Investigate on Moral Hazard: The Impact of Cash Transfer on Household Spending Behaviour

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Abstract. This study aims to examine the effects of cash assistance on consumption behaviour patterns in Indonesia, using the Indonesia Family Life Survey (IFLS) as the primary data source. The study also seeks to determine whether there are deviations in consumption behaviour when individuals receive cash assistance interventions. To address this, a multiple linear regression analysis using the OLS dummy variable method was employed. The results of this study reveal that cash assistance interventions have a positive impact on primary consumption and total consumption among the population. Furthermore, additional findings indicate that cash assistance also has a positive effect on tertiary consumption, such as cigarettes and alcohol. The increase in tertiary consumption suggests the presence of moral hazard among cash assistance recipients.

Keywords: Cash Assistance, Consumption Behaviour, Indonesia Family Life Survey (IFLS)

1   Introduction

Economic issues are inherently intertwined with social problems such as inequality and poverty. Numerous policies have been implemented by governments and related institutions to address these challenges, ranging from micro-level to macro-level strategies. In general, policies aimed at poverty alleviation and social assistance have widely adopted cash transfer programs as a primary mechanism. Cash transfer programs can be categorized into two types: Conditional Cash Transfers (CCT) and Unconditional Cash Transfers (UCT).

In various countries, numerous aid programs, both in cash and in kind, have contributed to alleviating poverty and promoting income equality. One example is the Mexican government's Prospera program, formerly known as Progresa. Through this initiative, the Mexican government aims to support low-income households that fall below the average income threshold. This aid is directed at impoverished households to help them escape poverty by enhancing their education, health, and nutrition levels. Prospera has

been effective in improving the economic conditions of Mexican citizens and preventing household poverty from worsening, although it has not significantly reduced the overall poverty rate or inequality [11]. Similarly, Indonesia has implemented comparable programs, such as the *Program Keluarga Harapan* (PKH). Like Prospera, PKH is considered effective in accelerating human capital investment, thereby improving the welfare of its beneficiaries [1],[2].

The provision of cash assistance, whether conditional or unconditional, is considered an effective alternative for poverty alleviation by stimulating household consumption among vulnerable populations, enabling them to meet their daily needs. This cash assistance aims to shift the consumption patterns of vulnerable households from minimal to normal levels, similar to non-vulnerable individuals. In theoretical terms, cash assistance provided to poor individuals is expected to increase their perceived income, thereby enhancing their disposable income. According to macroeconomic theory, disposable income is a principal factor in driving consumption.

Studies have shown that there is a slight increase in overall consumption and food consumption due to the contribution of cash assistance [3]. Furthermore, this study also implies that cash assistance given to recipients influences headcount poverty and the poverty gap. Other findings, such as those related to the *Program Keluarga Harapan* (PKH), also demonstrate positive and significant contributions to children's consumption, up to 19 percent [4]. These results are further supported by findings from other studies [5], who found that conditional cash transfer programs effectively increase total consumption and food consumption in both urban and rural areas.

Despite the potential benefits, there is a possibility that consumption by vulnerable populations may not always be directed towards essential goods such as rice, protein from meat, vegetables, and other staple foods. Instead, consumption may lean towards non-essential, tertiary goods. This tendency is evident if cash assistance is not consistently utilized responsibly by the recipients. There is a moral hazard risk where beneficiaries may increase their consumption of non-essential goods. Some study [6] demonstrated that less frequent cash transfer programs led to a 55-80 percent increase in the consumption of temptation goods, such as alcohol. These temptation goods are identified as tertiary or non-essential items.

While cash transfers appear to contribute to the consumption of tertiary goods, it is important that not all non-essential consumption is influenced by the assistance programs. Studies indicate that the presence or absence of cash assistance does not deter recipients from consuming certain non-essential goods, particularly tobacco. This is attributed to the addictive nature of tobacco consumption, which remains constant regardless of the provision of cash assistance [7].

The cash transfer provided by relevant parties to recipients has the potential to be used appropriately or diverted from its intended purpose. Additionally, various studies and research indicate several possible findings related to cash transfers and consumption behavior in Indonesia. The primary objective of cash transfers is to aid and stimulate consumption among the less fortunate or vulnerable populations. Therefore, this study aims to analyze the effects of conditional and unconditional cash transfers on consumption behavior patterns in Indonesia. To support this analysis, we utilized secondary data from the Indonesian Family Life Survey (IFLS) wave 5.

2   Method

This study aims to examine how cash transfers can influence consumer behavior. To assess this effect, a statistical approach was employed using regression analysis. The regression results aim to illustrate how the independent variable X, representing cash transfers in this context, influences the dependent variable Y, representing consumer behavior. The data utilized in this study were obtained from secondary sources, specifically the Indonesian Family Life Survey (IFLS). The study relies on data from IFLS wave 5, which is the most recent data released by the RAND institution.

Through statistical and econometric approaches, the influence of variable X on Y can be assessed using regression methods. This study employs multiple linear regression to address the relationship between cash transfers and consumer behavior. The multiple linear regression model, mentioned earlier, can be expressed as follows.

$$y_i = \beta_0 + \beta_1 x_i + \alpha z_i + u_i \qquad (2.1)$$

where, respectively, Y represents the dependent variable, also known as the regressand. In this context, our dependent variable Y is consumer behavior. Variable X serves as the representation of the independent variable, or regressor, and in this context, our variable X is a binary variable indicating a value of 1 if the participant receives cash assistance / cash transfer and 0 otherwise. The variable Z in the equation represents the control variable, and u denotes the error term

From the equation above, the relationship between variable X and variable Y will be depicted through the estimation results of β_1. To obtain the estimation results of β_1, a common regression method used in statistical/econometric approaches is required, namely the ordinary least squares (OLS) method. The OLS method is conducted by minimizing the sum of squared residual values to the smallest extent possible, and this value is considered the most efficient. The efficient OLS results will determine the most efficient estimation value of β_1, which effectively depicts the relationship between X and Y. The estimation value of β_1 from the OLS method is obtained by

$$\hat{\beta}_1 = \frac{\sum_{i=1}^{n}(x_i - \bar{x})(y_i - \bar{y})}{\sum_{i=1}^{n}(x_i - \bar{x})^2} \qquad (2.2)$$

A crucial consideration in this study lies in the utilization of binary variables within the framework of multiple linear regression. As previously elucidated, variable X signifies whether an individual has received cash assistance or not. Given that the values of variable X are constrained to 0 or 1, the estimated coefficient β_1 represents a difference in an outcome associated with the receipt of cash assistance. This phenomenon can be further elucidated as follows

$$Consumption = \beta_0 + \beta_1 CT + u \qquad (2.3)$$

The variable CT signifies 1 for participants receiving cash transfer and 0 otherwise. Thus, when a participant receives cash transfer, the equation becomes

$$E(Consumption|CT = 1) = \beta_0 + \beta_1 \qquad (2.4)$$

$$E(Consumption|CT = 0) = \beta_0 \qquad (2.5)$$

Equation (1.3) dan (1.4) can be rearranged and become

$$E(Consumption|CT = 1) = E(Consumption|CT = 0) + \beta_1 \qquad (2.6)$$

$$\beta_1 = E(Consumption|CT = 1) - E(Consumption|CT = 0) \qquad (2.7)$$

In brief, the estimated result of β_1 from equation (1.6) will illustrate the consumption difference between households that received cash assistance and those that did not. Additionally, the estimated results from equations (1.1) and (1.7) will be subjected to statistical inference to ascertain the significance of cash transfers on consumption behavior. Statistical inference may include t-test statistics, F-test statistics, and analysis of R-squared results.

This study categorizes consumption into three types, with data sourced from the IFLS. The first type is the consumption of primary or essential goods such as rice, meat, and cooking oil. The second type is the consumption of tertiary or non-essential goods, such as tobacco and alcohol. The final type is total consumption, representing the aggregate consumption of poor households. Each of these three types of consumption will be modeled with its respective regression equation, as follows

$$firstconsump_i = \beta_0 + \beta_1 CashTrans_i + \alpha z_i + u_i \qquad (2.8)$$

$$thirdconsump_i = \alpha_0 + \alpha_1 CashTrans_i + \varphi z_i + u_i \qquad (2.9)$$

$$totalconsump_i = \gamma_0 + \gamma_1 CashTrans_i + \theta z_i + u_i \qquad (2.10)$$

Respectively, firstconsump represents the variable for primary consumption, thirdconsump represents tertiary consumption, and totalconsump represents the total consumption. CashTrans is a binary variable where 1 indicates the participant receives cash assistance, either conditional cash transfer or unconditional cash transfer and 0 otherwise. Variable z represents the control variable that can affect consumption behavior besides cash transfer, such as household characteristics, including the other transfer besides cash transfer received by household and years of education. Adding control variables serves to make the coefficient of the variable of interest (cash transfer) more efficient, considering that the OLS method must satisfy several Gauss-Markov assumptions [8].

3   Result and Analysis

Based on the observations from the data provided by the Indonesian Family Life Survey (IFLS), various forms of cash transfer have been identified, including the *Program Keluarga Harapan* (PKH), as well as aid from non-governmental organizations. For the purpose of this study, we will use the PKH variable as the primary indicator representing government cash assistance. The results we obtained illustrate the effect of PKH on consumption behavior in Indonesia during the fifth wave of the IFLS.

Table 1. Model result with logarithmic form (for total consumption)

	Coefficient	Std.Error
Main Indep Var		
Cash Transfer (PKH)	.1368464	(.03937)***

Control Var		
Non-Government Cash	-.02791	(.260173)
Years of Education	.0308129	(.001073)***
Cons	13.690	(.10684)
SS		13614.134
df		19,991
Prob > f		0.0000

***(significant at 1% alpha) **(significant at 5% alpha) *(significant at 10% alpha)

The estimation results demonstrate that cash assistance programs, such as the *Program Keluarga Harapan* (PKH), have a positive effect on household consumption. Households who received PKH cash assistance exhibit a 0.13 percent higher consumption rate compared to those who did not received cash transfer. Additionally, the findings indicate that non-governmental cash assistance does not influence consumption behavior. In contrast, our finding shows that the level of education, as measured by years of schooling, positively contributes to household consumption.

As outlined in the previous section, we categorized consumption into two types: primary consumption (*firstconsump*) and tertiary consumption (*thirdconsump*). A notable finding is that, in addition to affecting primary consumption, cash assistance also has a statistically significant positive effect on tertiary consumption. The results show that cash assistance significantly increases expenditures on items such as cigarettes and alcohol, with a 0.1308 percent higher consumption rate compared to households who did not receiving such assistance. This significant finding suggests a potential *moral hazard* effect among recipients, considering that cash assistance is primarily intended to enhance the consumption of essential daily needs. These results are consistent with the previous study [6] and these findings are also supported by previous research, which states that cash assistance programs contribute to an increase in weekly cigarette consumption [9].

Table 2. Model Result with Logarithmic Form

	Dependent Var	
	firstconsump	*Thirdconsump*
Main Indep Var		
Cash Transfer (PKH)	.1289734	.130819
	(.040279)***	(.054943)**
Control Var		
Non-Government Cash	-.024753	.056381
	(.02663)	(.03967)
Years of Education	.034697	.03271
	(.00109)***	(.001718)***
Cons	13.5084	12.0207
	(.0109427)	(.0158407)

SS	11139.71
df	11,857
Prob > f	0.0000

***(significant at 1% alpha) **(significant at 5% alpha) *(significant at 10% alpha)

Nevertheless, the results also indicate that cash assistance positively affects primary consumption, meaning that households receiving cash assistance genuinely allocate it towards primary consumption needs. This includes expenditures on rice, the nine basic commodities (Sembako), and other food items. Households who received cash assistance exhibit a 0.12 percent higher primary consumption rate compared to those who did not received cash assistance. To ensure the precision of these results, the robust standard error method was employed to mitigate heteroskedasticity issues.

Table 3. Robust Standard Error results

	without robust Std Error		with robust Std Error	
	firstconsump	*Thirdconsump*	*firstconsump*	*Thirdconsump*
Main Indep Var	.1289734	.130819	.1289734	.130819
Cash Transfer (PKH)	(.040279)***	(.054943)**	(.033037)***	(.052617)**
	-.024753	.056381	-.024753	.056381
Control Var	(.02663)	(.03967)	(.027356)	(.038851)
Non-Government Cash	.034697	.03271	.034697	.03271
	(.00109)***	(.001718)***	(.001114)***	(.001756)***
Years of Education	13.5084	12.0207	13.5084	12.0207
	(.0109427)	(.0158407)	(.011168)	(.017140)
Cons				
SS	14351.87	11139.71	-	-
df	19,696	11,857	-	-
Prob > f	0.0000	0.0000	0.0000	0.0000

***(significant at 1% alpha) **(significant at 5% alpha) *(significant at 10% alpha)

The results of the robust standard error analysis indicate that the outcomes are not significantly different from the initial estimates. Overall, the findings suggest that the *Program Keluarga Harapan* has a positive effect on the increase in primary consumption. On the other hand, the cash assistance program also contributes to the rise in tertiary consumption, such as the purchase of cigarettes and alcohol. Therefore, there is an indication of moral hazard among the majority of the aid recipients. This indication of moral hazard is also evident in previous studies with similar results, where the aid programs contribute to increased cigarette consumption in several countries, such as China and including Indonesia [10],[9].

The same results indicate that *Program Keluarga Harapan* has also proven efficient in preventing households from falling below the poverty line. This is demonstrated by the positive impact of cash assistance on primary consumption. These findings are consistent with previous studies showing that government aid programs have a positive effect on welfare [1],[2]. An interesting finding is that non-governmental aid programs do not affect consumption behavior, either primary or tertiary consumption. In contrast, years of education has a positive effect on both primary and tertiary consumption. This is likely because individuals or households with higher education levels tend to be more prudent in allocating their consumption patterns, leading to significantly higher consumption compared to individuals with lower education levels.

It is important to note that these results do not fully demonstrate that the aid program truly influences consumption behavior. This is because the study did not consider the counterfactual scenario of individuals who did not receive the aid program. The study solely examines the differences in consumption behavior with and without the program (with or without treatment), making it difficult to identify the program's true impact.

4   Conclusion

This study analyzes how cash assistance programs can affect household consumption patterns. As the name suggests, the program aims to prevent individuals or households from falling into poverty, which is represented by insufficient total consumption levels. However, there are instances where cash assistance is misused by recipients, allocating funds to non-essential items. Based on data collected through the Indonesia Family Life Survey (IFLS), the results show that the cash assistance provided by the *Program Keluarga Harapan* has a positive effect on primary consumption in Indonesia. This indicates that some recipients indeed allocate the aid towards primary consumption, such as rice and other staple goods. On the other hand, the findings also reveal indications of moral hazard among some recipients, where the cash assistance is used for tertiary or non-essential consumption, such as cigarettes and alcohol. This is evidenced by the positive coefficient between cash assistance and tertiary consumption levels.

These findings are expected to serve as a concern for policymakers to continuously monitor and supervise cash assistance recipients. We also believe that policymakers can distribute cash assistance wisely and more accurately, ensuring that the benefits of cash assistance are truly felt by vulnerable populations and ultimately making the aid program effective in alleviating poverty. Additionally, we recommend considering factors that can influence households to rise above the poverty line, such as the duration of education. We believe that strong human capital can accelerate individuals' ability to consume beyond basic needs, thereby indirectly helping them to escape poverty.

5   Reference

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