

How Productive Are Life Insurance Institutions in Malaysia? A Malmquist Approach

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Received: September 15, 2018 Revised: October 1, 2018 Accepted: December 20, 2018

Abstract

The purpose of this study is to investigate empirical evidences of productivity of life insurance institutions in Malaysia. Therefore, this study attempts to explore the productivity of the life insurance institutions in Malaysia. The overall findings show that the total factor productivity (TFP) has progressed by 2.5% per year during the study period from 2012 to 2016 in the Malaysian insurance industry. However, TFP change has declined from 2012 to 2015 and observed a negative growth in 2015-16 (3.3%). The highest productivity progress was documented during 2012-13 at a rate of 11.7% while the minimum productivity progress was during 2014-15 (only 0.2%). The results also indicate that the decomposition of TFP found that overall progress could mainly be attributed to technological change (TC). However, technical efficiency change (TEC) and pure technical efficiency change (PTE) have negative impact on TFP. The findings also show that most of the insurance companies have a steady growth. Therefore, this study will contribute new insights for the policy makers and insurance institutions to take appropriate steps in developing relevant policies for increasing productivity of insurance institutions in Malaysia.

Keywords: Insurance, Total Factor Productivity, Technological Change, Technical Efficiency Change.

JEL Classification Code: D21, D24, L23.

1. Introduction

The continuous shifts of the global economy, financial institutions around the world have been introducing new and innovative policies and mechanisms to guarantee uninterrupted spin of the financial cogwheel. The Malaysian financial sector encounters no exception when it has to deal with the global shifts. Hence, the entire financial sector in Malaysia including insurance industry undergoes challenges

and several changes to its regulatory systems and sub-segments. Simultaneously, the recent global financial meltdown of 2007-2008 forced many of the financial institutions around the world to become more conservative and strategic to survive in any unexpected crunch. Captivating the crisis of 2007-2008 as a lesson, insurance companies in Malaysia are striving hard to be productive and efficient, so as to fight against any further crisis in the financial sector (Khoon & Mah-Hui, 2010).

The insurance sector in Malaysia has significantly contributed to the economic development of the country for the last few decades. Unlike the banking sector, the insurance industry transfer risks among the parties (insurer and service providers) for any productive operation that involve life, capital and property that need to be protected from uncertainty and losses in future. According to Sabbir (2002) insurance industry transfers risk to provide security that enhances peace of mind and give formidable protection against losses to the insurer. While in many developed countries insurance is mandatory (particularly health insurance) and supported by associated laws, however, the size of the insurance industry in most of the developing countries still remains small and unpopular. As a result of this, the risk of vulnerability remains high in those

* The authors would like to acknowledge the Centre for Poverty and Development Studies, (CPDS), University of Malaya, for funding of this work (PD001-2017).

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developing countries and it is highly unlikely to recover the possible losses that may take place in future.

In contrast, the insurance industry in Malaysia is one of the largest among the same level of economically developed countries such as Indonesia, Vietnam, Thailand and Philippines. Despite the progress in the insurance sector in various aspects (insurance products, innovations and technological enhancement), the insurance industry in Malaysia has observed several challenges after the financial crisis in 2007-2008. Therefore, the concerned authorities are trying hard to bringing necessary changes to its regulatory system to minimize any adverse effect arising from unexpected financial meltdown. On top of that, the globalization and rapid technological development in the financial industry enhanced global competition in the insurance industry that put severe pressure on the local insurance companies. To survive in the long run and compete with the industry peers, attaining cost efficiency and productivity in the operation of the insurance companies remains a crucial policy choice both from the policy and management perspective. In addition to that, the insurance industries have a key role to play in achieving sustainable development goals (SDGs). After a careful investigation, it is observed that the importance of insurance was highlighted once in the SDGs, however, it is implicitly relevant to the achievement of multiple goals (GIZ, 2017).

To ensure that the insurance industry could achieve sustainability in their operation and contribute to achieving SDGs, this study aims to evaluate the productivity of insurance companies in Malaysia. The findings of this study will contribute several ways to the existing literature and provide key policy prescriptions to the practitioners and policymakers. Among others, the productivity evaluation of the insurance companies will allow us to know the operational state, in particular, their strengths and weaknesses. This will help to formulate possible policy suggestions to promote productivity in the industry for their long-term survival and contribute to the society.

2. Literature Review

Recently, Principles of Sustainable Insurance (PSI) recognizes insurance companies as risk managers, risk carriers and institutional investors in contributing to environmental, social and economic sustainability (Campiglio, Dafermos, Monnin, Ryan-Collins, Schotten, & Tanaka, 2018). With this view to attain SDGs, the PSI will be carrying out initiatives to support the aims of United Nations global frameworks. The initiatives of PSI include global insurance industry statements of support, and voluntary commitments that support the transition to

economies that are low-emission, resource-efficient and socially inclusive, and climate and disaster-resilient (UNEP, 2018). Therefore, insurance as a risk protection mechanism can arguably support many of the SDGs, some directly and others indirectly (GIZ, 2017). For this reason, insurance companies are required to be productive and efficient to contribute effectively to achieving SDGs. The following section will provide a brief overview of the insurance industry in Malaysia and some existing studies from the literature.

2.1. Overview of Insurance Companies in Malaysia

The insurance sector in Malaysia is one of the most important growth drivers of overall Malaysia's total financial service sector. Besides, Bank Negara Malaysia expresses that the insurance industry in Malaysia is recently going through one of its most significant transformations since the early 1990s when the insurance regulatory system in Malaysia was overhauled (BNM, 2016).

Recently, the insurance sector is faced with intense competition in Malaysia. There are 22 general insurance, 14 life insurance, 8 general Takaful and 11 life Takaful insurance companies operating in Malaysia (iBanding, 2016). Meanwhile, due to the globalization process Malaysian local insurance companies have fallen into competition with the global giants in this eminent sector. Consequently, it has become rather important for the insurance companies whether local or foreign to be productive for being sustainable in this industry. When this financial sector will be sustainable and generate enough revenue to cover up the operating expenses and financial costs, the industry will be able to perform better in terms of client services through effective insurance products.

In the annual statistics of Insurance 2016, Bank Negara, the Central Bank of Malaysia revealed that in 2016 Malaysia's total insurance fund assets amounted to 5.2 percent of the national financial system. In addition, the insurance sector also contributed to about 20.9 percent to Malaysia's total gross national income (GNI) in the same year (Yvonne, 2017). Moreover, Bank Negara Malaysia expects that both the growth of life and general insurance market may significantly outpace the economy, ascending the steep slope up to 'S-curve' and revealed that the total assets of insurance and takaful sector has experienced an annual growth of 13.3 percent between 2000 and 2010 but the growth has started to plateau in the recent years (BNM, 2016). Therefore, the recent statistics of insurance companies provided by Bank Negara Malaysia conveys the essence to revisit the industry in Malaysia to understand the reasons for the recent halt in the growth of this sector. By evaluating the productivity of the insurance companies in Malaysia using Data envelopment analysis (DEA) and

Malmquist Productivity Index (MPI) will give a snapshot to discern the strengths and capabilities of the firms to meet the challenges of SDGs by 2030.

2.2. A Review of Productivity Studies of Insurance Companies in Malaysia

Lately, researchers, professionals and academicians are paying much attention in evaluating productivity efficiency study of the insurance industry. The productive and efficient insurance companies will be able to contribute effectively in the development process of a country's economy. The previous literature on productivity evaluation of the insurance industries in Malaysia reflects the sector's ability to cope up with competition due to the globalization process in this sector. These studies also investigated whether insurance companies are progressing, regressing or remaining stagnant in Malaysia.

Mansor and Radam (2000) conduct study to evaluate the productivity of life insurance companies in Malaysia and find that the life insurance companies' productivity is lower than the actual economic growth in Malaysia. Although the duo finds that the life insurance company is productive, the authors also mention that the growth of this industry will follow a similar trait of the manufacturing sector for relying on its efficient ability at the time of competition. The authors further infer that both technical efficiency and technical progress contribute to the overall productivity growth of the industry. Whereas, efficiency study of life insurance company by Saad, Idris, and Edzalina (2011) analyse insurance industries five years data of Brunei and Malaysia through DEA and explore the influence of technical and efficiency change to the overall productivity in the life insurance industry. The authors conclude that total factor productivity (TFP) of the studied industry is mainly attributed to efficiency and technical changes where the main source of efficiency change is contributed by the scale efficiency rather than pure efficiency.

Similarly, Saad (2012) analyse the efficiency of takaful and insurance companies in Malaysia using a panel of 28 companies from the period of 2007 to 2009. For the analysis, the study adopted DEA and MPI and found that TFP of both conventional and takaful insurance mainly depend on efficiency change and the main source of efficiency change are both scale and pure efficiency. A recent study conducted by Yakob, Yusop, Radam, and Ismail (2014) on efficiency performance of insurance and takaful operators in Malaysia. The authors studied 20 insurance firms both from the conventional and Islamic insurance industry using DEA (slack-based measure) which implied that the average insurance operators both from the conventional and Islamic need to improve about 20 percent for practicing the best

financial performance. Besides, insurance companies' financial efficiency using DEA has been estimated in various parts of the world. For example in the United States many researchers used DEA (Berger, Hunter, & Timme, 1993; Cummins, Tennyson, & Weiss, 1999; Cummins, Weiss, Xie, & Zi, 2010; Gardner & Grace, 1993; Meador, Ryan, & Schellhorn, 2000) and in some other countries like in Japan, Italy, United Kingdom, Australia, Spain and Germany many studies are done by using DEA (Fukuyama, 1997; Cummins & Turchetti, 1996; Diacon, Starkey, & O'Brien, 2002; Mahlberg & Url, 2010; Worthington & Hurley, 2002).

Apart from the insurance industry's productivity evaluation, DEA and MPI have been used to measure other sectors of financial and service industries around the world. For example, this methodology has been used in microfinance and banking sectors extensively to evaluate productivity and efficiency performance of the institutions in many dimensions (Mia, 2017; Mia & Chandran, 2016; Muneer Babu & Kulshreshtha, 2014; Bassem, 2014; Wijesiri & Meoli, 2015; Mia & Soltane, 2016; Saha & Ravisankar, 2000; Asmild, Paradi, Aggarwall, & Schaffnit, 2004).

3. Methodology

It is important to know the state of the insurance companies by evaluating the productivity, hence the insurance companies can enhance performance through the utilization of limited resources in an efficient manner (Isik & Hassan, 2003).

3.1. The Malmquist Productivity Index (MPI)

The DEA method was first debuted in 1978 and after then there has been tremendous growth both in its modelling and application in various sectors. The MPI is an extension of the DEA which is frequently used to evaluate the productivity of formal and non-formal financial institutions. This approach is appropriate for non-governmental organizations (NGOs) (Charnes, Cooper, & Rhodes, 1978). There are three basic features of the MPI which make this method superior to other methods. Firstly, specific price information is not necessary for the inputs and outputs. Secondly, certain behavioural assumptions regarding profit maximization and cost minimization are relaxed by the MPI. Finally, a better index decomposition facilitates the search for sources of productivity change.

Moreover, TFP is further decomposed into two parts; namely, Technical Efficiency Change (TEC) and Technological Change (TC). TEC reflects the ability of a firm to either use minimum levels of inputs to produce a given level of outputs or produce the same level of outputs by using fewer inputs. On the other hand, TC represents the

process by which an optimum combination of inputs and outputs is achieved through better technology and capital equipment in the production process (Chandran & Pandiyan, 2008).

According to Mia and Soltane (2016), MPI of output-oriented DMU between the period's t and t+1 can be defined as follows:

Time period t

$$D^t = f(x^t, y^t)$$

Time period t+1

$$D^t = f(x^{t+1}, y^{t+1})$$

MPI time period t

$$M^t = \frac{D^t(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)}$$

MPI time period t+1

$$M^{t+1} = \frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^{t+1}(x^t, y^t)}$$

MPI time period's t and t+1

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\frac{D^t(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)} \times \frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^{t+1}(x^t, y^t)} \right]^{1/2}$$

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = \left[\frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)} \right] \times \left[\frac{D^t(x^{t+1}, y^{t+1})}{D^{t+1}(x^{t+1}, y^{t+1})} \times \frac{D^t(x^t, y^t)}{D^{t+1}(x^t, y^t)} \right]^{1/2}$$

$$M_0(x^{t+1}, y^{t+1}, x^t, y^t) = TEC(y^{t+1}, x^{t+1}, x^t, y^t) \times TC(y^{t+1}, x^{t+1}, x^t, y^t)$$

TEC can be decomposed into pure technical efficiency change (PTE) and scale efficiency (SE)

$$PTE = \frac{D^{t+1}(x^{t+1}, y^{t+1})}{D^t(x^t, y^t)}$$

$$SE = \left[\frac{D^t(x^{t+1}, y^{t+1})}{D^{t+1}(x^{t+1}, y^{t+1})} \times \frac{D^t(x^t, y^t)}{D^{t+1}(x^t, y^t)} \right]^{1/2}$$

3.2. Data Source

The data for this study has been extracted from the secondary sources; insurance companies' websites. The variables used to analyse DEA and MPI were collected from the annual reports of different insurance companies for the period of 5 years (2012 to 2016). The annual reports of the insurance companies are the only valid and reliable sources of data for this study since these reports are extensively audited by the internal and external chartered accountants. For the conventional Malmquist method, it is necessary that all the inputs and outputs are observed within the selected years and that the value is non-negative. The sample size in this study is optimum considering all these factors.

3.3. Selection of Input-Output and Determinants of Productivity

It is a requirement to select inputs and outputs to gauge the productivity of insurance companies. However, the selection of input and output varies based on how the sector is classified. This study has chosen two outputs and three inputs to analyse the efficiency and productivity of insurance companies as shown in Table 1. This study has used variable returns to scale (VRS) and direct output-oriented command to estimate MPI.

Table 1: Definitions of Inputs and Outputs

Classification	Name	Definition	Type
Output	Premium	Premium is the revenue of an insurance company.	Continuous
	Net Investment Income	Net investment income is an insurance company's income to its earned after all the expenses.	Continuous
Input	Commission	Amount paid to an agent or insurance sales-person as a percentage of the policy premium	Continuous
	Management Expenses	Management expenses includes directors' remuneration, administrative and audit fees, and shared registration expenses.	Continuous
	Claims	Legal demand by an insurance client for compensation, payment, or reimbursement for a loss under a contract.	Continuous

Source: Authors' compilation from annual reports of insurance companies.

4. Results and Discussions

This study considered commission, management expenses and claims as input variables while premium and net investment income as output variables. The descriptive statistics of the input variables indicates that the average commission of the insurance companies has accounted for RM 315268.40 with the standard deviation of RM 337282.30, while the minimum commission is RM 20167.00 and maximum commission is RM 1157268 respectively of these selected companies. The results also show that the average management expense, another input variable, of the companies is RM 239448.20. Besides, the minimum and maximum amount ranged for the management expenses are RM 36845.00 and RM 819448.00 respectively. The study also finds that the average claim, the final input, for the respected insurance companies is RM 1868364.00 while the minimum and maximum claims are RM 147461.00 and RM 8357090.00 respectively. Meanwhile, in terms of premium earnings which is considered as one of the output variables in the study, the selected insurance companies receive an average premium of RM 2045664.00, which estimates the standard deviation of RM 2213408.00. In case of the net investment, another output variable of the study, the average income ranges RM 531608.60 while the minimum and maximum income are estimated as RM 23895.00 and RM 2899084.00 respectively. The entire description is presented in Table 2.

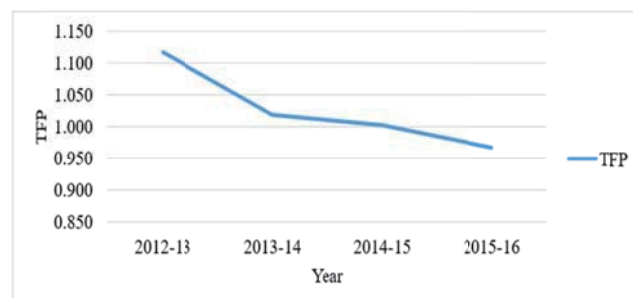
Table 2: Descriptive Statistics

Variables	Obs.	Mean	Std. Dev.	Min.	Max.
<i>Output</i>					
Premium ('000)	75	2045664.00	2213408.00	30124	7857840
Net Investment Income ('000)	75	531608.60	713378.20	23895	2899084
<i>Input</i>					
Commission ('000)	75	315268.40	337282.30	20167	1157268
Management Expenses ('000)	75	239448.20	202492.30	36845	819448
Claims ('000)	75	1868364.00	2149535.00	147461	8357090

Source: Authors computation.

Figure 1 indicates the estimated TFP of the selected insurance companies in Malaysia. The trend of TFP is declining over the study period from 2012-2016. The figure shows from 2012 to 2014, TFP is increasing at a diminishing rate. As results show that TFP value was greater than 1 over the period of 2012 to 2014 which reflect the positive growth of TFP (Mia & Soltane, 2016). However, TFP value is less than 1 in the following the years of 2015 which indicates productivity of insurance companies are declining

(Mia & Soltane, 2016). It also indicates that the productivity progress was very marginal (0.2%) during 2014 and 2015.



Source: Authors computation

Figure 1: Overall trend of the TFP of insurance companies in Malaysia (2012-2016).

The decomposition results reported in Table 3 suggest that overall progress can mainly be attributed to technological change (TC). On average the growth of TC is 3.4%. Meanwhile, scale efficiency (SE) has no impact on technical efficiency change. However, technical efficiency change (TEC) and pure technical efficiency change (PTE) have a negative impact (-0.09) on TFP. Nevertheless, the overall growth of the selected insurance companies is 2.5% in Malaysia which is very low compared to developed nations.

Table 3: Decomposition of TFP of insurance companies in Malaysia (2012-2016)

Year	TEC	TC	PTE	SE	TFP
2012-13	0.964	1.159	0.982	0.982	1.117
2013-14	1.032	0.987	1.029	1.003	1.019
2014-15	0.969	1.034	0.972	0.996	1.002
2015-16	1.002	0.966	0.984	1.019	0.967
Mean	0.991	1.034	0.991	1.000	1.025

Source: Authors computation

The Table 3 showed that the overall growth of the selected insurance companies is very low. This could be because of the reasons presented in Table 4. Table 4 shows that in Malaysia insurance schemes are too expensive and people have other financial priorities which are much more important than owning an insurance scheme. Moreover, the returns on investment are not visible and lucrative enough. Additionally, in many cases, people are not aware of the benefits of having insurance.

Table 4: Main obstacles to purchase life insurance policy

No	Items	Agree (%)	Disagree (%)
1	Lack of awareness on life insurance / family Takaful plan.	54.05	45.95
2	Returns on investment are not lucrative enough.	89.19	10.81
3	Return of the investment are not visible.	89.19	10.81
4	No one has approached me about it.	64.86	35.14
5	Inclination to short-term lump sum gain.	75.68	24.32
6	Promotion measures are not attractive.	81.08	18.92
7	Complexity of life insurance / family Takaful plan.	78.38	21.62
8	Lack of trust in insurance companies.	81.08	18.92
9	Lack of trust in insurance agents.	83.78	16.22
10	Too expensive.	89.19	10.81
11	I have other financial priorities.	97.30	2.70
12	I would not qualify for the coverage.	18.92	81.08

Source: Authors computation

Table 5 shows that most of the insurance companies have a steady growth, which means the value of TFP is very close to 1. However, Gibraltar BSN Life Bhd has an overall growth of 10.7% and this company has outperformed among the selected insurance companies in Malaysia. The main reason for such growth is the TC which alone grew at 10.7% whereas TEC, PTE and SE remained steady. Additionally, Gibraltar BSN Life Bhd has only 8 branches and with more than 1000 outlets nationwide. Therefore, the

operational expenses of this insurance company are lower than the other companies. Moreover, Gibraltar BSN Life Bhd received RM518 million through acquisition by Prudential Financial Inc. of the USA, which is one of the world's largest financial institutions with more than 140 years of business experience in the global financial market (Gibraltar, 2018). On the other hand, Hong Leong Assurance Bhd and Malaysian Life Reinsurance Group Bhd has negative growth of 0.09% and 15.8% respectively.

5. Conclusion and Policy Implication

The Insurance industry plays a significant role in developing a sustainable business organization through its products and services. Similarly, the insurance sector in Malaysia has significantly contributed to the economic development of the country for the last few decades. Having insurance for society and business organizations against risk uncertainties, it advances the standard of living of society and shapes confidence to meet the challenges and opportunities of the society. However, the trend of TFP is declining over the study period from 2012-2016 while the figure shows from 2012 to 2014, TFP is increasing at a diminishing rate. As results show that over the period of 2012 to 2014 reflect the growth of TFP. However, the following the years of 2015 that indicates productivity of insurance companies are declining. It also indicates that the productivity remained stagnant in 2014 and 2015. It also shows that the overall growth of the selected insurance

Table 5: Average annual means of TFP of insurance companies in Malaysia

Insurance Companies	TEC	TC	PTE	SE	TFP
Allianz Life Insurance Malaysia Bhd	1.000	1.008	1.000	1.000	1.008
AmMetLife Insurance Bhd	1.000	1.083	1.000	1.000	1.083
AIA Bhd	1.010	1.028	1.000	1.010	1.038
AXA AFFIN Life Insurance Bhd	0.953	1.051	1.000	0.953	1.002
Etiqa Life Insurance Bhd	1.000	1.018	1.000	1.000	1.018
Gibraltar BSN Life Bhd	1.000	1.107	1.000	1.000	1.107
Great Eastern Life Assurance (Malaysia) Bhd	1.000	1.015	1.000	1.000	1.015
Hong Leong Assurance Bhd	0.994	0.997	0.998	0.997	0.991
Malaysian Life Reinsurance Group Bhd	0.881	0.956	0.881	1.000	0.842
Manulife Insurance Bhd	1.024	1.058	1.000	1.024	1.084
MCIS Insurance Bhd	1.001	1.037	0.998	1.003	1.038
Prudential Assurance Malaysia Bhd	1.013	0.995	1.000	1.013	1.008
Sun Life Malaysia Assurance Bhd	1.000	1.086	1.000	1.000	1.086
Tokio Marine Life Insurance Malaysia Bhd	0.983	1.027	0.985	0.998	1.010
Zurich Life Insurance Malaysia Bhd	1.016	1.053	1.016	1.000	1.070

Source: Authors computation

companies is 2.5% in Malaysia, which is very low compared to developed nations. This could be due to lack of awareness of benefits of having insurance, returns on investment are not lucrative enough and not visible, lack of trust between companies and clients as well as clients find insurance scheme too expensive because of other financial priorities (Yusop, Radam, Ismail, & Yakob, 2011). Therefore, in order to increase the productivity of Malaysian life insurance industry, the mentioned obstacles should be removed by having proper strategies. Therefore, this study will contribute to the life insurance industry to take appropriate strategies to create awareness among people about the financial benefits and risk aversion of having life insurance to sustain economic and social wellbeing (Adamu, 2016).

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