Determinants of Cost Efficiency and Productivity Growth of the Indonesian Insurance Industry

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ABSTRACT

This paper provides new empirical evidences on determinants of cost efficiency and productivity performance of life and property-casualty insurance firms in Indonesia. Data envelopment analysis (DEA) method is used to investigate the cost efficiency and Total Factor Productivity (TFP) among a balanced panel of 118 insurance firms (35 life insurance and 83 property-casualty insurance) over the period of 2006-2008. Results show that on average, insurers were operating at a low level of cost efficiency. However, by constructing the Malmquist Indices, this research finds a positive productivity change for the two types of insurance firms due to an increasing use of technological advances. Furthermore, the paper estimates the influence of some environmental variables on the cost efficiency using a multiple regression analysis. New findings indicate significant negative effects among types of insurance, size, and solvency on the firm’s cost efficiency. Meanwhile, market share and ownership structure have positive but insignificant effects on the firms’ efficiency. These findings are additional empirical evidences for the efficiency analysis of life and property-casualty insurance in a developing country.

KEYWORDS
Cost Efficiency, Data Envelopment Analysis, Life and Property-Casualty Insurance, Random Effect, Total Factor Productivity

1. INTRODUCTION

Studies on the efficiency of insurance industry have been done for more than a decade: see for example, Cummins et al. (1996); Rai, (1996); Fukuyama (1997). A current study by Eling and Luhnen (2010) used the frontier approaches, such as data envelopment analysis (DEA) and stochastic frontier analysis (SFA) to investigate the cost and technical efficiency of 6462 insurance firms across 36 countries. Their study shows that Denmark and Japan insurance industries have the highest average cost and technical efficiency scores in Europe and Asia, while the Philippines is the least efficient among all sample. In addition, the previous study revealed no evidence to support expense preference hypothesis. Rai (1996) applied the Stochastic Frontier Analysis (SFA) and Distribution-free Model (DFM) to investigate the cost efficiency of international firms from 11 countries, including insurance firms from 1988-1992. Rai’s study also found that X-inefficiencies are varying by country as well as size and specialization. Interestingly, the same study found that specialized firms are more cost efficient than combination of life and property-casualty firms at the international level.
In the United States, Park et al. (2009) examined the insurance distribution systems toward its cost and revenues efficiency of the U.S. property-casualty insurance industry and revealed that an independent agent is the most cost inefficient but earned higher revenue efficiency than exclusive agents. In Europe, Fenn et al. (2008) also estimated the cost efficiency of European insurance firms and found that firms’ size and domestic market share are significantly affecting its efficiency: larger firms and those with a high market share tend to be more cost inefficient.

In Asia, Md. Saad et al. (2007) investigated the efficiency of life insurance industry between conventional insurance and Islamic insurance (takaful) firms in Malaysia, and found that the technical change is the primary factor that contributes to productivity. Another study by Yao et al. (2007) analyzed China’s insurance firms, which found that insurance efficiency is positively affected by firm size, human capital, and direct sales. In Africa, Ansah-Adu et al. (2011) found that market share, firm size, and leverage are key factors of the insurance efficiency.

Most studies on the efficiency analysis of the insurance industry were largely focused on the US and European countries and some Asian markets. To date, only a few studies that include Indonesia in their samples. For example, two studies by Eling and few Luhnen (2010), and Abidin and Cabanda (2011) focused more on the efficiency of non-life insurance firms. A recent study by Cabanda and Viverita (2012) found that Indonesian life insurance industry experienced managerial efficiency decline over time, which was due to a decline in scale efficiency during the financial crisis years.

It is apparent that the existing insurance efficiency literature has lacked an Indonesian evidence for the key determinants of cost efficiency and productivity growth. This present research will fill this empirical gap by extending the sample to include both life and property-casualty insurance firms and following the empirical researches of Yao et al. (2007), Eling and Luhnen (2010), and Ansah-Adu et al. (2011).

This paper aims to extend the empirical efficiency analysis of the Indonesian insurance industry by including life and property-casualty insurance firms based on its cost efficiency and productivity change during the global financial crisis period. Moreover, the paper determines key factors for cost efficiency, using multiple regression analysis, to determine random effects (if there are any) of several environmental variables, which reflect the characteristics of insurance firms, on the firm’s cost efficiency.

This paper makes an important contribution to knowledge since this is the first empirical investigation of the Indonesian insurance industry that provides a comparison of cost efficiency of both life and property-casualty (General) insurance firms. Previous research focused only on the productivity performance of one type of insurance firms either life or non-life insurance. Therefore, this research provides new empirically-based insights on factors that can affect the cost efficiency of the insurance industry in Indonesia. Overall, new empirical findings on cost efficiency and productivity growth are new added contributions to knowledge in terms of efficiency measurements and decision sciences.

The remainder of the paper is organized as follows. Section 2 provides a brief background of the Indonesian insurance industry. Section 3 discusses data and methodology. Section 4 provides empirical results and the final section presents conclusion and managerial implications.

2. INDOONESIAN INSURANCE INDUSTRY

Insurance industry leads the Indonesia’s non-bank financial sector, as it dominates with a 45.4 per cent of total assets of the financial sector. However, for the last seven years (2004-2009), this industry had undergone unstable number of its participants. The number of insurance participants declined for about 19.29 per cent and 11.88 per cent for life and property-casualty, respectively. A similar
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