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The Role of Social Protection Fiscal Policy in Supporting Indonesia's Economic Recovery During the Covid-19 Pandemic: Evidence from a CGE Model

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ABSTRACT

The Computable General Equilibrium model is used to build a general equilibrium model of the Indonesian economy, to see the effectiveness of the impact of fiscal policy on social protection during the Covid-19 Pandemic on economic growth and household group income for the 2019-2021 period. The PEP -1-1 model is used with the static version 2.0 in GAMS 23.5 software with social protection variables simulated as a shock to the model that has been built. The results explain that there is an impact and contribution of social protection to Indonesia's macroeconomic conditions and economic recovery and sustainable growth during the Covid-19 Pandemic and out of the crisis. The results of social protection fiscal policy carried out by the government were able to contribute to an increase in economic growth by 0.03 per cent. The results of fiscal policy on social protection provided by the Government also had an impact on increasing the highest level of income in the hhk6 household group, namely upper-class free entrepreneurs, non-agricultural entrepreneurs, managers, military, professionals, technicians, teachers, TU workers and upper-class sales, Urban) by 06 percent, while other household groups were only able to increase by 0.1 percent.
Keyword: Fiscal Policy, Social Protection, Growth, Household Income

1. Introduction

The Covid-19 pandemic has come as a surprise and has infected and shaken all walks of life, from the health, economic and social sectors in all countries around the world. Millions of people have died, lost their jobs and savings, and unemployment has increased. After being plunged into the abyss of recession, many countries are trying to rise and expand in order to achieve economic growth and get out of the valley of recession. Romer 2021 analyses and states that 30 OCDC countries (thirty developed countries) have undertaken a more aggressive fiscal response during the pandemic crisis than the financial crisis to avoid a deeper crisis, even though it has resulted in an increase in the debt to GDP ratio as a result of the aggressive fiscal measures taken. Romer argues that aggressive fiscal expansion and large private savings will enable rapid growth in the next few years (Romer 2021).

The COVID-19 pandemic has also hit the world of labour very hard. Based on ILO *(International Labor Organisation)* projections, global working hour losses in 2021 are estimated to reach 4.3 per cent or the equivalent of 125 million full working hours (ILO, 2021). This figure has decreased significantly when compared to the ILO projection in 2020 where it was estimated that the number of global working hours lost was 6.7 per cent or equivalent to 195 million full working hours. This decrease in working hours certainly has an impact on reducing economic productivity. This can be seen from the trend in world economic growth

where during the pandemic there was a decline of - 3.27 per cent in 2020 but slowly grew to 5.80 per cent in 2022 (*Macrotrends, 2022*) (Tobing 2023). In Indonesia, worker productivity immediately fell to -5.70 per cent where the previous year experienced a growth trend of up to 3.95 per cent. Interestingly, the level of worker productivity in 2021 shot up by 8.86 per cent higher when compared to 2019 before the pandemic (Tobing 2023). The Covid-19 pandemic has also had an impact on layoffs, as many as 2.9 million employees have been laid off (as of May 2020) reported by the Ministry of Manpower, while KADIN (Indonesian Chamber of Commerce and Industry) is even higher, reporting that 6.4 million employees have been laid off.

The impact of the COVID-19 pandemic also occurred in Indonesia's economic growth. In 2022, Indonesia's economic growth was 5.31 per cent, which previously stood at 2.07 per cent in 2020 at the peak of the COVID-19 pandemic. Meanwhile, the highest inflation rate in 2022 was 5.51 percent, which was previously 1.68 percent in 2020 with the largest share occurring in *volatile food* (VF) inflation originating from cayenne pepper, cooking oil, eggs, broiler chicken meat and red chilli. The government also continues to control the social impact of the Covid-19 pandemic with social protection worth up to 461 T in 2022 or an increase of more than 300 per cent from 2021 and 2020.

Table 1.1 Macroeconomic Indicator Data for 2008-2021

Year	Economic Growth	Inflation	Protection Social
2020	2.07%	1.68% (yoy)	IDR 123.51T
2021	3.69%	1.87% (yoy)	IDR 110 T
2022	5.31%	5.51% (yoy)	IDR 461.6 T

Source: Collected from several sources, BPS, BI, Ministry of Finance, Ministry of Social Affairs.

In the midst of economic conditions that are heavily impacted by Covid-19, social protection is present as a form of realisation of the responsibilities of the Central and Regional Governments, as well as part of the safety net in an effort to reduce the impact and also prevent poverty. Poverty is a person's inability to meet food and non-food needs as measured by expenditure.(Hasibuan 2015).

Social Protection is a concrete effort made by the Government on real threats to people's welfare which in turn disrupts consumption and the level of demand. Making social protection programmes one of its top priorities, the Government is expanding, strengthening and encouraging well-targeted social protection programmes to help the purchasing power and consumption of the poor and vulnerable.

The main objective of this study is to empirically examine the impact of fiscal policy on social protection during the Covid-19 Pandemic that has been carried out by the Government in 2021-2022, as well as its contribution to economic growth, and household group income, with the title ***"The impact of fiscal policy on social protection during the Covid-19 Pandemic; Computable General Equilibrium (CGE) Model Approach"***. Using general equilibrium theory analysis, we can see and analyse the impact of a policy carried out by the Government, analyse the impact of policies that are not limited to macroeconomic variables, can also analyse the distribution of economic impacts across economic sectors, regions, and household groups.

2. Method

Computable General Equilibrium Model is used in constructing general equilibrium in Indonesia economic model. PEP -1-1 model is used with static version 2.0 in GAMS 23.5 software. CGE models have been widely used in various countries including Indonesia. The CGE model can see and analyse the impact of a policy made by the government using the analytical approach of general equilibrium theory.

Walras, known as *Walras' law,* proves the existence of a general equilibrium point using formal mathematics, where total *excess demand* and *total excess supply* occur in all types of goods or commodities produced. General equilibrium theory explains that the market as a system consists of several kinds of interrelated markets. General equilibrium occurs when demand and supply in each market in the system are in equilibrium simultaneously. The realised equilibrium price level is the solution of a system of simultaneous equations describing the behaviour of each economic agent and the equilibrium in each market.(Suryadi 2019).

Partial equilibrium analysis describes the results for one market at a time, *Nicholson, 1995* says, pricing in one market usually has effects in other markets, and these effects, in turn, create ripples throughout the economy, perhaps even to the extent of affecting the equilibrium quantity price in the initial market.(Nicholson W & Snyder C 2008). To describe complex economic relationships, it is necessary to bypass partial equilibrium analysis and build a model that allows looking at multiple markets simultaneously (Suryadi 2019).

Data types and sources

The main data used to construct the basic data of the CGE model in the research is secondary data with a national scope. Using data from the Indonesian System of Socio-Economic Balance (SNSE) in 2008 and the National Socio-Economic Survey (SUSENAS) in 2008 published by BPS. Other main supporting data include the Indonesia Input-Output (I-O) Table 175 sectors in 2005, Indonesia Input-Output (I-O) Table 66 sectors in 2008 published by BPS.

Indonesia's National Socio-Economic System (SNSE) or *Social Accounting Matrix (SAM)*, a BPS publication, is a data framework system presented in the form of a matrix and data framework that summarises various economic and social variables of a country at a certain time in a comprehensive, consistent, integrated and unified manner. The NSE is able to describe the economic and social conditions of the community and the interrelationships between economic and social variables. the relationship between economic growth, employment and income distribution. As a comprehensive and integrated data framework system, the NSE covers a wide range of economic and social data in a consistent manner as it ensures a balance of transactions in each balance sheet contained therein.

Building the basic data of the CGE model begins with determining the production sector, domestic commodities, imported commodities, and the household sector. Because there are differences between Indonesia's NSE structure and the SAM structure used in the CGE model PEP 1-1 version 2.0 that has been developed by *Decaluwe et.al, 2012*(Handayani & Febriyanti 2023). All data sections in this study are captured in the *Indonesian SN*SE data matrix of 105 sectors, consolidated into four main balance sheets, namely: (a) production factor balance sheet; (b) institution balance sheet; (c) production sector balance sheet and (d) other balance sheet. 24 production sectors, and 8 household groups. CGE models can be used to analyse policy impacts that are not limited to macroeconomic variables (such as inflation rate, trade balance, and government debt), CGE models can be used to analyse the distribution of economic impacts across economic sectors, regions, and household groups.

3. Result and Discussion.

Validation of Model Computational Results

Validation of model computational results is a requirement that must be met before simulation is carried out on the CGE model. Validation of results in the CGE model must fulfil 4 computational aspects, namely: (Romer 2021) the formation of the initial value of SAM through the equation in the CGE model called the calibrated SAM. (Tobing 2023) the number of iterations to generate the calibration SAM *(before-optimality SAM)* must equal zero. (Hasibuan 2015) a solution must be found (indicated by *"EXIT-Solution Found"* when the programme is run) for the use of the initial value of the SAM by all equations in the CGE model; and (Suryadi 2019) the values resulting from the solution form the *post-optimality SAM* and the values must exactly match the original SAM and must satisfy the equilibrium condition.

Research Policy Simulation Design

Alternative scenarios of Fiscal Policy conditions on social protection expenditure carried out in the Model developed. The increase in social protection in 2022 by 42 per cent and its impact on economic growth and 8 BPS publication household groups.

Justification of Variable Determination

After the process of building the SAM PEP Model version 1.1 data, the next step is to select variables that are used as shocks in the model, and then select Solvar variables for simulation results. Justification for variable determination can be seen in the table below.

Table 1.2 Shock Justification and Determination of Outcome Variables.

No.	Justification Shock	On the model
1.	Variable Increase in Government social protection by 42 per cent in the simulation model	Decrease of subsidies * ttic.fx(i) =ttico(i)*1.42;
2	Economic Growth	GDP_BP GDP at basic price Economic Growth = $\frac{DGP\ BP\ setelah\ simulasi\ 1 - GDP\ BP\ \ sebelum\ simulasi}{GDP\ BP\ sebelum\ simulasi}\ X\ 100\ \%$
3	Household Group Income	---- VAR YH Total income of type h households after simulation ---- VAR YH Total income of type h households before simulation Delta total income change after simulation is.... $\Delta Total\ Income = \frac{perubahan\ total\ income\ setelah\ simulasi\ 1}{perubahan\ total\ income\ sebelum\ simulasi}\ X\ 100\ \%$ ---- VAR YH Total income of type h households Total hdd1 $\Delta Total\ Income = \frac{perubahan\ total\ income\ setelah\ simulasi\ 1}{perubahan\ total\ income\ sebelum\ simulasi}\ X\ 100\ \%$

Source: CGE Model, data processed, rita 2023

Macroeconomic Performance of the impact of Social Protection on Economic growth and Household Group Income.

The results of the analysis on the model of a 42 per cent increase in government social assistance has an impact on economic indicators as presented in the table below.

Table 1.3 Changes in Impact Indicator Variables Simulation 1

No.	Economic Indicators			Before Simulation	Delta Changes in Model Simulation
1.	Economic Growth			5.16 percent	up 0.03%
2.	Household	Code	Explanation	Before simulation	results after simulation 1
	1	hhd1	Agricultural labourer	1.73E+05	Up 0.1%
	2	hhd2	Agricultural entrepreneurs	7.20E+05	Up 0.04%
	3	hhk1	Low-level casual entrepreneurs, TU workers, itinerant traders, transport sector casual workers, personal services, unskilled labourers, Rural	4.85E+05	Up 0.01%
	4	hhk2	Non-labour force and undefined groups, Rural	1.70E+05	Up 0.01%
	5	hhk3	Upper class free entrepreneurs, non-farm entrepreneurs, managers, military, professionals, technicians, teachers, upper class TU and sales workers, Rural	4.55E+05	Up 0.03%
	6	hhk4	Low-income freelancers, TU workers, peddlers, transport freelancers, personal services, manual labourers, urban areas	6.92E+05	Up 0.04%
	7	hhk5	Non-labour force and undefined group, Urban	2.38E+05	Up 0.1%
	8	hhk6	Upper class freelancers, non-farm employers, managers, military, professionals, technicians, teachers, upper class TU and sales workers, Urban	8.09E+05	Up 0.6%

Source: CGE Model, data processed, rita 2022

From the results of the analysis conducted on the CGE model, it can be seen that the economic conditions after the increase in government social protection by 42 per cent, had an impact on economic growth increased by 0.03 per cent from before. It can be said that fiscal policy in the form of government social protection is able to contribute to an increase in economic growth by 0.03 per cent.

The next indicator is the income level of household groups in the 8 types of BPS household groups, both rural and urban household groups. The income of household groups has changed, meaning that the condition of a 42 per cent increase in government social protection has an impact on the income distribution of household groups. The highest increase in the income distribution of the housing group was in hhk6 by 0.6 per cent. Hhk 6 is upper class free entrepreneurs, non-agricultural entrepreneurs, managers, military, professionals, technicians, teachers, TU workers and upperclass sales, Urban. Meanwhile, other household groups were only able to increase by 0.1 per cent. The increase in government social assistance contributes or influences all macroeconomic conditions selected in the model, this condition can be interpreted that the increase in government social assistance has an impact on changes in macroeconomic indicators even though the change or impact is not very significant.

The increase in government social assistance has an impact on economic growth this is in accordance with *Bleaney et al, 2001* "Experiments in Exogenous Growth Models: Public Expenditure, Taxes and Over-Growth in the long run using data on OECD countries over the period 1970-1995". The *OECD* is the *Organization for Economic Co-operation and Development,* an international organisation of 30 countries that accept the principles of representative democracy and free market economics. There is a strong relationship between the exogenous growth model and the effect of long-run fiscal policy on *growth performance*. It is found that tax distortions *(income base and profit taxes, social security contributions, and proverty taxes) have* a negative effect on growth, while productive spending (*general public service expenditures, education expenditures, health expenditures, and housing expenditures)* generally have a positive effect on the economy.

R. Sri Endang found that the quality of life of households receiving PKH (Family Hope Programme) policy during the COVID-19 pandemic has decreased compared to before the pandemic. This is because it is increasingly difficult for people to receive PKH, because during the covid 19 pandemic their businesses were quiet and some of their businesses were closed. There is a difference between the PKH policy before the Pandemic and the PKH policy during the Pandemic, it can be seen that the amount of funds received is greater during the Pandemic. Not only that, assistance in the form of basic necessities has also changed or the government has increased the amount of basic food assistance.(Rahayu & Harahap 2022)

Tobing H, also examined social protection policies that are adaptive to various forms of crisis and of course capable in terms of financing. Existing social protection programs in Indonesia are considered comprehensive enough to protect workers including employers where these types of programs can be categorised as basic social protection programs that are classified as adaptive, so to create capable social protection, a social contribution mechanism (employers- workers and the Government) is needed to ensure its sustainability. Massive socialisation involving all components of society and law enforcement of social security provisions are successful ways to increase membership coverage, which is an important element in creating sustainable social protection financing (Tobing 2023). Juliani H also examined fiscal policy in order to provide social protection related to the handling of the Covid-19 pandemic implemented through PMK Number 43/PMK.05/2020. In the event that there are urgent conditions / cannot be postponed in handling the COVID-19 pandemic (Juliani 2020).

Handayani R (2022) stated that the expansionary fiscal policy carried out by the government had an impact on economic growth, increased sectoral employment and increased household group income(Handayani & Febriyanti 2023). Data on social protection distributed by the Ministry of Social Affairs during the Covid-19 pandemic as in table 1.1, the Government continues to increase the amount of social protection assistance in 2022 to 461Trillion. The realisation of distributing social protection in the form of the Family Hope Program, Regular Basic Food Card / PPKM (Enforcement of Restrictions on Community Activities) or Regional Proposed Social Assistance, Cash Social Assistance (BST) and Extreme Poverty Basic Food Assistance, pre-employment cards as well as internet quota subsidies for students, students, teachers and lecturers for 6 months and household electricity subsidies 450volt and 900 volts.

The government seeks to integrate various measures to minimise the impact of Covid-19 on the economy, both at the individual/household and corporate levels. The highly disruptive economic impact of Covid-19 must also be responded to with policy measures that are also extraordinary, including health care policies, social protection, incentives for the business world, support for Micro, Small and Medium Enterprises, corporate financing, as well as sectoral programmes of Ministries, Institutions and Local Governments.

4. Conclusion

The results of the analysis conducted on the model and the conclusions of this study indicate that the economic conditions following a 42 per cent increase in government social protection had an impact on economic growth, which increased by 0.03 per cent compared to before. It can be said that fiscal policy in the form of government social protection contributed to an increase in economic growth of 0.03 percent.

Second conclusion Household income experienced changes, meaning that the 42 per cent increase in government social protection had an impact on household income distribution. The highest increase in household income distribution occurred in hhk6, at 0.6 per cent, consisting of upper-class self-employed entrepreneurs, non-agricultural entrepreneurs, managers, military personnel, professionals, technicians, teachers, civil servants, and upper-class urban salespeople. Meanwhile, other household groups only increased by 0.1 per cent. This condition can be interpreted as meaning that the increase in government social assistance has had an impact on macroeconomic indicators and has become a social safety net during the Covid-19 pandemic in Indonesia.

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6. Conflict of Interest

Improvements to the CGE model with the latest data can increase the accuracy of future policy analysis, providing a stronger basis for decision-making.

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