

An Assessment of the Basic Savings of Retirees Conducted through a Mathematical Approach

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This paper focuses on the issue of the ageing population which contributes towards the inadequacy of retirement savings. The research seeks to evaluate the Malaysian private sector workforce who mainly depend on Employee Provident Funds (EPF) to sustain their life during retirement age. It must be acknowledged that the savings in the EPF fund cannot facilitate their expenditures for their entire life, following the projected life expectancy of the age 75 years old. Most of retirees spend their retirement funds within 3 to 5 years' after reaching the age of retirement. The study attempts to look at the ideal basic savings by measuring the sustainability of the proposed amount to cover the expenditure costs during retirement age. This study found that the ideal basic savings amount of RM228,000 can extend the financial coverage of retirees up to the projected life expectancy. This is dependent on the retirees being disciplined enough to make a periodical withdrawal of RM950 per month based on minimum monthly pension rate. However, the basic savings has been developed by considering the minimum monthly pension rate amount of RM950 and ignored the impact of inflation, profit gains through accumulative retirement funds in calculating the ideal basic savings. Thus, it would be suggested that the government and authorities come up with the new basic savings by including additional elements to have a better idea of the basic savings which becomes the guideline for prospective retirees in Malaysia.

Key words: *Retirement planning, inadequacy of retirement savings, ideal basic savings, Employee Provident Fund, mathematical modelling.*



Introduction

All countries are facing the issue of an ageing population (World Health Organization, 2007; Crampto, 2009; Wan He, Goodkind and Kowal, 2016). This trend is due to retirement of baby boomers which affects the increment of the elderly population in each country (Rogers, Toder and Jones, 2000). Consequently, the ageing population has an impact on the future productivity as well as the economic growth of a country (Cheng, 2007; Lisenkova and Bornukova 2017). Furthermore, according to United Nations (2015), all countries around the world are facing a rise in the number of elderly people in their population. This in turn impacts all society sectors such as labor and financial markets, good and services including homes, transportation and social protection, and changes in the family structure.

The issue of a rapidly ageing population also affects Malaysia. The Department of Statistics Malaysia (2015) has reported that people at the age 65 years in Malaysia are estimated to live for 15 and 17 years, with respect to the male and female gender. Moreover, the total elderly population in Malaysia at the age of 65 years and above showed an upward trend through the years. This is indicated at 5.6% to 5.8% in years 2014 and 2015 respectively and is expected to jump from 6% in to 7% of the total population being classed as elderly, causing Malaysia to gain an ageing country status (Department of Statistics Malaysia, 2016).

Having solid retirement savings will ensure financial protection during retirement years. Generally, the retirement system has been classified as a three tiered system. This is known as social security, employment-based pensions, and individual savings. The three-tiered model has been practiced by many countries over the world (Moore, 2011). The major retirement system being adopted in Malaysia can be only classified as a two-tiered pension system, which consists of Employee Provident Funds (EPF) and pension's scheme for government servants.

The former system is facilitated for those in the private sector workforce. This system is an employment-based pensions defined as a contribution system. The latter is also under employment-based pension, but with a different platform of defined contribution system. Although Malaysia is classed as a developing country, it is still left behind by other countries in the same classification in regard to retirement. Previous research indicates that Chile, Brazil, China, and India are listed in a top 20 countries for the best retirement systems in the world (Mercer, 2015).

The primary concern of this paper is that the EPF have reported in 2016 that 70 per cent of EPF members who will be retiring in the next year have accumulated their retirement savings below than RM50,000 in their EPF account (Employees Provident Fund, 2016a). Additionally, 50 per cent of retirees have depleted their retirement savings for 3 to 5 years

(Employees Provident Fund, 2016a; Poh, 2015; Khan, et al. 2017). The report reveals an alarming problem of having inadequate retirement savings among Malaysian elderly.

Moreover, this indicates a serious problem with financial management among Malaysian people. In particular, their awareness of future retirement savings and how to manage their savings in order to sustain their entire life after receiving their lump sum payment from EPF (Folk, Beh, & Baranovich, 2012; Foziah, et al. 2017).

Literature Review

Ong & Hamid (2010) asserted in their study that some retirees were still working due to financial needs. Only a small fraction of them chose to keep working due to their self-achievement and fulfillment. Retirees are subject to retirement hazards such as the cost of healthcare, presuming a longer working life, misjudging how long one spouse will live, demographic change, and the consequences of retirement (Shafii, et al., 2013).

Regarding issues related to healthcare costs, Folk, Beh, & Baranovich (2012) mentioned that elderly people aged 60 and above require greater medical attention. It was found that this demographic visited medical and healthcare centers six times a year, on an average. Thus, it would further imply a heavier financial burden with rising medication and healthcare costs. Moreover, the issue is worsened as Malaysian people still have a lack of awareness towards their future retirement planning (Ibrahim, Isa, & Ali, 2012).

A record released by Mercer (2016) indicated that the overall index of Malaysian retirement system is at a C grade. This grade holds a major risk and must be improved, or else the system will not be efficient enough to achieve long term sustainability. Mercer (2016) added that in terms of the adequacy of the retirement system, which includes benefits, savings, benefit design, tax support and growth assets, Malaysia is placed at a grade D. This grade is significantly behind others developing countries such as Brazil, Chile, China, and Poland in achieving adequate retirement wealth.

The retirement system in Malaysia should incorporate a multiple tier system so that a full replacement of retirement income can be achieved (Ong & Hamid, 2010). Park (2012) has suggested the reconstruction the of Malaysia's pension system through a combination of parametric and systemic reforms of individual schemes by the EPF.

As a mainstream retirement scheme in Malaysia, the EPF needs to reform the country's central pension pillar from merely a retirement savings investment fund to a fully-fledged pension fund, which offers some minimum annuities, and if possible, change to the non-defined contribution scheme (Holzmann, 2014; Manaf & Ibrahim, 2017; Mapfumo, 2017;

Maree, 2017; Margaret and Donna, 2017; Maria and María, 2017; Maura, 2017). Furthermore, Beattie (1998) had claimed that a lump sum benefit payment of the EPF became more preference by the members, rather than opting for a phased withdrawal basis benefit. A lump sum basis option no longer represents the best option for income security of elderly people.

The traditional lump sum payment of retirement benefit should be revised since Malaysian retiree's lack of the financial management ability needed to allocate their money in order to sustain their financial position for entire life (Foziah, et. al, 2018a). It is proposed that an annuity-based scheme as a mandatory form of retirement benefit would work better. This idea received positive feedback from the Malaysian public regarding the monthly withdrawal system instead of the lump-sum form of retirement benefit payment (Foziah, et. al, 2018b)

Folk, et al. (2012) revealed that the adequacy of savings and retirement resources were a serious problem among the low-income and middle-income earners in Malaysia. The retirement incomes adequacy became a major problem due to people a lack of awareness regarding retirement saving preparedness (Ibrahim, et al., 2012). Moreover, in the case of the EPF, their members were given permission for pre-withdrawal provisions. As a result, they failed to maintain high investment returns (Ja'afar & Daly, 2016).

The minimum of wealth-need ratio is projected at 69 per cent to be adequately prepared for retirement (Alaudin, et al., 2016). It is clear that Malaysia is nowadays facing a serious problem regarding the inadequacy of retirement wealth, which is a concern for an ageing country.

Addressing the issues of inadequacy in retirement wealth and a lack of financial preparedness among Malaysian people towards retirement, the idea for basic savings has been revised and become effective as of 1st January 2017 with the increment from RM196,800 to RM228,000. It is believed that this can be consumed within a 20 years period (Employees Provident Fund, 2016b). The increasing trend of the ideal basic savings amount depicts that the requirement for retirement expenditure would become costlier for retirees in the future. This is due to the impact of time value of money. As the retirement savings goals a take longer period to reach, it may significantly impact people's total amount of basic savings due to the national inflation and interest gains.

This study aims to examine the proposed minimum ideal of basic savings for Malaysian people to have before retirement in order to sustain their life during retirement. The following research provides a guideline to the public to demonstrate the minimum financial requirements that should be met prior to retirement.

Methodology

Based on the ideal basic saving amount of RM228,000, this study applies the minimum amount of government pension, which is equivalent to RM950 (Ministry of Finance Malaysia, 2015) to measure the sustainability of the proposed ideal basic savings. This will demonstrate the actual financial coverage received for a person with a life expectancy of 75 years old.

The study will then generate a simulated result of retirees' expenditure, based on the given funds in measuring the sustainability of this amount in the monthly payment of annuity period. The general simulation elements can be referred in Table 1.

Table 1: General Simulation Estimation of Ideal Basic Saving's Annual Expenditure

N	A	C	BS
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Where:-

N	=	Number of year
A	=	Age of EPF retiree
C	=	Annual consumption
BS	=	Retirement fund balance from total accumulated savings
	=	RM 228,000 – RM 11,400 = RM 216,000

The elements of N , A , C , and BS can be generated through mathematical formulations are derived as in the Table 2.

Table 2: Mathematical Formulation in Generating the Simulation Result

Element		Formula
C	=	Monthly consumption x 12
		RM950 x 12 = RM11,400
BS	=	Previous retirement fund balance- annual consumption
		$BS_{n-1} - C$
BS_1	=	RM228,000 – RM11,400
	=	RM216,000

Results and Discussion

The ideal amount of basic savings can be rationalized by translating it into the Table 3.

Table 3: Estimation of Ideal Basic Saving's Annual Expenditure

N	A	C	BS
0	55	11,400	228,000
1	56	11,400	216,600
2	57	11,400	205,200
3	58	11,400	193,800
4	59	11,400	182,400
5	60	11,400	171,000
6	61	11,400	159,600
7	62	11,400	148,200
8	63	11,400	136,800
9	64	11,400	125,400
10	65	11,400	114,000
11	66	11,400	102,600
12	67	11,400	91,200
13	68	11,400	79,800
14	69	11,400	68,400
15	70	11,400	57,000
16	71	11,400	45,600
17	72	11,400	34,200
18	73	11,400	22,800
19	74	11,400	11,400
20	75	11,400	-

The above figure provides a good indicator to whether a person can successful accumulate the retirement savings up to basic savings amount. It is demonstrated that a lifestyle can be sustained by the minimum pension consumption of RM950 for the next 20 years' period, which is equivalent to the current Malaysian life expectancy of 75 years old. However, not all retirees would have accumulated the amount of RM 228,000 in their EPF account. In fact, this study revealed that 70 per cent of the EPF members who retired in 2016 had less than RM50,000.

The calculation of basic savings is rather a straightforward without considering other factors. The minimum consumption of RM950 is not the same value gains for the next 10 years or even 20 years. This is because one of the principles of finance is concerned about time and the value of money. The real value should be decreasing over time. Over an extended period, the more it will depreciate. The calculation, however, should consider the inflation rate in order to get the better result. Considering the inflation factor in the estimation of retirement



wealth will demonstrate the decreased current value. This will cause almost all retirees to be living under poverty as the poverty line income is at RM 930 per month (Manap et al., 2017).

Conclusion

In conclusion, neither the lump sum payment benefit nor the monthly basis payment annuity can be guaranteed to support the financial needs of the elderly for their entire life. Nevertheless, the suggestion of using annuity as a mode of retirement = benefit payment does not provide a full coverage for an individual's entire life. This scheme does, however, provide a much better coverage compared to the lump sum mode of payment. This is because it can extend the coverage period for another 11 years, as opposed to the lump sum benefit which runs out the retirement fund just within 3 years as reported by EPF.

Thus, as Malaysia is becoming an ageing country, it would be better to get prepared for longevity risk and its implication on finance. Prevention is better than cure. Considering the problem of the inadequacy of retirement wealth, lack of financial savings among citizens, and the growth of elderly population in future, Malaysia should not delay their improvement of the retirement system. Therefore, it may be an interesting topic for future study to investigate the existing retirement system in Malaysia in order to formulate betterment and enhance the system.



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