

# Do remittances and/or public transfers matter for agricultural investments and food security outcomes among rural households in Zimbabwe?

Advanced policy-focused poverty analysis in Zimbabwe



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## **Abstract**

This study investigates whether private transfers, specifically, migrant remittances, and public transfers, that is, government support programs, matter for agricultural and food security outcomes of rural households in Zimbabwe using descriptive statistical methodologies on a recent household survey. The findings reveal agriculture-related public transfers have a positive association with crop diversification and the use of modern agricultural inputs, particularly inorganic fertilizer and improved/hybrid seed. Thus, there is evidence of the positive effect of targeted public transfer government interventions such as the Command Agriculture and Presidential Input Support Programme on the agricultural outcomes of rural households. The results also show that food-related public transfers are rightly channelled towards the poorest households. The study also shows some differential findings according to the type of land households are located on, and/or their agro-ecological zone. Other findings suggest that households headed by men are more likely to diversify crop production, use modern agricultural inputs, and own livestock of higher value, relative to female headed households.

International migrant remittances are found to have no statistically significant relationship with the agricultural outcomes of rural households and to be received by richer households. Domestic remittances are shown to have a negative association with crop diversification but a positive association with the use of modern agricultural inputs, particularly inorganic fertilizer and herbicides. Thus, domestic remittances seem to have an opposite effect to public transfers when it comes to crop production, but complement public transfers when it comes to input use.

It is notable that despite evidence showing both domestic remittances and public transfers have statistically significant associations with agricultural outcomes, this does not seem to translate to an increase in the quality of nutritional intake as measured by dietary diversity. This highlights the need to further understand how better nutritional outcomes can be achieved in rural Zimbabwe.

## **Context: Importance and Policy Relevance of the Issue**

Agriculture is an extremely important sector in the socio-economic and political context of Zimbabwe. Food and Agriculture Organization (FAO) estimates suggest agriculture contributes approximately 17% to the GDP of Zimbabwe. Thus, the sector has the potential to be a key driver for pro-poor economic growth and sustainable development, poverty reduction, employment creation, and food and nutrition security. Agriculture in Zimbabwe is divided into four major sectors. Firstly, the large-scale commercial farming sector are farms located in areas occupied by former white commercial farmers producing crops and livestock on a large scale. Small scale commercial farms undertake crop and livestock

production on a relatively smaller scale. Old resettlement schemes conduct farming as individual households or cooperatives and came into existence following the early land redistribution programme between 1982 and 1998 where the government bought land from large scale commercial farms and resettled farmers from communal lands. Lastly, A1 and A2 farms stemmed from the accelerated land reform programme in the early 2000s. A1 farms are smallholder farmers on communal land while A2 farms follow a commercial model of farming.

It is widely acknowledged that most growth-inducing and poverty-reducing agricultural growth in Sub-Saharan Africa is expected to come largely from the expanded use of inputs that embody improved technologies, particularly improved seed, fertilizers and other agro-chemicals. According to the African Development Bank (AfDB), in 2019 Zimbabwe was regarded as one of the most vulnerable and food insecure countries in the Sub-Saharan Africa region. The AfDB recommends putting in place mechanisms that improve access to finance by smallholder farmers to boost agricultural productivity and food security outcomes.

The Zimbabwe Transitional Stabilisation Programme (2018) expects the contribution of agriculture to the GDP to grow in 2020 due to policy and practice interventions under the banner of “Smart Agriculture”. However, despite the prevalence of smallholder farming as a primary livelihood source for Zimbabwean rural households, the sector faces many resource constraints, including limited access to finance. In addition, following a prolonged liquidity crisis in Zimbabwe, financial flow towards agricultural growth has been weak. Thus, the government of Zimbabwe has directed its policy towards improving access to agricultural finance under the Transitional Stabilisation Programme and new National Agricultural Policy Framework (2018-2030). These two policy documents identify public, private and diaspora remittances as key funding sources to support the growth of the agricultural sector. Key programmes under public support include Command Agriculture and the Presidential Input Support Programme. Private transfers in the form of migrant remittances are also expected to contribute significantly towards agriculture development. Given the recent significant growth in migrant remittance inflows, Zimbabwe now recognizes their contribution in the National Developmental Policy framework.

Despite the acknowledged importance of private transfers in the agricultural sector, robust empirical evidence on the relationship between private transfers and agricultural and food security outcomes at the rural household level is lacking in framing the aforementioned policies. Thus, the current study set out to investigate whether private transfers in the form of domestic and international migrant remittances matter for the agricultural and food security outcomes of rural households in Zimbabwe. Also, agricultural input subsidies and other public transfers not specifically tied to agriculture have regained popularity among African policymakers. In the Zimbabwe context, there is a lack of recent empirical evidence on public transfers and agricultural and food security outcomes at the rural household level. It is therefore important to address these gaps in evidence and contribute towards shaping the ongoing development of agriculture and food security policy.

## Objectives and Methods

The objective of the study was to investigate the relationship between the receipt of private transfers (migrant remittances), public transfers, and the agricultural and food security outcomes of rural households in Zimbabwe. Ordinary Least Square (OLS) regression and Linear Probability Model (LPM) analysis were employed to estimate factors that determine the agricultural outcomes of rural households using the 2017 Poverty, Income, Consumption, Expenditure Survey (PICES), including the pre- and post- harvest Agriculture Productivity Module (APM) of the survey. The following relationship was estimated:

$$Y_i = \alpha + \gamma_j DR_i + \delta_j IR_i + \lambda_j FT_i + \tau_j AT_i + \eta_j OT_i + z_i' \gamma_j + \varepsilon \quad (1),$$

where  $Y_i$  is the dependent variable and captures the agricultural or food security outcome. The explanatory variables in equation (1) are  $DR_i$  which is a dummy variable capturing the receipt of domestic migrant remittances by the household,  $IR_i$  which is a dummy variable capturing the receipt of international migrant remittances by the household,  $FT_i$  capturing the receipt of food-related public transfers by the household,  $AT_i$  capturing the receipt of agriculture-related public transfers by the household,  $OT_i$  capturing the receipt of other public transfers by the household  $z_i'$ : a vector of household and other characteristics, and  $\varepsilon$  an error term.

Agricultural outcomes relate to input use in agriculture, crop diversity/ specialization, and value of livestock owned. Food security outcomes relate to the household dietary diversity score and the share of the total household budget allocated towards food. The dietary diversity score ranges from 0 to 12 and is a sum of scores for the consumption of 12 categories of food that constitute the food pyramid. The share of total annual expenditure allocated to food is a measure of food security in that as total expenditure increases (that is, as the household becomes better off) the share of the budget allocated to food is expected to decline. Thus, households with relatively low food budget shares are expected to be more food secure as it is relatively easy for them to respond to rising food prices by reducing the consumption of non-food items.

## Findings

Figure 1 shows that 38% of households in the sample received agriculture-related public transfers, 7% of households received food-related public transfers, and 5% received other types of public transfer.

**Figure 1: Proportion of Rural Households in the Sample Receiving Transfers**

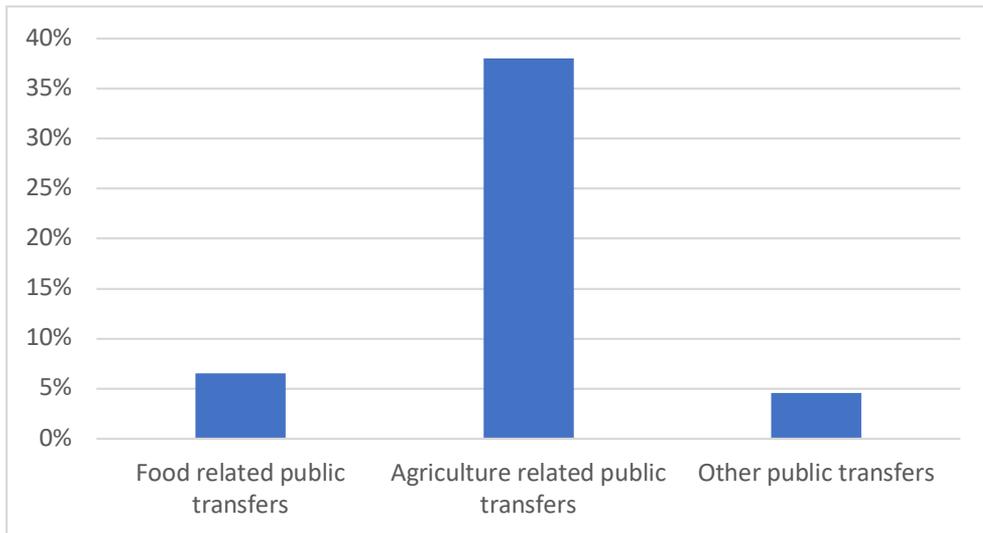
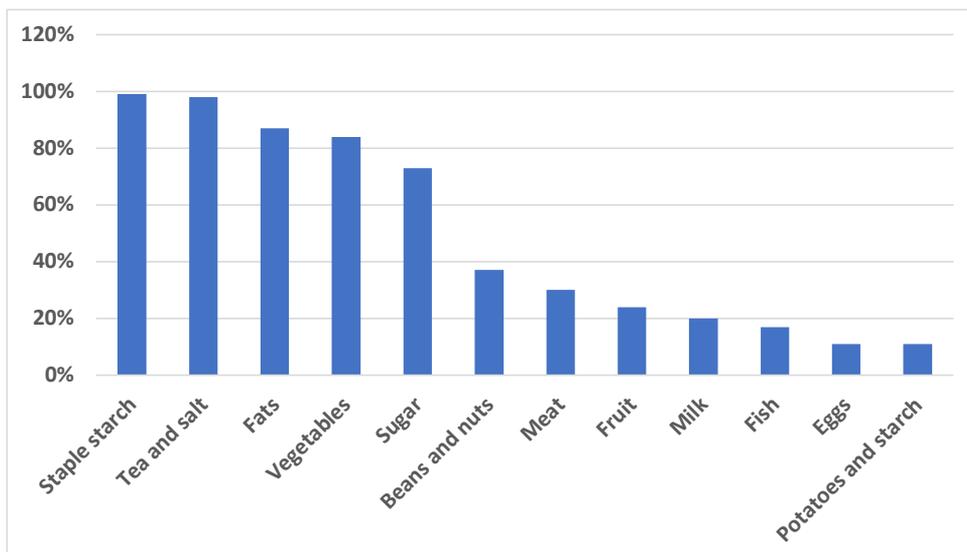


Chart 2 shows that rural households in Zimbabwe are largely food insecure in that their dietary composition is not particularly diverse. For example, most households consume only five food groups, namely, staple starch, tea and salt, fats, vegetables, and sugar. The average dietary diversity score for households in the sample is 6.

**Chart 2: Proportion of Households Consuming Food Group in Past Seven Days**



The average share of total annual expenditure spent on food by households in the sample is nearly 50%, which is considerably high according to studies in the literature. This indicates rural households in Zimbabwe have a high probability of becoming food insecure. Table 2 presents findings obtained when equation (1) is estimated for the agricultural outcome regression model.

**Table 2: OLS Regression Estimates: Public and Private Transfers and Agricultural Outcomes**

| VARIABLES                                    | Crop Count | Simpson Index | Entropy Index | Organic Fertilizer Use | Inorganic Fertilizer Use | Herbicide Use | Pesticide Use | Improved/Hybrid Seed | Value of Livestock |
|--|------------|---------------|---------------|------------------------|--------------------------|---------------|---------------|----------------------|--------------------|
| = 1 if received domestic remittances         | -0.301**   | -0.0333*      | -0.116***     | -0.0227                | 0.0553**                 | 0.0355**      | -0.00646      | -0.000771            | -84.07*            |
|  | (0.121)    | (0.0190)      | (0.0305)      | (0.0312)               | (0.0261)                 | (0.0172)      | (0.00949)     | (0.0246)             | (49.69)            |
| = 1 if received international remittances    | 0.212      | 0.0753**      | 0.0833        | 0.0849                 | -0.00969                 | -0.00789      | 0.0175        | 0.00323              | 102.1              |
|  | (0.246)    | (0.0372)      | (0.0654)      | (0.0706)               | (0.0525)                 | (0.0260)      | (0.0258)      | (0.0615)             | (117.9)            |
| = 1 if received food public transfers        | 0.152      | 0.0411**      | 0.0421        | -0.00671               | -0.100***                | -0.0110       | -0.00647      | -0.0887***           | -121.6**           |
|  | (0.136)    | (0.0196)      | (0.0343)      | (0.0365)               | (0.0334)                 | (0.0153)      | (0.00816)     | (0.0314)             | (55.00)            |
| = 1 if received agriculture public transfers | 0.286***   | 0.0227*       | 0.0621***     | -0.0206                | 0.148***                 | 0.00850       | 0.00891       | 0.190***             | 24.89              |
|  | (0.0892)   | (0.0124)      | (0.0219)      | (0.0228)               | (0.0201)                 | (0.0117)      | (0.00692)     | (0.0159)             | (35.47)            |
| = 1 if received other public transfers       | -0.0211    | -0.00624      | -0.0158       | -0.0152                | 0.0309                   | -0.00951      | -0.000667     | 0.0219               | 145.3*             |
|  | (0.169)    | (0.0255)      | (0.0462)      | (0.0470)               | (0.0402)                 | (0.0186)      | (0.0125)      | (0.0359)             | (86.75)            |
| Control variables included                   | Yes        | Yes           | Yes           | Yes                    | Yes                      | Yes           | Yes           | Yes                  | Yes                |
| Province level fixed effect                  | Yes        | Yes           | Yes           | Yes                    | Yes                      | Yes           | Yes           | Yes                  | Yes                |
| Observations                                 | 1,917      | 1,917         | 1,917         | 1,923                  | 1,923                    | 1,923         | 1,923         | 1,923                | 1,923              |
| R-squared                                    | 0.238      | 0.166         | 0.162         | 0.146                  | 0.311                    | 0.155         | 0.084         | 0.133                | 0.171              |

**Notes to the table:** (i) Standard errors are reported in parentheses. (ii) \*, \*\*, \*\*\* represent the statistical significance of the differences for the 10 per cent, 5 per cent and 1 per cent significance levels respectively. (iii) The control variables included are: total cropped area (in acres), total consumption expenditure, household size, dummy variables for the age of the household head, dummy variables for the education level of the household head, gender of the household head, land type, and land title deed status. (iv) Ten province level fixed effects are included in all the specifications. (v) Columns 4 to 9 have four more observations included in the sample as there are four households that provided responses to input use but have some missing observations for variables that are used to compute crop diversification variables.

The findings of our research reveal that the type of public transfer received by households matter for their agricultural outcomes. Specifically, agriculture-related public transfers have a positive association with crop diversification and with the use of modern agriculture inputs, particularly inorganic fertilizer and improved/hybrid seed. On the other hand, households receiving food and other types of public transfer tend to specialize rather than diversify their crop production. There are no evident associations between food- and other-types of public transfer and agriculture input use or other outcomes.

With regards to private transfers, the evidence obtained shows international remittances are largely unrelated to the agricultural and food security outcomes of rural households. This is likely a result of the small number of rural households in receipt of international remittances. On the other hand, unlike agriculture-related public transfers, domestic remittances are associated with an increase in crop specialization. But, similar to agriculture-related public transfers, domestic remittances seem to enable households to use more modern agricultural input, particularly inorganic fertilizer and herbicides.

Other specific findings show households headed by men are more likely to diversify crop production and to use modern agricultural inputs, relative to female headed households. The value of their livestock is also higher than that of female headed households. This finding ties in with the finding that male headed households are more food secure than female households as they have more diverse diets.

We also find evidence that food-related transfers are received by poorer households. It is notable that despite evidence showing public transfers have a positive association with crop diversification, this does not seem to translate to an increase in the quality of nutritional intake as measured by dietary diversity. This is also the case for domestic and international remittances. The findings also reveal heterogeneities in the relationship between remittances and public transfers, and agricultural outcomes and food security depending on the agro-ecological zone.

**Table 3: OLS Regression Estimates: Public and Private Transfers and Food Security Outcomes**

| VARIABLES                                   | Dietary Diversity   | Food Budget Share    |
|---|---------------------|----------------------|
| =1 if received domestic remittances         | -0.0426<br>(0.0991) | -1.307<br>(1.001)    |
| =1 if received international remittances    | 0.188<br>(0.207)    | -6.381***<br>(2.074) |
| =1 if received food public transfers        | -0.191*<br>(0.113)  | 2.063*<br>(1.133)    |
| =1 if received agriculture public transfers | -0.0130<br>(0.0758) | 0.483<br>(0.736)     |
| =1 if received other public transfers       | 0.119<br>(0.163)    | -1.297<br>(1.531)    |
| Control variables included                  | Yes                 | Yes                  |
| Province level fixed effect                 | Yes                 | Yes                  |
| Observations                                | 1,923               | 1,923                |
| R-squared                                   | 0.167               | 0.128                |

**Notes to the table:** (i) Standard errors are reported in parentheses. (ii) \*, \*\*, \*\*\* represent the statistical significance of the differences for the 10 per cent, 5 per cent and 1 per cent significance levels respectively. (iii) The control variables included are: total cropped area (in acres), total consumption expenditure, household size, dummy variables for the age of the household head, , dummy variables for the education level of the household head, gender of the household head, land type, and land title deed status. (iv) Ten province level fixed effects are included in all the specifications.

## Policy Recommendations

The study recommends that the government should continue providing agriculture specific interventions such as the Command Agriculture and Presidential Input Support Programme as they are correlated with crop diversification and the use of modern agriculture input. Another recommendation is for the continuation of government food-related public transfer interventions in rural areas since these are accruing to the neediest households. The complementarity between private and public transfers shows there is a role for shaping public policy to better understand and facilitate the benefit of such transfers. Given the prominence that remittances are given in the National Development Policy framework and the recognition by the government of the need to support the growth of the agricultural sector, the role of domestic remittances in supporting the agricultural sector should be more explicitly considered and supported. There may also be a role for policy to play in the harmonisation of public and private transfers to ensure public transfers are channelled towards inputs that are most needed. The study advocates for space to be created in Zimbabwe's policy arena to better understand and explore this interaction between private and public transfers. In addition, a proposed agenda for future research is to examine the role of in-kind remittances to determine to what extent they play a role in the agricultural outcomes of rural households.

The study also recommends the government to prioritize female headed households in providing food relief and other agricultural interventions given their vulnerability to food insecurity.

The finding that both public and private transfers do not have an association with dietary diversity showcases the lack of diverse nutritional intake by households in rural Zimbabwe and calls for a better understanding of how this can be achieved. Perhaps policymakers may wish to consider offering more diverse foods when providing food-related public transfers, and/or more diverse seed input, in order to promote the diversification of the diets of rural households.



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