

Participation in Non-Farm Activities in Rural Sudan: Patterns and Determinants

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Abstract

Despite the importance of non-farm income in the livelihood of the rural population in Sudan, information available on its size and determinants is scant. This study examined the patterns and determinants of decisions to participate in non-farm activities in rural Sudan. It also investigates whether the determinants of participation in non-farm activities vary across agriculture sub-sectors and income groups as well as among males and females. The data for this study was sourced from the Sudanese National Baseline Household Survey (NBHS) conducted by Sudan's Central Bureau of Statistics in 2009. The results show that non-farm income is a crucial source of livelihood, contributing

about 43% to household income in rural Sudan. The results of multinomial logit and probit estimation methods indicate that educational level, mean of transportation, lack of land and lack of access to formal credit are the most significant factors that push rural farmers to participate in non-farm activities. Surprisingly, the effect of household income was positive and significant, implying that individuals from rich households have higher opportunity to engage in non-farm activities compared to their poor counterparts. Moreover, the analysis revealed some symptoms of gender and location disparities in the effect of factors that influence participation in non-farm activities. The study concluded with some recommendations that aim to enhance the engagement in non-farm activities as an important diversification strategy to complement the role of the agriculture sector in improving rural economy in Sudan.

Introduction

In the presence of unfavourable economic conditions, most of the rural population in developing countries tend to obtain their livelihoods from diverse sources of income and are not entirely dependent on agriculture. Indeed, a considerable portion of rural households in poor countries are involved in non-farm activities such as trading and rural manufacturing. A large body of empirical studies has shown that non-farm activities represent an important source of livelihood for small-scale farmers and contribute between 20% and 60% to the total household income in rural areas (Newman and Gertler, 1994; Reardon, 1997; Ellis, 1998; Lanjouw and Lanjouw, 2001; Adams, 2001 and Kimhi, 2004;).

Like other developing countries, agriculture in Sudan is a dominant sector and contributes on average about 40% to the total gross domestic product (GDP) and employs about 75% of the total population. The agriculture sector also ensures the livelihood of about 70% of the total population, most of them living in rural areas (World Bank, 2014). However, the role of farming in generating rural income has declined remarkably in recent decades, owing to the breakdown of the agriculture sector. Agriculture in Sudan has deteriorated significantly in the last two decades due to government policies, such as the adoption of structural adjustment programmes, which were launched in the early 1990s. Moreover, the exploitation of oil at the end of 1990s diverted the government's attention from agriculture to the oil industry. These factors have weakened agricultural production; hence a large portion of rural farmers has been pushed to non-farm activities to supplement their meagre agricultural income or to smooth intra-seasonal cash flows and consumption. However, despite the significant role of non-farm activities in the rural economy, many small-scale farmers have not been able to diversify their income sources by engaging in non-farm, income-generating activities. Therefore, this study aimed to investigate the factors that encourage small-scale farmer to participate in non-farm activities and diversify their income sources.

Against this backdrop the main questions of this study were: What are the determinants of participation in non-farm activities? What are the contributions of non-farm activities to the total rural income and employment? To what extent could the determinants of participation in non-farm activities vary across different agriculture sub-sectors and among male and female farmers?

Regarding the importance and policy relevance, the analysis undertaken by this study was decisive for several reasons. First, despite the importance of rural non-farm activities in a typical developing country like Sudan, the information available on its size, determinants, and the various roles it can play in economic development is meagre; and there are no empirical studies examining the factors that influence the participation in non-farm activities and income diversification in rural Sudan. Therefore, the empirical results emerging from this study would guide appropriate policies to enhance income generating activities in rural Sudan. Second, gender disparities in the factors affecting participation in non-farm activities cannot be ignored. This is because the participation of females and males may be affected differently because of gender specific inequality in education and labour markets and in the prevailing norms about the role of females and males in society.

Thus, apart from investigating the determinants of participation for the full sample, the study also examined the gender-differentiated effects of the factors that influence participation in non-farm activities. This would be crucial in designing an effective strategy that may empower women and reduce gender inequality in rural Sudan. Third, the agriculture sector in Sudan is classified into two sub-sectors in terms of irrigation: the irrigated and the rainfed sub-sector. The two sectors are different in terms of location characteristics, types of crops, and inputs used in farming activities. Consequently, the factors that influence household member participation in farm and non-farm activities may vary across these sub-sectors. Thus, this study examined the determinants of participation in non-farm activities in both irrigated and rainfed systems. This could be helpful in designing appropriate pro-poor policies to allocate infrastructure and services across irrigated and rainfed areas.

Methodology

To examine the determinants of the decision by rural farmers to participate in non-farm activities, the study used econometric methodology. Following Corral and Reardon (2001) and Yúnez-Naude and Taylor (2001), we classified non-farm activities into two major groups, namely non-farm wage work and non-farm self-employment. This categorization is due to the availability of data and because it reflects the nature of non-farm activities in rural Sudan. To identify the determinants of non-farm participation decision and participation in specific non-farm activity, the study estimated two regression models: the first one is for labour supply participation in farm

and non-farm work, and the second model is delegated to explore the determinants of participation decision in specific non-farm activity (i.e., wage work and self-employment). The dependent variables in both models are binary variables, which are functions of individual characteristics, household characteristics, household assets and location characteristics.

The data for this study were gathered from the National Baseline Household Survey (2009) conducted by Sudan's Central Bureau of Statistics. The survey covered information about individuals and household characteristics, expenditure items, sources of income, and labour status in urban and rural Sudan. This study used only the rural population sample, comprising 5,454 households with 33,616 individuals. Specifically, the analysis focused on 7,238 individuals, who were active workers of age 14 years and above. The 15 states which are covered by the survey were divided into two sub-samples: irrigated and rainfed agricultural states, so as to examine the variation in the determinants of participation in non-farm activities across different agricultural sub-sectors. The irrigated areas include six states while the rainfed agriculture involves nine states.

Conclusion and policy implications

This study examined the patterns and determinants of the decision to participate in non-farm activities in rural Sudan. The study used the National Baseline Household Survey (NBHS) database 2009 for both the aggregate and sectoral levels of agricultural irrigation systems. For the robustness check, the analysis was also executed for different income groups and for males and females.

The study shows that non-farm income is an important source of livelihood, contributing about 43% to the total income in rural Sudan. This result is in line with most of previous studies conducted in the other sub-Saharan African countries (e.g., Reardon, 1997, Beyene, 2008; Babatunde and Qaim, 2010). The results also revealed that non-farm wage employment represents the highest share of non-farm income amounting to 53%, while self-employment contributes 47%.

The empirical analysis indicates that education level, age, per capita expenditure, dependency ratio, and owning a motorcycle were the most significant factors that encourage individuals to participate in non-farm activities. Square of age, owning land, distance to urban centres, and access to farm credit had a negative and significant impact on participation in non-farm activities. In addition, households residing in an irrigated agricultural system had a higher probability of engaging in non-farm activities than those living in a rainfed system. The empirical results also indicate some variations in the determinants of participation in wage employment and self-employment.

Surprisingly, the impact of household income was positive and statistically significant, suggesting that individuals from rich households have a better opportunity to engage in non-farm activities than their poor counterparts. This is because households with higher income possess assets and better chances to access credit, hence enable their members to easily engage in non-farm activities. Put differently, this also implies that individuals living in poor households have fewer opportunities to diversify their income. Moreover, the results reveal that the determinants of participation in non-farm activities vary between the irrigated and the rainfed agriculture sectors. The analysis also indicates some symptoms of gender and income inequality in the factors that affect participation in non-farm activities.

Based on these findings, many policy implications can be drawn. First and foremost, the entry barriers to non-farm activities should be removed to facilitate the participation of the disadvantaged household members like the poor and women in non-farm activities. Therefore, policy measures that enhance infrastructure, education and access to credit should be adopted, so as to increase the capacity of households (particularly poor households), to participate in non-farm activities. In addition, poverty strategies that aim to reduce poverty in rural areas should focus on non-farm activities, as a complementary source of income. Thus, microfinance projects that target poor households need not only to finance agriculture enterprises, but non-farm activities should be given considerable attention as a diversification strategy.

Since agriculture is still the largest source of livelihood in rural Sudan, policy makers need also to pay a great deal of attention to enhancing agriculture through supporting new technologies that promote crop and livestock production. In addition, non-farm activities should gain an equivalent focus; this is because farming alone may fail to guarantee a sufficient livelihood for most farming households. Thus, non-farm activities can bridge the gap by directly increasing household income and providing cash that can be invested in farm inputs to increase agricultural productivity. The attention therefore should be to adopt policies that aim to enhance the role of both sectors (i.e., farm and non-farm) in improving the rural economy and the welfare of poor rural households. Specifically, approaches towards developing agriculture need to be balanced by those that encourage investment in small-scale enterprises. For example, access to credit can support both farm and non-farm businesses. Moreover, the relevant government entities should pay serious attention to physical infrastructure that reduces transportation and transaction costs in both sectors so as to increase overall employment opportunities. Furthermore, the disparities in factors that affect participation in non-farm activities across irrigated and rainfed system and between males and females indicate the need for policy makers to consider the specific nature of gender and location in supporting access to non-farm activities.

Finally, to complete the view on the non-farm activities in rural Sudan, the issue of non-farm activities needs further analysis in many dimensions. First, it would be important to analyse the effect of non-farm income on poverty reduction and inequality in rural areas. Second, an empirical study needs to be conducted to examine whether farm and non-farm incomes crowd-out or crowd-in each other. Finally, a study to investigate the impact of non-farm income on food security and nutrition would be very useful.

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