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The Impact of the Corona Virus Pandemic on the Macro Economy and the Tourism Industry in the Digital Age

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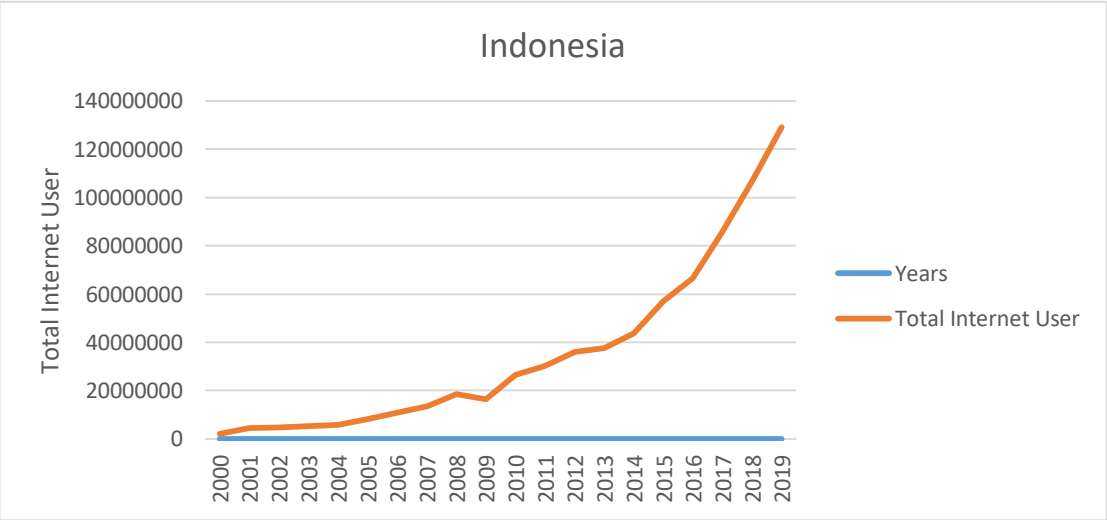
Abstract

The purpose of this study was to investigate the macroeconomic impact of the corona virus in 3 countries in Asia, namely Indonesia, Malaysia and Thailand. With the macroeconomic impact and the tourism industry in 3 countries in Asia, it can be understood the pattern of the impact of the virus pandemic on the economy and the gap in gradual economic recovery solutions by taking into account the impact of the pandemic on human health, especially in the tourism industry. We found that each country has different economic buffer can be used as a basis for policy making to recover the economy in each country based on the economic buffer of each country.

Keyword : Corona Virus,Digital Age,Tourism
JEL Classification: M1,L8,E3

Introduction

Today, it is easier to find out about destinations through digital tourism sites. Customers can do anything on their cell phones(Tüzün, et al, 2020; Wood, 2017). Due to the coronavirus, people around the world have canceled their travel plans (Hudson, 2020; Mallya & Silva, 2020).



Source: World Bank. Processed

In plain view, the virus pandemic is hitting not only the health of the world community but also the global economy. Focusing on isolation and restricting human movement also hampers the economy which has an impact on many things in the economic field that are likely to have an impact on humanitarian crises such as hunger and food shortages as well as other impacts that are not yet known.

Literature Review

Pandemic Covid 19

The Coronavirus is putting enormous pressure on health care systems around the world (Bal, et al, 2020; Fredj & Chérif, 2020).

The impact of the coronavirus pandemic is not only on the health sector. But also, the economy and business with declining demand for electricity and oil globally and changes in the behavior of companies and consumers globally (Donthu & Gustafsson, 2020; Norouzi, et al, 2020).

The coronavirus has the potential to trigger the world economic crisis (Sharif, et al, 2020; Nicola, et al, 2020). Policies to restrict social movements and lockdown have triggered an economic downturn and layoffs of labor (Lawreniuk, 2020). This pandemic also has an impact on the macroeconomy. The economic crisis due to the coronavirus has never occurred in world economic history. (Brakman, et al, 2020; Iqbal, et al, 2020).

The coronavirus pandemic is hitting the global economy hard and of course, it has an impact on various industries, especially the tourism industry globally. In addition, the coronavirus pandemic has a major impact on tourism around the world (Zenker & Kock, 2020; Fong, et al, 2020). However, the Crisis caused by disease is nothing new in tourism. The scenario that can be taken to restore the tourism industry is a gradual opening (Assaf & Scuderi, 2020; Tsionas, 2020).

Digital Technology

Digital technology can be a breakthrough to help deal with the corona pandemic. Technology is potentially more productive for identifying, isolating and quarantining infected individuals (Kummitha, 2020).

Digital technology can play a role in restoring creative tourism, revitalizing socio-culture and economy, through the means of a joint creation process involving various stakeholders (Marques & Borba, 2020). Digital marketing practices can be used to increase tourism sales and demand (Alford & Jones, 2020).

Digital Technology and Tourism

Tourism and hospitality companies around the world are moving towards offering more sustainable products. The achievement of sustainable marketing in the small and medium-scale tourism industry is closely related to the sophistication of a website that is owned (Tiago, et al, 2020).

The development of digital technology has not only penetrated the market but also the ease of payment (Rashideh, 2020). The development of financial technology, such as the birth of electronic money, which was pioneered by the birth of bitcoin in 2009, facilitates cross-border transactions. Synthetic money strengthens the role of e-commerce and financial technology with transactions between countries as a means of payment such as electronic money, which is increasingly booming in developing countries such as Indonesia, Thailand, and Malaysia and crypto money become an investment commodity in Japan (Bawono, & Prestianawati, 2019).

The impact of digital content marketing is on the success of the sustainable tourism industry which is strengthened by its impact by electronic word of mouth such as reviews, social media, and traveler and tourism forums (Bu, et al, 2020).Digital technology has taken root in today's modern society(Li, et al, 2020).

Grand Theory

The coronavirus pandemic has reduced demand on the global market, resulting in a decrease in production and unemployment for economic resources. This includes laying off workers so that people's income in general decreases and consumption decreases so that production is also reduced, followed by decreasing market demand to autonomous limits. Where based on Keynes' income theory, 2019, people's consumption is autonomous plus the desire to increase consumption when income rises. When income decreases, the desire to consume also decreases with the lowest limit of zero or zero limits, so that the lowest limit of consumption for the community is autonomous or the minimum cost of living.

To recover the economy based on the Keynesian income theory, demand must be gradually formed. In order to shape the demand, it requires a gradual opening of businesses and a gradual easing of social restriction policies so that production can proceed according to demand. When production begins to creep up, economic resources begin to be productive so that the income of each element of society can increase along with the access of each individual to the input of the production resources they have. Where economic growth is based on an entrepreneur's profit because the increase in entrepreneur's profit encourages entrepreneurial motives to develop businesses and encourages investors to increase their investment by considering interest rates and investor expectations.

Mathematical Equation

As literature reviews, the coronavirus can trigger a global economic crisis and have a major impact on the tourism industry and has never happened in the modern era in the past. To understand the pressure pattern of the corona pandemic we look from two points of view. The microeconomic point of view through the tourism industry recovery approach by adapting the Tsionas, 2020 mathematical model as follows:

Before the Corona Virus Pandemic:
$Ic = TR - TC - K$
Where
Ic = Company profit or income
TR = Total Revenue or Total Company Revenue
TC = Total Variable Cost or Total Variable Cost
K = Fixed Costs

During the Corona pandemic, I = limit 0 due to lockdowns and social restrictions.
After the Corona Virus Pandemic or the entry into force of the new normal with the existence of a gradual opening policy by reducing the maximum capacity or decreasing income by h% and the presence of virus-related factors notified a. So that the mathematical model after the pandemic or the entry into force of the new normal is as follows:

$Ic = h.TR - a.TC - K$

Where is the difference between normal profits before the corona pandemic and after the new normal is implemented.

TR / TC = (1-a) / (1-h)

So that the change in the new balance of returns notified g is as follows:

TR / TC = g

So that the value of the factors related to the coronavirus denoted a is
a = 1 - g (1-h)
So as to restore to normal profit before the coronavirus with a gradual opening up to the following relevant conditions:
$a \leq 1 - g (1-h)$
So that this upper limit becomes positive or returns to normal. Then the conditions of income and expenses are towards
$h \geq 1 - 1 / g$

with a macroeconomic approach modifying the previous model with the Keynes, 1937 macroeconomic approach as follows
Y = C
Where
Y is income
C is consumption
Where
C = a + b. yd
Where
C = consumption
a = autonomous
b = the desire to consume from the increase in income
yd = disposable income where yd = Y - SC
SC = Social cost including tax

From the individual's point of view, when consumption equals income then
Y = C where C = a + b.yd
When consumption is less than income then C = a - b.yd where - b.yd = debt or debt or D so that C = a + D where Y = C - D
Where d is the debt that must be obtained to meet the minimum needs or someone's life will be disrupted because their minimum needs are not met. When the accumulated individual D is greater than GDP, there will be a severe crisis.

When consumption is greater than income then
Y = C + S where S is income that is not consumed
When the income is not consumed, the individual can decide to save his money with a precautionary motive or increase his consumption or invest the money to increase future income so that
S is equivalent to I or $S \approx I$ where I is an investment

Based on the micro-production approach where Y = income and Y = TR where TR is formed from sales or transactions that occur. TR itself is channeled to investors, employers, workers, and owners of production resources
TR = Y = YI + YE + YL + YS
Where

YI + YE = Ic
And
YL + YS = TC + K
So that
Ic = TR - TC - K
Where
YI = Investor or owner's income
YE = Entrepreneur or Entrepreneur income
YL = Worker's or employee's income
YS = The income of the resource owner, both raw materials and machines, and the owner of the fixed cost resource
TR itself is the sales price multiplied by sales or
TR = P x S
Where
P = Price
S = Sales
S itself is equivalent to production where production requires variable costs (TC) plus fixed costs (K) where S is demand.
So it can be said that production follows demand. And production growth follows Ic (company profit). Cumulative production can be reflected from GDP (Gross Domestic Product) where GDP itself reflects economic productivity and Ic cumulatively is GDP growth. So it can be said that economic recovery can be carried out by increasing demand accompanied by reproducing idle economic resources due to the coronavirus pandemic.

Where GDP itself is the cumulation of productivity which is influenced by the level of consumption, investment, government spending, and net exports.

Returning to the consumption and income approach where C = Y where there is I which makes changes to Y in the future where Y is currently influenced by consumption and investment in the past. So that GDP = f (C, I)

From the mathematical modeling above, a new model can be obtained before the corona pandemic and the new normal takes effect. Adapt from the Tsionas equation, 2020 then

Pre-pandemic GDP / normal GDP = 1
GDP new normal / GDP normal = h
Where GDP = cumulative TR and TR = YE + YI

Pre-pandemic C / normal GDP = 1
C new normal / GDP normal = a

Where TC = YS + YL = C the cumulative community

Our assumption is a fixed investment where fixed costs are not affected by how many units of product are produced so that I = K

Method
The scope of research

In writing this study, the scope of the research will be discussed, namely simulating the impulse response between the GDP, investment and consumption variables in ASEAN 3.

Data and Data Sources

The type of data used in this study is quantitative data, while the data source in this study is secondary data. Secondary data is data that already exists, and has been collected for research purposes (Jain & Ohri, 2020).

Population and Sample

Population

The data population can be defined as the set of all possible observations (Ofungwu, 2019). The population in this study is all consumption, investment and GDP in Asean 3, either recorded or recorded as world bank.

Sample

The sample is data that has essential characteristics of the population where the sample is taken (Andreasen & McDonald, 2019). The sample in this study is represented by all consumption, investment and GDP in Asean 3, both recorded by the world bank.

Method of collecting data

To obtain representative data (sample), as a basis for determining this sample, the authors do several ways, including:

- Library research, namely by studying the literature related to the title.
- Collecting secondary data from the Ministry of Transportation of the Republic of Indonesia and secondary data from the World Bank.

Research Variables and Operational Definitions

This sub-chapter describes in detail the variables in the study as well as the operational definitions of each research variable. The research variable description and operational definition describe the research variables so that these variables are specific and measurable.

Research variable

Research variables are the qualities, traits, or characteristics identified in the objectives and objectives of the study or the identifiers of characteristics in the research objectives and objectives or questions that are observed or measured in a study (Grove, 2014).

Operational Definition of Variables

The operational definition is a precise description of how variables in a study will be manipulated and measured (Kreiger, 2020).

Dependent Variable

The dependent variable is considered dependent on the independent variable (McGrath, et al, 2019). In this study, the VAR method was used to see the responses and impulses between variables so that the dependent variables in this study were GDP, investment, and consumption.

Independent Variable

Independent variables are variables that are believed to be predictors that cause fluctuations in the dependent variable (Vallabhaneni, 2019). The independent variables of this study use the VAR method to see the response and impulse between variables so that the independent variables in this study are GDP, Investment and Consumption.

Descriptive Statistical Analysis

Descriptive statistics are statistical analysis used to analyze data by describing or describing data without intending to make general conclusions or generalizations (Rostamkhani & Karbasian, 2020).

Data analysis method

This research is a hotel industry business research where the data analysis used is business analysis. Data analysis in business research is a method for determining what the business is doing now (its activities) and what data is needed to support these activities (Evans, 2019).

Research Model

Based on the mathematical model and literature review, it can be simulated the likelihood of responses and impulses between variables with unknown future economic data. To see the responses and impulses of the key economic variables that we discuss in this journal, we use the Vector Autoregression (VAR) method to estimate the possible future events based on a simulation of the application of the new normal. Follows the following equation model:

$Y_t = C + A_1 Y_{t-1} + ... A_p Y_{t-p} + e_t$

Where $Y_t=(Y_{1t},...,Y_{Kt})$ is a set of K time series of variables, c is K x 1 vector of constants, A is K x K coefficient matrix and e_t is the error terms

We focus on simulating pre-corona response and impulse and simulating the application of the new normal based on past data sets assuming variables outside the key variables we studied do not change..

Results and Discussion

Each country has differences in economic strength due to differences in economic policies that have an impact on the macro economy of each country, differences in natural and human resources and differences in the advantages of each country which of course have differences in making policies in maintaining the economy, especially in times of economic crisis.

Prior to the exposure to the Covid 19 pandemic, Asean had been exposed to the previous economic storm, namely the 1997 Asian financial crisis with each country responding with different responses and impacting the economy of each country, especially ASEAN 3, namely Indonesia, Malaysia and Thailand.

This, of course, has a different response from each economic variable such as GDP, investment and consumption which ultimately impacts each sector. One of the sectors that was hit very hard in the era of the Covid 19 pandemic in 2020 is the tourism sector.

Economic growth, which ultimately boosts investment and consumption, of course has an impact on the tourism sector. Because increased consumption, especially tourism consumption, will be a driving force for tourism. Likewise, investment in tourism will consider the GDP of the investment destination country.

To understand which economic variables should be prioritized in economic recovery during the Covid-19 pandemic in 2020, it is necessary to simulate the response and impulse of each variable in each country in the research object, namely Indonesia, Malaysia and Thailand.

Based on the results of our estimates and simulations by following the mathematical equations previously described, it can be seen for the country of Indonesia with the pre-corona GDP variable R square 0.979395, investment variable 0.730886 and consumption 0.997216, it can be seen that a fairly strong economic driver is an increase in domestic production with the domestic market along with a quite significant investment boost even though it is underpowered.

So it is very appropriate if domestic businesses with domestic markets such as umkm are strengthened and prove to be Indonesia's strongest buffer against the Asian financial crisis in 1997. However, currently after the corona virus hit Indonesia. And the new normal is applied with a simulation of the application of a 50% capacity policy, there is a change in the economic drive of the variable we studied, namely R square GDP, there is a drastic decrease of 0.486336, investment there is a slight weakening of the drive with an R square value of 0.672893. However, surprisingly the boost from domestic consumption has actually increased with an R square value of 0.998565. From these figures, it can be seen that the Indonesian state received a severe economic blow but was saved by Indonesia's demographics.

So that the main focus in improving the Indonesian economy is not to bring in investors, nor to boost domestic production but to increase domestic consumer confidence in domestic spending. As well as the implementation of easing consumption, of course, by meeting the prevailing health protocols and increasing the use of technology. This also applies to the tourism industry.

Where the increase in domestic consumer consumption is actually more significant in recovering the domestic tourism industry by comparing the pre and new normal GDP response and impulse charts and consumption in Indonesia has increased even though it is sloping. This means that the domestic market should be optimized. And our advice is that the promotion of overseas tourism should be reduced and allocated to Indonesia's social safety net because this can stimulate lower-level consumption. The r-square of each variable tested in the three countries and the strength of the constants for each variable are attached.

Pre Corona Simulation

This study simulates the response and impulse for each variable in each country using the mathematical equations described earlier and uses the Vector Autoregression (VAR) method of response and impulse between pre-corona variables and the implementation of the new normal in Indonesia, Malaysia and Thailand.

From the estimation results of the three key variables that we examined, namely consumption, investment and pre-corona GDP, are as follows:

Indonesia Pre Corona

VAR Model - Substituted Coefficients:
==========
GDP = 1.42851896725*GDP(-1) - 0.557768783572*GDP(-2) - 4.82075824807*INVESTASI(-1) + 0.864272962291*INVESTASI(-2) - 0.000310663075397*KONSUMSI(-1) + 0.000343745379279*KONSUMSI(-2) - 8331891931.95

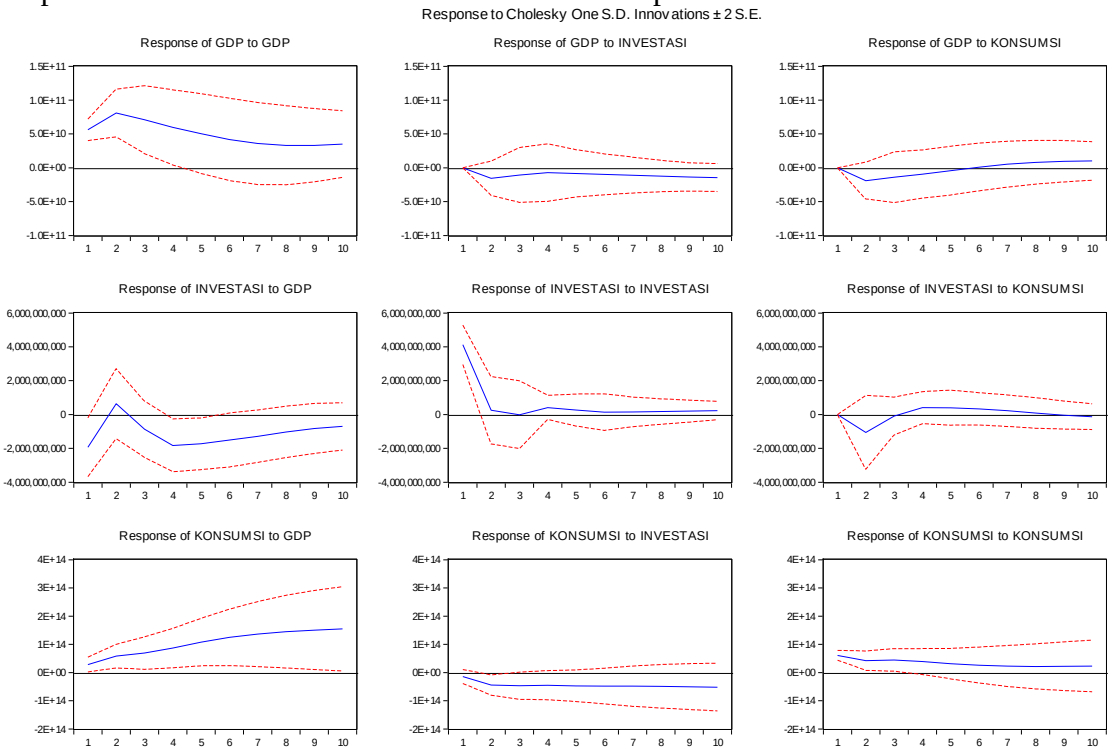
INVESTASI = 0.0201264422681*GDP(-1) - 0.0369251449611*GDP(-2) + 0.00220080132663*INVESTASI(-1) - 0.0600651175766*INVESTASI(-2) - 1.73262337846e-05*KONSUMSI(-1) + 1.658209029e-05*KONSUMSI(-2) + 4416139368.72

KONSUMSI = 398.564311593*GDP(-1) - 112.853026075*GDP(-2) - 8506.76475879*INVESTASI(-1) - 1113.55027358*INVESTASI(-2) + 0.686965607934*KONSUMSI(-1) + 0.232240858729*KONSUMSI(-2) + 2.67963298299e+14

From the direction of movement, the influence of the GDP variable constant before the current period on current GDP is negative. This indicates that cash out flow tends to be higher in Indonesia during the study period. The independent variable investment to the dependent variable GDP also has a negative direction, meaning that foreign investment is strong enough to encourage cash out flow in Indonesia. The good news is that there is a current consumption variable that is positive, which means that domestic consumption is the driving force of the Indonesian economy so that umkm with the domestic market becomes a buffer for the Indonesian economy. The Indonesian tourism market also tends to be stronger for domestic tourists with domestic economic strength and support for domestic technology inclusion.

Like dependent GDP and independent investment, dependent investment and independent GDP go in the opposite direction, this reinforces that foreign investment has a strong enough role in encouraging cash out flow during the study period. Judging from dependent consumption and independent consumption, it shows that the estimation results illustrate that Indonesia with a large population is able to become the backbone of the Indonesian economy without relying on foreign markets or exports.

In understanding the pull and impulse of the impulse response on each variable in Indonesia, with the previous description, a response impulse simulation was carried out with the results of the impulse response simulation for the Indonesian state in the pre-corona simulation as follows:



Malaysia Pre Corona

VAR Model - Substituted Coefficients:
==========
GDP = 1.09034639941*GDP(-1) - 0.426023980563*GDP(-2) - 1.5812131303*INVESTASI(-1) + 0.541335524055*INVESTASI(-2) - 0.235071579179*KONSUMSI(-1) + 0.473019350434*KONSUMSI(-2) - 9944089899.16

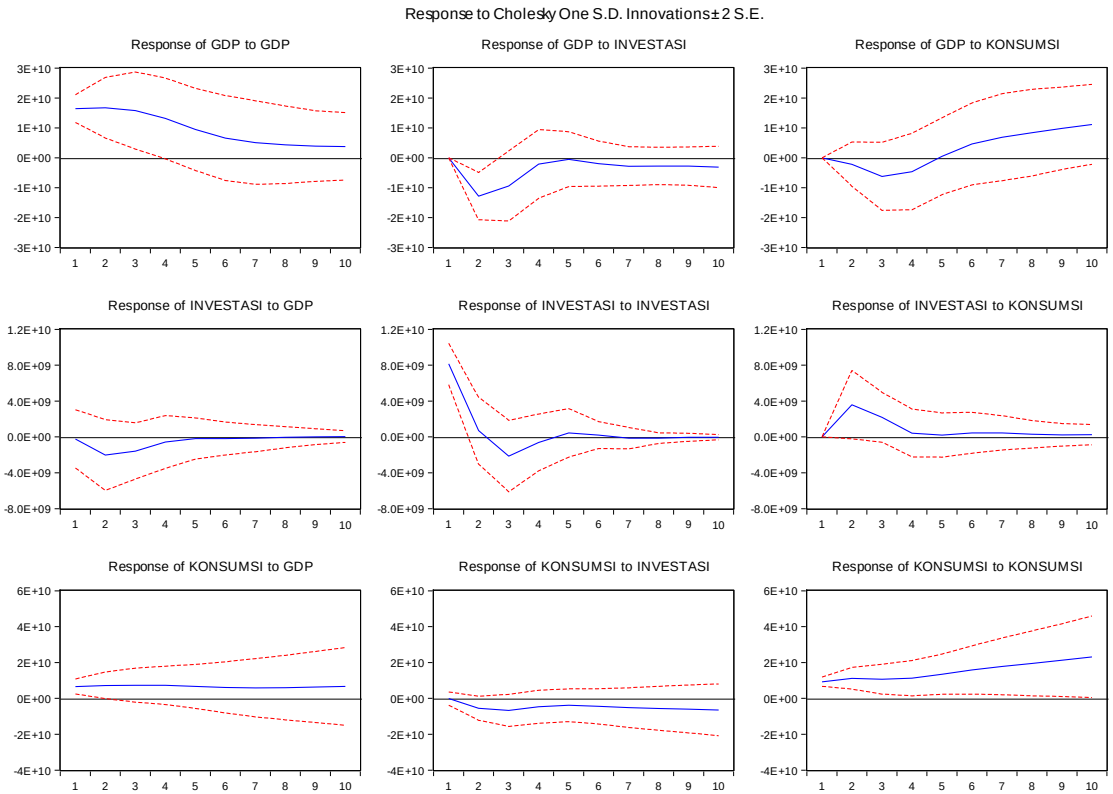
INVESTASI = - 0.277299390818*GDP(-1) + 0.154002936228*GDP(-2) + 0.0908559957526*INVESTASI(-1) - 0.448795436184*INVESTASI(-2) + 0.387228261958*KONSUMSI(-1) - 0.331434507388*KONSUMSI(-2) - 3979919515.03

KONSUMSI = - 0.0520927758161*GDP(-1) - 0.0909315791798*GDP(-2) - 0.666894305647*INVESTASI(-1) - 0.027482891424*INVESTASI(-2) + 1.20440840746*KONSUMSI(-1) - 0.0528770987075*KONSUMSI(-2) - 8214449587.41

From the direction of movement, the influence of the GDP variable constant before the current period on current GDP is negative. This indicates that cash out flow tends to be higher in Malaysia during the study period. The independent variable of investment to the dependent variable of GDP is also negative for the current period and positive for the before period, which means that foreign investment entering Malaysia is quite strong in driving the economy in Malaysia. Current consumption variable is negative, which means that Malaysia's exports are quite high in the study period.

Like dependent GDP and independent investment, dependent investment and independent GDP go in the opposite direction, this reinforces that foreign investment has a fairly strong role in the economy during the study period. In terms of dependent consumption and independent consumption, it shows that Malaysia's exports are strong enough to boost the economy. In the tourism industry when viewed from its macro economy, Malaysia's tourism industry still relies on business travelers and foreign tourists.

In understanding the pull and impulse of the impulse response on each variable in Malaysia with the previous explanation, a response impulse simulation was carried out with the results of the impulse response simulation for the Malaysian state in the pre-corona simulation as follows:



Thailand Pre Corona

VAR Model - Substituted Coefficients:

==========

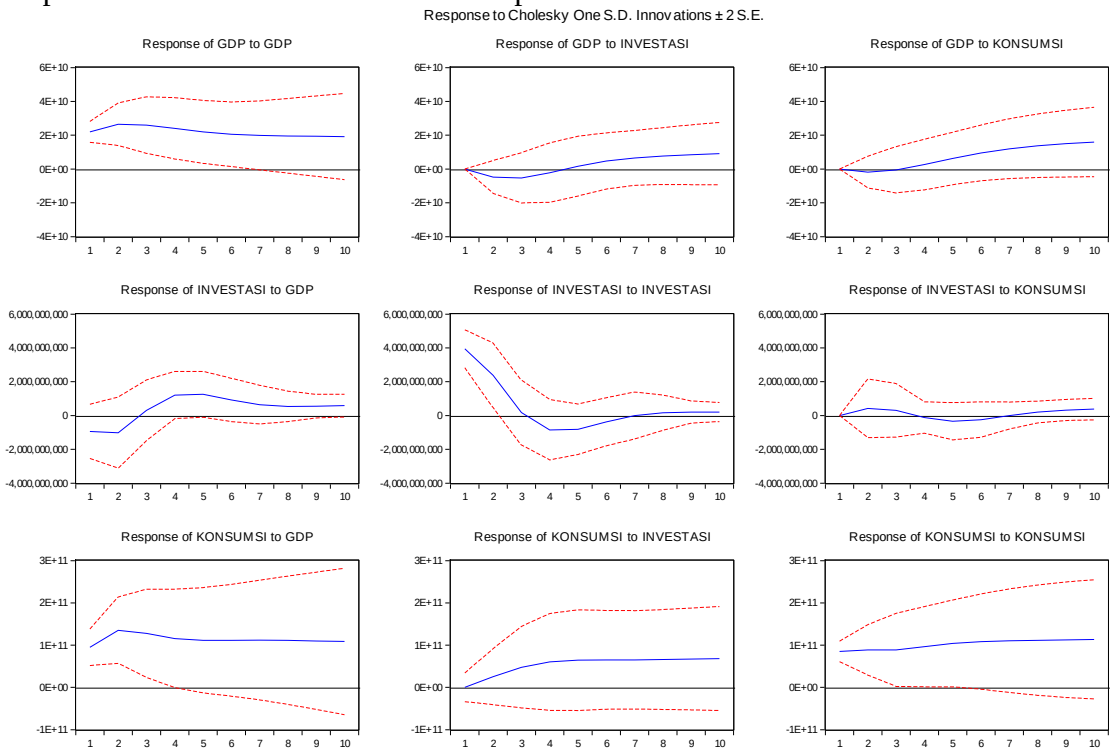
GDP = 1.24600750898*GDP(-1) - 0.409380026927*GDP(-2) - 1.20858518752*INVESTASI(-1) + 1.02517159291*INVESTASI(-2) - 0.0213584294744*KONSUMSI(-1) + 0.0490069526902*KONSUMSI(-2) - 46992117858.2

INVESTASI = - 0.0416547385007*GDP(-1) + 0.0679210435887*GDP(-2) + 0.602183130427*INVESTASI(-1) - 0.399536357593*INVESTASI(-2) + 0.00490738619677*KONSUMSI(-1) - 0.00534370668005*KONSUMSI(-2) - 4295732873.74

KONSUMSI = 1.93024270815*GDP(-1) - 2.31346725004*GDP(-2) + 6.34203112341*INVESTASI(-1) + 3.90488282746*INVESTASI(-2) + 1.04257070089*KONSUMSI(-1) - 0.0344629224154*KONSUMSI(-2) + 152700663833

From the constant direction of the dependent variable GDP with GDP independent in the current time period is positive and before time period is negative, meaning that there is a balance between cash out flow and cash inflow in Thailand. Likewise, the investment and consumption variables illustrate the balance of attraction and push between cash inflow and cash outflow. From the estimation results and descriptive macroeconomic statistics, it can be seen that in Thailand, business travelers and foreign tourists are quite significant in supporting the business performance of the hotel industry with a balance of foreign investment.

In understanding the pull and impulse of the impulse response on each variable in Thailand with the previous explanation, a response impulse simulation was carried out with the results of the impulse response simulation for Thailand in the pre-corona simulation as follows:



New Normal Simulation 50%

This study tries to simulate the data in the study period into the application of the new normal capacity of 50%. From the estimation results of the three key variables we studied, namely consumption, investment and GDP in the implementation of the new normal 50% economic capacity as follows:

Indonesia Implementing New Normal with 50% Capacity

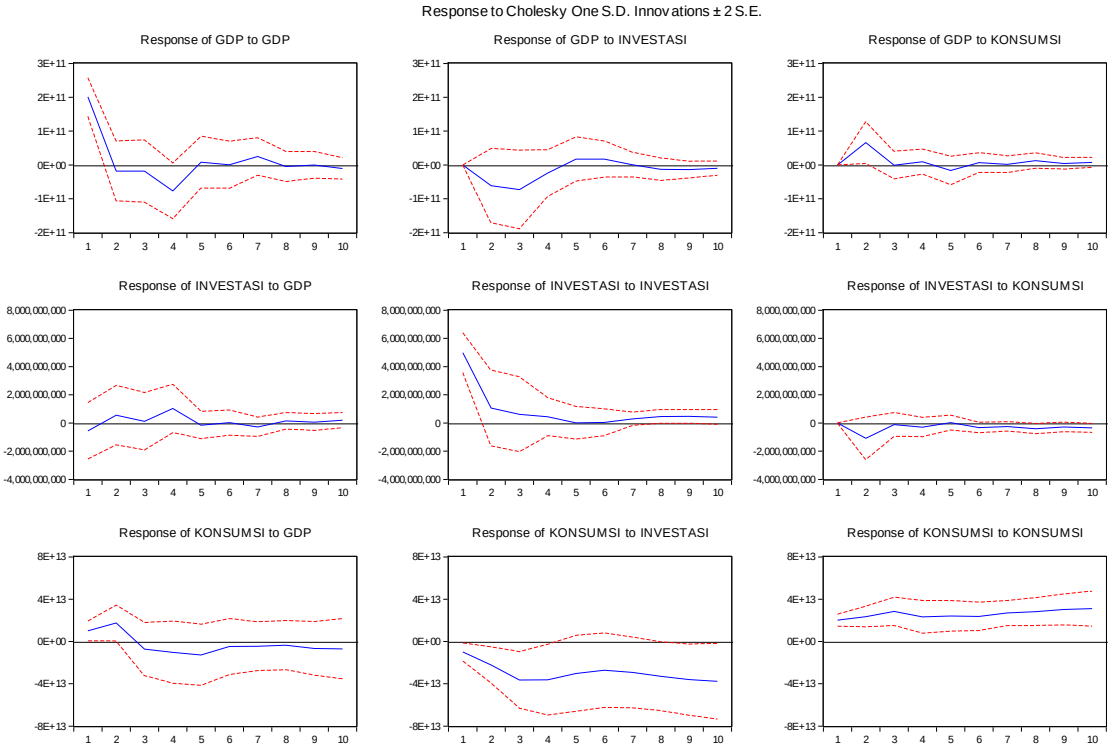
VAR Model - Substituted Coefficients:
==========
GDP = - 0.269871912709*GDP(-1) - 0.244272918866*GDP(-2) - 5.72311872911*INVESTASI(-1) - 8.56122152288*INVESTASI(-2) + 0.00328915355298*KONSUMSI(-1) - 0.00329349875971*KONSUMSI(-2) + 95559729144

INVESTASI = 0.00572648629604*GDP(-1) + 0.00335393602199*GDP(-2) + 0.104705552143*INVESTASI(-1) + 0.0172654194468*INVESTASI(-2) - 5.44125835633e-05*KONSUMSI(-1) + 4.49045140661e-05*KONSUMSI(-2) + 10889311010.6

KONSUMSI = 22.6261560853*GDP(-1) - 126.165059462*GDP(-2) - 2140.2379932*INVESTASI(-1) - 1632.20203227*INVESTASI(-2) + 1.16855079633*KONSUMSI(-1) - 0.147903512697*KONSUMSI(-2) + 3.76069113555e+13

From the direction of the constant pull and push, there is no change in direction, but there is a difference in the strength of the push and pull from the pre-corona virus as well as the presence of external factors that strengthen the economy stronger for Indonesia, which is seen in the error term which is positive either on Dependent GDP, consumption or investment. This shows that when the productivity of the Indonesian people is limited to 50%, there is a strong new external factor that comes from below or grass root, which relies on the consumption variable. This shows that the Indonesian people and their MSMEs have quite strong resistance to the economic crisis.

Because there are differences in the strength of the pull and push in the variable response impulse, the simulation results of the pre-corona and new normal 50% response impulse are different from the simulation results as follows:



Malaysia Implemented New Normal with 50% Capacity

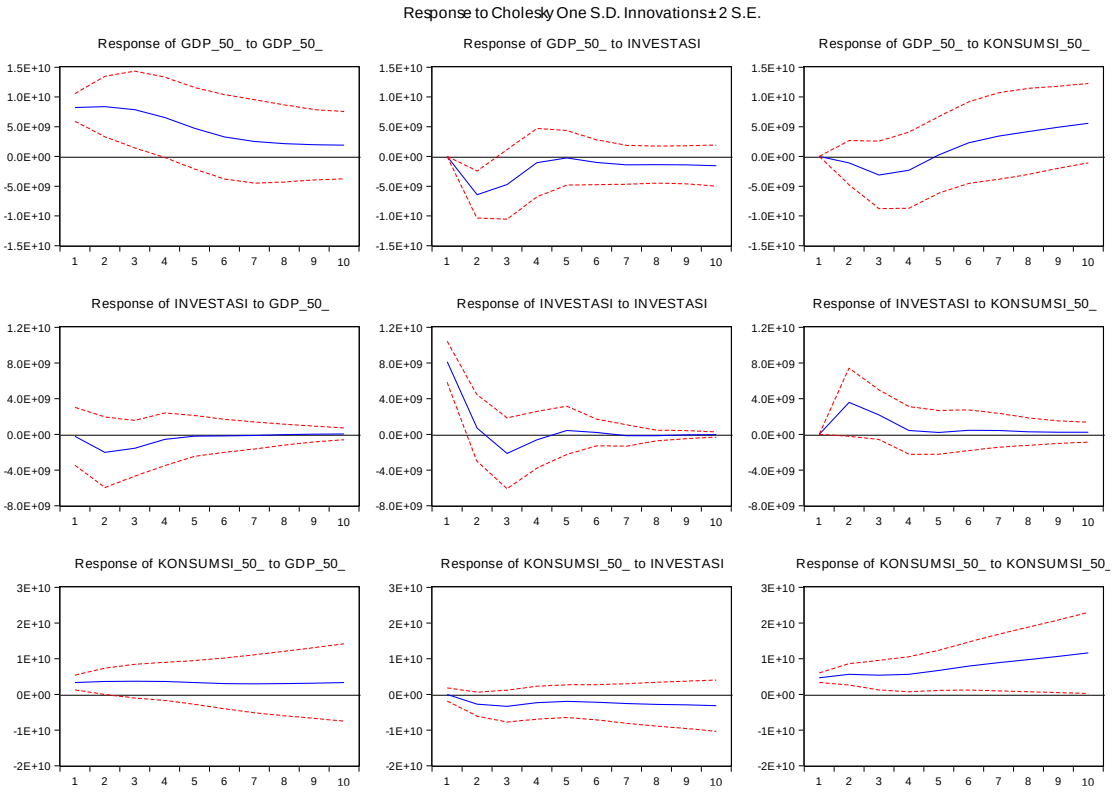
VAR Model - Substituted Coefficients:
==========
GDP_50_ = 1.08915273357*GDP_50_(-1) - 0.42486327591*GDP_50_(-2) - 0.791011476566*INVESTASI(-1) + 0.270503016574*INVESTASI(-2) - 0.23391661276*KONSUMSI_50_(-1) + 0.471798967915*KONSUMSI_50_(-2) - 4965324379.28

INVESTASI = - 0.554183856683*GDP_50_(-1) + 0.307490602933*GDP_50_(-2) + 0.0908446948435*INVESTASI(-1) - 0.448823017435*INVESTASI(-2) + 0.773955457896*KONSUMSI_50_(-1) - 0.662282515821*KONSUMSI_50_(-2) - 3983314644.72

KONSUMSI_50_ = - 0.0520909452795*GDP_50_(-1) - 0.0908861590722*GDP_50_(-2) - 0.333450216867*INVESTASI(-1) - 0.0137539479924*INVESTASI(-2) + 1.20442133672*KONSUMSI_50_(-1) - 0.0529255332799*KONSUMSI_50_(-2) - 4105483429.08

From the estimation results of the research period with a simulation of limiting productivity by 50%, there is almost no change in direction with pre-corona. However, external factors that have the same negative direction as external forces are stronger. This shows that the Malaysian export market is quite influential on the economy when productivity is limited by 50%, then there will be economic externalities which erode the economy quite large and the domestic market has not been strong enough to replace its export market.

Because there are differences in the strength of the pull and push in the variable response impulse, the simulation results of the pre-corona and new normal 50% response impulse are different from the simulation results as follows:



Thailand Implemented New Normal with 50% Capacity

VAR Model - Substituted Coefficients:

==========

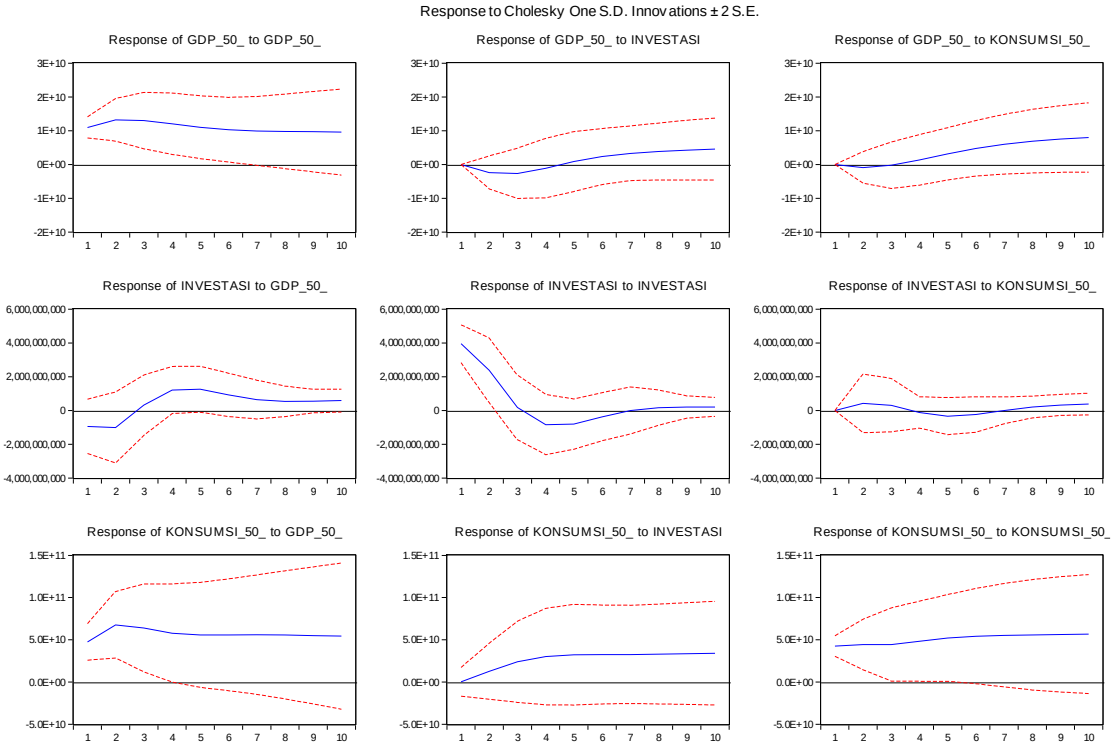
GDP_50_ = 1.2460075136*GDP_50_(-1) - 0.409380032848*GDP_50_(-2) - 0.021358424572*KONSUMSI_50_(-1) + 0.0490069477111*KONSUMSI_50_(-2) - 0.604292569611*INVESTASI(-1) + 0.512585808226*INVESTASI(-2) - 23496058932.5

KONSUMSI_50_ = 1.93024306656*GDP_50_(-1) - 2.31346757416*GDP_50_(-2) + 1.04257067543*KONSUMSI_50_(-1) - 0.0344629052457*KONSUMSI_50_(-2) + 3.17101583706*INVESTASI(-1) + 1.95244147155*INVESTASI(-2) + 76350341996.8

INVESTASI = - 0.0833094855342*GDP_50_(-1) + 0.135842094278*GDP_50_(-2) + 0.00981477250829*KONSUMSI_50_(-1) - 0.0106874132366*KONSUMSI_50_(-2) + 0.602183121602*INVESTASI(-1) - 0.399536353869*INVESTASI(-2) - 4295733091.97

From the estimation results, the productivity limitation of 50% in a constant direction does not change much even though the difference in the pull strength and impulse response changes because of the 50% limitation which can be considered to understand the potential that might occur is the direction of economic externalities in Thailand where there is an imbalance in GDP and investment, where Thailand tends to be stable in terms of cash inflow and cash out flow with a limit of 50%, there is an imbalance in these two variables. However, domestic consumption needs are sufficiently met and it helps the Thai economy. The imbalance of the two variables can trigger the possibility of conflict in Thailand related to the economy. When the country is unable to maintain a balance, the Thai economy could be threatened with a bigger imbalance gap.

Because there are differences in the strength of the pull and push in the variable response impulse, the simulation results of the pre-corona and new normal 50% response impulse are different from the simulation results as follows:



Conclusion

The corona virus pandemic has hit various industrial sectors including tourism. However, based on the estimation and simulation of the new normal 50% that we calculated and simulated, there is an expectation for the economy to return to normal with the enactment of the new normal. Where each country has a unique economic buffer that is used as a reference

In contrast to Indonesia, Malaysia and Thailand actually have a fairly large R square value in GDP and consumption at the new normal estimate of 50%. This reflects that the net exports of the two countries are strong enough to be used as a variable for the economic recovery of the two countries and the domestic market also has a strong enough incentive to help improve the economies of the two

countries. With the GDP impulse response to consumption that has an upward trend, it means that the economic recovery of the two countries to a normal growth rate like before the corona hit can be achieved in a relatively fast time. Our prediction is less than 5 years. Malaysia with the lowest R square in the investment variable, reflects that investment is not too strong to drive economic improvement in Malaysia so that it is quite focused on increasing domestic production and domestic consumer confidence.

Judging from the pull and push of each variable, it can be concluded that the Thai economy can be recovered well when cash inflow and cash flow balance are maintained, the State of Indonesia can be recovered well by increasing social safety networks, and encouraging the productivity of MSMEs. The Malaysian state maintains a balance of exports and imports by maintaining a positive net export value while still paying attention to the domestic needs of Malaysia.

In the tourism industry, Thailand needs a balance and stability of the business, economic and political climate because the market for the Thai tourism industry is reflected in foreign tourism with technology inclusion in the Thai tourism industry which is quite good, seen from the balance of cash inflow and cash out flow that reflects cultural encounters. domestic and foreign quite well. For Malaysia, the mapping of foreign tourists entering Malaysia is needed and tourism recovery can be encouraged by focusing on security and handling the outbreak first because the Malaysian export variable is good enough so that it can focus on handling the outbreak to its completion and encouraging foreign tourist arrivals by maximizing promotion and information technology. The Indonesian tourism industry is quite strong with domestic tourism and Indonesian consumption being the strongest driving force for the economy in ASEAN 3 and it can be the focus of the government to regulate regulations so that Indonesian people can consume domestic products including the domestic tourism industry. The existence of social restrictions abroad can be a trigger for braking domestic tourists traveling abroad and can be directed at domestic tourists so that the tourism industry can recover more quickly. The link between pandemics, information technology or digital and macroeconomics becomes an overview in collective decision making.

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Attachment
Estimation results for Indonesia Pre Corona

Vector Autoregression Estimates			
Date: 07/06/20 Time: 06:07			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP	INVESTASI	KONSUMSI
GDP(-1)	1.428519	0.020126	398.5643
	(0.21965)	(0.01781)	(267.890)
	[6.50373]	[1.13020]	[1.48779]
GDP(-2)	-0.557769	-0.036925	-112.8530
	(0.21574)	(0.01749)	(263.121)
	[-2.58543]	[-2.11112]	[-0.42890]
INVESTASI(-1)	-4.820758	0.002201	-8506.765
	(3.05936)	(0.24804)	(3731.33)
	[-1.57574]	[0.00887]	[-2.27982]
INVESTASI(-2)	0.864273	-0.060065	-1113.550
	(3.16017)	(0.25621)	(3854.29)
	[0.27349]	[-0.23444]	[-0.28891]
KONSUMSI(-1)	-0.000311	-1.73E-05	0.686966
	(0.00022)	(1.8E-05)	(0.26655)
	[-1.42149]	[-0.97785]	[2.57725]
KONSUMSI(-2)	0.000344	1.66E-05	0.232241
	(0.00020)	(1.6E-05)	(0.24779)
	[1.69197]	[1.00672]	[0.93726]
C	-8.33E+09	4.42E+09	2.68E+14
	(8.9E+10)	(7.2E+09)	(1.1E+14)
	[-0.09322]	[0.60944]	[2.45819]
R-squared	0.979395	0.730886	0.997216
Adj. R-squared	0.972527	0.641182	0.996288
Sum sq. resids	5.68E+22	3.73E+20	8.44E+28
S.E. equation	5.62E+10	4.55E+09	6.85E+13
F-statistic	142.5992	8.147699	1074.630
Log likelihood	-650.1514	-587.3419	-827.8093
Akaike AIC	52.57211	47.54735	66.78474
Schwarz SC	52.91339	47.88864	67.12603
Mean dependent	4.97E+11	-6.72E+09	3.49E+15
S.D. dependent	3.39E+11	7.60E+09	1.12E+15
Determinant resid covariance (dof adj.)		1.99E+68	
Determinant resid covariance		7.42E+67	
Log likelihood		-2059.892	
Akaike information criterion		166.4713	
Schwarz criterion		167.4952	

Estimation results for Malaysia Pre Corona

Vector Autoregression Estimates			
Date: 07/06/20 Time: 06:16			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP	INVESTASI	KONSUMSI
GDP(-1)	1.090346	-0.277299	-0.052093
	(0.26764)	(0.13266)	(0.18502)
	[4.07387]	[-2.09037]	[-0.28156]
GDP(-2)	-0.426024	0.154003	-0.090932
	(0.25662)	(0.12719)	(0.17740)
	[-1.66013]	[1.21079]	[-0.51259]
INVESTASI(-1)	-1.581213	0.090856	-0.666894
	(0.42565)	(0.21097)	(0.29424)
	[-3.71484]	[0.43066]	[-2.26649]
INVESTASI(-2)	0.541336	-0.448795	-0.027483
	(0.55708)	(0.27611)	(0.38510)
	[0.97173]	[-1.62540]	[-0.07137]
KONSUMSI(-1)	-0.235072	0.387228	1.204408
	(0.40098)	(0.19874)	(0.27719)
	[-0.58624]	[1.94837]	[4.34506]
KONSUMSI(-2)	0.473019	-0.331435	-0.052877
	(0.43338)	(0.21480)	(0.29959)
	[1.09146]	[-1.54297]	[-0.17650]
C	-9.94E+09	-3.98E+09	-8.21E+09
	(1.0E+10)	(5.0E+09)	(7.0E+09)
	[-0.98062]	[-0.79185]	[-1.17183]
R-squared	0.980456	0.328008	0.997070
Adj. R-squared	0.973941	0.104010	0.996094
Sum sq. resids	4.86E+21	1.19E+21	2.32E+21
S.E. equation	1.64E+10	8.14E+09	1.14E+10
F-statistic	150.4981	1.464338	1021.060
Log likelihood	-619.4299	-601.8824	-610.1996
Akaike AIC	50.11440	48.71060	49.37596
Schwarz SC	50.45568	49.05188	49.71725
Mean dependent	1.91E+11	4.33E+08	3.95E+11
S.D. dependent	1.02E+11	8.60E+09	1.82E+11
Determinant resid covariance (dof adj.)		1.53E+60	
Determinant resid covariance		5.73E+59	
Log likelihood		-1826.388	
Akaike information criterion		147.7911	
Schwarz criterion		148.8149	

Estimation results for Thailand Pre Corona

Vector Autoregression Estimates			
Date: 07/06/20 Time: 06:19			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP	INVESTASI	KONSUMSI
GDP(-1)	1.246008	-0.041655	1.930243
	(0.33159)	(0.06139)	(1.92588)
	[3.75772]	[-0.67853]	[1.00226]
GDP(-2)	-0.409380	0.067921	-2.313467
	(0.32879)	(0.06087)	(1.90964)
	[-1.24511]	[1.11580]	[-1.21147]
INVESTASI(-1)	-1.208585	0.602183	6.342031
	(1.21535)	(0.22501)	(7.05889)
	[-0.99443]	[2.67624]	[0.89845]
INVESTASI(-2)	1.025172	-0.399536	3.904883
	(1.17953)	(0.21838)	(6.85080)
	[0.86914]	[-1.82956]	[0.56999]
KONSUMSI(-1)	-0.021358	0.004907	1.042571
	(0.05496)	(0.01017)	(0.31920)
	[-0.38863]	[0.48230]	[3.26620]
KONSUMSI(-2)	0.049007	-0.005344	-0.034463
	(0.05314)	(0.00984)	(0.30866)
	[0.92216]	[-0.54312]	[-0.11165]
C	-4.70E+10	-4.30E+09	1.53E+11
	(3.5E+10)	(6.5E+09)	(2.1E+11)
	[-1.33059]	[-0.65699]	[0.74444]
R-squared	0.977510	0.582472	0.985199
Adj. R-squared	0.970013	0.443296	0.980265
Sum sq. resids	8.66E+21	2.97E+20	2.92E+23
S.E. equation	2.19E+10	4.06E+09	1.27E+11
F-statistic	130.3912	4.185148	199.6869
Log likelihood	-626.6461	-584.4801	-670.6275
Akaike AIC	50.69169	47.31841	54.21020
Schwarz SC	51.03298	47.65969	54.55148
Mean dependent	2.62E+11	2.97E+08	3.84E+12
S.D. dependent	1.27E+11	5.44E+09	9.07E+11
Determinant resid covariance (dof adj.)		5.43E+61	
Determinant resid covariance		2.03E+61	
Log likelihood		-1870.976	
Akaike information criterion		151.3581	
Schwarz criterion		152.3820	

Estimation results for Indonesia New Normal

Vector Autoregression Estimates			
Date: 07/07/20 Time: 19:07			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP	INVESTASI	KONSUMSI
GDP(-1)	-0.269872	0.005726	22.62616
	(0.21538)	(0.00537)	(26.3288)
	[-1.25301]	[1.06553]	[0.85937]
GDP(-2)	-0.244273	0.003354	-126.1651
	(0.21481)	(0.00536)	(26.2596)
	[-1.13714]	[0.62571]	[-4.80452]
INVESTASI(-1)	-5.723119	0.104706	-2140.238
	(11.2834)	(0.28155)	(1379.33)
	[-0.50722]	[0.37189]	[-1.55165]
INVESTASI(-2)	-8.561222	0.017265	-1632.202
	(11.5628)	(0.28852)	(1413.48)
	[-0.74041]	[0.05984]	[-1.15474]
KONSUMSI(-1)	0.003289	-5.44E-05	1.168551
	(0.00146)	(3.7E-05)	(0.17904)
	[2.24573]	[-1.48886]	[6.52670]
KONSUMSI(-2)	-0.003293	4.49E-05	-0.147904
	(0.00143)	(3.6E-05)	(0.17455)
	[-2.30656]	[1.26031]	[-0.84734]
C	9.56E+10	1.09E+10	3.76E+13
	(2.4E+11)	(6.0E+09)	(2.9E+13)
	[0.39785]	[1.81687]	[1.28081]
R-squared	0.486336	0.672893	0.998565
Adj. R-squared	0.315114	0.563858	0.998086
Sum sq. resids	7.28E+23	4.53E+20	1.09E+28
S.E. equation	2.01E+11	5.02E+09	2.46E+13
F-statistic	2.840391	6.171316	2086.937
Log likelihood	-682.0505	-589.7813	-802.2010
Akaike AIC	55.12404	47.74250	64.73608
Schwarz SC	55.46533	48.08379	65.07736
Mean dependent	2.89E+11	-6.72E+09	1.74E+15
S.D. dependent	2.43E+11	7.60E+09	5.62E+14
Determinant resid covariance (dof adj.)		4.08E+68	
Determinant resid covariance		1.52E+68	
Log likelihood		-2068.887	
Akaike information criterion		167.1909	
Schwarz criterion		168.2148	

Estimation results for Malaysia New Normal

Vector Autoregression Estimates			
Date: 07/07/20 Time: 19:17			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP_50_	INVESTASI	KONSUMSI_50_
GDP_50_(-1)	1.089153	-0.554184	-0.052091
	(0.26766)	(0.26519)	(0.18492)
	[4.06919]	[-2.08976]	[-0.28169]
GDP_50_(-2)	-0.424863	0.307491	-0.090886
	(0.25656)	(0.25420)	(0.17726)
	[-1.65597]	[1.20965]	[-0.51273]
INVESTASI(-1)	-0.791011	0.090845	-0.333450
	(0.21295)	(0.21099)	(0.14713)
	[-3.71455]	[0.43057]	[-2.26643]
INVESTASI(-2)	0.270503	-0.448823	-0.013754
	(0.27872)	(0.27615)	(0.19257)
	[0.97050]	[-1.62526]	[-0.07142]
KONSUMSI_50_(-1)	-0.233917	0.773955	1.204421
	(0.40110)	(0.39740)	(0.27712)
	[-0.58319]	[1.94755]	[4.34626]
KONSUMSI_50_(-2)	0.471799	-0.662283	-0.052926
	(0.43349)	(0.42949)	(0.29950)
	[1.08837]	[-1.54201]	[-0.17672]
C	-4.97E+09	-3.98E+09	-4.11E+09
	(5.1E+09)	(5.0E+09)	(3.5E+09)
	[-0.97897]	[-0.79266]	[-1.17158]
R-squared	0.980432	0.327930	0.997070
Adj. R-squared	0.973909	0.103906	0.996094
Sum sq. resids	1.22E+21	1.19E+21	5.81E+20
S.E. equation	8.22E+09	8.14E+09	5.68E+09
F-statistic	150.3096	1.463818	1021.022
Log likelihood	-602.1155	-601.8839	-592.8713
Akaike AIC	48.72924	48.71071	47.98971
Schwarz SC	49.07053	49.05200	48.33099
Mean dependent	9.56E+10	4.33E+08	1.97E+11
S.D. dependent	5.09E+10	8.60E+09	9.09E+10
Determinant resid covariance (dof adj.)		9.61E+58	
Determinant resid covariance		3.59E+58	
Log likelihood		-1791.757	
Akaike information criterion		145.0206	
Schwarz criterion		146.0444	

Estimation results for Thailand New Normal

Vector Autoregression Estimates			
Date: 07/07/20 Time: 19:22			
Sample (adjusted): 1994 2018			
Included observations: 25 after adjustments			
Standard errors in ( ) & t-statistics in [ ]			
	GDP_50_	INVESTASI	KONSUMSI_50_
GDP_50_(-1)	1.246008	-0.083309	1.930243
	(0.33159)	(0.12278)	(1.92588)
	[3.75772]	[-0.67853]	[1.00226]
GDP_50_(-2)	-0.409380	0.135842	-2.313468
	(0.32879)	(0.12174)	(1.90964)
	[-1.24511]	[1.11580]	[-1.21147]
INVESTASI(-1)	-0.604293	0.602183	3.171016
	(0.60768)	(0.22501)	(3.52945)
	[-0.99443]	[2.67624]	[0.89845]
INVESTASI(-2)	0.512586	-0.399536	1.952441
	(0.58976)	(0.21838)	(3.42540)
	[0.86914]	[-1.82956]	[0.56999]
KONSUMSI_50_(-1)	-0.021358	0.009815	1.042571
	(0.05496)	(0.02035)	(0.31920)
	[-0.38863]	[0.48230]	[3.26620]
KONSUMSI_50_(-2)	0.049007	-0.010687	-0.034463
	(0.05314)	(0.01968)	(0.30866)
	[0.92216]	[-0.54312]	[-0.11165]
C	-2.35E+10	-4.30E+09	7.64E+10
	(1.8E+10)	(6.5E+09)	(1.0E+11)
	[-1.33059]	[-0.65699]	[0.74444]
R-squared	0.977510	0.582472	0.985199
Adj. R-squared	0.970013	0.443296	0.980265
Sum sq. resids	2.16E+21	2.97E+20	7.30E+22
S.E. equation	1.10E+10	4.06E+09	6.37E+10
F-statistic	130.3912	4.185148	199.6869
Log likelihood	-609.3174	-584.4801	-653.2988
Akaike AIC	49.30540	47.31841	52.82390
Schwarz SC	49.64668	47.65969	53.16519
Mean dependent	1.31E+11	2.97E+08	1.92E+12
S.D. dependent	6.33E+10	5.44E+09	4.53E+11
Determinant resid covariance (dof adj.)		3.39E+60	
Determinant resid covariance		1.27E+60	
Log likelihood		-1836.319	
Akaike information criterion		148.5855	
Schwarz criterion		149.6094	