The Effect of Cash Assistance Programs on Children's Involvement in Domestic and Economic Activities in Indonesia

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Abstract:

This study examines the impact of conditional (PKH) and unconditional (UCT/BLT and BLSM) cash assistance programs on children's participation in work and their working hours in Indonesia using IFLS Wave 5 data, focusing on 2,530 working children aged 5–14 years. Since beneficiary and non-beneficiary households differ in observable characteristics, the analysis addresses potential selection bias and endogeneity through a bivariate probit model that jointly estimates child labor participation and program receipt. The findings indicate that PKH reduces children's involvement in household chores; however, both PKH and UCT increase the likelihood of children engaging in economic activities, suggesting a shift rather than a reduction in child labor. Cash assistance is also positively associated with longer working hours, particularly among UCT recipients in economic and combined work sectors and PKH recipients in domestic and combined sectors. These effects are more pronounced among girls, older children, and those living in rural or non-Java regions. Overall, the results show that current cash transfer schemes have not fully alleviated household dependence on child labor. Enhancing program effectiveness requires adjustments to benefit adequacy, integration with family economic empowerment initiatives, and regionally responsive policy designs.

Keywords: *cash assistance, bivariate probit model, work duration, labor participation, child labor.*

1. Introduction

Child labor, or child labor, is a phenomenon that involves children in work activities outside of formal educational activities. There are many definitions related to child labor, but in general this concept includes any form of work that hinders the rights of children to grow and develop optimally. The International Labor Organization (ILO) defines child labor as children who are involved in all forms of economic activities that are exploitative, harmful, and negatively impact children, both in formal and informal settings (ILO, 2017). The United Nations International Children's Emergency Fund (UNICEF) even emphasizes that child labor is not only limited to

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the type of economic work but also includes all domestic activities or household work that are time-consuming, dangerous, and disruptive to health and education (United Nations Children's Fund, 2020).

Over the past four years, global efforts to reduce child labor have stagnated. The absolute number of child laborers increased by more than 8 million, or reached a total of 160 million in 2020, while the percentage of child labor showed no significant change. Based on projections, it is estimated that around 140 million children will become child laborers by 2025 if the handling of this issue is not immediately accelerated (ILO & UNICEF, 2021).
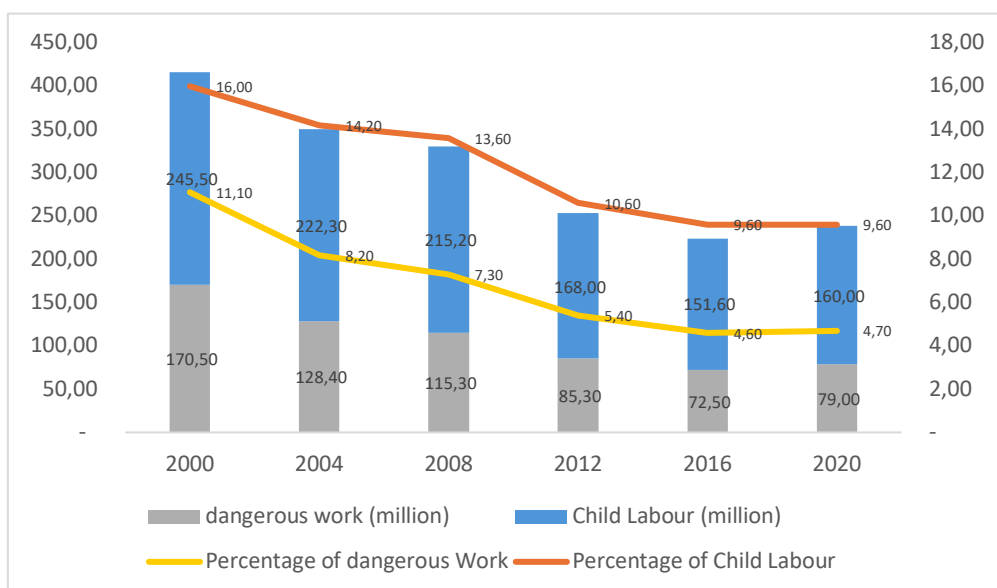

Figure 1 Percentage of children aged 50-17 years engaged in child labor and hazardous work
Source: ILO-Child Labour Report 2021

BPS data as of March 2023 shows that there are 1.004 million child workers aged 5-17 years in Indonesia, or 1.72% of all children in Indonesia (Indonesian data, 2024). This figure is a portrait that confirms that child labor is still a phenomenon that exists in Indonesia, as well as a reflection of social problems that have not been fully resolved.

One approach that is recognized as effective in reducing the number of child laborers in developing countries is through interventions in the form of cash transfers or cash assistance. Many studies have shown a positive impact of these interventions, such as the study of Edmonds & Schady (2012) and the study of (Dake et al., 2020), where cash assistance is expected to reduce the likelihood of children engaging in work activities and reduce the number of hours school-aged children work. In Indonesia itself, the social protection program in the form of a conditional cash assistance

program is known as the Family Hope Program (PKH) which was launched in 2007. This program is designed as an effort to accelerate poverty alleviation, which aims to improve the standard of living of beneficiary families through access to education and health services, reduce the burden of expenses, and break the chain of poverty between generations (Ministry of Social Affairs of the Republic of Indonesia, 2021). Meanwhile, the unconditional cash assistance program (Direct Cash Assistance/BLT) was launched for the first time in 2005, and the Temporary Direct Community Assistance (BLSM) was launched for the first time in 2013.

This study aims to analyze the influence of conditional cash assistance (PKH) and unconditional cash assistance (BLT and BLSM) programs on children's participation and work duration, both in the categories of domestic work, economic activities, and a combination between the two, for all regions in Indonesia.

2. Theoretical Background

Theoretical Framework

One of the models used to understand child labor decisions is the Luxury Axiom and Substitution Axiom developed by (Basu & Van, 1998). Luxury Axiom states that child employment only occurs if household income is below a certain level. The concept in this model assumes that children are inferior goods in the family's productive function, which means that the higher the family's economic level, the less likely they are to rely on child labor.

$$W = \begin{cases} 0, & if\ Y \geq Y* \\ w > 0, & if\ Y < Y* \end{cases} \tag{2.1}$$

where Y* = minimum income level, i.e. the condition in which the household can survive without relying on income from child labor; Y = household income; and W = number of hours a child works. From this model, the child will work if the household income is lower than Y*, W>0.

If Luxury Axiom explains the reasons why children work, Substitution Axiom illustrates how the existence of child labor can affect the structure of the labor market and the well-being of adult workers. This theory argues that child workers and adult workers are often considered perfect substitutes, especially in low-skill jobs or the informal sector.

$$Y = f\left(L_e + iL_a\right)Y \tag{2.2}$$

where Y = production output; Le = total child labor; Lα = total adult workforce; and θ = the substitution parameter between child workers and adult workers.

Previous Research

Research on the impact of cash assistance both conditional (CCT) and unconditional (UCT—on child labor has grown rapidly in the past two decades. Studies have shown that these programs are generally able to reduce children's working hours and increase school participation (Dammert et al., 2018; Edmonds & Schady, 2012; Fiszbein & Schady, 2009). Benedetti et al. (2016) study in Honduras showed that PRAF-II increased school enrolment and reduced child labor, while a similar program, Bono 10,000, yielded weaker results due to inconsistent implementation of the conditions. Del Carpio et al. (2016) found that CCTs in Nicaragua reduce child labor in the household and agricultural sectors, although productive assistance drives a shift to skilled work. Meanwhile, Miller & Tsoka (2012) in Malawi showed that UCT decreases child work outside the home but can increase domestic work due to increased family economic activity.

3. Methodology

Data Sources and Units of Analysis

This study analyses the influence of cash assistance programs in reducing children's participation and working hours in Indonesia, using data from the Indonesian Family Life Survey (IFLS) wave 5 (2014-2015) as the main source to be used to analyze various socio-economic aspects of Indonesian society. IFLS data is the most comprehensive survey ever conducted in Indonesia (Strauss et al., 2016).
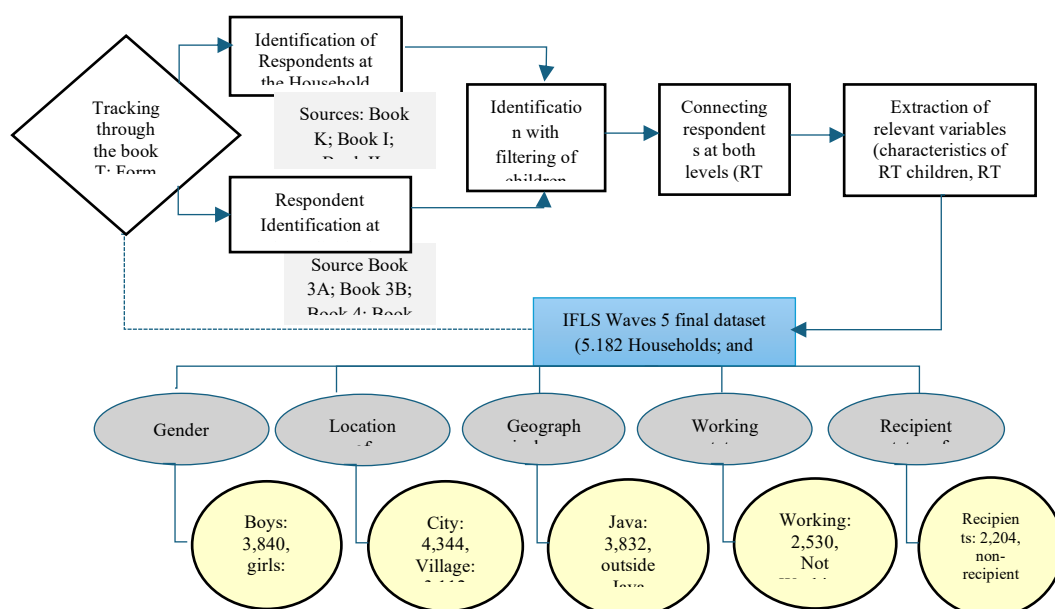

Figure 2 Selection Scheme and Number of Samples Used
Source: IFLS wave 5 throughout the province (processed)

The unit of analysis in this study is individuals of children aged 5–14 years who are identified as working. The selection of this age group is based on five considerations: (1) according to the minimum working age limit according to ILO Convention No. 138 and Law No. 20/1999; (2) be in the compulsory study period according to Law No.20/2003; (3) in line with the general practice of international studies to avoid legal ambiguity at the age of 15–17 years; (4) follow ILOSTAT reporting standards so that data can be compared between countries; and (5) the technical limitations of IFLS which only records detailed data on children's work up to the age of 14.

Variable

The dependent variables that will be estimated in this research model are work participation and children's work duration. Work participation is defined as a child's involvement in the category of housework, economics, or a combination of both, while the duration of a child's work is calculated from the average number of working hours a child has spent doing work activities in the past week.

The main independent variable (treatment variable) is the status of recipients of cash assistance programs, both conditional (Conditional Cash Transfer/CCT/PKH), and unconditional (Unconditional Cash Transfer/UCT/BLT and BLSM). The independent/control variable uses four groups of variables, namely the characteristics of the child (proxy: gender and age of the child), the characteristics of the head of the household/KRT (proxy: gender of the KRT, age of the KRT, the education of the KRT, the employment status of the KRT), the characteristics of the household (proxy: the size of the household, the type of floor, the type of wall, the family assets in the form of TV ownership and livestock, non-food expenses, the location of residence, the geographical area), and the characteristics of the residential environment (proxy: the number of elementary schools and the number of factories in the residential location).

Selection Bias and Endogeneity in Cash Assistance Programs

Cash assistance programs in Indonesia are not given randomly, but are aimed at community groups with certain characteristics, so that program beneficiaries have different characteristics compared to households that do not receive assistance. This difference has the potential to create selection bias and give rise to endogeneity problems, which are conditions in which the main independent variable (cash assistance recipient status) correlates with unobserved factors that also affect the dependent variable, in this case the child's participation and duration of work.

Overcoming Endogeneity: The Role *of the Bivariate Probit Model*

To address the endogeneity challenge, the study adopted a bivariate probit model, which was specifically designed to address the problem of endogeny in binary regressors. This study follows (Hidayatina & Garces-Ozanne, 2019), where to overcome the problem of self-selection is to treat variables of interest as endogenous variables. This means that the household's decision to receive cash assistance is not

considered an exogenous variable, but as part of a holistic decision that also includes the child's decision to work. In this context, the most appropriate approach to estimate the simultaneous relationship between two binary variables i.e., cash assistance receiving status and child work participation status is the bivariate probit model. This model has a major advantage in dealing with endogeneity problems in binary regressors, as it allows the estimation of two interrelated decisions simultaneously, accommodating the correlation between the error terms of the two regression equations, so that the estimates obtained are more accurate.

Model Mathematics

Formally, the structural model consists of two probit equations. The first equation describes the child's decision to work (household chores, economic activities, or a combination of both) as a function of exogenous variables (Xi) and cash assistance recipient status (CCTij and UCTij). The second equation is used to estimate the probability of a child receiving cash assistance.

The two probit equations, if notarized, are as follows:

$$W_{ij}{}^* = \alpha1 + \text{Xi}B1 + CCT_{ij}\,\gamma1 + UCT_{ij}C2 + \varepsilon_{1i} \tag{3.1}$$

$$CCT_{ij}{}^* = \alpha2 + \text{Xi}\beta2 + \text{Zi}\gamma3 + \varepsilon_{2i}$$

$$UCT_{ij}{}^* = \alpha3 + \text{Xi}\beta3 + \text{Zi}\gamma4 + \varepsilon_{3i} \tag{3.2}$$

Where:

Wij*	:	A latent variable that indicates a child's tendency to work in a certain type of work (RT work, economics, or a combination). Wij=1 if the child is working, and Wij=0 if the child is not working.
CCTij* UCTij*	:	A latent variable that indicates the tendency of households to receive cash assistance. CCTij=1 if my child receives PKH, 0 if not. UCTij=1 if the child i receives BLT/BLSM assistance, 0 if not.
$\alpha1; \alpha2; \alpha3$	:	Intercept or constant.
Xi	:	Exogenous characteristic vectors for each child i observed (age and gender), which directly affect the child's work participation.
Zi	:	The variable vector, which acts as identifying restrictions to address endogeny in the receipt of cash assistance, includes the characteristics of households, heads of households, and the environment, which affect the probability of households receiving assistance, but are assumed not to directly influence the child's decision to work after receiving assistance. Zi is assumed to be orthogonal to the error term in the equation of the child's decision to work (equation 1).
$\varepsilon_{1i}, \varepsilon_{2i}, \varepsilon_{3i}$	:	Error term

4. Empirical Findings/Result

Descriptive Analysis
Child Labor Profile and Socio-Economic Aspects
From the results of IFLS wave 5 data coverage, there are 7,456 children with a proportion of working children of 33.93% (2,530 children). The maximum duration of the child's work is 40 hours per week, which indicates a significant variation in the child's workload. From the scope of this data, the total recipients of assistance were 29.56%, consisting of 5.11% of children from households receiving conditional cash assistance (CCT/PKH), and 24.45% of recipients of unconditional cash assistance (UCT) such as BLT and BLSM. Total 2,530 children who worked, 79.17% worked in the category of household work, 2.37% carried out economic activities, and the remaining 18,46% did a combination of both.

Table 1. Proportion and Duration of Children's Work by Job Category, Gender, and Location of Residence

Categories Working Children	RT Jobs (2,003)		Economic Jobs (60)		Combines (467)	
	Propose yourself (%)	Average working hours/week	Propose yourself (%)	Average working hours/week	Propose yourself (%)	Average working hours/week
Working (N:2.530)	79.17	4.24	2.37	4.47	18.46	10.77
Man	74.22	3.92	3.97	5.38	21.81	9.58
Woman	82.73	4.44	1.22	2.33	16.04	11.92
City	81.59	3.86	2.63	4.77	15.78	10.05
Village	76.48	4.68	2.09	4.04	21.43	11.35
Java	82.65	3.63	2.86	3.63	14.49	9.01
Non-Java	76.70	4.70	2.03	5.30	21.27	11.62

Source: IFLS Wave 5 all provinces (processed)

Table 2. Proportion and Average Working Hours of Children by Category of Recipients and Non-Recipients

Categories Working Children	RT Jobs		Economic employment		Combines	
	Propose yourself (%)	Average working hours/week	Propose yourself (%)	Average working hours/week	Propose yourself (%)	Average working hours/week
Aid Recipients (N: 812)	75,25	4.53	3.45	6.57	21.31	12.24
Man	38.13	4.16	71.43	8.05	50.87	10.69
Woman	61.87	4.75	28.57	2.88	49.13	13.84
City	48.12	3.87	57.14	6.56	38.15	11.65

Village	51.88	5.13	42.86	6.58	61.85	12.61
Jawa	43.70	3.76	57.14	3.06	31.79	11.22
Outside Java	56.30	5.12	42.86	11.25	68.21	12.72
Non-recipients (N: 1,718)	80.99	4.11	1.86	2.63	17.15	9.86
Man	39.70	3.82	68.75	2.95	48.47	8.89
Woman	60.30	4.3	31.25	1.90	51.53	10.78

Source: IFLS Wave 5 all provinces (processed)

Econometric Model Analysis
Estimation of Bivariate Probit Model Results on Children's Work Participation

One of the indicators of endogeny in the model is the value ρ (Rho), which measures the correlation between errors in the equation of child work participation and cash assistance. To determine whether endogeny really occurs in each type of child work, a Wald test of ρ was performed on each work model.

Table 3. Wald Test

Job Type	Chi2 (Forest Test)	Prob> Chi2	Significance ρ (Rho)	Model Results
Household	4.1149	0.0425	Significant (Endogeny needs to be addressed)	Bivariate Probit Penuh
Economics	0.6254	0.4291	Insignificant (ρ can be considered 0)	Bivariate Probit with ρ = 0
Combination	0.2289	0.6323	Insignificant (ρ can be considered 0)	Bivariate Probit with ρ = 0

Source: IFLS Wave 5 all provinces (processed)

As recommended by (Wooldridge, 2010) in the bivariate probit model when the Wald test situation states that the value ρ is insignificant, then setting ρ = 0 can increase the validity of the estimate. In addition, according to (Greene, 2012) when ρ is insignificant, setting ρ = 0 as a fixed parameter can be used as a stratagem to avoid estimation inconsistencies caused by fluctuations in the correlation between equations.

Table 4. Comparison of Bivariate Probit Estimation Results of Full Model and Model ρ = 0 in Economic and Combination Work

Variable	Economic Work		Combination Work	
	Bivariate Probit	*Bivariate Probit ρ = 0*	*Bivariate Probit*	*Bivariate Probit ρ = 0*
	Coefficient	Coefficient	Coefficient	Coefficient
(1)	(2)	(3)	(4)	(5)
Child Labor Equality				
PKH	0.8838 (0.7200)	0.3395** (0.1719)	-0.5059 (0.6628)	-0.1823 (0.1212)

Remarks: ** ρ <0.05; * ρ <0.1; source: IFLS wave 5 data of all provinces (processed)

After addressing endogeny by establishing $\rho = 0$, the influence of PKH on economic work becomes smaller, but statistically significant. This shows that PKH recipients tend to be more likely to work in the economic sector. Meanwhile, the influence of PKH on combination work has negative and significant value in both models. In regression analysis bivariate probit, we should use marginal effect to measure the real impact of each variable on the probability of a child working.

Table 5. Marginal Effect of Bivariate Probit Estimation (PKH)

Independent Variables	Bound Variables		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
PKH	-0.0171**	0.0004*	-0.0011
	(0.0066)	(0.0002)	(0.0007)
Child age	0.0019***	0.0002**	0.0010***
	(0.0002)	(0.0000)	(0.0001)
Child gender	-0.0079***	0.0004***	-0.0003
	(0.0009)	(0.0001)	(0.0008)
Krt gender	0.0020	0.0002	0.0000
	(0.0048)	(0.0003)	(0.0008)
Krt age	-0.0004***	0.0000	-0.0000**
	(0.0001)	(0.000)	(0.0000)
Work Assignment	0.0067	0.0005	0.0023**
	(0.0062)	(0.0003)	(0.0010)
education1	-0.0273***	-0.0009***	-0.0041**
	(0.0073)	(0.0002)	(0.0007)
floor	0.0177***	0.0003*	0.0024***
	(0.0050)	(0.0002)	(0.0006)
wall	-0.0011	0.0000	-0.0001(0.0006)
	(0.0038)	(0.0002)	
size	0.0042***	0.0001***	0.0008***
	(0.0014)	(0.0000)	(0.0001)
tv	-0.0053	0.0042***	0.0009
	(0.0091)	(0.0007)	(0.0016)
cattle	-0.0042	-0.0001	-0.0009
	(0.0035)	(0.0002)	(0.0005)
urban	-0.0002	0.0000	-0.0007
	(0.0031)	(0.0001)	(0.0005)
java	0.0099**	0.0002	-0.0002
	(0.0046)	(0.0002)	(0.0005)
lhhexpnonfood	-0.0102***	-0.0002*	-0.0015***
	(0.0033)	(0.0001)	(0.0003)
SD	-0.0001	0.0000*	-0.0001
	(0.0005)	(0.0000)	(0.0001)
factory	-0.0012	0.0002	-0.0014***
	(0.0030)	(0.0001)	(0.0005)

Description: *** ρ <0.01; ** ρ <0.05; * ρ <0.1;
source: IFLS wave 5 data throughout the province (processed)

From the marginal effect value, children from PKH recipient families have a 1.71% lower chance of working in the household, but 0.04% higher working in the economic sector. This shows that PKH has not eliminated child labor but has shifted the type of work. The decline in household work is likely to be influenced by school obligations, while the increase in economic employment reflects the ongoing economic pressures. This indicates that the economic pressure on households is still there, and the assistance provided is not large enough to fully replace the economic contribution of children.

To support this hypothesis, a Bivariate Probit test was performed on household and economic work. The results showed a significant negative correlation between the two (ρ = -0.9448), indicating that children tend to move from household work to the economy after receiving PKH. These findings support the hypothesis that PKH does not eliminate child labor but rather shifts the type of work. This study also shows the same precedent for Unconditional Cash Transfer (BLT and BLSM), hereinafter referred to as UCT.

Table 6. Marginal Effect of Bivariate Probit UCT Estimation Results

Independent Variables	Bound Variables		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
UCT	0.0040	0.0035**	-0.0762*
	(0.0029)	(0.0016)	(0.0410)
Child age	0.0074***	0.0004***	0.0110***
	(0.0004)	(0.0001)	(0.0015)
Child gender	-0.0310***	0.0008**	-0.0032
	(0.0024)	(0.0003)	(0.0033)
Krt gender	0.0531	0.0002	-0.0048
	(0.0062)	(0.0006)	(0.0002)
Krt age	-0.0005***	0.0000	-0.0002
	(0.0002)	(0.0000)	(0.0002)
Work Assignment	-0.0009	0.0009	0.0205**
	(0.0069)	(0.0009)	(0.0098)
education1	-0.0395***	-0.0020***	-0.0442**
	(0.0043)	(0.0006)	(0.0178)
floor	0.0148***	0.0004	0.0146**
	(0.0045)	(0.0004)	(0.0080)
wall	0.0084*	0.0004	-0.0098
	(0.0050)	(0.0004)	(0.0067)
size	0.0014	0.0002**	0.0054**

	(0.0011)	(0.0000)	(0.0021)
TV	-0.0167	0.0104***	0.0061
	(0.0150)	(0.0019)	(0.0187)
cattle	0.0034	-0.0001	-0.0023
	(0.0040)	(0.0003)	(0.0047)

Description: *** ρ <0.01; ** ρ <0.05; * ρ <0.1;
source: IFLS wave 5 data throughout the province (processed)

Of the two types of cash assistance, PKH has a clearer influence in reducing the probability of children being involved in household chores than UCT. This indicates that the implementation of requirements in PKH, such as compulsory schooling, is more effective in preventing children's involvement in domestic work, compared to unconditional cash assistance (UCT).

One of the interesting findings is that PKH and UCT increase the probability of children engaging in economic activities, by 0.04% and 0.35%, respectively, which indicates a moral hazard to beneficiary families, who may still face economic pressure, by encouraging their children to participate in work even though they are recipients of assistance.

Results of Estimated Cash Assistance on Children's Working Duration

This study also estimated the duration of children's work, namely the number of hours spent by children working for one week, using the quasi-Poisson method with maximum quasi-likelihood estimation (MQLE). This method was chosen because the data on the duration of children's work in the form of count data (number of working hours) is often over dispersed, where the variance of this study is 24.62 with a mean of 1.85. Therefore, this method is considered to have more robust estimation results against overdispersion.

Table 7. Quasi-Poisson Estimation: The Effect of PKH on Children's Working Duration

Independent Variables	Bound Variable: Average Child Working Hours		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
PKH	1.5819***	0.8480	2.1266***
	(0.2112)	(1.0883)	(0.4177)
Child age	0.5338***	0.5365***	0.5321***
	(0.0271)	(0.0271)	(0.0268)
Child gender	-0.8027***	-0.8330***	-0.8283***
	(0.1123)	(0.1128)	(0.1122)
Krt gender	-0.0556	-0.0327	-0.0465
	(0.2172)	(0.2182)	(0.2180)

Krt age	-0.0089	-0.0104*	-0.0096*
	(0.0058)	(0.0058)	(0.0058)
Work Assignment	0.4298*	0.4381*	0.4358*
	(0.2352)	(0.2361)	(0.2346)
education1	-0.0896	-0.1213	-0.1074
	(0.1330)	(0.1325)	(0.1326)
floor	0.1598	0.1609	0.1278
	(0.1404)	(0.1429)	(0.1434)
wall	0.0742	0.0953	0.1141
	(0.1506)	(0.1520)	(0.1512)
size	0.0382	0.0491	0.0419
	(0.0328)	(0.0327)	(0.0318)
tv	0.3853	0.3211	0.2903
	(0.4417)	(0.4408)	(0.4407)
cattle	-0.0213	-0.0181	-0.0047
	(0.1272)	(0.1278)	(0.1278)
urban	-0.4733***	-0.4797***	-0.4841***
	(0.1148)	(0.1159)	(0.1153)
java	-1.1481***	-1.1397***	-1.1469***
	(0.1298)	(0.1297)	(0.1297)
lhhexpnonfood	-0.0899	-0.1029*	-0.1008*
	(0.0600)	(0.0601)	(0.0600)
SD	0.0036	0.0054	0.0060
	(0.0177)	(0.0181)	(0.0180)
factory	-0.1349	-0.1530	-0.1327
	(0.1282)	(0.1280)	(0.1279)

Description: *** ρ <0.01; ** ρ <0.05; * ρ <0.1;
source: IFLS wave 5 data throughout the Province (processed)

Table 8. Quasi-Poisson Estimation: Effect of UCT on Children's Working Duration

Independent Variables	Bound Variables		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
UCT	1.0689***	1.7832***	2.6288***
	(0.1268)	(0.4909)	(0.1889)
Child age	0.5293***	0.5334***	0.5009***
	(0.0274)	(0.0270)	(0.0266)
Child gender	-0.7853***	-0.8589***	-0.8636***
	(0.1138)	(0.1130)	(0.1101)
Krt gender	-0.0470	-0.0499	0.0396
	(0.2175)	(0.2184)	(0.2025)

Krt age	-0.0099*	-0.0104*	-0.0088
	(0.0058)	(0.0058)	(0.0057)
Work Assignment	0.4334*	0.4498*	0.4226*
	(0.2354)	(0.2370)	(0.2282)
education1	-0.0662	-0.1041	-0.0270
	(0.1320)	(0.1322)	(0.1316)
floor	0.1390	0.1744	-0.1295
	(0.1415)	(0.1421)	(0.1377)
wall	0.0924	0.0903	0.0024
	(0.1508)	(0.1514)	(0.1469)
size	0.0441	0.0491	0.0436
	(0.0331)	(0.0327)	(0.0341)
tv	0.3136	0.3040	0.4841
	(0.4374)	(0.4406)	(0.4020)
cattle	-0.0388	-0.0176	0.0069
	(0.1283)	(0.1275)	(0.1256)
urban	-0.4888***	-0.4745***	-0.4106***
	(0.1161)	(0.1159)	(0.1160)
java	-1.1265***	-1.1366***	-1.0387***
	(0.1299)	(0.1296)	(0.1264)
lhhexpnonfood	-0.0545	-0.0994*	-0.0853
	(0.0608)	(0.0603)	(0.0605)
SD	0.0086	0.0052	0.0093
	(0.0182)	(0.0181)	(0.0177)
Factory	-0.1620	-0.1621	-0.1391
	(0.1273)	(0.1277)	(0.1240)

Description: *** $\rho < 0.01$; ** $\rho < 0.05$; * $\rho < 0.1$;
source: IFLS wave 5 data throughout the province (processed)

The results of Quasi-Poisson estimation show that both PKH and UCT significantly increase children's working duration in all job categories. UCT has more impact on economic and combination work, while PKH has more impact on household and combination work. This means that children from families receiving assistance work longer than children from non-recipient families. Girls from households receiving cash assistance have a higher working duration than boys in all types of jobs. The duration of work also increases as the child ages. The education of the head of household significantly reduces the working hours of the child. In addition, children from beneficiary families living in cities and on the island of Java tend to have a lower working duration than children from non-recipient families in villages and outside Java. These findings show that educational factors, residential location, and regional socio-economic differences also influence children's involvement in work.

To describe the impact of PKH and UCT more concretely, the Average Treatment Effect (ATE) and Average Treatment Effect on the Treated (ATET) were calculated. ATE measures the impact of assistance on the entire child population (N=7,456), while ATET focuses on children who receive assistance.

Table 9. Comparison of ATE and ATET in PKH and UCT

Job Type	PKH		UCT	
	ATE	THE ACT	ATE	THE ACT
Household	2.44	2.75	1.35	1.70
Economics	1.07	1.24	2.97	3.20
Combination	3.94	4.49	5.19	5.46

Source: IFLS wave 5 data for all provinces (processed)

A comparison of ATE and ATET shows that the greatest impact of assistance on a child's working duration occurs in combination work, especially in UCT. UCT increases children's working hours in economic work, while PKH has more impact on household work. The findings showed that children of PKH and UCT recipients actually spent more time working. This is in line with the study of Pais et al. (2017) on the Bolsa Familia program in Brazil, which also found that children of aid recipients tend to work longer. This phenomenon is suspected to arise due to an imbalance between the amount of assistance received and the economic needs of households.

Taking into account similar findings in the Indonesian context, these findings indicate that the nominal amount of cash assistance has not been sufficient to reduce dependence on child labor. To test this, a t-test was carried out with the variable of non-food expenditure as a welfare proxy, the results of which showed that the non-food expenditure of the households receiving assistance was lower than that of non-recipients (Rp1,089,446 vs Rp2,079,712 per month). These findings support the hypothesis that nominal assistance is still insufficient, so families continue to rely on children to increase their income. To further test whether a larger amount of assistance (a combination of PKH and UCT) can reduce the child's working duration, regression was carried out through the total aid variable.

Table 10. The Effect of PKH, UCT, and Total Cash Assistance on Children's Working Duration

Independent Variables	Bound Variable: Child's Working Duration/Week		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
PKH	1.5819***	0.8480	2.1266***
	(0.2112)	(1.0883)	(0.4177)
UCT	1.0689***	1.7832***	2.6288***
	(0.1268)	(0.4909)	(0.1889)
Total aid	1.2806***	1.6214***	2.6424***
	(0.1194)	(0.4568)	(0.1806)

Remarks: *** $\rho < 0.01$,
Sources : IFLS wave 5 data sources for the entire province (processed)

Estimates show that economic motivation encourages children to engage in work. When the assistance only comes from PKH or UCT, the child still works for a long

time. However, when the total assistance increased (combined PKH and UCT), the child's working duration decreased to 1.62 hours/week. This suggests that sufficient assistance can nominally reduce a child's workload and be an effective intervention to pull them away from income-oriented work. On the other hand, in the domestic work sector, the increase in assistance has not consistently significantly reduced the duration of children's work, indicating that factors other than the economy may also influence the household's decision to divide domestic tasks into children.

Based on these findings, researchers developed the hypothesis that family economic empowerment programs, such as skills training, are needed to further reduce children's working duration. For this reason, a regression of the interaction between cash assistance (PKH and UCT) and participation in training was carried out into the model. The results of the analysis showed that training integrated with PKH was effective in reducing the duration of children's work, especially in combination work. On the other hand, the training that accompanies UCT tends to increase the duration of work. This suggests that training is more effective when it is associated with conditional assistance such as PKH.

Table 11. The Effect of Cash Assistance and Training Interaction on Children's Working Duration

Independent Variables	Bound Variable: Child's Working Duration/Week		
	Housework	Economic Work	Combination Work
	Average Marginal Effect	*Average Marginal Effect*	*Average Marginal Effect*
(1)	(2)	(3)	(4)
PKH	1.5819***	0.8480	2.1266***
	(0.2112)	(1.0883)	(0.4177)
PKH_Training	1.3590**	-0.3192	-0.9508***
	(0.7101)	(0.2549)	(0.2347)
UCT	1.0689***	1.7832***	2.6288***
	(0.1268)	(0.4909)	(0.1889)
UCT_Training	1.0952***	2.0934*	2.5676***
	(0.2549)	(0.7893)	(0.4820)

Description: *** $\rho < 0.01$; ** $\rho < 0.05$; * $\rho < 0.1$;
Source of IFLS wave 5 data for all provinces (processed)

To understand the mechanism behind these findings, the role of household income as an intermediary pathway was tested, considering various characteristics. This analysis aims to assess whether training that improves economic well-being also affects the duration of children's work, and whether the impact depends on the type of assistance received.

Table 12. Training Mechanism for Household Income and Children's Working Hours

Types of Assistance	Key independent variables	Bound Variables	
		Lhhincome	Working hours
PKH	Training	0.3505** (0.1666)	-2.0611** (0.026)
	Household income		-0.1320 (0.3355)
UCT	Training	0.1931*** (0.0553)	-0.4708 (0.3492)
	Household income		-0.2321 (0.1696)

Description: *** ρ <0.01; ** ρ <0.05;
Source of IFLS wave 5 data for all provinces (processed)

The regression results showed that training significantly increased household income, by 35.05% in PKH and 19.31% in UCT. This signifies effective training improves well-being, regardless of the type of assistance. However, when income was included in the model, no significant effect was found on a child's working duration, suggesting that increased income was not the only factor that affected a child's reduction in working hours. The training still significantly reduced the duration of children's work in the PKH group, but not in the UCT. This shows that training is more effective when integrated with conditional assistance, and its success depends on the institutional design of the social programs that overshadow it.

Furthermore, separate regression between regions showed that cash assistance increased the duration of children's work in both regions, with the strongest and most significant effect outside Java, especially for UCT (coefficient of 1.0451***). This shows that in areas outside Java, assistance tends to be used to support children's economic activities, while in Java the household response is more controlled.

Table 13. The Influence of Interregional Cash Assistance

Independent Variables	Bound Variable: Child's Working Duration	
	Javanese	Outside Java
PKH	0.5676** (0.2660)	0.8886* (0.4732)
UCT	0.2808** (0.1427)	1.0451*** (0.2294)

Description: *** ρ <0.01; ** ρ <0.05;
Source of IFLS wave 5 data for all provinces (processed)

These findings underscore the importance of region-based interventions. Visualization of interprovincial scatterplots shows that high aid coverage does not always succeed in reducing child labor rates, reinforcing the argument for the need for regionally tailored policies.
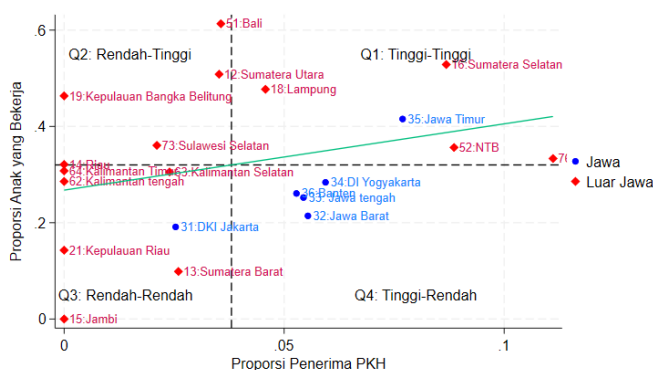
Figure 3. Provincial Distribution: PKH vs Child Labor

Source: IFLS wave 5 throughout the province (processed)

The scatterplot shows the relationship between the proportion of PKH recipients and children working at the provincial level. PKH is more effective in Java, as can be seen from the dominance of Java province in Quadrant IV (high PKH and low child labor). In contrast, many provinces outside Java are in Quadrant I (high PKH & high child labor), indicating more complex socioeconomic challenges. Quadrant II indicates a potential exclusion error, while Quadrant III indicates the existence of protective factors outside of cash assistance. A similar pattern is also seen in UCT, reflecting regional inequalities in program effectiveness.
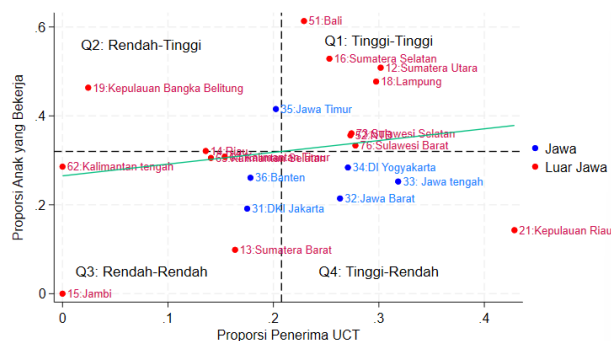

Figure 4. Provincial Distribution: UCT vs Child Labor

Source: IFLS wave 5 throughout the province (processed)

Provinces in Java such as Central Java, Yogyakarta, and West Java dominate Quadrant IV (high UCT–low child working), showing that UCT is relatively effective in this region. On the other hand, provinces such as Bali, South Sumatra, and North Sumatra are in Quadrant I, indicating that the high coverage of UCT does not necessarily reduce child labor. The PKH trend line is steeper than UCT, indicating that PKH is more responsive to the dynamics of child labor. This pattern underscores the need for a reformulation of cash assistance that is more sensitive to child labor risks and regional conditions.

5. Discussion

The bivariate probit estimation reveals indications of endogeneity in the household work equation, as shown by the statistical significance of the cross-equation error correlation. Under such conditions, correcting for endogeneity is essential to avoid biased estimates. In econometric literature, Wooldridge (2010) notes that when the error correlation is not statistically significant, setting the correlation parameter to zero helps improve estimation precision. Greene (2012) similarly argues that fixing the correlation parameter can stabilize the model and prevent estimation instability arising from fluctuating correlation values. Therefore, this correction approach is applied to the economic-work and combined-work equations, where no endogeneity is detected. After implementing the correction, the effect of conditional cash transfers (CCTs) changes: their impact on the likelihood of children engaging in economic activities becomes smaller in magnitude yet statistically significant, indicating that CCT recipients remain more likely to participate in economic work. Conversely, for combined work, the impact of CCTs is consistently negative and significant across both models. Marginal effects provide a more accurate interpretation, suggesting that CCTs reduce the probability of children engaging in household work but slightly increase the likelihood of economic labor—indicating a shift in work type rather than a reduction in total child labor involvement, a phenomenon aligned with theoretical predictions from Basu and Van (1998).

The strong negative correlation between household and economic work supports the notion of task substitution rather than overall workload reduction, consistent with evidence that unconditional cash transfers (UCTs) also increase children's involvement in economic activities (Dake et al., 2020). These results suggest that household economic pressures remain dominant and that cash transfers alone do not fully replace children's economic contributions. Additional marginal-effect analyses for UCTs show parallel patterns: the program does not reduce household work and instead increases the likelihood of economic labor, with larger impacts than CCTs. This aligns with findings that conditionalities—especially school-attendance requirements—make CCTs more effective in reducing certain forms of child labor (Fiszbein & Schady, 2009; Del Carpio et al., 2016).

Work-duration estimates from the quasi-Poisson model further demonstrate that both CCTs and UCTs increase children's working hours across all job categories. UCTs have larger effects on economic and combined work, while CCTs primarily increase household-work duration. Overall, beneficiary children work longer hours than non-beneficiaries, a pattern particularly pronounced for girls—consistent with global evidence of gendered burdens in child labor (ILO & UNICEF, 2021; ILO, 2017). Age also consistently increases work duration, while household-head education reduces it, supporting findings from Indonesia and other low-income contexts (Hidayatina & Garces-Ozanne, 2019; Edmonds & Schady, 2012). Regional characteristics matter as well: beneficiary children in urban areas and Java work fewer hours than those in rural areas and outside Java, reflecting socio-economic disparities also documented in national child-labor statistics (Indonesian Data, 2024).

Treatment-effect calculations reveal that UCTs have the largest impact on increasing work duration in combined tasks. This result echoes evidence from international experiences, such as Brazil's Bolsa Família program, where beneficiary children also record higher work durations despite income support (Pais et al., as cited in Benedetti, Ibarrarán, & McEwan, 2016). This indicates that cash-transfer amounts remain insufficient to meaningfully replace the economic contributions of children. Additional analysis of household expenditure shows that non-food spending among beneficiaries is lower than among non-beneficiaries, reinforcing the view that transfer amounts are inadequate to reduce reliance on child labor (World Bank, 2005; UNICEF, 2020). However, cumulative assistance—receiving both CCTs and UCTs—reduces child work duration in several job categories, suggesting that larger combined benefits may begin to offset economic pressures sufficiently to reduce income-oriented work.

Even so, household-work duration does not decline consistently, reflecting the influence of non-economic factors such as cultural norms around gendered household responsibilities (ILO & UNICEF, 2021). To examine this mechanism further, an interaction analysis between cash assistance and training is conducted. The results show that training integrated into CCT programs effectively reduces child-work duration, particularly in combined tasks, whereas training linked to UCTs increases work duration—indicating that program design and institutional conditionalities shape the effectiveness of complementary interventions (Dammert et al., 2018; Miller & Tsoka, 2012). Additional mechanism tests reveal that training increases household income under both programs, but income gains do not automatically reduce child labor, suggesting that structural constraints persist. Within CCT programs, however, training continues to reduce child work duration, whereas no such effect appears under UCTs, highlighting the stronger policy discipline embedded in conditional schemes (Ministry of Social Affairs RI, 2021; Strauss, Witoelar, & Sikoki, 2016).

Finally, cross-regional analysis shows that the impact of cash assistance on increasing child-work duration is stronger outside Java—particularly for UCTs—indicating greater household economic vulnerability in those regions. This aligns with broader patterns of socio-economic inequality in Indonesia and global evidence that poverty alleviation programs often struggle to eliminate economic child labor when structural household vulnerabilities remain significant (World Bank, 2005; Dammert et al., 2018).

6. Conclusions

This study examines the effect of conditional and unconditional cash assistance (BLT/BLSM or UCT) on children's participation and duration of work in Indonesia. The results show that cash assistance does not necessarily eliminate child labour but tends to shift the type of work. PKH decreased participation in household work but increased in the economic sector, while UCT tended to decrease participation in combination and insignificant work in the domestic sector. Another important finding is the positive correlation between cash assistance and the duration of a child's work.

UCT recipients tend to work longer hours in the economic and combination sectors, while PKH has an impact on household and combination work. This shows that aid has not sufficiently replaced children's economic contributions, so family dependency remains high. In addition to cash assistance, the characteristics of children, families, and the environment also affect children's work. Girls who are older and live in villages and outside Java tend to work longer. Meanwhile, higher education of heads of households and higher non-food expenditures lower children's participation and work duration. Overall, these findings confirm that cash assistance interventions need to be accompanied by nominal adjustments, integration of family economic empowerment programs, and policy approaches that are sensitive to regional socio-economic dynamics, to be more effective in reducing child labor in Indonesia.

Based on the findings of this study, strategic steps are needed so that cash assistance is effective in reducing child labor and improving welfare. The three policy recommendations were prepared based on theory and regression results that showed a consistent relationship between assistance, household characteristics, and children's working duration, providing a solid basis for more responsive policies. First, it is necessary to make periodic adjustments to the amount of cash assistance to really reduce family economic pressure. Although the PKH has been adjusted since 2019, inflation, the cost of living between regions, and complex household needs require regular evaluation so that the value of assistance remains relevant and effective. Second, cash assistance needs to be integrated with economic empowerment programs, such as training for parents, so that it is not consumptive. Increased family income can reduce dependence on child labor. The design of assistance must also be in favor of child protection, especially in unconditional assistance schemes. Third, a cash assistance policy based on regional characteristics is needed. Because the effectiveness of assistance varies between regions, programs should be tailored to local contexts and more sensitive to the risks of child involvement in work, especially in areas with mismatches between assistance levels and the number of child laborers. With the right strategy, cash assistance is expected to not only help in the short term but also encourage sustainable change in reducing child labor and improving the welfare of poor families in Indonesia.

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