



Non-farm work, food poverty, and nutrient availability in northern Ghana



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ABSTRACT

Despite the significant economic development in Ghana, northern Ghana has made little progress. Nationally, households engaged in the non-farm work are less likely to be categorized as poor, relative to those engaged in farming only. Given the well-established positive nexus between non-farm work and food security, this study extends the literature by analyzing the nexus between different types of non-farm work (own business, wage employment, and their combination) and household food nutrient availability in northern Ghana. Results from an application of a linear regression with endogenous treatment effects model to a sample of 3488 farming households and 5770 individuals indicate that, non-farm work positively affects food nutrient availability; and that farming households that own non-farm business are superior in terms of their nutrient availability and the extent of food security. Furthermore, households participating in the labor market in search of supplemental income do not appear to have better food security status relative to those engaged in farming only. Finally, females participating in non-farm work provide the largest contribution to household food nutrient availability. The study recommends the implementation of policies and building of infrastructure that foster the creation of non-farm income generating opportunities in northern Ghana, coupled with a framework that enables women to take advantage of these opportunities.

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1. Introduction

The Ghanaian economy achieved sustained growth averaging about 7% annually from 2007 to 2015 (Ghana Statistical Service [GSS], 2016, 2012). In terms of poverty and food security, Ghana had met its Millennium Development Goal's (MDG) target of halving the proportion of hungry people in 2002 and the proportion of poor people in 2015 (FAO et al., 2015). Despite the rapid national development, northern Ghanaians, especially those above latitude 8°N, are much poorer and food deprived relative to their southern peers. The average rate of poverty incidence in the north is estimated at 48.4% (GSS, 2014). The low decline in poverty and food insecurity in the north is a reflection of the region's much higher rate of subsistence farming – which is dependent on climate sensitive factors – and its lower rate of urbanization (World Bank, 2013). In 2013, data from the sixth round of the Ghana Living

Standards Survey showed that, households engaged in agricultural were among the poorest, and contributed the most to Ghana's poverty.¹ On the contrary, households engaged in the non-agricultural sector were less likely to be poor (GSS, 2014).

Employment in the non-agricultural sector plays an important role in alleviating poverty and food insecurity. Despite being labor intensive, the sector requires relatively less capital or training to set up and can provide a potential route to lift households out of poverty. Research shows that employment in the non-agricultural sector can lead to higher average household income. Thus, increasing consumption and equipping household's with better coping strategies in times of shocks (e.g. Abdulai and Delgado, 1999; Araujo, 2003; Matshe and Young, 2004). By easing budget

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¹ The Living Standards Measurement Study (LSMS) that includes countries such as Ghana (Ghana Living Standards Survey) is a research project initiated in 1980 by the Policy Research Division of the World Bank. The survey focuses on the household as a key socio-economic unit and provides valuable insights into living conditions in Ghana.

constraints, the non-agricultural sector can also enhance the household's farm input purchasing capacity, thereby improving household labor productivity and ultimately income (Ruben and Van den berg, 2001; Stark and Wang, 2002; Taylor et al., 2003).

Several studies have examined the nature and determinants of non-farm work in resource poor households (Abdulai and CroleRees, 2001; Barrett et al., 2001; Ellis, 2000; Fabusoro et al., 2010; Senadza, 2012; Smith et al., 2001; van Leeuwen and Dekkers, 2013). Many have empirically shown that non-farm work positively impacts the welfare of households (Babatunde and Qaim, 2010; Ersado, 2006; Owusu et al., 2011; Reardon et al., 1992; Ruben and Van den berg, 2001). Food security impacts of non-farm work participation are also observed to be positive because of improved access to food through increased income. Owusu et al. (2011), for instance, showed that participation in non-farm work by farming households in Northern Ghana resulted in a positive and statistically significant effect on household income and food security. In their analyses, Owusu et al. (2011) captured the availability and access to food by the household using binary variables. Using farm survey data from Nigeria, Babatunde and Qaim (2010) also showed that non-farm income resulted in a net positive effect on food security measured through household caloric intake, dietary quality, and iron and vitamin A availability.

While the overall effect of non-farm income on household food security is fairly documented, the implications of the nature and diversity of non-farm income sources on household food security and nutrient availability is scanty. This study extends the existing literature on this front in three important ways. First, this study uses extended indicators of food and nutrient availability measured by calorie, carbohydrate, protein, and fat consumptions and household dietary diversity (HDDS), as well as, the extent of monetary food shortfall. This allows for the consideration of multiple assessments of household food nutrient availability, thus improving the consistency and robustness of the results.

Secondly, in addition to providing evidence to the overall impact of non-farm work, this study presents a disaggregated analysis of the impact of various types of non-farm work and their combinations on the availability of food and nutrient to farming households. We are able to do this by leveraging the large sample size of 3488 households and 5770 individuals. The sample is drawn from a population based survey dataset encompassing nutritional, agricultural, and employment information about farming households in Northern Ghana.

Thirdly, the study addresses the impact of gender differences on household's food and nutrient availability. As in most of the developing world, women in Ghana assume varied responsibilities such as running businesses, housekeeping and preparing household meals, and are usually the primary care givers for household children. As such, women's empowerment has increasingly been the focus of many development interventions, with women's empowerment shown to be positively related with households' food security and nutrition (Cunningham et al., 2015; Malapit and Quisumbing, 2015; Ross et al., 2015; Sraiboni et al., 2014).

Literature indicates that households' non-farm work is not randomly distributed among households and most likely to be endogenous. The current study addresses the endogeneity problem by applying an instrumental variables technique, implemented through a Linear Regression with Endogenous Treatment Effects (LRET) model. Using the LRET model, we test the hypothesis of whether non-farm work and its disaggregated forms have an impact on household food nutrient availability, and whether household food nutrient availability varies by the type and combination of non-farm work. Furthermore, we test whether the gender of household heads and participation in non-farm work matter for household's nutrient availability and food poverty.

The analysis showed that non-farm work is indeed endogenous and the use of the LRET approach is appropriate. Results show that non-farm work positively affects food nutrient availability and that farming households engaged in non-farm business are better off, as judged by their nutrient availability and extent of food poverty. Farming households that participate in the labor market in search of supplemental wage do not seem to be doing any better than those entirely engaged in farming only. Finally, female members or heads with non-farm work in addition to farming, positively contribute the most to household food nutrient availability.

2. Measuring household food insecurity

Food insecurity is a situation that exists when people lack secure access to sufficient amounts of safe and nutritious food for normal growth and development and an active and healthy life. It may be caused by the unavailability of food, insufficient purchasing power, inappropriate distribution or inadequate use of food at the household level (FAO et al., 2014, p 0.50). Food insecurity is a complex phenomenon, manifested in numerous physical conditions with multiple causes. However, four dimensions of food insecurity are identified: (1) food availability, (2) economic and physical access to food, (3) food utilization, and (4) stability of the other three dimensions over time.² In this study, we focus on food availability dimension, and utilize household daily intake of nutrients (calorie, carbohydrate, protein, and fat), household dietary diversity score (HDDS), and the monetary food consumption shortfall as assessment indicators.

Total daily availability of household calorie, carbohydrate, protein, and fat are computed from food consumption quantities elicited on a 7-day recall period and using food composition table in Stadlmayr et al. (2012). Using nutrition requirement scale presented in National Academy of Sciences-National Research Council [NAS-NRC] (1989), household size in terms of adult equivalence (AE) is computed by dividing the total energy requirements of the household by 2900 kcal.^{3,4} The value 2900 kcal is the energy requirements of an adult male between the ages of 19–50 years. The household daily availability of calorie, carbohydrate, protein, and fat per the AE are then taken as the quotient of their respective total daily availability divided by household size in terms AE.

The HDDS is calculated as the count of food groups that the household had consumed based on a 24-h recall, using the following nine food categories: starchy staples, green leafy vegetables, other vitamin-A-rich fruits and vegetables, other fruits and vegetables, organ meat, meat and fish, eggs, legumes and nuts, milk and milk products (Kennedy et al., 2011). The HDDS gives a snapshot of the economic ability of a household to access a variety of foods. Past studies based on HDDS assessment have shown that an increase in HDDS is correlated with improved socio-economic status and household's food security (Hatloy et al., 2000; Hoddinott and Yohannes, 2002).

Regarding the relative monetary food consumption shortfall, we apply the Foster-Greer-Thorbecke (FGT) food poverty measure (Foster et al., 1986). Given information on the food cost and caloric consumption, the FGT concept allows the estimation of a cost-of-

² See FAO et al. (2013) for a suite of indicators, which measures separately the four dimensions of food security.

³ The National Academy of Sciences-National Research Council (1989) calorie-based scale of AE has been commonly applied in nutritional studies in Ghana. The scale recognizes, for example, that the energy requirements for the young are less than that of the elderly. It also recognizes energy requirement differences along gender lines.

⁴ See Notes A1 in the Appendix for an in-depth description of the nutrient calculations.

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