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## **THAI BUSINESS CYCLE FROM MACROECONOMIC MODEL USING BVAR AND MS-BVAR METHODS**

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### **Abstract**

*This study aims to determine the impact of important components of Thai business cycle during prosperity and depression phases. The BVAR and MS-BVAR models are used to analyze the relationship of each variable. The variables consist of population, GDP, inflation, balance of payments, government cash balance, interest rate, and exchange rate. The data correlated in this study are secondary data during 1979 to 2014 obtained from various sources including World Bank World Development Indicators and the Global Development Finance database, World Resources Institutes (WRI), and Bank of Thailand (BOT). The results of this study indicate that each variable in this model has statistical significant relationship. From the analysis, each variable has different impact on Thai business cycle during prosperity and depression phases.*

## **Keywords**

Business cycle, Macroeconomic model, BVAR, MS-BVAR

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## **1. Introduction**

Nowadays, it is an unavoidable fact that business cycle becomes more and more important in the field of economics. Business cycle or economic cycle can be shortly defined as the upward and downward movements of Gross Domestic Product (GDP) levels. Business cycle is also referred to the period of expansions and contractions in the level of business fluctuations around its trend of long-term growth (Madhani, 2010).

Understanding the characteristics and statistical properties of business cycles is very essential in forming the basis for the construction and validation of theoretical business cycle models. In addition, understanding the cyclical patterns in economic activity and their causes is extremely crucial to the decisions of policymakers. As a consequence, the design of macroeconomic stabilization policies is a critically important policy objective for both developed and developing countries. Therefore, a detailed understanding of the business cycle from macroeconomic model and the interaction between policies is a very important objective in the field of economics (Male, 2010).

Despite not being a developed country, the business cycle has a great importance to the economy of Thailand. Thai economy oscillates from time to time with different frequency, intensity and duration. Therefore, the business cycle of Thailand needs to be examined in order to understand the characteristics of business cycle. The principal objectives of the study were as follows.

- To examine the characteristics of Thai business cycle during prosperity and depression phases.
- To determine the impact of important components of Thai business cycle during prosperity and depression phases.

In this study, population, GDP, inflation, balance of payments, government cash balance, interest rate, and exchange rate are both dependent and independent variables. As a result, the model is based on the VAR approach because each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables. The data analysis is operated by Bayesian Vector Auto regression (BVAR) and Markov Switching Bayesian Vector Auto regression (MS-BVAR) methods.

## **2. Literature Review**

Dong (2007) attempts to find out whether efficiency wage considerations can help better understanding of real business cycle theory. Extending the work of Uhlig & Xu (1996), a new model is developed to analyze effort and business cycles. The results demonstrate that variability of effort due to efficiency wage considerations help in explaining the large cyclical movements in employment as well as the low cyclical movements in real wages. In the model, technology fluctuates bigger than that in Hansen's (1985) model, but only 1.5 times bigger. It is concluded that efficiency wage theories help understanding real business cycles in some extent.

Arellano (2008) develops a small open economy model to investigate default risk and its interaction with output, consumption, and foreign debt. Her study utilizes a model where interest rates respond to output fluctuations through endogenous time-varying default probabilities. The model makes a prediction that default incentives and interest rates are higher in recessions based on the data set. The model is able to match multiple features of the data, including the volatility of interest rates, the negative correlation between output and interest rates, the negative correlation between the trade balance and output, and the high volatility of consumption relative to income.

Male (2009) attempts to make an important contribution to the literature of the business cycle by extending and generalizing the developing country stylized facts. Male examines both classical and growth cycles for a sample of thirty-two developing countries. The results show that there is the persistence of output fluctuations in developing countries and the strong positive relationship between the magnitude of this persistence and the level of economic development. One of significant finding of this study is the model underestimates output persistence in low inflation countries and overestimates output persistence in high inflation countries.

Wongpunya (2009) documents the stylized facts of the business cycle in Thailand and analyzes the ability of real business cycle models to capture these facts. Her study adopts the basic framework of real business cycle theory to test the ability to explain the salient business cycle features of the Thai economy. The results show that the volatility of investment and government spending are higher than that of aggregate output. Besides, consumption in the model is less volatile than that of output. These variables are procyclical and are persistent in general. On the contrary, net exports are highly volatile and countercyclical. The models indicate a high level of persistence and co-movement with output. One of the most important results is consumption fluctuates more than output does.

Bhattacharya et al., (2013) study the extent to which financial integration impacts of terms of trade shocks on business cycle volatility in emerging economies. Based on this empirical evidence on the potential role for terms of trade fluctuations in propagating the business cycle of an emerging economy, this study uses a small open economy real business cycle model with exogenous terms of trade shocks to investigate the effect of financial openness in this relation. Their results indicate that the nature of openness might influence their ability to absorb external shocks. More important, they find that in the presence of terms of trade shocks, as financial openness increases, business cycle volatility decreases. By increasing capital account openness, emerging economies can borrow and lend in international financial markets, which may help absorb shocks to the economy and stabilize the business cycle.

### **3. Theory**

#### **3.1 Macroeconomic Models**

Macroeconomic model is an analytical tool used to explain the operation of the economy of any region or country. Macroeconomic model is parable of the world. As in any other parable or theory, the macroeconomic model is not expected to be extremely close to reality. However, it is certain that macroeconomic model helps economists in understanding the consequences of economic policies in the real world (Gimenez & Jacobs, 2008).

#### **3.2 Economic Models at the Bank of Thailand (BOT)**

The Monetary Policy Committee (MPC) utilizes economic models as tools to communicate with the public about their policy decision. The MPC emphasizes that using different types of economic models during the process of forecasting and policy analysis is very important (BOT, 2008c).

#### **3.3 Business Cycle Facts**

According to the real business cycle theory, the economic fluctuations are mainly caused by productivity shocks. These productivity shocks are measured by the Solow residual or the change in output that cannot be interpreted by labor and capital changes (Evans, 1992). In the real business cycle theory, the market is always cleared by adjusting prices. When firms cannot sell their products at current prices, they have to choose either reducing their rate of output or decreasing their prices. Whatever the choice the firms choose, it will lead to more quantity of demand and thus clear the market (Lucas, 1972, 1973).

### 3.4 The Neoclassical Growth Model (The Solow-Swan Model)

Solow (1956) and Swan (1964) assume constant return to scale and diminishing returns to each input. The production function is consisted of three inputs which are capital, labor, and labor augmenting technology. Another assumption is that a certain fraction of output is invested in a capital next period. Saving rate is an exogenous variable in this model. The model indicates that the economy will eventually converge to a steady state no matter where the starting point of capital is. In the steady state, various variables grow at a constant rate as a ratio of the rate of technology which is predetermined.

### 3.5 The Basic Neoclassical Growth Model

The neoclassical aggregate production function takes the following form:

$$Y_t = F(K_t, N_t X_t) \tag{1}$$

Where  $Y_t$  is output,  $K_t$  is capital,  $N_t$  is labor and  $X_t$  is labor augmenting technology.

For the Cobb-Douglas production function, it is set in the form of  $Y = K^{1-\alpha} (N X)^\alpha$  where  $\alpha$  is labor share.

The physical capital moves along the first difference equation in  $K_t$ :

$$K_{t+1} = (1 - \delta) K_t + I_t \tag{2}$$

Where  $\delta$  is the depreciation rate of capital and  $I_t$  is investment. Moreover, the economy can only consume and invest from what it has produced, so the additional equation is:

$$Y_t = C_t + I_t \tag{3}$$

### 3.6 The Optimal Neoclassical Growth Model

Based on the Cass (1965) and Koopmans (1965) neoclassical growth model, the representative household aims to maximize its utility subject to budget constraint:

$$Max E_0 \sum_{t=0}^{\infty} \beta^t u(C)$$

$$\text{Subject to } K_{t+1} = (1 - \delta)K_t + F(K_t, N_t X_t) - C_t \tag{4}$$

Where  $\beta$  is the time discount factor and  $\beta \in (0, 1)$ . The higher the value of  $\beta$ , the less willingness for the households to delay their consumption is.

### 3.7 The Real Business Cycle Model

Finn Kydland and Edward Prescott (1982) use dynamic general equilibrium models in order to explain the business cycle. Their dynamic models overcome the weakness of the static computational general equilibrium that does not take capital accumulation into account. Kydland and Prescott use the technology shock to drive a process of the aggregate fluctuation in the closed economy.

### 3.8 The Original Real Business Cycle Model

Kydland and Prescott (1982) create the initial set of dynamic general equilibrium models of the 1980s by indicating that productivity shocks are a source of economic fluctuations. Kydland and Prescott explain how a well-functioning market economy responds to productivity shocks and displays important properties of business cycles in practical mean. They make an attempt to produce a modern business cycle model which is driven by an aggregate productivity shock.

### 3.9 The Basic Real Business Cycle Model

The real business cycle model is extended from the neoclassical growth model of the form developed by Solow (1956); Cass (1956); Koopmans (1965). The aggregate production function is the core element between the business cycle and the growth theory. The real business cycle theory sees exogenous stochastic fluctuation in productivity as the cause of economic variation. A real business cycle model is extended from the growth model by adding two components, which are variation in labor input and random shocks in productivity. The model is designed to capture the main features of both growth theory and business cycle based on the assumption on technology, endowment and preferences.

## 4. Methodology

The BVAR and MS-BVAR models used in the study of Thai business cycle is based on the properties of Bayes' rule (1718).

$A_1, A_2, \square, A_7$  are set to be Thailand's key economic indicators as  $POP_t, GDP_t, INF_t, BP_t, GCB_t, IR_t,$  and  $ER_t,$  respectively.  $A_1, A_2, \square, A_7$  Are events in a sample space  $S$  that do not happen together, that is  $\cup A_i = S$  and  $A_i \cap A_j = \phi$  when  $i \neq j$ , and  $B$  is any event that is the previous value of economic indicators as  $POP_{t-i}, GDP_{t-i}, INF_{t-i}, BP_{t-i}, GCB_{t-i}, IR_{t-i},$  and  $ER_{t-i},$  where  $i$  is the

lag length and  $i = 1, 2, 3, \dots, n$ . The previous value of economic indicators can be expressed as:

$$POP_{t-i} = POP_{t-1}, POP_{t-2}, \dots, POP_{t-n} \quad (5)$$

$$GDP_{t-i} = GDP_{t-1}, GDP_{t-2}, \dots, GDP_{t-n} \quad (6)$$

$$INF_{t-i} = INF_{t-1}, INF_{t-2}, \dots, INF_{t-n} \quad (7)$$

$$BP_{t-i} = BP_{t-1}, BP_{t-2}, \dots, BP_{t-n} \quad (8)$$

$$GCB_{t-i} = GCB_{t-1}, GCB_{t-2}, \dots, GCB_{t-n} \quad (9)$$

$$IR_{t-i} = IR_{t-1}, IR_{t-2}, \dots, IR_{t-n} \quad (10)$$

$$ER_{t-i} = ER_{t-1}, ER_{t-2}, \dots, ER_{t-n} \quad (11)$$

And  $B \subset S$ . The conditional probability is written as:

$$P(A_k|B) = \frac{P(B|A_k)P(A_k)}{\sum_{i=1} P(B|A_i)P(A_i)} \quad (12)$$

## 5. Data

All data are secondary data during 1979 to 2014 obtained from various sources including World Bank World Development Indicators and the Global Development Finance database, World Resources Institutes (WRI), and Bank of Thailand (BOT). The examined indicators consist of population, GDP, inflation, balance of payments, government cash balance, interest rate, and exchange rate. The data is from annual observations for 36 years. The data is converted into the form of logarithmic return.

## 6. Results

**Table 1:** Results of MS-BVAR.lag1 phrase 1

	POP	GDP	INF	BP	GCB	IR	ER
(Intercept)	0.0008	0.0157	0.0028	-0.4834	-2.1841	0.0017	-0.0119
(std.err)	0.0495	0.6424	0.1411	99.4130	46.6676	1.8743	0.5490
(t.stat)	0.0157	0.0245	0.0202	-0.0049	-0.0468	0.0009	-0.0216
POP.lag1	0.9606	0.1109	0.0080	59.0802	16.8615	0.2495	-0.0591
(std.err)	0.0810	1.0520	0.2311	162.8022	76.4246	3.0694	0.8990
(t.stat)	11.8564	0.1054	0.0345	0.3629	0.2206	0.0813	-0.0658
GDP.lag1	0.0015	0.9546	0.0103	-0.9925	0.5400	-0.0540	0.0397
(std.err)	0.0071	0.0926	0.0203	14.3270	6.7256	0.2701	0.0791

(t.stat)	0.2071	10.3113	0.5041	-0.0693	0.0803	-0.1998	0.5013
INF.lag1	-0.0070	-0.0985	0.9294	-11.6896	6.7994	-0.4513	-0.0179
(std.err)	0.0360	0.4673	0.1026	72.3156	33.9473	1.3634	0.3993
(t.stat)	-0.1939	-0.2109	9.0552	-0.1616	0.2003	-0.3310	-0.0449
BP.lag1	0.0001	0.0002	0.0000	0.8545	-0.0555	-0.0001	-0.0002
(std.err)	0.0001	0.0010	0.0002	0.1535	0.0720	0.0029	0.0008
(t.stat)	0.6976	0.1782	-0.0580	5.5681	-0.7707	-0.0223	-0.1917
GCB.lag1	0.0000	0.0006	0.0000	-0.0006	0.8679	-0.0007	-0.0002
(std.err)	0.0002	0.0020	0.0004	0.3041	0.1427	0.0057	0.0017
(t.stat)	0.0565	0.2827	-0.0264	-0.0019	6.0803	-0.1164	-0.1212
IR.lag1	-0.0002	-0.0144	0.0004	-0.1698	0.6805	0.9217	0.0091
(std.err)	0.0029	0.0373	0.0082	5.7739	2.7104	0.1089	0.0319
(t.stat)	-0.0687	-0.3861	0.0523	-0.0294	0.2511	8.4670	0.2865
ER.lag1	-0.0024	0.1055	-0.0209	-0.0781	-2.3741	0.0759	0.9006
(std.err)	0.0120	0.1555	0.0342	24.0664	11.2975	0.4537	0.1329
t.stat)	-0.2025	0.6786	-0.6117	-0.0032	-0.2101	0.1673	6.7766

From table 1, Thai business cycle during prosperity phrase:

For population, the constant value is 0.0008 and other variables are set in a fixed equation system. The POP variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, BP and GCB at time  $t - 1$  in the same direction with the magnitude of 0.9606, 0.0015, 0.0001, and 0.0000, respectively. It also has a correlation with variables INF, IR and ER at time  $t - 1$  in the opposite direction with the magnitude of 0.0070, 0.0002, and 0.0024, respectively.

For GDP, the constant value is 0.0157 and other variables are set in a fixed equation system. The GDP variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, BP, GCB, and ER at time  $t - 1$  in the same direction with the magnitude of 0.1109, 0.9546, 0.0002, 0.0006, and 0.1055, respectively. It also has a correlation with variables INF and IR at time  $t - 1$  in the opposite direction with the magnitude of 0.0985 and 0.0144, respectively.

For inflation, the constant value is 0.0028 and other variables are set in a fixed equation system. The INF variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, INF, BP, and IR at time  $t - 1$  in the same direction with the magnitude of 0.0080, 0.0103, 0.9294, 0.0000, and 0.0004, respectively. It also has a correlation with variables GCB and ER at



time  $t - 1$  in the opposite direction with the magnitude of 0.0000 and 0.0209, respectively.

For balance of payments, the constant value is 0.4834 and other variables are set in a fixed equation system. The BP variable of Thai business cycle at time  $t$  has a correlation with variables POP and BP at time  $t - 1$  in the same direction with the magnitude of 59.0802 and 0.8545, respectively. It also has a correlation with variables GDP, INF, GCB, IR, and ER at time  $t - 1$  in the opposite direction with the magnitude of 0.9925, 11.6896, 0.0006, 0.1698, and 0.0781, respectively.

For government cash balance, the constant value is 2.1841 and other variables are set in a fixed equation system. The GCB variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, INF, GCB, and IR at time  $t - 1$  in the same direction with the magnitude of 16.8615, 0.5400, 6.7994, 0.8679, and 0.6805, respectively. It also has a correlation with variables BP and ER at time  $t - 1$  in the opposite direction with the magnitude of 0.0555 and 2.3741, respectively.

For interest rate, the constant value is 0.0017 and other variables are set in a fixed equation system. The IR variable of Thai business cycle at time  $t$  has a correlation with variables POP, IR, and ER at time  $t - 1$  in the same direction with the magnitude of 0.2495, 0.9217, and 0.0759, respectively. It also has a correlation with variables GDP, INF, BP, and GCB at time  $t - 1$  in the opposite direction with the magnitude of 0.0540, 0.4513, 0.0001, and 0.0007, respectively.

For exchange rate, the constant value is 0.0119 and other variables are set in a fixed equation system. The ER variable of Thai business cycle at time  $t$  has a correlation with variables GDP, IR, and ER at time  $t - 1$  in the same direction with the magnitude of 0.0379, 0.0091, and 0.9006, respectively. It also has a correlation with variables POP, INF, BP, and GCB at time  $t - 1$  in the opposite direction with the magnitude of 0.0591, 0.0179, 0.0002, and 0.0002, respectively.

**Table 2: Results of MS-BVAR.lag1 phrase 2**

	<b>POP</b>	<b>GDP</b>	<b>INF</b>	<b>BP</b>	<b>GCB</b>	<b>IR</b>	<b>ER</b>
(Intercept)	-0.0018	-0.0081	-0.0031	-0.3370	-0.1669	0.2180	-0.0013
(std.err)	0.0644	1.1354	0.2511	32.1149	9.1584	8.1401	0.9892
(t.stat)	-0.0282	-0.0072	-0.0124	-0.0105	-0.0182	0.0268	-0.0014

POP.lag1	0.9720	0.2992	0.0102	-0.2054	0.9498	1.5679	-0.1503
(std.err)	0.0989	1.7437	0.3836	49.3221	14.0656	12.5015	1.5193
(t.stat)	9.8300	0.1716	0.0265	-0.0042	0.0675	0.1254	-0.0990
GDP.lag1	-0.0001	0.9160	0.0068	-1.3819	-0.4034	0.2116	0.0768
(std.err)	0.0114	0.2004	0.0443	5.6690	1.6167	1.4369	0.1746
(t.stat)	-0.0126	4.5703	0.1540	-0.2438	-0.2495	0.1473	0.4400
INF.lag1	0.0017	-0.0217	0.9879	-0.5387	-0.0080	-0.1747	0.0071
(std.err)	0.0176	0.3108	0.0687	8.7912	2.5071	2.2283	0.2708
(t.stat)	0.0948	-0.0697	14.3739	-0.0613	-0.0032	-0.0784	0.0264
BP.lag1	-0.0001	-0.0005	0.0005	0.9135	-0.0116	0.0068	0.0013
(std.err)	0.0004	0.0074	0.0016	0.2085	0.0594	0.0528	0.0064
(t.stat)	-0.1513	-0.0618	0.2852	4.3819	-0.1959	0.1287	0.2004
GCB.lag1	-0.0001	-0.0080	0.0014	-0.3925	0.8839	0.0152	0.0102
(std.err)	0.0017	0.0297	0.0066	0.8399	0.2395	0.2129	0.0259
(t.stat)	-0.0389	-0.2705	0.2133	-0.4674	3.6907	0.0714	0.3930
IR.lag1	0.0002	0.0000	-0.0006	0.0289	-0.0307	0.9119	-0.0007
(std.err)	0.0017	0.0296	0.0065	0.8362	0.2385	0.2120	0.0258
(t.stat)	0.0977	-0.0005	-0.0896	0.0345	-0.1287	4.3025	-0.0268
ER.lag1	0.0012	0.0586	-0.0146	1.2259	0.2993	-0.3138	0.9278
(std.err)	0.0128	0.2263	0.0500	6.4013	1.8255	1.6225	0.1972
(t.stat)	0.0931	0.2588	-0.2911	0.1915	0.1640	-0.1934	4.7052

From table 2, Thai business cycle during depression phrase:

For population, the constant value is 0.0018 and other variables are set in a fixed equation system. The POP variable of Thai business cycle at time  $t$  has a correlation with variables POP, INF, IR, and ER at time  $t - 1$  in the same direction with the magnitude of 0.9720, 0.0017, 0.0002, and 0.0012, respectively. It also has a correlation with variables GDP, BP, and GCB at time  $t - 1$  in the opposite direction with the magnitude of 0.0001, 0.0001, and 0.0001, respectively.

For GDP, the constant value is 0.0081 and other variables are set in a fixed equation system. The GDP variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, and ER at time  $t - 1$  in the same direction with the magnitude of 0.2992, 0.9160, and 0.0586, respectively. It also has a correlation with variables INF, BP, GCB, and IR at time  $t - 1$  in the opposite direction with the magnitude of 0.0217, 0.0005, 0.0080, and 0.0000, respectively.

For inflation, the constant value is 0.0031 and other variables are set in a fixed equation system. The INF variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, INF, BP, and GCB at time  $t - 1$  in the same direction with the magnitude of 0.0102, 0.0068, 0.9879, 0.0005, and 0.0014, respectively. It also has a correlation with variables IR and ER at time  $t - 1$  in the opposite direction with the magnitude of 0.0014 and 0.0146, respectively.

For balance of payments, the constant value is 0.3370 and other variables are set in a fixed equation system. The BP variable of Thai business cycle at time  $t$  has a correlation with variables BP, IR, and ER at time  $t - 1$  in the same direction with the magnitude of 0.9135, 0.0289, and 1.2259, respectively. It also has a correlation with variables POP, GDP, INF, and GCB at time  $t - 1$  in the opposite direction with the magnitude of 0.2054, 1.3819, 0.5387, and 0.3925, respectively.

For government cash balance, the constant value is 0.1669 and other variables are set in a fixed equation system. The GCB variable of Thai business cycle at time  $t$  has a correlation with variables POP, GCB, and ER at time  $t - 1$  in the same direction with the magnitude of 0.9498, 0.8839, and 0.2993, respectively. It also has a correlation with variables GDP, INF, BP, and IR at time  $t - 1$  in the opposite direction with the magnitude of 0.4034, 0.0080, 0.0116, and 0.0307, respectively.

For interest rate, the constant value is 0.2180 and other variables are set in a fixed equation system. The IR variable of Thai business cycle at time  $t$  has a correlation with variables POP, GDP, BP, GCB, and IR at time  $t - 1$  in the same direction with the magnitude of 1.5679, 0.2116, 0.0068, 0.0152, and 0.9119, respectively. It also has a correlation with variables INF and ER at time  $t - 1$  in the opposite direction with the magnitude of 0.1747 and 0.3138, respectively.

For exchange rate, the constant value is 0.0013 and other variables are set in a fixed equation system. The ER variable of Thai business cycle at time  $t$  has a correlation with variables GDP, INF, BP, GCB, and ER at time  $t - 1$  in the same direction with the magnitude of 0.0768, 0.0071, 0.0013, 0.0102, and 0.9278, respectively. It also has a correlation with variables POP and IR at time  $t - 1$  in the opposite direction with the magnitude of 0.1503 and 0.0007, respectively.

## **7. Discussion**

The study of Thai business cycle from macroeconomic model using BVAR and MS-BVAR methods has found that during prosperity phrase, population, GDP, inflation, government cash balance, and exchange rate have positive correlation with GDP and balance of payments and interest rate have negative correlation with GDP. This means population, GDP, inflation, government cash balance, and exchange rate increase the level of GDP and balance of payments and interest rate decrease the level of GDP. In addition, during depression phrase, GDP, inflation, interest rate, and exchange rate have positive correlation with GDP and population, balance of payments, government cash balance have negative correlation with GDP. This means GDP, inflation, interest rate, and exchange rate increase the level of GDP and population, balance of payments, government cash balance decrease the level of GDP.

For the future study, researcher should try to study other variables that have a potential in affecting the business cycle of Thailand because in this study, all of studied variables are merely based on macroeconomic indicators of the Bank of Thailand which might not be adequate. The researcher should collect more data in order to get more accurate results. Moreover, the business cycle of other countries in South East Asia region can be interesting to study as well.

## **8. Conclusion**

The study of Thai business cycle from macroeconomic model using BVAR and MS-BVAR methods aims to determine the impact of important components of Thai business cycle during prosperity and depression phases. The BVAR and MS-BVAR models are used to analyze the relationship of each variable. The data correlated in this study are secondary data during 1979 to 2014 obtained from various sources including World Bank World Development Indicators and the Global Development Finance database, World Resources Institutes (WRI), and Bank of Thailand (BOT). The results of this study indicate that during prosperity phrase, population, GDP, inflation, government cash balance, and exchange rate have positive correlation with GDP and balance of payments and interest rate have negative correlation with GDP. In addition, during depression phrase, GDP, inflation, interest rate, and exchange rate have positive correlation with GDP and population, balance of payments, government cash balance have negative correlation with GDP.

To sum up, during prosperity phrase, the GDP of Thailand rises by the increase of population, GDP, inflation rate, government cash balance, and exchange rate and the decrease of balance of payments and interest rate. Besides, during depression phrase, the GDP of Thailand rises by the increase of GDP, inflation rate, interest rate, and exchange rate and the decrease of population, balance of payments, government cash balance. Consequently, Thai government should aim to increase population, GDP, inflation rate, government cash balance, and exchange rate during prosperity phrase and increase GDP, inflation rate, interest rate, and exchange rate during depression phrase in order to enrich Thai economy.

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