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An empirical analysis of the factors influencing farmer demand for forest insurance: Based on surveys from Lin'an County in Zhejiang Province of China

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ABSTRACT

The lack of effective farmer demand is a major factor that restricts the development of China's forest insurance. To solve this problem, this study uses a Logit model to conduct an empirical analysis of relevant factors in the farmers' demand for forest insurance, based on field survey data of Lin'an County, Zhejiang Province. The results show that the farmers' understanding of forest insurance, the proportion of forestry revenues in the total household income, forest size, forest disaster frequency, forest insurance liability, insurance amount setup, and the farmers' satisfaction regarding the premium subsidy policy, are the main factors that affect the farmers' demand for forest insurance. Therefore, we propose to expand forest insurance promotion, raise the farmers' income, rationally design insurance products, and optimize the forest premium subsidy policy to enhance the farmers' willingness to participate in forest insurance.

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Introduction

Forests provide ecological, economic, social, and esthetic services to natural systems and humankind (Bonan, 2008). Therefore, forestry is an important industry that affects a country's ecological environment and economy development. However, forestry faces various natural hazards such as fires, hurricanes, blizzards, earthquakes, floods, and droughts during the long production cycle. In the USA, Hurricane Katrina damaged 5 million acres in 2005, and the 2007 wildfire in South Georgia destroyed some 550,000 acres (Brunette et al., 2015). In Europe, natural hazards damage an average of 35 million m^3 of wood each year (1950–2000). Storms are responsible for 53% of these damages, fires for 16% and biotic factors for 16%, respectively (Schelhaas et al., 2003). In 2011, direct economic losses resulting from various natural disasters in China accounted for RMB 310 billion (approximately US$ 50 billion). In particular, 26,950 ha of forestland are affected by 5500 forest fires, and 11.68 million ha of forest land are damaged by forest diseases, forest pest plague, and forest rat plague in China (National Bureau of Statistics of China, 2012).

As an effective mechanism to compensate forest risk, forest insurance plays a crucial role in stabilizing forestry farmers' income. It is an important risk management strategy for insurant to cope with uncertain risky environment, for it could offer a way to deal with the damage of disaster shocks (Mechler and Peppiatt, 2006). Compared with the developed countries, there is a large potential for forest disaster insurance in China due to the high frequency of natural disasters that occur in the country (Dai et al., 2015). In the actual operation in China, the problem of farmers' lacking a demand for forest insurance has been lingering. In 1984, China began piloting forest insurance. Until 1988, piloted forest insurance had covered more than 20 provinces (autonomous regions and municipalities). However, the forest insurance had been stagnant or even shrinking since the 1990s. In 2009, to promote a deeper development of the forest insurance business, China implemented the piloting work of the *Central Government's Forest Insurance Premium Subsidy Policy* (CFIP). Fujian, Jiangxi, and Hunan provinces were the first to test the new policy in 2009, and Zhejiang, Liaoning, and Yunnan provinces were added in 2010. By the end of 2012, the piloting forest insurance premium subsidy expanded to 17 provinces (autonomous regions and municipalities).

The CFIP is a government-sponsored insurance program. The multi-level governments (central, provincial, and county) provide premium subsidies for the insurant, and forestry departments provide technical and service platforms for the insurant. The CFIP can be divided into two kinds of typical products, namely comprehensive insurance and fire insurance, Forest comprehensive insurance covers the insured individuals' financial losses and reforestation costs caused by most natural hazards, such as forest fires, forest pests, rainstorm, hurricane, hail, frost, blizzard, flood, landslide, mud-rock flow, typhoon, and drought. This policy provides a risk-spreading mechanism to help forest producers cope with risky production environments. In 2012, the premium rate of the CFIP program was 0.2–0.5%, whereas the total subsidies from both central and provincial governments accounted for 60% of the premium. In addition, subsidies proportion from the county government varies from 1% to 15%, depending on the covered insured forestland area, and the remainder of the premium is paid by the CFIP insurant. The Forestry Department assisted the insurance company in carrying out CFIP dissemination, premium collection, insurance claims, and damage survey and assessment.

Similar to the insurance programs for other commodities and crop insurance program, participation in the CFIP program is not free and comes with a cost. Each insurant is required to pay a premium, the annual premium of the comprehensive insurance is RMB 1.6–2.4 per Mu (Mu is a Chinese unit of area, 1 Mu = 0.0667 ha) and the premium of the fire insurance is RMB 0.45–2.00 per Mu. Meanwhile, participation in the forest insurance program generates benefits, insurant can be compensated for their loss resulting from natural disaster shocks. First, although forest insurance does not immediately alleviate the impacts of disaster shocks, it provides indemnification against possible losses by pooling risks in exchange for a premium payment. By providing producers the right to post-disaster liquidity, the insurance program lessens the burdens brought about by disasters by securing livelihood for the insurant and expediting the recovery process (Bayer et al., 2011). Second, this program may change forest production practices among the insurant. For instance, insurant may be more likely to engage in higher-risk, higher profit forestry activities (e.g., adoption of new technologies and introduction