

Agricultural Risk and Remittances: The Case of Uganda

Stefanija Veljanoska

October 18, 2013

Abstract

The stock of migrants in the world is 215.8 million people which represents about 3.2 percent of the total world population [World Bank, 2010]. This trend is followed by an important increase in the amount of remittances sent to the developing countries which achieved a level of \$401 billion in 2012 and provide a financial flow that is higher than the official development aid [World Bank, 2013]. This phenomenon confirms the "New economics of labour migration" (NELM) assumption that the decision of a household member to migrate is taken collectively by the household and that migrants keep interacting economically with their remaining family [Stark, 1991]. Given the size of these financial transfers, it is essential to study their effect on remaining households' decision making. Taking into account that the agricultural sector represents 17 percent of the African GDP and that 75 percent of the African population live in rural areas, investigating the impact of remittances on different agricultural outcomes and agricultural behaviour is crucial for understanding farm organisations and decisions.

The NELM assumes that migration and remittances potentially can replace missing credit and insurance markets. The mechanism behind this hypothesis is the following: consider a household which sends a migrant away from his home such that the covariance of facing a negative shock of the remaining household and the migrant at the same time is zero and thus diversifies the sources of income [Stark and Levhari, 1982]. In this sense, migration is considered to be an insurance strategy as remittances will serve to absorb any negative shock of the remaining household and to smooth consumption. It is intuitive to expect that better insured households (households with higher remittances) are those that will undertake riskier agricultural activities and will have less need to diversify their production. Yang and Choi [2007] and Gubert [2002] showed that people facing a negative crop income shock received higher amounts of remittances, but the received amount did not allow them to fully buffer the shock.

The first question that the present study seeks to answer is whether households that receive remittances increase the riskiness of their crop production by cultivating more crops with higher but uncertain yield. Instead of focusing only on selected types of crops as in the previous literature, the novelty of the present study is to construct a measure of riskiness of each crop cultivated by a given household and to evaluate how different crops contribute to the riskiness of the total crop portfolio by taking into account the interdependence that might exist between crops at farm level and to study its relation to remittances. Thus, this question can be reformulated as: does the riskiness of the crop portfolio choice of a household increase with remittances? To this end, I will use the Single Index Model (SIM) developed by Turvey [1991] and applied by Bezabih and Di Falco [2012] in order to construct the measure of the individual crop and portfolio riskiness.

Following the intuition that migration and remittances represent an alternative for missing credit and insurance markets, a second question on crop diversification with two possible answers arises. On the one hand, farmers that receive higher remittances might choose more specialized crop production as specialization is seen as a risk increasing strategy. On the other hand, several studies showed that farmers in developing countries underdiversify their portfolio due to knowledge and financial barriers [Di Falco et al.,

2007, Di Falco and Chavas, 2009]. In particular, if remittances are seen as substitutes or complements to rural loans [Richter, 2008] then, I expect that farmers will be able to diversify more. In order to analyze this question, this paper seeks to complement the existing literature by using other measures of diversification such as the Shannon index, the Simpson index and the Berger-Parker index which take into account the allocation of shares to each variety and not only the number of different crops [Baumgärtner, 2004].

The third question that this article aims to answer is whether remittance-receiving households adopt and increase the amount of riskier inputs such as fertilizer. Using fertilizer can be seen as a risk-increasing strategy for several reasons. Knowing that agriculture in the developing world is mostly rainfed, using fertilizer can be unprofitable in periods of poor rainfall [Duflo et al., 2008]. Also because of missing or incomplete markets, fertilizer can be scarce and with a highly volatile price.

The contribution of the present paper to the literature is to give a complete analysis using different perspectives of the role of remittances on the household crop production decision making in terms of riskiness. In order to test empirically the previous hypotheses, I use data from the Living Standard Measurement Study-Integrated Surveys on Agriculture (LSMS-ISA) established by the Development research group at the World Bank. The sample includes approximately 3200 households, of which about 2000 are rural households engaged in agriculture which were interviewed in the periods 2005/2006, 2009/2010 and 2010/2011. Estimating the various equations on this data by Ordinary Least Squares (OLS) will yield biased results. The diversity indices (Simpson, Shannon and Berger-Parker index) are left-censored which requires a Tobit estimation model. Also, remittances are not random and depend on household characteristics. Thus, households that have migrants and receive remittances may differ from those households that have neither migrants nor remittances which might be based on some unobservable characteristics of the household. This problem can be solved when using panel data, by adopting a fixed effect model that will control for the unobservable household characteristics. At the same time, there might be some household unobservable characteristics that have a simultaneous impact on migration, remittances and agricultural decisions such as entrepreneurial spirit. I solve this issue by using an instrumental variable (IV) approach and using community level of migrants and remittances as instruments.

Preliminary results show that remittances have a negative impact on the degree of crop diversification, which means that remittances promote crop specialization. This holds for the different diversity indices that take into account the different weights, whereas remittances have no effect on the count number of crops. In addition, there is no significant effect of remittances on total portfolio riskiness. This last result is probably due the lower variability in the case of the crop choice of a farmer as it takes more time to decide what to crop, but less time to decide how to allocate the different resources once the crop choice is made. Technically, this is also a result from the fact that the dataset covers only three periods where two are consecutive.

The answer to these questions have important policy implications. The African continent with its rainfed agricultural sector is the most vulnerable to climate change. One form of farm-level adaptation to climate change is crop interspecific and intraspecific diversification. If remittances lead to less crop diversification, this may increase the vulnerability of African crop production to the consequences of climate change.