

Analysis of Fund Resistance and Management of Retirement Guarantee Fund BPJS Ketenagakerjaan for Long Term Resilience

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Abstract:

Background: Social security is social protection provided by the state to its citizens so that the basic needs of its citizens are properly met. BPJS Ketenagakerjaan was born based on the Law of the Republic of Indonesia Number 40 of 2004 concerning the National Social Security System and the Law of the Republic of Indonesia Number 24 of 2011 concerning the Social Security Administering Body unproductive age. Solvency financial ratios in the Pension Guarantee program for three consecutive years show a range of 100%, namely in 2017 the solvency value of the Pension Guarantee program was 100%, in 2018 it was at 100.16%, and in 2019 the solvency value fell to 100%. , although this value can still be said to be solvable, it is still very worrying because if BPJS Ketenagakerjaan takes the wrong steps in managing the Pension Guarantee fund and causes the solvency value to be lower than 100%, the possibility of default on the Pension Guarantee Program in the future is high possibility. ,

Materials and Methods: This study collects and analyzes data using quantitative and qualitative methods (mixed methods), integrates two forms of data, and uses a different design that may involve philosophical assumptions and theoretical frameworks in 2030. The data used in this study is secondary data obtained from BPJS Ketenagakerjaan. The type of data used is time-series data (data with a period of years). The time-series data used are 2015 to 2020

The variables used are BPJS Ketenagakerjaan pension program funds (expenditure), the number of retirees (pensioners), Gross Domestic Product (GDP/GDP), working-age population (WAP/active population aged 15-58 following the retirement age in Indonesia), old age population (following the retirement age in Indonesia, namely population 58 and over), the number of Indonesian workers (TI). This study does three things, namely per-variable forecasting for the calculation of PE/GDP in the future, calculating the correlation between variables to see which variables have the most influence on the calculation of PE/GDP. This study uses three measuring tools that can be used to conclude forecasting errors, namely the Mean Absolute Deviation (MAD), Mean Squared Error (MSE) method, and the last method Mean Absolute Percent Error (MAPE).

Results: The results of this study indicate an increase in pension expenditure but do not show any concern that causes default on benefits. It can be seen that the value of pension expenditure is only 0.045%. The results of this study are not the same as the government's anxiety as indicated by an increase in the retirement age in 2030 which is predicted to fail to pay, if the amount of contributions is not increased. From the correlation results, we can see that the number of retirees is the most influential on the level of PE/Management Funds. This shows that the expenditure of Pension Guarantee Program funds (payment of benefits) is something that needs to be considered, where the number of retirees affects pension expenditure. The forecasting results above are corroborated by the results of interviews from several competent sources in their fields, where the informants agreed that increasing the contribution is not the right step because it will have an impact on the continued reduction in consumption levels in the community and will result in a slowdown of the economy.

Conclusion: The conclusion obtained from this study is that the resilience of the BPJS Ketenagakerjaan Pension Guarantee Program Funds until 2030 is not worrying, because the results of this study indicate an increase in pension expenditure but do not show any concern that causes default on benefits. The value of pension expenditure is only 0.045% in 2030. From the results of the study, it was also found that the growth in the number of pensions is something that needs to be considered because the growth in the number of pensions will affect the amount of expenditure (pension expenditure).

Keyword: Fund Resilience; BPJS Ketenagakerjaan; Social Security; Pension Guarantee; Failed to Pay.

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I. Introduction

Social security is social protection provided by the state to its citizens so that the basic needs of its citizens are properly met (Purnawan, 2014). BPJS Ketenagakerjaan was born based on the Law of the Republic of Indonesia Number 40 of 2004 concerning the National Social Security System and the Law of the Republic of Indonesia Number 24 of 2011 concerning the Social Security Administering Body. BPJS Ketenagakerjaan has direct responsibility and reports to the President of the Republic of Indonesia, which is following the mandate of the Law to protect all Indonesian workers through 5 employment social security programs, namely Old Age Security (JHT), Work Accident Insurance (JKK), Death Insurance (JKM), Job Loss Guarantee (JKP) and Pension Guarantee (JP). Old Age Security is social security based on the principle of mandatory social insurance for workers with the benefit of guaranteeing the old age of participants, namely in the form of cash benefits with a total benefit of the accumulated contributions plus the results of its development if the participant has entered retirement age, has a permanent total disability, or dies, this JHT benefit can also be paid to participants who experience termination of employment, resign or stop working before retirement age. Work Accident Insurance is social security with benefits in the form of health services and/or cash for participants who have a work accident or illness caused by the work environment. Death Security is social security for the risk of death of participants due to non-work accidents or special services given to the heirs. A Job Loss Guarantee is a guarantee given to workers/laborers who experience termination of employment (Purnawan, 2014).

Pension Security is social security for workers whose function is for the welfare of workers when they enter unproductive age. The presence of this pension guarantee is one of the government's implementations and efforts to make pensioners independent even though they have stopped working (Lina et al., 2015). The amount of contributions that must be paid is 3% of the total reported salary with a composition of 2% charged to the employer and 1% charged to participants (Jemikan, 2018). By Government Regulation No. 45 of 2015 article 17, namely the amount of the Pension Guarantee benefits obtained by participants in the first year is 1% times the contribution period divided by 12 months times the weighted average annual wage during the contribution period divided by 12 months. Then for the following years, the calculation of pension benefits is calculated based on the results of the previous benefit calculation multiplied by the indexation factor, where the indexation factor is set at 1 plus the amount of general inflation in the previous year (Pertiwi, 2017). Where currently the BPJS Ketenagakerjaan Pension Security contribution is still the same at 3% from the start of this program and this is still very far from the Pension Security contributions in neighboring countries that have long and successfully run this program (Galuh Pertiwi & Ramli, 2020). Malaysia with a contribution rate of 23%, China at 28%, and Singapore the contribution rate for the Pension Security is 36% of the reported wages.

As was the case with the state-owned insurance company PT Asuransi Jiwasraya (Persero) which announced its inability to pay its JS savings to plan customer policies in October 2018 with a total value of 802 billion (Devira Prastiwi, liputan6.com), the total policy maturity starts from October- December 2019 which must be borne by PT Asuransi Jiwasraya amounted to 12.4 trillion. This financial management failure was caused by the misplacement of investment funds made by Jiwasraya's management. Similar to the Jiwasraya company, BPJS Ketenagakerjaan has a management fund that must be managed to protect workers. Recording on November 30, 2020 BPJS Ketenagakerjaan has a management fund of 472.9 trillion, this value has grown to 12.9%.

Wealth management is a part of financial science whose goal is to make it easier for companies, investment managers, and individuals to develop and protect wealth with various strategic steps. This science directs wealth owners to be better at managing funds, choosing insurance, choosing investment instruments, and distributing wealth to heirs. (Purwati, 2009). There are three main pillars of wealth management, namely the first pillar of wealth protection and preservation. The purpose of this first pillar is to protect the value of wealth from risks that may occur and harm. The second pillar is wealth accumulation and growth, in this pillar, the objectives are more focused on the growth and accumulation of wealth, where growth and accumulation are managed through tax management, investment management, business ventures, and money management. The third pillar, namely wealth distribution, and transition, in this pillar, discusses the distribution of wealth owned to heirs so that it can be managed properly and even usefully. This distribution plan consists of two things, namely inheritance and retirement (Mashruwala, 2011).

II. Materials And Methods

Research methods

This study collects and analyzes data using quantitative and qualitative methods (mixed methods). As defined by Creswell & Creswell, (2018:41) "mixed methods research is an investigative approach that involves collecting quantitative and qualitative data, integrating two forms of data, and employing different designs that may involve philosophical assumptions and theoretical frameworks. The core assumptions of the form of this

investigation are that the integration of qualitative and quantitative data yields additional insights beyond the information provided by either quantitative or qualitative data alone".

Material

This study focuses on the resilience of BPJS Ketenagakerjaan pension insurance program funds in the long term until 2030. The data used in this study are secondary data obtained from BPJS Ketenagakerjaan, the Central Statistics Agency (BPS), and the Ministry of Finance. The type of data used is time-series data (data with a period of years). The time-series data used are from 2015 to 2020. The variables used are BPJS Ketenagakerjaan pension program funds (expenditure), the number of retirees (pensioners), Gross Domestic Product (GDP/GDP), the working-age population (WAP/active population, which is 15-56 years old following the retirement age in Indonesia), the old age population (following the retirement age in Indonesia, namely the population of 56 and over), the number of Indonesian workers (TI).

Analysis Techniques

This study does three things, namely per-variable forecasting for the calculation of PE/GDP in the future, calculating the correlation between variables to see which variables have the most influence on the calculation of PE/GDP and creating a BPJS Ketenagakerjaan pension fund management scheme. All calculations using Microsoft excel tool. The forecasting technique used is trend projection. This technique matches the trend line to a series of past data, then projects the line in the future to make forecasts. Use the add trendline function in Microsoft Excel to find the most appropriate trendline. There are 5 choices of trendline lines, namely exponential, linear, logarithmic, polynomial, power and moving average. Because in this study the forecasting used is long-term forecasting, the trendlines to be chosen are Linear, Exponential, and polynomial. Then to determine which method will be used in the calculation equation, a forecasting error rate tool is used, this tool is used to view and assess the magnitude or level of error of each method. Then all the forecasting equations are entered into the PE/GDP calculation. Forecasting is carried out until 2030 to determine the resilience of the BPJS Ketenagakerjaan pension fund and to create a BPJS Ketenagakerjaan pension fund management scheme for long-term resilience. Then to determine which method will be used in the calculation equation, a forecasting error rate tool is used, this tool is used to view and assess the magnitude or level of error of each method. Then all the forecasting equations are entered into the PE/GDP calculation.

The level of accuracy of a forecasting method result can be measured using a forecasting error tool to ensure that the forecasting method is useful. This study uses three measurement tools that can be used to conclude forecasting errors, namely the Mean Absolute Deviation method, Mean Squared Error method, and finally the Mean Absolute Percent Error method (Heizer and Barry Render, 2015: translated by Hirson Kurnia, Ratna Saraswati and David Wijaya), and here is the explanation:

1. MAD (Mean Absolute Deviation)

The first way is to measure the overall forecast error for the model. This value is calculated by taking the sum of the absolute values of individual forecasting errors (deviations) and dividing by the number of data periods (n), namely:

$$MAD = \frac{\sum | \text{Actual} - \text{Forecasting} |}{n}$$

2. MSE (Mean Squared Error)

The second way is to measure the overall forecasting error. MSE (mean squared error) is the average difference squared between the predicted and observed values. The formula is as follows:

$$MSE = \frac{\sum (\text{Actual} - \text{Forecasting})^2}{n}$$

3. MAPE (Mean Absolute Percent Error)

Calculated as the absolute mean difference between the predicted and actual values, reflected as a percentage of the actual values, the MAPE, if we have the predicted and actual values for n periods, is calculated by:

$$\frac{\sum_{i=1}^n 100 \text{ actual}_i - \text{forecasting}_i / \text{actual}_i}{n}$$

These three indicators describe the distribution of numbers from the forecasting results. The smaller the value of these three indicators is, the less high is the forecast surge which leads to an unfeasible situation of forecast.

These three equations will be used to choose the right method to strengthen the argument in choosing the equation for forecasting results.

Correlation is carried out to see which factors or variables forming the calculation of PE/GDP is the most influential on the results of the calculation. Do all the factors or variables provide a unidirectional or inverse relationship so that later on seeing the results of the PE/GDP calculation, the input can be given to BPJS Ketenagakerjaan and the government, which factors or variables need more attention.

Table. 2.1. Interpretation Guidelines for the correlation coefficient

Coefficient Interval	Description
0,00 - 0,199	Very low
0,20 - 0,3999	low
0,40 - 5,999	medium
0,60 - 0,7999	good
0,80 - 1,000	very good

Source: Sugiono (2010) in Kusnadi & Mutoharoh (2016)

The correlation only ranges from 0-1. Positive and negative numbers only describe the direction of the relationship.

Research Model

The following model is used in this study:

$$\frac{PE}{GDP} = \frac{\text{Ependiture}}{\text{Pensioners}} / \frac{GDP}{WAP} * \frac{\text{Pensioners}}{WAP} * \frac{\text{Pensioners}}{\text{Old Age Population}}$$

Replacement Rate
Old Age Dependency Ratio
Coverage

Source: Soto, Thakoor, and Petri Research (2015)

Regarding the need for calculating the object of research, the above formula has been adjusted to the formula below but does not change the meaning of the original formula.

$$\frac{PE}{\text{Managed funds}} = \frac{** \text{Ependiture managed funds}}{\text{Pensioners}} / \frac{WAP}{WAP} * \frac{\text{Pensioners}}{WAP} * \frac{\text{Pensioners}}{\text{Old Age Population}}$$

Replacement Rate
Old Age Dependency Ratio
Coverage

Description:

- PE = Pension expenditure (expenses paid for retirement benefits)
- Managed funds = Net Asset Income at the end of the period (contributions, investments, others)
- Expenditure = Load BPJS Ketenagakerjaan Pension Guarantee
- Pensioners = Number of retirees
- WAP = Working-age Population (productive population aged 15-56, following the retirement age in Indonesia and data availability), or active participants of the BPJS Ketenagakerjaan Pension Guarantee Program
- Old age population = Following the retirement age in Indonesia, namely the population of 56 and over

In each calculation, the equation forms the factors that affect the resilience of the pension guarantee fund system. In the calculation between expenditure, pensioners, Managed Funds, and WAP, it is considered to represent the replacement rate in the pension guarantee fund system. The calculation between pensioners and WAP is considered to describe the old-age dependency ratio. The calculation of pensioners and the old age population is considered to represent coverage.

Expenditure divided by pensioners is depicted to represent the average pension and Funds Under Management divided by WAP is described to represent the average income. The average pension divided by the average income is later described as the replacement rate or replacement ratio which describes the level between income and expenses or contributions and benefits. This is one way of describing the income and expenditure ratio of the BPJS Ketenagakerjaan pension insurance calculation on a macro basis.

Pensioners divided by WAP describe the old-age dependency ratio or how large the active population is currently able to bear the old-age population. Pensioners divided by the old age population illustrate the coverage to see how successful this pension insurance program is because the BPJS Ketenagakerjaan pension insurance program is a pension insurance program organized by the government which aims to help the old/unproductive age population.

The replacement rate factor is a factor that describes the financial resilience of the BPJS Ketenagakerjaan pension insurance fund because it describes the income (contributions/incoming funds) with expenses (benefits payments). The old-age dependency ratio factor describes the effects of aging. In many studies in European countries, the aging population greatly affects the pension fund systems of European countries, which still mostly use the pay-as-you-go system or are still in transition to the funded system. Indonesia has a large active (productive) population, but some studies raise if there is a miscalculation that this active (productive) population will eventually age and become retired. Incorrect calculations will cause it to be a problem or burden.

The year 2030 was chosen as the end of the forecast because of the forecast that in 2030 BPJS Ketenagakerjaan will fail to pay the pension benefits. This illustrates that BPJS Ketenagakerjaan has seen concerns about the resilience of the pension insurance program funds. This can also be seen from the government's concern about the BPJS Ketenagakerjaan program itself by increasing the retirement age. Increasing the retirement age means that more contributions or funds will come in and slow down the expenditure or payment of benefits so that the collection and management of funds can be maximized.

This research involves the third pillar of wealth management, namely wealth distribution and transition. This pillar discusses the distribution of wealth owned to heirs so that it can be managed properly and even usefully. This distribution plan consists of two things, namely inheritance and retirement. Raising the retirement age is the same as delaying the distribution of pension benefits so that fund management is maximized. In addition, this study has certain parameters, namely only looking at the BPJS Ketenagakerjaan pension program and not linking it to other programs owned by BPJS Ketenagakerjaan. This fortune-telling also looks at all things around *ceteris paribus*.

III. Result

Quantitative

The results of calculations from Microsoft Excel get several models obtained from the equation trend. Each model has a value R Square. Thereafter, the bigger the value R Square is, the more accurate the result of the model is. When we did the forecasting, not all models with the highest result of R Square have always a negative forecast result. All variables here are considered to be unpredictable resulting in negative results. Then measurement tools that can be used to conclude forecasting errors, namely the Mean Absolute Deviation (MAD), Mean Squared Error (MSE) method, and the Mean Absolute Percent Error (MAPE) method are used to see the distribution of forecasting results. The smaller is the value of Mean Absolute Deviation, Mean Squared Error, and Mean Absolute Percent Error, the more the distribution of results is considered error-free and the forecasting type with many lower models is to be used.

Forecasting Model Selection for Each Variable

This research goes through several stages before forecasting, where the first stage is to determine the forecasting model that will be selected for each variable, by calculating or measuring the level of forecasting error in each variable, namely the MAD, MSE, and MAPE methods.

Expenditure Model Selection

Based on the results of the study by calculating the value of MAD, MSE, and MAPE in the selection of the expenditure model, it was found that the withdrawal method using the Exponential is the best fit or closest to the truth. It can be seen based on the table below:

**Table 3.1. MAD, MSE, and MAPE values
On Expenditure models**

Forecasting Type	<i>MAD</i> <i>(in tens of millions)</i>	<i>MSE</i> <i>(Hundreds Trillion)</i>	<i>MAPE %</i>	<i>R2</i>
Linear	7,912.36	89,124,562.74	53.9	0.5
Exponential	7,769.99	114,019.995.59	45.7	0.56
Polynomial	7,912.36	86,804,676.23	45.7	0.52

Based on the table above which is the result of the calculation of comparative data, it is known that the value of the forecasting error rate using Exponential is the method that has the smallest/lowest error rate with an average MAD value of 7,769.99, MSE of 114,019.995.59, and MAPE is 45.7%, even though the MSE value of the Exponential method is greater compared to Polynomial method. Nonetheless, the value of R Square's Exponential method (0.56) is greater than the one of Polynomial method (0.52). The following graphic shows the forecasting results using the chosen method, which is the Exponential method.

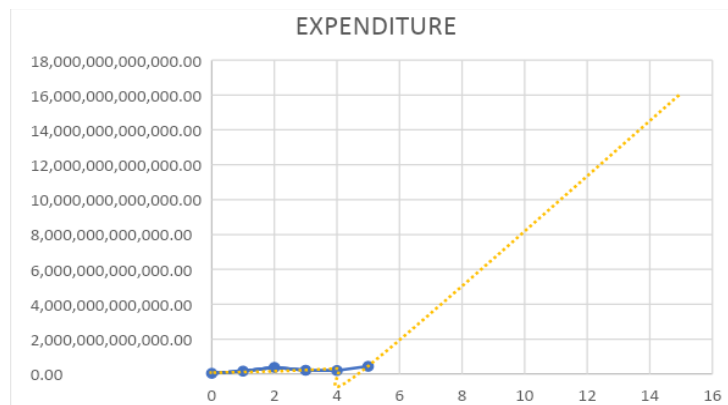


Figure 3.1. BPJS Ketenagakerjaan Expenditure forecasting results up to 2030
Source: BPJS Ketenagakerjaan, processed

Based on the graph above, the following equation formula can be obtained (where the year code in 2030 is 15, so $x = 15$), with R Square= 0.52:
 $y = 75,474,033,328,08e0,36x$
 $y = 75,474,033,328,08e0,36 * 15$
 $y = 16,710,435,235,645,60$

Selection of Managed Fund Model

Based on the results of the study by calculating the value of MAD, MSE, and MAPE in the selection of the Managed Funds model, it was found that the withdrawal method using Polynomial was the best fit or closest to the truth. It can be seen based on the table below:

**Table 3.2 Values of MAD, MSE, and MAPE
On the Managed Fund Model**

Forecasting Type	<i>MAD (in tens of millions)</i>	<i>MSE (Hundreds Trillion)</i>	<i>MAPE %</i>	<i>R2</i>
Linear	237,244.81	87,597,670,082.64	8.43	0.98
Exponential	947,031.99	2,193,150,411,029,70	33.71	0.9
Polynomial	25,835.70	948,377,041.36	2.21	1

Based on the table above which is the result of the calculation of comparative data, it is known that the value of the forecasting error rate using polynomials is the method that has the smallest/lowest error rate with an average MAD value of 25,835.70, MSE is 948,377,041.36, and MAPE is of 2.21%, therefore the method chosen is the polynomial method, with the following graphic and forecasting forms.

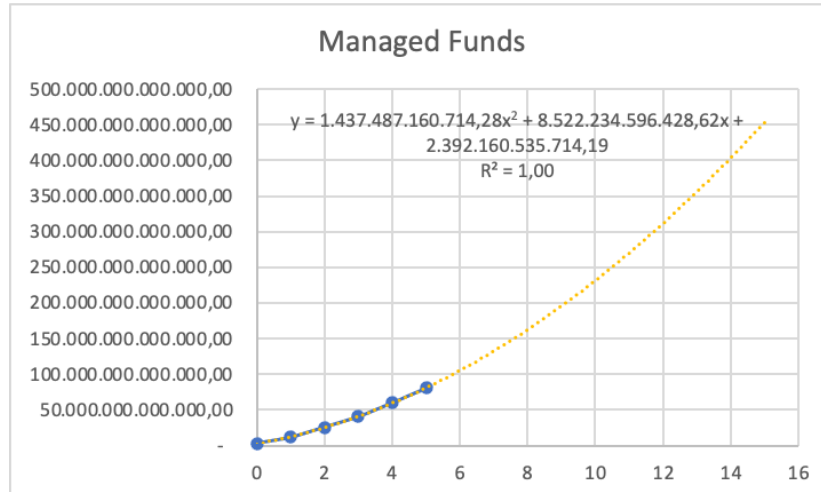


Figure 3.2. Forecasting results of BPJS Ketenagakerjaan Management Funds up to 2030
Source: BPJS Ketenagakerjaan, processed

Based on the graph above, the following equation formula can be obtained (where the year code in 2030 is 15, so $x = 15$),

with $R^2 = 1.00$

$$y = 1,437,487,160,714,28 x^2 + 8,522,234,596,428,62x + 2,392,160,535,714,19$$

$$y = 1,437,487,160,714,28 * 15^2 + 8,522,234,596,428,62 * 15 + 2,392,160,535,714,19$$

$$y = 453.660.290.642.856,00$$

Selection of OLD AGE POPULATION (OAP) Model

Based on the results of the study by calculating the MAD, MSE, and MAPE values in the selection of the OAP model showed that the withdrawal method using polynomials was the best or closest to the truth, it can be seen based on table below this.

**Table 3.3 Values of MAD, MSE, and MAPE
On the OAP model**

Forecasting Type	MAD (in tens of thousands)	MSE (in billion)	MAPE %	R2
linear	294.73	111.34	1.20	0.98
Exponential	296.90	113.92	1.17	0.98
Polynomial	294.73	108.47	1.18	0.98

Based on the table on which is the result of comparative data calculations, it is known that the value of the forecasting error rate using polynomials is the method that has the smallest/lowest error rate with an average MAD value of 294.73 , MSE is 108.47 , and MAPE is 1, 18%, even though the MAPE value of the polynomial method is greater compared to Exponential method but look at the value of R Square of the three methods showed the same value, namely 0.98, therefore the method chosen was still the polynomial method because it was considered the least error value. In the form of graphs and forecasts as follows.

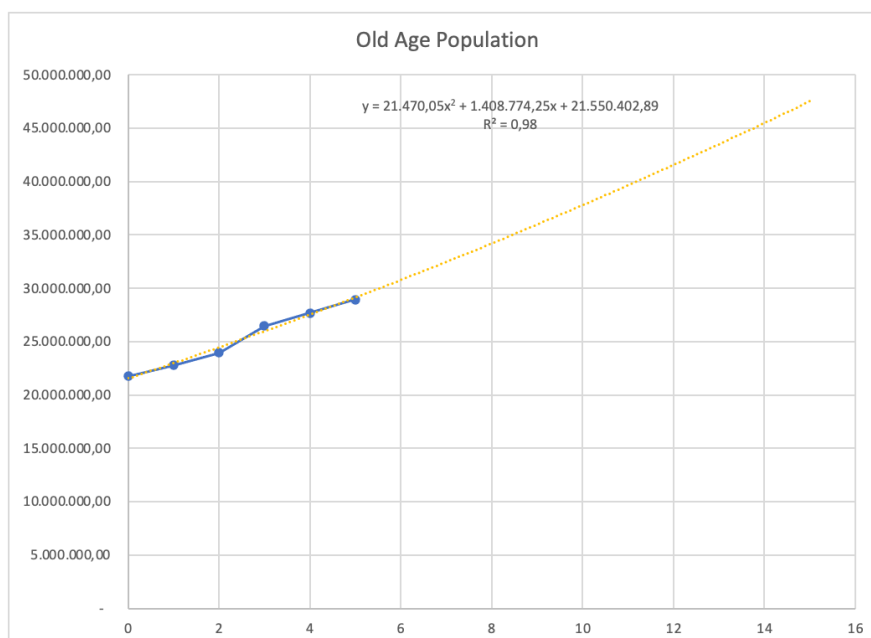


Figure 3.3. Indonesia's OAP forecasting results up to 2030

Source: bpjsketenagakerjaan.go.id, processed

Based on the graph above, the following equation formula can be obtained (where the year code in 2030 is 15, so $x = 15$),

with $R^2 = 1.00$

$$y = 21,470.05x^2 + 1,408,774.25x + 21,550,402.89$$

$$y = 21,470.05 * 15^2 + 1,408,774.25 * 15 + 21,550,402.89$$

$$y = 47,512,777.89$$

4.1.1.4 Selection of the WORKING AGE POPULATION (WAP) Model

Based on the results of the study by calculating the MAD, MSE, and MAPE values in the WAP model selection showed that the withdrawal method using Exponential was the best or closest to the truth, it can be seen based on table below this

Table 4.4 Values of MAD, MSE, and MAPE On WAP Model

Forecasting Type	MAD (in tens of thousands)	MSE (in billion)	MAPE %	R2
linear	1,720.79	3,473.01	23.63	0.87
Exponential	633.02	9,655.34	9.48	0.75
Polynomial	1,355.27	2425.28	13.78	0.91

Based on the table on which is the result of the calculation of comparative data, it is known that the value of the forecasting error rate using Exponential is the method that has the smallest/lowest error rate with an average MAD value of 633.02 , MSE of 9,655.34 , and MAPE of 9, 48%, therefore the method chosen is the Exponential method, in the form of graphs and forecasts as follows.

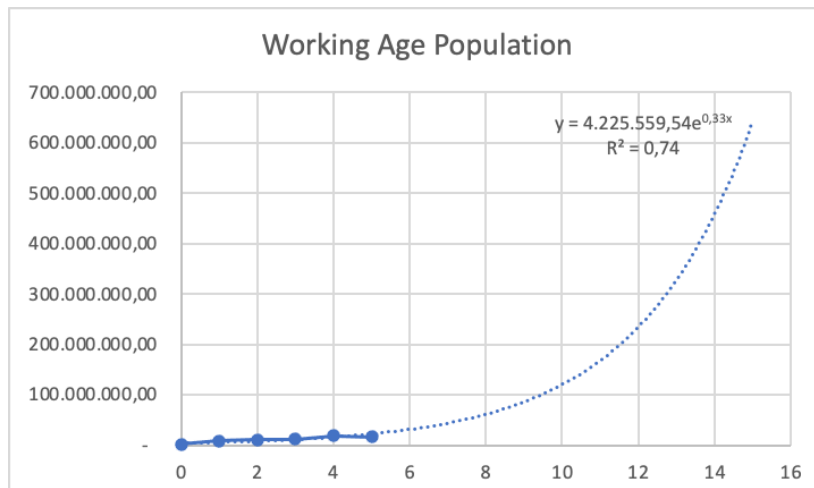


Figure 3.4. WAP forecasting results (Working-age population/Active workers registered in Manpower until 2030)

Source: BPJS Ketenagakerjaan, processed

Based on the graph above, the following equation formula can be obtained (where the year code in 2030 is 15, so $x = 15$),
 with $R^2 = 0.75$
 $y = 4,225,559.54 e^{0,33x}$
 $y = 4,225,559.54 e^{0,33 \cdot 15}$
 $y = 596.543.215.61$

PENSIONERS Model Selection

Based on the results of the study by calculating the MAD, MSE, and MAPE values in the Pensioners model selection showed that the withdrawal method using polynomials was the best or closest to the truth, it can be seen based on table below this.

Table 4.5 Values of MAD, MSE, and MAPE On the Pensioners. model

Forecasting Type	MAD (in tens of thousands)	MSE (in billion)	MAPE %	R2
linear	9,406.07	162,540,809.69	30.65	0.82
Exponential	11,533.01	187,525,646.05	39.89	0.85
Polynomial	8,632.51	134,532.186.90	31.61	0.85

Based on the table above which is the result of comparative data calculations, it is known that the value of the forecasting error rate using polynomials is the method that has the smallest/lowest error rate with an average MAD value of 8,632.51, MSE is 134,532.186.90, and MAPE is by 31.61%, although the MAPE value of the polynomial method is greater compared to linear method look at the value of R Square of the polynomial method is greater, namely 0.8,5 compared to linear which is 0.82, therefore the method chosen is still the polynomial method because it is considered to have the least error value. In the form of graphs and forecasts as follows:

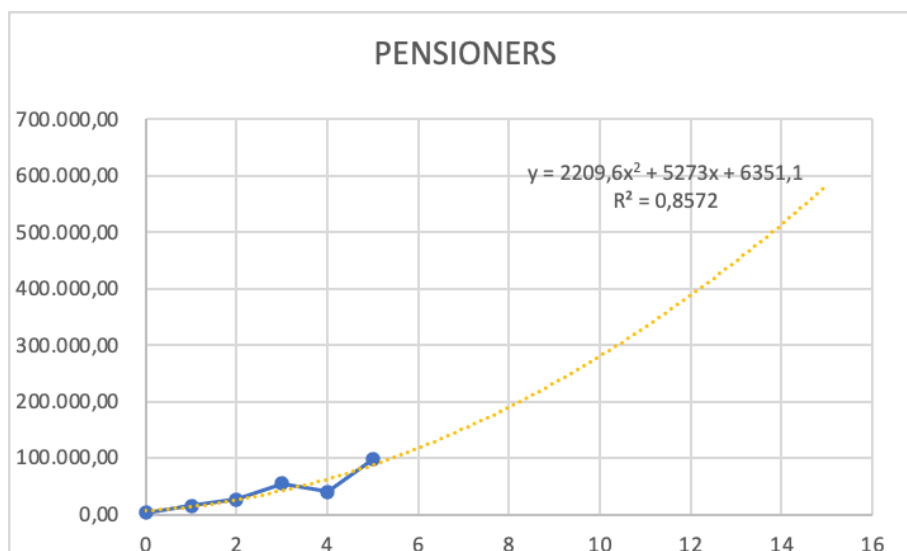


Figure 3.5. Forecasting results of Pensioners/Retirees registered with Employment until 2030)
Source: BPJS Ketenagakerjaan, processed

Based on the graph above, the following equation formula can be obtained (where the year code in 2030 is 15, so $x = 15$),
with $R^2 = 0.86$
 $y = 2209.6x^2 + 5273x + 6351.14$
 $y = 2209.6 \cdot 15^2 + 5273 \cdot 15 + 6351.14$
 $y = 582,614.99$

Based on the forecasting results above, after calculating with the existing formula, got forecasting results as follows:

Table 3.6 Forecasting Calculation Results

NO	Tahun	EXPENDITURE	PENSIONERS	DANA KELOLA	WAP	OLD AGE POPULATION
1	2015	35.813.000.000,00	3.507,00	2.620.886.000.000,00	2.465.019,00	21.760.049,00
2	2016	161.751.000.000,00	15.840,00	12.004.857.000.000,00	9.130.671,00	22.793.805,00
3	2017	375.285.000.000,00	26.922,00	25.150.467.000.000,00	10.633.387,00	23.959.169,00
4	2018	211.562.000.000,00	54.902,00	40.799.480.000.000,00	11.846.051,00	26.478.536,00
5	2019	196.220.000.000,00	39.744,00	60.027.239.000.000,00	18.483.720,00	27.694.987,00
6	2020	436.871.000.000,00	97.817,00	80.645.347.000.000,00	16.445.532,00	28.928.338,00
7	2021	654.445.732.627,24	117.536,12	105.275.105.900.000,00	30.604.641,72	30.775.970,19
8	2022	938.036.318.808,12	151.534,43	132.484.673.585.714,00	42.570.081,21	32.463.855,09
9	2023	1.344.515.047.673,57	189.952,02	162.569.215.592.857,00	59.213.626,19	34.194.680,09
10	2024	1.927.132.966.149,53	232.788,89	195.528.731.921.428,00	82.364.266,80	35.968.445,19
11	2025	2.762.216.366.151,04	280.045,04	231.363.222.571.428,00	114.566.070,05	37.785.150,39
12	2026	3.959.165.966.984,26	331.720,47	270.072.687.542.857,00	159.357.752,04	39.644.795,69
13	2027	5.674.789.037.604,77	387.815,18	311.657.126.835.714,00	221.661.554,11	41.547.381,09
14	2028	8.133.842.049.023,48	448.329,17	356.116.540.450.000,00	308.324.157,07	43.492.906,59
15	2029	11.658.475.062.253,10	513.262,44	403.450.928.385.714,00	428.869.075,72	45.481.372,19
16	2030	16.710.435.235.645,60	582.614,99	453.660.290.642.856,00	596.543.215,61	47.512.777,89

4.1.1. PE/Management Fund Calculation

Calculating PE value/Management Fundica way to find out how bigendurance funds in the BPJS Ketenagakerjaan Pension Program, based on the calculation results from the forecasting that has been done, then got the results of the PE/Management Fund calculation are as follows:

Table 4.7 Calculation Results of PE/Management Funds

NO	Tahun	REPLACEMENT RATE	OLD AGE DEPEDENCY RATIO	COVERAGE	PE/DANA KELOLA
1	2015	9,60	0,0014	0,0002	0,00022%
2	2016	7,77	0,0017	0,0007	0,00094%
3	2017	5,89	0,0025	0,0011	0,00168%
4	2018	1,12	0,0046	0,0021	0,00108%
5	2019	1,52	0,0022	0,0014	0,00047%
6	2020	0,91	0,0059	0,0034	0,00183%
7	2021	1,62	0,0038	0,0038	0,00237%
8	2022	1,99	0,0036	0,0047	0,00330%
9	2023	2,58	0,0032	0,0056	0,00459%
10	2024	3,49	0,0028	0,0065	0,00638%
11	2025	4,88	0,0024	0,0074	0,00885%
12	2026	7,04	0,0021	0,0084	0,01227%
13	2027	10,41	0,0017	0,0093	0,01700%
14	2028	15,71	0,0015	0,0103	0,02354%
15	2029	24,15	0,0012	0,0113	0,03261%
16	2030	37,72	0,0010	0,0123	0,04517%

Based on the results of the above calculations, the following graph can be obtained:

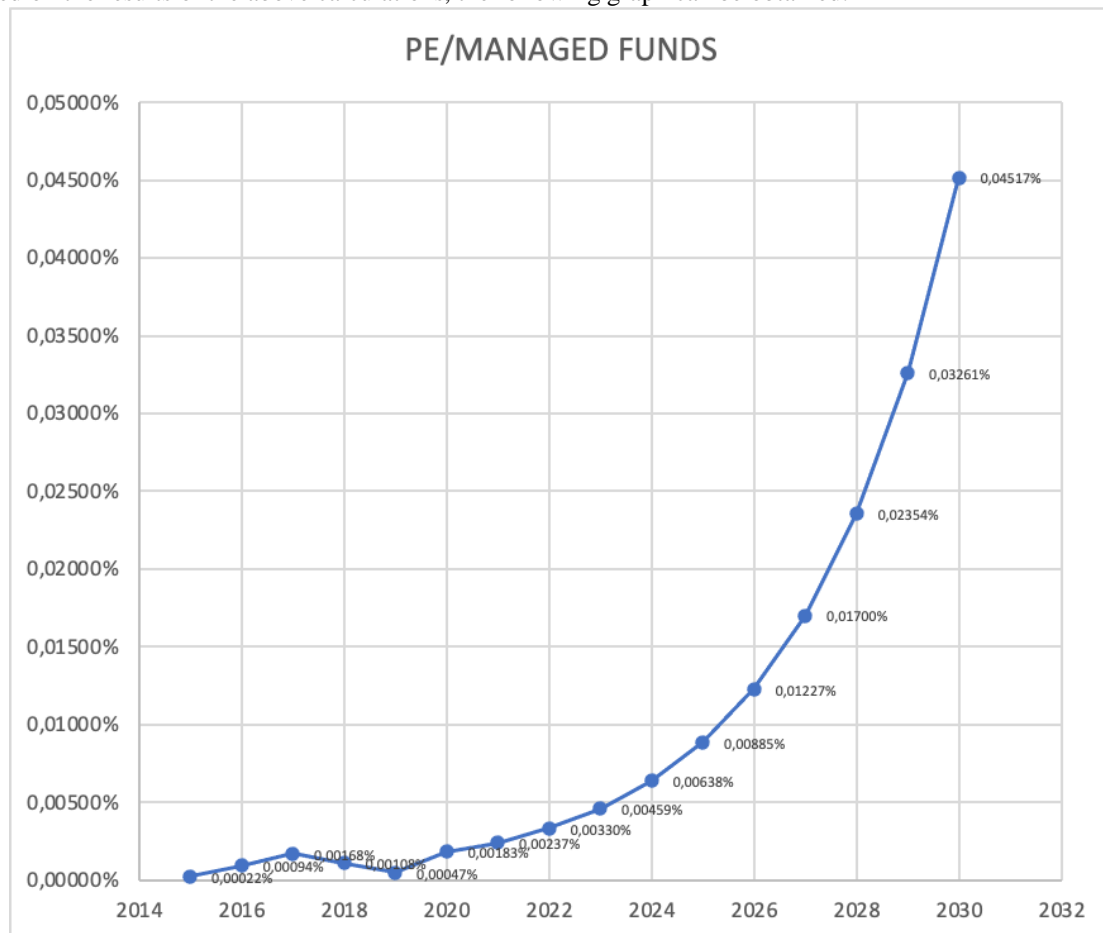


Figure 3.6. The calculation result of PE/Management Fund
Source: BPJS Ketenagakerjaan, processed

The table and graph above show that PE/Managed Funds increased from 2015-2017 then decreased until 2019, after which it rose again in 2020 to 2030. This shows that pension expenditure expenses compared to Managed Funds increased from 2015 to 2017, then had decreased from 2017 to 2019, and then increased again from 2020 to 2030.

Correlation of PE Factors/Management Funds

After getting the results of the PE/Management Fund calculation, then the correlation between the factors and the calculation results is calculated to see which factors need further attention to maintain the Resilience of the BPJS Ketenagakerjaan Pension Guarantee Program Funds. The data used is real data, not forecasting data. The first thing to do is look at the correlation between factor with the results of the calculation of PE/Management Fund.

Table 4.8. Correlation Result of PE/Management Fund

PE/FUND MANAGEMENT Correlation		
REPLACEMENT RATE	OLD AGE DEPENDENCY RATIO	COVERAGE
(0.4042)	0.6929	0.6853

Source: Processed

Based on the table on it can be seen that the replacement rate has a negative value which means a different direction from the old-age dependency ratio and coverage which means the same direction. If the replacement rate, old-age dependency ratio, and coverage of one or all of the three increase, the PE/Management Fund will increase. It can be seen in the three factors above that the replacement rate has the smallest correlation value. According to the existing guidelines, the replacement rate correlation is moderate. In numbers, the Old age dependency ratio has a higher value than Coverage but both have a strong correlation value, therefore it is necessary to correlate the Old age dependency ratio and Coverage to see the relationship.

Table 4.9. Correlation Results Old age dependency ratio

Correlation	
PENSIONERS	WAP
0.952	0.523

Source: Processed

Table 4.9. Coverage Correlation Results

Correlation	
PENSIONERS	OLD AGE POPULATION
0.998	0.899

Source: Processed

These three variables have a strong correlation. We can see that retirees are variable which has the strongest relationship.

Qualitative

This research goes through several stages in data processing where these stages refer to *Miles and Huberman* through the process of data collection, data reduction, data display, and conclusion. The following is a description of the data processing process:

data collection. This process is a stage in data collection, where data collection is carried out in the field by interviewsemi structured virtually using a video call application with samples/resources who are competent and have knowledge of the Pension Guarantee Program. According to the script of the question that was submitted. The Deputy Director of the BPJS Ketenagakerjaan Regional Office for Central Java & DIY was named the first resource person, the Deputy Director for Actuarial Affairs was referred to as the second resource person, and the Head of the Semarang Youth Branch Office was named the third resource person.

Then for the next stage is Data Reduction, where at this stage it is necessary to perform data reduction because the data obtained from the field is quite large, for that it needs to be recorded carefully and in detail. Reducing data means summarizing, choosing the main things, focusing on the important things, looking for themes and patterns, and removing unnecessary ones. Thus the reduced data will provide a clearer picture. Then for the next stage is Data Display, wherein qualitative research the presentation of data that is most often used to present data is narrative text. For this reason, in this study, the data presentation was carried out by using narrative text.

The following are the results of data processing that will be presented in the following order:

1. Source profile
2. Will delaying the distribution of the benefits of the pension insurance program or increasing the retirement age will strengthen the resilience of the pension security fund and minimize the possibility of default on benefits?

3. Is Will increasing the premiums or program contributions strengthen the resilience of the pension insurance fund and minimize the possibility of default on benefits?
4. Will maintaining the collectibility of contributions strengthen the resilience of the pension fund and minimize the possibility of default on benefits?
5. How much fund management (Expenditure) will affect the resilience of the pension guarantee fund and minimize the possibility of default on benefits?
6. How big is the influence of the Managed Fund in the resilience of the pension fund?
7. Will maintaining the resilience of the pension guarantee fund ensure that there is no possibility of default?
8. Stepstrategicwhat to do taken to avoid default?
9. Will setting a minimum membership of 15 years to affect the resilience of the pension fund and minimize the possibility of defaulting on benefits?
10. What risks will arise if the premium is increased?
11. What are the risks that will arise if the retirement age or the distribution of pension benefits is added?

Resource Person Profile

The first resource person is the Deputy Director for Central Java & DIY Region, the resource person is a woman who has worked for xx years at BPJS Ketenagakerjaan. The resource person is the number one office in the Central Java & DIY region, the task and responsibility of the resource person at BPJS Ketenagakerjaan are to ensure that all Work Units in the Central Java & DIY Regional Office carry out business processes following existing targets, rules, and regulations. His background has served as Head of the Service Division for xx years, then Assistant to the Deputy for Regional Services for xx years, and the Head of the Branch Office is an expert resource in maintenance BPJS Ketenagakerjaan programs.

The second resource person is the Deputy Director for Actuarial Affairs, the resource person is a man who has worked for 28 years at BPJS Ketenagakerjaan. The duties and responsibilities of the resource persons are to ensure that the formula, amount of contributions, on, and benefits of all BPJS Ketenagakerjaan programs are correct and follow the basic protection provided. set by la . is background has served as Head of Service for xx years, Head of Participation for xx years, Assistant Deputy for actuarial or years, and the Head of the Branch Office is an expert resource person in maintenance BPJS Ketenagakerjaan programs.

The third resource person is the Head of the Main Branch office, the resource person is a man who has worked for 30 years at BPJS Ketenagakerjaan. The duties and responsibilities of resource persons at BPJS Ketenagakerjaan are to ensure that all employees at BPJS Ketenagakerjaan Semarang Pemuda Branch Office carry out business processes by the targets, rules, and existing regulations. His background, who has served as Head of Finance for 26 years, Head of Deputy Assistant for Corporate Participation, and Head of Branch Offices is an expert resource in maintenance BPJS Ketenagakerjaan programs.

Interview result

Based on the results of interviews that have been carried out, delaying the distribution of the benefits of the pension insurance program or increasing the retirement age will strengthen the resilience of the pension guarantee fund, because the longer the distribution of benefits the longer the funds can be managed, the longer the funds are managed, the more likely the funds will increase, with a note that if the funds are managed properly and appropriately. If the managed funds exceed the need, there will certainly be no default.

Minimizing the possibility of default on benefits by increasing premiums or program contributions is not the right step. Where if the contribution is too high it can have an impact on reducing the level of consumption that continues in the community and will result in a slowdown in the economy, where Indonesia is a country with a high level of product Gross Domestic Product is affected by the level of consumptionits, people.

Maintaining the collectibility of legal contributions is mandatory, if the collectibility of contributions is well maintained, the managed funds will be stable, this can minimize the possibility of default because if the collectibility of contributions is not maintained, there can be a pension expenditure that is greater than income. if this happens then the possibility of default on benefits will be very large.

Funds are the spearhead of a program. Therefore, good and wise fund management is very important for the sustainability of a program. If funds are not managed carefully, income and expenditure (pension expenditure) will not be controlled properly, so it can result in default.

Funds are the spearhead of a program so that maintaining the resilience of the Pension Guarantee program funds will minimize the occurrence of non-payment of benefits. Based on the results of interviews with resource persons, strategic steps that can be taken are: taken to avoid default are as follows:

- Maintain collectibility of contributions
- Extend retirement age
- Good and wise fund management. (choose the instrument, right and wise investment)

- Set minimum membership
- Conduct regular evaluations and studies on the formula for program benefits and contributions linked with the Indonesian economy.

setting a minimum membership is one of the steps that must be taken by BPJS Employment, where if the minimum membership is not set, you can imagine that participants who have just registered for 1 month can get the same amount of benefits as participants who have been registered for 10 years, this will result in expenses uncontrolled. Therefore, by setting a minimum membership, it will lock up expenses (pension expenditure) so that there is no leakage of expenses, expenses will be more controlled, with controlled expenses, the possibility of default on benefits can be minimized.

Increasing the premium is not the right way where according to the informant several risks will arise if the premium is increased, namely:

- The level of public consumption is reduced.
- If the level of public consumption decreases, the money circulating in the market will also decrease.
- If the money circulating in the market decreases, it can cause inflation
- If there is inflation, the cost of living will increase, while income will remain constant-inflation many companies closed and investors fled.
- If the company closes and investors flee to other countries, the number of BPJS Ketenagakerjaan members will decrease.
- If there are fewer participants, the income will decrease and result in reduced management funds.

Reducing or lowering the benefits of the program is not the best solution because if the benefits or benefits of the program are lowered, the main goal held the Pension Guarantee Program is to maintain a decent standard of living when participants lose or reduce their income due to entering retirement age will not be achieved

IV. Discussion

Looking at the graph of the results of the PE/Management Fund, it shows that the PE/Management Fund increased from 2015-2017 then decreased until 2019, after which it rose again in 2020 to 2030. This shows that the pension expenditure burden compared to the Managed Fund increased from 2015. 2015 to 2017, then it decreased from 2017 to 2019, and then increased again from 2020 to 2030. The results of this study indicate an increase in pension expenditure but do not show any concern that causes default on benefits. It can be seen that the value of pension expenditure is only 0.045%. The results of this study are not the same as government anxiety which is indicated by an increase in the retirement age in 2030 which is predicted to default,

From the correlation results, we can see that the number of retirees is the one that has the most influence on the level of PE/Management Funds. This shows that the expenditure of Pension Guarantee Program funds (payment of benefits) is something that needs to be considered, where the number of retirees affects pension expenditure. This proves that in maintaining the resilience of the Pension Guarantee Program funds, it is necessary to pay attention to the balance of expenditure and input of funds. Financial security is the most important thing that needs to be maintained even though because of the resilience of the Pension Guarantee Program funds, it is not solely by increasing the maximum program contributions or by providing the lowest benefits (benefits). This is because the main purpose of holding the Pension Guarantee program is to maintain a decent standard of living when participants lose or reduce their income due to entering retirement age or experiencing permanent total disability and to support the government's efforts to eradicate poverty at an age that is no longer productive. Contributions that are too high can have an impact on the continued reduction in consumption levels for the community and will result in a slowdown in the economy, where Indonesia is a country whose Gross Domestic Product is influenced by consumption.

Results forecasting above is corroborated by the results of interviews from several competent sources in their fields, where the interviewees agreed that increasing the contribution is not the right step because it will have an impact on the continued reduction in consumption levels in the community and will result in a slowdown in the economy, where Indonesia is a country with a high level of domestic product. Gross is influenced by the level of consumption of the people. With low benefits, the main objective of holding a Pension Guarantee Program to maintain a decent standard of living when participants lose or reduce their income due to entering retirement age will not be achieved.

Based on the results of the interviews, the interviewees also agreed that Dana is the spearhead of a program. Therefore, good and wise fund management is very important for the sustainability of a program. If funds are not managed carefully, income and expenses (pension expenditure) will not be controlled properly, so that it can result in default).

V. Conclusion

The conclusion obtained from this study is that the resilience of the BPJS Ketenagakerjaan Pension Guarantee Program Funds until 2030 is not worrying, because the results of this study indicate an increase in pension expenditure but do not show any concern that causes default on benefits. The value of pension expenditure is only 0.045% in 2030. From the results of the study it was also found that the growth in the number of pensions is something that needs to be considered because the growth in the number of pensions will affect the amount of expenditure (pension expenditure).

Step-According to the resource persons, the strategic steps that can be taken to maintain the Resilience of the BPJS Ketenagakerjaan Pension Guarantee Program Fund are by maintaining the collectibility of contributions, Extending the retirement age, and managing funds properly and wisely. (choose the right and wise investment instrument), Determine the minimum membership, and Conduct regular evaluations and studies on the formula for program benefits and contributions associated with the Indonesian economy at that time.

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