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Effects of Public Transfers on The Financial Security of Rural Households: Evidence from Thailand

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ABSTRACT

Public transfers mitigate vulnerability and enable households to adapt to unforeseen shocks. The COVID-19 pandemic has revealed the inadequacy of the existing social safety nets for Thai rural households. This study evaluates the influence of public transfers in enhancing financial security strategies for poverty reduction. We applied two-stage least squares regressions to estimate poverty dynamics using Thailand Vietnam Socio-Economic Panel (TVSEP) from 2007 to 2022 in rural households in Thailand. This method was used to assess the effect of public transfers on building financial security by accumulating assets and diversifying income sources. The findings demonstrated that public transfers enhanced households' livelihoods by offering immediate financial liquidity through the accumulation of savings. Public transfers safeguarded the preservation of land ownership, which served as a crucial asset for agricultural output. Nevertheless, the provision of public transfers hindered rural households from expanding their income sources through formal and self-employment because they were increasingly dependent on permanent public cash transfers. The study recommends public transfers as an indirect intervention for short-term relief. However, the government needs to exercise caution in preventing a budget burden as rural households may assume public transfers to be their main source of permanent income.

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INTRODUCTION

Public transfer is a crucial policy intervention for poverty reduction, especially for households with limited access to formal employment. Studies have demonstrated that public transfers have a significant impact on poor households by improving nutrition (Aguero et al., 2006; Hidrobo et al., 2018; Miller et al., 2011), increasing higher educational attainment (Behrman et al., 2011; Evans et al., 2023), and improving quality of life, especially in developing countries (Daidone et al., 2019; Granlund and Hochfeld, 2020b). Nevertheless, concerns have been raised about the sustainability of such interventions to permanently alleviate households from poverty (De Groot et al., 2015; Neves et al., 2020). Hence, public transfer should not act merely as a short-term remedy for the poor. The distribution of public transfers should aim to modify household behaviors to engage in productive activities or mitigate income loss resulting from external shocks.

Thailand has achieved a significant reduction in poverty rate over the past 20 years, with the proportion of the population living below the poverty line decreasing from 25% to 6.32% in 2021 (NESDC, 2022). Economic uncertainty due to adverse shocks such as the COVID-19 pandemic has caused huge changes in the poverty rate. The aftermath of the pandemic indicates that a large part of the population, especially those in rural areas, is highly vulnerable to shocks. The Thai government has implemented economic relief packages because of the disruption of economic activities. For instance, public expenditure of 1.9 trillion Thai Baht was authorized for stimulus packages and social protection (Budget Bureau, 2022). The schemes were in addition to the annual fiscal cash transfers that were provided to various targeted groups prior to the pandemic. However, public transfers were distributed annually without evaluating their effectiveness in creating financial security for households, especially for rural households that rely agricultural sectors for their livelihood.

This study examines the impact of public transfers on rural household coping strategies for financial security. It aims to assess the impact of public transfer on the livelihood security index and the income diversification of rural households in the northeastern region of Thailand. The rest of the paper is organized as follows. Section 2 reviews the theories related to the permanent income hypothesis, the concept of the livelihood framework, and the financial security and social protection programs implemented by the Thai government to reduce poverty. Section 3 presents the method and data to assess the impact of public transfers on building coping strategies for financial security. Section 4 describes the empirical data and results of the estimations. The final section discusses and concludes with policy implications for effective public transfers for sustainable economic outcomes.

REVIEW OF LITERTURE

This section reviews the theoretical model of consumption smoothing, the livelihood framework, financial security, and social protection programs implemented by the Thai government.

Theoretical Approach: Permanent Income Hypothesis

Similar to most developing countries, Thai agricultural households, especially those in rural areas, must cope with financial insecurity due to uncertain production yields caused by risks such as natural disasters and extreme weather. However, according to Milton Friedman's theory of the permanent income hypothesis, it is possible to smooth consumption between good and bad years by providing unconditional cash transfers to ease liquidity constraints (Friedman, 1957).

Consider the following household utility function:

$$U = E\left[\sum_{j=0}^{\infty}\left(\frac{1}{1+\delta}\right)^{j} U\left(C_{it+j}\right)\right] \tag{1}$$

where U(˚) is the concave utility function, which is assumed to be additively separable with identical sub-utility functions for each period. C_{it+j} is the consumption of household i in period $t+j$, and δ is the discount rate.

Assets evolve in response to the interest rate and the proportion of income that is consumed or saved.

$$A_{it+j} = \left(1 + r_{t+j}\right)\left(A_{it} + Y_{it} - C_{it}\right) \tag{2}$$

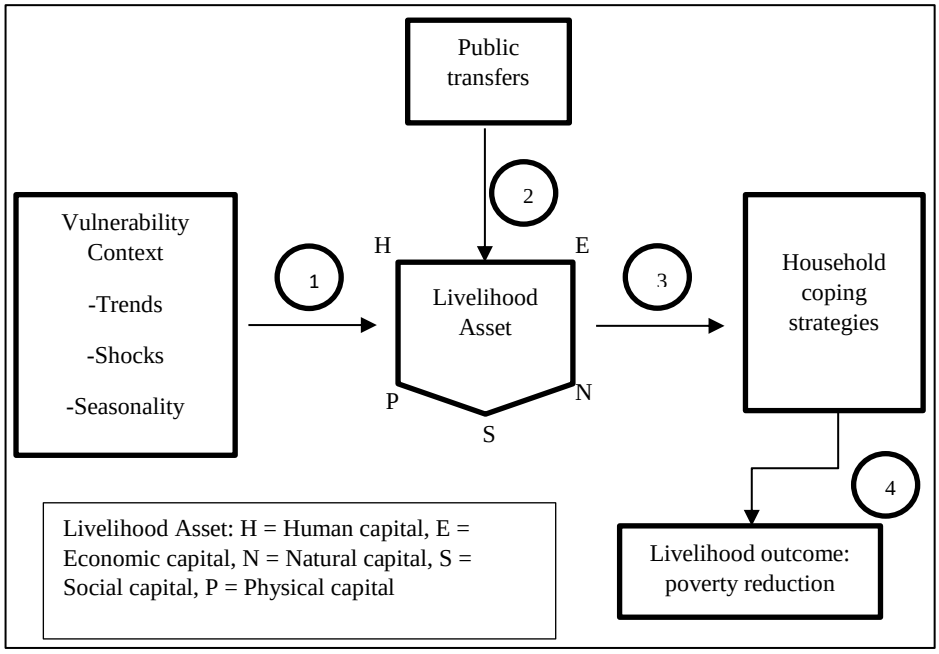
Given the intertemporal budget constraint, we can solve for the consumption function by assuming that the utility function is quadratic as follows:

$$C_t = \left(\frac{r}{1+r}\right)\left[A_t + E\sum_{j=0}^{\infty}\frac{1}{1+r_{t+j}}Y_{t+j}\right] \tag{3}$$

The above equation indicates that the standard version of the permanent income hypothesis is the annuity value of current assets plus the present value of the expected stream of future income. The theory is the primary framework for determining consumption and saving decisions by households.

Livelihood Framework

The livelihood framework provides a holistic concept in achieving financial security by determining households' suitable coping strategies when facing vulnerability and endowment. Investigating the interaction of these aspects is essential in understanding the impact of public transfers on the financial security of rural households. Livelihood security is used internationally to analyze situations and assess the impact of policy interventions targeted at vulnerable groups. Livelihood security was first presented in the work of the UK Department of International Development (DFID) (Slater et al., 2009). DFID defined livelihood security as the capabilities, assets, and activities required for living. A household's livelihood is secured when it can cope with and recover from stress and shock and maintain or enhance its capabilities and assets currently and in the future, while not undermining its natural resource base (Chaigneau et al., 2022). Originally, the sustainable livelihood approach was mainly used in exploring the rural poor's strategies in the agricultural sector or natural resource management (Singh and Nayak, 2020). However, the framework is applicable in conceptualizing financial security after experiencing adverse outcomes and receiving financial aid from public institutions. The livelihood security framework is illustrated in Figure 1.



Source: DFID Sustainable Livelihoods Guidance Sheets

Figure 1 Livelihood Security Framework

The framework provides a holistic view of the research conceptualization. The descriptions of each component are explained in the following sections.

Vulnerability

Identifying vulnerability and understanding its causes and impacts are essential tasks for social policy to ensure livelihood security. Vulnerability is the outcome of complex interactions of risk and lack of resources to deal with the threat. Vulnerabilities are external pressures that are key factors in many hardships faced by the poor, which are largely beyond their control. Categories of vulnerability are trends, shocks, and seasonality. Trends are observed in population, resource acquisitions, governance, and the environment. Shocks can be caused by diseases, natural disasters, economic crises, and conflicts. Seasonality can be seen in price production, food availability, employment opportunities, and health (Rahman and Hickey, 2020).

Livelihood Assets

Accessing the asset status of the poor is fundamental to understanding the strategies they adopt to attain financial security. The livelihood security approach distinguishes assets into five categories—natural, human, social, physical, and economic capital. Natural capital is the natural resources from which resources and services useful for livelihood are derived. It can be either tangible (e.g., land) or intangible (e.g., air quality). Natural assets are important for those whose livelihoods depend on natural-based activities such as forestry and fishery (Hunter et al., 2014). Human capital is the labor ability of the poor, which depends on their skills, knowledge, and health. Human assets have intrinsic values that help enhance the other four types of livelihood assets. The knowledge and endowed skills must be relevant to existing and potential future livelihood strategies (Karami Dehkordi et al., 2023). Social capital can be derived from three main channels. The first is network and connectedness, which can be both vertical and horizontal. The second is membership of both formal and informal groups with mutually accepted common norms and rules. The last channel for social assets is building relationships of trust, reciprocity, and exchange with others (Endris et al., 2017). Physical capital includes basic infrastructure and producer goods needed to support livelihoods. Infrastructure essential for sustainable livelihoods includes affordable transport, secure shelters and buildings, adequate water and sanitation, clean and affordable energy, and access to information. Physical assets also include producer goods, such as tools and equipment, that people use to function more productively (Bhandari, 2013). Economic capital relates to the savings and liquidity of financial flows. Economic assets denote the financial resources that households use to achieve their livelihood objectives. The asset includes flows and stocks of finance that can contribute to consumption and production. The sources of financial assets are savings (e.g., cash, bank deposits, and liquidity assets), credits, earned income, pensions, transfers from the state, and remittances (He and Ahmed, 2022).

Coping Strategies for Financial Securities

Coping strategies refer to the set of assets and relationships that allow people to protect themselves from hazards or recover from a crisis (Gatto and Islam, 2021). These assets are consistent with the livelihood assets mentioned in the livelihood security framework. These stocks of assets contribute to coping strategies. The ability to avoid and reduce vulnerability and create financial security depends not only on the assets but also on the capacity to manage them. The concept of coping strategies emphasizes the capacities of individuals to mobilize resources and utilize them to obtain financial security during crises.

Coping strategies fall into three broad categories—individual capacities, social networks, and formal social protection. Individual capacities include personal income and human capital, such as education, skills, and health. They also include personal adaptation to reduce vulnerability, such as the ability to live independently or plan financially for emergencies (Chaigneau et al., 2022). Formal social protection is necessary when there are limitations on individual resources and informal networks. Formal welfare provisions, such as pension, health, and social services, serve as a last resort and have the advantage of risk sharing across a large number of recipients. Research has demonstrated the positive outcome of formal welfare arrangements in ensuring financial security (Banerjee et al., 2015; Fisher et al., 2017; Granlund and Hochfeld, 2020a; Tirivayi et al., 2016).

Financial security fluctuates with households' vulnerability. It is formed by identifying restrictions or constraints that affect consumption and savings, and it includes action-related coping strategies for income diversification. Income diversification is determined by physical assets and capacity use. Although financial security provides predictability for unforeseen adverse shocks, it goes beyond an emergency fund for crises. It includes financial, health, social, and personal resources that enable sustainable well-being. Thus, financial security is the ability to adjust plans and arrangements in reaction to personal and economic changes beyond your control, such as economic shocks or health crises.

Thai Public Transfer Programs

There is generally a high correlation between being negatively impacted by external shocks and poverty. Many studies have demonstrated that reducing poverty can be achieved by mitigating the vulnerability of being exposed to disasters (Dotter and Klasen, 2017). Thus, development work and social assistance should aim to reinforce livelihoods that enable people to become more resilient to hazards. Such programs should endorse baseline conditions for livelihoods and access to proper support so that households can protect themselves and others from hazards.

Social protection programs can be classified into conditional and nonconditional assistance (Das et al., 2005). Nonconditional assistance, such as cash transfers, is the most effective way to support the purchasing power of vulnerable populations. Conditional cash transfer is social assistance through which a regular amount of money is given directly to targeted groups in exchange for compliance with a set of requirements. Both methods are recognized as an effective immediate way to improve household conditions and break away from the vicious cycle of poverty. However, the overall effectiveness of these schemes depends largely on access to the programs, the cost of administration, and the context in which they are being introduced or implemented (Arvin and Barillas, 2002).

For Thailand, policies and programs that aim to protect the rights of Thai citizens through social services or social assistance programs are considered social protection (NESDC, 2022). Noncontributory programs that provide benefits with the requirement of active contribution for targeted groups have been flourishing as populism propaganda throughout the government agendas for the past decades. Some of the core social protection programs in the form of unconditional transfers include the state welfare card, old age allowance, disability grant, universal health care scheme, and education financial aid (Cook and Pincus, 2014). These noncontributory schemes enhance livelihood security by providing social safety nets for the human, economic, and physical assets of rural households. For example, universal health care has provided Thai citizens with access to free healthcare, thereby reducing the burden of health expenditure and helping households save more for other productive expenditures such as education. Moreover, access to free health care allows rural households to improve their health and continue to work to increase their income. Health care also relieves households of shocks from the illness of family members. Hence, in adapting coping strategies for financial security, the essential assets for resilience for rural households are related to human, economic, and physical outcomes.

RESEARCH METHODOLOGY

This study examines how public transfers affect rural households' coping strategies through income diversification and productive asset accumulation. The research hypotheses are as follows:

Null Hypothesis (H_0):	*Receiving public transfers does not significantly increase the productive assets or income diversification of self-employment and off-farm employment among rural households.*
Alternative Hypothesis (H_1):	*Receiving public transfers significantly increases productive assets or income diversification, thereby enhancing financial security.*

The study utilized panel data and applied longitudinal analysis by estimating the following model using the differences-in-difference estimator:

$$\Delta id_t = \beta_0 + \beta_1 \Delta pt_t + \beta_2 LI_{t-1} + \beta_3 X_{t-1} + \varepsilon_t \quad (4)$$

The key parameter in this model is the coefficient of public transfer on the dependent variables. The two-stage least squares method was used to estimate Equation 1 as a panel regression and obtain unbiased estimates of the parameter. Further, logit regression was utilized to predict households' financial security decisions, including the probability of falling back into poverty and borrowing and saving. The variable definitions and measurements are described in Table 1.

Table 1 Definitions of dependent and independent variables

Variables	Definitions
Δid_t Income diversification	Sources of income in household *i* from off-farm employment and self-employment
Δp_t Public transfer	Value of public transfers received by households during the reference period
LI_{t-1} Livelihood asset index	Indices of livelihood security assets comprising indicators for human, social, economic, physical, and natural assets
X_{t-1} Household characteristics	Number of household members, head of household age, head of household gender, education, marital status, living arrangement, employment status, and availability of family labor

The study utilized data from a long-term panel project in Thailand and Vietnam (TVSEP) funded by the German Research Foundation. The project has established a database to examine poverty dynamics, economic transition, and rural–urban migration since 2007 in the northeastern region of Thailand and the central region of Vietnam. The data were collected in three Thai provinces—Buriram, Nakhon Panom, and Ubon Ratchathani—because of their high representative of the rural population. The sampling procedure included three stages, following the guidelines of the United Nations Department of Economic and Social Affairs (Hardeweg et al., 2013). Assuming a homogenous population, two villages in the subdistrict were chosen based on the size of the population. In each village, 10 households were systematically randomized and selected according to the size of the household. The total number of sampled households for repeated data collection is 2,200 in 220 villages in Thailand.

Enumerators were carefully selected and trained to interview selected households. The average duration per survey was 2.5 hours. Since 2013, the data have been collected using a computer-assisted personal interview technique with tablets to validate the data in real-time for inconsistent and implausible content. The household questionnaire contains sections asking about various aspects of a household, including member demographic profiles, household dynamics, income-generating activities, expenditure, agriculture (land, crops, livestock, fishing), nonagricultural activities, shocks, investment, savings, debt, assets, and housing conditions (www.tvsep.de). The surveys conducted in 2007, 2017, 2019, and 2022 were chosen for empirical analysis to examine the long-term effects of transfers on the coping strategies of rural households. The selected years facilitate a comparison between the period preceding the initiation of the public transfers program for poverty alleviation in 2017 and the intervals before and after the implementation of stimulus packages during the COVID-19 crisis in 2019 and 2022.

The dependent variables are related to households' coping strategies for financial security. Income diversification, that is, income from different formal and nonformal employment sources, was selected as a binary variable to determine household decision-making in diversifying their well-being. In addition, the poverty level for each household was calculated to determine whether households are vulnerable to financial insecurity in the event of adverse shocks. The poverty status was calculated by aggregating the necessary expenditures of each household from consuming durable and nondurable goods in a year and comparing it to the poverty line provided by the NESDC.

The independent variables are related to household characteristics, their livelihood assets, and whether households were exposed to economic vulnerabilities. Table 2 presents the measurement of the covariate variables of the five assets—human, physical, economic, social, and natural assets—and household characteristics that need to be controlled to understand households' strategies for financial security.

Table 2 Descriptive statistics of the relevant variables

Type of Variables	Measurement	2007 Mean (SD)	2017 Mean (SD)	2019 Mean (SD)	2022 Mean (SD)
Human capital	Educational expenditure (% of total expenditure)	0.680 (0.110)	0.127 (0.175)	0.058 (0.095)	0.070 (0.127)
	Food expenditure (% of total expenditure)	0.410 (0.182)	0.537 (0.206)	0.376 (0.177)	0.576 (0.215)
Social capital	Social expenditure (% of total expenditure)	0.124 (0.124)	0.074 (0.096)	0.081 (0.132)	0.056 (0.124)
Natural capital	Land area (rai)	9.310 (12.129)	16.828 (8.997)	15.322 (16.210)	12.924 (14.301)
Physical capital	Nonfood expenditure (% of total expenditure)	0.186 (0.100)	0.291 (0.164)	0.183 (0.103)	0.032 (0.023)
	Transportation and communication expenditure (% of total expenditure)	0.183 (0.145)	0.240 (0.161)	0.288 (0.193)	0.265 (0.188)
Economic capital	Total savings (THB/year)	8,051.103 (50,305.22)	22,375.33 (94,277.62)	19,567.35 (142,239.3)	29,552.26 (141,361.9)
Public Transfers	Total public transfers (THB/year)	708.343 (1,487.585)	19,651.4 (26,134.44)	20,775.72 (24,812.38)	19,200.71 (28,924.07)
Household Characteristics	Male as head of household	0.735 (0.441)	0.653 (0.047)	0.626 (0.483)	0.607 (0.488)
	Household size	3.971 (1.734)	4.604 (1.905)	4.850 (2.009)	4.850 (2.034)
	Age	54.59 (13.32)	67.79 (11.83)	62.48 (11.86)	64.258 (11.558)
	Education (primary level)	0.833 (0.712)	0.856 (0.350)	0.831 (0.374)	0.806 (0.394)
Outcome variables	Ratio of off-farm employment to household size	0.408 (0.337)	0.282 (0.250)	0.197 (0.398)	0.136 (0.343)
	Ratio of self-employment to household size	0.105 (0.190)	0.078 (0.163)	0.098 (0.297)	0.045 (0.208)
	Poverty (expenditure below poverty line)	0.887 (0.315)	0.591 (0.491)	0.555 (0.010)	0.879 (0.007)
	Observations	2,159	1,893	2,199	2,101

In this study, livelihood capital is measured as expenditures incurred to acquire essential assets to improve one's well-being. Human capital is measured as expenditures incurred on education and nutrition. Expenditures allocated to maintaining social networks within the rural community, including attending neighbors' funerals, weddings, and religious activities, serve as a measure of social capital. Natural capital denotes the size of land possessed by households for residential and agricultural purposes. Physical capital refers to the investment made in nonfood products that are essential for maintaining a certain level of life, such as durable goods and utilities used in houses. Furthermore, physical capital includes expenses allocated to transportation and communication equipment, such as automobiles, maintenance costs, and mobile communication devices. Lastly, economic capital refers to the total annual savings per household.

RESULTS AND DISCUSSION

The livelihood security variable was normalized between 0 and 1 as an aggregate indicator to compare the level of assets of the households. Min–max normalization was employed to normalize the raw data for each index. The lower value of the index indicates a lack of necessary capital to enhance the well-being of households. Assuming all assets contribute equally to the livelihood outcome of rural households, Table 3 compares the livelihood security index of the households in 2007 and 2022. In addition, a t-test (using unequal variances) was conducted to determine the differences in values of the livelihood security index and their capital assets accumulation between the years before (2007 and 2017) and after the COVID-19 pandemic (2019 and 2022).

Table 3 Comparison of means between livelihood capitals in 2007 and 2022

Livelihood Security Index	2007 Mean (SD)	2017 Mean (SD)	2019 Mean (SD)	2022 Mean (SD)
Human capital	0.5823***	0.5666	0.5699***	0.5520
	0.0041	0.0036	0.1937	0.1818
Social capital	0.5998	0.5997	0.5998***	0.5402
	0.0060	0.0065	0.2828	0.3291
Physical capital	0.5998	0.5997	0.5998	0.5998
	0.0041	0.0047	0.1685	0.1904
Economic capital	0.4408	0.5725***	0.5198	0.5245
	0.0074	0.0068	0.3332	0.3280
Natural capital	0.5993***	0.4567	0.5982	0.5978
	0.0060	0.0078	0.2821	0.2829
Overall livelihood security index	0.5673	0.5591	0.5775***	0.5628
	0.0024	0.0027	0.1111	0.1218

Note: *** p value < 0.01.

Overall, the average livelihood security index from 2007 to 2022 has a mean of 0.561 and a livelihood assets range of 0.502–0.599. Among the five capitals of livelihood security, economic capital has the lowest value in the index, while social capital has the highest value.

There were no significant differences between the overall assessment of the livelihood security index in 2007 and 2017. However, individually, there were significant differences in human, natural, and economic assets. In 2007, rural households gained higher human and natural capital than in the later years. On the other hand, households gained significantly higher economic capital in 2017. This result implies that in 2007, households maintained more land assets and accumulated higher human assets, which is indicated by the higher expenditure on education. However, in 2017, households were able to maintain higher financial security through a significant increase in savings, which is indicated by the higher economic capital. As the overall livelihood security index did not have significant differences in values between the two years, the result implies that higher savings offset the lesser spending in education and income from the liquidation of assets, such as land ownership, in 2007.

To evaluate the influence of the COVID-19 pandemic on the financial security of rural households, the livelihood index of 2019 and 2022 were compared. The livelihood security index indicated a substantially higher index in the year preceding the COVID-19 pandemic. Social and human capitals were significantly different. The decrease in the values of those capitals in 2022 is primarily attributable to the need for households to eliminate leisure expenditures due to the social distancing regulation and the decrease in food expenditure because of restricted access to outdoor consumption.

Two-stage least squares regression was conducted using the panel data for 2007 and 2019 as the lagged timeline for predicting the well-being outcome in 2017 and 2022 to determine the impact of public transfers on making diversified income sources decisions. Table 4 illustrates the impact of public transfers on the outcome variables related to whether households have more than one source of income from off-farm employment and self-employment. Logit regression was applied due to the binary nature of the outcome variable.

The second and third columns of each year present the result of the logit regression of having more than one source of income from self-employment and off-farm employment in 2017 and 2022. The deterministic variables were household characteristics and livelihood capital given in 2007 and 2019. The results revealed that household size and physical capital had a significant positive impact on the decision to earn income from self-employment in 2017. However, more assets from human capital resulted in a lower likelihood of earning income from a business establishment. Regarding income diversification from off-farm employment, the age and education of household heads had a significant negative impact on the composition of off-farm employment among households. Similar to the outcome of owning businesses, household size also had a statistically significant impact on the off-farm employment outcome. Financial and natural capitals had significant negative outcomes on the composition of off-farm employment. Similarly, the increase in the amount of public transfers lessened the likelihood of gaining income from off-farm employment.

Table 4 Regression results of household characteristics on income diversification and poverty

	2017			2022		
Variables	Self-employment	Off-farm employment	Poverty	Self-employment	Off-farm employment	Poverty
Age	−0.0114**	−0.0196***	0.00582	−0.0183***	−0.0618***	−0.00533*
	(0.0051)	(0.0052)	(0.0066)	(0.0054)	(0.00443)	(0.00310)
Gender	0.144	0.0381	0.00248	−0.0251	0.279***	0.0125
	(0.116)	(0.119)	(0.114)	(0.123)	(0.0938)	(0.0709)
Primary education	−0.134	−0.602***	−0.0264	−0.0794	−0.634***	−0.0984
	(0.153)	(0.184)	(0.177)	(0.149)	(0.104)	(0.0922)
Household size	0.177***	0.485***	0.195**	0.0996***	−0.0169	−0.0120
	(0.0287)	(0.0367)	(0.0919)	(0.0302)	(0.0243)	(0.0178)
Human capital			1.494***			−1.346***
			(0.390)			(0.212)
Social capital			−0.251			−0.719***
			(0.188)			(0.118)
Financial capital			−0.715***			−0.0774
			(0.174)			(0.105)
Physical capital			−0.207			0.0577
			(0.271)			(0.212)
Natural capital			−1.959***			0.280**
			(0.173)			(0.129)
Off-farm employment			−0.934			−0.0712
			(0.768)			(0.0999)
Self-employment			−1.424			−0.0098
			(1.165)			(0.1364)
Public transfers	−0.270	−0.659***	−0.230	−0.0440	−0.0226	0.0129
	(0.213)	(0.223)	(0.241)	(0.0452)	(0.0344)	(0.0263)
Human capital$_{(t-1)}$	−0.870***	0.509		−0.0635	−0.101	
	(0.337)	(0.344)		(0.364)	(0.276)	
Social capital$_{(t-1)}$	−0.109	−0.379*		0.434**	0.354**	
	(0.206)	(0.215)		(0.206)	(0.155)	
Financial capital$_{(t-1)}$	0.113	−0.345**		0.510***	0.480***	
	(0.154)	(0.161)		(0.181)	(0.138)	
Physical capital$_{(t-1)}$	0.731**	−0.215		1.014***	0.867***	
	(0.312)	(0.319)		(0.371)	(0.277)	
Natural capital$_{(t-1)}$	0.0729	−0.865***		−0.415*	−2.893***	
	(0.204)	(0.214)		(0.224)	(0.188)	
Constant	−0.951*	1.661***	1.081	−2.576***	3.232***	2.371***
	(0.537)	(0.567)	(0.916)	(0.549)	(0.421)	(0.321)
Observations	1,870	1,870	1,870	2,101	2,101	2,101

After the COVID-19 pandemic, financial security achieved through income diversification was significantly impacted by livelihood capital and household demographic composition. All livelihood capitals, except for natural and human indices, had a significant and positive impact on financial security through self-employment, that is, the establishment of businesses by household members. Similar livelihood indices significantly and positively influenced income diversification from off-farm employment. However, natural capital and education had significant negative impacts on employment outside the agricultural sector. The result is valid because households with larger land areas are more likely to engage in agricultural activities. Finally, age and primary level of education significantly impacted the increase in poverty. However, no livelihood assets demonstrated a significant impact on poverty after the COVID-19 pandemic, except for social capital. Households with lower social capital are more likely to experience poverty compared with those with greater social capital, such as community connections and social trusts that facilitate access to assistance and resources.

Although off-farm employment and self-employment had no significant impact on the poverty rate, the negative relationships of the coefficients imply that income diversification lessened the probability of falling back into poverty. The explicit impacts of human and economic capitals significantly alleviated poverty. The negative coefficient of human capital implies that higher spending on education by households makes them unlikely to fall back into poverty. On the other hand, the positive impact of economic capital implies that higher savings lower the probability of falling back into poverty. In addition, natural asset accumulation or owning more land allows rural households to likely escape poverty.

As various livelihood assets are significant determinants of poverty status, Table 5 presents the impact of public transfers on the changes in livelihood asset accumulation for financial security. According to the results, public transfers had a significant positive impact on the increase in economic, social, and natural capitals. Therefore, public transfers can indirectly reduce poverty through an increase in savings and the size of land owned. On the other hand, public transfers did not have a significant impact on human and physical

capital. The result implies that the unconditional cash transfer was likely spent on assets for financial security or reduced the likelihood of liquidating land for emergency relief during adverse shocks.

Table 5 Regression results of public transfers on livelihood capital for financial security

Variables	Human capital	Natural capital	Physical capital	Social capital	Economic capital
Age	−0.0106***	−0.0342***	0.00193	0.000311	−0.0171***
	(0.00387)	(0.00465)	(0.00382)	(0.00392)	(0.00396)
Gender	−0.273***	0.350***	0.113	0.0592	0.170*
	(0.0890)	(0.104)	(0.0866)	(0.0884)	(0.0887)
Primary education	0.318**	0.170	−0.124	−0.188	−0.444***
	(0.125)	(0.144)	(0.123)	(0.122)	(0.125)
Household size	0.293***	0.107***	−0.0255	−0.0440**	0.0189
	(0.0231)	(0.0258)	(0.0218)	(0.0223)	(0.0223)
Human capital$_{(t-1)}$	0.358	−0.0546	−0.316	−0.645**	0.275
	(0.261)	(0.296)	(0.252)	(0.258)	(0.261)
Social capital$_{(t-1)}$	0.300*	0.0910	−0.256	0.214	0.533***
	(0.160)	(0.184)	(0.156)	(0.159)	(0.163)
Economic capital$_{(t-1)}$	−0.0211	−0.153	0.281**	−0.228*	−0.255**
	(0.120)	(0.139)	(0.118)	(0.119)	(0.123)
Physical capital$_{(t-1)}$	−0.0547	−0.202	0.0121	−0.557**	0.273
	(0.242)	(0.273)	(0.233)	(0.237)	(0.242)
Natural capital$_{(t-1)}$	−0.661***	2.312***	0.600***	0.427***	0.416***
	(0.159)	(0.189)	(0.156)	(0.158)	(0.160)
Public transfers	−0.107	1.438***	0.125	0.403**	0.542***
	(0.164)	(0.188)	(0.161)	(0.164)	(0.166)
	(0.422)		(0.406)	(0.414)	(0.423)

The empirical results of this study both confirm and challenge the existing literature related to livelihood assets and public transfers for financial security. This study supports the concept that alleviating poverty through establishing financial security via income diversification is possible in the long-term. Public transfer is an indirect intervention that can have a profound impact on accumulating livelihood assets that are essential for maintaining well-being against unexpected shocks.

Unconditional public transfers in the form of cash to households, either due to eligibility or vulnerability to adverse shocks, are indirectly effective by allowing households to increase their economic capital via higher savings and gaining more land ownership assets. This study revealed that public transfers had a significant impact on increasing economic capital when they were distributed at a higher value in 2017 than in 2007 for Thai rural households. Similarly, public transfers from the economic stimulus package during the COVID-19 lockdown period resulted in a higher accumulation of productive capital that enhanced financial security. The result supports the outcome of various research conducted on the impact of cash transfers on increasing short-term liquidity and the unnecessity of liquidating productive assets for emergency relief (Mayunga and Peacock, 2010).

The livelihood security framework is utilized due to the nature of households' strategies for their livelihood assets when confronted with stress and shocks of different intensities and duration. Households' coping mechanisms depend on their ability to adapt using their resources and assets. Prior literature and empirical studies have presented conflicting findings about the effectiveness of coping mechanisms in mitigating vulnerability caused by various shocks associated with income and household productive assets (Ravallion, 2015). Households that possess a comparative advantage in terms of income diversification experience greater levels of satisfaction with their livelihoods. However, these households are typically located in a dynamic economy and are susceptible to reverting to poverty (Banerjee et al., 2021). Nevertheless, a substantial body of research indicates that income diversity is a beneficial strategy for enhancing financial stability (Slater, 2011). Hence, to comprehend the potential resolution for escaping the vicious circle of poverty, it is imperative to grasp how public transfers can influence the development of skills and resources, such as investment and accumulation of productive assets, to ensure financial stability in households.

Previous research has demonstrated that public transfers can shift household behavior toward leisure if they are substantial (Duflo, 2003). This study also supports this assumption because of the negative relationship between public transfer inflows and the ratio of members willing to occupy formal employment. Hence, it is likely that households relied more on government aid not only during the adverse shocks but also considered the transfers as a permanent flow of income. This likely decreased rural households, mitigated risks, and reduced households that relied on one main source of income such as agriculture. Moreover, public

transfers caused a significant increase in social capital. Social capital is related to leisure expenditure, including ceremonies, and unrelated to the necessary assets for well-being. Although social assets are essential in terms of serving as an alternative source of help from the community through networks, it is still not clear if it is sustainable in reducing poverty in the long run.

CONCLUSIONS

Public transfers may have both positive and negative effects on the financial security of rural households. In the long run, public transfers alter the decision to gain income from diversifying sources in the formal sectors. This can result in households falling back into poverty when faced with adverse shocks. However, public transfers are influential in increasing savings and land ownership, allowing households to increase their liquidity or save toward adverse events.

By lowering the possibility of reverting to poverty, public transfers can significantly improve financial stability. Public transfers allow households to generate income through self-employment and business ownership, which increases precautionary savings and successfully reduces harmful risk-coping mechanisms. Households may spend their savings and invest more in productive assets because they are less dependent on unofficial loans. Furthermore, public transfers help households attain long-term improvements in living standards and increase their land ownership by directly addressing liquidity. They also help households become more resilient and financially secure when faced with covariate shocks, such as pandemics or droughts.

The government must consider the dual impact of public transfers in reducing poverty by addressing the effects of susceptible shocks. However, offering transfers without any conditions can influence their choices to seek alternative sources of revenue beyond their own capabilities. Therefore, a policy prescription is needed to enable the adoption of behaviors that establish self-sustaining safety nets for households. Policymakers should consider the effectiveness of unconditional cash transfers (Gaarder et al., 2010). Furthermore, it is crucial to thoroughly examine the use of targeted transfers as a substitute for universal transfers in various program types when establishing social safety nets. The social safety net is an essential program intervention, especially for rural households that are more vulnerable to shocks and disruptions to their livelihoods in the current volatile market and era of globalization.

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