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Research article

How conditional and unconditional cash transfers affect rural household economic resilience: Evidence from the China Household Finance Survey

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Abstract: Cash transfers, as a fundamental form of social assistance, provide timely support to disadvantaged rural households and strengthen economic resilience among disadvantaged rural households. Strengthening economic resilience is crucial for poverty alleviation and enhancing rural households' capacity to withstand economic risks. Few studies have systematically analyzed how different types of cash transfers influence rural household economic resilience, particularly within the context of China's ongoing rural development and poverty reduction efforts. This research drew on data from the CHFS2019 to investigate the impact of both conditional and unconditional cash transfers on the economic resilience of rural households. Benchmark regression results present that conditional cash transfers significantly enhance household economic resilience in rural areas of China, while unconditional cash transfers have a significant inhibitory effect, with the stronger effect being less resonant than the latter. Heterogeneity analysis suggests that the influence of both conditional and unconditional cash transfers on household economic resilience is concentrated primarily in western regions. The mechanism analysis demonstrates that cash transfers can strengthen household economic resilience through two primary channels: Fostering human capital accumulation and elevating households' long-term economic expectations. However, these positive effects are partially offset by a reduction in labor supply incentives, indicative of welfare dependency, a phenomenon empirically documented in prior studies on social assistance programs. This study highlights the significance of

cash transfers in strengthening rural households' economic resilience and offers key policy insights for sustaining poverty alleviation efforts and advancing common prosperity.

Keywords: Cash transfers; rural households; resilience; human capital; common prosperity
JEL Codes: I32, I38, J88

1. Introduction

Essentially, economic resilience represents an economy's capacity to endure external shocks, recover swiftly, adapt to environmental changes, and maintain core functions, structural integrity, and feedback dynamics while identifying new growth opportunities to address external shocks and achieve a new equilibrium [1,2]. The economic resilience of households in rural areas belongs to a part of economic resilience, emphasizing households in rural areas, which connotes the resistance, resilience, and reconfiguration of the household economic system exhibited when households are subjected to disruptions such as natural disasters, environmental changes, and market price fluctuations. Strengthening household resistance to uncertainties such as economic fluctuations or crises is, therefore, key to safeguarding basic livelihoods, reducing economic inequalities, and stabilizing the macroeconomy, as well as contributing to the solution of the rural poverty problem [3] and the promotion of sustainable household economic development.

Existing studies on cash transfers have mainly focused on Africa, South Africa, Mexico, Sahara, Brazil, Zambia, and other regions. In China, cash transfers contribute significantly to the social security system, serving as a key approach for governmental agencies to extend support to disadvantaged groups. Based on this, examining the effectiveness of China's cash transfer policies holds significant theoretical and practical importance, particularly regarding whether these policies produce either beneficial or adverse effects on household economic resilience—a question that warrants thorough investigation. This research theme is especially urgent for developing countries, which commonly face the dual imperative of strengthening rural households' capacity to manage economic risks and improving the social protection system.

Achieving shared prosperity continues to be a paramount global objective, with poverty eradication representing the ultimate aim of human development. Based on the World Bank's international poverty threshold, over 70% of the world's rural poor resided in China as of 2021 [4], highlighting the critical need to bolster the economic resilience of Chinese households—a crucial avenue for poverty alleviation and inclusive growth. Within social assistance frameworks, cash transfers have demonstrated substantial effectiveness in improving the economic welfare of low-income rural populations. The receipt of diverse government cash subsidies has been demonstrated to alleviate immediate livelihood hardships, whilst concomitantly contributing to the strengthening of households' capacity to absorb and recover from future shocks. This paper explores the impact of cash transfers on household economic resilience using the 2019 China Household Finance Survey database, which includes a sample size of 33,553. The analysis is divided into three parts. First, the literature and theoretical frameworks are reviewed to describe the relationship between cash transfers and economic resilience. Second, the impact of cash transfers on economic resilience is empirically examined for different geographic regions and different income household subgroups. Third, the mediating role of human capital, mobility constraints, and consumption behavior in this relationship is explored in detail.

This paper commences with a critical examination of the existing literature on cash transfers and economic resilience, and an analysis of the mechanisms at play between the two. It then conducts an empirical analysis using detailed survey data to assess how conditional and unconditional cash transfers influence household economic resilience, and explores differences across regions and income groups using a benchmark regression model. Finally, a mediation effects model is used to verify that cash transfers affect household economic resilience through three pathways: Human capital accumulation, labor time allocation, and economic expectations.

Employing detailed survey data sourced from the CHFS, this study broadens the analysis of cash transfer impacts to include the economic resilience of rural households. This approach not only assesses the reallocation effects of such transfers but also provides a comprehensive evaluation of the effectiveness of targeted transfer programs. Additionally, it promotes the literature on household economic resilience by offering perspectives on the role of cash transfer policies. However, existing studies often lack comparative analysis on their distinct impacts. This paper addresses this gap by incorporating conditional and unconditional cash transfers as core explanatory variables to empirically evaluate their relative effects on household economic resilience. The findings provide empirical evidence to guide policy decisions on cash subsidies and the management of in-kind transfers during transitional phases. Third, human capital and economic expectations are critical pathways for enhancing recipients' intrinsic capacity for sustainable development and achieving long-term household stability. These channels also represent essential mechanisms through which cash transfers shape household economic resilience. By exploring these pathways, this research seeks to investigate the pathways by which cash transfers affect household economic resilience, furnishing precise orientations for policy optimization.

The organizational structure of this study proceeds sequentially: Section 2 presents the literature review and theoretical framework; Section 3 describes the model design and variable selection; Section 4 provides the empirical analysis (including baseline regression, endogeneity tests, robustness checks, qualitative analysis, and mechanism tests); and Section 5 concludes with policy implications.

2. Comprehensive literature review and theoretical analysis

2.1. Literature review

Transfers are an important tool for developing countries in their efforts to reduce poverty and mitigate inequality, not only to meet the basic consumption needs of low-income households, but also to improve social welfare and stimulate economic growth [5]. Current literature on cash transfers has focused on poverty reduction, agricultural productivity, education, labor market participation, and fertility outcomes [6–13]. Within the realm of poverty management, cash transfers, as a crucial element of social protection systems, represent a fundamental approach for poverty reduction in developing economies [13].

For example, Skoufias and Maro [12] analyzed the poverty reduction effects of the PROGRESA program in Mexico and found that it significantly reduced the incidence of poverty among low-income groups, a finding similar to that of Robson et al. [14]. Subsequently, O'Connor [15] analyzed CCTs and showed that children who benefited from such interventions were more resilient to poverty in adulthood, with gender differences.

Cash transfers have been demonstrated to affect agricultural production activities [9,11],

particularly by boosting crop productivity [16]. Moreover, such transfers enable farmers to better manage risks associated with agriculture [16] by facilitating greater access to essential inputs like livestock, tools, labor, seeds, and fertilizers for households [11,17,18]. Economically, cash transfers exhibit a wide-ranging impact, including their ability to influence intertemporal decision-making and modify attitudes toward risk [19]. For example, Bianchi and Bobba [20] reported that Mexico's PROGRESA initiative increased households' willingness to take risks, a conclusion that diverges from the findings of Prifti et al. [11]. Additionally, Karlan et al. [16] emphasized that cash transfers serve as a form of financial insurance within agricultural systems, offering a mechanism to reduce economic uncertainties faced by farming households.

Cash transfer programs exert a significant influence on both children's educational participation and labor supply patterns [6]. Empirical evidence demonstrates that these transfers contribute to higher school enrollment rates among youth [21–23]. Additionally, an extensive literature corpus has investigated the impact of cash transfers on labor market engagement [24–26]. For instance, Churchill et al. [22] analyzed the Benazir Income Support Programme to evaluate the immediate as well as medium- and long-term effects of unconditional cash transfers (UCTs) on child labor incidence and educational achievements. Their analysis revealed that, although such transfers reduce school dropout rates in the short term, they initially do not significantly affect the prevalence of child labor. However, over extended periods, UCT contribute to a reduction in child labor employment for both genders. Complementary research by Banerjee et al. [24], Handa et al. [27], and Salehi-Isfahani and Mostafavi-Dehzooei [26] corroborates the tendency of cash transfers to modestly elevate labor supply. In contrast, Bhorat and Kohler [28] presented an opposing viewpoint, arguing that beneficiaries may recalibrate their allocation between work and leisure time. With increasing transfer amounts, recipients might prefer to increase leisure, thereby diminishing their labor participation [29].

Research on how cash transfers influence fertility yields mixed results. Some researchers, such as Luna and Luker [30], Todd et al. [12], and Parker and Ryu [31], suggested that cash transfers can lower fertility rates by enhancing child health [32] and affecting women's reproductive decisions. Conversely, Stecklov et al. [33] argued that conditional cash transfers may lead to higher fertility in low-income households, whereas unconditional cash transfers seem to have little to no impact on fertility rates [12]. This divergence might be attributed to the interplay of factors like the transfer amount, child-rearing costs, and spending on child-related investments [33].

Walker et al. [1] and Martin et al. [2] described economic resilience as an economic system's capacity to withstand external shocks, swiftly recover its functionality, and innovate toward alternative developmental trajectories. This definition is equally relevant to assessing the economic resilience of rural households. Rural areas frequently face natural disasters, social risks, and other challenges that together influence rural livelihoods [34], the adaptability of family farms [35], and the robustness of rural communities [36]. Increasingly, research has identified several critical factors shaping economic resilience, such as industry clustering, policy measures, technological innovation, access to inclusive finance, availability of agricultural insurance, and the adoption of digital technologies [2,37–41].

Several strands of literature suggest that digital financial inclusion improves economic resilience in both rural and urban areas [39,42–46]. In rural contexts, financial inclusion enhances economic resilience through multifaceted mechanisms, notably by facilitating rural industrial integration, intensifying entrepreneurial activity, improving financial market conditions, fostering technological innovation, and elevating consumption levels [39,45,46]. At the national level, digital financial inclusion platforms contribute to economic resilience by advancing financial education, delivering

tailored content that heightens risk awareness and encourages prudent savings behavior [47]. These developments in turn stimulate consumption and bolster economic growth during downturns [5,42,48,49], ultimately strengthening systemic resilience.

Scholars have shown a growing interest in examining how economic policies affect rural household resilience, with a large number of studies focusing on the impact of rural development policies on rural economic resilience. For example, Zhou and Gu [50] referred to rural revitalization strategies, Cui et al. [3] studied poverty alleviation policies, Roberts et al. [51] analyzed digital countryside policies, and Huang et al. [52] studied rural homestead exit policies.

2.2. Theoretical analysis

Cash transfers function as a pivotal social policy instrument, extensively utilized worldwide for poverty reduction, social security, and human capital development. China and the international community demonstrate both parallels and distinctive features regarding the implementation background, program design, targeting strategies, and effectiveness evaluation of cash transfer programs.

Globally, conditional cash transfers typically operate on a "cash-for-compliance" basis, where monetary assistance is contingent upon fulfilling predetermined conditions in areas like education, health services, and dietary enhancement [12]. Such programs often target female beneficiaries, aiming both to address immediate livelihood challenges in poor households and to promote intergenerational mobility by mandating investments in children's health and education for sustained human capital development. China's conditional cash transfer initiatives are comparatively limited, mostly operating as localized pilots integrated with rural revitalization policies (such as labor-for-relief schemes and incentive-based subsidies). Internationally, unconditional cash transfers refer to a form of social transfer in which governments or organizations directly provide cash assistance to specific groups without attaching any usage conditions or behavioral requirements. Such programs usually focus on the poorest households, frequently those led by female heads. They respect the recipients' autonomy in decision-making, allowing them to allocate resources according to their most pressing needs without imposing restrictions on how the money is spent. Their main impact lies in alleviating multidimensional poverty. While learning from global practices, China has developed its own unconditional cash transfer policies with institutional adaptations tailored to national circumstances. These policies aim at urban and rural families whose incomes fall below local standards. The most representative is the Dibao scheme. Although the use of subsidy funds is not restricted, there is an orientation toward productive investments. The emphasis has moved from tackling absolute poverty to building family resilience reflecting distinct Chinese characteristics.

To maintain consistency with international standards while fully reflecting Chinese characteristics in the research, this paper adopts a classification framework of conditional and unconditional cash transfers to analyze the impact of cash transfers on household economic resilience. Conditional cash transfers link the disbursement of funds to recipients' specific productive activities with the goal of enhancing efficiency through incentives for productive investment, thus boosting household earnings and improving the capacity to withstand economic uncertainties. Unconditional cash transfers (such as the Dibao and Wubao) impose no restrictions on fund usage—recipients have full autonomy in allocating the money. These subsidies aim to provide short-term relief for households facing financial hardship. However, the absence of behavioral incentives may weaken households' intrinsic development motivation, which could ultimately erode their economic resilience.

Cash transfers constitute a fundamental element within social protection frameworks. Specifically, subsistence allowances, serving as a critical mechanism for state assistance to disadvantaged groups, primarily bolster household economic resilience by fostering human capital development. From a policy classification standpoint, these transfers may be categorized as either conditional and unconditional cash transfers. Conditional cash transfers are directed toward agricultural activities, aiming explicitly to maintain farm viability, enhance productive efficiency, and ensure stable output supply. Their allocation is inherently conditioned upon engagement in production or factor contributions. Conversely, unconditional cash transfers provide support to low-income households, victims of disasters, and those facing pressing needs in domains like education, health, and employment. Such transfers are purely needs-based, intended to alleviate immediate living constraints independently of productive participation. According to microeconomic theory, households behave as rational economic agents that seek to maximize welfare over time when receiving transfers, especially those aimed at subsistence support. This optimization strategy encourages greater investments in knowledge and skills, thereby promoting asset building and enhancing long-term economic resilience through improved labor market participation and better risk management abilities.

China's unconditional cash transfer programs, including Dibao and Wubao, form a foundational part of the social safety net, aimed at providing basic living assistance to low-income groups. By delivering regular cash payments, these programs establish a safety net that has been instrumental in alleviating absolute poverty and securing the subsistence of vulnerable families. Beyond monetary aid, the government also facilitates access to low-skill vocational training and job placement services, seeking to enhance participants' employability and support moves toward self-reliance. Nevertheless, empirical studies indicate that prolonged reliance on such transfers can generate adverse incentives. For instance, it may dampen beneficiaries' initiative to seek economic improvement, leading to diminished work effort and lower engagement in the labor market. There is also the potential for entrenched welfare dependency, wherein able-bodied individuals continue to depend on government support rather than entering employment. These effects may partially offset the intended goal of strengthening household economic resilience, underscoring the importance of policy mechanisms that harmonize immediate welfare provision with incentives for long-term self-sufficiency.

When recipient households receive cash transfers, the resulting change in income directly influences their economic decisions and resource allocation. In this process, economic expectations (a key psychological-economic variable) play an essential mediating role. Defined as a household's subjective evaluation and forecast of future economic conditions, economic expectations operate through two main mechanisms: First, optimistic economic expectations reduce perceived income risk. When anticipating favorable economic conditions, households are more inclined to direct resources toward current consumption or productive investments [27]. This shift reflects confidence in economic stability and serves as a behavioral marker of expectation-driven optimism. Second, well-anchored income expectations improve intertemporal consumption smoothing. As shown by Banerjee et al. [53], and Couharde and Mouhoud [54], transfer recipients demonstrate a greater ability to maintain consumption levels following unexpected shocks compared to non-recipients. This smoothing effect is largely attributable to improved economic expectations. Stable income projections strengthen households' capacity to cope with risk, enabling them to sustain consumption stability despite macroeconomic fluctuations. Drawing on the analytical framework established above (Figure 1), the following research hypotheses are advanced:

H1: Conditional cash transfers have the potential to strengthen household economic resilience, whereas unconditional cash transfers may impede improvements in the level of household resilience.

H2: Cash transfers can enhance household economic resilience by fostering improvements in human capital.

H3: Cash transfers may weaken household economic resilience by reducing labor supply time.

H4: Cash transfer payments may alter household members' economic expectations, thereby enhancing the economic resilience of families.

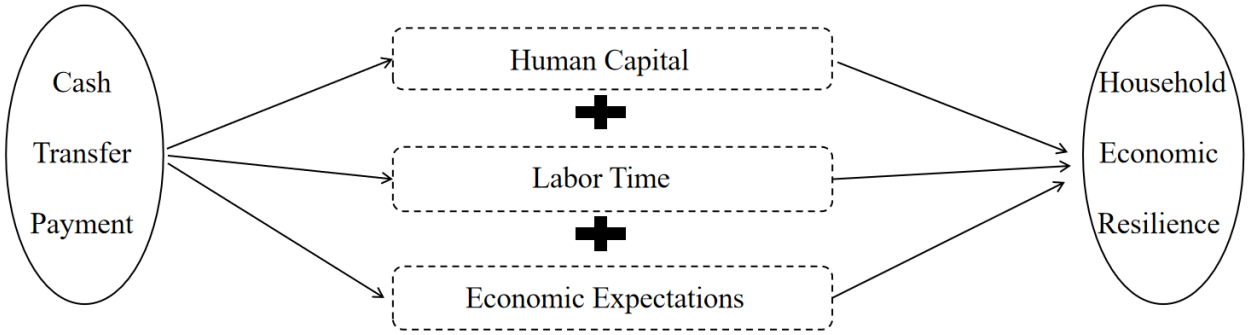

Figure 1. Theoretical framework of cash transfers on household economic resilience.

3. Model specification and variable selection

3.1. Data source

The data used in the article come from a database managed and supervised by the CHFS at Southwestern University of Finance and Economics in 2019 [55]. The survey covers 29 regions across China and includes 34,643 sample households. Detailed data on household assets, income and expenditure insurance, and employment are collected by systematically tracking household financial status and economic activities over time.

3.2. Baseline regression model specification

To explore the influence of cash transfers on household economic resilience, this study constructs a regression model 1 as below:

$$HER_i = \alpha_0 + \alpha_1 CCT_i + \alpha_2 UCT_i + \beta_m Control_m + \varepsilon_i, \quad (1)$$

where HER_i represents household economic resilience; CCT_i and UCT_i denote the amounts of conditional and unconditional cash transfers, respectively; $Control_m$ represents a set of control variables; α_1 and α_2 are the estimated coefficients for conditional and unconditional cash transfers, respectively; β_m captures the regression coefficients for the control variables; and ε_i denotes the error term.

3.3. Variable selection

3.3.1. Dependent variable

Household economic resilience refers to the capacity of families to withstand and adjust to challenges stemming from uncertainties, including economic volatility and natural disasters. While some scholars, such as Wu and Zhang [45], have measured household economic resilience based on changes in total income, a single indicator may inadequately capture a household economic system's capacity to respond to such shocks. Given variations in research focus, data sources, and target subjects, Li [56] proposed a multidimensional framework encompassing drivers, pressures, states, impacts, and responses to evaluate economic resilience. With a series of policies and social guarantees, such as precise identification and precise policy implementation, China has not only solved the problem of absolute poverty, but has also alleviated relative poverty. Enhancing the economic resilience of households in rural areas, as a necessary way to solve relative poverty and realize common prosperity, ensuring the sustained achievement of poverty eradication outcomes, and creating a durable system for addressing relative poverty represent key priorities in the current phase of development. These are the objective requirements for promoting the common prosperity of all people. It has substantial implications to study the role of cash transfers in shaping the economic resilience of rural families.

Building on Martin et al.'s [2] conceptualization of economic resilience, this paper examines rural household economic resilience through three key aspects: Resistance, resilience, and recovery. Resistance represents the ability of rural household economies to withstand external shocks, with critical determinants including farm income, exposure to debt, and risks associated with investments. Resilience refers to the capacity of a household's economic system to return to its prior state within a defined timeframe after experiencing a shock, shaped by factors such as household savings, the proportion of expenditures on basic needs, and optimistic psychological perceptions. Recovery, alternatively termed reconstructive capacity, highlights the ability of household economies to reallocate resources effectively, improve their overall economic status, and restore balance following a shock. This process facilitates the structural transformation and optimization of household economic systems, with an emphasis on innovation capacity. In this study, reconfiguration is assessed using three indicators: Social capital, objective financial literacy, and subjective risk attitudes.

This research establishes a tri-level framework for evaluating household economic resilience (refer to Table 1), organized into three fundamental pillars—resistance, recovery, and reconfiguration—with each pillar comprising three sub-indicators, resulting in a total of nine specific measures. Table 1 outlines the calculation methods for each secondary indicator and explicitly defines their value types (i.e., positive or negative), providing a solid methodological basis for quantitative evaluation. To demonstrate its application, this study employs the entropy method to assess household economic resilience across 29 Chinese regions in 2018, with the specific procedural steps detailed below.

Step 1: Standardization procedure. Given the varying dimensions across evaluation indicators, standardization is conducted to mitigate the influence of unit and dimensional discrepancies. In accordance with the indicator system established for measuring household economic resilience, this study performs both positive and negative normalization on the indicators to achieve standardized data configuration (Eq 2).

$$\begin{aligned} x_{ij}^{'} &= \frac{x_{ij} - \min(x_{ij})}{\max(x_{ij}) - \min(x_{ij})} (i = 1,2,...,n; j = 1,2,...,m) \\ x_{ij}^{'} &= \frac{\max(x_{ij}) - x_{ij}}{\max(x_{ij}) - \min(x_{ij})} (i = 1,2,...,n; j = 1,2,...,m) \end{aligned} . \quad (2)$$

Step 2: Determination of indicator weight coefficients (Eq 3),

$$\begin{aligned} p_{ij} &= \frac{x_{ij}^{'}}{\sum_{i=1}^{n} x_{ij}^{'}} (i = 1,2,...,n; j = 1,2,...,m) \\ e_j &= \frac{1}{\ln n} \sum_{i=1}^{n} p_{ij} \ln p_{ij} (0 \le e_j \le 1) \\ r_j &= 1 - e_j \\ w_j &= \frac{r_j}{\sum_{j=1}^{m} r_j} (j = 1,2,...,m) \end{aligned} . \quad (3)$$

Step 3: Calculation of composite evaluation index. The composite index is derived through a weighted summation of the normalized data, utilizing the previously computed indicator weights (Eq 4),

$$S_j = \sum_{i=1}^{m} w_j x_{ij}^{'} . \quad (4)$$

In Eq 4, the household economic resilience index is bounded by a range of 0 to 1, inclusive. S_j approaching 1 indicates a higher level of household economic resilience, whereas a value closer to 0 suggests lower resilience.

Table 1. Framework for assessing the economic resilience of rural households.

Primary indicator	Variable	Measurement of indicators	Indicator attributes
Resistance	Proportion of agricultural income	(Income derived from agricultural activities/Aggregate household income) × 100%	+
	Debt risk	(Total household debt/Aggregate household assets) × 100%	−
	Investment risk	[(Stock income + Fund income + Bond income + Wealth management income + Non RMB asset income)/Total household assets] × 100%	−
Recovery	Total household savings	Household demand and time deposits	+
	Proportion of subsistence consumption	Expenditures on Clothing + Food + Housing/Total household consumption expenditure	−
	Mindful psychological perception	Subjective perception of well-being	+
Reconfiguration	Social capital	Transfer income from relatives and friends during festivals and life events	+
	Objective financial literacy	Head of household's attention to economic and financial information	+
	Subjective risk attitude	Investment risk-return preference	+

3.3.2. Independent variable

This study categorizes subsidies associated with agricultural production activities as conditional cash transfers. These include payments for farmland afforestation and grassland restoration, direct grain subsidies, subsidies for agricultural machinery acquisition and deployment, subsidies for cultivation of improved varieties comprehensive input subsidies, and other production-oriented agricultural supports. In contrast, unconditional cash transfers are designed primarily to safeguard the basic living standards of low-income populations. Including the Dibao program, temporary assistance, support for Wubao households, medical aid, poverty alleviation grants, natural disaster relief, compensation payments, and similar social welfare subsidies.

3.3.3. Control variables

The covariates employed in the present study encompass the gender of the householder', their age, household registration type, marital situation, educational attainment, and health status. Table 2 highlights the descriptive statistics corresponding to these factors.

Table 2. Summary statistics of primary variables.

Variable	Variable Symbol	Variable Definition and Coding	Mean	Std. Dev.	Min. value	Max. value	Observations
Household economic resilience	HER	The indicator system can be calculated using the entropy method	0.1556	0.1199	0	0.9356	33,553
Conditional cash transfers	CCT	Ln (Direct grain subsidies + Subsidies for the purchase and modernization of large-scale agricultural equipment + Seed subsidies + Comprehensive subsidies for purchasing production materials + Other agricultural production subsidies + 1)	1.7872	2.8577	0	12.1007	33,553
Unconditional cash transfers	UCT	Ln (Dibao subsidies + Temporary assistance + Wubao subsidies + Medical assistance + Natural disaster subsidies + Other subsidies + 1)	1.0611	2.6962	0	12.7657	33,553
Variable	Variable Symbol	Variable Definition and Coding	Mean	Std. Dev.	Min. value	Max. value	Observations
Age	Age	((2018 – Year of Birth)^2)/100	50.6464	16.5082	16	80	33,553
Gender	Gender	1 = Male, 2 = Female	1.5034	0.5	1	2	33,553
Household registration type	Reg	0 = Urban, 1 = Rural	0.3572	0.4792	0	1	33,553
Educational attainment	Education	1 = No formal education, 2 = Primary school, 3 = Junior high school, 4 = Senior high school, 5 = Vocational high school, 6 = Junior college, 7 = Bachelor's degree, 8 = Master's degree or above	3.3566	1.6108	1	9	33,553
Marital status	Marriage	1 = Single, 2 = Married, 3 = Cohabiting, 4 = Separated, 5 = Divorced, 6 = Widowed	2.3998	1.2138	1	6	33,553
Health status	Health	1 = Excellent, 2 = Good, 3 = Fair, 4 = Poor, and 5 = Very Poor	2.7413	1.0044	1	5	33,553

4. Results

4.1. Baseline regression results analysis

A regression analysis was conducted to analyze the influence of cash transfers with distinct characteristics on the economic resilience of households, with findings detailed in Table 3. The outcomes from model (1) reveal that conditional cash transfers positively influence household economic resilience, achieving statistical significance at the 5% threshold. Conversely, unconditional cash transfers demonstrate a pronounced negative effect, statistically validated at the 1% level of significance. Additionally, the influence of unconditional cash transfers exceeds that of their conditional counterparts. This difference could be attributed to the broader scope and higher transfer amounts inherent in the unconditional cash transfers considered in this research. H1 is verified.

Table 3. Results of baseline regressions.

Variable	Model (1)	Model (2)	Model (3)
Cash Transfer		−0.0092***	
		(0.0023)	
CCT	0.0006**		
	(0.0003)		
UCT	−0.0007***		
	(0.0002)		
AMPS			0.0041**
			(0.0020)
MLS			−0.0018***
			(0.0003)
Gender	0.0005	−0.0012	0.0005
	(0.0013)	(0.0004)	(0.0013)
Age	−0.0006***	−0.0006***	−0.0006***
	(0.0000)	(0.0000)	(0.0000)
Reg	−0.0125***	0.0176**	−0.0106***
	(0.0017)	(0.0073)	(0.0015)
Edu	0.0091***	0.0065***	0.0089***
	(0.0005)	(0.0008)	(0.0005)
Marriage	−0.0007	−0.0010*	−0.0007
	(0.0006)	(0.0006)	(0.0006)
Health	−0.0058***	−0.0035***	−0.0056***
	(0.0007)	(0.0010)	(0.0007)
Constant	0.1618***	0.1812***	0.1627***
	(0.0038)	(0.0060)	(0.0038)
Anderson canon. corr. LM statistic		325.5230***	
Cragg-Donald Wald F statistic		109.5830	
Observations	33,553	33,553	33,553

Note: (1) Significance levels are denoted by ***, **, and *, corresponding to 1%, 5%, and 10% confidence thresholds, respectively; standard errors are reported in parentheses. (2) For identification assessment, the Anderson canonical correlation LM test is employed to examine under-identification, while the weak instrument test is conducted using the Cragg-Donald Wald F statistic.

4.2. Endogeneity test

To mitigate potential endogeneity issues arising from bidirectional causality and omitted variable bias, this study employs the 2SLS approach using three instrumental variables. These include 2018 rainfall data from 29 Chinese regions, a composite index of natural disasters (measured by the share of area affected by floods, landslides, mudflows, and typhoons), and the economic background of local party-government leaders. The latter is coded as 2 if both the party secretary and governor possess an economic background, 1 if only one does, and 0 otherwise. These instruments satisfy the relevance condition: rainfall and natural disasters influence cash transfer allocation by eliciting government fiscal responses, while leaders with economic training tend to prioritize livelihood-oriented spending, thus affecting the scope and execution of transfer policies. The exogeneity condition is also met, as rainfall and disasters are driven by natural phenomena unrelated to household resilience, and official appointments follow institutional rules uncorrelated with household-level outcomes.

The Anderson canon. corr. LM statistic (325.523) is significant at the 1% level, rejecting under-identification, and the Cragg–Donald Wald F statistic (109.583) comfortably exceeds standard critical values, indicating no weak instruments. Crucially, as demonstrated in model (2) of Table 3, the estimated effect of cash transfers remains statistically significant after addressing endogeneity, confirming their positive impact on household economic resilience.

4.3. Robustness checks

Table 4. Balance tests and average treatment effects of the three matching methods.

Matched method	Pseudo-R^2	LR Statistic	Std. Bias (%)	Treated Group	Control Group	ATT	Std. Error	*t*-value
Unmatched	0.2470	10934.7600	57.0000					
1:4 matched	0.0860	3.9700	27.7000	0.0607	0.1010	−0.0404*	0.0208	−1.9400
Radius matched	0.0070	0.3400	21.8000	0.0607	0.1465	−0.0858***	0.0085	−10.0600
Kernel matched	0.0070	0.3400	20.7000	0.0607	0.1462	−0.0855***	0.0075	−11.4500
Mean				0.0607	0.1312	−0.0706	0.0123	−7.8167

Note: Asterisks denote statistical significance levels: *p < 0.05, ***p < 0.01.

This study conducts robustness checks by replacing the core explanatory variables. Specifically, the general measure of conditional cash transfers is substituted with the specific program “subsidies for the purchase and renewal of agricultural machinery.” For unconditional cash transfers, the “subsidy for the subsistence allowance program” is adopted as an alternative proxy. Regression results in column (3) of Table 3 indicate that subsidies for agricultural machinery procurement and updating have a significant positive effect on household economic resilience, while the unconditional cash

transfers have a negative impact significant at the 1% level. These results are consistent with the baseline estimates, providing further support for H1 and confirming that the effects of conditional and unconditional cash transfers on household economic resilience are robust.

Propensity score matching (PSM) is employed to estimate the treatment effects. Three distinct matching algorithms are applied, and the results are summarized in Table 4. For recipient households, the pseudo-R^2 declines from 0.247 to 0.007 after matching, and the standardized bias for household economic resilience falls below 27.7%. These outcomes suggest that the matching procedure effectively balanced the observed covariates across the experimental and comparison cohorts, with post-matching characteristics showing substantial alignment, thereby affirming the quality of the match. Upon confirming that the balanced sample meets the balancing property, the average treatment effect on the treated (ATT) of cash transfers on household economic resilience is estimated. As reported in Table 3, the ATT estimates obtained from all three matching methods are negative and statistically significant at conventional levels. The average ATT across methods is −0.0706. From a counterfactual perspective, the household economic resilience was estimated to be 0.1312 in the absence of cash transfers. By contrast, the observed resilience level among receiving households was 0.0607, implying a reduction of 53.73%. These findings indicate that, after accounting for selection bias, cash transfers significantly reduce household economic resilience.

4.4. Heterogeneity analysis

4.4.1. Regional heterogeneity

Cash transfers with different attributes also affect the economic resilience of households in rural areas across different regions due to regional differences in economic base, resource endowment, industrial structure, population density, and geographic location. To examine this heterogeneity, the 33,553 samples were divided into eastern, central, western, and northeast regions based on their geographic locations. The analysis results are summarized in Table 5.

The results in Table 5 reveal pronounced regional heterogeneity in conditional cash transfers' impact on household economic resilience. Specifically, these subsidies exhibit statistically significant positive effects in both western and eastern regions, with effect sizes that are more substantial in the former. Conversely, a suppressive effect is observed in northeastern China. This spatial variation likely stems from misalignment between subsidy policies and local economic conditions: Western regions benefit from subsidies emphasizing market integration, whereas northeastern areas suffer from industrial transition lags and insufficient policy flexibility, undermining subsidy efficacy. Unconditional cash transfers likewise demonstrate regionally divergent impacts—significantly negative effects in western and northeastern regions, and statistically insignificant (thus economically meaningless) negative coefficients in central and eastern areas. This pattern reflects developmental disparities: In less-developed, less-marketized regions (west/northeast), subsistence transfers risk inducing welfare dependency, whereas economically diversified, market-vibrant regions (east/center) exhibit greater capacity to absorb or transform transfer funds, thereby mitigating adverse effects.

Table 5. Examination of regional variations in regression outcomes.

Variable	Eastern Region Model (1)	Middle Region Model (2)	Western Region Model (3)	Northeast Region Model (4)
CCT	0.0009*	0.0004	0.0019***	−0.0014*
	(0.0005)	(0.0006)	(0.0005)	(0.0007)
UCT	−0.0002	−0.0004	−0.0013***	−0.0014**
	(0.0004)	(0.0005)	(0.0004)	(0.0008)
Control Variables	Control	Control	Control	Control
Constant	0.1584***	0.1831***	0.1544***	0.1456***
	(0.0057)	(0.0094)	(0.0072)	(0.0118)
Observations	12,491	7,316	10,101	3,645

Note: (1) Statistical significance is marked by ***, **, and * at the 1%, 5%, and 10% confidence levels, respectively; values shown in parentheses represent the standard errors.

4.4.2. Heterogeneity in income

Table 6 reports regression results under income-distribution-neutral conditions, with the study sample divided into five income quintiles: the first (low-income), second (lower-middle-income), third (middle-income), fourth (upper-middle-income), and fifth (high-income). Separate regressions were estimated for each quintile to examine heterogeneous effects of conditional and unconditional cash transfers on household economic resilience. Three main findings emerge: Conditional cash transfers significantly improve economic resilience among lower-middle and upper-middle-income groups. Unconditional cash transfers show differential effects: A statistically significant negative impact on the lower-middle-income group, but a positive effect on the high-income group. Conditional cash transfers are more effective for low-income households, whereas high-income households exhibit both greater ability to leverage conditional cash transfers and higher marginal utility in converting unconditional cash transfers into resilience gains.

Table 6. Regression results on household total income heterogeneity.

Variable	First quintile Model (1)	Second quintile Model (2)	Third quintile Model (3)	Fourth quintile Model (4)	Fifth quintile Model (5)
CCT	0.0001	0.0013***	0.0002	0.0029***	0.0011
	(0.0004)	(0.0005)	(0.0006)	(0.0009)	(0.0010)
UCT	−0.0004	−0.0017***	0.0001	0.0004	0.0023**
	(0.0003)	(0.0004)	(0.0006)	(0.0007)	(0.0011)
Control Variables	Control	Control	Control	Control	Control
Constant	0.1216***	0.1249***	0.1356***	0.1531***	0.2033***
	(0.0065)	(0.0077)	(0.0085)	(0.0098)	(0.0111)
Observations	6711	6710	6710	6711	6711

Note: (1) Statistical significance is marked by ***, **, and * at the 1%, 5%, and 10% confidence levels, respectively; values shown in parentheses represent the standard errors.

4.5. Mechanism analysis

Theoretical analysis suggests that cash transfers could affect household economic resilience through three primary mechanisms: Human capital accumulation, labor supply hours, and economic expectation realignment. To empirically test these pathways, this study employs a mediation effect model.

$$M_i = \gamma_0 + \gamma_1 Cash_i + \lambda_m Control_m + \varepsilon_i \quad (5)$$

In the equation, M_i stands for the mechanism variable, $Cash_i$ denotes cash transfers, derived from the summation of conditional and unconditional cash transfers, serving as the key intervention measure in this study, and the control variables remain the same as those included in Eq 1. To conduct the mechanism test, Eq 5 is constructed. By incorporating human capital accumulation, labor supply hours, and economic expectations into the analytical framework of cash transfers and household economic resilience, this study examines the mechanism through which cash transfers influence household economic resilience in rural areas via these three pathways. Table 7 shows the results obtained by analyzing the mechanism.

First, this study uses educational expenditure data from recipient households as a proxy for human capital to examine its mediating role in the relationship between cash transfers and household economic resilience. The mediation test results from model (1) in Table 7 show that, after including the human capital mediator and controlling for household head characteristics, the coefficient for cash transfers remains statistically significant at the 1% level. This finding strongly supports the argument that cash transfers enhance household economic resilience by promoting human capital accumulation, thereby validating H2. These results have significant policy implications for consolidating poverty reduction achievements and breaking the cycle of intergenerational poverty.

Second, this study uses annual household labor hours as a mediator to examine their role in the pathway through which cash transfers affect household economic resilience. The mediation test results from model (2) in Table 6 indicate that cash transfers significantly reduce household labor supply at the 1% level. These results suggest that while cash transfers effectively fulfill their fundamental role in safeguarding basic living standards for disadvantaged populations, they may simultaneously lead to diminished work participation—a manifestation of welfare reliance that corroborates H3. This empirical evidence underscores the importance of developing targeted transfer schemes that reconcile potential discrepancies between policy objectives and behavioral adaptations. Drawing on comparative international studies, welfare program designers should strive to optimize the equilibrium between essential social protection and productive incentive structures.

Finally, to assess the mediating effect of economic expectations on the relationship between cash transfers and household economic resilience, our analysis employs survey data capturing household heads' short-term economic outlook (measured as a three-month forward-looking assessment). This forward-looking indicator serves as an empirical proxy for anticipatory economic behavior in our mediation framework. Given the ordinal nature of the economic expectation variable, an ordered logistic regression model is employed for estimation. Results from the mediation test in model (3) of Table 7 show a statistically significant odds ratio (OR) of 0.9720 for cash transfers. This implies that for each unit increase in cash transfers, household heads are 1.0288 times more likely to report a more optimistic economic outlook. The significant effect of cash transfers on economic expectations supports H4.

Table 7. Results of theoretical mechanism testing.

Variable	Human Model (1)	Time Model (2)	Expectation Model (3)
Cash	0.0167*** (0.0049)	−0.0773*** (0.0059)	−0.0284*** (0.0046)
Control Variables	Control	Control	Control
Constant	5.55779*** (0.0850)	4.0448*** (0.1015)	
Observations	33,553	33,553	33,553

Note: (1) Statistical significance is marked by ***, **, and * at the 1%, 5%, and 10% confidence levels, respectively; values shown in parentheses represent the standard errors.

5. Conclusions

Enhancing economic resilience among rural households is a crucial factor influencing poverty alleviation and the achievement of common prosperity. This enhancement is closely linked to the support and guidance provided by social security policies, with cash transfer payments serving as a key mechanism for low-income groups to improve human capital and adjust economic expectations, thereby strengthening household economic resilience.

This study first conducts a theoretical examination of the channels through which cash transfers influence household economic resilience, with particular emphasis on human capital accumulation, labor time allocation, and economic expectations. Subsequently, based on estimates of rural household economic resilience across 29 provinces (including municipalities and autonomous regions) in China in 2018, empirical analyses are performed using data from the 2019 CHFS.

This study's crucial conclusions are highlighted in the following. First, baseline regression results indicate that conditional cash transfers significantly enhance household economic resilience, whereas unconditional cash transfers tend to diminish it, with the influence of conditional cash transfers on household economic resilience being comparatively weaker than that of unconditional cash transfers. Second, heterogeneity analysis indicates that the effects of cash transfers on household economic resilience vary across different regions and income groups. Both conditional and unconditional cash transfers are more effectively directed toward the western region, where their impact on household economic resilience is markedly greater. Conditional cash transfers significantly improve economic resilience among lower-middle and upper-middle income groups. Unconditional cash transfers exert a statistically significant negative impact on lower-middle-income households, but a positive effect on high-income ones.

This study provides critical insights for refining the cash transfer payment policy framework, sustaining and broadening the gains from poverty reduction efforts, facilitating the effective integration of rural revitalization initiatives, and ultimately promoting common prosperity. First, the current cash transfer system predominantly relies on unconditional transfers, such as unconditional cash transfers, which provide essential financial support to meet basic household needs. However, these subsidies exhibit limited efficacy in enhancing households' capacity to withstand and recover from various shocks and stresses, and in some cases, may even exert adverse effects on improving economic resilience. Within the framework of contemporary economic development, it is unrealistic to rely

exclusively on unconditional transfers to enhance the economic resilience of households. On the contrary, conditional cash transfers can be used as a "money-for-action" policy to enhance the endogenous development incentives of low-income groups and reduce welfare dependency in offsetting poverty governance. Therefore, according to the research in this paper, while increasing cash transfer subsidies, policymakers should prioritize agricultural support subsidies, such as subsidies for good seeds, and subsidies for the purchase and application of agricultural machinery through the development of agriculture to sustainably raise rural household incomes. In addition, as the western region remains the main battleground for consolidating poverty alleviation and promoting rural revitalization, conditional cash transfers have greatly improved the economic resilience of households in the region, demonstrating the economic effects of social protection policies. This further underscores the need to continue to focus policy on the western region, take advantage of its rich land resources, and make full use of the agricultural subsidy policy in implementing conditional agricultural cash transfers to improve the efficiency of the cash transfers and the capacity of the region to develop, thereby stabilizing and increasing rural incomes. Third, unconditional cash transfers aim to satisfy basic subsistence needs, whereas unconditional cash transfers focus on stimulating beneficiaries' intrinsic motivation and encouraging efforts to increase household income. Implementing a differentiated cash transfer policy tailored to distinct demographic groups is essential for maximizing the efficacy of various transfer types. In response to the observed reduction in household consumption following the receipt of cash transfers in rural areas, governments should strengthen social security systems to instill a sense of long-term security and reduce precautionary savings. Additionally, rural outreach programs should promote consumption awareness and encourage investment in agricultural production to enhance future household consumption capacity.

This study carries substantial theoretical and practical importance for the global community, especially for emerging economies. Existing literature and relevant theoretical frameworks have predominantly concentrated on areas including education, fertility, and poverty. This study provides the first comprehensive investigation into the mechanisms by which various attributes of cash transfer programs influence household economic resilience. It not only illuminates the impacts of two distinct cash transfer modalities on the household's economic resilience, but underscores the heterogeneity of these impacts across geographic regions and income strata. The findings provide robust scientific evidence to policymakers, facilitating the design of long-term resilient economic frameworks for low-income rural households. In China, relative poverty persists as a critical challenge, with its mitigation fundamentally contingent upon strengthening households' capacities for resilience, recovery, and adaptation to economic shocks. Therefore, bolstering the economic resilience of rural households constitutes a pivotal component of China's strategy to address relative poverty. This study offers valuable insights for other developing countries in crafting effective strategies to alleviate relative poverty. One constraint of this research lies in its dependence on cross-sectional data. Given that the 2017 sample from the CHFS pertinent to this study was limited in size and encompassed only a single conditional cash transfer program lacking adequate representativeness, and that subsequent survey waves did not include similar subsidies, this analysis exclusively employs data from 2019. Future research will seek to extend this domain and undertake more granular analyses.

This research examines the feasibility of region-specific policy adaptations by aligning with the conceptual foundations of globally recognized conditional cash transfer (CCT) initiatives, while incorporating the operational realities of China's farm subsidy system. Through a structured categorization of China's grain production incentives, premium seed support schemes, broad-based

farm input subsidies, and mechanization procurement aids within the CCT taxonomy, this study aims to uncover hidden connections between domestic agrarian assistance measures and standard CCT models.

This classification carries intrinsic conceptual constraints: While China's subsidy programs incorporate de facto behavioral stipulations—including restrictions on leaving fields fallow, requirements to cultivate specified crops, or compliance with authorized farm equipment lists—their conditional nature primarily surfaces in adherence to output-oriented regulations. This presents a stark divergence from mainstream CCT implementations worldwide, where conditions are principally tied to human development benchmarks (e.g., educational attendance metrics, health service access indicators). This "low-conditionality" feature mirrors the distinctive governance rationale underlying China's farm support regime, where safeguarding national food supplies and optimizing agricultural productivity constitute fundamental policy aims. However, this theoretical misalignment could invite critical examination of whether standard CCT paradigms are transferable to China's institutional environment.

Subsequent studies ought to focus on (1) developing a precision-oriented measurement system to evaluate the "strictness of requirements" embedded in China's subsidy mechanisms, and (2) conducting transnational benchmarking studies to test the external validity of this categorization approach.

Use of AI tools declaration

The authors declare they have not used Artificial Intelligence (AI) tools in the creation of this article.

Data availability

The data used in this study is from the China Household Financial Survey Project (CHFS) organized and managed by the China Household Financial Survey and Research Center, Southwestern University of Finance and Economics.

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Conflict of interest

The authors declare no conflict of interest in this paper.

Author contributions

Wenxing Li: Conceptualization, Writing-original draft and editing. Weiying Ping: Methodology, Funding acquisition. Jia Wang: Funding acquisition, Writing-original draft. Biaobiao Zhang: Writing-review and editing.

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