International Journal of Business and Management Sciences **E ISSN**: 2708 – 4337 **P ISSN:** 2708 – 4329
Available online at http://www.ijbms.org
International Journal of Business and Management Sciences
Volume 04 (03), 2023
Received, 10 July, 2023, Revised, 11 September, 2023,
Accepted, 15 September, 2023, Online First, 18, September, 2023.

FISCAL POLICY RESPONSE TO COVID-19 PANDEMIC: CASE OF PAKISTAN

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Keywords:
Fiscal Policy, Taxation, Energy, Subsidies, COVID-19.
JEL: *C68, H22, H25, H61*

ABSTRACT

This study aims to explain the macroeconomic and welfare impacts of changes in indirect taxes brought about as a response to COVID-19. We study if tax relief provided in federal budget of fiscal year 2020-21 provided any relief to the private enterprise and trade sector. Another effort in this study aims to study if production subsidies during first wave of COVID-19 were able to effectively support firms in the agriculture sector. Using a PEP Single Country Recursive Dynamic CGE model, we simulate impact of changes in tax codes and production subsidies and explain five major results. First, out of all fiscal policy changes, those designed for manufacturing sector offer highest gains in real GDP and reduction in consumer prices (and increase in consumer welfare). Second, tax relief offered for services sector firms lead to highest investment gains. Third, while all simulations depicting changes in fiscal policy led to increases in exports, however this is also accompanied by an even higher increase in import demand. Fourth, we do see that consumption inequalities may have expanded as a result of the pandemic and fiscal policy responses. Finally, our qualitative assessment reveals how COVID-19 has led to widening of gender inequalities. Based on a structured public-private dialogue series (where results of this study were also presented), we offer policy recommendations which could help mitigate the challenges for both households and firms as a result of the pandemic.

INTRODUCTION

In the wake of COVID-19, public sector service delivery in Pakistan came under severe pressure. A concern of more immediate nature was regarding the livelihoods of those associated with various economic activities. The lockdowns resulted in -0.5% real GDP growth in fiscal year 2019-20 (Table 1) putting jobs in both formal and informal segments of

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the economy at risk. Due to the delayed medical solutions and vaccination drive, the second and third waves of COVID-19 further exacerbated these challenges.

Due to low economic growth, and resultant decline in collections from taxes, there was a concern regarding sustainability of social protection offered by the government. While some tax relief was provided to the micro small and medium enterprises (MSMEs) in fiscal year 2019-20 (FY20), it was felt that this relief may continue in to the coming years given the prolonged incidence of the pandemic. To sustain provision of tax relief and subsidies, government's borrowing requirements are bound to increase.

In view of this, the government aims to improve its targeting for tax relief so that exemptions and subsidies are only provided to those in most need. Furthermore, as taxes are reduced for MSMEs another concern for the government is to find out avenues for compensatory sources of taxes. These are difficult to find in crisis times, however some sectors which have pivoted well have also seen rising turnover in local and foreign markets. For example, textile sector was able to provide personal protective equipment abroad and has seen a rise in their exports in comparison to initial days of COVID-19. Likewise, higher trade-in-digital-services seems to have benefited those who were already part of the ecosystem and well positioned to continue work during pandemic.

Table 1: Pakistan Macroeconomic Profile

Indicators	**2019-20**	**2019-20**	**2020-21**
	Estimated Pre Covid-19	**Actual**	**Provisional***
Real GDP growth (%)	2.4	-0.5	3.94
Fixed investment (as % of GDP)	13.2	13.8	11.4
Public investment (as % of GDP)	3.3	3.8	2.7
Inflation (CPI, Average, Growth %)	11.8	11.2	6.5
Government revenue (% of GDP)	16.0	15.0	15.9
Govt. expenditure (% of GDP)	23.2	23.1	22.9
Budget deficit (percent of GDP)	7.2	8.1	7.0
Government debt (% of GDP)	80.4	-	83.3
Exports bop (USD billion)	25.5	22.5	24.8
Imports bop (USD billion)	48.3	42.4	45.8
Remittances (USD billion)	22.6	23.1	20.5

Current Account Deficit (% of GDP)	2.2	1.1	2.4
Gross reserves (USD billion)	12.6	13.7	15.0
Gross reserves (months of Imports)	2.5	2.7	3.3

Source: Pakistan Economic Survey & Finance Division
*As on 30th June 2021.

The federal government is also keen to study how tax administration at federal and provincial levels can be a catalyst in post-pandemic recovery. The development partners supporting the government are aiming to design a three-pronged approach which includes changes to tax policy, administration, and audit systems (IMF 2020). Additionally, this time provincial governments are under pressure to improve sub-national revenue collection from agriculture, transport, and property-related local incomes and wealth sources. This approach is being informed by examples from other countries who are actively looking to build taxation structures that respond more rapidly in times of crisis.

During the pandemic MSMEs also complained of their inability to bear high overhead (fixed) costs due to reduced availability of working capital in the short term. The government came forward with a time bound energy subsidy whereby electricity rates were rationalized for MSMEs. Lately, there are voices within the government including Ministry of Commerce suggesting that this subsidy may have been misused by some firms. This has again led to the debate around finding better ways of targeting firms for such subsidies. Also, there are concerns that the exemptions allowed under these subsidies were not progressive in nature – an area which we wish to analyse through this study.

In view of the above mentioned, the overarching objective of our study is to simulate the impact of tax relief for commodity producing sectors and production subsidy in agriculture sector provided in response to COVID-19, during the first wave of the pandemic.

Research Questions

Based on the overarching objective explained in the previous section, our main research questions include:

1. What were the macroeconomic and welfare impacts of changes in structure and rates of indirect taxes in federal and provincial budgets 2019-20? How have these changes provided relief to firms and households?
2. How were changes in tariff policy designed and how far these measures rescued the firms in trade sector?
3. What was the incidence of production subsidies? How far have these measures supported firms in the agriculture sector?

While responding to the above mentioned research questions, we also study effects of COVID on women and vulnerable groups. We analyse how policy response to the pandemic may have influenced various forms of inequalities.

LITERATURE REVIEW

Evidence on damage needs

Cardenas et al (2021) observe that the fiscal policy response to the COVID-19 pandemic in the majority of Latin American countries was much more than during the Global Financial Crisis (GFC), implying that the fiscal space "was not as tight as expected". The impact of lockdown imposed to curb the spread of Covid-19 pandemic however, in Asian countries such as Pakistan, is still unfolding.[3] The emerging literature indicates that MSMEs segment in Pakistan was largely ill-equipped to adapt to the crisis resulting in reduced operations, disruption in supply chain, liquidity crunch, and inability to service orders.

The extended lockdown and its impact on MSMEs also contributed towards job insecurity and unemployment in sectors that is largely undocumented, and offers informal employment lacking healthcare and other benefits, such as enrolment in social services programs such as by Employees' Old-Age Benefits Institution (EOBI). This not only frustrated official efforts to mitigate the health impact of Covid-19, but also resulted in public resentment towards disease mitigation measures such as lockdown of trade and commerce.

Initial estimates suggested GDP contraction of 1.3 percent[4]. This was later revised to contraction of 0.4 percent due to better than expected performance of agriculture sector, as per provisional estimates released by National Accounts Committee in May-2020. However, contraction in various sub-sectors manufacturing and services sectors was more pronounced.[5]

Pakistan does not produce quarterly GDP, which makes it difficult to separate economic performance in the quarter ending June 2020, the period in which the impact of Covid-19 on economy would have been most visible.

However, the Large-Scale Manufacturing (LSM) Index reported every month provides a clue. By end-March 2020, the LSM for nine months of fiscal year 2020 (9MFY20) was down 5.4 percent; however, latest numbers show that by June 2020 the full year FY20 LSM was down 10.2 percent. This clearly reflects the impact of Covid-19 in the last quarter.

[3] The authors of this report have benefited from their meetings and work in collaboration with EU GRASP program.
[4] World Bank, 2020
[5] National Accounts Committee, 2020

Pakistan also does not officially produce provincial or sub-national GDP estimates on annual basis, leading to gaps in understanding of trends in provincial economies, which in turns impairs effective decision making by both federal and provincial governments as well local and international development partners.

In terms of job losses, preliminary estimates conducted by Pakistan Institute of Development Economics (PIDE) showed that lockdown measures and resultant slowdown in economic activity could result in high levels of unemployment. In case of limited restrictions, PIDE estimated that job losses may stand at 1.4 million; under moderate restriction, loss of employment could reach to 12.3 million; in the case of complete shutdown, up to 18.53 million people may have been rendered unemployed[6].

Estimates of impact on micro-, small, and medium enterprises are similarly dire. According to International Trade Center, globally SMEs have faced "decrease in demand, financial instability, job insecurity, and disruptions in supply chain"[7]. Annual Economic Survey of Finance Ministry notes that SMEs may not only see mass layoffs and furloughs, but severe cash flow and liquidity crunch the impact of which may be compounded due to largely informal nature of the segment[8]. Lack of documentation of businesses further limits the efficacy of any administrative measures taken for targeted relief and intervention, such as monetary stimulus by the central bank to extend loans for salary support and working capital requirements.

Any estimate of damage, however, must account for limitations in data availability, which faces serious challenges of credibility due to obsolescence and lack of robustness in methodology employed. Various government census such as Census of Economic Establishments are at least 15 years old and thus outdated, as fresh census exercise has been long overdue. The challenge is particularly magnified for the rural segment of the economy, where estimates available are invariably outdated: Agricultural Machinery census was last conducted in 2004; Livestock Census in 2006; Mouza/Village Census in 2008; and Agriculture Census in 2010.

Moreover, no official consensus even exists on total number of MSMEs in the country, as official quarters rely on various proxies, given extensive nature of informality, and lack of registration or documentation in the segment, usually for tax evasion purposes.

[6] PIDE, 2020
[7] International Trade Centre, 2020
[8] Finance Ministry, 2020

According to a SME Policy, 2007 that uses commercial and industrial electricity connections as a proxy, 90 percent of total economic establishments in Pakistan consists of SMEs[9]. Various estimates arrived at using GDP and population growth rates places number of these enterprises anywhere between 3.8 – 4.75 million[10]. Consider also that these estimates do not include micro-enterprises, which may number up to two or even three times the total numbers of SMEs in the country[11].

As a result, both government and private sector lack material insights on MSME and rural economy. This reduces the efficacy of the analysis, as both local and international research organizations and policy think tanks base their analyses on data that is in some ways obsolete. This is an outcome of historic indifference to developments of SMEs at policy-level, especially for those in rural economy.

Despite the challenges of measurement and reliable estimates, the integral role of SMEs in a developing economy cannot be overemphasized. According to SME Asia Finance Monitor 2014, on average SMEs account for 96 percent of all enterprises in the Asian region[12]. Sustainable Development Policy Institute places SME contribution to GDP at 40 percent; to exports at 40 percent; 80 percent to non-agricultural employment; and 35 percent to total value addition[13].

Attempting to measure the impact of lockdown, the SDPI study noted in April 2020 that over two-thirds of SMEs would struggle to survive beyond three-month due to cashflow crunch[14]. As SMEs operate outside the formal sector, access to finance is constrained even under ordinary circumstances. According to State Bank of Pakistan (SBP), only 0.18 million SMEs have access to financing from commercial banks, while 0.2 million micro enterprises have access to credit from microfinance lending institutions[15]. As a result, it is questionable whether these enterprises have been able to benefit from relief measures announced by SBP to manage their liquidity crunch.

According to a survey conducted by Karandaaz Pakistan, of 123 self-selected SME respondents, nearly half had either laid off employees or reduced employee salaries. One-third expressed fears of insolvency within a month of lockdown; more than three-fourths

[9] Karandaaz, 2017
[10] NEPRA, 2018
[11] Industry sources
[12] ADB, 2014
[13] SDPI, 2020
[14] Ibid
[15] Business Recorder, 2020

noted having faced supply chain disruptions, which included both exporters and domestic-focused enterprises.[16]

Similarly, study conducted by SMEDA in April-2020 noted that up to 95 percent of surveyed enterprises experienced reduction in production/activity and supply chain disruption. One-fourth of respondents reported loss of up to hundred percent of export orders. Close to half of the enterprises admitted having laid off workers. However, up to 84 percent of these organizations planned to rehire employees within a quarter, provided the lockdown were to be lifted[17].

Fidel-e-Castro (2021) calibrates to find different types of fiscal policies in the US. He concludes that unemployment benefits are effective to stabilize income for the borrowers, who were the most affected during the pandemic, while cash assistance programs are plausible and effective if the policy objective is to improve employment in the respective affected sector. Romer (2021) also reiterates the same, suggesting that cash handouts during COVID-19 were useless, while social health and insurance packages were found to be useful.

Finally, Ahmed et al. (2021) studied export competitiveness of Pakistani firms amid COVID-19. Authors informed that several types of trade costs have increased for both exporters and importers. Compliance with SOPs and new standards in transportation and other aspects of logistics post additional costs. COVID-19 has led to productivity losses across exporting firms. Such losses were most reported by the commodity producing sectors and therefore require government's attention.

a. Measuring vulnerable population amid pandemic

In their provincial level analysis of vulnerable employment across sectors, Nasir & Faraz[18] show that the share of vulnerable employment in various sectors varies across the provinces. In most provinces, labour force is seen vulnerable in agriculture and wholesale and retail trade – two sectors in which poorest of the poor are found intensively in both formal and informal sectors. Women in informal segments of the economy are particularly vulnerable – an aspect discussed in detail latter.

b. COVID-19 has widened gender inequalities

An analysis presented in June 2020 has explained how Pakistan's women-owned firms, which are usually smaller than firms owned by men, are 8 percent more likely to lose their entire revenue during the pandemic (Quresh 2020). In the microenterprise sector, the

[16] Karandaaz, 2020
[17] SMEDA, 2020
[18] Nasir, M & Faraz N 2020

uncertainty was much higher. The informal jobs, which account for most of women's employment in the microenterprise sector may have been adversely hit the most. Those women informal workers who are based at home may have lost their source of income completely. In terms of formal wage employment over a quarter of Pakistani women were laid-off or temporarily let-go from their jobs in various sectors including manufacturing industries and services.

The key gaps in the literature which our study aims to bridge include:

a. Economy-wide impact of COVID-19 in Pakistan using a dynamic general equilibrium approach;
b. Economy-wide and welfare impact of changes in tax and tariff policy;
c. Economy-wide and welfare impact of production subsidies allowed during the pandemic for agriculture sector enterprises.

Data

Our analysis has been informed by various data sources. The CGE model presented here uses the Social Accounting Matrix (SAM) with Pakistan Input-Output table (IOT) from the year 2014. This IOT has been developed and explained in Zeeshan (2020). The table provides industry-wise disaggregation across different sectors of agriculture, manufacturing and services. The macro values are provided below and indicate an economy without COVID-19.

Table 2: Industry-wise disaggregation across different sectors of agriculture, manufacturing and services

Sr.no.	Indicators	Amount; Fiscal Year 2014
1	Real GDP (PKR billion; CBP[19])	10217
2	Fixed Investment (PKR billion; CBP)	1366
3	Household Consumption (PKR billion; CBP)	8305
4	Total Exports (PKR billion; CBP)	1225
5	Manufactured Exports (PKR billion; market prices)	1029
6	Total Imports (PKR billion; CBP)	1558
7	Government Revenues (PKR billion)	3637
8	Total indirect tax collection (PKR billion)	1480
9	Government Expenditure (PKR billion)	5026
10	Total Subsidies (PKR billion)	340

We generated a baseline to represent actual pandemic-related loss estimated by Ministry of Finance for fiscal year 2020. For example, in the case of real GDP, the baseline value was 0.4% less than the value in table below (actual reduction in GDP growth as reported in the Economic Survey of Pakistan). The impact of COVID-19 on other macro totals is provided below. In terms of the interpretation of our results which follow, all results are with respect to

[19] At constant basic prices of 2005-06.

baseline mentioned in the table below. The baseline here implies a scenario that exhibits state of the economy after COVID-19.

Table 3: Pre-Covid and Post-Covid on Macroeconomic Variables

Sr.no.	Indicators	Pre-Covid	Covid (FY20) [Baseline]	Impact	Difference (PKR)
1	Real GDP (PKR billion; CBP[20])	10217	10176		-41
2	Fixed Investment (PKR billion; CBP)	1366	1362		-4
3	Household Consumption (PKR billion; CBP)	8305	8272		-33
4	Total Exports (PKR billion; CBP)	1225	1214		-11
5	Manufactured Exports (PKR billion; market prices)	1029	1021		-8
6	Total Imports (PKR billion; CBP)	1558	1549		-9
7	Government Revenues (PKR billion)	3637	3603		-34
8	Total indirect tax collection (PKR billion)	1480	1468		-12
9	Government Expenditure (PKR billion)	5026	5021		-5
10	Total Subsidies (PKR billion)	340	343		3

The COVID-19 impact has been constructed by considering the following main transmission channels:

a. Fall in employment level: Out of a total employed labour force of 63 million, it was projected that 2.3 million would lose jobs during fiscal year 2020-21 – a fall of 3.6 percent[21];

b. With lower availability of labour due to self-prevention, lockdowns and social distancing measures, we have allowed the wages to rise by 3 percent[22];

c. Lower labour also results in lower demand for capital, as both inputs are combined to produce output. However, the return to capital is not allowed to change in our scenario (and in light of literature);

d. The international trade cost of both exports and imports is increased by 19 percent. To arrive at the actual loss value reported in Pakistan Economic Survey, we have applied this to all merchandise trade.[23]

[20] At constant basic prices of 2005-06.

[21] In our model's BAU case, we apply an upper bound as constraint whereby total labour demand equals 60.71 million (also called employed labour force in Pakistan Economic Survey).

[22] Wage rate of industry 'j' labor increased by 3 percent for both agriculture and manufacturing industries.

[23] International evidence suggests that these trade costs (including transportation, information, marketing, and other transactions costs) may have increased up to 25 percent (Maliszewska 2020). We have modeled this as an increase in export tax rate on exported commodity 'i' and increase in import duty on imported product 'i'. We did not have good information on how commodity-wise trade and transport margins were changing and therefore no change has been introduced in this case. While the increase in rate introduced for export and imported items may differ the average increase introduced here is 19 percent which in turn allows us to replicate the change in trade flows amid COVID-19. Any revenue increase for the government is then rebated back to firms.

e. Demand for select services is allowed to fall. We assume that with lockdowns and social distancing measures, household demand for services such as transport, dwellings, tourism, restaurants, hotels, and recreational activities would decline by 15%.[24]

For the design of our tax-focused policy simulations, we also used the beneficiary data from tax bodies and finance departments at federal and provincial level to assess the amount provided and number of recipients of tax and subsidy benefits. While most of the value of tax expenditures and production subsidies is available from Pakistan Economic Survey 2019-20, however number of actual beneficiaries by sector was requested from the relevant departments. Likewise, we conducted interviews to see if this relief was designed in a manner that helped to pivot.

Finally, we used the information in federal and provincial government budget documents to derive proposed changes to medium-term structure and rates of indirect and trade taxes faced by the MSMEs and trade sector firms. It is expected that tax relief will be gradually rolled back.

A limitation is that our SAM does not offer gender dimensions. We faced data limitations which didn't allow us to for example split the labour market or the firm sector by gender. We have therefore tried to capture the impact of COVID-19 on women and vulnerable groups through our qualitative research exercise most notably key informant interviews with women-led firms.

METHODOLOGY

This study has a quantitative simulation modelling methodology as the main component, and an accompanying qualitative survey exercise. We use the PEP-1-t CGE model explained in Robichaud et al. (2016). The model provides the flexibility to manage multiple types of workers and capital. Both these factors of production can receive income from multiple industries. Our aim is to provide a disaggregation in SAM and explicitly account for those industries which were considered for some form of fiscal policy relief (see Annex-A for types of relief provided).

The model also allows us to see the distributional impact of the fiscal response as labor income is distributed amongst the various types of households in the model. We have split the household segment in to both rural and urban and with in these regions poor and non-poor.

[24] The commonly used method to model such a change is to increase indirect tax rate on these services. Any revenue increase for the government is then rebated back to households. In our model, we have increased 'sales (indirect) tax rate on commodity 'i' to replicate the actual reduction in demand as a result of pandemic.

All economic agents can receive income from capital. From distributional point of view, this implies that we can assess the changes in gains for both wage and self-employed.

One of the limitations of our model is that we will only use one government sector. This implies that we will not split the fiscal policy response by federal and provincial governments. There will be a shock based on consolidated response of national and sub-national fiscal policy. This however doesn't imply that multiple tax instruments cannot be considered. We run experiments separately to see impact of indirect tax changes as applied to different sectors.

The model allows simulating production subsidies to various sectors. In this regard, adequate level of disaggregation is also available in SAM. Additionally, multiple subsidies can also be simulated using the same framework. For our case a production subsidy for cotton sector has been modeled as a negative indirect tax. A key contribution of this study will be that it has simulated impact of various fiscal policy instruments separately (and not simultaneously) to see and compare results which could help in improving packaging of such measures for the future.

As explained above that our labour market in SAM is not split by gender. Therefore, gender dimensions will be studied through the key informant interviews where we will inquire about the impact of fiscal policy changes on women-led enterprises.

The discussion in this study is also informed by a comprehensive literature review. This review exercise helped in understanding the baseline scenario, competing fiscal policy options available with the government, and their pros and cons.

We also conducted interviews with relevant policy departments to understand their perspectives. Select private enterprises in trade sector were also interviewed. We will also focus on women-led enterprises who faced relatively greater constraints in pivoting amid pandemic. Our consultations helped us in understanding how the private sector benefited from fiscal relief measures and if these measures were enough to protect from job and consumption related losses.

Design of simulations

Our simulations are listed below for reference and we explain the rationale for these policy experiments in this section.

Simulation-I: A reduction in GST by 3.5% for activities under large scale manufacturing

Simulation-II: Reduction in tariffs by 2% on priority agriculture and food items

Simulation-III: General sales tax on select services sub-sectors reduced by 3%

Simulation-IV: Production subsidy allowed to cotton sector[25]

i) Design of tax relief

At the start of the first wave, PTI government moved to reduce the customs and other duties on import of food and agriculture sector inputs. This reduction was to the tune of 2 percent – aimed at stabilizing local prices which had seen a hike due to supply chain disruptions in turn further strengthening market speculation.

Then as part of the federal and provincial budget for fiscal year 2020-21, the government also relaxed the income tax rates for agriculture and select food sub-sectors by 3 percent. This measure was aimed at providing necessary relief to farmers facing cashflow difficulties. Ensuring availability of savings with farmers was essential so that they could afford the next season's inputs – necessary to maintaining agricultural production and yield and overall food security objectives.

Some changes were also made to general sales tax on goods. Most notable from our point of view include reduction in GST rate for large scale manufacturing sectors by 3.5 percent. For food processing sector and small scale manufacturing we have seen a five percent reduction in GST.[26]

The GST on services (GSTS) is the domain of provincial governments. All provinces reduced the standard rate of GSTS. The economy-wide average reduction in GSTS is estimated at 3 percent. The services which face this standard rate among others include IT, ICT, and freelancing which witnessed an increase in their demand during the pandemic time.

ii) Subsidy for crop sector

The cotton sector received a comprehensive support owing to challenges which coincided with COVID-19. A shortfall in output was attributed to 10 percent decrease in area under cultivation in comparison to the previous year (USDA 2020). Sugarcane, rice and corn, offered better prices and received pre-pandemic government support. These crops are also less prone to pest attack and diseases. Some part of the cotton crop was also damaged by locusts attack followed by heavy monsoon rains. In view of the above mentioned the government announced a package which covered subsidized availability of fertilizer[27], seed[28],

[25] Modeled as a negative 2.5% indirect tax.
[26] This includes 3 percent reduction in indirect tax and 2 percent negative indirect tax (representing mean reduction in electricity and gas rates allowed to this sector).
[27] PKR 925 per bag on phosphorus fertilizers and PKR 243 per bag on urea and other nitrogen fertilizers.
[28] Size of subsidy for cotton seed is PKR 2.3 billion.

and pesticides[29]. This impact was estimated and simulated as a 2.5% negative GST rate on cotton sector output.[30] We now explain the impact of our policy experiments below.

ANALYSIS

Application and results

The results are from CGE model PEP-1-t explained above. We explain the impact on economic growth, investment, goods and factor prices, government budget, trade, and household welfare as measured by their consumption. The results provide changes in macroeconomic and welfare indicators in comparison to the baseline – a scenario constructed to reflect actual economic loss due to COVID-19 during fiscal year 2020. The data on actual changes was derived from Economic Survey of Pakistan.

Growth impacts of policy measures

An intended contribution of our effort is to simulate the fiscal policy measures separately to see differentiated impacts on macroeconomic and other variables. A reduction in tax burden on manufacturing sector has produced a positive growth impact – perhaps the highest magnitude vis-à-vis all other measures adopted by the government during the pandemic. While industrial production has a share of 19 percent in overall GDP however it has strong impacts for employment, government revenues and trade sector as we will see below.

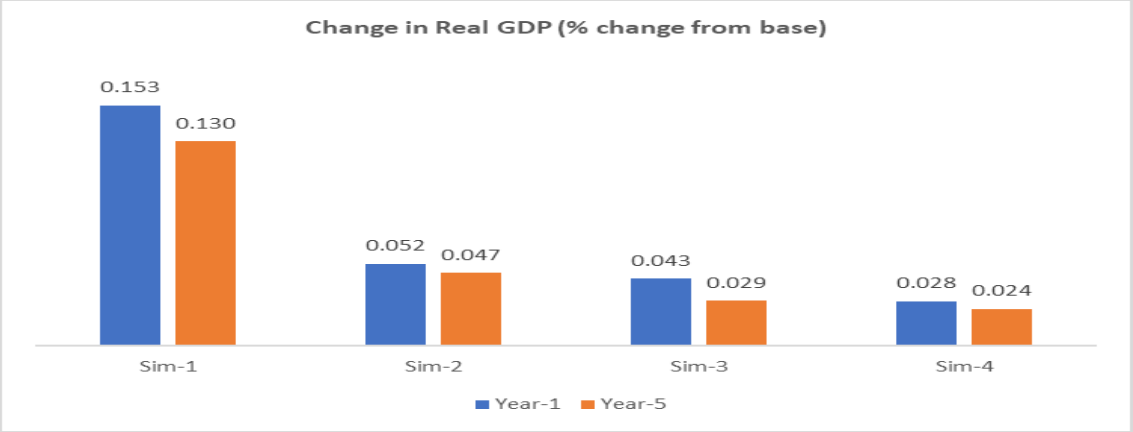


Figure 1: Change in Real GDP (%change from base)

Tariff reduction for agriculture and food items was intended to stabilize local prices and smooth household consumption. This reduction in the burden of customs duty has lesser impact than our first simulation however the overall growth impact remains positive. For the non-food agriculture sector a production subsidy was also announced for the fiscal year 2020-

[29] Size of subsidy for pesticides is PKR 6 billion. For further details, see "Pakistan approves agriculture relief package to support farmers." Arab News. May 13, 2020.
[30] In December 2019, the government had already abolished 3 percent regulatory duty, 2 percent additional customs duty and 5 percent sales tax.

21. As most of this was targeted to address the risks in only one sector i.e. cotton therefore the overall (positive) growth impact is low. Cotton does however have forward-linkages with textile and garment sector – constituting 55% of Pakistan's exports (we discuss trade impact of this subsidy below).

While services sector's share in Pakistan's GDP is 54 percent however, we see that rationalizing the indirect tax burden on this sector has led to low levels of growth impact (in SIM-3) compared to, for example, the manufacturing sector (as seen in SIM-1). A possible explanation for this may be that provincial GSTS is still a relatively new tax instrument and several services sub-sectors haven't been filing returns a key reform initiative which is still on-going (i.e. bringing services sub-sectors under provincial tax net).

Most of the medium-term impacts (5-Year) of our simulations remain positive, however the magnitude of gains starts to decline as the time horizon prolongs. We have allowed this relief for each year during the study period i.e. 5 years. In reality however it is likely that in a V-shaped or even U-shaped recovery the government may decide to roll back some of the tax relief and subsidy measures on account of revenue collection shortfalls.

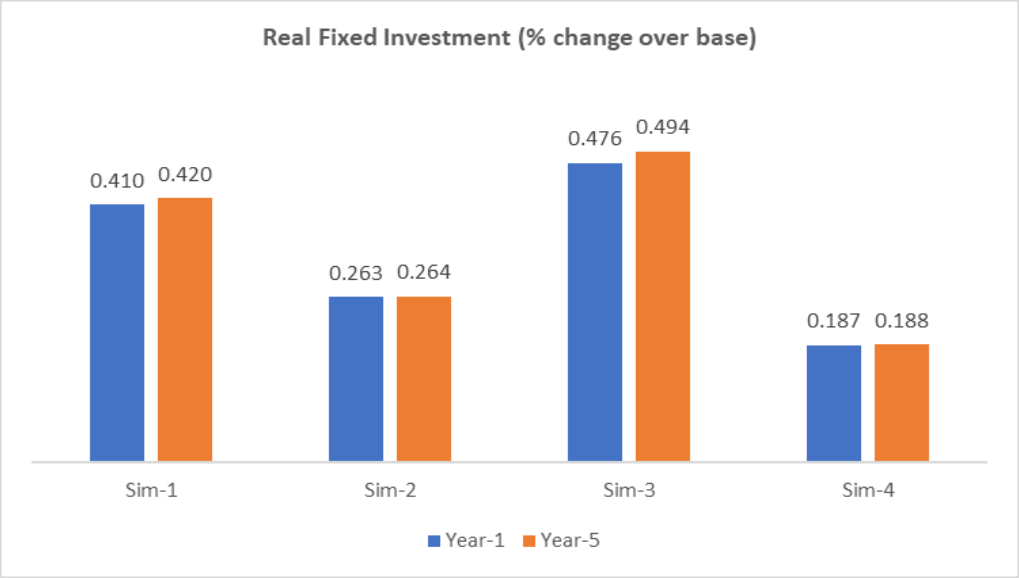


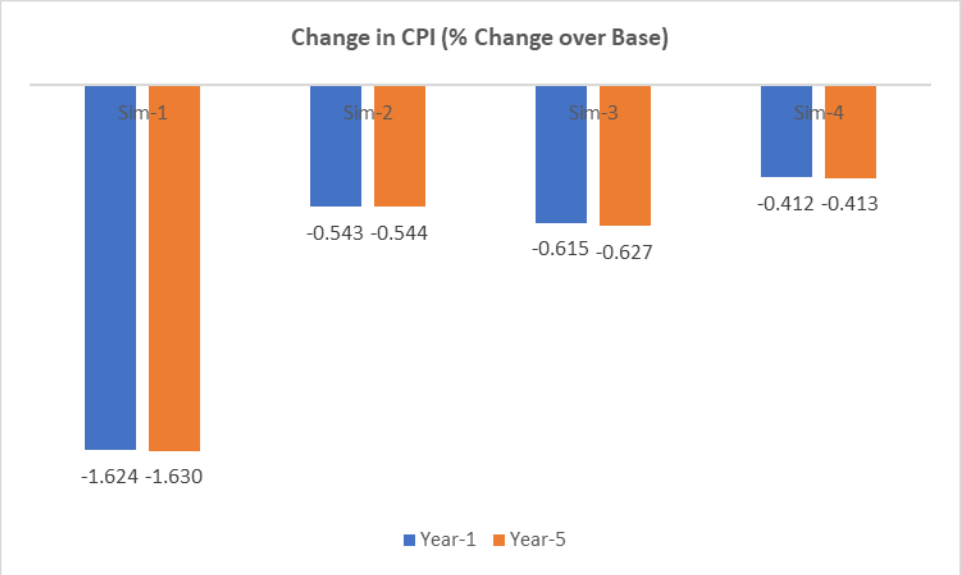
Figure 2: Real Fixed Investment (% change over base)

Government's fiscal policy measures produce positive investment impacts. Given the large share of services sector in overall GDP, we see that reduction in indirect tax burden faced by this sector (SIM-3) produces the largest investment gains followed by reduction of GST on large scale manufacturing. The fixed investment impact increases for future time periods. This trend is slightly higher in the case of changes in GST in comparison to changes in customs duty or production subsidy in food and non-food sector respectively. It is likely that the overall investment impact for large scale production would be higher than this result as

reduction in taxes faced by this sector was also complimented by reduction in interest rates which saw rise in private sector credit (not simulated here).

Impact on Prices

The period immediately after the COVID-19 outbreak witnessed stubbornly high growth in consumer price index. To manage this rising trend in prices, particularly in the agriculture and food sector, government resorted to both policy and administrative measures. We note here that all our simulations have led to reduction in prices. These price gains in fact increase as time horizon increases which also reflects an increase in consumer surplus over time.



Firgure 3: Change in CPI (% change over base)

The reduction in prices is most seen once tax burden on large scale manufacturing sector is rationalized – almost more than double the impact seen in other simulations. One possible reason for such strong impact could be the underlying price elasticies which vary by sector. Items in the manufactured goods basket for example, energy, processed food, and other important consumer durables' prices respond strongly to tax changes, often more expediently than other goods owing to inelastic demand.

The same explanation could hold true for services sector (SIM-3) which follows SIM-1 in terms of its price impact and has greater downward impact in comparison to simulations seen for agriculture sector. For both manufacturing and services sectors it is likely that prices may have fallen beyond what is exhibited in our results due to a period during and after lockdowns in which low demand was observed locally and abroad.

Impact on trade

A key priority for the government was to revive and take Pakistan's exports to pre-pandemic levels. The foreign exchange inflows were termed necessary for the sustainability of the balance of payments. During initial days, for stabilizing the foreign exchange reserves, a rapid fund instrument facility was also procured from the International Monetary Fund.

The manufacturing sector constitutes over 65 percent of Pakistan's exports. In this context, an important finding here is that most fiscal policy measures did lead to a positive impact on sub-sectors under manufacturing. The actual data on Quantum Index of Manufacturing, produced by Pakistan Bureau of Statistics also exhibited a revival of industrial output during the November and December months of calendar year 2020. As explained in the case of fixed investment impacts, it is likely that overall impact on exports would also be greater due to two complimentary changes: (i) increase in availability and uptake of private sector credit (due to unprecedented low interest rates allowed by the central bank), and (ii) exchange rate devaluation which had already taken place at the start of COVID-19.

While in the case of SIM-I the causal impact is easier to understand i.e. tax reduction for manufacturing helps trade sector firms to achieve export gains, however in the case of other simulations the transmission mechanism varies. For SIM-2 as inputs of agro-based and processed food sector industries face less burden of trade taxes, this provides gains for food sector export items, although the magnitude is less than the first simulation. The impact of reduction in provincial taxes faced by services sector results in the highest gains for manufactured exports – a change which is harder to explain. One possible explanation could be favorable impact of investment and price changes in SIM-3 which could have spillover effects on manufacturing e.g. in the form of inputs, intermediate services, logistics and distribution.

Finally, in case of SIM-4, cotton-based inputs are critical for manufactured exports in the case of textile and garments sector which is why a production subsidy for cotton results in positive trade gains. The terms of trade impact is also favourable here as import requirements of manufacturing sector decline.

It is however clear that imported content in domestic production and exports is critical. We see that SIM-I which led to strong export gains, also led to an even higher demand for imports. In reality too, the central bank had in December 2020 started to study if such increases in imports could be sustained, given the uncertainty surrounding medical solutions required to fully address pandemic and arrest its impact on the economy.

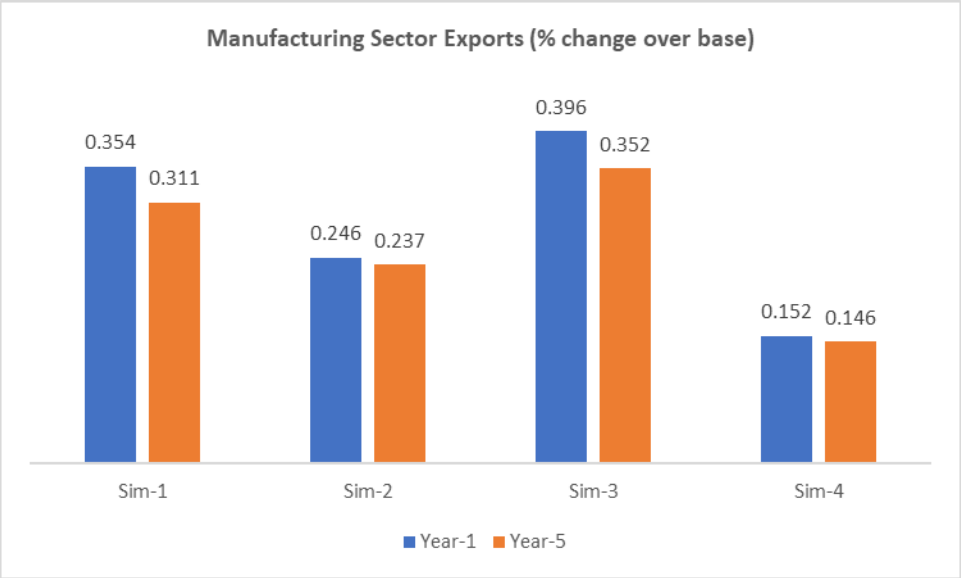


Figure 4: Manufacturing Sector Exports

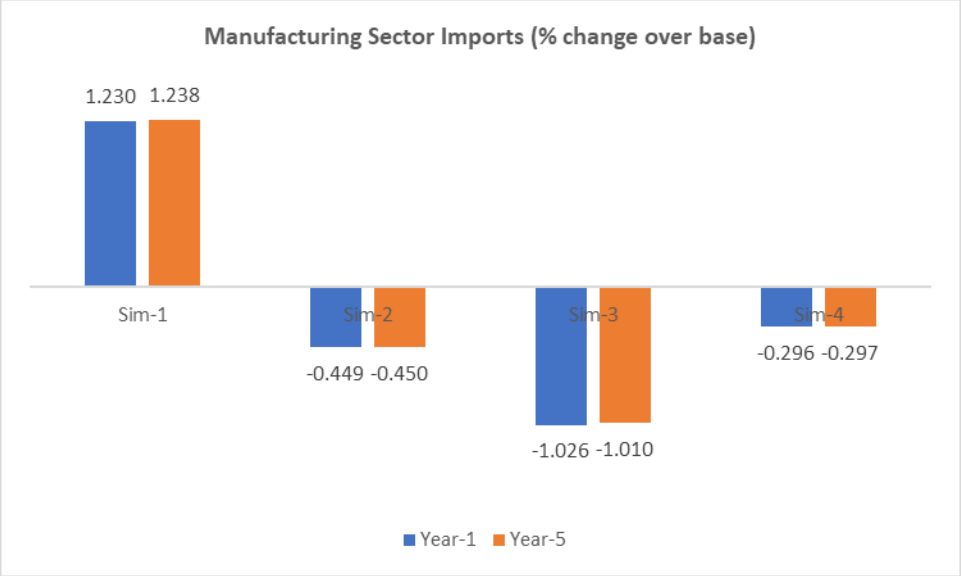


Figure 5: Manufacturing Sector Imports

We also study how our simulations have led to export gains for agriculture and services sectors. For example, reduction in trade taxes on imported agriculture and food sector items have resulted in small increases in agriculture sectors exports as well. However, GSTS reduction for services sector leads to strong positive impact on services exports.[31] These export gains increase as time horizon increases. This dynamic change is particularly large in the case of SIM-3.

[31] Pakistan's services sector exports amounted to USD 5.3 billion/annum in 2018. The IT and ICT sector exports were projected to increase during the pandemic times.

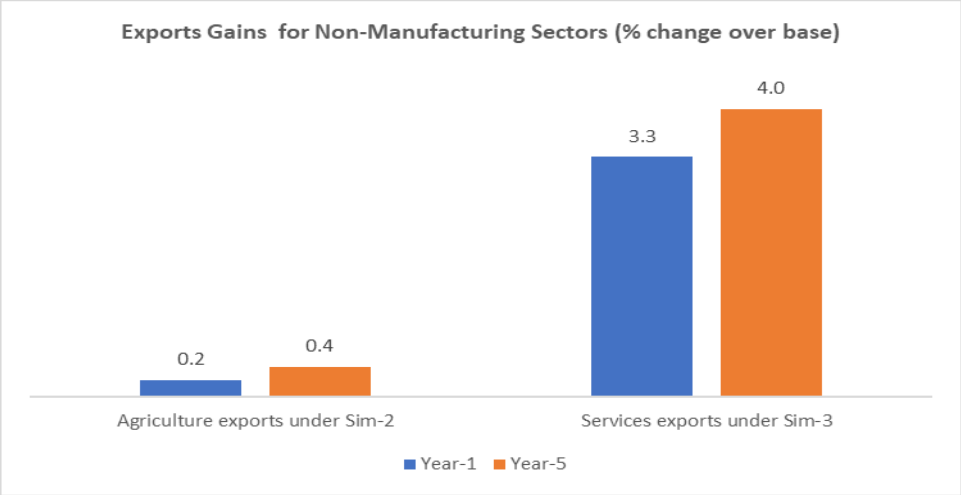


Figure 6: Export gains for non-manufacturing

Impact on wages and household consumption

The reduction in indirect taxes for manufacturing sector (SIM-1) favours non-poor households in both rural and urban areas relatively more than the poor. A result which is also visible for reduction in GSTS for services sector (SIM-3). A likely explanation for this is that both manufacturing and services activities have a higher concentration of non-poor households (associated with this activity) versus poor households who would see concentration in agriculture sector.

Under SIM-2 where trade taxes are reduced on agriculture and food items, we see that rural non-poor are the main gainers. The gains although positive are still lowest for rural poor – indicating that poor households are weekly integrated in trade sector. This explanation is validated as in the case of production subsidy for cotton sector (SIM-4) the gains for rural non-poor are marginally higher relative to other households.

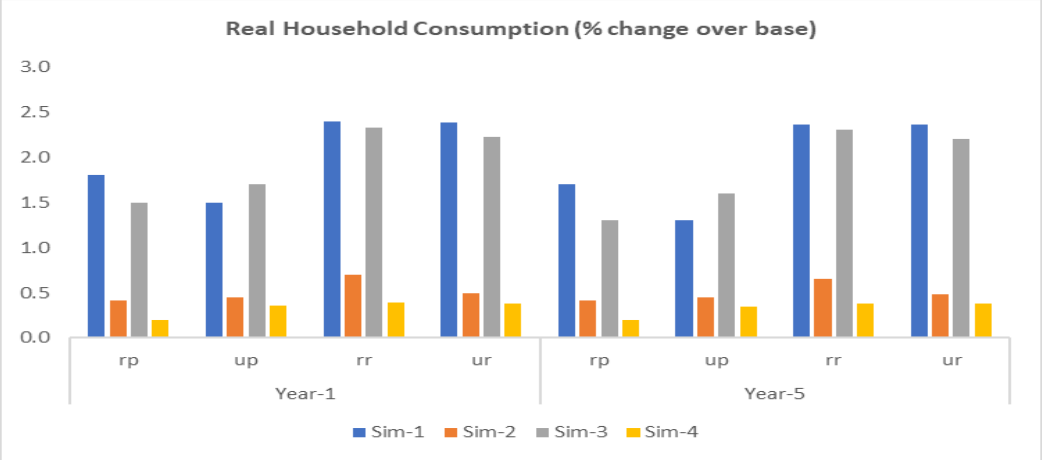


Figure 7 : Real household consumption

*Where rp is household rural poor, up is urban poor, rr is rural non-poor and ur is urban non-poor

This leads us to an important conclusion that fiscal policy changes introduced as a response to pandemic may have contributed to some increase in consumption inequalities. To investigate this further we present results on changes in food consumption separately. The gains for rural poor turn out to be lowest in case of SIM-1and SIM-3, however rural poor only gain higher relative to other households once tax relief or production subsidy is extended to agriculture and food sector (SIM-2 and SIM-4), however as seen below these gains are very low in comparison to other simulations.

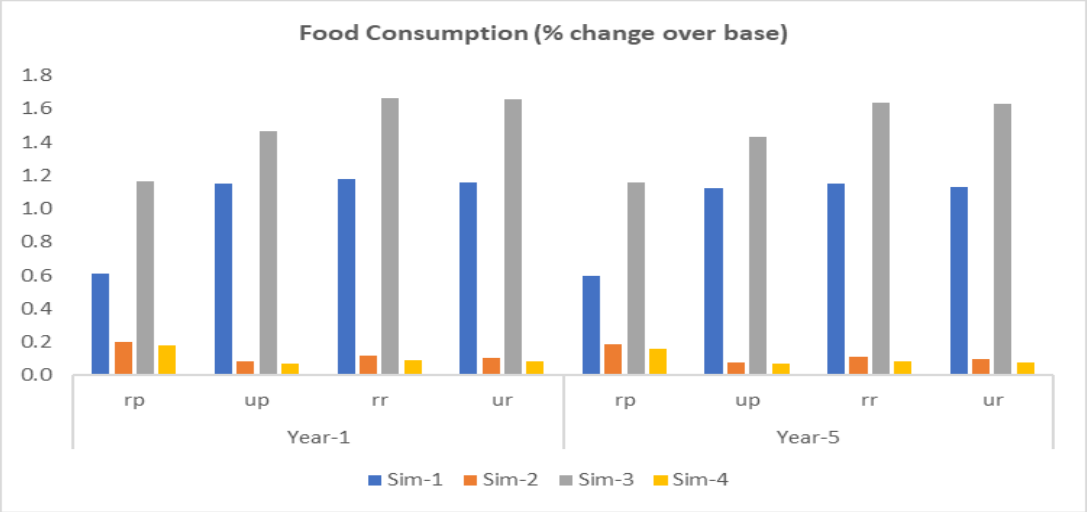


Figure 8 : Food consumption

*Where rp is household rural poor, up is urban poor, rr is rural non-poor and ur is urban non-poor

Our point regarding widening of inequalities during COVID-19 is also validated through the wage-effect. We note that fiscal policy measures for both manufacturing and services sector result in relatively large increase in wages of skilled workers vis-à-vis unskilled workers. Similarly, liberalizing agriculture imports and allowing production subsidy for cotton have led to negligible (positive) gains for skilled workers and in fact rendered negative wage returns for unskilled workers.

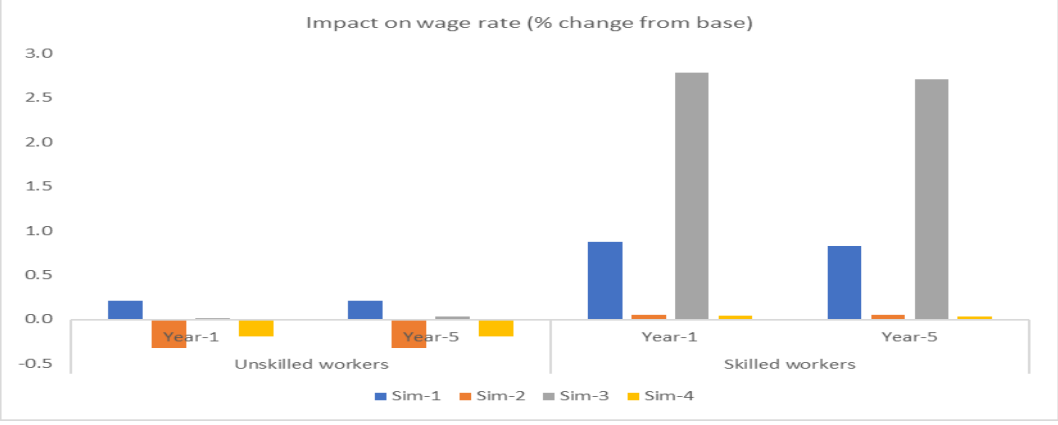


Figure 9: Impact on wage rate

Impact on gender inequalities

Their remains a need to identify the vulnerable groups more carefully and how these groups may have been impacted during COVID-19. Our interviews with key informants reveal that gender-responsive planning will be important. According to information provided in our consultations[32] held during October to December 2020, there was a reduction in economic opportunities available for young women during the lockdowns. In comparison to men, women had to cover for the increased carework required to support children-at-home.

During the initial wave of COVID-19, disruptions in routine health services for women led to many suffering inordinate days in access to medical care for themselves and their children. Most reproductive health and family planning facilities were not functioning during the first wave of the pandemic. Pre- and post-natal services discontinued as community health workers did not have timely access to personal protective equipment. Field reports indicated that pregnant women faced heightened incidence of mental wellness issues. The trade and travel related restrictions also led to shortages of contraceptives. Infrastructure deficits in public health sector resulted in quarantine and isolation wards not well-equipped to serve women. Most emergency centers lacked toilet privacy as well as sanitation products for women.

Education of young girls was particularly affected. Years of behvioral campaigns had prompted parents and guardians to enroll out-of-school girls. However, low-income households were seen refusing to send their girls back to schools once lockdowns were partially lifted citing reasons which included the need for support with additional housework or generate extra income.

There was some evidence on the rise in gender-based violence (GBV). Unfortunately, this was a time when usual services and helplines were also not available as relevant staff was assigned duties related to other more immediate emergencies. The shelter centers (Darul Amans) available for affectees of GBVs were also not encouraging higher numbers to visit owing to lack of capacities to host larger population while ensuring physical distancing.

The design of post pandemic economic recovery strategies will need to facilitate and ease return of women in both wage- and self-employment. Additionally, a focus on: safe transport, childcare support, and anti-sexual harassment in the workplace will need to be increased. To encourage the return of girls to schools, awareness campaign that uses online platforms,

[32] For example, video recording of one of these consultations may be seen here: https://www.youtube.com/watch?v=uRHt0Pyb0Dc

electronic media, and mobile messages coupled with community mobilization sessions will be required. To curb GBV, increased use of technology solutions such as the use of text/WhatsApp services can help survivors report instances of abuse and domestic violence.

Moving towards a gendered CGE analysis

During the course of this project we worked closely with Pakistan Bureau of Statistics (PBS) to collectively understand the needs of a gendered SAM. We hope that this exploratory exercise will help PBS to make available more comprehensive data which will allow for credible gender-aware general equilibrium analysis in the future.

In line with the literature, construction of a gendered SAM will include: compiling information on gender-wise shares in activities, labour, and household incomes, and utilization of time use data[33]. Apart from the sexes who participate in the labour market an explicit treatment for care and household services is ideal in a gendered analysis. For example, Lofgren et al. 2020 have explained that as a first step the household sector in a standard SAM will include a separate household (non-GDP) service. This single household is then split according to the care needs. In the case of Korea, authors have split this in to: households with children with head in working-age; households without children with head in working age; and households with the head above working age. Other similar categorizations are possible depending upon the research objectives.

These alterations if data permits allow for step (a) where the disaggregation of the household (row and column) into multiple households is done; and (b) disaggregating labor types if household time allocation to leisure and production of household services for own consumption is available.

In step (a), two tabulations are possible - for household columns and household rows. Each can be disaggregated into three household types and totals of each identical to the single household column and household row in macro SAM. These tables will be based on a nationally representative labour force survey which preferably should have information on both formal and informal segments of male and female labour force. In the event that information on informal segments is missing, other survey related values or information from peer economies would need to be considered. As education level is a key element in disaggregating labour accounts in a manner that they reflect qualification and skills across the population therefore nationally representative education dataset is also needed for the year pertaining to SAM.

[33] To capture non-paid activities for own or household consumption.

There could be issues with regard to gaps in column and rows for which adjustment could be done through scaling consumption to balance the two households with relatively smaller incomes - the elderly and the households with children. Likewise, the commodity accounts could be balanced thorough adjusting consumption for the largest households -without children with head in working age.

In step (b) we can calculate values for household time dedicated to leisure and service production for own consumption. This can be calculated by taking the product of time in hours and wage rate per hour. The activities are split into various categories including child care, elderly care, and other services. The same split is maintained for household and labor type. Labour types can also be extended by skill level or education keeping gender as a key element (e.g. skilled female labour and skilled male labour).

On time-use data, the past effort[34] is now dated and a new survey by PBS could help this exercise. This data will be crucial for leisure activity as wage rate should reflect opportunity cost. Similarly for services output, wages will reflect the cost of replacing an hour of family labor with an hour of hired labor. For this, average hired labor wage will be used instead of usual wage information. For services such as child care, labor could be treated as the only cost item and there will be no intermediate costs.

After defining the activity columns, a standard SAM balancing technique will be required so that the output column totals equal the row totals. The payments from the activities to household-specific labor is passed on as income to the households, generating balance, for labour and household accounts.

Conclusions and Policy Implications

The overarching objective of our study is to simulate the impact of tax relief for commodity producing sectors and production subsidy in crop sector provided in response to COVID-19, during the first wave of the pandemic.

Our findings discussed above offer conclusions which could contribute to better design of fiscal response during future emergency milieu such as the one presented by COVID-19. First, out of all fiscal policy changes, those designed for manufacturing sector offer highest gains in real GDP and reduction in consumer prices.

Second, relief for services sector firms is important as (given its largest share in GDP) fixed investment gains are highest once sub-sectors in this sector receive tax rate reduction.

[34] See GoP (2009).

Third, while all fiscal responses led to increases in exports, however the impact on net exports or terms of trade could differ. For example, while reduction in indirect taxes led to higher level of manufactured exports. This however was accompanied by an even higher level of import demand in this sector. Contrary to this, once indirect taxes for services sector are reduced this leads to increases even for the manufactured sector (and overall) accompanied by a reduced import demand. This simulation also offers increased export returns as time horizon increases.

Finally, we do see that overall and food consumption inequalities may have expanded to some extent. While all households see increases in their consumption levels, these gains are relatively less for poor households. We also note that gains in wages for skilled workers were relatively more than unskilled workers. This conclusion also implies that tax and subsidy changes are not enough and sustained provision of social protection and social safety nets will be required to mitigate the adverse welfare impacts of COVID-19.

Following are the main policy implications which we aim to explore further in the coming days during our interaction with Federal Board of Revenue and Ministry of Planning, Development and Special Initiatives.

1. There is a clear need to study the potential of all federal and provincial-level taxes (rate and base) and what role these taxes could play in the post-pandemic economic recovery. Additional simulation exercises in future studies are required to understand if cut in compliance cost of taxes (also introduced during pandemic) may have led to favourable gains.
2. Given that we see some inequality enhancing impacts of changes in tax policy, therefore a future exercise could help offer insights in to what supplementary expenditure side or social protection related measures could be expanded to mitigate various forms of inequalities.
3. Tax policy changes amid COVID-19 haven't resulted in a significant export gain for the agriculture and food sector. This needs to be explored further as this sector was able to see rise in availability of imported inputs too during the pandemic. Additionally, local inputs were also subsidized.

We are mindful that due to data limitations the team could not provide analysis based on a gender-aware CGE model. Therefore, in consultation with PBS we have included a section in our report on data requirements which could enable a gender-aware CGE analysis in the future.

In this regard, PEP supervisors informed about such work in Vietnam and Korea which has been cited here. We feel that this will be a good contribution of this report and perhaps also motivate PBS to have more comprehensive statistics which could allow gendered social accounting matrix.

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Funding Statement.

This work was carried out with financial and scientific support from the Partnership for Economic Policy (PEP), with funding from the Government of Canada through the International Development Research Centre (IDRC). The authors are also grateful to Margaret Chitiga, Christian Emini, Martin Henseler, Marzia Fontana, Jane Mariara, and John Cockburn for their valuable comments and suggestions. We received feedback from referees, which is duly acknowledged.