

Dynamic System for Analyzing the Effect of Growth (Government Spending, Population, Wages) and (Alk and Kor (Technology)) on Economic Growth

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Subject Area : Economic

Abstract

Indonesia's Economic Improvement After the Covid Pandemic, economic growth will be influenced by various factors. This study tries to analyze the Growth Modeling (Government Spending, Population, Wages) and (Alk and Kor (Technology)) of the economy needed to be able to analyze its effect on economic growth. This study used dynamic system modeling using Vensim. This growth is a form of economic growth that will have an effect on job creation and it will have a major effect on the unemployment rate. The results of the first simulation show that labor needs will be influenced by real wage or real wages, then by Short run Expected Demand, and Alfa. While the Alpha Forming Elements themselves are KOR (Capital Output Ratio), Life Of capital (ALK) and Real Interest Rate. The results of Simulation 2 show that the increasing economy will also increase the number of workers and capital, but that does not reduce unemployment. This is because the state of the kor and alk is considered constant. Furthermore, it will be tested in the next simulation when the alk dank or is not considered constant. The results of Simulation 3 ALK that continue to rise or in other senses the depreciation is getting bigger, it can reduce the level of upgrading, because the speed of innovation and technology makes companies have to make new machines quickly.

Keywords: *Economic Growth, Dynamic System, Simulation*

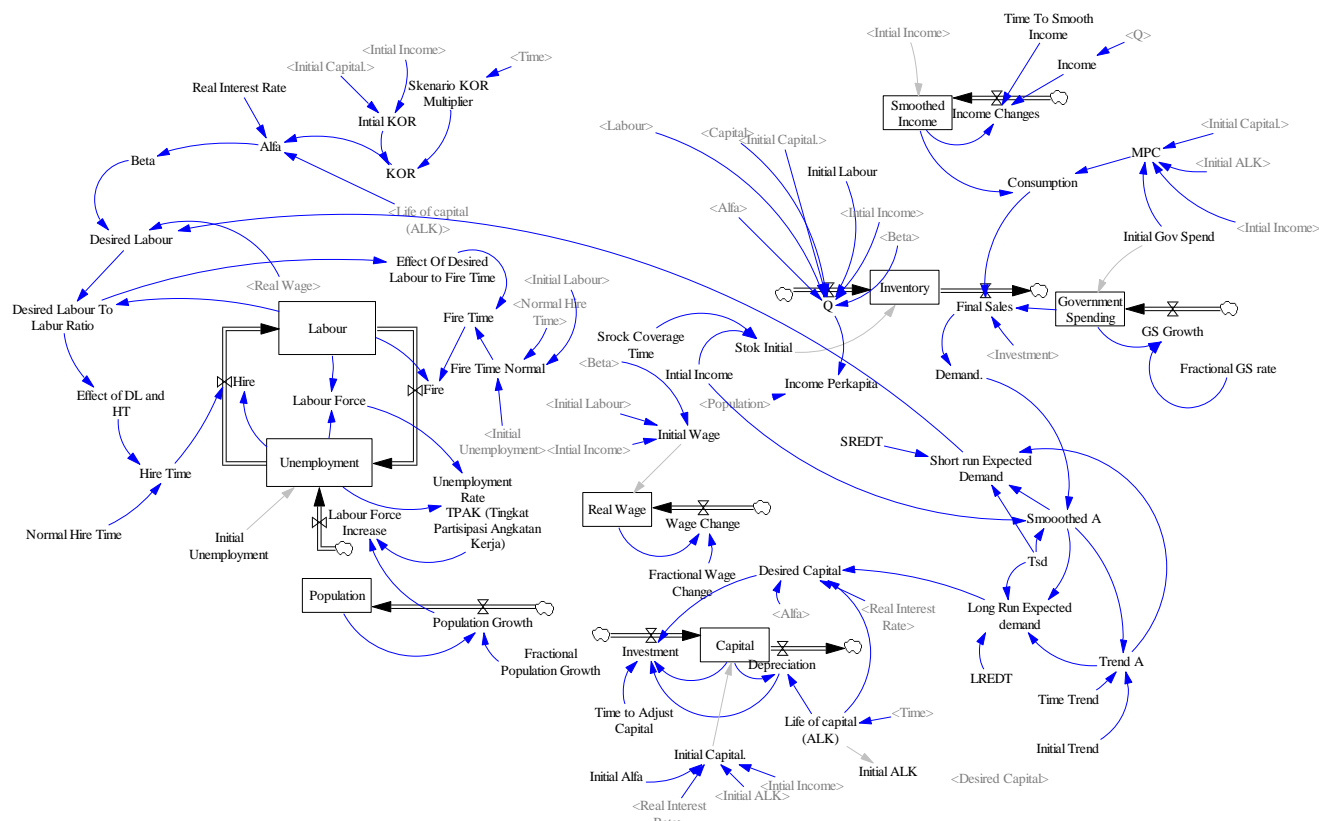
Introduction/Background

Indonesia's economic growth in the third quarter of 2022 again recorded an impressive performance by being able to grow by 5.72% (yoy) continuing the solid growth trend since the beginning of 2022 (Kementrian Keuangan n.d.). Economic growth is one of the indicators of successful development in an economy. The progress of an economy is determined by the amount of growth shown by

changes in national output. The change in output in the economy is a short-term economic analysis (Adisasmitta 2013).

Economic growth is the process of increasing per capita output in the long term. The pressure is on three aspects, namely: process, per capita output and long-term. Economic growth is a process, not an economic picture at some point. Here we see the dynamic aspect of an economy, namely how an

economy develops or changes over time. The pressure is on the change or development itself (Boediono 1999).



Simulation 1

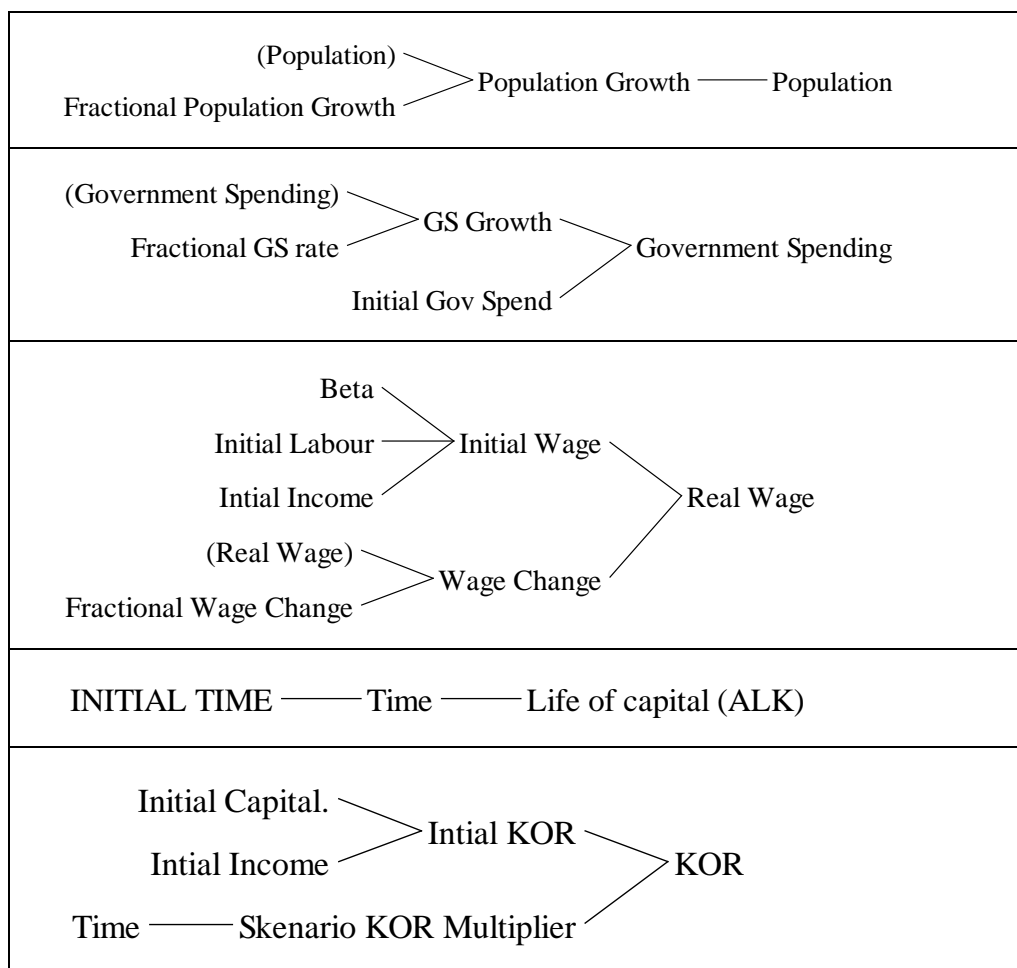
In the current Simulation Model we will look at the influence of Government Spending, Population, Wage Growth, Alk and Kor on economic growth. In Solow's growth model, in addition to being determined by capital growth and labor growth; the level of economic growth (income or Gross Domestic Product, GDP) of a region is also determined by the rate of technological progress, which is considered an exogenous magnitude. In the context of policy analysis, the above Solow model cannot be used. Therefore, the

theory of economic growth with technology as an endogenous variable is still developing.¹

As we know that the Capital output ratio is a capital coefficient that shows the relationship between the size of the investment and the value of the output. The increase in the amount of investment will be followed by an increase in purchases of capital goods such as machinery or equipment and other means of production. These capital goods are used to establish new industries and companies. This growth is a form of economic growth that will have an effect on job creation and it will have a major effect on the unemployment rate.

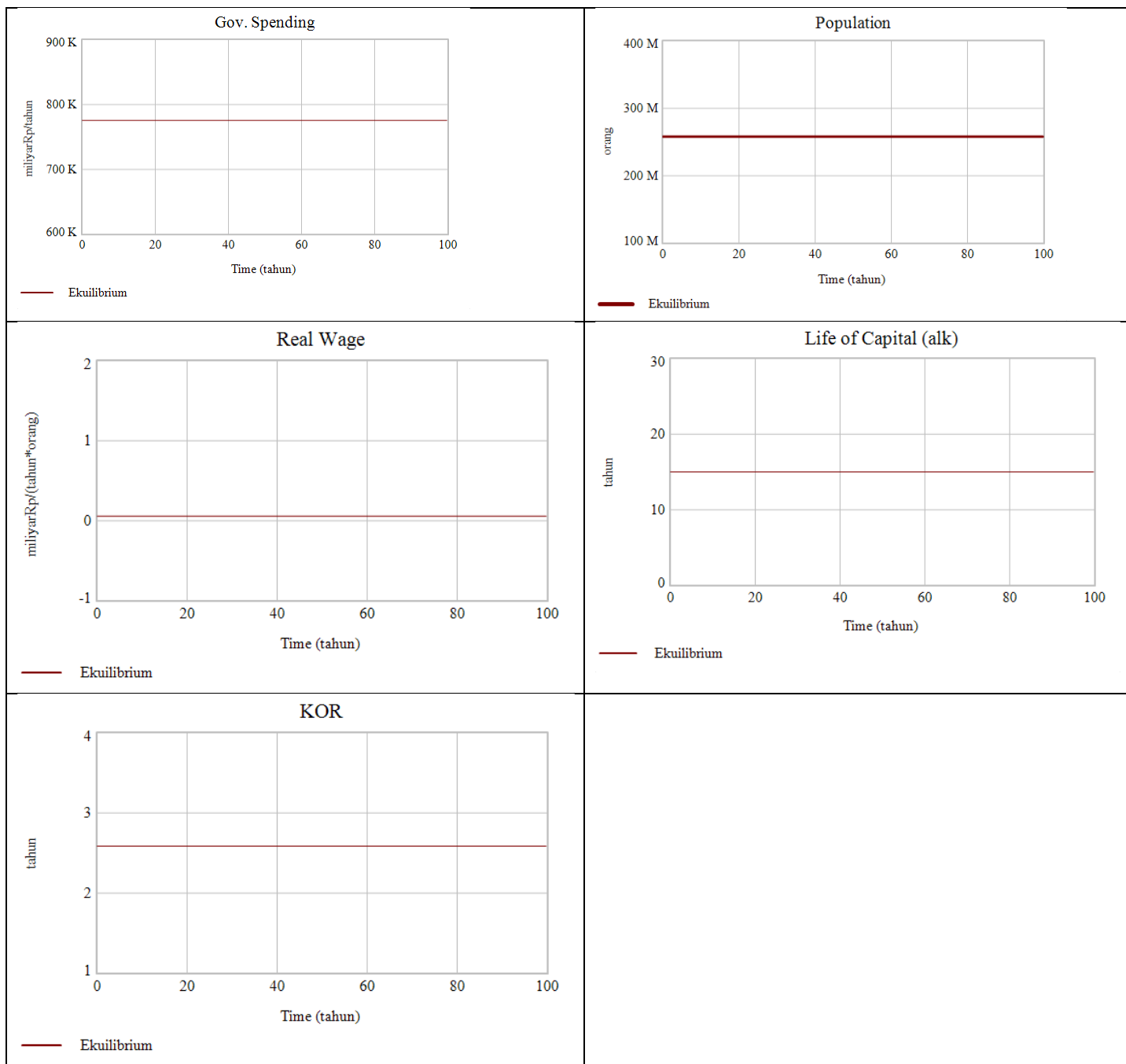
¹ Lihat Jurnal Peran teknologi dalam perekonomian indonesia: suatu model system dynamics oleh

muhammad tasrif, Warta KIML Vol. 12 No. 2 Tahun 2014



The table above describes the variables that determine Government spending, Population, wages, alk, and Kor. Each variable is determined by different components, such as Population determined by Population growth, then GS determined by GS growth and Gv Spending, then Wages determined by initial wages and wage changes, then alk determined by time, and the last is the kor determined by initial KOR and KOR Multiplier Scenarios. In the first simulation, the data

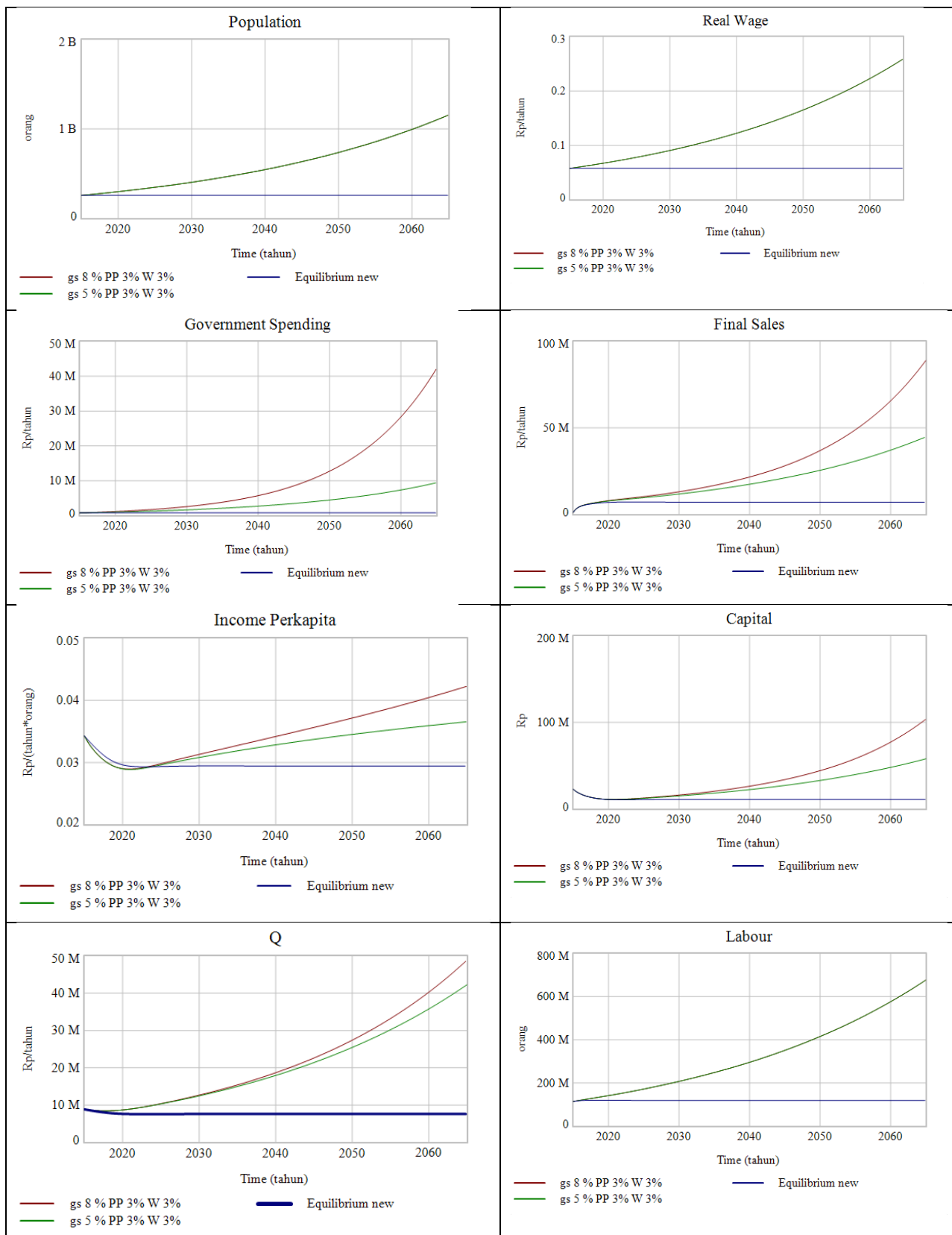
was taken from GDP in 2021, consumption in 2021, labor needs in 2021 and average wages in 2021. Labor needs will be influenced by real wage or actual wages, then by Short run Expected Demand, and Alfa. While the Alpha Forming Elements themselves are KOR (Capital Output Ratio), Life Of capital (ALK) and Real Interest Rate. For the First Simulation all components are in an equilibrium state, the graphic form is :

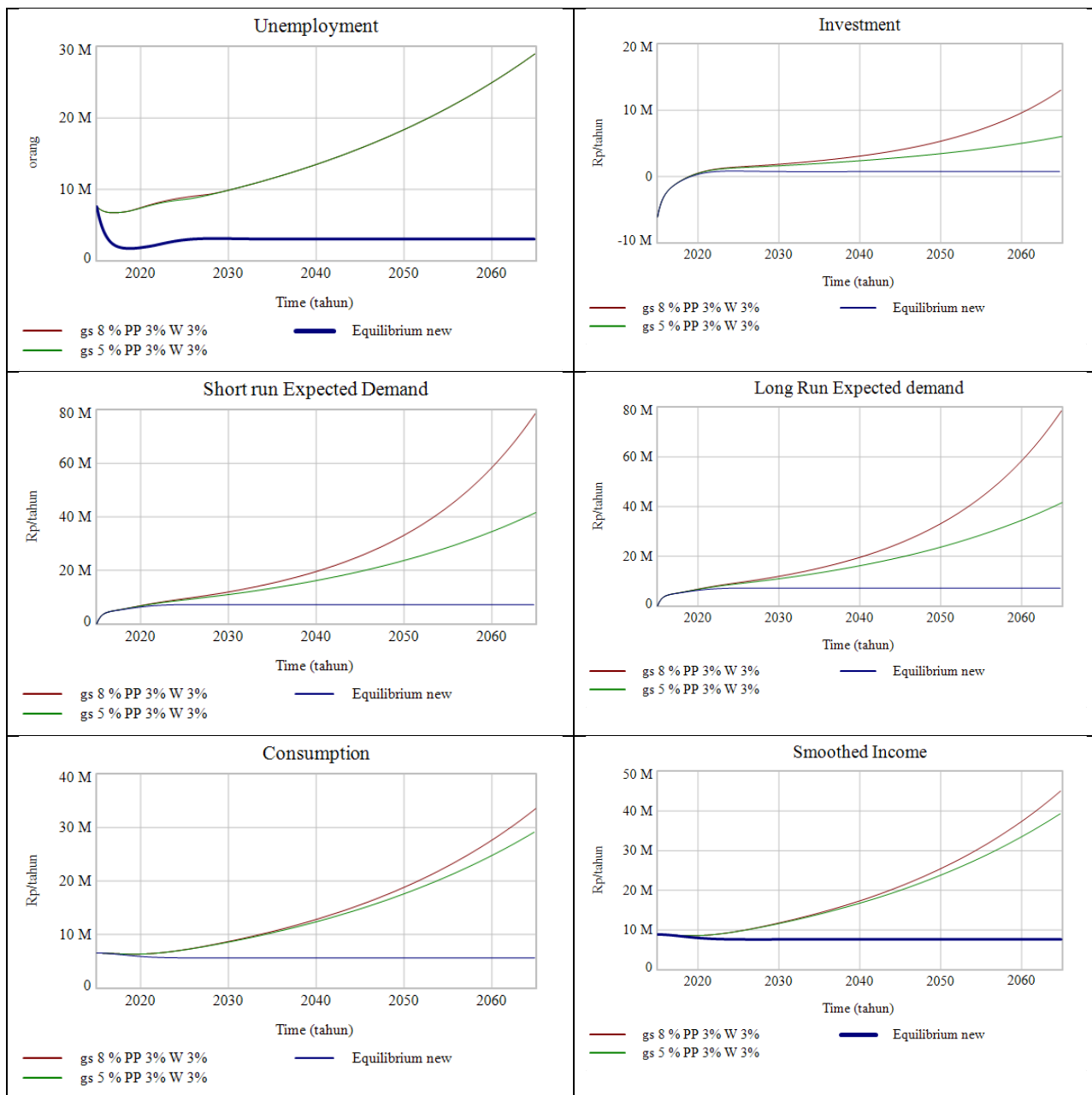


Simulation 2

In Simulation 2 We will see changes in Gov spending, Population, Kor, and Alk. In this scenario

Gov Spending is assumed to be 0.05 and 0.08, Population growth of 0.03 and Wage Growth of 0.03. The visible graphic results are:

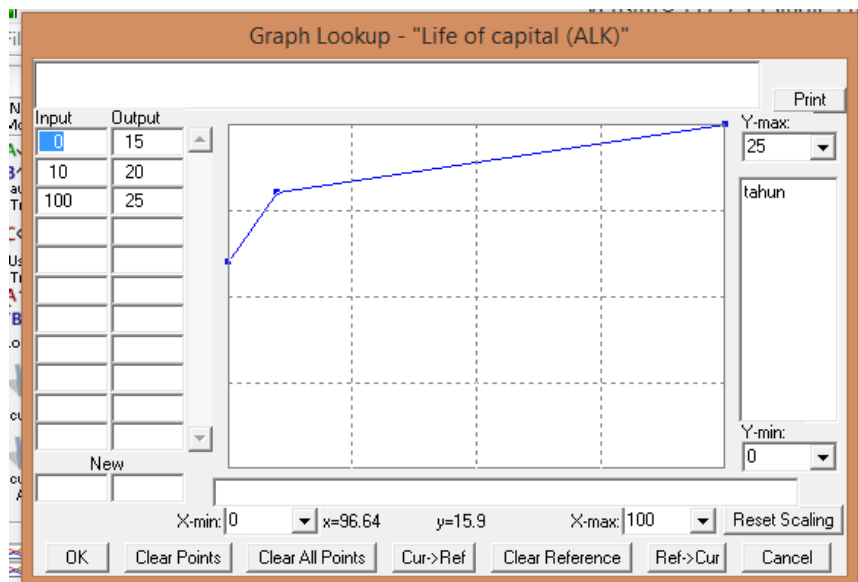




In the Chart, it can be seen that when government growth rises and is so high that it can indeed improve the economy in a country, it can be seen from the increase in consumption and investment. However, behavior shows that rising The economy will also increase the number of workers and capital, but that does not reduce unemployment. This is because the state of the kor and alk is considered constant. Furthermore, it will be tested in the next simulation when the alk dank or is not considered constant.

Simulation 3

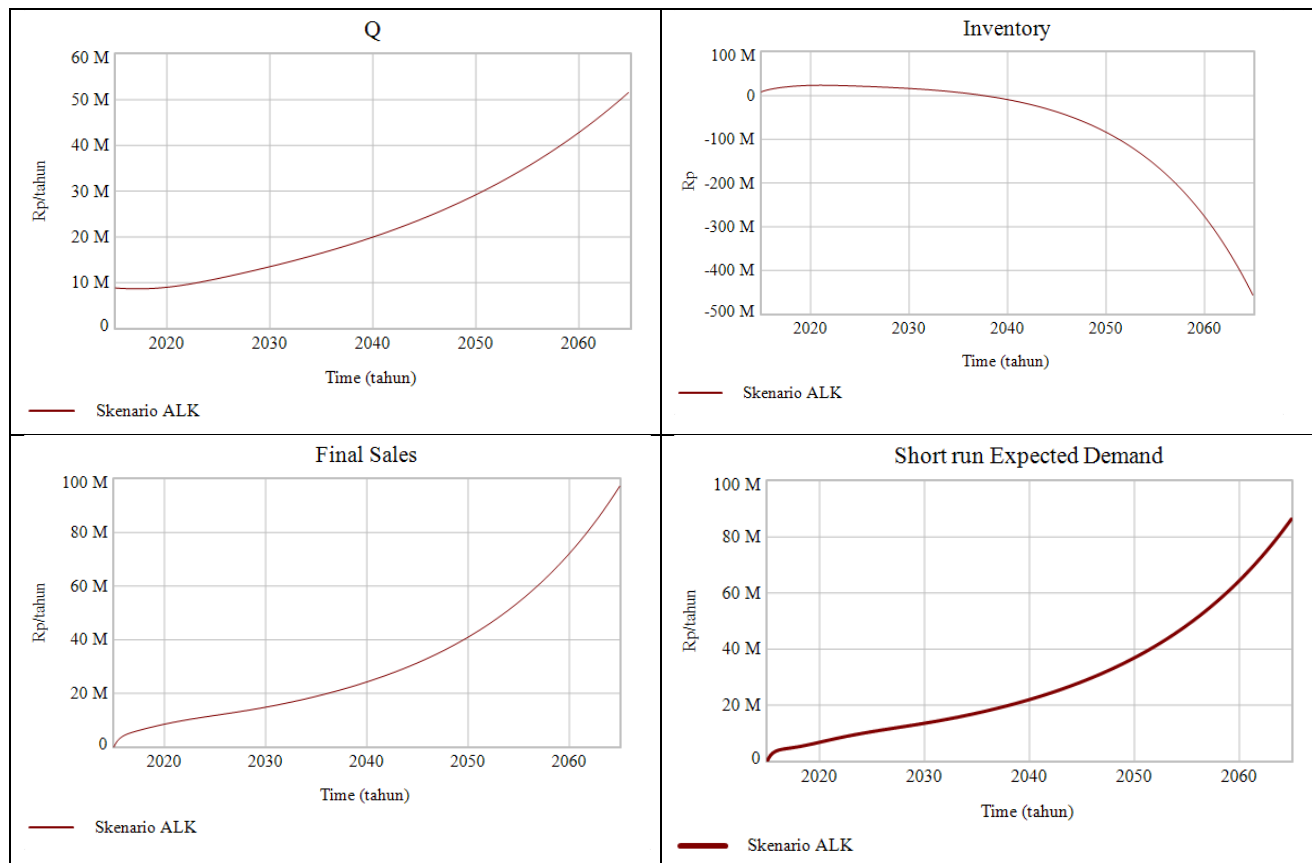
In the third simulation, Alk and Kor's growth scenario will be scenaried against time.

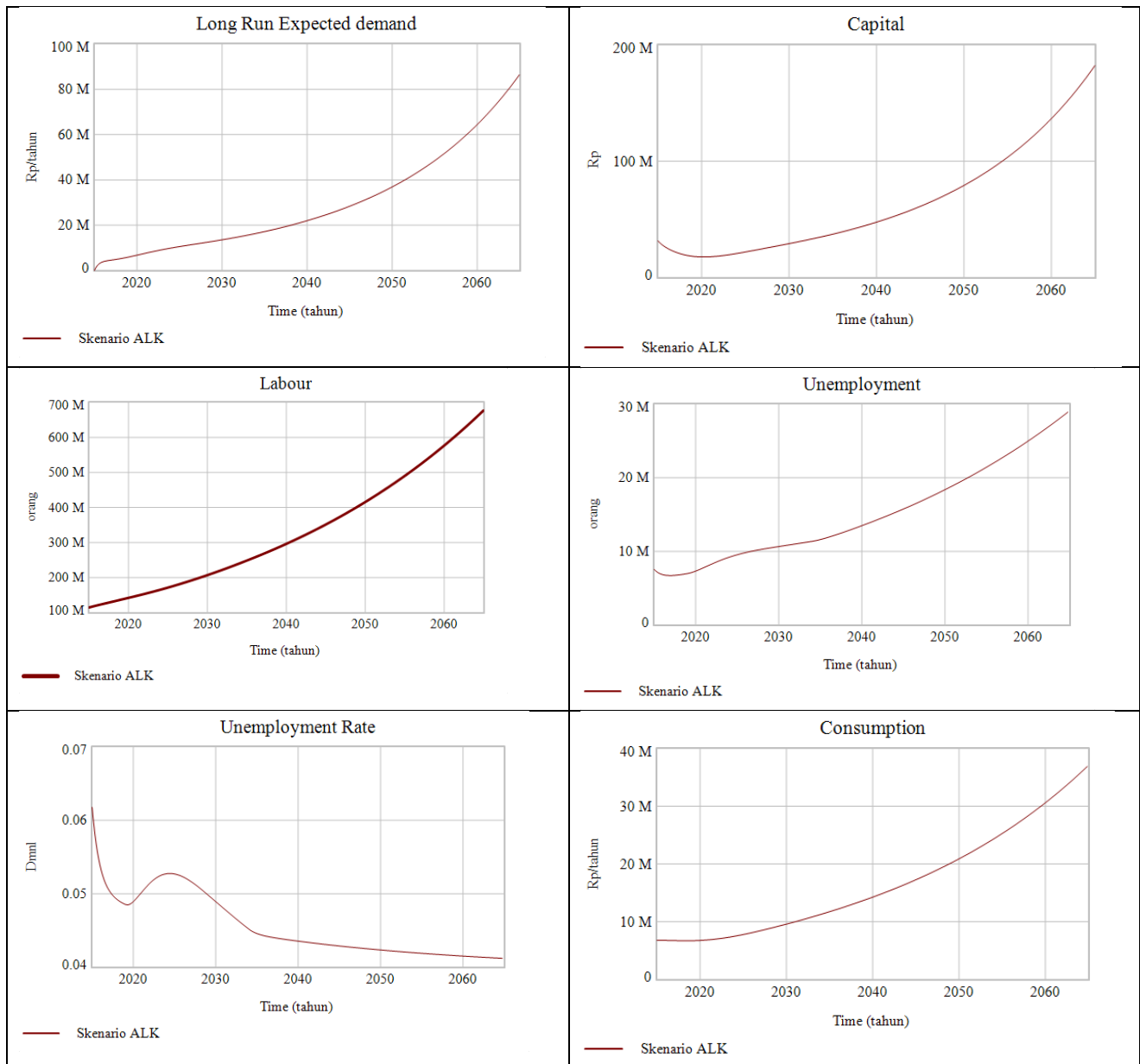


Made a scenario as shown below:

Researchers assume that the life of the machine will increase by the rest of the year. For the GS scenario, population, and wages are still the same as the

previous simulations. Then I want to see what happens to Income per capita, Inventory, labour and others. The behavioral graph is as follows :





It can be seen that with the ALK scenario continuing to rise or in another sense, the depreciation is getting bigger, it can reduce the level of upgrading, because the speed of innovation and technology makes companies have to make new machines quickly. This is because the shortening life of the machine makes the production of the machine faster and more. This also makes the stock continue to decrease even to a minus state.

CONCLUSION

Output growth is influenced by technological advances which are also influenced by the production factors of Capital and Labour. When technology increases, the life of capital or engine life becomes smaller. Technology will continue to accelerate and cannot be controlled, causing the unemployment rate to decline. In contrast to the KOR (Capital Output Ratio) technology will experience a relatively low increase, this is in accordance with the assumption of the model at the beginning, KOR is desired to be stable and should

even be able to go down. Because the smaller the KOR, it will indicate that the more conducive the political system of a State, that way economic growth will not be peppered by the instability of the condition of the political system. The economy will be better with technological improvements, although it will have to reduce the life of the engine. Technological Advancements will boost growth in output per worker. Technological Advances can explain the improvement of living standards for both workers, wages, and capital

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