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Impact of land ownership on productivity and efficiency of rice farmers: The case of the Philippines

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ABSTRACT

Land is a key factor in production agriculture and the land rental market is an important institution in agriculture. Rental activity of both sharecropped and fixed rent arrangements represents about 25% of cultivated land in the Philippines. The Comprehensive Agrarian Reform Program (CARP) of 1988, which essentially redistributes land to landless farmers, has implications for land ownership and farm productivity. This study investigates the impact of land ownership on the productivity and technical efficiency of rice farmers in the Philippines. We use a 2007–2012 Loop Survey from the International Rice Research Institute (IRRI) and a stochastic frontier function method. Results show that land ownership has a significant impact on technical efficiency. In particular, counter to the theory, the CARP may have reduced the technical efficiency of leasehold farmers compared with owner operators. Additionally, results show that land area, fuel cost, fertilizer cost, irrigation cost, and labor cost are significant factors that affect rice production. We found a mean technical efficiency score of 0.79—still leaving room for improvement. Finally, educated females and farmers leasing land have higher technical inefficiency.

1. Introduction

Agriculture is the main source of income in many developing countries and increased agricultural productivity has the potential to increase farming income and alleviate poverty in rural areas. Rice is the single most important agricultural crop in the Philippines, and is therefore a major source of income for millions of Filipino farmers (Bordey, 2010; Koide et al., 2013).[1] Interestingly, rice production in the Philippines increased from 5.32 million metric tons in 1970 to 16.82 million metric tons in 2008. However, because of natural disasters (such as strong typhoons[2]), production declined (to 15.77 million metric tons) in 2010. In 2011, rice production in the Philippines showed a remarkable improvement and production rose to 16.68 million metric tons. This increase could be attributed to an increase in total area allocated to rice farming, which increased by 3.4% during 2011–2012. On the other hand, rice yield increased significantly from 3.71 metric tons per hectare in 2011 to 3.84 metric tons per hectare in 2012. This increase can be mainly attributed to improved seed-fertilizer technology and increased access to irrigation facilities.

The literature (Diagne et al., 2013; Rola, 1990; Timmer, 2012) points to several factors, such as the world food crisis in 2008, high prices of agricultural inputs, limitations on land ownership, and rising population, that set the Philippines back in its rice-self-sufficiency efforts—resulting in higher rice imports. The Philippines' high dependence on rice imports exposes the country to international market shocks and may have a serious risk for food security (Dawe et al., 2006; Timmer, 2012). Self-sufficiency in rice is a primary goal of agricultural policy in the Philippines; achieving rice security is directly related to the nation's struggle in eliminating extreme hunger and poverty. Rural poor people's access to land for agriculture is essential for food security and economic development in the Philippines. Finally, the Philippine government in 2010 implemented a program to support rice self-sufficiency,

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[1] The Filipino government still imports rice (about a million tons of rice per year). On average, 20% of the Filipino household's food expenditure is allocated to rice. Hence, a slight increase in the price of rice will greatly affect the standard of living for most Filipinos.

[2] Philippines Rice Industry. http://pinoyrkb.com/main/resources/facts-and-figures.

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which mandated a reduction in imports by 70%, from 2.3 million tons in 2010 to 707 thousand tons in 2012.[3]

Agricultural farms in the Philippines are heterogeneous. On the one hand, you have small groups of farmers who operate large farms; on the other hand, many farmers operate small subsistence farms—a large majority of which are still practicing traditional agricultural systems. The land resource in the Philippines is the major limiting factor in rice production and the cause of increased imports. Recent data show that the Philippines harvested only 4.69 million hectares of rice in 2012 compared to major rice-producing countries in Asia. For example, during the same time period, India, China, Indonesia, and Thailand harvested 44, 29, 12, and 10 million hectares of rice, respectively. According to the International Rice Research Institute (Irri, 2014), the main factors that make the Philippines a rice-importing country are (1) limited land area, (2) population growth, (3) diet, (4) weather, (5) old infrastructure, and (6) lack of land ownership.

Economic theory predicts that the lack of land ownership may restrict farmers' access to land and also access to credit that are required for improved land practices. Since, land is central to agricultural development, it has attracted the attention of both researchers and policymakers in developing countries (Abdulai et al., 2011; Ballesteros and Bresciani, 2008; Arun, 1999). Land income is the major contributor to farm income. The land rental market is an important institution in Filipino agriculture. To improve accessibility to land, the Filipino government has enacted several land reform policies. The Philippine land reform law applies only to tenant areas growing rice and corn. The most recent policy, the Comprehensive Agrarian Reform Program (CARP), was enacted in 1988 (but is still not fully implemented[4]), to redistribute agricultural land to landless farmers and tenants. These land reforms have stipulated that no more than 7 hectares of all cropland could be owned (Vargas, 2003). The CARP could have an adverse effect on the efficiency of the land rental market. It may constrain rental activity because of the possibility that leasing of lands awarded under the CARP could lead to rental disputes and/or the cancellation of awarded rights to land—perhaps resulting in higher land rental rates.[5]

With the self-sufficiency goal in mind, higher rental rates for land could result in a loss of rice productivity and technical efficiency. Therefore, the objective of the study is to assess the impact of land ownership on rice production and technical efficiency (TE) of rice producers in the Philippines. Specifically, using recent farm-level pooled data (2007–2012), we investigate whether land ownership has an impact on technical efficiency.

2. Land ownership in the Philippines

The Philippines is an archipelago of about 7100 islands off the coast of Southeast Asia. It covers an area of 300,000 square kilometers, of which 298,170 square kilometers are land. The geography of the Philippines has implications for land use and tenure relations. Land of the Philippines is categorized in two basic categories, namely, Alienable and Disposable (A&D) (14.2 million hectares) and protected areas (15.88 million hectares). The A&D type of land is mostly privately owned (65%) or state-owned but eligible for transfer to private hands. According to Vargas (2003), the Philippines have one of the worst land tenure problems in the developing world. The size of landholdings is a major determinant of household income in an agrarian community such as the Philippines, where the people depend on farm production (Estudillo et al., 2000). In spite of having a lot of land in the Philippines, much of it is mountainous or made up of small islands, and those areas are unsuitable for rice production. Therefore, land area for growing rice is limited in the Philippines.

The first major land reform law (Presidential Decree, 1972) was passed in 1972—also known as Operation Land Transfer (OLT), which outlawed tenancy, in particular sharecropping. The OLT program, which transferred land to others, was applied in the case of excess land, more than 7 ha. Sharecropping was the preferred contract. Thus, the main objective of the land reform program was to convert a leasehold land (land shared by farmers with a landlord) situation to a share tenant (land leased with money for some years) situation. A Certificate of Land Transfer (CLT), a program that transferred land to eligible tenants, provided rights to purchase land by paying amortization fees. A CLT holder was required to pay amortization fees to the Land Bank within 15 years in the Philippines. In spite of having a retention limit, certain landlords register excess holdings in the names of sons, daughters, and close relatives (Otsuka, 1991; Otsuka et al., 1992).

Operation leasehold (LHO), a parallel program, absorbed tenants and landlords not covered by OLT. Since small landlords (7 ha or less) were exempted from OLT, their tenants were not eligible to receive CLTs. Tenants were not evicted but were presumed to have shifted from share tenancy to a leasehold arrangement (under either an oral or written contract). In 1986, Corazon Aquino's presidential campaign put forth a land reform first priority—"Land-to-the-Tiller"—slogan. The land reform commission was formed and, in July 1987, Aquino proclaimed the Comprehensive Agrarian Reform Program (CARP) and Congress passed the CARP in 1988. The major purpose of the land reform program was to transfer land to actual cultivators (Estudillo et al., 2000). The CARP was enacted to redistribute public and private agricultural lands to farmers and farmworkers who were landless. The CARP's vision was to have equitable land ownership. It prohibited any form of transfer of land for 10 years and mandated landlords to retain 7 hectares of land. Additionally, under the CARP, any form of transfer of land awarded under the CARP was prohibited; lands exceeding 7 ha were bought by the government and sold to landless farmers. Gordoncillo (2012) reported that the CARP was a major intervention to affect rural development in the Philippines. However, because of current problems with land titling and registration, the CARP has not been fully implemented.

Nonetheless, land reform activities can improve farming efficiency and productivity. Land reform activities provide access to land to those with high agricultural ability to farm but who own little or no land. Findings from previous studies (Ballesteros and Bresciani, 2008; Tenaw et al., 2009; Kyomugisha, 2008) conclude that small farms tend to be more productive than large farms from land reform activities. Tenaw et al. (2009) stated two reasons why there was a positive link between access to land and agricultural productivity. Land ownership eliminates the anxiety and uncertainty of expropriation, which encourages farmers to make long-term investment decisions on land and to adopt best cropping systems. Similarly, it makes it easy for farmers to use the land as collateral for credit. Therefore, access to land enables farmers to make a durable investment and helps to intensify production systems in inputs, thus boosting agricultural productivity. In another study, Kyomugisha (2008) stated that land tenure was an important institutional factor that promotes investment in agricultural technology and enhances the productivity of the land. Today, land tenure systems in the Philippines can be classified into three categories: fully owned land, share tenant land, and leasehold land. Fully owned land refers to land operated with a title of ownership

[3] IRRI. http://irri.org/our-work/locations/philippines.

[4] Though the law was passed in 1988, the implementation of the law has been slow and has been extended until the end of 2014.

[5] Note that renting land is across farm sizes and forms, with share tenancy as the most common arrangement on farms (Ballesteros and Bresciani, 2008; Estudillo et al., 2000).