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Effect of the Cash Support from the Vision Umurenge Programme on Household Financial Behaviour in Rwanda: The Case of Direct Support (DS)

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Abstract: This study aims to quantify the extent to which poor households receiving cash support from the Vision Umurenge Programme (VUP) allocate their income across major spending categories, mainly consumption, savings, household-level investment, and cash transfers for community participation. The analysis utilises a nationally representative panel dataset of 1642 respondents, collected between 2013 and 2017. A Maximum Likelihood Method (MLM) approach was employed to model four financial behaviours: (i) saving, (ii) consumption, (iii) investment, and (iv) social transfers as a proxy for community participation. The independent variables include the monetary benefits received by individuals over different periods, alongside demographic characteristics such as gender, age, education level, and area of residence (rural–urban), which were controlled in the analysis. The findings reveal a positive and statistically significant effect of the direct cash support provided by the VUP on increased consumption, and marginal effects on individual savings and investment behaviours. However, the data do not provide sufficient evidence to conclusively establish a relationship between participation in the VUP and cash transfers for community participation. The study recommends the intensification of efforts to engage in saving as way to build resilience, and further suggest a periodic increase in the VUP benefits' size to cushion inflation effects.

Keywords: financial behaviour; Vision Umurenge Programme (VUP); maximum likelihood; social protection; cash support

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1. Introduction

The concept of a social safety net (SSN) plays a central role in inclusive development discourse, frequently promoted by international financial institutions and social development practitioners. The World Bank defines SSNs as support provided to low-income and vulnerable populations to address the effects of market failures in economic resource allocation. In recent years, the development landscape has rapidly embraced and expanded the concept. Social safety nets are estimated to have lifted 36% of the world's extremely poor out of extreme poverty globally (The World Bank, 2018).

Social safety net (SSN) programmes are classified into two broad categories: formal and informal safety nets. The primary distinction between these categories lies in the legal framework governing their enforcement. Formal safety nets legally guarantee individuals access to economic or social support. In contrast, informal safety nets offer livelihood

support to help individuals attain or maintain a minimum standard of living but do so without any legal guarantees (Paitoonpong et al., 2008).

Informal SSNs can be private, involving transfers from family members, friends, or neighbours. In contrast, public SSNs refer to financial or non-financial assistance that individuals expect to receive from the government. Formal safety net programmes are characterised by interventions that: (i) generate assets, (ii) create employment opportunities, (iii) provide income or cash transfers, and (iv) deliver basic social services (Cichon et al., 2004). Table 1 below provides an overview of social safety programmes administered in Rwanda.

Table 1. Social protection categories, objectives, and types of programmes.

Social Protection	Programmes Objective	Types of Programmes
Social safety net/social Assistance	Reduce poverty and inequality	• Unconditional/conditional cash transfers • Social pension • Food and in-kind transfer • School feeding programmes • Public works • Fee waivers and targeted subsidies • Other social service interventions
Social insurance	Ensure adequate living standards in the face of shocks and life changes	• Contributory old-age, survivor, and disability pensions • Sick leave • Maternity/paternity benefits • Health insurance coverage Other types of insurance
Labor market programmes contributory or non-contributory	Improve chances of employment and earnings; smooth income during unemployment	• Active labour market programmes (training, employment intermediation services, wage subsidies) • Passive labour market programmes (Unemployment insurance, early retirement incentives).

Source: (The World Bank, 2018), State of Social Safety Nets.

The African Development Bank (AfDB) (2020) outlook report shows that only a few African countries have achieved inclusive growth, although most countries experienced strong growth episodes during the past two decades. Interestingly, Rwanda is among the few African countries appraised for promoting inclusive growth. The OECD (2018) analysis on the contribution of governments, through public finance, to foster inclusive growth found that there are several areas of reforms to offer possibilities for raising the incomes of poor households. These include, among others, investments in education, employment promotion, and large social transfers including social safety nets (SSNs).

Before the COVID-19 outbreak in early 2020, the Rwandan economy had achieved significant socio-economic development, marked by strong GDP growth, a reduction in poverty levels, and decreased income inequality. Data show that, over the past two decades (2000–2020), the annualized average GDP growth rate was 7.7%, and per capita GDP increased from USD 333 in 1999 to USD 824 in 2018. Additionally, the proportion of the population living below the nationally defined poverty line fell from 58.9% in 2000 to 38.2% in 2016 (National Institute of Statistics of Rwanda, 2017). The national poverty line has been set at RWF 159,375 per adult equivalent per year, based on January 2014 prices, while the threshold for extreme poverty is benchmarked at RWF 105,064 per adult equivalent per year.

To address high poverty levels and other forms of vulnerability, the Government of Rwanda (GoR) has implemented various social safety net programmes. These programmes

enable poor and vulnerable households to access cash or in-kind support through employment opportunities under public works, access to financial services, and periodic direct cash transfers (DS). They also cushion the income of programme participants, helping them cope with economic, social, and environmental shocks, while ultimately contributing to their graduation from poverty. The most well-known social protection programme in Rwanda is the Vision Umurenge Programme (VUP), a flagship social safety initiative launched in 2008. Data from the 2016 VUP survey indicate that 21.8% of individuals in the lowest income quintile participated in the programme at least once (NISR, 2018).

The World Bank's analysis of Rwanda's approach to reducing vulnerability and strengthening inclusion concluded that the country has transitioned from small and fragmented social support interventions a decade ago to establishing a nationwide social protection programme, the Vision Umurenge Programme (VUP), aimed at eradicating extreme poverty (The World Bank, 2019).

Additionally, an analysis conducted by the Food and Agriculture Organization of the United Nations (2019) found that the Vision Umurenge Programme (VUP) has only marginally promoted the economic advancement of female beneficiaries. This study confirmed that wages received through the VUP were primarily used to support small investments and initiate income-generating activities. The programme also encouraged women to open bank accounts and use financial products, including savings and credit cooperatives, thereby improving access to other financial services such as microloans.

While the FAO analysis attempted to evaluate the impact of social safety nets on saving and investment behaviour, it narrowly focused on the role of the VUP for the female population. Additionally, several other studies that have investigated the effects of the VUP on socio-economic development in Rwanda using household-level data have overlooked the aspect of financial inclusion in their analytical frameworks. For example, a recent analysis of the impact of unconditional cash transfers on consumption and poverty in Rwanda showed that participation in the programme led to a modest increase in food consumption, a reduction in consumption from home production, and no significant impact on non-food consumption, such as expenditure on household items (Habimana et al., 2021).

Additionally, an analysis of the VUP's impact on how social protection cash transfers contribute to poverty reduction in Rwanda shows that the direct cash transfer programme helps households cope with economic shocks and vulnerabilities. However, the analysis did not find sufficient evidence to conclude that the social safety net programme has a significant role in lifting poor households out of poverty (Nirere, 2022).

Furthermore, National Institute of Statistics of Rwanda (2017), in its thematic report on the VUP, shows a mixed effect; on the one hand, 15.6% of VUP beneficiaries moved out of poverty, while on the other hand, 13% of programme participants fell into poverty. This reflects a net effect of a 2.6 percentage point increase, while public resources allocated to social protection interventions and coverage have been rapidly increasing in recent years. These findings suggest that there are dynamic differences among VUP beneficiaries, and the socio-economic effects of the VUP require further assessment to understand the sources of variation in household financial behaviour among programme participants.

Notably, these analytical works confirm that social safety programmes achieve their primary objective of preventing poor households from falling into destitution. However, there is a lack of evidence regarding their contribution to household development and growth, including involvement in productive investments. Moreover, there is insufficient evidence on how programme participants allocate financial resources from social safety nets to maximize both immediate and long-term household or individual needs.

A review of recent analyses examining the interaction between social safety net programmes and financial inclusion indicates that this area of academic inquiry is only partially

covered. While numerous studies have focused on assessing the direct effects of social safety nets on poverty reduction and household consumption, fewer have investigated the mechanisms through which the benefits of these safety nets are transmitted. This includes exploring how financial inclusion can sustainably reduce poverty and facilitate graduation from poverty. The country cases assessed in Africa include Namibia, Mozambique, Zambia, South Africa, and Rwanda (Access to Finance Rwanda (AFR) (2016); Adato et al., 2004; Kamurase et al., 2012).

The desired economic situation of a country is one in which micro determinants of growth are translated into improvements in social welfare, such as an increase in household consumption, diversification of investments in the form of savings and household investments, as well as increased government spending and trade (Imbs & Wacziarg, 2003). Additionally, development partners in Rwanda continue to advocate for more public investments in social safety net programmes to strengthen households' resilience and poverty reduction and ensure inclusive growth. However, there is a narrow evidence base on how safety net programmes contribute to the induction of households' financial behaviour, namely saving, investment community transfers, and households consumption, as critical indictors for poverty reduction monitoring (United Nations Children's Fund (UNICEF) (2020)). A lack of empirical evidence for informed policy advocacy weakens the incentives among financial decision makers to allocate more domestic resources to social safety net programmes. Therefore, this analysis contributes to filling that knowledge gap.

This study specifically aimed to determine the empirical effects of the Vision 2020 Umurenge Programme (VUP) on various household financial behaviours and expenditure patterns, particularly in addressing family needs under constrained incomes from VUP programmes. The specific objectives achieved are: (i) the effects of VUP on households' food expenditure, (ii) the contribution of VUP benefits to increasing individual savings, (iii) the relationships between VUP monetary benefits and households' investments measured by allocations to education and asset accumulation, and (iv) the effects of VUP benefits on improving social transfers as an indicator to measure community participation.

To undertake the empirical analysis, this study focuses on VUP beneficiaries over the past decade and utilizes nationally representative data collected through the Integrated Living Conditions Surveys (EICV) in Rwanda. Detailed information about the data and their use is provided in the Methodology Section of this study. It is worth noting that household behavioural finance study concerns the mechanism of resource allocation by household to various needs including consumption and savings, (Beshears et al., 2018). Therefore, the analysis of financial behaviour examines the allocation of social safety net (SSN) benefits across households' spending categories, mainly expenditures on food and non-food items (consumption behaviour), investments in education and health, land acquisition, house renovation, individual savings in formal financial institutions, and other mechanisms to access credits.

The time frame of the analysis covers data from the past 10 years, spanning from 2008 to 2017, with survey series from 2013/14 and 2016/17. This period was selected due to the rapid expansion of social protection programmes, marked by the introduction of a diversified SSN package, geographical expansion, and increased coverage, which in turn led to a rise in the public budget allocated to the VUP.

The rest of this research is organized into five main sections. Section 2 provides a review of the literature, Section 3 outlines the methodology applied in this study. Section 4 presents the results along with their interpretation, Section 5 discusses the results, and Section 6 concludes with key policy recommendations.

2. Literature Review and Policy Context

Countries around the world have rapidly adopted social protection interventions, including cash transfers, as tools for accelerated poverty reduction and the strengthening of households' resilience to socio-economic shocks. In 2016, approximately 130 low- and middle-income countries were running at least one non-contributory unconditional cash transfer (UCT) programme, including poverty-targeted cash transfers. Specifically, 40 out of 48 African countries evaluated had cash programmes. Similarly, the expansion of social protection programmes has led to a rapid increase in the evaluation of their effectiveness and impact on poor populations (Bagstagli et al., 2016).

Social safety nets (SSNs) and the broad concept of social protection have taken centrality within the socio-economic development literature over the past decades. Since 2015, social protection or social inclusion features in the United Nations' Sustainable Development Goals (SDGs) have indicated the global commitment to "*Leave No One Behind*". Under goal one of ending poverty in all its form everywhere, target 1.3. reads, "*Implement nationally appropriate social protection systems and measures for all, including floors, and by 2030 achieve substantial coverage of the poor and the vulnerable*" (United Nations Statistical Department, 2018). Data show that state governments spend, on average, about 1.5% of GDP on social safety nets. Specifically, the Government of Rwanda allocated 2.2% of its GDP to social safety net programmes in 2019 (United Nations Children's Fund (UNICEF) (2018)). However, in many countries, institutionalized systems of social protection that go beyond emergency relief are often considered unaffordable and seen as luxuries for poor countries, leading to a lack of public financing for such programmes (Devereux, 2002).

Additionally, in an analysis of the determinants of saving rates through a comparative analysis of developed and developing economies, with an emphasis on the impact of social safety nets and social benefits among households, it was concluded that there are significant variations in household saving rates and the social benefits ratio across countries (Horioka, 2010). However, the benefits do not fully explain the level of savings. The study found that the key determinants of savings among countries are age composition and access to credit. Further, a cross-country analysis by the ADB Institute (2010) to understand the correlation between social safety nets and saving rates revealed that there is no significant correlation of any direction between the two variables.

However, a review of how the SSN programme promotes poverty reduction, increases household resilience, and expands opportunities to the programme participants argues that, in Africa, social safety net programmes and interventions contribute not only to increasing households' food consumption but also have a positive impact on protecting households from resorting to costly and irreversible strategies while dealing with socio-economic shocks. They also provide positive benefits in terms of expanding household investment which would otherwise be missed, notably, investments in education, health, and good nutrition (Andrews et al., 2018).

Against the backdrop of the above findings, household behaviour—whether financial or non-financial—is a vital aspect of national balance sheets due to the role households play in income generation and wealth accumulation within the economy. A wealthy economy is the result of wealthy households; thus, households' financial decisions contribute to economic development, both at the microeconomic and macroeconomic levels. Yamana (2016) claims that the empirical study of household finance is a very challenging field of academic inquiry and the literature on households' financial behaviour has evolved around macroeconomics and microeconomics; however, due to the emergence of technology for conducting large surveys of households within a small-time interval, this issue has been consistently addressed.

Mullainathan and Eldar (2009) argued that human financial behaviour is context-dependent, with both poor and well-off households using mental accounting to determine the fungibility of income and money. This leads people to view cash, credit, and debit differently. For example, working-class individuals are more likely to save because saving becomes a default function through automatic enrolment in a savings scheme with a financial institution. However, Andreasch (2017) shows that poor people will have a limited budget to even cover monthly consumption needs.

Households make decisions over the received income in time and choose to save and borrow to smooth consumption over the lifecycle. Intuitively, if agents have concave utility functions over consumption, then they should spread consumption across time to optimally exploit that curvature. Individuals and households take active and time-variant approaches to personal finance management. Furthermore, households' financial behaviour is at the centre of economic growth and poverty reduction both over the short term and in the long term since their behaviours affect the aggregate economic growth function (van de Ven & Daniele, 2017; Andreasch & Lindner, 2014).

Browning and Lusardi (1996), pointed out that households with limited income or wealth face a difficulty choice to allocate this between consumption for subsistence and saving; however, since social safety nets are incentives and contribute to improving disposable income, recipients are likely to adopt precautionary behaviour through savings or purchasing durable assets such as land and home assets. The conclusion of the analysis reveals that this behaviour is not linear.

A meta-analysis of the impact of cash transfer programmes on household financial behaviour reveals mixed findings. First, in 27 studies across 12 countries, 50% of cash transfer programmes had a significant impact on individual savings and accumulated household savings. Second, in some cases, households used cash transfer benefits to repay debts or increase access to credit. However, there is evidence that access to cash transfers has, to some extent, contributed to an increase in household debt. Third, there is a notable impact on household involvement in business and enterprise development, as seen in increased expenditure on business-related assets (Bagstagli et al., 2016). This distribution of the impact on households highlights the high relevance of the continuous evaluation of various social protection interventions tailored to country contexts.

Additionally, Devereux (2002) noted that where social safety net systems do exist, they encourage moderate risk-taking behaviour by the beneficiaries through smoothing of income streams against adverse entrepreneurial outcomes. Households opt to divert safety net benefits to non-consumption uses such as petty trading and/or household asset creation. Similarly, the analysis of the impact of social safety net programmes on household savings in Colombia concluded that the savings of informal households are higher than those of formal households among households receiving cash assistance.

The paper further noted that this is because of there being little possibility of households entering the formal job market; thus, informal households need to cover slightly greater non-covered risks to favourably adjust their expenditure patterns (Tovar & Miguel, 2017). In this regard, households' financial behaviour is at the epicentre of economic growth both over the short and long terms through a multiplier channel; thus, their behaviour affects all components of aggregate economic growth.

In 2007, Rwanda's Ministry of Finance and Economic Planning (MINECOFIN) established the VUP social safety net programme with the primary mission to accelerate the rate of poverty reduction by promoting the pro-poor growth agenda. This was to be achieved through the strengthened productive capacity of the poor in rural areas by available public works, the promotion of cooperatives, enhancing access to microloans, and providing unconditional cash support (direct cash transfers) (The Ministry of Finance and

Economic Planning (MINECOFIN) (2007)). According to the latest available data (2018), there are 194,440 total households eligible for public works (PWs) across the country, and 147,996 households have been benefiting from various VUP schemes.

The Vision Umurenge Programme (VUP) is an integrated local development programme aimed at accelerating poverty reduction and fostering rural growth through social protection, thus supporting the achievement of Rwanda's development vision. According to its guiding document, the main objective of VUP is to provide social assistance to the most vulnerable populations while also supporting the able-bodied to graduate from extreme vulnerability and poverty into more sustainable means of self-support.

To achieve its objective, the VUP had two main pathways. First, the protective pathway aims to prevent poor households from falling below survival levels through the provision of unconditional cash support commonly known as direct support (DS). Second, the productive pathway encourages risk taking through predictable transfers and wages, creating employment opportunities as a foundation for savings (public works) and taking credit in a form of financial inclusion (financial support). It also focuses on building community assets, developing an entrepreneurial culture, and helping monetize the local economy. It is evident that the second pathway is the primary focus of this analysis.

The implementation of the VUP is carried out through three distinctive channels: (i) direct cash support (DS) that is delivered in the form of unconditional cash transfers to the most vulnerable people who lack productive capacities; (ii) public works (PWs), which involve providing paid employment for poor people with labour capacity in productive community asset development projects; and (iii) a financial services (FSs) channel that focuses on increasing access to financial services including microcredits and financial literacy training for the poor. The loans provided under this category have interest rates lower than the market rates.

The Vision Umurenge Programme (VUP) determines the benefits based on the type of programme to ensure targeted and effective support. Public work (PW) benefits are tied to the number of days worked each month, with daily wages set at no more than the local market rates for unskilled labour. Direct cash support (DS) provides unconditional cash transfers that vary according to household size; a single individual receives FRW 7000 (approximately USD 7) monthly, while larger households can receive up to FRW 21,000 (approximately USD 21).

This tiered support structure helps address the diverse needs of vulnerable populations. Financial services (FSs) focus on increasing access to microcredits, with loans available of up to FRW 100,000, repayable over 12 months at an interest rate of 2%. However, the financial package is tailored to support small-scale entrepreneurial projects. These loans are coupled with financial literacy training to enhance recipients' economic opportunities (Rwanda Local Development Support Fund, 2011).

In 2015, the Government of Rwanda introduced the minimum package for graduation programme that intended to deliver a defined package of social protection services and complementary interventions with a view to strengthening household productivity and resilience through increased savings, productive asset accumulation, community participation, and life skills development. This intended to accelerate poverty reduction, leading to a permanent rise above the poverty lines and deregistering households into the safety net programmes within a predetermined period (Local Administrative Entities Development Agencies (LODA) (2022); Ministry of Local Government (MINALOC) (2022)).

However, since the VUP's establishment and the graduation programme, there has been no robust system of monitoring and evaluation of the impact of the programme on beneficiaries and on the economy as a whole, including the acceleration of poverty reduction, and increase in consumption, saving, and productive behaviour. For decision

purposes, the government and stakeholders have been relying on cross-sectional survey data, administrative data from various implementing partners, and other ad hoc analyses that provide basic information on programme coverage and the level of benefits. Hence, this analysis fills that information gap for this critical programme in the development pathway of Rwanda.

This paper confirms the statistical relevance of SSNs, the direct cash transfers, the induction of poor households' consumption, their increased saving, and the promotion of various forms of investments; however, the data do not provide enough evidence to acknowledge the role of SSNs in improving the community participation programme through cash transfers for community social causes.

3. Methodology

3.1. Data

Financial behaviour topics and social safety nets have been researched by different contemporary scholars and financial economists over the last half a century (O'Neill & Xiao, 2006; Dolan et al., 2012; Jing, 2016), and various metrics have been applied to measure the effect of social safety on poverty reduction. In this study, the units of analysis are the individuals from low-income households benefiting from SSNs in Rwanda, mainly the VUP. We followed a quantitative micro-econometrics approach using household-level data from VUP panel data from the Integrated Living Conditions Surveys or EICVs as administered by NISR covering the periods of 2013/2014 and 2016/2017. NISR collected and built a panel of data to monitor poverty countrywide, ensuring that the sample was nationally representative. Researchers consolidated various survey modules to establish a data framework containing relevant variables suitable for this analysis. In total, the VUP panel data consist of 1642 household respondents, and this sample is statistically large enough to provide reliable and valid estimates of the effect of the VUP on household financial behaviour.

3.2. Models

We estimated the analytical model using regression with the maximum likelihood method (MLM) as developed by Moral-Benito et al. (2019), which is equivalent to the models as developed by Arellano and Bond (1991). Wooldridge (2010) also appreciated the model over ordinary least squares because it is efficient when performing the non-linear optimization of variables; therefore, it provides more robust and reliable results. The maximum likelihood estimations (MLEs) are generally appraised for being consistent and asymptotically normally distributed on the data-generating process including the exogenous variables, offering high tolerance of heteroscedasticity, and showing less sensitivity to multicollinearity (Hsiao et al., 2002).

The following are the properties of the model:

$$y_{it} = \lambda y_{it-1} + \beta x_{it} + \alpha_i + v_{it} \quad (1)$$

$$E\left(v_{it} \mid y_i^{t-1}, x_i^t, \alpha_i\right) = 0 \ (t = 1, \ldots, T) \ (i = 1, \ldots, N) \quad (2)$$

where i represents an index of units in the panel (VUP beneficiaries) and *t* refers to the time periods during which the data were collected; the $t \times 1$ vectors of past realizations are $y_i^{t-1} = (y^0_i, \ldots, y_{i,t-1})'$ and $x^t_i = (x_i, 1, \ldots, x_{i,t})'$; and β and x_{it} are vectors including more than one predetermined regressor. The analysis includes the strictly exogenous and relaxed regressors; α_i refers to the individual, specific effects (random effect) and v_{it} is the error terms that are not correlated, including time-invariant regressors. Additionally, this model relaxes the strict exogeneity assumption for x variables and implies a lack of

autocorrelation in v_{it}, including lagged values that are linear combinations of the variables in the conditioning set.

Specifically, the data for dependent variable y and the explanatory variable x are presented as follows

$$y_{it} = \lambda y_{it-1} + \beta x_{it} + \sigma_i + v_{it} \quad (3)$$

$$x_{it} = \rho_{x_{it-1}} + \varnothing y_{it-1} + \pi\sigma_i + \zeta_{it} \quad (4)$$

By substituting the model into the system equation, the following are the models used to generate analytical results. Sets of dependent variables measured individually are: the individual level of (i) saving, (ii) consumption, (iii) investment, and (iv) cash transfers for community participation in social events. To estimate the coefficient elasticities and to reduce the intensity to quantitative figures (2011), the models were log transformed and equations are presented as follows:

$$\log SAV_{it} = \lambda_0 + \lambda_1 \log SAV_{it-1} + \lambda_2 \log VUP_{it} + \beta x_{it} + \alpha_i + v_{it} \quad (5)$$

$$\log CONS_{it} = \lambda_0 + \lambda_3 \log CONS_{it-1} + \lambda_4 \log VUP_{it} + \beta xit_t + \alpha_i + v_{it} \quad (6)$$

$$\log INVEST_{it} = \lambda_0 + \lambda_5 \log INVEST_{it-1} + \lambda_6 \log VUP_{it} + \beta x_{it} + \alpha_i + v_{it} \quad (7)$$

$$\log TRANSF_{it} = \lambda_0 + \lambda_7 \log TRANSF_{it-1} + \lambda_8 \log VUP_{it-1} + \beta x_{it} + \alpha_i + v_{it} \quad (8)$$

Where;

- SAV_{it} is the amount of money saved from the net income received from the VUP in time t period;
- $CONS_{it}$ represents the annual amount spent by household consumption both on food and non-food from the net income received from the VUP in time t;
- $INVEST_{it}$ represents the annual amount an individual made for house improvement, education, health care, and purchase of assets as livestock;
- $TRANSF_{it}$ indicates the amount of money transferred by individuals for community causes as an indicator of community participation. For this analysis, community participation was measured by the amount of money that individuals transferred out for social activities such as weddings, funerals, and fees required by the local government for community causes;
- VUP is an explanatory variable relating to the income received by an individual from the VUP in different time periods;
- X comprises the group variables, which include other sources of income for households, the size of households, the sex of the head of the household, and whether the location is rural or urban;
- β refers to the coefficient of vectors of covariate variables;
- v_{it} refers to the error terms.

Prior to running the regression, we performed exploratory data analysis (EDA) to generate summary statistics and tested the normality assumption of the variables of interest. The summary statistics were followed by regression results of each model of household behaviour, and finally, model diagnostics tests were performed to achieve accuracy measurements.

4. Results

4.1. Summary Statistics

The data indicate that women account for 733 (44.6%) of the social safety net (SSN) beneficiaries, while men represent 909 (55.4%). In terms of income levels, the majority of VUP beneficiaries fall into the lowest income category, comprising 40.4% of the participants.

The second category accounts for 32.6%, and the relatively well-off population represents 24.2%. Regarding marital status, 49.5% of the programme participants were married, followed by widowed individuals, who made up 39.5% of the population under study. Divorce and single statuses were each represented by approximately 5%. Regarding residence status, the majority of SSN beneficiaries live in rural areas (63.0%), compared to 37.0% residing in urban areas. Concerning education levels, most participants in the safety net programme (nearly 55%) completed only the primary education level, while 36% lack any formal education. Furthermore, 15% of VUP beneficiaries tried to run an income-generating activity during the 12 months preceding the survey Table 2.

Table 2. Sample size description.

Variable	Label	Frequency	Percent
Gender	Male	909	55.4
	Female	733	44.6
Ubudehe categories	Cat 1	664	40.4
	Cat 2	536	32.6
	Cat 3	397	24.2
	Non-identified	45	2.7
Marital status	Married	813	49.5
	Divorce	85	5.2
	Single	96	5.9
	Widow(er)	648	39.5
Residence status	Urban	607	37.0
	Rural	1035	63.0
Education level	No education	592	36.1
	Primary	901	54.9
	Post primary	48	2.9
	Secondary	81	4.9
	University	20	1.2
	Total	**1642**	**100**

Source: National Institute of Statistics of Rwanda (NISR), EICV 2016–2017, data analysed by authors

The distribution of key variables related to the VUP shows that, on average, household consumption (both food and non-food) increased during the inter-survey period of 2013/2014 and 2016/2017 by FRW 28,689 (USD 28.6), representing a 13.7% growth. The average income from VUP public works rose from FRW 54,210 (USD 54.2) in 2013/14 to FRW 136,050 (USD 136.0) in 2016/17, reflecting an increase of more than 150% over the inter-survey period. Similarly, the average income from VUP direct support (SD) increased by 4.2%, from FRW 138,176 (USD 138.1) in 2013/14 to FRW 143,991 (USD 143.3) in 2016/17.

Regarding the scale of the programme, the number of VUP beneficiaries has increased and the programme has recorded a geographical expansion to cover the entire country. Participation in the survey among VUP beneficiaries increased from just 32 respondents in 2008 to more than 400 individuals in 2017 (Figure 1). The nationally available data show that the social safety net average among the eligible households was 78.4% in 2019/20 (United Nations Children's Fund (UNICEF) (2020)).

The analysis of the use of VUP SSN benefits shows that 93.3% of households used them for food consumption. The second most reported use of the VUP benefits was for the purchase of clothing as indicated by 68.6%; those who reported making savings out of the cash represent 19.4% (Figure 2). This shows that social safety benefits are primarily allocated to meet the basic needs of households, such as food consumption and clothing. Other uses of income, such as saving, investment through the purchase of household assets, and paying

for scholastic materials, take a relatively smaller share but hold meaningful importance in the financial decision making of poor households. Furthermore, this distribution of cash benefits from the VUP aligns strongly with a study from Bangladesh, which found that food and cash transfer programmes successfully reduced food insecurity in the country. Similarly, a study in Colombia concluded that analysing the effects of cash transfer programmes revealed an increase in savings among participating households (Din et al., 2023).

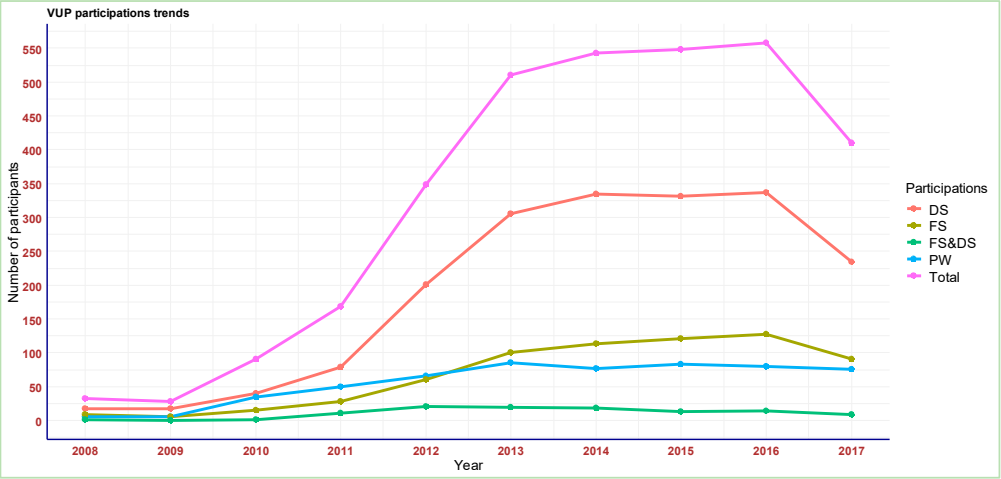


Figure 1. VUP participations trends. DS: direct support, PW: public works, FS: financial service. Source: National Institute of Statistics of Rwanda (NISR), EICV 2013/14 and 2016/17 data analysed by the researcher.

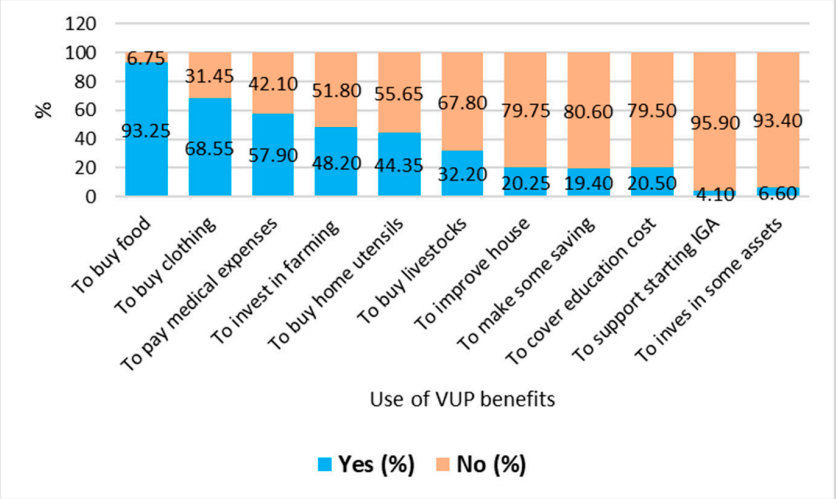


Figure 2. Use of VUP benefits as reported by beneficiaries (%). Source: EICV5 data analysed by authors.

Correlation analyses (Tables 3 and 4) of the different uses of the VUP benefits, both direct support (DS) and public work (PW) benefits, show that among the critical variables of interest, saving is positively and significantly correlated with (i) home improvement, (ii) starting income-generating activities, and (iii) the purchase of home assets. This is a strong indication that those who make savings from social safety nets are much more likely to invest in other households' asset accumulation. Improvements in wealth accumulation among SSN beneficiaries could contribute to enhancing household resilience and accelerating graduation from poverty. For the purpose of this paper, other than spending on clothing and food, areas such as investments were considered. A composite index of household investment reveals that, among the total sample size analysed, at least 24% reported engaging in investment practices using social safety net benefits.

Table 3. Correlation table of direct support benefits use.

Direct Support	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
(1) DS_Food	1											
(2) DS_Clothes	0.08	1										
	(0.1447)											
(3) DS_Home_utensils	0.0483	0.2642 *	1									
	(0.3785)	(0)										
(4) DS_Home_assets	0.0025	0.0779	0.2736 *	1								
	(0.9638)	(0.1557)	(0)									
(5)DS_Education_cost	0.0463	0.0816	0.1385*	0.1528 *	1							
	(0.3992)	(0.1367)	(0.0113)	(0.0051)								
(6) DS_Medical_cost	0.0378	0.1596 *	0.1799 *	0.1179 *	0.0971	1						
	(0.4906)	(0.0034)	(0.001)	(0.0312)	(0.0763)							
(7) DS_Livestock	−0.0247	0.2353 *	0.1810*	0.1641 *	0.1519 *	0.2534 *	1					
	(0.6529)	(0)	(0.0009)	(0.0026)	(0.0054)	(0)						
(8) DS_Farming	0.1212 *	0.1934 *	0.1909 *	0.0957	0.0966	0.2135 *	0.2134 *	1				
	(0.0268)	(0.0004)	(0.0005)	(0.0806)	(0.0778)	(0.0001)	(0.0001)					
(9) DS_IGAs	0.0225	0.009	0.0145	0.0701	0.0034	−0.0274	0.0492	0.0211	1			
	(0.6819)	(0.8698)	(0.7916)	(0.201)	(0.9501)	(0.6183)	(0.3702)	(0.7013)				
(10) DS_Home_improvement	−0.075	0.1132 *	0.2188 *	0.1820 *	0.1115 *	0.077	0.1215 *	0.1259 *	−0.0557	1		
	(0.1714)	(0.0387)	(0.0001)	(0.0008)	(0.0417)	(0.1604)	(0.0264)	(0.0214)	(0.3101)			
(11) DS_Saving	0.0626	−0.0094	0.0753	0.1400*	0.0978	0.0742	0.0606	0.0212	0.1653 *	0.1043	1	
	(0.2536)	0.8642	(0.1699)	(0.0104)	(0.0741)	(0.1761)	(0.2691)	(0.7001)	(0.0024)	(0.0569)		
(12) DS_otheinv~t	0.0167	−0.1015	0.0217	0.0086	0.0383	0.0423	−0.0026	0.0492	−0.0205	−0.0726	−0.0571	1
	(0.7614)	(0.0638)	(0.6926)	(0.8759)	(0.4852)	(0.4409)	(0.9629)	(0.3698)	(0.7087)	(0.1857)	(0.2981)	

IGA: income-generating activities; values with * are significant at 0.05 significant levels, and values in () are *p*-values. Source: EICV5 data analysed by authors.

Table 4. Correlation table of public work benefits use.

PW Benefits Use	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) PW_Food	1										
(2) PW_Clothes	0.2627 *	1									
	(0.0027)										
(3) PW_Home_utensils	0.2320 *	0.4440 *	1								
	(0.0084)	(0)									
(4) PW_Home_assets	0.1327	0.1870 *	0.2697 *	1							
	(0.1353)	(0.0346)	(0.0021)								
(5) PW_Education_cost	0.0301	0.2420 *	0.2586 *	0.1282	1						
	(0.7359)	(0.0059)	(0.0032)	(0.1492)							
(6) PW_Medical_cost	0.1387	0.3749 *	0.3191 *	0.1531	0.1219	1					
	(0.1185)	(0)	(0.0002)	(0.0844)	(0.1706)						
(7) PW_Livestock	0.2016 *	0.2081 *	0.1048	0.0278	0.1947 *	0.2325 *	1				
	(0.0225)	(0.0184)	(0.2393)	(0.7556)	(0.0276)	(0.0083)					
(8) PW_Farming	0.121	0.2884 *	0.2270 *	0.1321	0.1409	0.4539 *	0.1622	1			
	(0.1736)	(0.001)	(0.01)	(0.1372)	(0.1125)	(0)	(0.0674)				
(9) PW_IGA	0.0876	0.1894 *	0.0976	0.126	0.1394	0.0919	0.1914 *	0.0347	1		
	(0.3253)	(0.0322)	(0.2731)	(0.1563)	(0.1166)	(0.3022)	(0.0305)	(0.6975)			
(10) PW_Home_improve	0.1521	0.0124	0.2213 *	0.1212	0.2010 *	0.0024	0.3396 *	0.0537	−0.1004	1	
	(0.0865)	(0.8899)	(0.0121)	(0.1731)	(0.0229)	(0.9785)	(0.0001)	(0.5474)	(0.2594)		
(11) PW_Saving	0.1288	0.1314	0.1533	0.1688	0.157	0.1483	0.2112 *	0.0917	0.2125 *	0.1612	1
	(0.1472)	(0.1392)	(0.0841)	(0.0568)	(0.0768)	(0.0949)	(0.0167)	(0.3034)	(0.016)	(0.0692)	

Values with * are significant at 0.05 significant levels, and values in () are *p*-values. Source: EICV5 data analysed.

4.2. Analytical Findings

4.2.1. Regression Results

Through the descriptive analysis, saving stands out as important behaviour among the SSN beneficiaries. The social safety net's contribution to other wellbeing indicators was also confirmed by the statistically significant correlation to other variables such as home improvement, purchase of livestock, and starting income-generating activities. These findings are consistent with those of Devereux (2002) in his analysis of social safety nets in terms of reducing chronic poverty. He concluded that even a small income transfer to poor households is often invested in income-generating activities, education, social networks, or the acquisition of productive assets. This financial behaviour suggests that SSNs contribute not only as a residual welfare intervention to alleviate transitory shocks but can also address the root causes of chronic poverty among beneficiaries.

After a simulation exercise and log-linear transformation of the relevant variables, the following were decided upon to be included in the analytical models: (i) saving in 2013/14 and 2016/17, (ii) amounts of benefits from VUP direct support, along with interactions between demographic variables such as (i) marital status, (ii) education levels, (iii) gender, and (iv) age of SSN participants. Table 5 shows that the statistics of the model diagnostics are significant at 0.001 p-value against 0.05 hypothesized significance levels, while R-square adjusted stands at 0.05, which is in line with the expected levels' coefficient under human-centred behaviour studies (Frost, 2019).

Table 5. Fitting the regression.

Source	**SS**	**df**	**MS**	**Number of Obs.**	**=**	**1163**
				F(13, 1149)	=	5.53
Model	105.9	13	8.15	Prob > F	=	0.0001
Residual	1694.7	1149	1.47	R-squared	=	0.0588
				Adj R-squared	=	0.0482
Total	1800.6	208.0	1.5	Root MSE	=	1.2145

Source: Survey data analysed.

The data from the EICVs (2013/14 and 2016/17) indicate that, holding other variables constant, participation in the VUP DS program marginally increases the savings levels among SSN beneficiaries. Robust evidence suggests that for every additional FRW 100 received in VUP DS benefits, beneficiaries are likely to allocate an additional FRW 22 to savings. These findings remain significant when both fixed and random effects are accounted for. Interestingly, the data reveal that prior savings from the 2013/14 period did not statistically influence household savings in 2016/17. However, the results are statistically significant only at the 0.1 level ($P > |t|: 0.058 > 0.05$). This finding can be partly explained by the fact that participation in the VUP programme included only a small proportion of the population who rarely engaged in saving prior to receiving social safety net support. Furthermore, the data indicate that saving behaviour is significantly associated with age, with savings increasing by 1.4 units among older VUP beneficiaries. However, gender is negatively associated with saving behaviour; the probability of saving among male beneficiaries decreases marginally by 1.631 units compared to female participants (Table 6).

Table 6. Saving behaviour and VUP benefits.

	(1)	(2)	(3)
VARIABLES	**Robust**	**Fixed Effects**	**Random Effects**
Log_Saving in 2013	−0.0623 **	−0.0692 **	−0.0692 **
	(0.0302)	(0.0328)	(0.0328)
log_VUPDS2017	0.226 ***	0.226 ***	0.226 ***
	(0.0243)	(0.0210)	(0.0210)
Marital_status_divorce	0.460	0.502	0.502
	(0.468)	(0.467)	(0.467)
Marital_status_single	1.936 ***	1.989 ***	1.989 ***
	(0.485)	(0.440)	(0.440)
Marital_status_Widow/er	0.990 **	1.033 ***	1.033 ***
	(0.396)	(0.372)	(0.372)
Education—primary	−0.152	−0.166	−0.166
	(0.213)	(0.217)	(0.217)
Education—post_primary	1.316 **	0.969 *	0.969 *
	(0.642)	(0.562)	(0.562)
Education—secondary	0.0713	0.0528	0.0528
	(0.489)	(0.461)	(0.461)
Education—post_secondary	2.470 *	2.481 ***	2.481 ***
	(1.278)	(0.956)	(0.956)
rural_urban	−0.122	−0.137	−0.137
	(0.195)	(0.193)	(0.193)
Gender—Female	−0.526	−0.534	−0.534
	(0.351)	(0.331)	(0.331)
log_age	0.767 ***	0.722 **	0.722 **
	(0.286)	(0.307)	(0.307)
Constant	−1.313	−1.120	−1.120
	(1.206)	(1.298)	(1.298)
Observations	1642	1632	1632
R-squared	0.142		
Number of panels		2	2
RE		No	Yes
FE		Yes	No

Standard errors in parentheses. Dependent variable: household savings. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: EICV5 data analysed by authors.

The findings presented in Table 7 show a robust, positive, and statistically significant relationship was confirmed between consumption levels in 2013/2014, at a 45-percentage point increase, holding other variables constant. The significance remains when both fixed and random effects are controlled. Consumption is also positively linked with marital status; compared to married individuals, both single and widowed individuals have higher consumption levels. The SSN beneficiaries demonstrated an increase in overall consumption. This behaviour can be explained by the fact that widowed and single beneficiaries view VUP benefits, particularly direct cash support, as their primary source of income. Furthermore, the impact on consumption varies significantly based on the education, marital status, and age of the program participants. These findings emphasize the need for complementary services, particularly those related to skills development, to maximize the programme's impact on beneficiaries.

Table 7. Consumption behaviour and VUP benefits.

	(1)	(2)	(3)
Variables	**Robust**	**Fixed Effects**	**Random Effects**
log_AE2013-2014	0.450 ***	0.451 ***	0.450 ***
	(0.0240)	(0.0224)	(0.0223)
log_VUPDS2017	0.00614 **	0.00611 *	0.00614 **
	(0.00293)	(0.00312)	(0.00312)
marital_status_divorce	−0.00652	−0.00153	−0.00652
	(0.0765)	(0.0714)	(0.0704)
marital_status_single	0.242 ***	0.248 ***	0.242 ***
	(0.0790)	(0.0671)	(0.0658)
marital_status_widow(er)	0.114 **	0.119 **	0.114 **
	(0.0560)	(0.0557)	(0.0545)
Education level	0.202 ***	0.202 ***	0.202 ***
	(0.0206)	(0.0189)	(0.0188)
Rural_urban	−0.0221	−0.0221	−0.0221
	(0.0288)	(0.0291)	(0.0291)
Gender—female	−0.0508	−0.0583	−0.0508
	(0.0529)	(0.0531)	(0.0500)
log_age	0.0433 ***	0.0426 ***	0.0433 ***
	(0.00818)	(0.00894)	(0.00877)
Constant	6.270 ***	6.274 ***	6.270 ***
	(0.288)	(0.270)	(0.270)
Observations	1632	1632	1632
R-squared	0.317	0.316	
Number of Panels		2	2
Random effect		No	Yes
Fixed effect		Yes	No

Standard errors in parentheses. Dependent variable: aggregate household consumption. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: EICV5 data analysed by authors

The analysis of VUP beneficiaries in terms of social transfers shows that VUP direct support benefits do not contribute to increased household transfers as a means of community participation. Data show a reverse effect, implying that an increase in DS reduces the likelihood of making community transfers by 4% per every FRW 100 increase in the total benefits. All other factors included in models do not show any significant contribution to household participation in community engagement through outward transfers (Table 8). This can be partly explained by the fact that the level of benefits received from the direct support, as well as other sources of income, is still inadequate to cater for household needs including investment. There is a need to increase the benefits package to maximize households' consumption and improve community activities requiring cash transfers.

Analysis of the VUP DS's contribution to household-level investment behaviour shows that the aggregate consumption in 2016/17 and the VUP DS explain the level of investment in different directions. The VUP DS is positively related to investments; the data show that a marginal increase of FRW 100 in DS benefits leads to nearly a 7% increase in the level of investments. However, households' spending on consumption is negatively correlated with the level of investment, with a 3.0 percentage point decrease. These findings are robust and significant when both fixed and random effects are controlled in the model (Table 9).

Table 8. Transfer behaviour and VUP benefits.

	(1)	(2)	(3)
Variables	**Robust**	**Fixed Effect**	**Random Effect**
Tranferin2013	−0.147 *	−0.147 **	−0.146 **
	(0.0806)	(0.0694)	(0.0694)
log_VUPDS2017	−0.0407 **	−0.0383 *	−0.0397 *
	(0.0207)	(0.0208)	(0.0208)
LogSav2013	−0.00873	−0.0105	−0.0124
	(0.0343)	(0.0327)	(0.0326)
Marital_status_divorce	−1.194 ***	−1.297 ***	−1.208 ***
	(0.453)	(0.469)	(0.463)
Marital_status_single	−0.796	−1.008 **	−0.914 **
	(0.486)	(0.442)	(0.435)
Marital_status_Widow/er	−0.560	−0.670 *	−0.594
	(0.382)	(0.373)	(0.368)
Education—primary	0.539 **	0.539 **	0.534 **
	(0.212)	(0.215)	(0.214)
Education—post_primary	0.948 *	0.828	0.823
	(0.562)	(0.557)	(0.557)
Education—secondary	−0.251	−0.219	−0.245
	(0.513)	(0.457)	(0.456)
Education—post_secondary	0.496	−0.752	−0.785
	(1.168)	(0.947)	(0.947)
rural_urban	0.143	0.101	0.105
	(0.192)	(0.192)	(0.192)
Gender—female	0.575 *	0.752 **	0.623 *
	(0.346)	(0.345)	(0.327)
log_age	0.399	0.360	0.352
	(0.306)	(0.304)	(0.304)
Constant	3.405 ***	3.597 ***	3.650 ***
	(1.287)	(1.286)	(1.285)
Observations	1642	1642	1642
R-squared	0.019	0.021	
Number of panels		2	2
Fixed Effect		Yes	No
Random Effect		No	Yes

Robust standard errors in parentheses. Dependent variable: transfers out. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Source: survey data analysed.

Table 9. Investment behaviour and VUP benefits.

	(1)	(2)	(3)
Variables	**Robust**	**Fixed Effects**	**Random Effects**
log_VUPDS2017	0.0690 ***	0.0690 ***	0.0690 ***
	(0.00165)	(0.00161)	(0.00161)
logAEx2017	−0.0300 ***	−0.0300 ***	−0.0300 ***
	(0.0115)	(0.0116)	(0.0116)
marital_status_divorce	0.0680	0.0648 *	0.0680 *
	(0.0422)	(0.0367)	(0.0362)
marital_status_single	0.0580 *	0.0545	0.0580 *
	(0.0345)	(0.0347)	(0.0341)
marital_status_widow(er)	0.0681 **	0.0651 **	0.0681 **
	(0.0331)	(0.0287)	(0.0281)
log_aged	−0.00580	−0.00536	−0.00580
	(0.00462)	(0.00460)	(0.00452)

Table 9. *Cont.*

	(1)	(2)	(3)
Variables	**Robust**	**Fixed Effects**	**Random Effects**
Education—primary	−0.00643	−0.00617	−0.00643
	(0.0175)	(0.0163)	(0.0163)
Education—post_primary	−0.0699 *	−0.0695	−0.0699
	(0.0364)	(0.0441)	(0.0441)
Education—secondary	−0.0355	−0.0346	−0.0355
	(0.0367)	(0.0356)	(0.0356)
Education—post_secondary	0.0256	0.0268	0.0256
	(0.0703)	(0.0760)	(0.0760)
rural_urban	0.0180	0.0180	0.0180
	(0.0146)	(0.0149)	(0.0149)
gender_female	−0.0357	−0.0309	−0.0357
	(0.0300)	(0.0273)	(0.0257)
Constant	0.447 ***	0.444***	0.447 ***
	(0.139)	(0.141)	(0.140)
Observations	1632	1632	1632
R-squared	0.590	0.589	
Number of panels		2	2
Random Effect		No	Yes
Fixed Effect		Yes	No

Standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Dependent variable: household investments. Source: EICV5 data analysed.

4.2.2. Normality Testing for the Model

The primary aim of a normality test is to identify the distribution of data and have a sense of the models' efficacy and the choice between the linear and non-linear parametric models. In that respect, we applied the swilk test of normality. According to Brzezinski (2012), the SW and SF tests are believed to be slightly powerful tests of normality; therefore, a combination of the different approaches of normality testing provides robust evidence of the normality of the variables of interest for this analysis. The normality hypothesis is true according to the Chen–Shapiro test when the distribution of QH has a mean close to 1. The probability of non-rejection will be significant if the p-values are lower than the hypothesized significant level, in our case, 0.05. Table 10 shows that all variables of interest have a statistically significant normal distribution.

Table 10. Findings from normality tests of key variables in models.

Variable	Chen–Shapiro QH* Test for Normal Data				Shapiro–Wilk W Test for Normal Data				Shapiro–Francia W′ Test for Normal Data			
	Obs	QH	QH*	*p*-Value	W	V	z	Prob > z	W′	V′	z	Prob > z
ae2013_14	1632	0.80348	7.93902	<0.0001	0.64442	350.45	14.792	0.000	0.64177	373.712	14.004	0.00001
ae2016_17	1632	0.84339	6.32682	<0.0001	0.70844	287.358	14.291	0.000	0.70619	306.504	13.535	0.00001
VUP_pw2017	124	0.794	2.29397	<0.0001	0.61534	38.056	8.167	0.000	0.60313	43.164	7.546	0.00001
VUP_pw2013	50	0.95374	0.32711	<0.0001	0.87263	5.990	3.818	0.000	0.90224	5.094	3.077	0.00104
VUP_ds2017	334	0.73726	4.80176	<0.0001	0.53877	108.095	11.049	0.000	0.53088	118.872	10.213	0.00001
VUP_ds2013	125	0.96983	0.33727	<0.0001	0.91979	7.990	4.666	0.000	0.92044	8.711	4.341	0.00001
Save2017cor	590	0.46033	13.10856	<0.0001	0.23025	300.663	13.818	0.000	0.22938	322.056	12.803	0.00001
Save2013	216	0.48853	7.5171	<0.0001	0.23561	121.954	11.095	0.000	0.23231	133.491	10.17	0.00001
Tansftout2017	1642	0.28745	28.87377	<0.0001	0.09285	899.055	17.175	0.000	0.09099	953.579	16.225	0.00001
Transfers_2013	17	0.63364	1.51055	<0.0001	0.36306	13.456	5.184	0.000	0.33762	15.576	4.875	0.00001
Educost2017	1642	0.15173	34.37341	<0.0001	0.51955	476.157	15.57	0.000	0.75341	258.679	13.139	0.00001
education_2013	163	0.40217	7.63258	<0.0001	0.15454	105.655	10.611	0.000	0.15164	116.088	9.7	0.00001

Where QH* = $\sqrt{n}(1 - QH)$; significance level is 0.05; Source: EICV5 data analysed by authors.

5. Discussion

This analysis of the impact of the VUP on household financial behaviour over the past decades primarily aims to assess the contribution of both cash and non-cash benefits to households' financial behaviour, focusing on saving, consumption, investments, and community participation through outward cash transfers. The analysis reveals statistically significant positive effects of direct cash support on aggregate household consumption of goods and services, as well as increased levels of saving and investment. However, the data do not confirm the impact of the VUP on fostering community participation through cash transfers.

The findings from our analysis are consistent with the study conducted by Ravallion et al. (1995) and that of Berhane et al. (2011), which concluded that social programmes do not only provide immediate relief to most households affected by a shock, but they also contribute to curtailing and cushioning household decisions with potentially detrimental effects in the long run. Furthermore, the analysis of the household effects of unconditional transfers in Sub-Saharan Africa showed that participation in the programme has contributed to increasing by 7.4 per cent and 5.8 per cent the share of households purchasing seeds and chemical fertilizers, respectively Daidone et al. (2019). It is worth mentioning that due to limited accuracy of the other sources of income among social safety net programme participants, its effect on financial behaviour is generally implied in the aggregate household expenditure.

Additionally, the analysis of the probability of saving among households participating in unconditional cash transfers under Pakistan's Benazir Income Support Programme based on various indicators of savings concluded that the programme has a statistically significant positive influence on increasing savings Churchill et al. (2024) and (Mumtaz & Peter, 2016). However, the analysis revealed that participation in the programme increased saving through informal channels relative to formal saving mechanisms. Similarly, Tovar and Miguel (2017), in their analysis of the impact of social safety net programmes on household savings in Colombia, concluded that informal savings were higher among households benefiting from social safety nets, thus lacking evidence on its contribution to fostering formal financial inclusion.

The findings from our analysis are further consistent with Toksanbaeva (2014), who revealed that social safety net assistance significantly supports households with the minimum or low income compared to the national level to smooth their necessary level of consumption, which is not guaranteed by their constrained incomes and does not guarantee subsistence level at the minimum level. Similarly, Taaffe et al. (2017), in their analysis on the impact of cash transfers on livelihoods, concluded that social safety, mainly cash transfer, programmes are effective in leading to positive and multi-sectoral development outcomes such as better health, access to education and learning opportunities, and improved demand for health services.

Our analysis did not find enough evidence to confirm a dependence on social safety among programme participants as demonstrated by the increased investment and saving among the beneficiaries; this is contrary to the findings revealed from the study conducted by the Institute of Labour Studies (Garganta et al., 2017) on the impact of cash transfers and female labour force participation, which showed that female transitions from inactivity to activity seem to have been affected by the average proportion of eligible inactive women that enter the labour force, which decreased by almost 2.2 percentage points after the introduction of the programme.

Our findings are consistent with the analytical results by Gerry and Li (2010) who found that a formal social safety net does not contribute to consumption smoothing in Russian society. Furthermore, the findings did not show a significant contribution of the

social safety net programme to increased community participation at the household level, as measured through household-to-household cash transfers.

Our findings, however, contradict the views expressed by Molyneux et al. (2016) who concluded that, with the recent emergency of innovation in the cash transfer programme, the design involves approaches that induce beneficiary rights, citizenship, and participation, which further empower poor people by promoting citizens' voice and participation through social accountability and social audits.

Moreover, while our analysis confirms a statistically significant effect of VUP direct cash support benefits on household investments, we remain with a question on how involvement in the social safety net programme meaningfully contributed to households' accumulation of promoting productive assets and engaging in income-generating activities in a form of entrepreneurship development, especially among those with productive capacities. This question is to be further analysed in the next studies using household-level data.

6. Conclusions

This analysis provides yet another robust piece of evidence on the impact of social safety beyond the mere purchasing of food for consumption and strengthens our understanding of the social safety benefits' capability of increasing individual's saving and engagement in investment activities, thus fostering the country's economic growth and development.

The evidence further suggests that the aggregate consumption has increased during the period under study due to increased VUP benefits; however, it is important to consistently monitor the income growth of both VUP beneficiaries and non-beneficiaries to make timely adjustments for optimal income redistribution. Specifically, the government needs to identify fiscally sustainable approaches that enable indexing of social safety net benefits with inflation and cost of living.

To mitigate the risk of fostering only informal saving among programme participants and the associated financial risks, there is a need to strengthen mechanisms that enable VUP participants to save with financial institutions. A case in point is leveraging Rwanda's long-term savings scheme, the Ejo Heza programme, which provides an alternative solution for low-income households to make savings and ultimately benefit from social security.

It is therefore important to enforce the saving component within the non-contributory social safety net benefits through this scheme by making VUP beneficiaries the de-facto members of the *Ejo Heza* programme. This approach will largely contribute to increasing savings and improving resilience to socio-economic shocks among the social safety net beneficiaries. In addition, community-saving groups should be strengthened through the development and adoption of nationally owned operational standards which link members directly with the formal financial institutions. This approach will need to be complemented by availing the proximity advisory services, which could provide quick advice on the best use of the available financial means for needy households.

Investment decisions made by households such as improving the house, purchasing utensils and other assets, covering the education costs for children, and ensuring medical costs (insurance premiums and medical bills) are very important components of the safety net's usage, which must be monitored consistently. The greater the proportion of the safety net that is spent on investments, the better off the household is in multiple dimensions. Therefore, the government will need to design and offer complementary capacity-building interventions focused on investment decisions among safety net beneficiaries, including expanding financial literacy to promote rational investment decision making.

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References

Access to Finance Rwanda (AFR). (2016). *Access to finance rwanda (AFR) financial inclusion in rwanda*; Institute of Statistics of Rwanda. Available online: https://www.statistics.gov.rw/publication/finscope-rwanda-2016 (accessed on 20 June 2022).

Adato, M., Ahmed, A. U., & Lund, F. (2004). *Linking safety nets, social protection, and poverty—directions for Africa*. 2020 Africa Conference Brief 12. Available online: https://ebrary.ifpri.org/digital/api/collection/p15738coll2/id/73039/download (accessed on 20 June 2022).

ADB Institute. (2010). Effect of social policy on domestic demand. In M. Kawai, & G. O. Pasadilla (Eds.), *Annual conference 2009*. Asian Development Bank. Available online: https://www.adb.org/sites/default/files/publication/159343/adbi-effects-social-policy.pdf#page=77 (accessed on 18 August 2022).

African Development Bank (AfDB). (2020). *African economic outlook 2020: Amid COVID-19*. African Development Bank. Available online: https://www.afdb.org/sites/default/files/documents/publications/afdb20-04_aeo_supplement_full_report_for_web_0705.pdf (accessed on 18 August 2022).

Andreasch, M. (2017). Households and their financial behaviour. In P. van de Ven, & D. Fano (Eds.), *Understanding financial account, households and their financial behaviour*. OECD Publishing.

Andreasch, M., & Lindner, P. 2014 May. *Micro and macro data: A comparison of the household finance and consumption survey with financial accounts in Austria* (pp. 1–28). Working Paper Series. Available online: https://www.ecb.europa.eu//pub/pdf/scpwps/ecbwp1673.pdf (accessed on 15 January 2023).

Andrews, C., Hsiao, A., & Ralston, L. (2018). Social safety nets promote poverty reduction, increase resilience, and expand opportunities. In *Realising the full potential of social safety nets in africa* (pp. 88–132). The World Bank.

Arellano, M., & Bond, S. (1991). Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. *Review of Economic Studies*, *58*, 277–297. [CrossRef]

Bagstagli, F., Hagen-Zanker, J., Harman, L., Barca, V., Sturge, G., & Schmidt, T. (2016). *Cash transfers: What does the evidence say? a rigorous review of programme impact and of the role of design and implementation features*. Overseas Development Institute. Available online: https://www.researchgate.net/profile/Francesca-Bastagli/publication/307436275_Cash_transfers_What_does_the_evidence_say_A_rigorous_review_of_programme_impact_and_of_the_role_of_design_and_implementation_features/links/57c586cc08ae0a6b0dc8ca9f/Cash-transfe (accessed on 18 August 2022).

Berhane, G., Hoddinott, J., Kumar, N., & Taffesse, A. S. (2011). *The impact of ethiopia's productive safety nets and household asset building programme: 2006–2010*. International Food Policy Research Institute. Available online: https://www.peiglobal.org/sites/pei/themes/pei/kc_files/Berhane%20et%20al.%202011.pdf (accessed on 10 May 2023).

Beshears, J., Choi, J. J., Laibson, D., & Madrian, B. C. (2018). Chapter 3—behavioral household finance. In *Handbook of behavioral economics: Applications and foundations 1* (pp. 177–276). Science Direct Elsevier. [CrossRef]

Browning, M., & Lusardi, A. (1996). Household saving: Micro theories and micro facts. *Journal of Economic Literature (JEL)*, *34*, 1797–1855.

Brzezinski, M. (2012). The Chen–Shapiro test for normality. *The Stata Journal*, 368–374. [CrossRef]

Churchill, S. A., Iqbal, N., Nawaz, S., & Yew, S. L. (2024). Unconditional cash transfers, health and savings. *Economics & Human Biology*, *53*, 101373. [CrossRef]

Cichon, M., Wolfgangm, S., Arthur van de, M., Krzysztof, H., Fabio, B., & Pierre, P. (2004). *Financing social protection*. International Labour Organization. Available online: https://www.ilo.org/sites/default/files/wcmsp5/groups/public/@ed_protect/@soc_sec/documents/publication/wcms_secsoc_8030.pdf (accessed on 15 January 2023).

Daidone, S., Davis, B., Handa, S., & Winters, P. (2019). The household and individual level productive impacts of cash transfer programs in sub-saharan Africa. *American Journal of Agriculture Economics*, *101*, 1401–1431. [CrossRef] [PubMed]

Devereux, S. (2002). Can social safety nets reduce chronic poverty? *Development Policy Review*, *20*, 657–675. [CrossRef]

Din, B. H., Habibullah, M. S., Abdullah, H., Safuan, S., & Osman, A. A. (2023). Developing the model of integrated social safety net programmes towards better financial welbeing. *Journal, Russian Law*, *11*, 1–13.

Dolan, P., Elliott, A., Metcalfe, R., & Vlaev, I. (2012). Influencing financial behavior: From changing minds to changing contexts. *Journal of Behavioral Finance*, *13*, 126–142. [CrossRef]

Food and Agriculture Organization of the United Nations. (2019). *Food and Agriculture Organization of the United Nations Strengthening the impact of rwanda's public works and beneficiaries's graduation out of poverty*. FAO. Available online: https://openknowledge.fao.org/server/api/core/bitstreams/35b29b1f-f993-485e-965c-9bc956800a28/content (accessed on 10 March 2023).

Frost, J. (2019). *Regression analysis: An intuitive guide for using and interpreting linear models*. Jim Publishing, Pennsylvania. Available online: https://statisticsbyjim.com/ (accessed on 30 May 2023).

Garganta, S., Gasparini, L., & Marchionni, M. (2017). Cash transfers and female labor force participation: The case of AUH in Argentina. *IZA Journal of Labor Policy*, *6*, 10. [CrossRef]

Gerry, C. J., & Li, C. A. (2010). Consumption smoothing and vulnerability in Russia. *Applied Economics*, *42*, 1995–2007. [CrossRef]

Habimana, D., Haughton, J., Nkurunziza, J., & Haughton, D. M. A. (2021). Measuring the impact of unconditional cash transfers on consumption and poverty in Rwanda. *World Development Perspectives*, *23*, 100341. [CrossRef]

Horioka, C. Y. (2010). *The determinants of saving rates in the developed and developing economies: The impact of social safety nets*. Japan National Committee for Pacific Economic Cooperation (JANCPEC). The Japan Institute of International Affairs (JIIA). Available online: https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=250d9f24bad93ba3010554a929ff0ee548b52619#page=309 (accessed on 15 January 2023).

Hsiao, C., Pesaran, M. H., & Tahmiscioglu, A. K. (2002). Maximum likelihood estimation of fixed effects dynamic panel data models covering short time periods. *Journal of Econometrics*, *109*, 107–150. [CrossRef]

Imbs, J., & Wacziarg, R. (2003). Stages of diversification. *American Economic Review*, *93*, 63–86. [CrossRef]

Jing, B. (2016). Behavior-based pricing, production efficiency, and quality differentiation. *Management Sience*, *63*, 2049–2395. [CrossRef]

Kamurase, A., Wylde, E., Hitimana, S., & Kitunzi, A. (2012). *Rwanda—Social safety net assessment*. Economic Literature. Available online: https://ideas.repec.org/p/wbk/hdnspu/91577.html (accessed on 20 October 2022).

Local Administrative Entities Development Agencies (LODA). (2022). *VUP Programme document*; LODA. Available online: https://www.loda.gov.rw/index.php?eID=dumpFile&t=f&f=59172&token=a4f84cbb1d0808901131479f7d37e9a05ce31fae (accessed on 14 February 2023).

Ministry of Local Government (MINALOC). (2022). *National strategy for sustainable graduation*; MINALOC. Available online: https://www.minaloc.gov.rw/index.php?eID=dumpFile&t=f&f=57400&token=ebdc71608f1687253826e20e38990beebefe5c85 (accessed on 18 July 2023).

Molyneux, M., Jones, N., & Samuels, F. (2016). Can cash transfer programmes have 'transformative' effects. *The Journal of Development Studies*, *52*, 1087–1098. [CrossRef]

Moral-Benito, E., Allison, P., & Williams, R. (2019). Dynamic panel data modeling using maximum likelihood: An alternative to arellano-bond. *Applied Economics*, *51*, 2221–2232. [CrossRef]

Mullainathan, S., & Eldar, S. (2009). Savings policy and decision-making in low-income households. In *Insufficient funds: Savings, assets, credit and banking among low-income households*. Russell Sage Foundation Press. Available online: https://www.jstor.org/stable/10.7758/9781610445887.4 (accessed on 30 May 2023).

Mumtaz, Z., & Peter, W. (2016). Social safety nets in the development of a welfare system in Pakistan: An analysis of the benazir income support programme. *Asia Pacific Journal of Public Administration*, *39*, 16–38. [CrossRef]

National Institute of Statistics of Rwanda. (2017). *EICV5-rwanda poverty profile report 2016/17*; National Institute of Statistics. Available online: https://www.statistics.gov.rw/publication/eicv-5-rwanda-poverty-profile-report-201617 (accessed on 16 June 2022).

Nirere, M. (2022). Do social protection cash transfers reduce poverty in Rwanda? Evidence from an econometric analysis of vision umurenge program direct support. *African Developement Review*, *34*, 114–126. [CrossRef]

NISR. (2018). *EICV5-thematic report-vup*; National Institute of Statistics. Available online: https://www.statistics.gov.rw/publication/eicv5-thematic-report-vup (accessed on 10 July 2022).

OECD. (2018). *Opportunities for all: A framework for policy action on inclusive growth*. OECD. [CrossRef]

O'Neill, B., & Xiao, J. J. (2006). Financial fitness quiz findings: Strengths, weaknesses, and disconnects. *Journal of Extension*, *44*, 1RIB5.

Paitoonpong, S., Abe, S., & Puopongsakorn, N. (2008). The meaning of "social safety nets". *Journal of Asian Economics*, *19*, 467–473. [CrossRef]

Ravallion, M., Van de Walle, D., & Gautam, M. (1995). Testing a social safety net. *Journal of Public Economics*, *57*, 175–199. [CrossRef]
Rwanda Local Development Support Fund. (2011). *Vision 2020 umurenge programme (vup)*. Rwanda Local Development Support Fund.
Taaffe, J. E., Longosz, A. F., & Wilson, D. (2017). The impact of cash transfers on livelihoods, education, health and HIV—What's the evidence? *Development Policy Review*, *35*, 601–619. [CrossRef]
The Ministry of Finance and Economic Planning (MINECOFIN). (2007). *Economic development and poverty reduction strategy 2008–2012*; MINECOFIN. Available online: https://www.rencp.org/wp-content/uploads/2010/06/ECONOMIC-DEVELOPMENT-AND-POVERTY-REDUCTION-STRATEGY.pdf (accessed on 30 August 2022).
The World Bank. (2018). *The state of social safety nets 2018*. The World Bank. Available online: https://openknowledge.worldbank.org/server/api/core/bitstreams/e9d9681c-2e77-5950-9f0d-4f10ef3791a8/content (accessed on 6 September 2022).
The World Bank. (2019, October 19). *Reducing vulnerability and strengthening inclusion in rwanda through rural development and enhancing social protection*. Results Brief. Available online: https://www.worldbank.org/en/results/2019/10/29/reducing-vulnerability-and-strengthening-inclusion-in-rwanda-through-rural-development-and-enhancing-social-protection (accessed on 30 August 2022).
Toksanbaeva, M. (2014). The social vulnerability of women. *Russian Social Science Review*, *44*, 22–33. [CrossRef]
Tovar, J., & Miguel, U. (2017). The impact of social safety net programs on household savings in Colombia. *The Developing Economies*, *55*, 23–37. [CrossRef]
United Nations Children's Fund (UNICEF). (2018). *United Nations Children's Fund (UNICEF) social protection budget brief: Investing in inclusiveness in rwanda 2018/2019*. UNICEF. Available online: https://www.unicef.org/rwanda/media/1161/file/Social-Protection-Budget-Brief-2018-2019%20.pdf (accessed on 30 May 2022).
United Nations Children's Fund (UNICEF). (2020). *Social protection budget brief: Investing in inclusiveness 2020/21*. UNICEF. Available online: https://www.unicef.org/rwanda/media/2781/file/Social-Protection-Budget-Brief-2020-2021.pdf (accessed on 30 May 2023).
United Nations Statistical Department. (2018). *Global indicator framework for the sustainable development goals and targets of the 2030 agenda for sustainable development*. Resolution 68/261. Available online: https://unstats.un.org/sdgs/indicators/Global%20Indicator%20Framework%20after%20refinement_Eng.pdf (accessed on 30 May 2023).
van de Ven, P., & Daniele, F. (2017). *Understanding financial accounts*. OECD Publishing. [CrossRef]
Wooldridge, J. M. (2010). *Econometric analysis of cross section and panel data* (2nd ed.). The MIT Press. Available online: https://mitpress.mit.edu/9780262232586/econometric-analysis-of-cross-section-and-panel-data (accessed on 18 March 2023).
Yamana, K. (2016). *Structural household finance*. Discussion Papers. Available online: https://ideas.repec.org/p/mof/wpaper/ron279.html (accessed on 18 March 2023).

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