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Evidence from a Regression Discontinuity Design**

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# **Cash Transfers and Socioeconomic Behavior among Older Adults: Evidence from a Regression Discontinuity Design**

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## **Abstract**

The rapid aging of populations has prompted the introduction of social pension programs aimed at preserving the welfare of the elderly. However, adverse socioeconomic behaviors may dampen the intended policy effects. Using a fuzzy regression discontinuity design, this study examines the impact of social pension receipt on expenditure patterns and material hardship among older adults aged 80 year or older in Vietnam. We find that social pension increases the risk of material hardship in rural areas and reduces non-food expenditures in urban areas. To explain these findings, we explore two potential pathways: economic behavioral mechanisms and social behavioral mechanisms. The results suggest that behavioral responses may offset the intended welfare benefits of social pensions, underscoring the need to account for such adjustments in the design of aging-related policies in developing countries.

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## **1. Introduction**

Many countries in the developing world are experiencing an increase in the proportion of older people. By 2050, four out of five older adults will reside in low- and middle-income countries (LMICs), posing unprecedented challenges for national social protection systems (UN-DESA, 2017; WHO, 2020). In these countries, formal programs for old-age support are often lacking, while traditional support systems are also in decline (Lee, 2005). As a result, these countries face a shorter timeframe to develop or strengthen social protection systems in response to population aging, as well as constrained national incomes and limited capacity to support such efforts (Beales & Gorman, 2003). The inadequacy and vulnerability of traditional eldercare systems have led to the implementation of non-contributory pension schemes in more than 80 countries around the world (The World Bank, 2018).

Social protection programs are a crucial instrument for reducing poverty, enhancing economic well-being, and fostering social cohesion within society (The World Bank, 2018). To date, most anti-poverty policies and interventions have been designed based on income-based indicators. For the older population, however, conventional measures of income poverty may underestimate the extent of material insufficiency (Beales & Gorman, 2003; Van Dullemen, 2007). Public cash transfers can ease budget constraints faced by older people and their households, and may therefore affect labor supply, consumption behavior, and intergenerational transfers within families and between relatives (Aguila, Kapteyn, & Perez-Arce, 2017; Aguila, Kapteyn, & Tassot, 2017; Kabeer & Waddington, 2015). Nevertheless, small cash transfers may yield negligible benefits for recipients and their households, while having the potential to lead to adverse behavioral responses (Bergolo & Galván, 2018). Therefore, a critical question is how much impact social pensions have on the social behavior and economic well-being of older people. Since

governments are often faced with tight fiscal constraints, the answer to this question is crucial, as the effects serve as important information for evaluating and designing efficient social pension programs.

The outcome of welfare policy programs can be evaluated using indirect indicators, such as income, or direct measures, including consumption, expenditures, and material hardship (Ringen, 1988). Empirical research has shown that indicators based on consumption, expenditures, and material hardship are often considered more accurate in capturing the financial constraints associated with maintaining living standards, quality of life, and economic well-being for those with few resources, particularly among older adults (European Union, 2010; Meyer & Sullivan, 2011). Material hardship refers to the inability of households to afford essential goods and services—such as adequate food, clothing, and housing—that are customary within their social context or perceived as basic necessities (European Union, 2010). Substantial empirical evidence indicates that older households allocate a greater proportion of their income to fundamental needs compared with younger households (Ebrahimi, 2021).

Although the effects of social pensions on the welfare of older people present a critical topic, the causal impact of this relationship has been less well documented in developing countries, and findings in the literature remain mixed. On the one hand, several studies indicate that social pensions contribute to poverty reduction and improved consumption among elderly populations (Ren et al., 2023; Unnikrishnan & Imai, 2020; Zheng & Zhong, 2016). For instance, Zheng and Zhong (2016) found that China's social pension program increased consumption expenditures and agricultural investment among low-income beneficiary households, although it had no significant effect on savings rates. Similarly, Unnikrishnan and Ismail (2020) reported that social pensions led to an increase in total consumption expenditures in India. However, this positive effect was

diminished after subsequent modifications were made to the program's design. In South Korea, social pensions were found to increase spending on essential living items such as food and clothing, but not on leisure activities (Kang et al., 2022). These results suggest that social pensions tend to enhance consumption, particularly among more disadvantaged groups.

Social pensions have been found to have a negligible impact on consumption, income, labor supply, and wealth accumulation (Cox et al., 1998; Juarez, 2009; Nikolov & Bonci, 2020; Plamen, 2019; Ren et al., 2023).

Ren et al. (2023) demonstrated that receiving a social pension in Kyrgyzstan had no significant effect on food expenditures or macronutrient intake, although it significantly reduced the proportion of protein intake. Other studies suggest that social pensions have a limited impact on labor participation. For example, the introduction of a social pension program in rural Pakistan was associated with a marked decline in women's labor market participation (The World Bank, 2010). Similarly, Borraz (2009) found that receiving conditional cash transfers led to a reduction in the number of hours worked in Uruguay (Borraz, 2009). Moreover, several studies suggest that social pensions may have a crowding-out effect on private transfers and wealth accumulation (e.g., see Cox et al. (1998) for the case of Peru; Juarez (2009) for the case of Mexico; Plamen (2019) for the case of China).

In the context of Vietnam, empirical causal evidence on the welfare effects of social pensions remains limited. To date, only one study—Nguyen (2021)—has examined the impact of social pensions on income levels in Vietnam. However, that study's reliance on indirect welfare indicators constrains the validity of its conclusions regarding the economic well-being of older adults. Moreover, this study does not find valid empirical evidence on the mechanisms through which social pensions affect household income. To our knowledge, no prior research has examined

the impact of social pensions on expenditure patterns and material hardship in Vietnam or other low- and middle-income countries.

Focusing on the case of older adults aged 80 year or older in Vietnam, we examine the impact of social pension receipts on expenditure patterns and material hardship among older adults. Using a fuzzy regression discontinuity design (FRDD) that exploits the program's age eligibility threshold, we find that receiving a social pension increases the risk of material hardship in rural areas while reducing non-food expenditures in urban areas. To explain these findings, we explore two potential pathways—one based on economic behavioral mechanisms and another based on social behavioral mechanisms—across rural and urban contexts. Our mechanism analysis suggests that work disincentives, reduced engagement in agricultural activities, and declines in household expenditures may serve as channels through which cash transfers increase the risk of material hardship in rural areas. Conversely, in urban areas, cash transfers might lead to reduced daily non-food expenditures through mechanisms such as investment income, caregiving support, and financial contributions toward grandchild care.

This study contributes to the growing body of literature on social pensions by examining their effects on expenditure patterns and material hardship among older adults in developing countries that are facing persistent old-age poverty and have underdeveloped public pension systems.

Our contributions are as follows. First, previous studies often focused on the welfare effect that social pensions had on income or consumption (Kang et al., 2022; Nguyen, 2021; Ren et al., 2023; Zheng & Zhong, 2016). In this study, we expect to shed additional light on both the effects and mechanisms that social pensions have on expenditure patterns and material hardship. Outcomes based on expenditures and material hardship are often regarded as more accurate



indicators of the financial constraints faced by older adults with limited resources. However, to date, no such study has been conducted in low- and middle-income countries. Secondly, identifying empirical evidence on the mechanisms that explain the main outcomes of social pension programs remains a major challenge. Therefore, very few studies have empirically unraveled the behavioral pathways driving these results. This study is among the first to examine socioeconomic behaviors as mechanisms underlying the main findings in developing countries. By analyzing the behavioral responses to pension benefit receipt in a lower-middle-income country context, we provide valuable insights for the design of public assistance programs in other developing economies. Third, we perform an in-depth analysis of heterogeneous effects across rural and urban areas. Our results reveal significant differences in the underlying mechanisms driving the main findings in rural versus urban settings. To the best of our knowledge, this is the first study to examine and explain mechanisms that lead to key outcomes separately for rural and urban areas. Finally, the Vietnamese social pension policy is unique in that the eligibility age is set at 80 years of age, which is among the highest in the world. In contrast, most social pension schemes in other countries set the eligibility age between 60 and 70 years (Barrientos, 2015). This unusually high threshold raises important policy questions about the balance between welfare gains from poverty reduction and potential adverse incentives for beneficiaries. The key challenge in designing social pension programs lies in maximizing welfare gains while minimizing disincentives to work and save or to engage in other potentially adverse behavioral responses. Therefore, this research contributes to the existing literature by examining the implications of Vietnam's notably high eligibility age and provides evidence that may inform future policy adjustments.

The remainder of the paper is structured as follows. Section 2 provides the institutional

background. Section 3 describes the data and empirical strategy. Section 4 presents the results. Section 5 discusses potential mechanisms. Section 6 concludes the paper.

## **2. Institutional setting - Cash transfer program for older people in Vietnam**

Vietnam is undergoing a demographic transition toward an aging population at an early phase of its economic development (The World Bank, 2021). The older population (those aged 60 years or older) is projected to constitute approximately 25% of the total population by 2050 (General Statistics Office, 2020). In contrast to many countries that have undergone population aging after achieving higher income levels, Vietnam is experiencing this demographic shift while still at a relatively low level of economic development. With a per capita income that remains around 40% of the global average, the country has yet to reach upper-middle-income status (The World Bank, 2021). Recognizing the challenges of an aging population, the government of Vietnam has implemented a series of social protection policies specifically targeted toward older people. On 13 April 2007, the Government of Vietnam promulgated Decree No. 67/2007/ND-CP concerning support for social assistance beneficiaries. The decree stipulated that certain vulnerable groups—specifically the poor, isolated elderly individuals, poor elderly couples without family support, and individuals aged 85 years or older without access to retirement pensions or other forms of social allowances—would be entitled to a minimum monthly benefit of VND 120,000, in addition to free health insurance coverage. This policy was later revised through Decree No. 13/2010/ND-CP, issued on 27 February 2010, which introduced several amendments to the original provisions. Notably, the cash transfer program was expanded to include all individuals aged 80 years or older who do not receive contributory pensions, and the minimum monthly allowance was increased to VND 180,000. These changes reflected an effort to better address the

basic needs of eligible beneficiaries. Table 1 summarizes the regulations in Decree No.13/2010/ND-CP as follows:

**Table 1: Target Groups of the Social Pension Scheme for older people in Vietnam**

Category	Beneficiaries	Benefit level (VND 1,000)
<b>I</b>	<b>80 years or older who do not receive contributory pensions</b>	180
<b>II</b>	<b>Older people living in poor households, AND:</b>	
	1. Living alone; or	
	2. Living with an ill older spouse and who do not have any children, grandchildren or relatives to support	
	60-79	180
	60-79 and are severely disabled	270
	80+	270
	80+ and are severely disabled	360

This amount represented about 20 percent of the World Bank's national poverty line at the time (871,308 VND per person per month)(Demombynes & Hoang Vu, 2015). Data from the 2012 Vietnam Household Living Standards Survey (VHLSS) show that the average monthly per capita income for this age group was approximately 1.66 million VND, suggesting that the social pension accounted for only 10.8 percent of beneficiaries' income. By contrast, the average benefit from contributory pension schemes was considerably higher, reaching 2.75 million VND per month. These figures underscore the relatively low generosity of the social pension, both in relation to poverty thresholds and to the contributory system.

### **3. Data and Empirical model**

#### **3.1 Data**

The data used in the empirical analysis come from two sources: the Vietnam Household Living Standards Survey (VHLSS) for the main analysis, and the Vietnam National Aging Survey

(VNAS) for examination of the mechanism and robustness checks. Specifically, the study utilizes the 2012 and 2014 waves of the VHLSS, a key instrument for monitoring socioeconomic trends and informing policy development in Vietnam. VHLSSs have been conducted by the General Statistics Office of Vietnam (GSO) with assistance from the World Bank since 1993. The 2016 and 2018 waves of VHLSS were influenced by the revised national health insurance policy in 2014, which substantially decreased out-of-pocket expenditures for both outpatient and inpatient healthcare services (Thuong et al., 2020). Furthermore, the 2020 VHLSS was conducted amid the COVID-19 pandemic, a period marked by significant disruptions to economic activity and household behavior. These contextual factors may bias the estimation of treatment effects related to social assistance programs for older people. Therefore, the 2012 and 2014 waves of VHLSS serve as the most recent and comprehensive sources for examining how cash transfer affects consumption and expenditures for older people in Vietnam. Each wave of the VHLSS comprises approximately 45,000 households, providing comprehensive socio-economic data for both the household and individual family members. Household-level data include information on households' assets, production, income, housing condition, and participation in government programs. Individual-level data consist of information on demographics, education, and employment. All variables in monetary values are adjusted for inflation.

The second data source is the 2011 Vietnam Aging Survey (VNAS), the first nationally representative survey focused on older adults in Vietnam. The VNAS employed a multi-stage stratified random sampling design based on the 2009 Population and Housing Census. The final sample included 4,007 individuals aged 50 years or older, drawn from 400 villages across 200 communes in 12 provinces, representing all six ecological regions of the country. Data collection was carried out through structured, face-to-face interviews. The survey gathered detailed

information on demographic characteristics, household assets, health status, and receipt of social transfers, including both contributory and non-contributory pensions.

We focus on the impact of cash transfers provided under the social assistance policy outlined in Decree No. 13/2010/ND-CP, which targets individuals. Accordingly, we use individual-level data from both the VHLSS and VNAS. However, the VHLSS does not collect information on cash transfers received by individuals directly, but instead records household-level transfers received under this policy over the past 12 months. As a result, it is possible that a household member under the age of 80 was co-residing with another eligible individual who received the transfer. To address this ambiguity, we exclude from our sample individuals under age 80 who reside in households with at least one member aged 80 or above.

It is worth noting that individuals aged 60 years or older who live in poor households are also eligible for cash transfers under the social assistance policy. However, our identification strategy focuses specifically on the policy targeting individuals aged 80 years or older who do not receive contributory pensions. Moreover, the proportion of poor households is relatively small—approximately 8 percent during the 2012–2014 period. For these reasons, we exclude poor households from our sample.

### **3.2 Empirical model**

To analyze the impact of the social pension program, we use a regression discontinuity design (RDD).

In our empirical strategy, we exploit the age-based eligibility criteria of the program by employing a FRDD. Specifically, individuals aged 80 years or older become eligible to receive the social assistance, creating a discontinuity in the probability of treatment at this threshold. Moreover,

due to imperfect compliance—some eligible individuals may not register for the program, while some ineligible older people may receive the transfer—the assignment is not strictly deterministic (Figure 1 and Figure 2).

The idea behind RDD is to estimate the impact of social assistance by comparing the outcomes of cash recipients who are aged 80 years or just above the threshold, with those of non-recipients who are just below the age of 80 years. It is assumed that individuals around the age threshold of 80 years have very similar characteristics. The FRDD approach identifies the local effect of receiving cash transfers at the 80-year age threshold as follows:

$$\tau_{FRD} = \frac{\lim_{z \rightarrow c^+} E[y, age = z] - \lim_{z \rightarrow c^-} E[y, age = z]}{\lim_{z \rightarrow c^+} E[x, age = z] - \lim_{z \rightarrow c^-} E[x, age = z]} \quad (1)$$

where age is used as the running variable and is denoted by  $z$ , and  $x$  represents the probability that an elderly individual receives a cash transfer. The outcome of interest is denoted by  $y$ . Both the outcome variable and the probability of receiving the transfer are estimated using either parametric or non-parametric methods, focusing on the elderly whose ages lie within a defined bandwidth around the threshold of 80 years.

To determine the causal relationship of cash transfers, we use a local linear regression approach as developed by Hahn et al. (2001):

$$\begin{aligned} Y_i &= \beta_0 + T_i \beta_{FRD} + f(z_i - c) + \beta_1 I_{\{z_i \geq c\}} f(z_i - c) + \beta_2 X_i + \varepsilon_i \quad (2) \\ T_i &= \alpha_0 + \alpha_1 I_{\{z_i \geq c\}} + \alpha_2 g(z_i - c) + \alpha_3 g(z_i - c) I_{\{z_i \geq c\}} + \alpha_4 X_i \\ &\quad + u_i \quad (3) \end{aligned}$$

where  $Y_i$  is the outcome measured for elderly individual  $i$ , and  $T_i$  is the treatment variable, a dummy variable equal to 1 if the individual received a cash transfer, and 0 otherwise. Let  $z$

represent the age of the elderly individual, and let  $c=80$  be the age threshold. The functions  $f(\cdot)$  and  $g(\cdot)$  are polynomial functions that relate to the forcing variable (age). The indicator  $I_{\{z_i \geq c\}}$  is a dummy variable set equal to 1 if elderly individual  $i$ 's age is at or above the threshold  $c$ , and 0 otherwise.

In a parametric regression, control variables  $X$  can be added to the regression discontinuity (RD) equation to increase precision (Imbens & Lemieux, 2008a). The interaction between the treatment variable  $I_{\{z_i \geq c\}}$  and age captures heterogeneity in the effect of age depending on treatment status. The local average treatment effect in a FRDD,  $\tau$ , is estimated by the coefficient  $\beta_{FRD}$  on the treatment variable.

In an RDD, selecting an appropriate bandwidth around the cutoff point is crucial. A larger bandwidth increases the number of observations, which can reduce the standard error of the estimates, but might lead to a potential misspecification bias. Since RDD estimates the local treatment effect around the cutoff, using a smaller bandwidth can reduce bias but may also lead to lower estimation efficiency due to a smaller sample size.

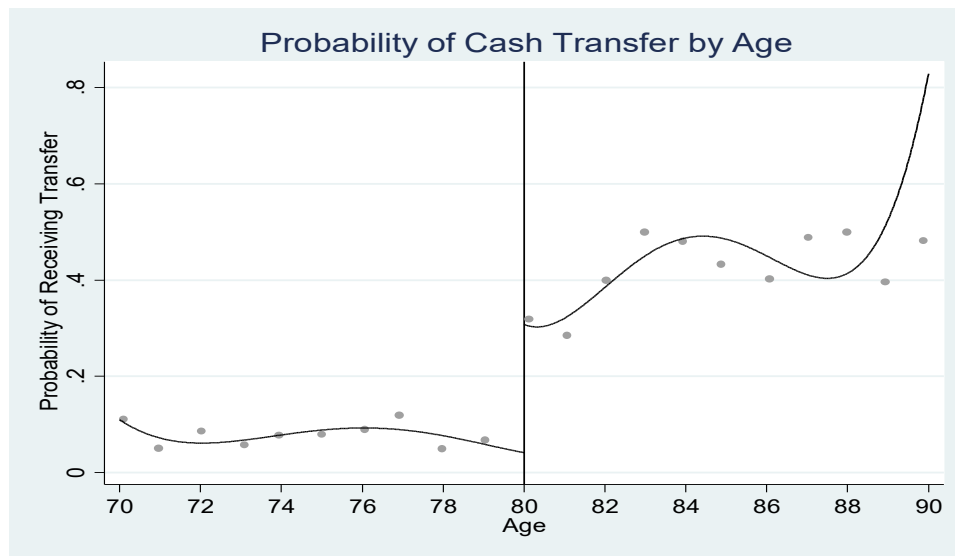
In this study, for the main outcomes, we primarily rely on a bandwidth of 5 years—restricting the sample to individuals aged 75 to 85. We also assess the sensitivity of our estimates to a 10-year bandwidth and find that the results remain consistent across these different bandwidth choices. Furthermore, the 5-year bandwidth aligns well with optimal bandwidth selection based on the `rdrobust` command introduced by Calonico et al. (2017).

For the mechanistic outcome variables used in the 2SLS regressions, we select appropriate bandwidths by referencing the mean squared error (MSE)-optimal bandwidths generated from a nonparametric estimation method.

To select the appropriate polynomial order for regressions (2) and (3), we explore

specifications using polynomials of degree one to four, following the guidance of Lee and Lemieux (2010) in the context of RDDs (Imbens & Lemieux, 2008b). The results, reported in Online Appendix Table A3, show that our findings are robust across all polynomial orders. Given the consistency of the estimates, we select a first-order polynomial as our baseline specification and allow the slope to vary on either side of the cutoff by including an interaction term.

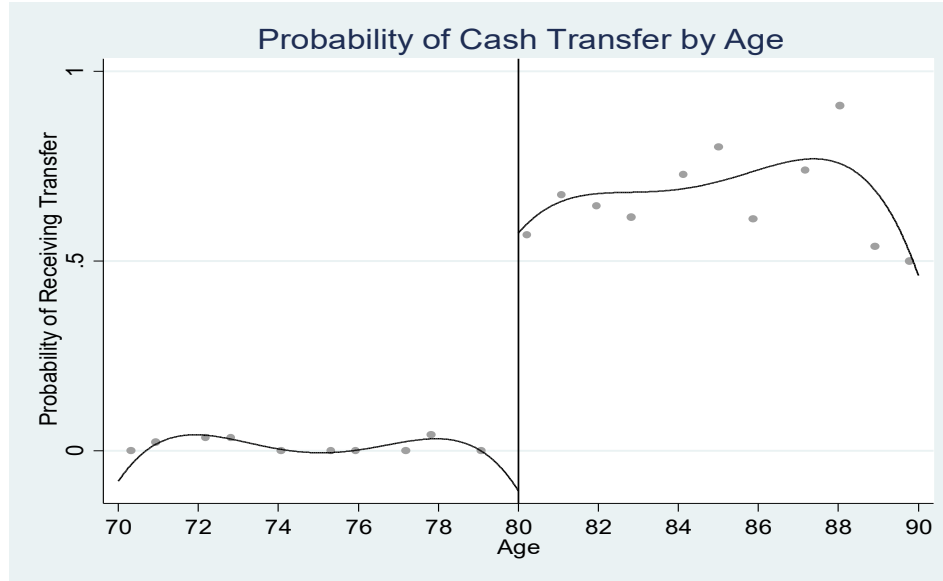
**Figure 1: The regression discontinuity plot using VHLSS**



*Note: The graph shows the regression discontinuity plot of the probability that individuals live in a household receiving the cash transfer, across age. The sample is limited to individuals aged 70 to 90 years.  
Source: Estimation from VHLSSs 2012 to 2014.*

**Figure 2: The regression discontinuity plot using VNAS2012**





Note: The graph shows the regression discontinuity plot of the probability that older people aged 80 and above receiving the cash transfer, across age. The sample is limited to individuals aged 70 to 90 years.  
Source: Estimation from the VNAS 2012.

## 4. Results

### 4.1 Main Results

Table 2: First-stage regression of receiving the transfer

VARIABLES	Receiving the transfer (yes=1, no=0)			
	(1)	(2)	(3)	(4)
$I_{\{age \geq c\}}$	<b>0.237***</b> (0.048)	<b>0.243***</b> (0.038)	<b>0.256***</b> (0.032)	<b>0.272***</b> (0.030)
$(age - 80) I_{\{age \geq 80\}}$	<b>0.044***</b> (0.015)	<b>0.023**</b> (0.009)	<b>0.015**</b> (0.006)	<b>0.017***</b> (0.005)
$(age - 80)$	-0.005 (0.012)	0.001 (0.007)	0.002 (0.004)	-0.001 (0.004)
Control variable	v	v	v	v
Bandwidth	5	7	9	10
F-statistic	26.17	39.79	50.88	55.67
Constant	0.063	0.114***	0.100***	0.079**
Year fixed effects	yes	yes	yes	yes
R-squared	0.14	0.16	0.17	0.17
Observations	1412	1888	2318	2544

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

First-stage regression results are presented in Table 2. Columns 1–4 correspond to bandwidths of 5, 7, 9, and 10, respectively, and estimate the effects of the age-based instrument—being 80 years or older—on the probability of residing in a household that receives the social

pension. As expected, the instrument has a strong positive impact on the receipt of social assistance, with large and statistically significant coefficients across all specifications. These findings are also confirmed by Figure 1 and Figure 2, showing a sharp discontinuity in the probability of receiving social assistance at the age eligibility threshold. The probability increases markedly for older individuals whose age is just above the cutoff and drops substantially for those just below it.

**Table 3: 2SLS regression of material hardship**

VARIABLES	Dependent Variable: Coefficient (SE) on material hardship					
	Pooled		Rural		Urban	
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel a. Material hardship index</i>						
Receiving the transfer	<b>0.411***</b> (0.148)	<b>0.324***</b> (0.107)	<b>0.537***</b> (0.199)	<b>0.383***</b> (0.136)	0.1436 (0.030)	0.138 (0.160)
$I_{\{age \geq 80\}} (age - 80)$	0.013 (0.015)	-0.004 (0.006)	0.013 (0.022)	-0.010 (0.007)	0.012 (0.011)	0.009 (0.008)
$(age - 80)$	-0.019* (0.008)	-0.006** (0.003)	-0.025** (0.012)	-0.007* (0.004)	-0.004 (0.007)	-0.005 (0.004)
F-statistic	39.182	89.697	30.561	67.804	10.393	22.191
<i>Panel b. Material hardship indicator</i>						
Receiving the transfer	<b>0.247**</b> (0.106)	<b>0.178***</b> (0.069)	<b>0.333**</b> (0.142)	<b>0.201**</b> (0.087)	0.550 (0.108)	0.094 (0.095)
$I_{\{age \geq 80\}} (age - 80)$	0.013 (0.015)	-0.003 (0.003)	0.013 (0.022)	-0.008* (0.004)	0.0008 (0.008)	0.006 (0.005)
$(age - 80)$	0.0005 (0.008)	-0.004** (0.002)	-0.016* (0.009)	-0.005* (0.003)	0.0009 (0.003)	-0.004 (0.003)
Kleibergen-Paap rk F-statistic	39.182	89.697	30.561	67.804	10.393	22.191
Control variable	v	v	v	v	v	v
Year fixed effects	yes	yes	yes	yes	yes	yes
Bandwidth	5	10	5	10	5	10
Observations	1412	2544	935	1731	477	813

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

Kleibergen-Paap rk F-statistics are reported for testing weak instruments. The statistics are high, indicating that the instruments are strong (Staiger & Stock, 1994)

In our analysis, we first examine whether cash transfer receipt affects household material hardship. The outcome variable is defined in two ways: (panel a) material hardship index, and (panel b) material hardship indicator. Material hardship index is defined as a count variable ranging from 0 to 6 to capture household-level consumption hardship across six features: grain

food, foodstuff, electricity, water, housing, and clothing and footwear. The material hardship indicator is defined as a binary indicator set equal to 1 if the household reports insufficiency in any of the six categories, and 0 otherwise. The analysis is conducted for pooled, rural, and urban samples. All models employ a bandwidth selection of 5 and 10 years to ensure the robustness of the estimates. All estimations are year fixed effects estimations. All columns include control variables.

Overall, cash transfer receipt has a statistically significant effect on the probability of a household experiencing material hardship, for both categorical and binary outcome measures. The results are consistent across different bandwidth selections (Table 3, columns 1 and 2). These findings suggest that receiving transfers is positively associated with both the incidence and extent of household material hardship in the pooled sample.

Next, we consider whether these effects mask heterogeneity by area of residence (Table 3, columns 3–6). We disaggregate the analysis into rural and urban subsamples and find that transfer receipt is associated with a statistically significant increase in material hardship in the rural subsample, but not in the urban subsample. In rural areas, the effects are larger in magnitude, with coefficients of 0.537 and 0.333 for the categorical and binary outcome measures, respectively (Table 3, column 3). The results are consistent when using a bandwidth of 10 years (Table 3, column 4).

To examine the impact of cash transfer receipt on household expenditures, we conduct analyses using the following five expenditure outcomes: daily expenditures on non-food, on regular food, on health, on durable goods, and on housing, electricity, and water. The results, presented in online Appendix Table A.4, suggest that only daily expenditures on non-food shows

a statistically significant effect of cash transfer receipt in the full sample. Therefore, we focus on presenting this outcome in the main text.

**Table 4: 2SLS regression of daily expenditure**

VARIABLES	Dependent variable: Log of daily expenditure on non-food					
	Pooled		Rural		Urban	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Receiving the transfer</b>	<b>-0.505*</b>	-0.165	-0.212	0.047	<b>-1.232**</b>	<b>-0.834**</b>
	(0.283)	(0.188)	(0.328)	(0.195)	(0.596)	(0.388)
$I_{\{age \geq 80\}} (age - 80)$	0.027	0.002	0.015	0.010	0.029	0.005
	(0.020)	(0.009)	(0.024)	(0.009)	(0.039)	(0.017)
(age - 80)	0.010	-0.0006	0.006	-0.010	0.029	0.018
	(0.016)	(0.006)	(0.019)	(0.006)	(0.031)	(0.010)
Control variable	v	v	v	v	v	v
Year fixed effects	yes	yes	yes	yes	yes	yes
Bandwidth	5	10	5	10	5	10
Constant	5.6727***	5.765***	5.653***	5.563***	6.250***	6.198***
Observations	1412	2544	935	1731	477	813
F-statistic	40.988	89.351	31.275	67.804	10.296	21.524

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

Table 4 presents the effects of cash transfers on daily non-food expenditures. Receiving a cash transfer is associated with a statistically significant reduction in non-food spending when using a bandwidth of 5 years, but not when using a bandwidth of 10 years. When the analysis is disaggregated by area of residence, we find a significant decrease in non-food expenditures in the urban subsample, but no effect in the rural subsample. In urban areas, the effects are larger in magnitude, with estimated coefficients of 1.232 and 0.834 for bandwidths of 5 and 10 years, respectively (Table 4, columns 5–6).

## 4.2 Robustness checks

Next, we conduct several analyses to examine the robustness of the effect estimates of the cash transfer program on different model specifications and bandwidths.

### 4.2.1 Nonparametric methods

**Table 5: Nonparametric estimation of the impact of the cash transfer program with MSE-optimal bandwidth selection.**

	Pooled	Urban	Rural	Pooled	Urban	Rural
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a): Material hardship index						
Receiving the transfer	<b>0.365*</b>	0.111	<b>0.390*</b>	<b>0.322**</b>	0.193	<b>0.381**</b>
	(-0.001, 0.72)	(-0.23, 0.37)	(-0.06, 0.85)	(0.08, 0.60)	(-0.29, 0.67)	(0.08, 0.72)
Optimal bandwidth	msetwo	msetwo	msetwo	mserd	mserd	mserd
	(4.5, 6.2)	(6.1, 6.6)	(4.3, 5.7)	9.1	4.6	11.1
Panel (b): Log of daily expenditure on non-food						
Receiving the transfer	<b>-0.582**</b>	<b>-1.276**</b>	-0.456	-0.285	<b>-1.046***</b>	-0.033
	(-1.48, -0.06)	(-2.83, -0.33)	(-1.41, 0.26)	(-0.86, 0.11)	(-2.28, -0.37)	(-0.57, 0.45)
Optimal bandwidth	msetwo	msetwo	msetwo	mserd	mserd	mserd
	(6.7, 6.2)	(7.1, 8.8)	(4.6, 6.2)	10.9	10.9	10.7
Observations	6342	2061	4281	61741	19783	41958

*Notes.* Fuzzy RDD estimates within the MSE-optimal bandwidth. The bandwidth selection procedure “mserd” specifies one common MSE-optimal bandwidth selector, while “msetwo” specifies two different MSE-optimal bandwidth selectors (below and above the cutoff) for the RD treatment-effect estimator.

*Statistical significance:* \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

*Source:* Estimation from VHLSSs from 2012 to 2014.

Table 5 presents nonparametric FRDD estimates following the methodology developed by Calonico et al. (2014), which implements local polynomial regression techniques to identify the local average treatment effect of cash transfer receipt on the outcomes of interest. For robustness, we present results using one common MSE-optimal bandwidth as well as two different MSE-optimal bandwidths for the RD treatment effect estimator, as recommended by Calonico et al. (2017). All specifications include the full set of covariates. Overall, we found similar results in sign, magnitude, and statistical significance using the nonparametric fuzzy RD method in comparison with the main results presented in Tables 3 and 4.

#### 4.2.2 Propensity Score Matching

Propensity score matching (PSM) serves as a robust method for mitigating selection bias in observational studies, facilitating the creation of balanced groups by matching treatment and control units based on a range of baseline characteristics (Wan, 2025). In our analysis, individuals aged 70–90 years who received cash transfers were defined as the treatment group, while non-recipients served as the control group. Matching was implemented using the kernel method with a

bandwidth of 0.06. The propensity score is estimated based on a set of covariates, including gender, marital status, education level, household size, and region.

**Table 6: Propensity Score Matching of the impact of the cash transfer program**

	Material hardship index			Log of daily expenditure on non-food		
	Pooled (1)	Urban (2)	Rural (3)	Pooled (4)	Urban (5)	Rural (6)
<b>Receiving the transfer</b>	<b>0.045*</b>	-0.025	<b>0.060*</b>	<b>-0.144***</b>	<b>-0.179***</b>	<b>-0.070**</b>
Control variable	v	v	v	v	v	v
Observations	2544	813	1731	2544	813	1731

*Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .*

The results obtained from the PSM approach (Table 6) are consistent in sign and statistical significance with the main findings reported in Tables 3 and 4, which are based on a parametric FRDD. As with the main findings, receiving a cash transfer is associated with a statistically significant reduction in non-food expenditures in both rural and urban areas. Notably, the magnitude of the treatment effects estimated via PSM is smaller than those obtained using the FRDD. This divergence is expected, given the methodological differences between the two approaches. PSM estimates the average treatment effect on the treated (ATT) across the matched sample, whereas the FRDD identifies a local average treatment effect (LATE) for individuals near the discontinuity threshold.

Despite differences in magnitude, the PSM estimates reinforce the robustness of our main findings with respect to both the sign and statistical significance of the outcomes. These results further support the validity of our conclusions across alternative identification strategies.

### 4.2.3 Falsification Analysis

**Table 7: Falsification Analysis of the impact of the cash transfer program**

VARIABLES	Pooled		Rural		Urban	
	(1)	(2)	(3)	(4)	(5)	(6)
Panel (a): Material hardship						
Receiving the transfer	0.641 (0.432)	0.467 (0.363)	0.554 (0.543)	-0.216 (0.471)	0.173 (0.809)	-0.067 (0.428)
Panel (b): Log of daily expenditure on non-food						
Receiving the transfer	0.502 (1.205)	0.690 (0.602)	0.073 (0.543)	0.493 (0.609)	0.226 (1.110)	0.676 (1.232)
$I_{\{age \geq 85\}}(age - 85)$	v		v		v	
$(age - 85)$	v		v		v	
$I_{\{age \geq 75\}}(age - 75)$		v		v		v
$(age - 75)$		v		v		v
Control variable	v	v	v	v	v	v
Year fixed effects	yes	yes	yes	yes	yes	yes
Bandwidth	10	10	10	10	10	10
Cutoff age	85	75	85	75	85	75
Observations	2544	2544	1731	1731	813	813

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

Furthermore, we conduct a falsification test that involves re-estimating the 2SLS model specified in Equation (2), using placebo thresholds of 85 and 75 years of age instead of the original cutoff of 80. These placebo thresholds are applied to the full sample as well as to subsamples stratified by rural and urban residence. Consistent with the identifying assumptions, we find no statistically significant effects of cash transfer receipt on the outcomes of interest at either placebo threshold, thereby reinforcing the validity of our identification strategy.

## 5. Mechanism analysis

A useful approach to elucidating potential mechanisms is to look for subgroups displaying stronger treatment effects. As discussed above, our results indicate that receipt of the transfer is associated with a statistically significant increase in material hardship in rural areas and a significant decrease in daily non-food expenditures in urban areas. Although we are unable to identify a single channel through which the cash transfer affects these outcomes, we divide our

analysis into two broad categories: economic behavioral mechanisms (Table 8) and social behavioral mechanisms (Table 9).

Fiszbein and Schady (2009) identify a notable causal feature through which conditional cash transfers may affect household economic behavior, particularly labor supply decisions. They argue that labor supply at the intensive margin may respond to the income effect of the transfer and to substitution effects arising from time allocated to child care (Kabeer & Waddington, 2015; Rätzel, 2009). Some of these behavioral responses are likely economic in nature, involving trade-offs between work and leisure (Rätzel, 2009; The World Bank, 2010). Empirical evidence from a range of country contexts supports this theoretical mechanism. For example, in rural Pakistan, rollout of a cash transfer program led to a significant decline in women's labor market participation, as beneficiary households reduced female engagement in paid work (The World Bank, 2010). Further evidence in Uruguay shows that receiving conditional cash transfers reduced hours worked by 5.1 percent for male beneficiaries and by 17 percent for female beneficiaries (Borraz, 2009).

As shown in Panel B of Table 8, receipt of a cash transfer is associated with negative effects on both expenditure- and income-related indicators in rural areas (Columns 1-3, Panel B). Specifically, receipt of a cash transfer significantly reduces the number of working days per month, participation in agricultural activities, food expenditures during holidays, and other expenditures in rural areas. These findings suggest that work disincentives are relevant in the cases of Uruguay and Pakistan (Borraz, 2009; The World Bank, 2010). Therefore, work disincentives, reduced engagement in agricultural activities, and declines in household expenditures are considered potential channels through which the receipt of cash transfers may contribute to increased material hardship in rural areas.



Regarding the cash transfer effects reported in Panel B of Table 8, we find a statistically significant negative impact on investment income in urban areas (Column 5, Panel B). This finding is consistent with results from the VNAS dataset, which show that receipt of cash transfers is associated with a significant reduction in both the probability of ownership of other land as well as household income levels in urban areas (Columns 6–7, Panel B). Thus, investment income may serve as a potential channel through which receipt of cash transfers leads to decreased daily spending on non-food items in urban areas.

Existing theoretical frameworks for analyzing the relationship between private and public transfers emphasize two primary features underlying family-member exchanges: altruism and self-interested exchange (Cox, 1987). These two mechanisms generate critical theoretical predictions. Under altruistic models of family behavior, the introduction of public transfer programs is expected to crowd out private transfers (Becker, 1974). In contrast, when private transfers are motivated by private exchange, public transfers do not necessarily displace private assistance. For altruistic family transfers, the introduction of public transfer programs will offset private transfers (Cox, 1987; Cox & Fafchamps, 2007; Becker, 1974). Given Vietnam’s unique socioeconomic and historical context, a recent study also highlights two dominant motivations behind private remittances in Vietnam: altruism and implicit loan agreements (Ngo et al., 2024). From the perspective of social behavioral mechanisms, Table 9 shows that cash transfers significantly reduce the probability of receiving support from relatives in urban areas (Column 3, Panel A). This result is robust when cross-validated using the VNAS dataset. Specifically, receipt of cash transfers is associated with a significant reduction in the probability of receiving cash gifts in urban areas (Column 4, Panel A). These findings are consistent with theoretical predictions under the altruistic model of family transfers.

Columns 1–2 of Panel A show that receiving a cash transfer increases the probability of both providing caregiving support and contributing financially to grandchild care in urban areas. It is quite common for grandparents to co-reside with their children and take care of their grandchildren in Vietnam and Southeast Asian countries. Recent surveys conducted in Myanmar, Thailand, and Vietnam reveal that substantial proportions of individuals aged 60 and older live with their grandchildren and frequently serve as primary caregivers (Knodel & Nguyen, 2015). Grandparents may assume parental responsibilities for their grandchildren, motivated by kinship ties and a desire to ensure the children's well-being and future success (Edwards, 1998). However, serving as a primary caregiver imposes substantial costs, including greater financial burdens and restrictions on both work time and personal autonomy<sup>1</sup> (Ochiltree, 2006).

These factors above suggest that receipt of cash gifts, support from relatives, investment income, caregiving support, and financial contributions toward grandchild care may represent channels through which receipt of cash transfers leads to reduced daily non-food expenditures in urban areas.

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<sup>1</sup> *In our own calculations, we also split the sample by gender and found that cash transfers nearly significantly reduce the number of working days among older women.*

**Table 8: The effect of cash transfer on mechanism outcomes from economic behavior**

VARIABLES	Expenditure factors		Income factors				
	Log of expenditure on food during holidays	Log of other expenditure	Log of working days per month	Agriculture activity (yes=1, no=0)	Log of investment income	Own other lands (yes=1, no=0)	Income level of HH (yes=1, no=0)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<b>Panel A: Rural Areas</b>							
Receiving the transfer	- 0.745 *	- 1.373*	-0. 513 *	-0. 773*	0.327	0.124	0. 281
	(0.401)	(0. 715)	(0.308)	(0. 455)	(0. 632)	(0.107)	(0. 397)
$I_{\{age \geq 80\}} (age - 80)$	-0. 034	0. 057	-0.075 *	-0. 020			
	(0. 035)	(0. 084)	(0.043)	(0. 066)			
$(age - 80)$	0. 052*	0. 042	0. 083 *	0. 089			
	(0. 034)	(0. 050)	(0. 043)	(0. 066)			
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
Bandwidth	4	4	2	2	10	10	10
Observations	777	777	452	452	1731	671	671
F-statistic	30.185	30.185	11.728	11.560	66.760	205.109	204.792
<b>Panel B: Urban Areas</b>							
Receiving the transfer	- 0.921	- 3.110	0. 257	0. 074	- 4.154*	-0.333***	-1.050*
	(0.800)	(1. 977)	(0.984)	(0. 612)	(2.159)	(0. 133)	(0. 550)
$I_{\{age \geq 80\}} (age - 80)$					0. 023	0.012	-0. 039
					(0. 088)	(0.012)	(0. 061)
$(age - 80)$					0. 034	0. 009	0. 065
					(0. 063)	(0. 009)	(0. 032)
Year fixed effects	yes	yes	yes	yes	yes	yes	yes
Bandwidth	4	4	2	2	10	10	10
Observations	386	386	228	228	813	332	332
F-statistic	5.525	5.525	10.916	29.554	23.597	96.550	96.652
Data source	VHLSS	VHLSS	VHLSS	VHLSS	VHLSS	VNAS	VNAS

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ . We select the appropriate bandwidths by referencing the MSE-optimal bandwidths generated from a nonparametric estimation method, as presented in Online Appendix Tables A.6 and A.7.

**Table 9: The effect of cash transfer on mechanism outcomes from social behavior**

VARIABLES	Provided caregiving support for a grandchild (yes=1, no=0)	Provided paid care for a grandchild (yes=1, no=0)	Support from relative (yes=1, no=0)	Log of receipt of cash gifts
	(1)	(2)	(3)	(4)
<b>Panel A: Urban Areas</b>				
<b>Receiving the transfer</b>	<b>0.540 ***</b>	<b>0.082*</b>	<b>-0.061*</b>	<b>-3.411*</b>
	(0.179)	(0.116)	(0.030)	(1.814)
$I_{\{age \geq 80\}} (age - 80)$	0.050	-0.020	0.0003	0.058
	(0.034)	(0.013)	(0.003)	(0.083)
$(age - 80)$	-0.076 ***	0.014	0.004	0.062
	(0.026)	(0.016)	(0.002)	(0.050)
Year fixed effects	yes	yes	yes	yes
Bandwidth	5	5	10	10
Observations	179	179	332	813
F-statistic	47.162	137.701	96.550	23.597
<b>Panel B: Rural Areas</b>				
<b>Receiving the transfer</b>	<b>-0.042</b>	<b>-0.126</b>	<b>-0.020</b>	<b>0.935</b>
	(0.218)	(0.150)	(0.036)	(0.972)
$I_{\{age \geq 80\}} (age - 80)$				
$(age - 80)$				
Year fixed effects	yes	yes	yes	yes
Bandwidth	5	5	10	10
Observations	367	367	671	1731
F-statistic	94.672	94.672	205.109	66.760
Data source	VNAS	VNAS	VNAS	VHLSS

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ . We select the appropriate bandwidths by referencing the MSE-optimal bandwidths generated from a nonparametric estimation method, as presented in Online Appendix Tables A.6 and A.7.

## 6. Conclusions

In the context of rapidly aging populations, the design of social pension programs for older adults is a critical determinant of both social welfare and economic development. In this study, we examined the impact of social pension receipts on household expenditure patterns and material hardship among older individuals aged 80 years or older in Vietnam. Using a fuzzy regression discontinuity design that exploits the program's age eligibility threshold, we found that receiving a social pension increases the risk of material hardship in rural areas while reducing non-food expenditures in urban areas. To explain these findings, we explore two potential pathways—one based on economic behavioral mechanisms and another based on social behavioral mechanisms—across rural and urban contexts. Our mechanism analysis suggests that work disincentives, reduced

engagement in agricultural activities, and declines in household expenditures may serve as channels through which cash transfers increase the risk of material hardship in rural areas. Conversely, in urban areas, cash transfers might lead to reduced daily non-food expenditures through mechanisms such as investment income, caregiving support, and financial contributions toward grandchild care. By analyzing the behavioral responses to the receipt of pension benefits in a lower-middle-income country context, we provide valuable insights for the design of public assistance programs in developing economies.

We acknowledge several limitations in this study. First, the data were collected at both the individual and household levels; however, the survey primarily provides household-level information on social pensions. As a result, the estimated effects of the cash transfer program may be underestimated. To enhance the robustness of our analysis, we incorporate another dataset from the Vietnam National Aging Survey (VNAS), which provides detailed individual-level information on demographic characteristics and social pension receipts of older adults. Second, the scope of our analysis allows us to capture only the short-term impacts of the cash transfer program, while potential long-term effects remain beyond the reach of the available data.

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## Appendix

**Table A.1 Descriptive statistics of variables**

	Type	Obs.	Mean	Std. Dev.	Min	Max
<i>Outcome variables</i>						
Material hardship index	Discrete	2,544	0.099	0.457	0	6
Material hardship indicator	Dummy	2,544	0.065	0.246	0	1
Log of daily expenditure on non-food	Continuous	2,544	5.144	0.642	2.397	7.492
Log of daily expenditure on food during holidays	Continuous	2,544	5.166	0.798	2.432	8.016
Log of other expenditure	Continuous	2,544	6.643	1.331	0	11.169
Log of receipt of cash gifts	Continuous	2,544	5.992	2.722	0	11.823
Log of investment income	Continuous	2,544	0.803	2.429	0	11.057
Log of working days	Continuous	2,544	0.720	1.275	0	3.433
Agriculture activity	Dummy	2,544	0.636	0.481	0	1
<i>Control variables</i>						
Gender (male=1, female=0)	Dummy	2,544	0.609	0.487	0	1
Education (yes=1, no=0)	Dummy	2,544	0.753	0.431	0	1
Married status (yes=1, no=0)	Dummy	2,544	0.454	0.497	0	1
Ethnic (kinh=1, ethnic minorities=0)	Dummy	2,544	1.755	3.297	0	1
Urban (urban=1, rural=0)	Dummy	2,544	0.319	0.466	0	1
Region	Discrete	2,544	3.225	1.879	1	6
Relation to head of household (head or wife/husb of head=1, no=0)	Dummy	2,544	0.340	0.473	0	1

*Note: For variable expressed in log form, we transform the transfer variables using the inverse hyperbolic sine (IHS) transformation, defined as  $(\text{arsinh}(x) = \ln(x + \sqrt{x^2 + 1}))$ , which has a similar interpretation to the natural log function but allows for a zero or negative values of the dependent variable.*

**Table A.2 Descriptive definition of variables**

Variable	Definition
<i>Outcome variables</i>	
Material hardship Index	A count variable ranging from 0 to 6 to capture household-level consumption hardship across six features: grain food, foodstuff, electricity, water, housing, and clothing and footwear.
Material hardship Indicator	Or a binary indicator equal to 1 if the household reports insufficiency in any of the six categories, and 0 otherwise.
Log of daily expenditure on non-food (thousand VND/person/day)	Household per capital of daily expenditure on non-food
Log of daily expenditure on food during holidays (thousand VND/person/day)	Household per capital of daily expenditure on food during holidays
Log of other expenditure (thousand VND/person/day)	Household per capital of other expenditure
Log of receipt of cash (thousand VND/person)	Household per capital of receipt of cash
Log of investment income (thousand VND/person)	Household per capital of investment income. Investment income includes earnings from interest on savings deposits, dividends from stocks and shares, income from lending activities, and returns on contributed capital.
Log of working days	Total working days reported by the individual
Agriculture activity	Household participates in agricultural activities. It includes any form of crop cultivation, livestock or poultry raising, planting (e.g., fruit trees, vegetables), or owning and managing a farm.
<i>Control variables</i>	
Gender (male=1, female=0)	A binary variable equal to 1 if the individual is male, and 0 if female.
No education (yes=1, no=0)	A binary variable equal to 1 if the individual is no degree, and 0 if otherwise.
Married status (yes=1, no=0)	A binary variable equal to 1 if the individual is currently marital status, and 0 if otherwise.
Ethnic (kinh=1, ethnic minorities=0)	Equals 1 if household belongs to the Kinh ethnic group, 0 otherwise.
Urban (urban=1, rural=0)	Equals 1 if the household resides in an urban area, 0 otherwise.
Region of residence	A categorical variable that indicates six major geographical regions
Relation to head of household (head or wife/husb of head=1, no=0)	Equals 1 if the individual is head of household, 0 otherwise.

**Table A.3 Polynomial order selection**

	Receiving the cash transfer (yes=1, no=0)			
	(1)	(2)	(3)	(4)
$I_{\{age \geq 80\}}$	<b>0.272***</b> (0.030)	<b>0.220***</b> (0.050)	<b>0.286***</b> (0.077)	<b>0.268**</b> (0.126)
$(age - 80)$	-0.001 (0.004)	0.002 (0.004)	-0.064 (0.004)	-0.026 (0.130)
$I_{\{age \geq 80\}} (age - 80)$	0.017*** (0.005)	0.051* (0.021)	0.145* (0.059)	0.050 (0.139)
Quadratic term of $(age - 80)$		0.0002 (0.001)	-0.013 (0.010)	-0.0001 (0.045)
$I_{\{age \geq 80\}}$ *quadratic of $(age - 80)$		-0.004* (0.002)	0.001 (0.013)	0.019 (0.050)
Cubic term of $(age - 80)$			-0.0008 (0.0006)	-0.001 (0.006)
$I_{\{age \geq 80\}}$ * cubic of $(age - 80)$			0.001* (0.0007)	-0.006 (0.007)
4 <sup>th</sup> degree of $(age - 80)$				0.00007 (0.0003)
$I_{\{age \geq 80\}}$ * 4 <sup>th</sup> degree of $(age - 80)$				-0.0002 (0.0003)
Bandwidth	10	10	10	10
F-statistic	55.67	46.61	46.61	34.54
Constant	0.079**	0.086*	0.086*	0.039
R-squared	0.17	0.168	0.168	0.170
Observations	2544	2544	2544	2544

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

**Table A.4 The impact of the cash transfer program on expenditure**

	Log of daily expenditure on non-food	Log of expenditure on regular food	Log of expenditure on health	Log of expenditure on purchasing durable things	Log of regular expenses on housing, electricity, water
	(1)	(2)	(3)	(4)	(5)
<b>Receiving the transfer</b>	<b>-0.505*</b>	-0.371	1.110	-0.331	-0.317
	(0.283)	(0.231)	(0.845)	(1.692)	(0.488)
$I_{\{age \geq 80\}}(age - 80)$	0.027	0.004	0.019	0.099	0.017
	(0.020)	(0.017)	(0.057)	(0.110)	(0.035)
$(age - 80)$	0.010	0.013	-0.078	-0.067	0.013
	(0.016)	(0.012)	(0.045)	(0.095)	(0.024)
Control variable	v	v	v	v	v
Year fixed effects	yes	yes	yes	yes	yes
Bandwidth	5	5	5	5	5
Constant	4.987***	5.079***	4.968***	2.201***	5.975***
Observations	1412	1412	1412	1412	1412

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

**Table A.5 The impact of the cash transfer program on income**

	Log of total income per capital	Log of income from renting/leasing husbandry areas	Log of other incoming money	Log of income from agricultural service	Log of income from wages, salaries
	(1)	(2)	(3)	(4)	(5)
<b>Receiving the transfer</b>	-0.254	1.042	2.580**	-0.291	-2.896
	(0.308)	(0.908)	(1.182)	(0.332)	(2.213)
$I_{\{age \geq 80\}}(age - 80)$	0.015	-0.065	-0.078	0.020	0.006
	(0.022)	(0.069)	(0.074)	(0.025)	(0.153)
$(age - 80)$	0.002	0.016	-0.019	-0.003	0.122
	(0.018)	(0.046)	(0.065)	(0.016)	(0.122)
Control variable	v	v	v	v	v
Year fixed effects	yes	yes	yes	yes	yes
Bandwidth	5	5	5	5	5
Constant	10.072***	0.721***	6.335***	0.096	6.612***
Observations	1412	1412	1412	1412	1412

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

**Table A.6: Nonparametric estimation of the impact of the cash transfer program on mechanism outcomes in rural areas**

	Log of other expenditure	Log of daily expenditure on food during holidays	Agriculture activity (yes=1, no=0)	Log of working days
	(1)	(2)	(3)	(4)
<b>Receiving the transfer</b>	<b>-1.433 **</b>	<b>-0.629 *</b>	<b>-0.491 *</b>	<b>-1.826 *</b>
	(-3.27, -0.13)	(-1.7, 0.13)	(-1.88, 0.11)	(-9.77, 0.73)
Bandwidth	msetwo	msetwo	mserd	msetwo
	(6.6, 6.1)	(6.2, 6.0)	3.2	(2.3, 6.7)
Observations	4281	4281	1302	1302

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

**Table A.7: Nonparametric estimation of the impact of the cash transfer program on mechanism outcomes in urban areas**

	Log of receipt of cash gifts	Log of interest of savings
	(1)	(2)
<b>Receiving the transfer</b>	<b>-3.599***</b>	<b>-3.856***</b>
	(-9.26, -1.72)	(-7.80, 0.36)
Bandwidth	msetwo	msetwo
	(37, 10)	(27, 11)
Observations	19783	19783

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .

**Table A.8: 2SLS regression of household wealth from VNAS**

VARIABLES	Dependent Variable: household wealth (poor=1, average=2, rich =3)					
	Pooled		Rural		Urban	
	(1)	(2)	(3)	(4)	(5)	(6)
<b>Receiving the transfer</b>	<b>-0. 527**</b>	<b>-0.269*</b>	<b>-0. 578**</b>	<b>-0. 453***</b>	0. 296	0. 317
	(0.148)	(0.157)	(0.268)	(0.177)	(0. 383)	(0.230)
$I_{\{age \geq 80\}} (age - 80)$	-0. 052	0.015	-0. 019	-0. 052	-0.033	-0.004
	(0.039)	(0.016)	(0.042)	(0.039)	(0.053)	(0.028)
$(age - 80)$	0.056	0.002	0.038	0.017	-0. 003	-0. 016
	(0.036)	(0. 010)	(0.037)	(0.018)	(0. 053)	(0. 015)
Control variable	v	v	v	v	v	v
Year fixed effects						
Bandwidth	5	10	5	10	5	10
Constant	2. 757***	2. 538***	2.910***	2. 772***	1.801***	1.712***
Observations	527	974	527	654	172	320
F-statistic	144.820	298.469	96.495	198.691	53.724	99.844

Note: Standard errors in parentheses. Statistical significance: \*, \*\*, and \*\*\* indicate  $p < 0.1$ ,  $p < 0.05$ ,  $p < 0.01$ .