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Research article

COVID-19 Social Assistance Program and Poverty: Evidence from Indonesia

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Abstract: The COVID-19 pandemic and policy response caused widespread disruptions to Indonesia's economy. Besides prioritizing saving people's lives during the COVID-19 pandemic, the government's focus is also to minimize the negative economic impact of the pandemic, including allocating social assistance programs to support household well-being. This study examines the role of COVID-19 social assistance programs in protecting households from falling into poverty during the COVID-19 pandemic. Using a longitudinal dataset from SUSENAS March and September 2020, this study employs difference-in-difference estimation with a conditional logit model to estimate the impact of COVID-19 social assistance programs on household poverty status. The result shows that the COVID-19 social assistance programs positively prevent households from becoming poor during the COVID-19 pandemic.

Keywords: COVID-19, poverty, government assistance, panel data

JEL Classification: D60, I18, C33

Abstrak: Pandemi dan kebijakan sebagai respons terhadap COVID-19 menyebabkan disrupsi yang meluas terhadap perekonomian Indonesia. Selain memprioritaskan penyelamatan nyawa masyarakat di masa pandemi COVID-19, fokus pemerintah juga meminimalkan dampak negatif ekonomi dari pandemi, termasuk mengalokasikan program bantuan sosial untuk mendukung kesejahteraan rumah tangga. Penelitian ini bertujuan untuk mengkaji peran program bansos COVID-19 dalam melindungi rumah tangga jatuh ke dalam kemiskinan di masa pandemi COVID-19. Menggunakan longitudinal dataset dari SUSENAS Maret dan September 2020, penelitian ini menggunakan estimasi difference-in-difference dengan model conditional logit untuk mengestimasi dampak program bantuan sosial COVID-19 terhadap status kemiskinan rumah tangga. Hasil penelitian ini menunjukkan bahwa program bantuan sosial COVID-19 berdampak positif dalam mencegah rumah tangga menjadi miskin di masa pandemi COVID-19.

Kata Kunci: COVID-19, kemiskinan, perlindungan pemerintah, data panel

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1. INTRODUCTION

The coronavirus disease 2019 (COVID-19) pandemic, which has claimed the lives of more than 6,407,500 people worldwide (as of August 07, 2022), led to a severe public health crisis that has been recorded in history for the past several centuries. Beyond the health effects on human beings, COVID-19 is predicted to cause the most prominent global recession of the last nine decades, rising unemployment and poverty rates worldwide (Ben Hassen et al., 2020). During the COVID-19 pandemic, governments worldwide have applied many policy responses, such as lockdown restrictions, to slow the virus's growth rate and save people's lives. However, these measures, combined with a massive disruption on the supply and demand sides associated with the pandemic, caused a more adverse economic impact, such as a fall in employment and income and a rise in

poverty and inequality (Bonaccorsi et al., 2020).

The coronavirus has infected more than a million people since the first confirmed cases in Indonesia at March 2020. To contain the spread of the virus, the Indonesian government implemented partial lockdowns, known as large-scale social restrictions (Pembatasan Sosial Berskala Besar [PSBB]). The implementation of PSBB implies restricting people's mobility and activity, especially in public areas or work facilities. The restriction may decelerate the virus's spread. However, on the other side, it also caused supply shock and triggered deep contractions of aggregate demand, further endangering socioeconomic conditions. The need for specific sectors, such as healthy and medical products, may increase significantly. However, other sectors, such as air transportation and tourism, have experienced the devastating impacts of the COVID-19 pandemic. According to BPS, in the first quarter of 2020, Indonesia's economic growth declined from over 5 percent to just under 3 percent, compared with the first quarter of 2019, and had contracted by 2.4 percent compared with the fourth quarter of 2019. The slowdown was mainly driven by a fall in household consumption, which accounts for more than half of Indonesia's Gross Domestic Product (GDP). The annual change in consumption was just 2.8 percent in the first quarter, significantly lower than the 5 percent recorded over the same period in 2019 (Olivia, Gibson, and Nasrudin, 2020). Besides the demand side, at the same time, many sectors are also experiencing issues on the supply side, as governments lessen the activities of non-essential industries and workers' activities are restricted (Litheko, 2021; Maria del Rio-Chanona et al., 2020).

Although the cost of restricting economic activities through lockdowns is typically heterogeneous within the population, the impact of the COVID-19 pandemic is predicted to be highly regressive, with households in the lowest income distribution may be severely hit. In Indonesia, the economy is mainly dominated by household consumption; the devastation of purchasing power during the pandemic would cause adverse economic impacts and slow economic recovery. Millions of previously economically secure households in the middle of the income distribution have become poor or are at risk of becoming poor. Therefore, concerns are arising regarding the economic impacts of the pandemic and how it can disproportionally hit the weak and the poor.

During an economic shock such as the COVID-19 pandemic, a household's coping strategies, such as savings and social assistance programs, affect its ability to maintain its consumption and well-being. Social protection programs maintain to incentivize the bargaining power of weaker individuals or families and lift restrictions on household productive capacity, helping households maintain their consumption during a crisis. Glassman et al. (2013) propose how social assistance programs, such as cash transfers, can impact household well-being. One of them is income effects. With cash transfers, household income increases; thus, there is more disposable income to spend. It would also replace the loss of income due to job loss during crises. Recent evidence proves that the economic impact of crises would have been lessened with the support of government assistance (Martin et al., 2020; Suryahadi, Al Izzati, and Suryadarma, 2020; Almeida et al., 2021; Bidisha, Mahmood, and Hossain, 2021). Azeem et al. (2019) argue that Benazir Income Support (BISP) programs can mitigate the negative impacts of the food and financial crises in 2008 by contributing to raising the incomes of poor households, controlling the variance of income of all households, and ensuring equitable access to essential services.

Literature examining the role of social assistance programs in supporting household well-being during the COVID-19 pandemic is growing significantly. Martin et al. (2020) show that the simulation of three-month lockdowns significantly declines household savings and consumption, leading to an increase in the poverty rate in the San Francisco Bay Area and even worse without government stimulus programs. This study proves that social benefit programs effectively help households maintain their consumption. Almeida et al. (2021) indicate that discretionary fiscal policy measures will play a significant cushioning role in mitigating the economic impact of the COVID-19 pandemic, reducing the size of the income loss (from −9.3% to −4.3% for the average equivalized disposable income). In addition, Chetty et al. (2020) find that stimulus payments to low-income households in the US sharply increased consumer spending. Likewise, in Indonesia, Suryahadi et al. (2021) found that social assistance programs play a significant role in mitigating the impact of COVID-19 on the

poverty rate by four percentage points, or by about three-quarters in Indonesia. Given the fact that the poverty rate would increase to nearly 14 percent with the absence of social assistance programs.

To mitigate the socioeconomic impact of the pandemic in Indonesia, the Indonesian government initially allocated Rp 695.2 trillion (about 4% of GDP) to recover the severely hit public health and economic sectors. With the crisis still unfolding, the government has continued to invest in strengthening its social protection programs to respond to the crisis through the National Economic Recovery (PEN) program. In 2020, the Indonesian government launched COVID-19 social assistance programs, namely conditional cash transfers (Bantuan Sosial Tunai - BST) and unconditional cash transfers (Bantuan Langsung Tunai Dana Desa– BLT DD). The coverage of beneficiaries is expanded to protect the poor against major shocks and a growing number of low- and middle-income earners. They have become vulnerable and are at risk of becoming tomorrow's poor. Besides, small businesses also receive assistance as they struggle with contracting economies and policy measures.

To understand how social assistance programs can protect household welfare in Indonesia, this study aims to estimate the impact of COVID-19 social assistance programs on household poverty status. Although some studies have examined the impact of social assistance programs, studies that specifically estimate the impact of new social assistance programs related to the COVID-19 pandemic is still limited, especially at the household level. Therefore, this study contributes to the literature by providing empirical evidence of how the COVID-19 social assistance programs offset the adverse effects of the COVID-19 pandemic and implemented policy responses.

2. RESEARCH METHODS

2.1. Data colletion

This study uses the longitudinal or panel data of Susenas March 2020 and September 2020 to estimate the impact of COVID-19 social assistance programs on household welfare, and the subject of focus is households. Susenas is conducted by Statistic Indonesia (BPS) twice a year, in March and September, and provides a substantial set of expenditure, individual, and household characteristics. In 2020, BPS conducted Susenas in March and September 2020 with a panel sample of households. This study uses panel data as panel data allow comparison within-subject, which means that the outcome, in this case, household poverty status, can be observed when treated and not treated (Békés & Kézdi, 2021). Based on Susenas data, the data includes 66,512 districts repeated in March and September 2020; hence the total sample is 133,024 observations were included in our analysis.

Table 1. The description of variables

Variables	Description
Poverty	Household poor status
Assis_cov19	BLT and BST; 1 if received; 0 if did not receive
PKH_BPNT	Other social assistance program (PKH and BLT); 1 if received; 0 if did not receive
Age_HHH	Age of head of household (year)
HHsize	Number of members in household
Members_work	Number of members who working in household
PSBB	Large-Scale Social Restrictions, 1 if after PSBB; 0 if before PSBB district
Employ_HHH	Head household employment status; 1 if working; 0 if not
Educ_HHH_SMA	Dummy head of household finish senior high school, 1 if head of household incomplete senior high school; 0 if otherwise
HHH_sector	Head household job sector
HHH_married	Head household married status; 1 if married; 0 if otherwise

From Susenas, this study obtains per capita household consumption, individual characteristic, and household economic characteristics. The welfare of households is measured by households' poverty statuses which are determined using household expenditure compared to a poverty line at the province level. The treatment is COVID-19 social assistance programs, including conditional cash

transfers (BST) and unconditional cash transfers (BLT DD). Table 1 describes the variables used in the estimation model.

2.2. Model Specification

In experimental research, unmeasured differences between subjects are often controlled via random assignment to treatment and control groups. However, random assignment is usually only possible with some survey designs. Nevertheless, in many studies, Quasi-experimental studies such as *difference-in-differences* (DID) are frequently used when it is not ethical or feasible to conduct a randomized controlled trial (Harris et al., 2004). The DID method is an impact evaluation technique that emphasizes comparing treatment and control groups before and after interventions when doing the random assignment is impossible (Moeis et al., 2020). The change of outcome in the treatment groups compared to the control groups after the intervention (controlling for other factors) indicated the effect of the treatment on the outcome. The subjects before treatment or intervention can be used as their controls for treated units using panel data. This study uses panel data; thus, we can employ *difference-in-difference* estimation to estimate the impacts of COVID-19 social assistance programs on the household's poverty status. The empirical model is specified as follows:

$$Poverty_{it} = \beta_0 + \beta_1 Assis\_cov19_{it} + \beta_2 T_{it} + \gamma_1 (Assis\_cov19_{it} \times T_{it}) + \sum_{j=1}^{J} \upsilon_j X_{jit} + \varepsilon_{it} \quad (1)$$

Here, $Poverty_{it}$ is household poverty status, 1 indicates poor if household expenditure is under the poverty line and 0 is non poor; $Assis\_cov19$ represents dummy household recipient status of COVID-19 assistance programs, 1 if household is beneficiary of COVID-19 assistance programs; 0 if non-beneficiary. All pre-treatment of samples is 0; therefore, the typical DID regression eliminates the treatment variable because it is the same as the treatment and month interaction variables ($Assis\_cov19_{it} \times T_{it}$) due to collinearity; T_{it} represents time dummies, 1 if September 2020, 0 if March 2020; X_{jit} includes a set of covariates, including household socio-demographic variables. ε_{it} represents error term and *i* represents the household (*i* = 1, 2, …, n). The coefficient γ on the interaction between the post-program treatment variable and time shows the impact of the COVID-19 assistance programs on household poverty status.

With a binary outcome variable, this study employs conditional logit or fixed effects logit models to estimate the impact of COVID-19 social assistance programs on household poverty status. The good thing about using the fixed effect logit model is that it can control time-invariant variables, such as characteristics that do not change across time, whether measured or not. The drawback is that this method only estimates individuals (or observations) with variation in the outcome, while others will be dropped; therefore, we will lose some observations. The fixed effect also does not estimate the effects of time-invariant variables. Fixed effects estimates use only within-individual differences, essentially discarding any information about differences between individuals. There is a trade-off between bias and efficiency. When predictor variables vary significantly across individuals but have little variation over time for individuals, the fixed effect estimates will be biased and have large standard errors. Other methods, such as random effects, can estimate the effects of time-invariant variables, but this method cannot control omitted variables. If the within-person variation is large relative to the between-person variation, the standard errors of the fixed effects coefficients are small and can be tolerated. This study uses the Hausman test to select between fixed effect and random effect. Since fixed effects do not control for unobserved time-variant variables, this study includes a set of control variables that change over time in the model.

To the extent that this study is seeking evidence of a causal effect of COVID-19 social assistance programs on household poverty status, this study is aware of the difficulties in estimating causal effects when lacking randomization and is therefore cautious in interpreting our results. This study expects that the estimation bias is small after controlling many explanatory variables such as household characteristics, which are the essential eligibility criteria for household eligibility for received social assistance programs. This study also includes government policy measures at the district level, namely large-scale social restriction (PSBB). The implementation of PSBB caused the

economic impact of the pandemic to become more adverse because of mobility and activity restrictions.

3. RESULTS AND DISCUSSION

3.1. Descriptive statistic

Providing the descriptive statistics of variables used in this research is essential to enrich the analysis and support the main findings. Table 2 summarizes the variable of interest and control variables for the main estimation models. Based on Susenas panel data, the data includes 66,512 districts repeated in March and September 2020; hence the total sample is 133,024 observations. However, in the estimation model, this study uses conditional fixed effect conditional logit or fixed effects logit models to estimate the impact of COVID-19 social assistance programs on household poverty status; this method would only estimate unit or household that has variation or change in the outcome variable during the period of estimation.

As shown in Table 2, during the observation period, the average number of poor households based on the province-level poverty line was 9.3 percent in Indonesia between March 2020 and September 2020. Meanwhile, the average of households that received COVID-19 social assistance programs is 11.6 percent. Besides COVID-19 social assistance, about 23.4 percent of households also benefit from other social protection, namely PKH and BPNT. In 2020, as a policy response due to the COVID-19 pandemic, Indonesia implemented PSBB in the epicenters of the virus. In this study, about 2.6 percent of our household samples live in the PSBB region.

Table 2. Summary statistics of variable used in estimation

Variables	Obs.	Mean	Std. Deviation
Dependent variables			
Household poor status	133,024	0.093	0.290
Independent variable			
COVID-19 assistance programs	133,024	0.116	0.320
Control variables			
Other Social assistance (PKH & BPNT)	133,024	0.234	0.423
Age of head household	133,024	50.105	13.243
Number of members in household	133,024	3.818	1.695
Number of household member who work	133,024	1.658	0.926
Large scale social restrictions (PSBB)	133,024	0.026	0.160
Head household employment status	133,024	0.871	0.335
Education of head household (>=SMA)	133,024	0.340	0.474
Head household job sectors	133,024	2.998	1.808
Head household married status	133,024	0.021	0.144

Source: Author's calculation.

The Indonesian government has initiated the National Economic Recovery (PEN) program to mitigate economic losses, address health impacts, support domestic consumption, and deal with rapidly worsening poverty and unemployment during the COVID-19 pandemic (UNICEF et al., 2021). The government targets social assistance to poor households, job seekers, and laid-off workers (Olivia et al., 2020). However, there are concerns about the effectiveness of social assistance programs in preventing economic losses and how precisely these programs in terms of targeting.

Figure 1 depicts the percentage of households that received the benefits of social protection programs, as recorded in the National Socio-economic Survey (Susenas) data from BPS in September 2020. The BST and the BLT Village Fund are new social assistance programs distributed during the COVID-19 pandemic. The program coverage is disaggregated by quintile of per capita household expenditure, where the first quintile represents the poorest 20 percent of households, and the fifth quintile represents the wealthiest 20 percent of households. Based on Susenas September 2020, about 44.91 percent of households received at least one of four major social assistance programs. Meanwhile, in total, 23.16 percent of households received COVID-19 assistance programs.

Figure 1 shows that the lowest proportion of households without social assistance programs is in the first quintile. In the first quintile, 35.9 percent of the poorest 20 percent of households did not receive social assistance programs, while about 64.1 percent received at least one social assistance program based on Susenas September 2020 in Indonesia. The COVID-19 social assistance program covers 26.6 percent of the lowest 20 percent of income distributions. Meanwhile, the coverage of social assistance programs in the fourth quintile is still high. The percentage of households in the fourth benefited from at least one social assistance program is 35.0 percent, and 21.5 percent received COVID-19 social assistance programs. Even among the wealthiest at the fifth quantile, 21.1 percent benefited from at least one social assistance program, and 14.9 percent are beneficiaries of COVID-19 assistance programs.

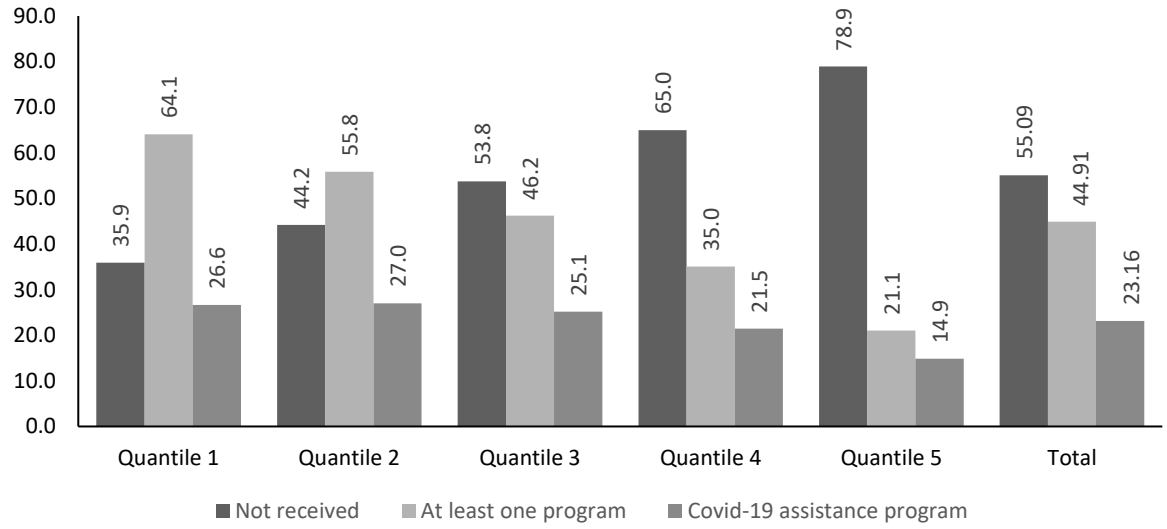

Figure 1. Proportion of Households Receiving the Benefits of Social Assistance Programs as of August 2020 (%)
Source: Author's calculation

Figure 2 shows the proportion of households that benefited from four major social assistance programs according to household income distributions. The four programs are the PKH, or the Family Hope Program, which is a conditional cash transfer program; the BPNT, which is a program providing electronic vouchers for food; the BST, which is an unconditional cash Social Assistance; and the BLT DD, which is an unconditional direct Cash Transfer from the Village Fund. The ineffectiveness of COVID-19 social assistance programs targeting, either by giving benefits to the non-poor or by missing the new poor, will lead to inefficient fiscal spending on poverty alleviation (Gibson & Olivia, 2020). As shown in Figure 2, the BPNT program coverage for the poorest households is the highest among Indonesia's four major social assistance programs. In terms of aiming to protect the poorest, the precision of the PKH and BPNT seems promising, even though some households in the top income distribution still receive benefits from these two programs. The BPNT and PKH target more people in the poorest 20 percent of households, covering 33.3 percent and 27.2 percent of the poorest 20 percent of households in Indonesia based on Susenas September 2020, respectively. Meanwhile, for BLT and BST, since these two programs target vulnerable households, including people who lost jobs or income during COVID-19 or Small and medium-sized enterprises, the proportion of households receiving these programs is more similar across the expenditure distribution. BST and BLT Village Fund coverage in the richest households is also relatively high; they cover 8.8 percent and 7.1 percent of households in the 20 percent top income distributions, respectively.

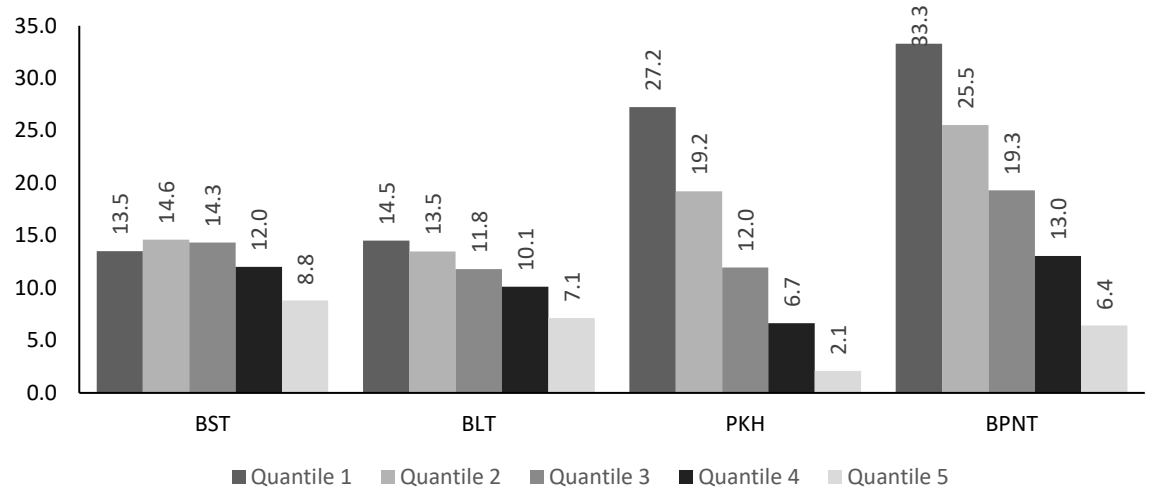

Figure 2. Percentage of Households Receiving the Benefits of Social Assistance Programs as of September 2020 based on Social Assistance Programs Type (%)
Source: Author's calculation

The allocation of social protection programs, especially COVID-19 social assistance programs, is expected to support household purchasing power and well-being during the COVID-19 pandemic. The effectiveness of social protection programs to protect households can be measured using the change in the percentage of households who fell into poverty between March 2020 and September 2020 in Indonesia. Figure 3 shows the household poverty status mobility between March and September 2020 in Indonesia. The figure depicts that about 8.9 percent of households in Indonesia were poor in March 2020, and it increased to 9.6 percent in September 2020. Based on Susenas, 4.4 percent of non-poor households fell into poverty in September 2020. Meanwhile, 3.75 percent of households moved from poor to non-poor in September 2020.

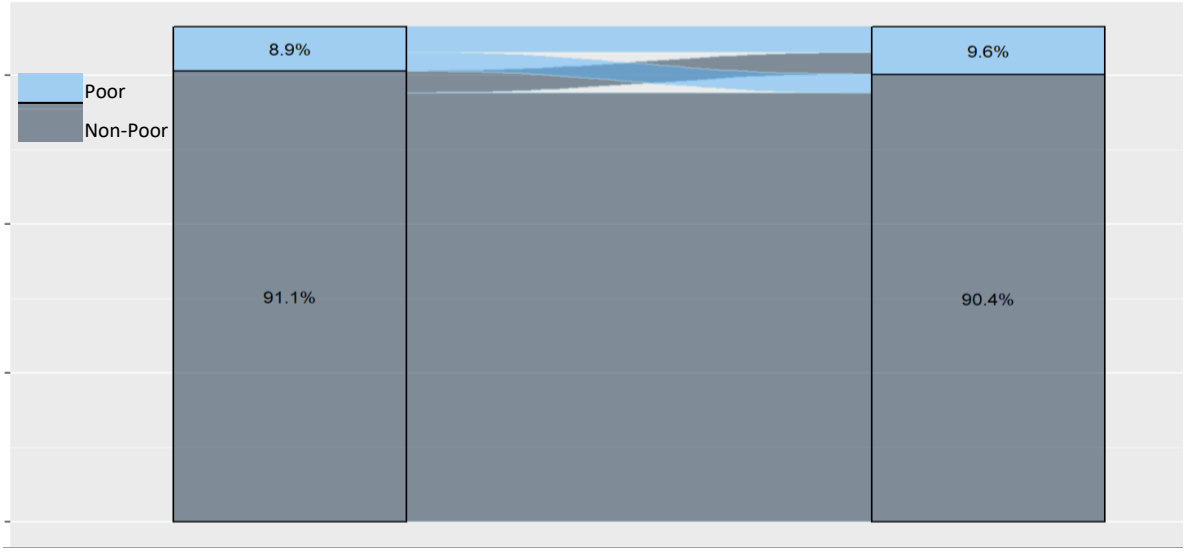

Figure 3. The household poverty status mobility in Indonesia between March and September 2020
Note: This study measure household poverty status based on poverty line at province level
Source: Author's calculation based on Susenas September 2020, processed using R

3.2. The Impact of COVID-19 Social Assistance Programs on Household Poverty Status

This study estimates the impact of COVID-19 social assistance programs on household poverty status in Indonesia during the pandemic in 2020. In Table 3, this study compares OLS and fixed effect estimation, whether including control variables or not in the model. Based on OLS estimation, this

study found that the impact of COVID-19 social assistance positively affects household poverty status. It indicates that COVID-19 social assistance increases the probability of households becoming poor during the COVID-19 pandemic. However, as explained before, since the outcome variable is binary and concerned about unbiased estimation, this study preferred to use a fixed effect logit or random effect model rather than OLS estimation. This study uses the Hausman test to select between random or logit models. Based on the Hausman test result, fixed effect estimation provides an unbiased and consistent estimation than random effect (see Appendix A).

Table 3. The impact of COVID-19 social assistance programs on household poverty status

Dependent variable: Household poor status				
Variables	**OLS**		**FE Logit**	
	No-control	**With control**	**No-control**	**With control**
COVID-19 assistance programs	0.024***	0.025***	0.026	-0.224***
	(0.002)	(0.003)	(0.052)	(0.064)
Month (0 = March 2020; 1 = Sept 2020)		-0.000		0.226***
		(0.002)		(0.073)
Other Social assistance (PKH & BPNT)		0.061***		0.20
		(0.002)		(0.138)
Age of Head Household		-0.000***		0.046
		(0.000)		(0.077)
Head household married status		0.031***		-0.044
		(0.005)		(0.786)
Education of head household (>=SMA)		-0.048***		-1.322
		(0.002)		(1.152)
Head household employment status		-0.027***		0.070
		(0.003)		(0.115)
Head household job sectors		-0.014***		-0.019
		(0.000)		(0.020)
Household size		0.043***		0.575***
		(0.001)		(0.032)
Number of household members who working		-0.026***		-0.199***
		(0.001)		(0.038)
Large scale social restrictions (PSBB)		-0.036***		-0.146
		(0.005)		(0.161)
Observation	133,024	133,024	10,888	10,888
Prob.	0.000	0.000	0.619	0.000
Hausman Test				518.19
Prob. > chi2				0.000

Note: Standard errors are in parentheses with * p < 0.1, ** p < 0.05, *** p < 0.01
Source: Author's calculations, processed using STATA 17

Table 3 report that the COVID-19 social assistance programs alone do not significantly affect household poverty status. However, the coefficient might be misleading as the COVID-19 social assistance programs are not random in the model because there are confounders between COVID-19 social assistance programs and household poverty status, which should be controlled. Without controlling the confounders, the coefficient estimation may be biased. After including the list of control variables related to household poverty status, such as household characteristics, the coefficient that represents the impact of COVID-19 assistance programs on household poverty status is corrected. After considering the control variable for household characteristics, the result shows that the magnitude of COVID-19 assistance programs is -0.224. It indicates that the COVID-19 social assistance programs lower the probability of households becoming poor during the COVID-19 pandemic by 0.224 compared to households that have not received COVID-19 assistance programs. This result is consistent with Martin et al. (2020) and Azeem et al. (2019), which also found that social cash transfers protect households from being poor, especially during crises.

The pandemic and policy response, such as the PSBB policy, has hampered community mobility and activities, impacting decreasing domestic demand. The decline caused some business sectors to reduce their activities or close entirely and increased unemployment (Givelyn et al., 2022). Thus, the pandemic also potentially affects the supply side. The decline of domestic demand and supply would cause individual or household to lose their income. Thus, the negative impact of the pandemic is mainly through income effects. Allocating social assistance programs would support household income and prevent households from losing their purchasing power.

4. CONCLUSIONS

This study proposes a household-level estimation to assess the impact of COVID-19 social assistance programs on household poverty status. The result suggests that COVID-19 social assistance programs statistically significantly lower the probability of households becoming poor during the pandemic. This finding also confirms that social assistance programs can protect the poor and the weak during crises. Thus, this research concludes that government policies' response to allocate social assistance programs to lessen the pandemic's negative impact and containment policy is appropriate. Nevertheless, to increase the effectiveness of social assistance programs, the database needs appropriate management and updating by central or regional-level government officials.

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