



The Role of Remittances for Sorghum Production

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Abstract

The large increase in remittances from migrants has generated optimism about the potential development benefits of these capital flows in rural communities where capital market failures are prevalent. This paper examines the causal effect of remittances on sorghum production by using the 2014 Living Standards Measurement Study (LSMS) dataset on Burkina Faso. We use a Bayesian instrumental variables approach to explore several specific pathways. The results show that land size, the number of workers, and the quantity of herbicide used are the factors that significantly improve sorghum production in Burkina

Faso. We also find that a 1% increase in the amount of remittances leads to 0.938% decrease in production of sorghum. We suggest that public policies aimed at improving agricultural productivity will be more effective if there is a remittance use scheme in place, along with the transparency of decision-making concerning land allocation.

Introduction

Agriculture is important for sustainable development, poverty reduction and enhanced food security in sub-Saharan African countries. It is also an important source of income, employment, and raw material for small and medium industries (Kaninda et al., 2014). However, agricultural productivity in this region has continued to decline over the last decades and poverty levels have increased (Doss, 2006; Ouma and De Groote, 2011). In Burkina Faso, poverty has worsened consistently over the past two decades despite the antipoverty measures by the Government and international development agencies. Over 43.7% of the Burkina Faso population in 2014 was estimated to be below the poverty line (World Bank, 2014).

The lack of rural financial markets has been one of the major constraints in improving agricultural productivity in developing countries (Dercon and Christiaensen, 2011; Dupas and Robinson, 2013; Mo et al., 2011; Ouma and De Groote, 2011; Suri, 2011). The provision of micro-credit is generally perceived as an effective way to promote the adoption of improved technologies and then to boost agricultural productivity in developing countries (Simtowe and Zeller, 2006). However, agricultural subsidy programmes implemented by many governments in the late 1960s and early 1970s, the creation and the promotion of microfinance institutions since the 1980s, and other financial services programmes to boost agricultural and rural activities have failed or shown their limits (Adams and Vogel, 1984; Andrews, 2006; Nagarajan et al., 2005; Zeller, 2003). As a result, the provision of financial services to the rural poor remains a challenge in sub-Saharan African countries in general and Burkina Faso in particular.

The lack of formal financial institutions has led poor households in developing countries to rely on informal credit markets, family members and friends to increase their productive capacities, share risks and smoothen their consumption over their life cycle (Diagne et al., 2000). In addition, many households have been relying on migration and remittances as a source of revenue and diversification, and a way to protect themselves against credit and insurance market imperfection (Kaninda and Fonsah, 2014). International remittances constitute the second largest source of external finance¹ and represent almost two times the official foreign aid to developing countries (Bettin and Zazzaro, 2012; De Haas, 2009). International remittances received in Burkina Faso reached nearly 67 million in 2000, to 444 million in 2017 (World Bank, 2018).

1 After foreign direct investments.

Remittances are viewed by the New Economics of Labour Migration (NELM) theory as a substitute for formal or informal credit that may enable households to overcome liquidity constraints and invest in new technologies and activities (Taylor and Wyatt, 1996; WouTerSe, 2010). By reducing risk and credit constraints, migration and remittances can increase agricultural productivity (Quinn, 2009; Zahonogo, 2011). To the best of our knowledge, the only one paper which addressed the relationship between remittances and agricultural productivity is Rozelle et al. (1999) in China.

This paper therefore aims to fill the gap by exploring how remittances affect farmers' productivity in Burkina Faso. In this country, emigrants make up between 8% and 10% of the population (about 90% of them live in Côte d'Ivoire) and remittances have grown from 1% of Gross Domestic Product (GDP) in 2009 to 4% in 2015 (OECD, 2017). At the same time, many people from Burkina Faso returned or immigrated (for those born there) from Côte d'Ivoire during the decade-long conflict in that country. The agriculture sector in Burkina Faso represents about 33.8% of GDP and occupies almost 80% of the active population (Hochet, 2014). The sector is dominated by small-scale farms of less than 5 hectares and its main products are sorghum, millet, maize, and cotton. Traditional cereals such as sorghum and millet dominate food consumption and expenditure of rural households while urban households prefer rice and maize. Indeed, it is crucial to investigate the effect of remittances on agricultural productivity especially for sorghum production. In this paper, we define sorghum productivity as total sorghum output.

To assess the effect of remittances on sorghum productivity in Burkina Faso, we follow Craig et al. (1997), Rozelle et al. (1999) and proceed using Bayesian instrumental variables approach proposed by Lopes and Polson (2014). We use data from the 2014 Living Standards Measurement Study (LSMS) survey on Burkina Faso established by the World Bank. Right now, Burkina Faso has implemented six (6) rounds of LSMS where the previous surveys were conducted in 1994, 1998, 2003, 2007 and 2010.

The 2014 data allow us to recover the remittances amount received by households and their use. We then investigate which households' characteristics and inputs are responsible to increase sorghum production. The results indicate that land size, the number of workers, and the quantity of herbicide used are the factors that significantly improve the sorghum production in Burkina Faso. Specifically, the elasticity of these inputs is respectively equal to 0.023, 0.1 and 0.107. In addition, we find that a 1% increase in the amount of remittances leads to 0.938% decrease in total production of sorghum. This result is not entirely surprising even though, according to the New Economics of Labour Migration (NELM) scholars, remittances constitute an important source of investment capital in developing countries (Richter et al., 2008; WouTerSe, 2010) and then can increase total factor productivity (Imai et al., 2014). Rozelle et al. (1999) analyze the effect of migration, remittances and agricultural productivity and find that an additional Yuan remitted increases maize yield by 0.44 jin per mu.

However, the result is consistent with several empirical studies in developing countries which have repeatedly shown that an important implication of migration and receiving remittances as a non-labour source of revenue could be the generation of a state of dependence, thereby reducing the labour market participation of the recipient household and its production effort (Berker, 2011; Jean and Jimenez, 2007; Ndiaye et al., 2016; Ruhs and Vargas-Silva, 2014; Schumann, 2013). In addition, Amuedo-Dorantes (2014) shows that remittances can reduce labour supply and create a culture of dependency. The results also show that with respect to risk neutral farmers, risk averse farmers are more likely to produce more. This may be because risk averse farmers would think it is possible, they will no longer receive transfers (remittances or any kind of additional income) in the future, and therefore invest suitably in their agricultural activities.

Moreover, the results also show that each additional FCFA of remittances received by households significantly decreases the cultivated area and land size. This result therefore suggests that since remittances are sometimes used to explain cultivated area, one may think that households are cultivating more hectares and when doing so cultivate the increased area less intensively. In addition, the migrant households generally improved their access to land mainly through consolidation of their existing land rights by putting the land into more productive use through hired labour and agricultural inputs, and land rental.

In terms of policy implications, the results suggest that since decentralization is in place in Burkina Faso and local governments have been given land management responsibilities, remittances flows can provide invaluable source of finance for local development, but also alter power relations within the community. The transparency of decision-making concerning land allocation, and the extent to which it successfully considers the interests of both migrant and non-migrant households are key for local democracy and equitable development.

Data

Our empirical analysis is based on data from the Living Standards Measurement Study (LSMS) survey² data collected in 2014 by the National Institute of Demographics and Statistics of Burkina Faso. The LSMS survey is funded through the national budget of Burkina Faso and the Swedish International Development Cooperation Agency, with cooperative funding from the World Bank. The database covered around

2 Information on how to obtain the LSMS data files of Burkina Faso is available on the World Bank website: <http://microdata.worldbank.org/index.php/catalog/2538>{<http://microdata.worldbank.org/index.php/catalog/2538> . The previous surveys were conducted in 1994, 1998, 2003, 2007 and 2010.

10,860 households. The sample is representative for the national, rural, and urban, and regional levels. A stratified two-stage survey was conducted to collect the data where, in the first stage, the primary units or enumeration areas (EAs) were drawn with a proportional probability to the number of households counted in the EAs. A staff of 905 enumeration areas were drawn on that occasion. In the second stage, 12 households were drawn with equal probability in each enumeration area.

Four features of the LSMS dataset are central to our analysis: (i) it provides information about the use of remittances by recipient households; (ii) it has a high dimension, which provides households' information on education, income, access to land, employment and labour participation; (iii) it features a rich set of variables on credits and risk preferences, including internal and international remittances; (iv) it has a large sample size that allows us to find a sub-sample of households that conforms to the requirements of our analysis. In the case where a farmer has more than one land, we retain the land with the greatest productivity.

Conclusion and policy implications

Burkina Faso is an important country of emigration, and the level of remittances sent by migrants to their families is among the highest in sub-Saharan Africa. The primary destination of migrants from Burkina Faso is Côte d'Ivoire, which is also the principal source of migrant remittances and significantly influences remittance inflows. This paper analyzes the effect of remittances on sorghum production and explores spatial sources of heterogeneity in this effect (by using the region fixed effects). Using micro-level data from Burkina Faso, we find that land size, the number of farm workers, and the quantity of herbicides used are the factors that significantly improve sorghum production in Burkina Faso. In addition, we find that a 1% increase in the amount of remittances leads to 0.938% decrease in total production of sorghum.

In terms of policy implications, our findings highlight that decisions concerning remittances use are affected by policy and institutional factors at local level. As decentralization is in place in Burkina Faso and local governments have been given land management responsibilities, remittances flows can provide invaluable source of finance for local development and alter power relations within the community. The transparency of decision-making concerning land allocation and the extent to which it successfully considers the interests of both migrant and non-migrant households are key for local democracy and equitable development. More research is needed to better understand these processes and their outcomes, and ways to improve transparency and representation of different interests. We also think that future work should focus on providing credible empirical evidence concerning the use of farmer's risk preferences and household welfare variables in the analysis of agricultural productivity. For instance, further research can investigate whether the impact of remittances on sorghum productivity differs across income classes.

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Mission

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