THE IMPACT OF COVID-19 ON HOUSEHOLD WELFARE

Summary

Diseases and pandemics affect household's welfare through a number of channels including labour supply, earnings, leisure, consumption of health and non-health goods, trade-off between current and future consumption, among others. The impact of COVID-19 control measures on household welfare are much felt by a section of households who depend on wages as a major source of livelihood in both the formal and informal sector. We undertook this study analyzing the Uganda National Household Survey (UNHS) 2016/17 data set collected by the Uganda Bureau of Statistics (UBoS) to forecast the impact of the epidemic on household welfare and poverty. With the UNHS, 2016/17 showing, that 17% of wage earners were living below the poverty line, the current loss of employment and a reduction wages during and after the lock down, is expected to push more households below the poverty line. The study results indicate that if a community is faced with unemployment as a shock, wages would fall by 28.1%, all else constant. Since as per UNHS 2016/17, wages are a major source of livelihood for 21.75 percent of the population, household consumption would fall, with knock-on effects on welfare.

COVID-19 will increase poverty rate among wage earners. Assuming that COVID-19 pandemic is not contained in the short term and the current social distancing measures remains in place, the increase in unemployment is expected to increase the poverty rate among wage earners from 17% to 32.72 %, representing a 15.72 % percentage point increase in poverty rate among wage earners. A further analysis of COVID-19 impact by regions of Uganda shows that the increase in poverty among wage earners shall be felt most in the Eastern, Northern and Western regions. Over 53.3% of the wage earners in Eastern Uganda will be plunged in to poverty, up from 20.8%; in Northern Uganda, 44.8%, up from 30.3% and Western Uganda 31.7% up from 13.3%.

C**OVID-19 if not tamed early will soon affect welfare of Household and national poverty rate will go up by 2.24 percentage point.** Whereas high unemployment rate can lead to significant reduction in earnings among wage earners, a reduction in their income may not lead to sudden increase in poverty if households have sufficient savings or social protection. However, COVID-19 related shocks, such as sudden increase in price of consumer goods, unemployment and the likely food shortage due to the lock down will reduce consumption and adversely affect household welfare. The study results show that, if all other factors are held constant, unemployment and prices shocks combined will lead to 26.9% reduction in welfare of Ugandans. These effects mirror how social distancing measures and restriction on businesses affect households through increased unemployment and increased prices of consumer goods. When this effect is calibrated in the UNHS 2016/17 data set, the national poverty rate would increase by 2.24 percentage points. Regionally, the increase in poverty due to the combined effect of unemployment and price shock is more evident in the Eastern and Northern regions with Eastern region having 39.1% up from 35.7% and Northern Uganda at 35.8%, up from 32.5% and the national rate at 23.6% up from 21.4%.

The study concluded that the COVID-19 pandemic and public health measures taken to control its spread are likely to impact many households in terms of welfare and poverty negatively and made a number of recommendations including; (i) need to provide social security support to most affected households beginning with the most affected regions (ii) Stimulus support to local manufactures and producers of essential commodities and incentives to firms to set up in the long run in the most depressed regions to create the much needed jobs and local economy revitalisation.

1. Introduction

Diseases and pandemics affect household's welfare through a number of channels including labour supply, earnings, leisure, consumption of health and non-health goods, trade-off between current and future consumption, among others. Public health measures such as social distancing, suspension of public transport, closure of businesses ultimately affects households' labour market participation, earnings, consumption and savings. The WHO (2009) recommends an output-based approach to measure the actual losses in income or output due to illness[1]. However, pandemics like COVID-19 do not affect the infected person only since the entire population is susceptible and the control measures such as lockdowns disrupts general social interactions, employment and access goods and services. We take a conservative approach in our estimations, being aware that the various coping strategies that may compensate for some of the losses. Furthermore, measurement of full economic impact of diseases may require valuation of leisure and health itself through willingness to pay (WTP). However, social valuation of health and leisure can be subjective, leading to over or under estimation. Therefore, we focused on household welfare, measured using consumption per adult equivalent.

1.1 Microeconomic Theoretical Framework

Conceptually, a household can consume market and non-market goods, which include health and non-health goods. Households may supply labour to the market as well as hire some labour from the market and these influence their welfare and income. Households also derive utility from leisure and health. Considering these stylized facts, a household can be assumed to seek to maximize its utility (U) subject to a budget and time constraints. Symbolically, households maximize: $U = U(L, C, M, H)$ where L is leisure time , C is consumption of home produced goods, M is consumption of non-health market goods, H is health status which depends on time devoted for health and consumption of health goods. The utility is maximized subject to budget and time constraints, implying the welfare impact of diseases or a pandemic like COVID-19 can be measured by changes in utility or changes in the inputs that goes into a utility function such as leisure, non-market consumption, and market consumption of health inputs. With this backdrop, we utilised the measurable changes in wages and consumption due to shocks to mimic the impact of COVID-19 on household welfare.

1.2 Estimation Strategy

Fixed effects regression analysis was utilised to estimate the effect of COVID-19 associated wages and welfare (consumption per adult equivalent) losses. The shocks considered in estimating the losses include; disease burden, unemployment, increase in price of consumer goods and other disasters such as food shortages. Data on these shocks are contained in the community section of the Uganda National Household Survey 2016/17. In the regression analysis, consumption expenditure was modelled as function of control variables and pandemic related shocks, summarised in the equation below.

$$W_{id} = SH'_i \beta + X_{id}'\alpha + +u_{id}$$

Where W_{id} is an indicator of welfare of a household in location d or a variable that enters into households' utility function, HS_i are health related shocks/disease control measures, X_i are control variables and u_i is the stochastic disturbance term. The estimation strategy closely follows Alejandro de la Fuente et al.'s (2019) approach which involved the study of the impacts Ebola Epidemic on Agricultural Production and household welfare.

[1] World Health Organization. (2009). WHO guide to identifying the economic consequences of disease and injury.

2. JOBS, WAGES & HOUSEHOLD WELFARE

The impact of COVID-19 control measure on household welfare are much felt by a section of households who depend on wages as a major source of livelihood, in both the formal and informal sector. The baseline information in the Table 1 below shows that by 2016/17, 17% of wage earners were living below the poverty line. The current loss of employment and a reduction wages during and after the lock down, is expected to push more households below the poverty line.

Table 1: Household income sources and poverty

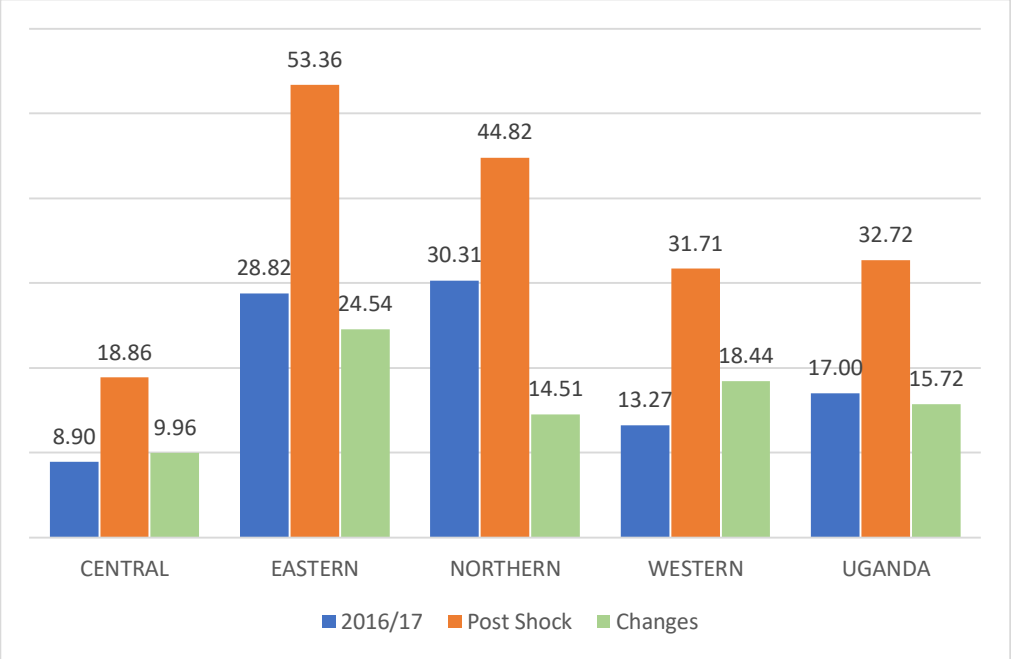
Source of income	Population	Share(%)	Poverty rate(%)	No. of the Poor
Crop farming(small scale)	17,535,693	46.75	30	5,218,518
Livestock farming(small Scale)	754,122	2.01	16	124,133
Commercial farming	955,557	2.55	14	130,672
Wage Employment	8,159,418	21.75	17	1,391,419
Non-Agric	7,228,706	19.27	11	820,946
Property income	516,486	1.38	6	29,110
Transfers Payments	70,551	0.19	5	3,454
Remittances	1,941,750	5.18	12	241,898
Organizations	5,183	0.01	0	-
Others	344,132	0.92	21	72,049
Total	37,511,598	100		8,032,202

Source: Authors Computations based on UNHS 2016/17 data set

The regression results in Appendix 1 indicates that if a community is faced with unemployment as a shock, wages would fall by 28.1% [(exp (-0.33) -1) *100], all else constant. Since wages are a major source of livelihood for 21.75 percent of the population, household consumption would fall, with knock-on effects on welfare.

Assuming that COVID-19 pandemic is not contained in the short term and the current social distancing measures remains in place, the increase in unemployment is expected to increase the poverty rate among wage earners from 17% to 32.72 %, representing a 15.72 % percentage point increase in poverty rate among wage earners. A sub national analysis shows that the increase in poverty among wage earners shall be felt most in the Eastern and Western regions as illustrated in figure 1 below. The figure shows that over 53.3% of this category Eastern Uganda will be plunged in to poverty, up from 20.8%; in Northern Uganda, 44.8%, up from 30.3% and Western Uganda 31.7% up from 13.3%.

Figure 1: Poverty Rate among Wage before and after Unemployment Shocks



Source: Author's computations based on UNHS 2016/17 data set

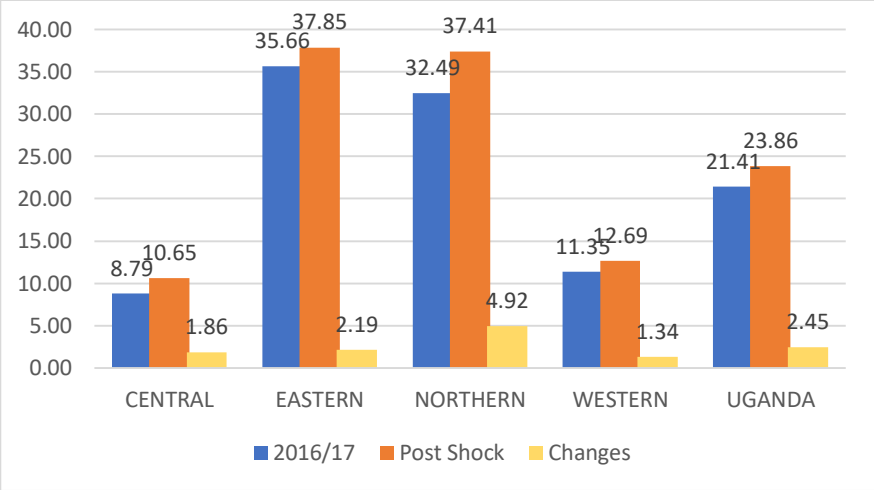
Notes: A 28.1 % reduction in wage was used to calibrate reduction in consumption per adult equivalent (CPAE). If the adjusted CPAE after unemployment shock is less than the national poverty line, then a household is considered to be poor. Poverty rates are then computed for wage earners to obtain post shock poverty rate . The increase in poverty rate is computed as the difference between post shock poverty rate and the 2016/17 poverty rate amongst wage earners. A 95% confidence interval can be computed to show the expected lower and upper bounds of the effects

3. DIRECT EFFECTS OF PANDEMIC RELATED SHOCKS ON HOUSEHOLD WELFARE

Whereas high unemployment rate can lead to significant reduction in earnings among wage earners, a reduction in their income may not lead to sudden increase in poverty if households have sufficient savings or social protection. However, COVID-19 related shocks, such as sudden increase in price of consumer goods, unemployment and the likely food shortage due to the lock down will reduce consumption and adversely affect household welfare. Using fixed effects regression, the impact of COVID-19 related shocks on household welfare was estimated and presented in appendix II. The dependent variable is the natural logarithm of welfare, measured by consumption per adult equivalent. The shocks were included separately and then jointly in the regression models. The results show that, if all other factors are held constant, unemployment and prices shocks are associated with 16.47% and 10.4% reduction in welfare, respectively. These effects mirror how social distancing measures and restriction on businesses affect households through increased unemployment and increased prices of consumer goods.

The estimated results show that a reduction in welfare due to COVID-19 associated shocks can push more households into poverty. If we apply the percentage reduction of welfare due to unemployment and price shocks on the UNHS 2016/17 data set, both the national and regional poverty rates would increase as illustrated in Figure 2, Figure 3, and Figure 4. Figure 2 shows the change in poverty rate due to increase in unemployment only. The increase in unemployment as a result of COVID-19 will increase the national poverty rate from 21.41% to 23.86%, the largest increase experienced in Eastern and Northern regions.

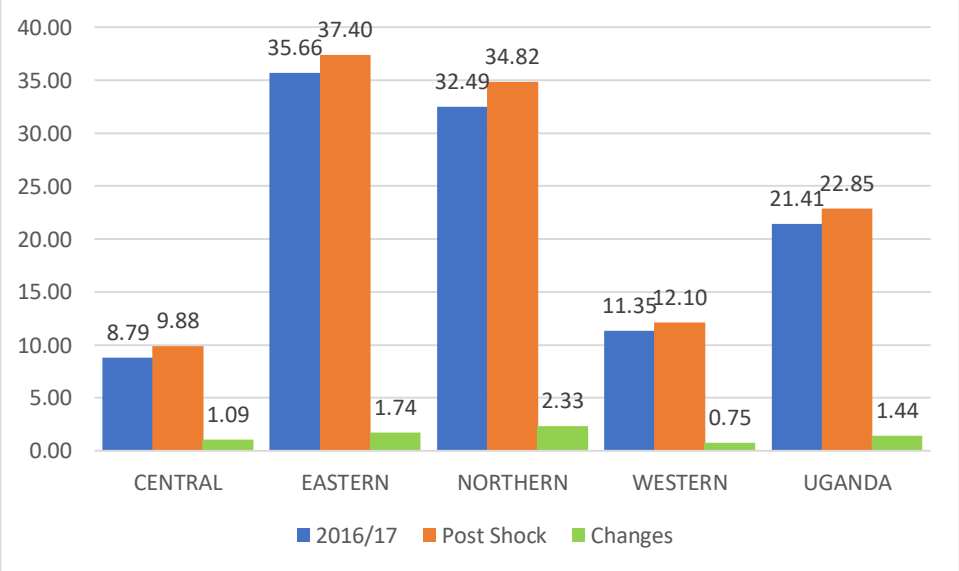
Figure 2: Loss of Jobs and Poverty



Source: Authors' computations based on UNHS 2016/17 data

A similar calibration of the effect of price shocks on welfare is associated with a 1.44 percentage point increase in the national poverty rate. Northern and Eastern regions are likely to bear the largest increase in poverty rate due to price shocks. This could be due to long distance from Kampala, the hub for manufacturing and trade. Restrictions on movement of people has slowed down the movement of goods, hence leading to localized scarcity and price increases.

Figure 3: Price Shocks and Poverty

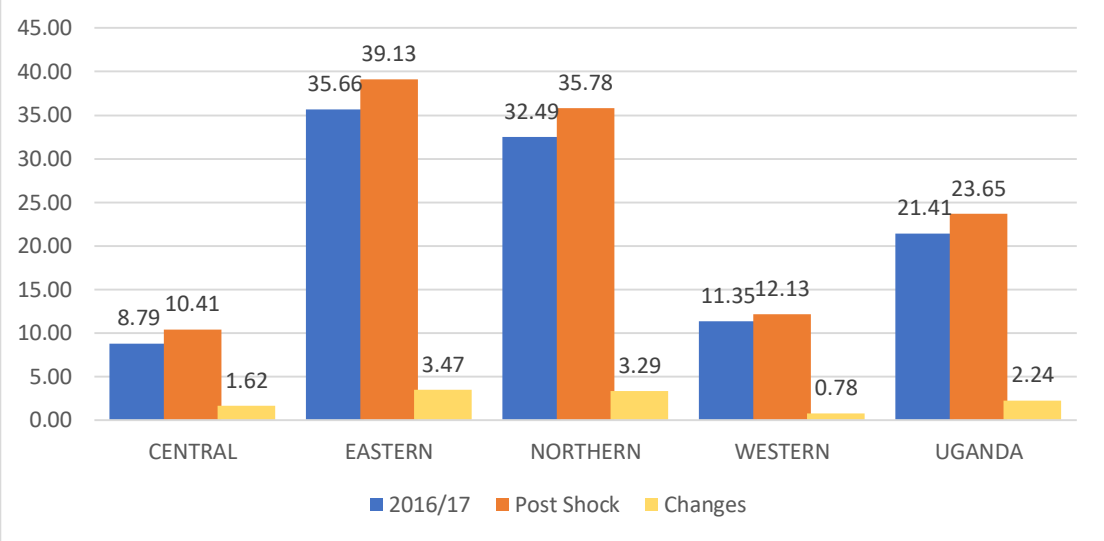


Source: Authors' computations based on UNHS 2016/17 data

In Figure 2 and Figure 3, we had assumed that the shocks are experienced iteratively, however, the current social distancing measures are impacting both jobs and prices. As shown in appendix II, the combined effect of unemployment and price will lead to a 26.88% decrease in consumption

per adult equivalent (welfare). When this effect is calibrated in the UNHS 2016/17 data set, the national poverty rate would increase by 2.24 percentage points. Regionally, the increase in poverty due to the combined effect of unemployment and price shock is more evident in the Eastern and Northern regions as illustrated in Figure 4, with the national rate at 23.6% up from 21.4%, Eastern region, 39.1% up from 35.7% and Northern Uganda at 35.8%, up from 32.5%.

Figure 4: Price Shocks, Unemployment and Poverty



Source: Authors' computation based on UNHS 2016/17 data

4. Conclusion and Policy Recommendations

The COVID-19 pandemic and public health measures taken to control its spread are likely to impact many households negatively. Many firms have laid down workers and many more are going to do the same. This has led to a sudden increase in unemployment and loss of income with negative implications on household welfare. As much as some households can depend on past savings and social assistance, poverty is likely to increase among those who depend on wage employment as a major source of income.

Furthermore, the restriction on movement of people and social distancing has led to reduction in sales for goods and services. As a result manufacturing, services and other sectors have slowed down and prices of have increased due to scarcity, which is likely to reduce household consumption.

In order to counteract the loss of incomes, jobs and the likely increase in prices that affect households' welfare, the following recommendations should be considered.

- Provide social security support to the most affected households. The regions with high poverty rates should be targeted to prevent the worsening living conditions.
- Support local manufactures and producers of essential commodities. For example, the demand for food in the region is likely to increase because of the lockdown. So the industrial component of agricultural value chain should be supported to preserve and add value to foodstuff to counteract scarcity of food and food items in future.
- In the long run, include incentives to firms setting up businesses in the most depressed regions as a stimulus to create new jobs and local economic revitalisation.

5. Appendices

Appendix 1: The effect of unemployment shocks on wages

VARIABLES	All	epidemics	Unemployment	Disasters	Price	Base
Diseases	-0.23	-0.32				
	(0.28)	(0.26)				
Unemployment	-0.33**		-0.27*			
	(0.15)		(0.15)			
Natural disasters	-0.20			-0.16		
	(0.20)			(0.20)		
High Prices	0.18				0.17	
	(0.16)				(0.16)	
Some primary	0.87***	0.90***	0.91***	0.92***	0.89***	0.32
	(0.22)	(0.26)	(0.26)	(0.28)	(0.29)	(0.21)
Completed primary	0.78***	0.73**	0.82***	0.78**	0.77**	0.44*
	(0.25)	(0.30)	(0.29)	(0.31)	(0.32)	(0.23)
Some secondary	1.78***	1.80***	1.82***	1.86***	1.81***	0.89***
	(0.27)	(0.31)	(0.31)	(0.33)	(0.33)	(0.22)
Lower secondary	0.94***	0.92***	0.99***	0.98***	0.93***	0.47**
	(0.31)	(0.34)	(0.32)	(0.35)	(0.36)	(0.24)
Higher secondary	0.69	0.94	0.82	0.92	0.95	0.96**
	(0.61)	(0.62)	(0.63)	(0.64)	(0.64)	(0.43)
Diploma	2.02***	1.97***	2.11***	1.99***	1.98***	1.18***
	(0.34)	(0.36)	(0.34)	(0.36)	(0.37)	(0.25)
Degree	1.68***	2.13***	1.89***	1.96***	2.00***	2.28***
	(0.46)	(0.43)	(0.42)	(0.44)	(0.45)	(0.49)
Construction sector	0.57**	0.39*	0.44*	0.46*	0.43*	0.26
	(0.26)	(0.21)	(0.24)	(0.27)	(0.24)	(0.17)
Trade & Services	1.16***	1.18***	1.17***	1.15***	1.17***	0.54**
	(0.33)	(0.35)	(0.34)	(0.36)	(0.35)	(0.21)
Transport and Storage	0.97***	0.95***	0.91***	0.94***	0.92***	0.59***
	(0.20)	(0.20)	(0.19)	(0.20)	(0.19)	(0.20)
Hotels& restaurant	-0.04	-0.01	-0.13	-0.03	-0.10	-0.05
	(0.53)	(0.47)	(0.44)	(0.35)	(0.45)	(0.44)
ICT	0.57*	0.29	0.47*	0.30	0.39	1.02*
	(0.30)	(0.27)	(0.28)	(0.28)	(0.27)	(0.61)
Finance & Insurance	1.70***	1.48***	1.63***	1.63***	1.56***	0.74*
	(0.29)	(0.30)	(0.28)	(0.30)	(0.29)	(0.44)
Observations	2130	2130	2130	2130	2130	5711
R-squared	0.57	0.55	0.55	0.54	0.54	0.28

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Notes: The analysis is based on UNHS 2016/17 data set .The dependent variable is the natural logarithm of monthly wages. Other explanatory variables include age, gender, marital status. Location and year fixed effects were also included.

Appendix 2: THE EFFECT OF SHOCKS ON WELFARE

VARIABLES	All	Diseases	Unemployment	Disasters	Price
Diseases	0.01	0.00			
	(0.02)	(0.02)			
Unemployment	-0.18***		-0.18***		
	(0.02)		(0.02)		
High prices of consumer goods	-0.11***				-0.12***
	(0.02)				(0.02)
Natural disasters/famine	-0.02			-0.01	
	(0.02)			(0.02)	
(sum) hsize	-0.07***	-0.07***	-0.07***	-0.07***	-0.07***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Age in completed years	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Male	-0.04*	-0.03	-0.04	-0.03	-0.04
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Some primary	0.17***	0.16***	0.16***	0.16***	0.16***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)
Completed primary	0.38***	0.38***	0.37***	0.38***	0.38***
	(0.04)	(0.05)	(0.05)	(0.05)	(0.04)
Some secondary	0.47***	0.45***	0.46***	0.45***	0.46***
	(0.04)	(0.05)	(0.04)	(0.05)	(0.04)
Lower secondary	0.54***	0.53***	0.53***	0.53***	0.54***
	(0.05)	(0.05)	(0.05)	(0.05)	(0.05)
Higher secondary	0.63***	0.63***	0.62***	0.63***	0.63***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
Diploma	0.89***	0.87***	0.89***	0.87***	0.87***
	(0.08)	(0.07)	(0.08)	(0.08)	(0.08)
Degree	1.36***	1.35***	1.35***	1.34***	1.36***
	(0.10)	(0.09)	(0.10)	(0.10)	(0.10)
Livestock farming (Small scale)	0.31***	0.34***	0.32***	0.34***	0.34***
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
Commercial farming	0.20***	0.24***	0.21***	0.23***	0.22***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Wage employment	-0.63***	-0.62***	-0.63***	-0.62***	-0.63***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Non-agricultural enterprises	0.24***	0.23***	0.24***	0.23***	0.23***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Property income	0.53***	0.53***	0.53***	0.52***	0.52***
	(0.07)	(0.08)	(0.07)	(0.08)	(0.08)
Transfers(Pension, allowances etc)	0.16	0.12	0.15	0.12	0.13
	(0.17)	(0.14)	(0.16)	(0.14)	(0.15)
Remittances	0.14**	0.14**	0.14**	0.14**	0.14**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Organizational support	-0.24***	-0.38***	-0.29***	-0.37***	-0.32***
	(0.06)	(0.05)	(0.05)	(0.05)	(0.05)
Others	0.29**	0.29*	0.29**	0.29*	0.29**
	(0.14)	(0.15)	(0.14)	(0.15)	(0.15)

Year fixed effect	-0.11***	-0.17***	-0.14***	-0.17***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Urban/Rural Identifier	0.31***	0.28***	0.30***	0.27***	0.30***
	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
Constant	11.18***	11.08***	11.15***	11.08***	11.12***
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Observations	6,415	6,415	6,415	6,415	6,415
R-squared	0.39	0.37	0.39	0.37	0.38

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1