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Children's Learning Gap in Cambodia during the COVID-19 Pandemic: The Effect of Targeted Cash Transfer*

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Abstract

This paper examines the impact of a cash transfer program to poor households during a COVID-19 outbreak on engagement in children's learning activities in Cambodia. The Cambodian government introduced the IDPoor program to better define target groups to alleviate poverty in 2006. During the COVID-19 pandemic, the government launched a cash relief program mainly benefiting the IDPoor households. Using the High Frequency Phone Survey, we find that receiving cash transfers mitigates the negative impact of poverty on the education opportunities of children in poor households during the pandemic. Receiving cash relief is positively associated with children in poor households engaging more in education activities, particularly using mobile apps and also with the likelihood that the children contact their teachers through the medium of telephone.

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Ⅰ. Introduction

There is a broad consensus that the impact of the COVID-19 pandemic reaches well beyond the scope of health and economic consequences, especially in less developed countries (Miguel and Mobarak, 2021). The pandemic-related impact on other dimensions of individual welfare, such as education, food security and mental health, has also been found to be more severe for the vulnerable group such as children or the poor (Bundervoet et al., 2022; Haelermans et al., 2022). There are concerns that not only the average level of living standards have declined for the poor households, but also inequality in various dimensions have exacerbated during the pandemic.

In particular, studies have documented that the inequality in education has increased sharply during school closures induced by the spread of COVID-19 in both developed and developing countries (e.g. Bonal and González, 2020; Azevedo et al., 2021; Goudeau et al., 2021). Using U.S. data, Bacher-Hicks et al. (2021) find socioeconomic disparity in access to alternative learning activities and parental inputs which compensate for lost in-school learning opportunities. Students with low-income or low-educated parents also experienced larger learning loss during the pandemic in Netherlands (Haelermans et al., 2022). Such gap in education is likely to be larger in developing countries where digital divide is likely to be more severe across regions and socioeconomic status(Goudeau et al., 2021) and where locksdowns may impose a larger cost with weak social safety nets (Miguel and Mobarak, 2021).

As a policy effort to reduce the adverse effects of the pandemic, governments around the world have engaged in either universal or targeted public assistance programs, which largely took the form of a cash transfer (Bundervoet et al., 2022; Braun and Ikeda, 2020). Understanding whether such programs may reduce inequality in

education is important, given the well-documented evidence that negative shocks in early childhood have long term consequences for individual welfare (Almond, 2006), along with intergenerational transmission of education (Caruso and Miller, 2015), which suggests that the current gaps in education across the income distribution are likely to be persistent and have long-term distributional consequences. The already existing education inequality is likely to be exacerbated post-pandemic.

In this paper, we investigate whether the cash transfer during the COVID-19 pandemic targeted to IDPoor households in Cambodia mitigated the negative shock on children's education in low-income households. The government of Cambodia introduced a poverty targeting program in 2006, called the Identification of Poor Households (IDPoor) to efficiently execute poverty alleviation programs. In June of 2020, the government started a nationwide cash transfer program to the IDPoor households to reduce the shock to vulnerable households. Using the High Frequency Phone Survey of Households - Living Standards Measurement Study Plus 2020 conducted by the World Bank, we examine whether schooling or learning behavior of the children in the households changed with the provision of a centralized cash transfer.

We find that the large scale cash relief program for poor households in Cambodia during the COVID-19 pandemic mitigated learning gaps due to school closures or interruptions. Receiving cash relief correlates with about 30 percentage points increase in the probability of participating in education activities in the last week for IDPoor households. While cash transfer has no impact on meeting with the teacher in-person, it has positive relationship with the likelihood that the children uses mobile learning apps for learning in IDPoor households. Also, while the extensive margin of having interaction with teachers in the last week does not change, cash

transfer program correlates with about 13 percentage point increase in the likelihood of communicating with teachers over the phone.

This study first contributes to the recent literature on the impact of public cash transfer programs during the COVID-19 pandemic in developing countries. Unconditional cash transfer to poor households in Columbia (Londoño-Vélez and Querubin, 2022) and noncontributory pension payout in Bolivia (Bottan et al., 2021) improved food and financial security for the low-income households. Bui et al. (2022) shows that pandemic-related government transfer correlates with higher mental condition and more optimistic perspective towards macroeconomic conditions in Vietnam and Thailand. We add to this literature by documenting that cash relief targeted to the poor helps reduce the education gap through increased use of alternative learning mediums during pandemic-induced schooling interruptions.

Our work is also related to studies that document schooling inequality during the COVID-19 pandemic in developing countries.[1] Azubuike et al. (2021) shows that student's socioeconomic background has strong correlations the parental ability to support children's remote learning during school closures as well as with affordability of digital tools such as internet data, electricity, phone credit, and digital devices in Nigeria. Bundervoet et al. (2022) using harmonized high frequency survey of households across 31 low- and middle-income countries documents that children from lower-educated parents and rural areas are significantly less likely to continue learning during school closures with substantial magnitude of the effects. Consistent with the literature, we also show that children in households with IDPoor cards on average display lower participation in education activities and lower usage rate of mobile devices during the pandemic period in Cambodia, which imply that the learning gap is likely to widen without government intervention. Our finding

1) See Miguel and Mobarak (2021) for a review.

highlights the importance of having sufficient emergency funds at times of prolonged crisis to provide adequate social safety net for the poor and to reduce long-term negative consequences. Another policy implication is that identifying target households may facilitate effective implementation of emergency assistance during potential crisis or a pandemic.

The rest of the paper is organized as follows. We describe the background of Cambodia's economic conditions, changes after outbreak of COVID-19 and the cash relief program targeted to poor households in Section 2. Section 3 describes our data and section 4 presents our empirical strategy and results of our research. Section 5 concludes.

Ⅱ. Background

Cambodia is currently one of the least developed countries, with low levels of human capital. As of 2020, the Human Capital Index (HCI) of Cambodia ranks 118th of 174 countries and the expected years of schooling is 9.5 years, which corresponds to completed lower secondary education, ranking 138th out of 174 countries. Cambodia's GDP per capita in terms of PPP is 4423.5 in 2020, ranking 187th out of 240 countries[2] and 76 percent of the total population were living in rural areas.[3] [4]

In 2020, the global crisis by the COVID-19 pandemic negatively affected Cambodia's overall economy and three main sectors of Cambodia's economy - tourism, manufacturing exports, and construction

2) World Bank Data. https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?locations=KH.
3) World Bank HCI. https://www.worldbank.org/en/publication/human-capital.
4) World Bank Data. https://data.worldbank.org/indicator/SP.RUR.TOTL.ZS?locations=KH.

- that contributed more than 70 percent of the country's economic growth and provided 39 percent of its total paid employment in prior to the pandemic in 2019.[5] GDP growth rate dropped from 7.1 percent to -3.1 percent in between 2019 and 2020. In addition, the poverty rate defined as the proportion of population living below the national poverty line has increased by 4.3 percentage points from 2019 to 17.8 percent during the pandemic.[6]

There have been dramatic changes in everyday lives in Cambodia since COVID-19 outbreak. The first confirmed case of COVID-19 was reported on January 27, 2020, and travel restrictions were imposed on March 27 and limitation of mass gatherings is followed on April 3.[7] Nationwide school closures took place on March 16, and reopened on November 2. However, on November 30, all schools across the country were closed again and public schools finished 2019-2020 academic year earlier than expected whereas private schools postponed the end of school years with two weeks of e-learning. The third nationwide school closure was issued on March 21, 2021 (Karamba et al., 2021b).

In response to the COVID-19 pandemic, the Government of Cambodia approved a USD300 million cash relief program, which provides cash transfers to households identified by the government as part of the The Identification of Poor Households (IDPoor) in May 2020 (Bilo et al., 2021). The IDPoor program was initially established in 2006 by the Ministry of Planning (MOP) to reduce the poverty more efficiently by reducing duplication of effort and resources by different institutions and organisations in identifying their target groups for various poverty reduction interventions and ensuring that

5) World Bank https://www.worldbank.org/en/country/cambodia/overview.
6) Asian Development Bank Basic Statistics. https://data.adb.org/dataset/basic-statistics-asia-and-pacific.
7) World Health Organization https://www.who.int/cambodia/internal-publications-detail/covid-19-joint-who-moh-situation-report-30.

assistance is provided to those households who most need it.[8] Before the pandemic, the program focused on the households including pregnant women or children under 2. After the COVID-19 outbreak, target of the program slightly expanded to cover more general households in poverty, including households with children aged 0-5, people with disabilities, elderly, and people living with HIV/AIDS.[9]

On June 24, 2020 the government of Cambodia started the nationwide cash relief, which is covered under the IDPoor program, to support poor and vulnerable households during the pandemic. The government initially intended to provide cash payments to households for 7 months, from June to December 2020. As the pandemic continued, however, the Prime Minister announced that the relief program would be extended until March 2021. Payments had been made monthly during the period (Karamba et al., 2021b).

As the cash relief covered more households with the deepening of the pandemic, there is variation in when the poor households received cash relief. In June 2020, it is announced that the program would spend USD25 million a month to support IDPoor households and would benefit around 560,000 families.[10] In October, the government spent USD28.8 million to support more than 640,000 households (2.6 million people)(Karamba et al., 2021a). In March 2021, the government had spent USD30.7 million per month to support more than 690,000 households (2.7 million people)(Karamba et al., 2021b). Also, because eligible households received cash transfer only if they registered, some households received cash relief later if they delayed registration. This rapid expansion along with variations in receipt timing gives us a proper setting to evaluate the program.

8) Ministry of Planning. https://www.idpoor.gov.kh/about/process.
9) UNICEF https://www.unicef.org/cambodia/stories/covid-19-cash-transfer-programme-helping-families-most-basic-needs.
10) Before COVID-19, as of early 2020, 506,000 households (approximately 15 percent of the population) were identified as poor (Bilo et al., 2021).

Ⅲ. Data

To examine the relationship with the cash transfer and learning for children in poor households, we use the COVID-19 High Frequency Phone Survey of Households - Living Standards Measurement Study Plus (henceforth HFPS-LSMS+) 2020, conducted by the World Bank. The sample for the HFPS-LSMS+ was drawn from the nationally representative Living Standard Measurement Study Plus (LSMS+) 2019 survey by the National Institute of Statistics (NIS) with technical and financial support from the World Bank.[11] The HFPS-LSMS+ survey started on May 11, 2020 and ended March 21, 2021. The survey consists of five rounds, which were conducted in May, August, October, December 2020 and March 2021.

Because the HFPS-LSMS+ 2020 suvey is sampled from LSMS+ 2019, household characteristics, such as sex, age, marital status and education level of the household head are merged using the LSMS+ 2019 survey. We assume that the household characteristics are time-invariant over the five rounds of the HFPS-LSMS+, which is not unrealistic because the survey is completed within one year. The survey collects information on place of residence, knowledge regarding the spread of COVID-19, behavior and social distancing, access to basic services including education, coping responses to shocks, self-assessed socio-economic status, and social safety net[12] and the information is collected at the household level.

Among these variables, we especially focus on education, which is very important in that it has long-term impact on individuals as well as social mobility. HFPS-LSMS+ provides information on education,

11) World Bank Microdata Library https://microdata.worldbank.org/index.php/catalog/3860/study-description.

12) Among these sections, place of residence, access to basic services, self-assessed socio-economic status, and social safety net appear consistently from round 1 to round 5.

〈Table 1〉 Summary Statistics

	Obs	Mean	Std. Dev.	Min	Max
Assistance and Socioeconomic status					
holds IDPoor Card (Equity Card)	1,077	0.157	0.364	0	1
self-assessed socioeconomic status before COVID-19	1,008	4.635	1.230	1	9
increase in assistance since last round	1,077	0.039	0.194	0	1
responses to shocks: relied on savings	491	0.151	0.358	0	1
responses to shocks: received assistance from government	489	0.131	0.338	0	1
Household head information					
male	1,077	0.851	0.356	0	1
age	1,077	47.522	12.471	24	83
married	1,077	0.875	0.331	0	1
Household head education level					
no education	1,071	0.146	0.353	0	1
primary	1,071	0.496	0.5	0	1
lower secondary	1,071	0.232	0.422	0	1
upper secondary	1,071	0.102	0.302	0	1
some college and more	1,071	0.025	0.157	0	1
Zone					
Phnom Penh	1,077	0.054	0.226	0	1
Plain	1,077	0.3	0.458	0	1
Tonle Sap	1,077	0.323	0.468	0	1
Coastal	1,077	0.118	0.323	0	1
Plateau/Mountain	1077	0.205	0.404	0	1
Access to education (Outcomes)					
engaged in any education activities in the last week	1,077	0.735	0.441	0	1
type of education - met with teacher	1,077	0.389	0.488	0	1
type of education - mobile learning apps	1,077	0.25	0.433	0	1
type of education - completed assignments	1,077	0.244	0.43	0	1
type of education - watched TV	1,077	0.136	0.343	0	1
communicated with teachers in the last week	1,077	0.243	0.429	0	1
how to contact with teachers - sms	1,071	0.031	0.173	0	1
how to contact with teachers - online apps	1,071	0.039	0.194	0	1
how to contact with teachers - phone (audio)	1,071	0.067	0.251	0	1
how to contact with teachers - facebook	1,071	0.033	0.178	0	1

which is surveyed only for the households with children who were attending school before schools were closed due to COVID-19. We restrict our analysis to these households, and the final sample consists of 1,077 households. Because the questions on education access and medium of education was collected at the household level, and not at the individual level, the unit of analysis in this study is the household. We adopt baseline self-assessed socioeconomic status[13] in December 2019, which is before round 1, and zone[14] as additional control variables in addition to household head characteristics.

We report the summary statistics in Table 1.[15] 15.7 percent of households in our analysis sample holds the IDPoor card. While our sample consists of households with children who were attending school before school closures from COVID-19, only 73.5 percent still have their children engaged in education or learning activities during the pandemic and 24.3 percent of them have interacted with teachers in the last week.

In Table 2, we further show that the households with IDPoor card indeed display differences in household head characteristics. Percentage of household heads who have never attended school is 17.7 percentage points higher in IDPoor households. Percentage of households head with completed primary education and under is 24.9 percentage points higher in IDPoor households. Percentage of households head with more than some secondary education is again 24.8 percentage points higher in non-IDPoor households. The comparison confirms that the IDpoor households are less advantaged households.

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13) It consists of discrete values from 1 (poorest) to 10 (richest) and the value of 5 means the average.

14) Zone consists of Phnom Penh, Plain, Tonle Sap, Coastal, and Plateau/ Mountain.

15) Summary statistics for the full sample, including households without school attending children are presented in TableA1.

〈Table 2〉 Comparison of households heads' education level by IDPoor status

	non-IDPoor	IDPoor
no education	12.6%	30.3%
primary	47.6%	54.8%
lower secondary	24.5%	11.8%
upper secondary	12.3%	2.5%
some college and more	2.9%	0.6%

Ⅳ. Results

We estimate out the impact of the cash transfer program on children's education by estimating the following equation:

$$Y_{ht} = \beta_1 idpoor_{ht} * aftertrans_{ht} + \beta_2 idpoor_{ht} + X_{ht}\gamma + \theta_h + \lambda_t + \epsilon_{ht}. \quad (1)$$

Y_{ht} is the outcome for household h in round t, including engagement in education activities and communication with teachers. $aftertrans_{ht}$ is an indicator for whether the household has started receiving cash transfers and $idpoor_{ht}$ is an indicator for the household holding an IDPoor card. θ_h is household fixed effects to control for unobserved time-invariant household characteristics and λ_t is round fixed effects to control for changes in COVID-19 related situations or school interruptions across rounds. X_{ht} control for baseline self-assessed socioeconimic status before the of COVID-19 outbreak, residential area (urbal/rural, zone), and household head characteristics, including his/her sex, age, marital status, and education level. Since the controls are time-invariant in our dataset, they are fully absorbed with household fixed effect. The standard

errors are clustered at the household level.[16] Our preferred specification includes household and round fixed effects and our main coefficient of interest, β_1, estimates the within-household partial correlation between receiving cash transfer and the outcome of interest.

In Table 3 we show first stage estimation results that β_1 properly captures the increase in financial assistance for the recipient households. For all outcomes, the first column includes no household head controls, the second column includes household head controls, and the final column includes household fixed effects. Columns (1)-(3) shows that the coefficient on the $idpoor \cdot aftertrans$ is positive and significant when the outcome variable is whether the amount of assistance has increased since the last round of surveys. Column (3), which is our preferred specification, shows that receiving cash transfer increases the probability of reporting increased assistance by 20.8 percentage points.

Columns (4)-(9) consider the households' coping strategies to shocks, which are surveyed only in rounds 1 and 4. The results on reliance on savings for coping with shocks, columns (4)-(6), shows that without the transfer, IDPoor households are less likely to rely on savings, consistent with the fact that IDPoor households have less savings or financial buffer in times of negative shocks. However, once cash transfer is provided, there is increased likelihood of drawing down savings for these households. The final columns (7)-(9) directly measures whether the household perceives as receiving government assistance. The β_1s are very close to one and

16) Note that we do not use the household weights because we focus only on households who had school-attending children before the pandemic, which is a highly non-representative subsample of the full HFPS-LSMS+ sample as can be seen from the comparison of summary statistics. However, for robustness we also include the results including weights in Appendix Tables A2 - A5. The are qualitatively similar.

〈Table 3〉 First Stage

	Increase in assistance since last round			Responses to shocks: Relied on savings			Responses to shocks: Received assistance from government		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
idpoor · aftertrans	0.187***	0.187***	0.208**	0.119*	0.105	0.153*	0.848***	0.980***	0.959***
	(0.032)	(0.034)	(0.102)	(0.072)	(0.089)	(0.090)	(0.087)	(0.030)	(0.066)
idpoor	-0.005	-0.002	0.046	-0.146**	-0.102	-0.254	0.082	-0.093***	-0.071
	(0.004)	(0.013)	(0.123)	(0.065)	(0.090)	(0.314)	(0.084)	(0.033)	(0.163)
socioeconomic status before COVID-19		-0.002			0.019			-0.021*	
		(0.006)			(0.015)			(0.012)	
urban		0.002			0.030			-0.013	
		(0.013)			(0.043)			(0.025)	
zone (ref. Phnom Penh)									
Plain		0.015			-0.037			0.024	
		(0.016)			(0.083)			(0.034)	
Tonle Sap		0.023			-0.003			0.060*	
		(0.015)			(0.087)			(0.032)	
Costal		0.013			0.048			0.028	
		(0.015)			(0.093)			(0.038)	
Plateau/Mountain		0.016			0.017			0.033	
		(0.018)			(0.088)			(0.030)	
head information									
male		0.029			0.072			-0.051	
		(0.028)			(0.075)			(0.064)	
age		0.000			-0.002			0.001	
		(0.000)			(0.002)			(0.001)	
married		0.008			-0.076			-0.017	
		(0.027)			(0.086)			(0.064)	
head education level (ref. no educaion)									
primary		-0.012			0.003			0.042	
		(0.019)			(0.054)			(0.033)	
lower secondary		-0.008			-0.002			0.040	
		(0.019)			(0.065)			(0.032)	
upper secondary		-0.014			-0.035			0.078	
		(0.021)			(0.071)			(0.050)	
some college and more		-0.019			-0.157***			0.007	
		(0.019)			(0.059)			(0.030)	
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	1,077	1,002	1,077	491	422	491	489	420	489
R-squared	0.141	0.144	0.438	0.055	0.085	0.872	0.595	0.650	0.921

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

highly statistically significant, which implies that our main explanatory variable is well defined and that households are well-aware of the transfer program. The coefficient estimate on the interaction term in column (9), indicates that being targeted by the program increases the probability to deal with the shocks by receiving assistance from government by 95.9 percentage points.[17)]

For the main analysis on education outcomes, we first focus on whether children in the household ever experienced any kind of education activities or communication with teachers in Table 4. Columns (1)-(3) show that while the IDPoor households are less likely to experience any type of education compared to less poor households, cash relief program is able to mitigate the adverse impact. According to column (2), cash transfer increases the opportunity of being engaged in learning activities by 35.2 percentage points. Although the magnitude of the coefficient estimates is similar, the main coefficient is not statistically significant with household fixed effects. The effect of the cash relief program on the likelihood that the children in the household communicated with teachers in the last which is not significant in columns (4)-(6).

In Table 5, we examine the intensive margin of how the provision of cash transfer may have changed the medium of contact with the teacher. While there are no relationship with the cash transfer and other methods of contact with the teacher, we find that communication with teacher with telephone is positively correlated with the receipt of cash transfer in columns (7)-(9). Benefiting from the cash transfer program is associated with a 13.2 percentage point increase in the probability of contacting with their teacher by phone in column (9).

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17) Comparing columns (3) and (9), the β_1 is much smaller in column (3) than column (9), because the outcome variable of column (3) indicates whether the assistance has increased compared to last interview.

〈Table 4〉 Impact of cash transfer on education

	Engaged in any education activities in the last week			Communicated with teachers in the last week		
	(1)	(2)	(3)	(4)	(5)	(6)
idpoor · aftertrans	0.300***	0.352***	0.286	0.068	0.067	0.100
	(0.116)	(0.124)	(0.202)	(0.066)	(0.079)	(0.111)
idpoor	-0.305***	-0.370***	-0.268	-0.112*	-0.125	-0.113
	(0.111)	(0.120)	(0.213)	(0.063)	(0.0771)	(0.179)
socioeconomic status before COVID-19		0.0069			-0.016	
		(0.012)			(0.012)	
urban		-0.0631**			-0.00504	
		(0.031)			(0.031)	
zone (ref. Phnom Penh)						
Plain		0.009			-0.014	
		(0.071)			(0.086)	
Tonle Sap		-0.039			-0.010	
		(0.070)			(0.085)	
Costal		-0.057			-0.053	
		(0.078)			(0.091)	
Plateau/Mountai		-0.012			-0.107	
		(0.073)			(0.088)	
head information						
male		-0.044			-0.037	
		(0.058)			(0.073)	
age		-0.002			0.001	
		(0.001)			(0.001)	
married		-0.079			0.032	
		(0.060)			(0.075)	
head education level (ref. no educaion)						
primary		0.043			0.004	
		(0.043)			(0.042)	
lower secondary		0.048			0.006	
		(0.050)			(0.049)	
upper secondary		0.052			0.048	
		(0.057)			(0.059)	
some college and more		0.139*			0.241*	
		(0.084)			(0.131)	
Household Fixed Effects	No	No	Yes	No	No	Yes
Obs.	1,077	1,002	1,077	1,077	1,002	1,077
R-squared	0.117	0.139	0.493	0.055	0.071	0.449

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

〈Table 5〉 Impact of cash transfer on how to contact teacher

	SMS			Online applications			Telephone (audio)			Facebook		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
idpoor · aftertrans	0.027	0.024	-0.002	-0.035	-0.047	-0.077	0.083***	0.093***	0.132*	0.019	0.023	0.044
	(0.016)	(0.019)	(0.018)	(0.061)	(0.078)	(0.115)	(0.025)	(0.027)	(0.075)	(0.020)	(0.022)	(0.058)
idpoor	-0.032***	-0.029*	-0.011	0.019	0.055	0.123	-0.095***	-0.100***	-0.142	-0.023***	-0.021	0.025
	(0.009)	(0.016)	(0.073)	(0.059)	(0.076)	(0.117)	(0.015)	(0.025)	(0.087)	(0.008)	(0.014)	(0.071)
socioeconomic status before COVID-19		-0.005			0.008**			0.013**			-0.003	
		(0.006)			(0.004)			(0.006)			(0.004)	
urban		-0.010			0.013			-0.033*			-0.015	
		(0.013)			(0.015)			(0.019)			(0.011)	
zone (ref. Phnom Penh)												
Plain		0.024			0.036			-0.015			-0.092*	
		(0.025)			(0.032)			(0.042)			(0.048)	
Tonle Sap		0.009			0.019			0.004			-0.099**	
		(0.023)			(0.031)			(0.043)			(0.046)	
Costal		-0.006			0.025			-0.025			-0.085*	
		(0.024)			(0.033)			(0.043)			(0.048)	
Plateau/Mountain		-0.001			-0.006			-0.036			-0.118**	
		(0.024)			(0.030)			(0.041)			(0.047)	
head information												
male		0.016			0.024			-0.034			-0.007	
		(0.033)			(0.040)			(0.030)			(0.033)	
age		0.000			0.001**			-0.000			0.000	
		(0.001)			(0.001)			(0.001)			(0.001)	
married		-0.003			-0.002			0.034			-0.002	
		(0.040)			(0.049)			(0.033)			(0.037)	
head education level (ref. no educaion)												
primary		0.008			-0.012			-0.005			0.028**	
		(0.017)			(0.020)			(0.025)			(0.013)	
lower secondary		0.009			0.008			-0.016			0.018	
		(0.019)			(0.022)			(0.028)			(0.014)	
upper secondary		0.042			-0.021			-0.014			0.045	
		(0.032)			(0.024)			(0.033)			(0.028)	
some college and more		0.063			0.197**			0.127			0.104*	
		(0.072)			(0.085)			(0.085)			(0.060)	
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	1,071	997	1,071	1,071	997	1,071	1,071	997	1,071	1,071	997	1,071
R-squared	0.005	0.018	0.412	0.010	0.057	0.375	0.009	0.028	0.448	0.031	0.053	0.392

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

Under the dire condition of the COVID-19 pandemic, the way of being educated need more attention than before because poor population can be easily isolated under e-learning system (Karamba et al., 2021b). Our data shows that among the household that had children engaged in any type of education activities last week, the average percentage of households with children using mobile apps is only 24.4% percent for the IDPoor households, whereas it is 37.1 percent in the non-IDPoor households.

We examine whether the cash relief program changed the type of education experienced by the children in the household in Table 6. Specifically, we study four types of education: meeting with a teacher in person, using mobile learning apps, completing assignments provided by the teacher and watching educational TV programs. Columns (1)-(3) examine the outcome of face-to-face meeting with teacher and none of the main coefficients are statistically significant. Since Cambodians are highly dependent on public education,[18] it is likely that face-to-face session with teacher is more affected by the changes in the government education policy across rounds, such as school closure and reopening, than the cash transfer. Note that such variation is controlled for using the round fixed effects.

On the other hand, cash relief is positively associated with an increase in the education using mobile learning apps in columns (4)-(6). Column (6) indicates while the IDPoor households were on average less likely to use mobile learning apps, the cash transfer increases the likelihood that the children in the IDPoor households use mobile app for learning by 23.6 percentage points. This result is meaningful in that it is consistent with the purpose of the program to protect the vulnerable during the COVID-19 crisis. Also, this result implies that the government policies can contribute to narrowing the

18) According to Living Standard Measurement Study Plus 2019 survey, about 90.4% of children currently attending school are in public school.

〈Table 6〉 Impact of cash transfer on the type of education

	Met with teacher			Used mobile learning apps			Completed assignments provided by the teacher			Watched educational TV programs		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
idpoor · aftertrans	-0.068	-0.120	-0.195	0.264***	0.235***	0.261**	0.166***	0.185***	0.124	0.097	0.181**	0.212
	(0.0900)	(0.108)	(0.186)	(0.067)	(0.082)	(0.118)	(0.045)	(0.0480)	(0.110)	(0.0990)	(0.090)	(0.133)
idpoor	0.049	0.061	0.139	-0.340***	-0.237***	-0.241	-0.201***	-0.232***	-0.159	-0.100	-0.181**	-0.204
	(0.082)	(0.102)	(0.224)	(0.062)	(0.081)	(0.150)	(0.021)	(0.034)	(0.156)	(0.095)	(0.086)	(0.156)
socioeconomic status before COVID-19		-0.017			0.028**			-0.002			0.013	
		(0.011)			(0.011)			(0.012)			(0.009)	
urban		-0.022			-0.023			0.009			-0.076***	
		(0.033)			(0.034)			(0.033)			(0.024)	
zone (ref. Phnom Penh)												
Plain		0.171***			-0.112			0.109*			-0.052	
		(0.053)			(0.083)			(0.062)			(0.057)	
Tonle Sap		0.155***			-0.170**			0.117*			-0.019	
		(0.053)			(0.084)			(0.064)			(0.056)	
Costal		0.172***			-0.107			0.089			0.011	
		(0.060)			(0.093)			(0.071)			(0.065)	
Plateau/Mountain		0.201***			-0.157*			0.110*			-0.004	
		(0.058)			(0.087)			(0.067)			(0.058)	
head information												
male		-0.068			0.032			-0.042			-0.054	
		(0.050)			(0.078)			(0.064)			(0.064)	
age		-0.001			0.002			-0.001			0.001	
		(0.001)			(0.001)			(0.001)			(0.001)	
married		0.058			-0.092			-0.025			-0.008	
		(0.059)			(0.086)			(0.070)			(0.064)	
head education level (ref. no educaion)												
primary		0.003			0.051			0.029			0.038	
		(0.046)			(0.046)			(0.043)			(0.037)	
lower secondary		-0.024			0.149***			0.057			0.082*	
		(0.050)			(0.057)			(0.048)			(0.046)	
upper secondary		-0.010			0.077			0.012			0.037	
		(0.055)			(0.068)			(0.057)			(0.051)	
some college and more		0.033			0.440***			0.152			0.097	
		(0.173)			(0.068)			(0.124)			(0.091)	
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	1,077	1,002	1,077	1,077	1,002	1,077	1,077	1,002	1,077	1,077	1,002	1,077
R-squared	0.295	0.297	0.561	0.072	0.115	0.570	0.029	0.036	0.407	0.095	0.107	0.581

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

educational gap and reduce learning loss during the school closures induced by the pandemic.

We also find suggestive evidence that the cash relief to IDPoor households increases engagement in types of education that could substitute in-school education. The probability of completing assignments provide by the teacher increases by 18.5 percentage points in column (8) with household controls, while the coefficient estimate with household fixed effects are similar in magnitude but insignificant. Furthermore, households also display increases in watching educational TV programs with the cash receipt, although the estimates are often insignificant.

Ⅴ. Conclusion

Using the cash relief program targeted to the poor households identified by holding an IDPoor card, we estimate the relationship between receiving cash transfers on schooling behavior of the poor households in Cambodia. We find that the cash transfer program is positively associated with the likelihood that the children in the poor household engage in education activities in the previous week. In particular, while there is an absence of an changes in the likelihood of in-person meeting with teachers, engaging in alternative methods of education shows positive relationship with the cash transfer program. Specifically, we find poor households to be more likely to engage in learning using mobile apps, watching educational TV programs and completing assignments at home provided by the teacher. In addition, while the extensive margin of having communicated with teachers in the last week does not change, communication with teacher over the phone also increases with cash receipt.

Our findings provide suggestive evidence that targeted cash reliefs may reduce the degree of education inequality in poor countries, by increasing poor household's access or utilization of alternative methods of education, particularly through increased usage of devices for remote learning. Since as most poor households in developing countries are credit or resource constrained during major crisis, timely provision of cash relief seems to give parents room to provide some resources to children under school interruptions. At times of prolonged pandemic, such as the one induced by Covid-19, out study highlights that securing sufficient funds for timely provision of cash relief would be important for governments of developing countries, who have tight budget for social safety net even during the normal times.

The limitation of our current analysis is that the questions on education opportunities were asked at the household level, and not at the individual level. Therefore, it is not possible to study the heterogeneity of the impact of the cash transfer across children's characteristics, such as age and gender. Such differential impact may be an important dimension to consider for the efficacy of the cash relief policy. We leave this for future work.

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〈Table A1〉 Summary Statistics (Full Sample)

	Obs	Mean	Std. Dev.	Min	Max
Assistance and Socioeconomic statuss					
holds IDPoor Card (Equity Card)	2,435	0.198	0.399	0	1
self-assessed socioeconomic status before COVID-19	2,292	4.663	1.209	1	9
increase in assistance since last round	2,435	0.042	0.2	0	1
responses to shocks: relied on savings	1,086	0.152	0.359	0	1
responses to shocks: received assistance from government	1,083	0.118	0.323	0	1
Household head information					
male	2,435	0.815	0.388	0	1
age	2,435	49.099	13.608	20	90
married	2,435	0.829	0.376	0	1
Household head education level					
no education	2419	0.162	0.368	0	1
primary	2419	0.49	0.5	0	1
lower secondary	2419	0.22	0.414	0	1
upper secondary	2419	0.104	0.305	0	1
some college and more	2419	0.024	0.154	0	1
Zone					
Phnom Penh	2435	0.076	0.264	0	1
Plain	2435	0.284	0.451	0	1
Tonle Sap	2435	0.323	0.468	0	1
Coastal	2435	0.102	0.303	0	1
Plateau/Mountain	2435	0.215	0.411	0	1

〈Table A2〉 First stage (full sample with weight)

	Increase in assistance since last round			Responses to shocks: Relied on savings			Responses to shocks: Received assistance from government		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
idpoor · aftertrans	0.190***	0.196***	0.260***	0.108*	0.126**	0.138**	0.805***	0.860***	0.904***
	(0.023)	(0.024)	(0.071)	(0.059)	(0.056)	(0.062)	(0.080)	(0.085)	(0.238)
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	2,288	2,156	2,288	968	852	968	965	849	965
R-squared	0.152	0.156	0.371	0.073	0.089	0.742	0.725	0.751	0.910

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

〈Table A3〉 Impact of cash transfer on education (with weight)

	Engaged in any education activities in the last week			Communicated with teachers in the last week		
	(1)	(2)	(3)	(4)	(5)	(6)
idpoor · aftertrans	0.195	0.197	0.082	0.072	0.088	0.110
	(0.122)	(0.133)	(0.214)	(0.068)	(0.077)	(0.111)
Household Fixed Effects	No	No	Yes	No	No	Yes
Obs.	1,077	1,002	1,077	1,077	1,002	1,077
R-squared	0.123	0.146	0.482	0.059	0.076	0.443

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

〈Table A4〉 Impact of cash transfer on how to contact teacher (with weight)

	SMS			Online applications			Telephone (audio)			Facebook		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
idpoor · aftertrans	0.038*	0.043**	0.005	-0.024	-0.027	-0.050	0.082***	0.088***	0.130	0.018	0.030	0.027
	(0.021)	(0.021)	(0.025)	(0.056)	(0.070)	(0.096)	(0.027)	(0.032)	(0.083)	(0.022)	(0.024)	(0.044)
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	1,071	997	1,071	1,071	997	1,071	1,071	997	1,071	1,071	997	1,071
R-squared	0.003	0.019	0.340	0.014	0.041	0.368	0.008	0.022	0.456	0.032	0.050	0.423

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

〈Table A5〉 Impact of cash transfer on the type of education (with weight)

	Met with teacher			Used mobile learning apps			Completed assignments provided by the teacher			Watched educational TV programs		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
idpoor · aftertrans	-0.167	-0.250*	-0.286	0.257***	0.243***	0.269*	0.128***	0.130***	0.030	0.122	0.171	0.151
	(0.120)	(0.137)	(0.223)	(0.067)	(0.076)	(0.150)	(0.047)	(0.047)	(0.079)	(0.117)	(0.126)	(0.151)
Household Fixed Effects	No	No	Yes	No	No	Yes	No	No	Yes	No	No	Yes
Obs.	1,077	1,002	1,077	1,077	1,002	1,077	1,077	1,002	1,077	1,077	1,002	1,077
R-squared	0.277	0.285	0.536	0.062	0.104	0.559	0.035	0.048	0.408	0.103	0.107	0.547

Note: Round fixed effects are included in all estimations. Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

코로나 19 기간 동안 현금 이전 정책이 빈곤 가구 아동들의 학습 격차에 미치는 영향: 캄보디아를 중심으로

박 민 경* · 손 혜 림**

논문초록

본 논문은 COVID-19 발생 이후 실시한 빈곤 가구에 대한 현금 이전 정책이 해당 가구 아동의 학습 활동 참여에 미치는 영향에 대해 캄보디아의 사례를 이용하여 살펴보았다. 캄보디아 정부는 2006년 빈곤 완화 정책의 목표 집단을 더 잘 정의하기 위해 IDPoor 프로그램을 도입 하였는데, COVID-19 팬데믹 이후, 캄보디아 정부는 주로 IDPoor 가구를 대상으로 현금 이전 정책을 실시하였다. 본 연구에서는 High Frequency Phone Survey를 분석하여 현금 이전 정책이 팬데믹 기간 동안 빈곤이 아동의 교육 기회에 미치는 부정적인 영향을 완화한다는 것을 확인하였다. 현금 이전을 받는 것은 빈곤 가구의 아동들이 교육 활동, 특히 모바일 앱을 이용한 활동에 더 많이 참여하는 것과 긍정적인 관계가 있으며, 전화를 통해 교사와 연락할 가능성과도 긍정적인 관계가 있는 것으로 나타났다.

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