Breaking the Cycle: How Conditional Cash Transfers and Other Determinants Affect Child Labour in Indonesia

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Abstract

Economic hardship frequently forms a reason for child labour. This issue obstructs the development of human capital and perpetuates a cycle whereby children involved in works are predisposed to generate future child labourers. This persistence is mostly ascribed to the deeply rooted socioeconomic difficulties experienced by families. Government initiatives such as conditional cash transfers that alleviate the hardship are considered efficacious in addressing these fundamental concerns and reducing the incidence of child labour. However, child labour rates in Indonesia have remained unchanged over the past seven years. This research analyses the impact and effectiveness of conditional cash transfers (CCTs) as a supply-side intervention designed to enhance family welfare and prevent child labour. Employing multinomial logit analysis and Average Treatment Effect on the Treated (ATT), the results consistently indicate that whereas CCTs promote school attendance, they paradoxically increase the probability of youngsters engaging in both education and work.

Keywords: *Child Labour, School Attendance, Cash Transfers, Susenas, Educational Quality.*
JEL: I380, J220, J240, O120.

Introduction

Child labour entails a significant concern in various developing countries, including Indonesia. Despite government regulations such as bans on child labour and minimum age legislation laws intended to address this problem, the national child labour rate has persisted at approximately 1.70% over the past seven years (Badan Pusat Statistik, 2024; Badan Pusat Statistik Indonesia, 2022), demonstrating the failure of the Indonesia Roadmap to eliminate all forms of child labour by 2022. However, enforcing such institutional norms faces significant costs (Schneider, 2022) and might lead to poor results, since policies largely address the demand side of child labour. Moreover, child labour appears to be a financially beneficial option for informal sectors which remain beyond government surveillance (Abdullah et al., 2022; Fotoniata & Moutos, 2013). Consequently, the persistent occurrence of child labour stresses the need of supply-side interventions to tackle the socioeconomic vulnerabilities that encourage families to engage their children in work.

Vulnerable families frequently encounter economic difficulties that jeopardize their ability to afford regular consumption. Under these conditions, families may remove children from school to minimize costs related to education and dwell their resources on income-generating activities such as working on a family business or working on paid jobs (Cigno & Rosati, 2005; De Silva & Sumarto, 2015; Islam & Hoque, 2022). This coping mechanism unfortunately perpetuates the poverty cycle by limiting children's human capital development, therefore obstructs future chances for better earnings (Emerson & Souza, 2011). The inadequate educational attainment associated with the normalization of child work sustains this cyclical pattern that maintains child labour throughout generations that bind families in a continuous struggle (Abdullah et al., 2022).

A possible supply-side intervention is the implementation of conditional cash transfer (CCTs) programs. It offers financial aid to underprivileged families, primarily upon meeting particular requirements, including school

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attendance. By reducing financial pressures, CCTs seek to disrupt the poverty-child labour cycle, promoting school enrollment and attendance while reducing the probability of child work (Cigno & Rosati, 2005; de Hoop & Rosati, 2014b, 2014a). Notwithstanding its promise, research on the efficacy of CCTs in reducing child labour remains inconclusive. Although multiple research have shown that cash transfer schemes effectively enhance school attendance and decrease child labour (de Hoop & Rosati, 2014a; Gee, 2010; Hidayatina & Garces-Ozanne, 2019), some reviews have shown unanticipated outcomes(Camilo & Zuluaga, 2022; Cigno & Rosati, 2005; Del Carpio et al., 2016; Edmonds, 2007), particularly an increase in children combining both work and school(De Silva & Sumarto, 2015). The specific effect of cash transfer schemes on decreasing child work is inadequately examined and needs further studies.

This research examines the efficacy of CCTs as a supply-side intervention to mitigate child labour in Indonesia. In Indonesia, two significant cash transfer programs are the Family Hope Program (Program Keluarga Harapan or PKH) and the Smart Indonesia Program (Program Indonesia Pintar or PIP). PKH is a conditional cash transfer initiative aimed at impoverished families under the Ministry of Social Affairs, whereas PIP offers educational transfers to enhance school attendance administered by the Ministry of Social Affairs, the Ministry of Education, Culture, Research, and Technology, and the Ministry of Religious Affairs for religious schools. Both initiatives signify substantial endeavours to mitigate poverty and enhance educational achievements(de Hoop & Rosati, 2014b); yet, their particular effects on child labour remain inadequately examined.

Utilizing data from the National Socio-Economic Survey (Susenas) and employing econometric methods such as multinomial logit models and treatment effect (ATT) estimations, this study aims to contribute to the empirical literature on the causal effects of cash transfer programs on children's engagement in economic activities and schooling while also concerning other socioeconomic characteristics. The use of both models helps to establish not just correlation but also causal impact of the programs. The variations based on children characteristics, household characteristics, and municipal characteristics are also examined as controls. Our findings consistently indicate that both multinomial and ATT analyses indicate that such programs enhance the propensity for schooling while simultaneously increasing the propensity to engage in both school and work activities. The implications of these findings could substantially contribute to the discourse on optimal strategies for fostering the development of human capital by addressing the needs of underprivileged children in Indonesia.

The subsequent sections of this research are organized as follows: Section two examines the current literature on child work and specifies the context in which our study adds contribution. Section three presents a simple theoretical framework for household decisions on children's activities including work, schooling, and leisure. Section four essentially summarises both the PKH and PIP CCT programs in Indonesia. Section five presents the data, measurements, and methods used in the empirical study. Section six delineates the regression and estimation outcomes and examines them within the context of the theoretical framework. The final section presents a summary and conclusion.

Literature Review

Research on child labour has considerably increased since the late 20th century. Becker's notion of altruism (Becker & Lewis, 1973), posits that parents ideally want to invest in their children's education for long-term advantages (Cigno & Rosati, 2005; Del Carpio et al., 2016). Nevertheless, poverty often forces the engagement of children in labour instead of school. The luxury hypothesis describes the notable association between child labour and economic adversity (Basu, 1999; Basu & Van, 1998). As earnings from home rises, child work reduces in favor of schooling and leisure (Krauss, 2016; Ravallion & Wodon, 2000). Alleviating the budgetary and financial limitations of impoverished households would reduce the need to rely on child labour for immediate cash, therefore encouraging families to include their children in school activities that could generate economic advantages in the future.

This hypothesis is supported by several research indicating that financial transfers leads to a reduction of both paid work and unpaid economic activities among children (Asfaw et al., 2014; Edmonds & Schady, 2012; Gee, 2010; Hidayatina & Garces-Ozanne, 2019) as a form of temporary assistance. The economic activity of beneficiary children has not only diminished, their engagement in school activities has increased as well (Baird, 2013; Baird et al., 2011; de Hoop & Rosati, 2014a; Ferreira et al., 2017; Larmar et al., 2017). This is attributed to the conditional terms associated with the financial transfers, such as school attendance percentages. Since the children allocation of time is limited, this school related activity will then reduce the working hours of children (Ravallion & Wodon, 2000; Rosati, 2003). However, the conditionality which mandates school attendance for children may result in unexpected effects. Children who benefit from the transfers may be compelled to participate in work. The reason is if the transfer inadequately covers all educational expenses, children from poor family may still be required to work to pay for these deficiencies in order to remain in school (de Hoop & Rosati, 2014b; De Silva & Sumarto, 2015; Hidayatina & Garces-Ozanne, 2019).

The examination of child labour has expanded in recent years. This concept is derived from the so-called wealth paradox, which suggests that a rise in home wealth may not correspond with a reduction in child labour activities in certain situations. Research indicates that child work is more prevalent in impoverished families with access to land (Bar & Basu, 2009; Bhalotra, 2003; Krauss, 2016), and productive resources (Del Carpio et al., 2016) than in those without such assets. Furthermore, Kraus (2016) observes that this phenomenon also occurs in the comparatively higher income quantiles. The examinations of child work consequently extend beyond poverty and economic hardship. The other than nominal cost-efficiency motive to hire engage children in to the family business is to reduce the perceived risk of moral hazard associated with employing adults labourer as they are less likely to shirk responsibilities (Abdullah et al., 2022; Adonteng-Kissi, 2019; Koomson & Asongu, 2016). In addition, the labour market in rural areas is typically inflexible; the difficulty in securing reliable adult labour, especially during cropping and harvest seasons, may force families to depend on their children for agricultural tasks (Basu et al., 2010; Tsiboe et al., 2016). Moreover, varying viewpoints of parents and societal norms could lead children to stay involved in work (Abdullah et al., 2022; Adonteng-Kissi, 2018). Parents might perceive leisure and education as a means of indulging their children. The involvement of children in work as essential for cultivating responsibility and survival skills that will benefit them in the future (Adonteng-Kissi, 2021). In particular situations, parents may perceive the family business as a legacy that their children are expected to inherit (Abdullah et al., 2022; Busquet et al., 2021).

Therefore, the impact of cash transfers on child labour allows further investigation and may vary across different circumstances. This paper contributes empirical evidence concerning governmental interventions and enhances existing studies that are inline with our objectives (Abang Ali & Arabsheibani, 2020; Ali & Arabsheibani, 2016; Dawood et al., 2023; De Silva & Sumarto, 2015; Hidayatina & Garces-Ozanne, 2019), examining the roots of child labour in Indonesia and the government's involvement in supply-side interventions through various methodologies and an expansive data framework.

Theoritical Framework

The unitary household model is implemented in this research, which sees the family as a unified decision-making entity that seeks to maximise its utility by employing available resources, such as time, goods, services, and parents and children. Rosenzweig and Evenson (1977) adapt the unitary model to provide empirical evidence on the factors that influence children's time allocation for work in the context of child labour decisions, while accounting for parental capabilities and family size (Rosenzweig & Evenson, 1977).

In a simplified unitary household decision model (De Silva & Sumarto, 2015; Khanam & Ross, 2011; Ravallion & Wodon, 2000; Rosati, 2003), the family's maximum utility is achieved through the activity of children, whether they are engaged in labour, attending school, or enjoying leisure time, assuming that parental

characteristics, child attributes, and other household factors are exogenous. The functional form of the unitary household model in the context of child labour is denoted as:

$$U \ = \ U \ (\ C \ , S \ , L \ ; \ Z \ ), \qquad\qquad (1)$$

where C denotes family consumption, S represents children's school attendance, L depicts children's leisure, and Z encompasses exogenous child, household, demographic and regional characteristics. The total time available to children, which is distributed among schooling, labour, and leisure, can be formally expressed as:

$$T = S + W + L. \qquad\qquad (2)$$

Here, S represents the time spent on schooling, W specifies the time designated to work, and L denotes leisure time. Equation (1) is limited by the child's time allocation, as specified in Equation (2). After balancing the exogenous income of adults (Y) with the output from family production, while considering the costs of production and household consumption, the household budget constraint can be formally specified by:

$$P_c C + \ P_s S = P_w W + Y. \qquad\qquad (3)$$

The left side of the equation denotes household expenditures and costs, whilst the right side indicates family income. P_c and P_s denote the price of goods and schooling, C states goods consumed by households, and S depicts children's engagement in school. P_w represents wages generated by child labour, and W refers to the time committed to work. In consequence, the budget limitation in equation (3), which pertains to the decision-making over whether the children attend school, engage in labour, or partake in leisure activities, can be modified by adding an extra source of revenue for the family. The cash transfer *(G)* can be included into the calculation as follows:

$$P_c C + \ P_s S = P_w W + Y + G, \qquad\qquad (4)$$

Adult labour supply, leisure, and household income Y are assumed to be exogenously determined. Therefore, unemployment among parents is the consequence of external market conditions rather than personal choices. Solving a model's first-order conditions produces numerous important understandings. Comparative statics indicate that a rise in the income (Y) of adult families will probably increase the probability of children attending school and lower the hours worked. Conversely, education and leisure will decrease and labour supply will rise when returns to child labour are high through more work prospects or more earnings. This approach emphasises how the jobs, tastes, and activities of parents affect not just income and wealth but also child labour. In addition, as income increases, household consumption (C), which encompasses voluntary educational products, will increase. On the other hand, a cash transfer will mostly have an income impact but not change relative pricing.

Furthermore, equation (4) provides the perspective that a decrease in the cost of education will lead to an increase in children's inclination to participate in schooling. Apart from providing the cash transfer, the government could also intervene by enhancing the quality of schooling (Dawood et al., 2023). This somewhat lowers the cost of education, increases the expected return of schooling, and reduces the likelihood of children being engaged to work (Krauss, 2016). This investigation offers additional insights to the existing body of literature.

Conditional Cash Transfer Programs in Indonesia: Program Keluarga Harapan and Program Indonesia Pintar

Program Keluarga Harapan (PKH) and Program Indonesia Pintar (PIP) are two important conditional cash transfer programs in Indonesia that aim for improvements in the welfare of underprivileged families. Both projects aim to disrupt the cycle of poverty by combating essential socioeconomic need. PKH focusses on providing low-income families with conditional cash transfers to enhance health, nutrition, and education outcomes, especially for pregnant women, children, and the elderly. This program has been performed since 2007 under the Ministry of Social Affairs (Kemensos), and participants have to comply to the specified requirements. For instance, pregnant women must attend frequent prenatal appointments, young children must obtain vaccinations and health assessments, school-aged children must ensure continuous school attendance, and elderly or handicapped family members must receive appropriate care. The financial aid given to PKH beneficiaries varies from 900,000 to 10,800,000 per year, depending on the family's circumstances. The educational component of PKH varies from 900,000 to 2,000,000 per student annually within a single family.

In other hand, PIP, which operates under the Ministry of Social Affairs, the Ministry of Education, Culture, Research, and Technology, and the Ministry of Religious Affairs for religious institutions, concentrates on the education sector by providing assistance for children from impoverished backgrounds to cover school expenditures. In order to improve access to educational services for children aged 6 to 21, PIP conditionally requires beneficiaries to be actively enrolled in school and maintain attendance. Its objectives are to: prevent students from dropping out or discontinuing their education due to financial difficulties; encourage school dropouts or those who have discontinued their studies to return and receive educational services in schools or non-formal education institutions; and ensure that they complete secondary education as part of the implementation of universal secondary education or the pilot program for 12 years of compulsory education. The financial assistance provided to students, varying from IDR 225,000 to IDR 1,000,000 annually, is contingent upon the educational level and the individual circumstances of the student. This range of amount is relatively lower than PKH program.

Despite the distinctions, both programs could pose as complementary rather than exclusive. PKH participants may receive both types of assistance if they satisfy the eligibility and conditional requirements for each program. This dual support approach allows families to get a wider array of financial assistance, addressing both basic family welfare (via PKH) and specialised educational requirements (through PIP).

Data and Methods

This research utilises secondary data mostly derived from the 2023 National Socioeconomic Survey (Susenas), a micro-level dataset involving individuals from 38 provinces in Indonesia, released by Statistics Indonesia. Through the distribution of surveys, Susenas records the unique features of responders, which are rendered in a coded format. To accurately assess the impact of cash transfers and other factors on child labour, the sample must include individuals under 18 years of age, consistent with the definition of a child as per Manpower Law No. 13 of 2003. Unfortunately, the Susenas data referring to occupational activities is restricted to children aged 10 to 17 years.

The Susenas survey outlines five occupational activities carried out by children in the preceding week: (1) work, (2) schooling, (3) performing household chores, (4) other non-individual activities, and (5) idle. This research, then, categorises those children's activities into four groups: (1) work only, (2) school only, (3) both work and school, and (4) neither work nor school (Khanam, 2008; Khanam & Ross, 2011). Household chores are not categorised as work; rather, they are classed with "other non-individual activities" and "idle" under the classification of "neither work nor school". This categorisation method may affect the interpretation of the study's results.

Table 1. Observation Summary

N = 161651	Work Only		School Only		Both Work and School		Neither Work nor School		Total	
	N	%	N	%	N	%	N	%	N	%
%PKH Beneficiaries N=36815 (22.77%)	939	2.55%	32240	87.57%	1139	3.09%	2497	6.78%	36815	100.00%
Male	736	2.00%	16253	44.15%	633	1.72%	1322	3.59%	18944	51.46%
Female	203	0.55%	15987	43.43%	506	1.37%	1175	3.19%	17871	48.54%
Rural	795	2.16%	23222	63.08%	955	2.59%	1901	5.16%	26873	72.99%
Urban	144	0.39%	9018	24.50%	184	0.50%	596	1.62%	9942	27.01%
Non PKH Beneficiaries N=124836 (77.23%)	2642	2.12%	111071	88.97%	2136	1.71%	8987	7.20%	124836	100.00%
Male	1992	1.60%	56808	45.51%	1181	0.95%	4798	3.84%	64779	51.89%
Female	650	0.52%	54263	43.47%	955	0.77%	4189	3.36%	60057	48.11%
Rural	2114	1.69%	62998	50.46%	1572	1.26%	6058	4.85%	72742	58.27%
Urban	528	0.42%	48073	38.51%	564	0.45%	2929	2.35%	52094	41.73%

Table 1 summarises the total number of observations that fit the study requirements, including the distribution of activities by gender and home location among PKH beneficiaries and non-beneficiaries. In both cohorts, boys exhibit a consistently larger percentage of working activities than girls. Among PKH beneficiaries, 2.00% of boys are employed exclusively, in contrast to 0.55% of girls. Boys in the working-and-schooling category account for 1.72%, surpassing girls at 1.37%. A comparable pattern is evident among non-beneficiaries, with 1.60% of boys engaged in work exclusively, in contrast to 0.52% of girls. Additionally, 0.95% of boys balance work and schooling, whereas 0.77% of girls do the same. This indicates a consistent gender pattern, demonstrating that boys exhibit greater engagement in work activities compared to girls in both groups. Differences in activity are also distributed based on residential location. Among PKH beneficiaries, the percentage of children in rural areas who work is 2.16%, which is higher than the 0.39% observed in urban areas. Rural children exhibit a greater prevalence of schooling-only activities (63.08%) in comparison to their urban counterparts (24.50%). This is caused by the data is mostly contained individuals residence in the rural area. A comparable trend is observed among non-beneficiaries, with 1.69% of rural children engaged in work, in contrast to 0.42% in urban regions.

The independent variables employed in the study are categorised into four types: cash transfer recipients, infant characteristics, household characteristics, and regional characteristics. Cash transfers are categorised into two types: PKH and PIP, both are binary variables. Child characteristics encompassed age, gender, and the status of children within the household, classed as either child or other relation. The independent variables in this study are categorised into four groups: cash transfer recipients, child characteristics, household characteristics, and regional characteristics. Cash transfers are categorised into two types: PKH and PIP. Child characteristics encompassed age, gender, and the status of children within the household, classified as either child or other relation. Characteristics of household heads encompass age, highest level of education, occupational sectors

and types, employment status, marital status, residence, per capita expenditure, land ownership, and dependency ratio. Regional characteristics, including urban economic growth and educational quality, allow further analysis of government intervention alternatives to address child labour. The data on the the municipal characteristics is obtained from Statistics Indonesia and the National Accreditation Agency for Primary and Secondary Education (BAN-PDM).

Before we further move to the inferential methods used in this study, a descriptive overview of the data is presented in Table 2. The results of the two-sample t-test presented in Table 2 indicate mean differences between PKH beneficiaries (124,836 individuals) and non-beneficiaries (36,815 individuals) across various characteristics. Children from PKH households show a greater mean of work-only activities (5.64%) compared to non-beneficiaries (3.83%), resulting in a significant difference of 1.82% ($p < 0.01$). This is due to the fact that CCT programs such as PKH targets vulnerable groups which are designed to enhance their welfare. Typically, these groups are identified by their insufficient income levels, which frequently require children to engage in employment to assist in meeting their basic (de Hoop & Rosati, 2014a, 2014b; Del Carpio et al., 2016).

Table 2. Descriptive Overview of the Utilised Data

Variables	Non PKH Beneficiaries N=124836	PKH Beneficiaries N=36815	Mean difference	Significancy level
Children Characteristics				
Work only	0.038274	0.056444	-0.01817	***
School only	0.906845	0.906668	0.00017	
Both work and school	0.017110	0.030938	-0.01383	***
Neither work nor school	0.071990	0.067826	0.00416	***
age	13.31555	13.57563	-0.26008	***
male	0.518913	0.514573	0.00434	
Biological child/stepchild	0.918629	0.930490	-0.01186	***
Head of HH Characteristics				
Age	46.18688	47.55801	-1.37113	***
Education	2.210244	1.553742	0.656502	***
Male	0.904779	0.900285	0.004494	**
Work	0.942044	0.943175	-0.00113	
Work on Agricultural Sector	0.39137	0.560315	-0.16895	***
Work on Industrial Sector	0.184843	0.194513	-0.00967	***
Work on Service Sector	0.377063	0.202146	0.174917	***
Married	0.816471	0.817031	-.000559	
HH Characteristics				
Urban Area	0.417300	0.270053	0.147247	***

Expenditure per capita	1,342,593	862,794	479,799	***
Municipal Characteristics				
Economic Growth	4.40613	4.030953	0.375177	***
Education Quality	0.711118	0.699626	0.011493	***

Although there is no discernible difference, school-only activity is still the most common in both categories (90.68% for beneficiaries and 90.67% for non-beneficiaries). It can be implied that the children in the data primarily participate in school activities without regard for work-related activities in the previous week. Children who engaged in work and school are more likely to be PKH recipients (3.0% vs. 1.7%, a significant difference). This is possibly for the reason PKH doesn't cover adequate of their educational costs, driving them to work to compensate for it. Furthermore, the number of children not participating in either work or school is greater among non-PKH beneficiaries (7.1% compared to 6.7%, significant). This suggests that the program has the potential to diminish children's non-productive activities. Nonetheless, However, more analysis needs to be conducted about the higher average in this group relative to the "work only" and "both work and school" categories. Our last category includes children engaged in domestic chores, other social activities, and inactivity, which in some research suggests an underestimation of child labour (Abdullah et al., 2022; Cigno & Rosati, 2005; Krauss, 2016), as well as exceedingly marginalised populations without access to education and skills for employment (Ali & Arabsheibani, 2016; Kis-Katos & Sparrow, 2011; Purnastuti, 2015)

In comparison to non-beneficiaries (mean = 2.21, middle school), household heads of PKH beneficiaries have a lower educational attainment (mean = 1.55, elementary) and are slightly older (47.56 vs. 46.19 years), both of which are statistically significant (p < 0.01). In the both beneficiary and non-beneficiary group, head of households are generally of male (90.03% vs. 90.48% p < 0.05), while the marital status and employment rates are consistent across the categories. Beneficiaries are more commonly located in rural areas (73% vs. 58% for non-beneficiaries) and have a reduced per capita income, with a substantial average difference of Rp479,799 (p < 0.01). Moreover, beneficiaries largely engage in agriculture sectors (56.03% compared to 39.14%), whereas non-beneficiaries are more involved in the service sector (37.71% versus 20.21%). At the municipal level, there are notable mean differences in educational quality (0.71 compared to 0.69) and economic growth (4.41% for non-beneficiaries versus 4.03% for beneficiaries). These distributions implicitly point out the socioeconomic disparities and imbalances encountered by beneficiary and non-beneficiary households. Beneficiaries are somewhat more vulnerable than non-beneficiaries.

In the primary analysis, we use multinomial logit regression to assess the impact of conditional cash transfers and other factors on children activities in the preceding week, including work and education. In scenarios where the dependent variable comprises many unordered categories, multinomial logistic regression is optimal for elucidating the relationship between the dependent and independent factors (Fuente-Mella et al., 2021; Khanam, 2008; Lambon-Quayefio & Owoo, 2018). Like logistic regression, it uses maximum likelihood estimation to evaluate the probability of membership in each group. considering that our dependent variable has four outcomes: (Y=1) work only, (Y=2 as reference) school only, (Y=3) both work and school, and (Y=4) neither work nor school, the multinomial logit model is as follows:

$$P_r(Y_i = j | X_i) = P_{ij} = \frac{exp(\beta_j^T X_i)}{1 + \sum_{z \neq 2} exp(\beta_j^T X_i)}.$$

Given the reference category $Y = 2$, the probabilities for each category are as follows:

for *j=2* (school only), as reference:

$$P_r(Y_i = 2|X_i) = P_{i1} = \frac{1}{1 + exp(\beta_1^T X_i) + exp(\beta_3^T X_i) + exp(\beta_4^T X_i)},$$

for *j=1* (work only):

$$P_r(Y_i = 1|X_i) = P_{i1} = \frac{exp(\beta_1^T X_i)}{1 + exp(\beta_1^T X_i) + exp(\beta_3^T X_i) + exp(\beta_4^T X_i)},$$

for *j=3* (both work and school):

$$P_r(Y_i = 3|X_i) = P_{i3} = \frac{exp(\beta_3^T X_i)}{1 + exp(\beta_1^T X_i) + exp(\beta_3^T X_i) + exp(\beta_4^T X_i)},$$

for *j=4* (neither work nor school):

$$P_r(Y_i = 4|X_i) = P_{i4} = \frac{exp(\beta_4^T X_i)}{1 + exp(\beta_1^T X_i) + exp(\beta_3^T X_i) + exp(\beta_4^T X_i)},$$

The vector of coefficients for category *j* is denoted by β_j, while the effects of the *k*-th independent variable (i.e., financial remittances and family characteristics) on the probability of selecting category *j* are represented by β_{jk}. *T* denotes transposition, while z represents the total number of categories for the dependent variable (four). The dot product with the independent variable vector X_i utilises the transpose of β_j, represented as β_j^T, and comprises the values of the *k* independent variables for individual *i*. Y_i represents the dependent variable for individual i, choosing one of the z values. The likelihood of choosing category j is determined by the exponential function of the dot product between β_j^T and X_i, normalised by the aggregate of these exponentiated values over all categories. Therefore, we get the log odds representation of the equation as follows:

$$\log \left(\frac{P(Y = j|X)}{P(Y = 2|X)} \right) = \beta_j^T X_i = \beta_{j0} + \beta_{j1} CT + \beta_{j2} Child + \beta_{j3} Head + \beta_{j4} HH + \beta_{j5} M,$$

β_{jk} refers to the coefficient associated with the *k*-th independent variable for category *j*. *CT* denotes cash transfers, *Child* denotes child characteristics, *Head* denotes household head characteristics, *HH* denotes household characteristics, and *M* denotes municipal characteristics.

Because the recipients of the cash transfer programme are not assigned randomly; instead, children from relatively poor households are specifically targeted, child activities (including work and school), and cash transfers beneficiaries such as PKH and PIP may be jointly determined by similar variables, making it essential to address potential endogeneity when analyzing their relationship. Treating child activities solely as exogenous could lead to biased estimates if not careful. Previous studies have approached this issue differently. Some have treated child activities as exogenous (e.g., (Hidayatina & Garces-Ozanne, 2019; Khanam, 2008; Krauss, 2016)), others have attempted to address its endogeneity by using other analysis than logistic regression (e.g., (de Hoop & Rosati, 2014b; De Silva & Sumarto, 2015; Del Carpio et al., 2016; Lee & Hwang, 2016; Saucedo Delgado et al., 2018)) or using instruments as variables affect child labour without directly influencing schooling. However, obtaining this instrument is challenging as the scarcity of suitable variables. Given these challenges, we address potential endogeneity concerns pragmatically by conducting additional analysis using the Average Treatment

Effect on the Treated (ATT). This method allows us to confirm the causal impact of the program on children's activities, providing a more robust interpretation of our findings despite the limitations inherent in the data. The formula of ATT is as follows:

$$ATT = E\left[Y_{(tj)} - Y(0) \mid D = 1\right]$$

$Y_{(tj)}$ denotes the result of an individual receiving treatment (treated) in category j j. For example, the outcome for children who are only worked (category 1) or whose are exclusively enrolled in school (category 2), and so forth. Conversely, $Y(0)$ represents the result for the person in the absence of treatment (untreated). Here, D = 1 signifies that the sample comprises persons who are engaged in the program (treated). Since $Y(0)$ for the "treated" group is unobservable (counterfactual), a technique is necessary to estimate the Average Treatment Effect on the Treated (ATT) by guaranteeing comparable features between the "treated" and "non-treated" groups. Therefore, we use the Propensity Score Matching (PSM) method to compare individuals who receive treatment (PKH beneficiaries) with those with similar characteristics who do not receive treatment (non-PKH beneficiaries), through their propensity scores. The score difference will thereafter be used to assess the causal impact of the program.

Empirical Results and Discussion

Using children's activity as the dependent variable, the findings are encapsulated in Table 3. This table delineates the probability of children participating in three categories: work only, both work and school, and neither school nor work, using the school-only category as the reference group. For interpretation, we use the Relative Risk Ratio (RRR), which indicates the probability of a child being in category j when an independent variable increases by one unit. The significant and negative constants across all categories suggest that the likelihood of children being categorized as any other than "school only" (the reference category) is rather low, regardless of other factors. This corresponds with the descriptive analysis, whereby the "school only" group constitutes 88.65% of the overall sample assessed.

Cash Transfers on Child Labour

The PKH variable has diverse impacts on children's likelihood to engage in activities outside school only. An RRR of 0.892 (*** significant) indicates that participation in PKH decreases the likelihood of engaged in work only by 10.8% relative to only attending school. This aligns with the luxury principle (Basu, 1999; Rosati, 2003), indicating that adolescents engage in labour only when subsistence-level economic needs are unmet. CCTs, such as PKH, alleviate budgetary constraints by reducing the relative cost of education (Cigno & Rosati, 2005; Del Carpio et al., 2016), which allows budget allocation towards human capital investment for higher future earnings (Bai & Wang, 2020; Basu & Van, 1998; Del Carpio et al., 2016; Krauss, 2016). Likewise, PKH reduces the likelihood of children falling into the "neither work nor school" group by 18.1% (RRR = 0.819, *** significant). This aligns with previous studies that increasing in household income will reduce this tendencies including home duties and idleness (Gee, 2010; Hidayatina & Garces-Ozanne, 2019; Krauss, 2016).

The decrease in both the propensity to "work only" and "neither work nor school" activities is almost certainly led by the conditionality of PKH, which requires children to meet a specific school attendance percentage, as children's time gets increasingly allocated to their school-related activities. In contrast, this conditionality clearly results in an undesirable tendency where poor kids must simultaneously engage in both work and school. The RRR of 1.485 (*** significant) for the "both school and work" group indicates a 48.5% increased probability among PKH recipients. This may be due to PKH's inability to cover indirect educational expenditures, such as transportation or equipment, forcing children to work to keep their education (De Silva & Sumarto, 2015). Opportunistic parental behavior may also exacerbate this problem, particularly in the absence of a flypaper effect from the transfers (de Hoop & Rosati, 2014a; De Silva & Sumarto, 2015).

The second CCT analyzed in this study is PIP, which aims to improve the education of children from poor families. The results indicate that this transfer has similarities to PKH for children's activities, but with different degrees of efficacy. PIP seems to be more successful in preventing children from engaging in undesirable activities. An RRR score of 0.126 indicates that PIP decreases the probability of engaging in "work only" activities by 87.4% relative to the reference category, which is notably more than PKH's 10.8% reduction. In the "neither work nor school" group, PIP reduces the likelihood by 62.4% (RRR = 0.376), which is more notable than PKH's 18.1% reduction. Additionally, in the "both work and school" category, an RRR score of 1.153 indicates that PIP beneficiaries are 15.3% more probable to engage in both work and school simultaneously than to attend school full-time. This is far lower than the 48.5% tendency seen for PKH beneficiaries.

This discrepancy in the influence of PIP and PKH on children's activities is likely due to their distinct objectives. While PKH emphasizes the improvement of family welfare in general, PIP is specifically focused on enhancing education for impoverished families. Additionally, PIP functions as a complementary cash transfer enabling PKH users to simultaneously receive benefits from PIP. This dual support facilitates more flexibility in cash allocation for PIP participants, allowing PKH transfers to be used towards other significant necessities, hence decreasing the chance of children working while attending school for PIP recipients relatively. Nonetheless, the positive likelihood in the "both work and school" group indicates that neither PKH nor PIP completely addresses educational expenses. As mentioned before, where conditional transfers are inadequate, children may still be needed to work to maintain their education.

Table 3. Multinomial Logit Results

Variables	Work Only			Both Work and School			Neither Work nor School		
	Coef.	p-value	RRR	Coef.	p-value	RRR	Coef.	p-value	RRR
Constant	-9.339	0.000***	0.003	-5.857	0.000***	0.003	-5.836	0.000***	0.003
Cash transfers									
PKH	-0.114	0.007***	0.892	0.395	0.000***	1.485	-0.200	0.000***	0.819
PIP	-2.068	0.000***	0.126	0.142	0.002***	1.153	-0.979	0.000***	0.376
Child characteristics									
Child age	0.711	0.000***	2.036	0.247	0.000***	1.28	0.414	0.000***	1.514
Child male	1.160	0.000***	3.190	0.210	0.000***	1.233	0.093	0.000***	1.098
Biological or step child	-0.454	0.000***	0.635	0.082	0.276	1.086	-.0440	0.000***	0.644
Household head characteristics									
HH head age	-0.005	0.009***	0.995	-0.003	0.233	0.997	0	0.696	1
HH head education	-0.220	0.000***	0.802	0.041	0.008***	1.042	-0.044	0.000***	0.957
HH head male	-0.485	0.000***	0.616	-0.737	0.000***	0.478	-0.081	0.022**	0.923
HH head working	0.135	0.458	1.144	0.055	0.731	1.056	-0.243	0.005***	0.784
HH head marital status									
Unmarried yet	.004	0.976	1.004	0.143	0.208	1.153	0.085	0.199	1.089
Married (base)	0	.	1	0	.	1	0	.	1
Divorce alive	-.022	0.811	0.978	0.027	0.770	1.027	-0.001	0.987	0.999
Divorce dead	.076	0.157	1.079	-0.076	0.182	0.927	-0.022	0.479	0.978
HH head working sectors									
Agriculture (base)	0	.	1	0	.	1	0	.	1
Industry	-0.264	0.000***	0.768	-0.060	0.293	0.942	-0.140	0.000***	0.869
Service	-0.604	0.000***	0.547	-0.086	0.080*	0.917	-0.157	0.000***	0.855
HH head type of work									
Own business (base)	0	.	1	0	.	1	0	.	1
Worker/freelancer	-0.235	0.000***	0.790	-0.875	0.000***	0.417	-0.014	0.554	0.986
Unpaid worker	-0.500	0.008***	0.607	0.174	0.211	1.191	-0.046	0.639	0.955
Household									

characteristics									
Ln per capita expenditure	0.079	0.499	1.082	-0.444	0.000***	0.642	0.216	0.000***	1.241
Urban area	-0.433	0.000***	0.648	-0.587	0.000***	0.556	-0.104	0.000***	0.901
Dependency ratio	0.053	0.053*	1.054	0.169	0.000***	1.184	-0.054	0.001***	0.947
Land owning	-0.291	0.000***	0.747	-0.158	0.000***	0.854	-0.200	0.000***	0.818
Expenditure quantiles (q=5)	0.025	0.530	1.025	0.082	0.021**	1.086	-0.056	0.007***	0.946
Municipal characteristics									
Economic growth	-0.001	0.885	0.999	0.002	0.623	1.002	-0.004	0.205	0.996
Quality of education facilities	-0.712	0.000***	0.491	-0.636	0.000***	0.529	-0.290	0.000***	0.748

Children Characteristics on Child Labour

The age variable has significant positive probabilities of children to engage across all categories. This suggests that as children age, the probability of participating only in work, in both work and school, or in neither work nor school rises in comparison to attending school entirely. The "work only" category exhibits the highest RRR value at 2.036, indicating that older children are twice as likely to be employed as the base category (1.280 for "work and school" and 1.514 for "neither work nor school"). Older children are twice as likely to be employed as those in the base category, as indicated by the highest RRR value of 2.036 in the "work only" category (1.280 for "work and school" and 1.514 for "neither work nor school").

This discovery corresponds with societal norms in which older children often assist in mitigating family financial difficulties when the household income is inadequate (Abdullah et al., 2022). Furthermore, as children grow up, both physical capabilities and skills develop; conversely, educational costs tend to escalate while the expected return of school may not be compelling in the future (Bai & Wang, 2020; Purnastuti, 2015). This raises the opportunity cost of education, leading older children to choose working rather continuing their schooling.

The increased RRR for the "neither work nor school" group, compared to "work and school," indicates a potential lack of job opportunities which requires labour by children. Children may be forced to leave school due to a lack of funding, yet they are unable to enter the labour market due to the lack the necessary skills in spite of their willingness to work (Ramos et al., 2014). Nonetheless, more investigation is required in distinct studies to validate these results and examine the intricacies more comprehensively.

Compared to girls, boys are far more likely to work. They are three times as likely to be classified into the "work only" group (RRR = 3.190, significant) than to attend school full-time. They have a 23% higher probability of simultaneously attempting work and school, and a 9% higher likelihood to abstain from both activities. This aligns with societal norms that label boys as breadwinners (Abdullah et al., 2022; Adonteng-Kissi, 2019)and the characteristics of child labour, which often include unskilled, physical, and outside activities that favor boys (Ibrahim et al., 2019). Familial status also affects the activities of a child. Biological or stepchildren have a 36% reduced likelihood of participating in "work only" or "neither work nor school" activities. This illustrates the vulnerability of non-biological children in families and the priority placed on the education of biological children in resource-constrained households (Ravallion & Wodon, 2000; Webbink et al., 2011).

Family Characteristics on Child Labour

The age of household (HH) heads negatively correlates to the probability of children participating in work-only activities (RRR = 0.995), indicating a 0.5% reduction for each additional year of age. This indicates that older household heads tend to have more economic stability, hence diminishing the demand for children to engage in labour (Gebregziabher et al., 2023; Hidayatina & Garces-Ozanne, 2019; Khanam, 2008). Nevertheless, HH heads age has no substantial influence on other activity categories. The educational attainment of household heads strongly influences children's activities. Higher education lowers the probability of engaging only in work activities by 19.8% (RRR = 0.802) and decreases the possibility of neither working nor attending school (RRR = 0.957). This signifies an enhanced recognition of the important role of education and better economic capability in households with higher education levels (Cigno & Rosati, 2005; Islam & Hoque, 2022; Krauss, 2016). In contrast, higher HH heads' education somewhat slightly increases the probability of children combining both work and school (RRR = 1.042), perhaps indicating multiple priorities.

Male HH heads decrease the engagement of children in work only activities (RRR = 0.616), combined work-school activities (RRR = 0.478), and neither work nor school activities (RRR = 0.923). This is likely due to the economic difficulties encountered by female-headed households, which increases the likelihood of children from these families participating in labour activities (Khan, 2022). Additionally, the employment status of HH heads only reduces the likelihood of children participating in neither work nor school activities (RRR = 0.784), while marital status seems to have no significant influence on children's activities.

Household heads engaged in agriculture increase the probability of children's participation in work-only activities compared to those in industrial or service sectors (RRR = 0.768 and 0.547, respectively). It presumably reflects subsistence-level earning in the agricultural sector that drive children to participate in labour activities (Adonteng-Kissi, 2018). Similarly, the likelihood of children engaging in neither work nor school reduces when household heads are employed in sectors other than agriculture (RRR = 0.869 and 0.855, respectively). This tendency is also slightly significant (RRR=0.917) at 10% alpha level in the "both work and school" category if HH heads work in service sectors.

Nonetheless, the type of employment of HH heads also decreases the likelihood of children participating exclusively in work activities, with RRR of 0.790 for those working as employees or freelancers and 0.607 for unpaid workers compared to those with HH heads that own business. HH heads that work as employees or freelancers also decrease the tendency of children engage in both work and school activities (RRR = 0.417). This could be the result of a business owner's desire for their offspring to take part in the operation of the family business in order to ensure its sustainability, either for economic or normative reasons(Adonteng-Kissi, 2021). However, this field needs more exploration.

Household spending profoundly impacts children's activities. Consistent with theoretical perspectives, a 1% rise in per capita spending diminishes the probability of simultaneously engaging in labour and education by 35.8% (RRR = 0.642), while increasing the probability of neither working nor studying by 24.1% (RRR = 1.241). This indicates less economic strain but underscores possible obstacles such as educational accessibility or familial inclinations. Nevertheless, this variable unexpectedly lacks any significant association with work-only children. In comparison to rural areas, children in urban areas have decreased likelihood of participating in work-only (RRR = 0.648), work-school (RRR = 0.556), or neither activities (RRR = 0.901). This can be explained as urban regions relatively have better access to education and higher expected return from schooling in the future (Bai & Wang, 2020; Krauss, 2016).

Furthermore, higher dependency ratios increase the likelihood of children participating in work-related activities, including work only (RRR = 1.054) and work-school engagement (RRR = 1.184). This may be due to higher financial strain on other family members, particularly children, as expected. Household land ownership decreases children's participation in work-only (RRR = 0.747) and work-school activities (RRR = 0.854). This indicates that wealthier families rely less on child work, in contrast to the "wealth paradox" that seen particularly in rural regions (Basu et al., 2010; Bhalotra, 2003)This could be due to the fact that the data utilized in this research is both rural and urban. Land ownership in urban areas is more accurately indicative of wealth and is comparatively uncorrelated with productive assets that increase the likelihood of children working in rural area (Del Carpio et al., 2016)

Education Quality on Child Labour

When considering regional characteristics as control variables, children's activity categories appear to be indifferent to economic growth, as the p-values across all categories do not indicate any significance, even at a 10% error level. On the other hand, educational facilities strongly impact children's activities. In this study, the quality of educational facilities is measured by the percentage of primary to secondary schools within the district/city that has a minimum "B" accreditation level, utilizing data from BAN-PDM. Indonesian accreditation levels are A (Excellent) for high facilities, curriculum, and outcomes; B (Good) for satisfactory quality with some areas needing improvement; C (Adequate) for meeting minimum standards but requiring significant improvements; and Not Accredited for schools lacking to satisfy requisite standards or still yet to be assessed.

An RRR of 0.491 indicates that improved educational facilities reduce the probability of children participating only in work activities by 50.9% relative to remaining in school. Correspondingly, the probability of engaging in work-school activities diminishes by 47.1%, whereas the probability of neither working nor attending school declines by 25.2%.

From the results, we can say that better educational quality is essential in mitigating child labour and unproductive activities among children, potentially by reducing the relative cost of education. Additionally,

this will raise the opportunity cost of child labour, which hinders child development. Household might see high-quality education as bringing greater future advantages, leading them to favor education over child labour (Del Carpio et al., 2016). They expect increased future income for their children when educational institutions are reputable and of excellent quality (Dawood et al., 2023; Edmonds, 2007).

Average Treatment Effect on The Treated

Despite the fact that multinomial logit analysis captures correlations between the activities of children (both school-related and work-related) and the beneficiaries of CCTs, it wasn't originally designed to establish causality. Moreover, the sample was chosen based on specific criteria (CCTs beneficiaries or otherwise), that might lead to selection bias. The PSM method was employed to conduct the ATT analysis in order to better capture causal relationships and address the issues. Undersampling technique was utilized to balance treatment and non-treatment groups by randomly lowering the non-recipients (Shendell et al., 2016). A randomized, balanced sample of 73,607 observations was obtained from 161,651. The result are as follows:

Table 4. The ATT Results Using Propensity Score Matching on PKH Beneficiaries

Variable Sample	Treated	Controls	Difference	S.E.	T-stat
Work only					
Unmatched	0.056	0.038	0.018	0.002	11.660
ATT	0.056	0.053	0.003	0.002	1.220
School only					
Unmatched	0.907	0.907	-0.000	0.002	-0.150
ATT	0.907	0.869	0.037	0.003	10.710*
Both work and school					
Unmatched	0.031	0.018	0.013	0.001	11.870
ATT	0.031	0.019	0.012	0.002	7.270*
Neither work nor school					
Unmatched	0.068	0.072	-0.004	0.002	-2.380
ATT	0.068	0.096	-0.029	0.003	-9.350*

Table 5. The Estimated Treatment Effect Results on PKH Beneficiaries

Treatment-effects estimation	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
r1vs0 (work only)	.003	.003	1.15	.252	-.002	.008	
r1vs0 (school only)	.038	.004	10.00	0	.03	.045	***
r1vs0 (both work and school)	.012	.002	7.23	0	.009	.015	***
r1vs0 (neither work nor school)	-.029	.003	-8.66	0	-.035	-.022	***
*** p<.01, ** p<.05, * p<.1							

Tables 4 and 5 demonstrate that the PKH program significantly enhances the chance of children's school attendance (ATT 0.037, t-stat 10.710, p < 0.05) and diminishes the possibility of being neither enrolled in school nor engaged in work (ATT 0.029, t-stat -9.350, p < 0.05). However, it has a modest but notable influence on children combining work and school (ATT 0.012, t-stat 7.270, p < 0.05). Although PKH does not markedly diminish children's economic engagements, it successfully curtails unproductive behaviors, corroborating De Silva & Sumarto (2015) that restricted financial transfers may somehow require children to contribute for covering educational expenses.

Table 6. The ATT Results Using Propensity Score Matching on PIP Beneficiaries

Variable Sample	Treated	Controls	Difference	S.E.	T-stat
Bekerja Saja					
Unmatched	0.033	0.052	-0.019	0.002	-10.420
ATT	0.033	0.049	-0.016	0.002	-6.680*
Bersekolah Saja					
Unmatched	0.967	0.889	0.078	0.003	31.100
ATT	0.967	0.892	0.074	0.003	22.930*
Bekerja dan Bersekolah					
Unmatched	0.030	0.023	0.007	0.001	5.310
ATT	0.030	0.020	0.009	0.002	4.910*
Tiadak Bekerja dan Tidak Bersekolah					
Unmatched	0.030	0.082	-0.052	0.002	-23.420
ATT	0.030	0.079	-0.048	0.003	-16.850*

Table 7. The ATT Results Using Propensity Score Matching on PKH Beneficiaries

Treatment-effects estimation	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
r1vs0 (bekerja saja)	-.016	.002	-6.65	0	-.021	-.012	***
r1vs0 (bersekolah saja)	.074	.003	22.90	0	.068	.081	***
r1vs0 (bekerja dan bersekolah)	.009	.002	5.06	0	.006	.013	***
r1vs0 (tidak bekerja dan tidak bersekolah)	-.049	.003	-17.04	0	-.054	-.043	***
*** p<.01, ** p<.05, * p<.1*							

Additionally, tables 6 and 7 demonstrate that the PIP program works better than PKH in Indonesia in terms of lowering child labour and improving education. PIP markedly decreases child labour (negative average treatment effect, higher t-statistic), boosts schooling outcome, and diminishes unproductive activities (neither work nor school) effectively than PKH. Nonetheless, both programs seem to insufficiently cover overall educational costs, leading to an increased likelihood of children balancing work and school. The ATT results are consistent with the multinomial logit model, confirming that CCTs, particularly the PIP that focuses on education, can effectively diminish participation in labour-related activities while enhancing involvement in school-related activities in comparison to broadening CCTs like PKH.

Conclusion

Conditional Cash Transfers like PKH and PIP are capable of decreasing child labour in Indonesia while improving school attendance from a supply-side perspective. Nevertheless, it is essential to adjust the transfer amount in order to ease the financial burden that may induce children to work concurrently in order to remain in school, which can restrict their potential development. Thus, enhancing school quality is also essential, since higher quality reduces educational costs, increases the opportunity cost of child labour, and eventually lowers child labour. Furthermore, parents with advanced educational qualifications are more likely to emphasize the importance of their children's education. However, poverty-related factors such as per capita spending, wealth, male-headed families, and the employment sectors of parents persist in affecting child labour.

Finally, further study is required to investigate specific circumstances, including rural regions, low-income female-headed households, and sector associated with child labour. Integrating qualitative methodologies

may provide also profound insights into the social and normative aspects, beyond to economic ones, that influence child labour.

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