



Tenure Insecurity and Investment in Soil Conservation. Evidence from Malawi

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Summary. — Tenure insecurity can have important consequences for the conservation of natural resources. This paper focuses on two main sources of tenure insecurity, informal short-term tenancy contracts, and customary gender-biased inheritance practices. Using a large plot-level dataset from Malawi, the analysis employs a linear probability model with household fixed effects and finds that both sources of insecurity have a negative effect on soil conservation investments. These findings suggest that future land reforms should deal with the informality of the land rental market and address the gap between users and owners of land created by existing customary practices.

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Key words — tenure insecurity, soil conservation, tenancy, inheritance systems, Malawi

1. INTRODUCTION

This paper analyzes the impact of tenure insecurity on the adoption of soil conservation measures in Malawi. Soil erosion is one of the principal causes of environmental degradation in Malawi and has been increasing due to population pressure, deforestation, and unsustainable agricultural practices. Malawi has experienced higher erosion rates; about 40% of the agricultural land considered in this study is subject to some levels of erosion, compared to other sub-Saharan African countries with similar levels of population density due to its specific topography (Drechsel, Gyiele, Kunze, & Cofie, 2001). Soil erosion has important consequences for agriculture and other economic sectors thereby threatening food security as well as downstream activities such as hydroelectric power generation and drinking water treatment services.

Soil erosion rates have been found to be significantly associated to climate change (O’Neal, Nearing, Vining, South worth, & Pfeifere, 2005). Soil conservation investment can, therefore, be considered an important climate change adaptation tool (Deressa, Hassan, Ringler, Alemu, & Yesuf, 2009) for farmers in Malawi. Moreover, because smallholders in Malawi are moving toward monoculture maize systems, this introduces an important trade-off between the economic benefits of specialization and maintaining soil quality in the face of weather-related agricultural risks (Chibwana, Fisher, & Shively, 2012). Adopting soil conservation measures is, therefore, crucial to guarantee the sustainability of such widespread agricultural practices.

Despite several government campaigns to promote soil and water conservation practices during the mid-1990s and the implementation of the National Environmental Policy in 1996, the extent of adoption of soil conservation measures is not yet satisfactory. More than 30% of the plots showing a high degree of erosion do not report any conservation measures. This paper provides new insights into why soil conservation measures are under-utilized with a focus on land tenure insecurity.

Most of the land in Malawi is under customary law. While use rights are well established, there is no formal market for land. Land is transferred through allocations by village

headmen or, more predominantly nowadays, through inheritance. Given the increasing demand for land, an informal rental market has emerged and is expanding. Initially started as a form of land borrowing between relatives, it has evolved over the past 20 years into one-season-long informal renting agreements mostly between non-relatives (Peters, 2010). Land transfers through inheritance are governed by customary tenure systems that vary across villages and are based on a mixture of marriage and residency customary practices. In the south, for example, the dominant system is matrilineal–matrilocal where the husband moves to the wife’s village and does not retain property rights on the land after death of the partner or divorce. The ultimate owners of the land are, therefore, the spouse’s relatives. The northern part of the country mainly adopts a patrilineal–patrilocal system that applies similar principles to wives. The gender-biased nature of these inheritance systems and the short-term nature of tenancy contracts constitute sources of tenure insecurity and are the focus of this paper.

Empirical analyses of the effects of land tenure insecurity on investment have produced varying results, in particular for sub-Saharan Africa (Deininger & Jin, 2006). While tenure insecurity is expected to decrease investment, investment itself could lead to higher tenure security if it can be claimed by the land user (Besley, 1995). Which mechanism prevails depends on the type of investment and on the nature of tenure insecurity. The lack of generalizable results, therefore, calls for in-depth empirical investigations that take into account the local social, political, and economic circumstances and the specific sources of tenure insecurity and types of investment. This paper focuses on marriage and inheritance practices whose

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impact on tenure insecurity has not been sufficiently studied in the economic literature (Berge, Kambewa, Munthali, & Wiig, 2014).

In particular, no existing empirical studies have focused on the effect of tenure insecurity on soil conservation investment in Malawi. Although Place and Otsuka's (2001b) research touches upon investment in terracing and water management structures, their results are inconclusive and the authors call for further research on the topic. This paper contributes to the literature by using a large plot-household-level dataset and employing an empirical strategy that takes advantage of the variation in tenure security across plots belonging to the same household. This approach offers an advantage over many of the existing empirical studies, often constrained by small sample sizes and limited geographical coverage, since it allows controlling for household-level unobserved heterogeneity using household fixed effects. The effects of tenure insecurity on erosion control investment are then compared to those on investment in trees and on the adoption of hybrid seeds. The comparison serves as robustness check since both production choices share some similarities but also show some differences with the adoption of conservation measures. Trees produce long-term benefits but, unlike conservation measures, exhibit stronger security-enhancing properties as they can mark a plot's boundaries in case of disputes. Therefore, we expect tenure insecurity to have a smaller (or even positive) effect on tree planting than on soil conservation investment. Hybrid seeds, instead, produce mostly short-term benefits and do not exhibit security-enhancing properties. We expect, therefore, tenure insecurity to not have a negative effect on the adoption of hybrid seeds since they do not produce long-term benefits that can potentially be expropriated by the ultimate owner of the land in case of end-of-contract for rented plots and death of the spouse or divorce for inherited plots.

Various failed attempts to implement a land reform in Malawi have put a new land policy high on the agenda of the Malawian government. The analysis presented in this paper can provide important insights for the development of the land reform process. In particular, it will shed light on the role of the land rental market, which was ignored by previous land reform attempts, and indicate whether additional interventions or compensation measures should be introduced together with land titling to sustain conservation.

The remainder of the paper is organized as follows: Section 2 describes the customary land tenure in Malawi. This is followed by a description of the existing empirical evidence on the relation between tenure insecurity and land-related investment. By reviewing the literature, the section provides the theoretical framework underpinning the empirical analysis presented in the paper. Section 3 presents the econometric approach, while Section 4 provides a description of the plot-household-level data used in the analysis. The results pertaining to the impact of tenure insecurity on soil conservation investment and other production choices are discussed in Section 5. Finally, the conclusions and policy implications are presented.

2. TENURE INSECURITY IN MALAWI

Most of the land in Malawi is under a traditional customary land system where cultivation rights are granted by traditional leaders. Nowadays, however, only a small proportion of plots are allocated by village headmen and most land is transferred through inheritance (Peters & Kambewa, 2007). A new land policy was formulated in 2002, mainly to allow farmers to reg-

ister their customary land as private property. The necessary legislative changes needed to make the policy operational, however, were not implemented and the reform process came to a halt. The question of land reform, therefore, remains high on the agenda of the Malawian government and has been subject to extensive public debate. In particular, major debates have focused on inheritance laws and the need to address the concerns of both owners and tenants in the rapidly expanding informal rental market (Peters, 2010).

These latter pressing issues are the main focus of the present study. Although the lack of ownership rights is an important source of concern, individual use rights over agricultural land are well-established (Place & Otsuka, 2001a). The country's constitution prohibits arbitrary land deprivations of farmers and when land is required for public use the government should provide adequate notification and compensation.¹ Therefore, the absence of legal titles is unlikely to constitute a major impediment to investment unless it prevents household from accessing the credit market, which will not be considered in this paper. A major concern is, instead, the absence of legal forms of land transfer. Although land can only be officially transferred through inheritance, an informal rental market has emerged and has been in continuous expansion in response to the increasing scarcity of land (Holden, Otsuka, & Place, 2008). The informal rental market is, however, dominated by short-term (one season) contracts that introduce uncertainty about future renewals and can prevent the adoption of soil conservation measures due to the fear that the investment and maintenance effort will be expropriated by the landlord.

Tenure insecurity is also caused by the presence of gender-biased inheritance systems. There are different customary tenure systems in Malawi that are based on two main descendant practices: matrilineal and patrilineal, and residency practices: matrilocal, patrilocal and neolocal. In Malawi, marriage is almost ubiquitous and the customary system in place determines residency and inheritance. To better understand land tenure it is important to consider both inheritance and residency practices. In a matrilineal-matrilocal system, the husband moves to the wife's village and cultivates the land that his wife inherited from her relatives (such as her parents or an uncle). In a patrilineal-patrilocal system the wife moves to the husband's village who has inherited the land from his relatives so that a family is an integral part of the husband's lineage. Divorce or death of a spouse under these two practices effectively renders the non-local partner landless and he/she will have to return to the village of origin without any form of compensation for the investment made into the land. In particular, in case of death the land will return to the relatives of the local deceased person (usually a brother or uncle). Berge *et al.* (2014) found that the belief in the rights of the lineage is strong in both matrilineal and patrilineal villages. Moreover, due to increasing land scarcity, evictions of non-lineage residents are becoming more frequent. For men in matrilineal households, for example, the most basic form of security is provided by stable marital relations (Kishindo, 2010). It is worth noting that the probability of divorce in Malawi is among the highest within sub-Saharan Africa countries with almost half of all first marriages ending in divorce within 20 years (Reniers, 2003). This is combined with a high prevalence of HIV/AIDS among the adult population. Moreover, because land might be bequeathed from uncle to nephew, bypassing the children, customary inheritance practices provide additional disincentives for investment with longer term benefits.

The matrilineal-matrilocal (or Chikamwini) system is practiced mainly by three large tribes: Chewa, Lomwe and Yao,

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