

XLeading Indicator For Economic Stability Four Emerging Market Countries

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Abstract. The research aims to analyze the contribution of monetary policy to economic stability of economic stability size, interest rate, exchange rate, amount of money supply, inflation expectations, GDP and inflation. The special Target in this research is to find the Leading indicator of effectiveness of economic stability control of each of the four emerging market countries namely China, India, Vietnam, and Indonesia abbreviated (CIVI). The material used in this study is quantitative material with data panels in 4 civil countries, the data source of the time series secondary is from the first quarter of 2000 until the first quarter of the year 2017. The data analysis model in this research is the ARDL Panel, analysis model. Analysis results of ARDL Panel generate that Leading indicator of state effectiveness in the control of stability of CIVI countries, namely India (interest, exchange rate, amount of money supply, inflation expectations, and GDP) and Vietnam (interest, amount of money supply and GDP). Other countries, such as Indonesia, economic stability control is done by interest and the money supply, whereas China is done through the amount of money supply.

Keywords: interest rates, rates, JUB, inflation expectations, GDP and inflation

1 Introduction

Monetary policy in achieving intermediate and final targets can be predicted in the short and long term. The intermediate target is macroeconomic stability, while the final target is price stability. The monetary transmission has problems with a time lag [1]. The delay effect can occur due to obstacles from other macroeconomic variables [2]. Interest can influence the delay effect [3]. Zega [4] Exchange rates affect the success of the monetary policy. Monetary transmission is significant in maintaining economic stability [5]. Onyeiwu [6] concluded that exports as a variable that can affect the success of the final target.

Alfian [7] states that asset paths affect economic growth and inflation. Natsir in [2] shows that labor and net exports influence economic growth. Hülsewig in [3] Economic stability is affected by consumption, net exports, and investment. Indonesia rose to fifth place because of the increased growth of chemical products, as well as industrial manufacturing and financial Services [8]. Vymyatnina [9] inflation targeting is a framework for monetary policy characterized by announcements to the public about the inflation target rate in a period. Given the ability to have a discussion about inflation, it is no wonder that BI has set it as the final goal in implementing its monetary policy.

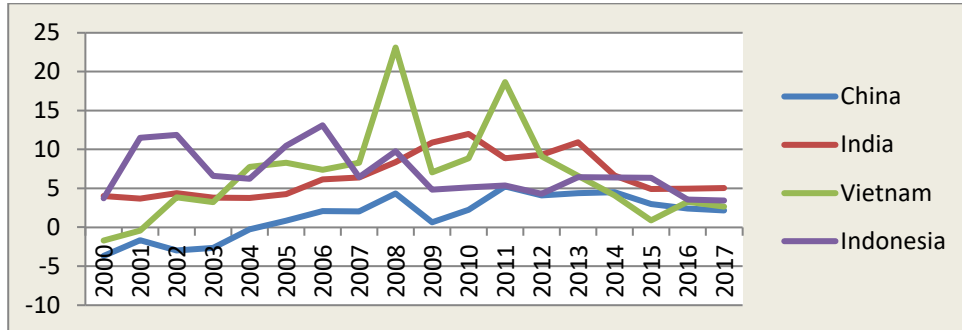


Fig 1. Inflation developments in the State of CIVI

The chart above shows the trend fluctuations inflation state of CIVI during years 2000 S/d 2017. Almost identical movements in the country of Vietnam, Indonesia, and China are a significant increase in inflation in the year 2008. This is due to the impact of international problems, namely rising global food prices. Thus the public will also become more prosperous [10]. Inflation over time is capable of undermining the value of money owed by the public. By increasing the price in the aggregate, it can lower the value of real money in the economy. It is capable of the welfare of the people of the country concerned. Price stability is a barometer of the country's real economic growth. Political rumors are also capable of triggering rising inflation. Not to mention the consumerist pattern of society especially on consumer goods due to the economic openness that makes the growing economic performance of the country undermined its inflation [11].

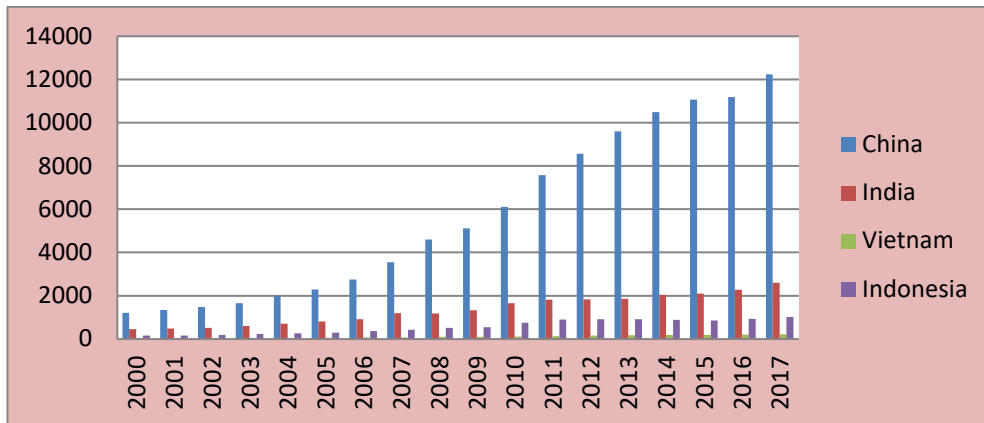


Fig 2. State GDP Development of CIVI

The chart above shows a tendency to increase GDP in CIVI state from 2000 to 2017. However, Indonesia, Vietnam, and India have seen a slowdown in economic growth, unlike China, which has significant economic growth. According to Trang [2], in an effort to maintain an efficient level of growth necessary, the interference of the Government is to reduce the primary sector and increase the role of non-primary sectors. In other words, constant trend of general price increases or inflation may occur when the increase in the amount of money supply exceeds the actual requirement. If the "amount of money supply

increases, the price of the goods will also rise" [3]. Inflation is also known as a monetary phenomenon; in other words when the amount of money circulating exceeds that of the needs of the community, the public will be more likely to spend its money by increasing consumption of goods and services [4].

In this research, the fiscal policy relations and monetary policy to macroeconomic stability, each of the variables of the fiscal policy and monetary policy is related to the macroeconomic stability variables where each of the fiscal policy variables contributes to variables of macroeconomic stability: inflation and economic growth (GDP). GDP is influenced by the rate of inflation. Inflation is the haunting dilemma of every country's economy. Its development continues to increase to provide barriers to economic growth in a better direction. Inflation tends to happen to emerge economies as Indonesia has an agrarian-patterned economic structure. Domestic failure or shocks will result in fluctuations in domestically listed prices and end with inflation in the economy [10].

Inflation and interest rates; Nwaobi [11] states that there is a link between the interest rate and the rate of inflation that is estimated that interest rates are also influenced by inflation, or in other words the rate of inflation has an influence or effect on the interest rate as a target. Interest rates are likely to increase as inflation is expected to increase as well — inflation and the amount of money supply. The value of money is determined by supply and demand for money. The amount of money supply is determined by the Central Bank, while the amount of money requested (money demand) is determined by several factors, such as the average price level in the economy. The amount of money requested by the community to make a transaction depends on the price level of goods and services in the market. The higher the price level, the greater the amount of money requested. The price increase then pushes the rise in the amount of money demanded by the public.

Based on this theory, the amount of money circulating in an economy determines the value of money, while the growth in the amount of money supply is a major cause of inflation. In general, the money quantity theory illustrates the influence of the amount of money circulating against the economy, attributed to variable price certain output. The relationship between the amount of money supply, output, and price can be written with the mathematical equation as follows: $M \times V = P \times Y$. Where P is the price level (GDP deflator), Y is the number of outputs (real GDP), M is the amount of money supply, $P \times Y$ is nominal GDP, as well as V is the velocity of money (turnover money). This equation is called quantity equation.

Inflation and exchange rates; Changes in the exchange rate need to be examined more thoroughly on how the exchange rate shock affects the economy as well as inflation. This change of exchange rate will certainly implicate the characteristics of the exchange rate fluctuations and their impact on the open economy. The Rupiah gained enormous depreciation pressures beginning with the exchange rate crisis. The rupiah exchange rate simultaneously gets quite heavy pressure due to the large capital outflow due to loss of confidence of foreign investors to the prospects of the Indonesian economy. Pressure on the exchange rate was weighed again by the growing activity so that since the crisis occurred the exchange rate was depreciation to reach 75 percent.

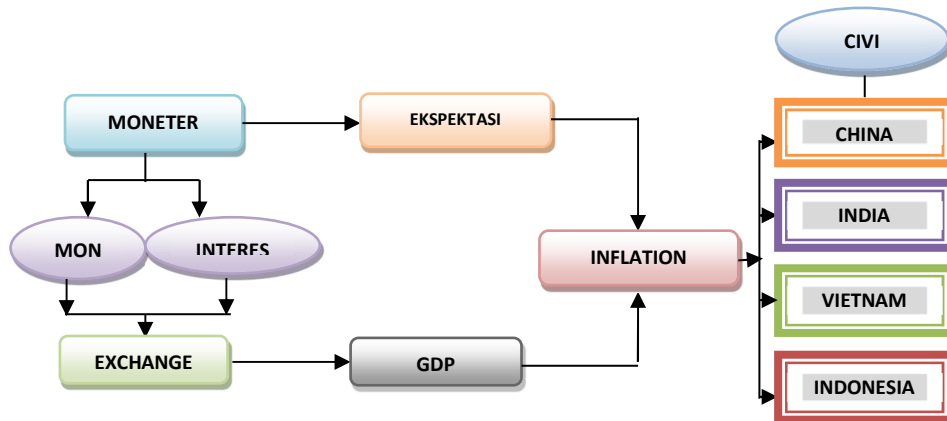


Fig 3. Inflation expectations of economic fundamentals in the state of CIVI

The conceptual framework Panel aims to obtain the estimates of each characteristic separately, providing more informative, more varied data, a more efficient degree of freedom, and avoiding the colonic between Variable. As well as to see the relationship of inflation expectations, the amount of money supply, gross domestic products, exchange rates, and interest rates on inflation in China, India, Vietnam, and Indonesia.

2 Research Method

The study uses data panels using data between time and data between regions. The ARDL regression panel is used to obtain the estimated individual characteristics individually by assuming the presence of co-integration in the long-term lag of each variable. An auto-reactivity Distributed Lag (ARDL) introduced by Rusiadi [5]. This technique examines each variable lag located on I (1) or I (0). Conversely, ARDL regression results are test statistics that can compare with two critical values of asymptotic.

Testing regression Panel with formulas:

$$\text{INFLASIt} = \alpha + \beta_1 \text{SBIt} + \beta_2 \text{KURSit} + \beta_3 \text{JUBIt} + \beta_4 \text{EINFit} + \beta_5 \text{PDBIt} + E$$

Here's the regression panel formula by country:

$$\text{INFLASICHINAt} = \alpha + \beta_1 \text{SBIt} + \beta_2 \text{KURSit} + \beta_3 \text{JUBIt} + \beta_4 \text{EINFit} + \beta_5 \text{PDBIt} + E1$$

$$\text{INFLASIINDIAAt} = \alpha + \beta_1 \text{SBIt} + \beta_2 \text{KURSit} + \beta_3 \text{JUBIt} + \beta_4 \text{EINFit} + \beta_5 \text{PDBIt} + E1$$

$$\text{INFLASIVIETNAMt} = \alpha + \beta_1 \text{SBIt} + \beta_2 \text{KURSit} + \beta_3 \text{JUBIt} + \beta_4 \text{EINFit} + \beta_5 \text{PDBIt} + E1$$

$$\text{INFLASIINDONESIAAt} = \alpha + \beta_1 \text{SBIt} + \beta_2 \text{KURSit} + \beta_3 \text{JUBIt} + \beta_4 \text{EINFit} + \beta_5 \text{PDBIt} + E1$$

3 Results and Discussion

Analysis panel with Auto-Regressive distribution Lag (ARDL) test pooled data that is combined data cross-section (country) with Data time series (yearly), the results of the ARDL panel is good more compared with ordinary panels, because it is capable of long-term integration and has the highest distribution of lag in accordance with the theory, using the Eviews 10 software, obtained the following results.

Table 1. ARDL Panel Output

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Long Run Equation				
LNPDB	4.667431	1.526554	3.057495	0.0080
BUNGA	-1.019133	0.164611	-6.191172	0.0000
LNKURS	-2.588605	3.271315	-0.791304	0.4411
JUB	3.921318	0.843635	4.648119	0.0003
LNEINF	32.13049	8.233768	3.902283	0.0014
Short Run Equation				
COINTEQ01	-0.139881	0.051571	-2.712383	0.0161
C	-45.19663	16.31298	-2.770593	0.0143

The ARDL Panel model received is a model that has a lag in the integration, where the main assumption is the value of the coefficient has negative slope with a significant rate of 5%. ARDL Panel Model Requirements: The value is negative (-0.13) and is significant ($0.01 < 0.05$) then the model is accepted. Based on the model acceptance, the data analysis is done by the panel per country.

Table 2. Output Panel ARDL China County

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	0.004512	0.000309	14.59018	0.0007
D(INF(-1))	-0.312752	0.353549	-0.884607	0.4415
D(LNPDB)	96.53039	105772.9	0.000913	0.9993
D(LNPDB(-1))	190.9485	71117.10	0.002685	0.9980
D(BUNGA)	-0.050130	0.121147	-0.413798	0.7068
D(BUNGA(-1))	-0.028852	0.021444	-1.345458	0.2711
D(LNKURS)	22.71591	324.7660	0.069945	0.9486
D(LNKURS(-1))	-7.835592	278.9961	-0.028085	0.9794
D(JUB)	-0.092870	0.006454	-14.38918	0.0007
D(JUB(-1))	-0.113662	0.007546	-15.06339	0.0006
D(LNEINF)	-72.64080	106153.9	-0.000684	0.9995
D(LNEINF(-1))	-194.7547	77265.34	-0.002521	0.9981
C	-0.973916	36.83009	-0.026443	0.9806

The ARDL panel test results show that GDP has no significant effect on inflation. Interest rates have no significant effect on inflation. Exchange rates have no significant effect on inflation. JUB has a significant effect on inflation. Inflation expectations have no significant effect on inflation.

Table 3. ARDL Panel Output Country India

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.147311	0.000977	-150.8222	0.0000
D(INF(-1))	0.241848	0.000591	408.9720	0.0000
D(LNPDB)	196.9540	56.92540	3.459862	0.0406
D(LNPDB(-1))	116.8716	26.35831	4.433957	0.0213
D(BUNGA)	-0.422299	0.000582	-726.0580	0.0000
D(BUNGA(-1))	-0.500857	0.000423	-1184.424	0.0000
D(LNKURS)	58.10061	4.363703	13.31452	0.0009
D(LNKURS(-1))	88.06993	6.725875	13.09420	0.0010
D(JUB)	-0.321468	0.000237	-1355.533	0.0000
D(JUB(-1))	-0.028718	0.000349	-82.37460	0.0000
D(LNEINF)	-200.8417	58.52541	-3.431700	0.0415
D(LNEINF(-1))	-77.76121	17.23195	-4.512619	0.0203
C	-48.05876	13.24779	-3.627681	0.0361

ARDL panel test results show GDP significant effect on inflation. Interest rates have a significant effect on inflation. The exchange rate has significant effect on inflation. JUB has significant effect on inflation. Inflation expectations significantly affect inflation.

Table 4. State ARDL Panel Output Vietnam

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.236921	0.001974	-120.0092	0.0000
D(INF(-1))	-0.057840	0.000336	-172.2795	0.0000
D(LNPDB)	-6.807701	10.32094	-0.659601	0.5566
D(LNPDB(-1))	-147.0746	39.32478	-3.739998	0.0333
D(BUNGA)	0.091708	0.002563	35.77913	0.0000
D(BUNGA(-1))	-0.424754	0.003598	-118.0481	0.0000
D(LNKURS)	-12309.89	77325.83	-0.159195	0.8836
D(LNKURS(-1))	3040.587	480714.9	0.006325	0.9954
D(JUB)	-1.469023	0.000964	-1523.567	0.0000
D(JUB(-1))	0.112932	0.001914	59.00419	0.0000
D(LNEINF)	12385.69	78632.80	0.157513	0.8848
D(LNEINF(-1))	-3098.996	489534.6	-0.006330	0.9953
C	-79.55484	195.4120	-0.407113	0.7112

The ARDL panel test results show GDP, a significant effect on inflation. Interest has a significant influence on inflation. Exchange rates have no significant effect on inflation. JUB has significant effect on inflation. Inflation expectations have no significant effect on inflation.

Table 5. Output Panel ARDL Negara Indonesia

Variable	Coefficient	Std. Error	t-Statistic	Prob. *
COINTEQ01	-0.179803	0.003044	-59.06268	0.0000
D(INF(-1))	-0.331977	0.011964	-27.74717	0.0001
D(LNPDB)	0.907105	159.3533	0.005692	0.9958
D(LNPDB(-1))	-98.46323	255.6070	-0.385213	0.7258
D(BUNGA)	-1.620768	0.229259	-7.069590	0.0058
D(BUNGA(-1))	-1.406337	0.046725	-30.09791	0.0001
D(LNKURS)	764.4331	11459.33	0.066708	0.9510
D(LNKURS(-1))	-1179.064	51110.64	-0.023069	0.9830
D(JUB)	1.481387	0.110820	13.36747	0.0009
D(JUB(-1))	0.966816	0.018673	51.77713	0.0000
D(LNEINF)	-832.4789	14686.59	-0.056683	0.9584
D(LNEINF(-1))	1240.790	55726.89	0.022266	0.9836
C	-52.19900	167.3357	-0.311942	0.7755

The ARDL panel test results show that GDP has no significant effect on inflation. Interest rates have a significant effect on inflation. The exchange rate has no significant effect on inflation. JUB has significant effect on inflation. Inflation expectations have no significant effect on inflation

Based on the overall results, it is known that a significant in the long term affects CIVI state inflation stability, i.e. interest rates, amount of money supply, inflation expectations and GDP. Then in the short-term interest-only affects the stability of inflation. The leading indicator of the effectiveness of variables in state stability control CIVI, i.e. Flower (India, Vietnam, and Indonesia) judging from the stability of short-run and long-run, where the interest variables in both long and short term significantly control Economic stability. The leading indicator of the country's effectiveness in the control of the stability of CIVI countries is namely India (interest, exchange rate, amount of money supply, inflation expectations and GDP) and Vietnam (interest, amount of money supply and GDP). Other countries, such as Indonesia, economic stability control is done by interest and the money supply, whereas China is done through the amount of money supply. In the panel, the amount of money supply is also able to be a leading indicator for the control of China, India, Vietnam, and Indonesia but its position is unstable in the long run.

Based on the overall results, it is known that the sign in the long term affects the inflation stability of the CIVI state of interest, the amount of money supply, inflation expectations, and GDP. Then in the short term only flowers are affecting the stability of inflation. Here's a summary of ARDL Panel results table:

Table 6. ARDL Panel Summary

	CHINA	INDIA	VIETNAM	INDONESIA	Short Run	Long Run
Bunga	0	1	1	1	1	1
Kurs	0	1	0	0	0	0
JUB	1	1	1	1	0	1
Ekspektasi Inflasi	0	1	0	0	0	1
PDB	0	1	1	0	0	1

Source: Data Processed authors, 2019

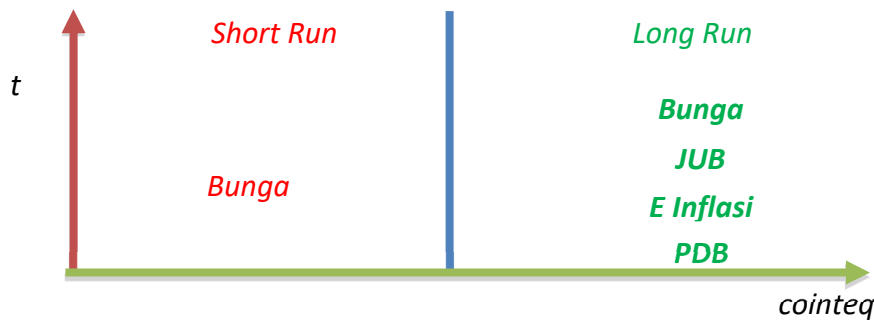


Fig 4. CIVI Country economic control period stability

Leading indicator of the country's effectiveness in the control of stability of CIVI countries, namely India (interest, exchange rate, amount of money supply, inflation expectations and GDP) and Vietnam (interest, amount of money supply and GDP). Indonesia's economic stability control is conducted by (interest rate and amount of money supply), whereas China is through (amount of money supply). India is still strong in controlling price stability through its stability (exchange rate). China's state is still strong in controlling price stability through the preservation of the amount of money supply. Indonesian state is still strong in controlling the price stability through the stability of the amount of money supply [12]. In panel the amount of money supply is also able to be a leading indicator for the control of China, India, Vietnam, and Indonesia but its position is unstable in the long run.

The leading indicator of the effectiveness of variables in the state stability control CIVI, i.e. Flower (India, Vietnam, and Indonesia) seen from the stability of the short-run and long-run, where the interest variables both in the long and short term are significant controlling economic stability. The designation of interest as a leading indicator of CIVI country also supported the opinion of Ashiddiqi [13], stating that the SBI interest rate is real (significant) to economic growth and inflation. The SBI rate is the most dominant variable to influence the variable economic growth rate. The working mechanism changes BI Rate to affect inflation is often referred to as the transmission mechanism of monetary policy. This mechanism illustrates Bank Indonesia's actions through changes in monetary instruments and operational targets affecting various economic and financial variables before ultimately impacting the final goal of inflation. This study uses the interest rate channel, asset prices, and the exchange rate channel [5]. Other studies have nothing in common using these three pathways. For example, those using a single channel such as Alani [1] credit lines, Hussain [4], Soares [14], interest lines and using two channels such as Vymyatnina [9] lines of credit and exchange rates [5]. Rosoiu [16], Oliner [17], Wollmershäuser [15], interest and credit lines, Rusnák [3],

Vymyatnina [9], Shenglin [18], Odo [19], Oliner [17], interest and exchange rates. Using three channels such as Ashiddiqi [13], interest, credit and exchange rates, Odo [19], interest, credit and asset prices, Forhad [20] credit lines, asset prices and exchange rates [5] and using four channels such as Oguanobi Interest, credit, asset prices, exchange rates and expectations, Trang [2], Nwaobi [11], interest lines, credit, asset prices. Although using the three paths, but not the same path of interest, asset prices and exchange rates, and using the four Paths of Trang [2] and Oliner [17], but only one country.

4 Conclusion

By panel, the amount of money supply leading indicator (China, India, Vietnam, and Indonesia), but its position is unstable in the long run. The leading indicator of the effectiveness of variables in state stability control CIVI, i.e. interest (India, Vietnam, and Indonesia) seen from the stability of short-run and long-run, where the interest variable in both long and short term is significant controlling economic stability. The leading indicator of the country's effectiveness in the control of the stability of CIVI countries is namely India (interest, exchange rate, amount of money supply, inflation expectations and GDP) and Vietnam (interest, amount of money supply and GDP). Other countries, such as Indonesia, economic stability control is done by interest and the money supply, whereas China is done through the amount of money supply. India is still strong in controlling price stability through its exchange rate stability. China's state is still strong in controlling price stability through the preservation of the amount of money supply. The Indonesian state is still strong in controlling price stability through the stability of the amount of money supply.

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