



# The Influence of Macroeconomic Variables on Three ASEAN Share Price Index

**Benny Budiawan Tjandrasa**  
*benny.tjandrasa@gmail.com*

Lecturer at Maranatha Christian University, Indonesia

## Abstract

*One of the indicators of the economy of a country is the stock price index. Various studies examining the influence variables such as inflation, interest rates and the exchange rate of the stock price index have a different conclusion. This paper investigates the effect of inflation, interest rates, exchange rate, per capita income, and Hang Seng index to stock price index in three ASEAN countries such as JCI (Indonesia), KLSE (Malaysia), and STI (Singapore) from 1997 to 2012. The results of this study indicate a number of variables affecting the stock price index in those countries, but there is variable that do not affect due to the distortions in the economy region.*

**Keywords:** *Stock price index, inflation, interest rate, exchange rate, per capita income*

## Introduction

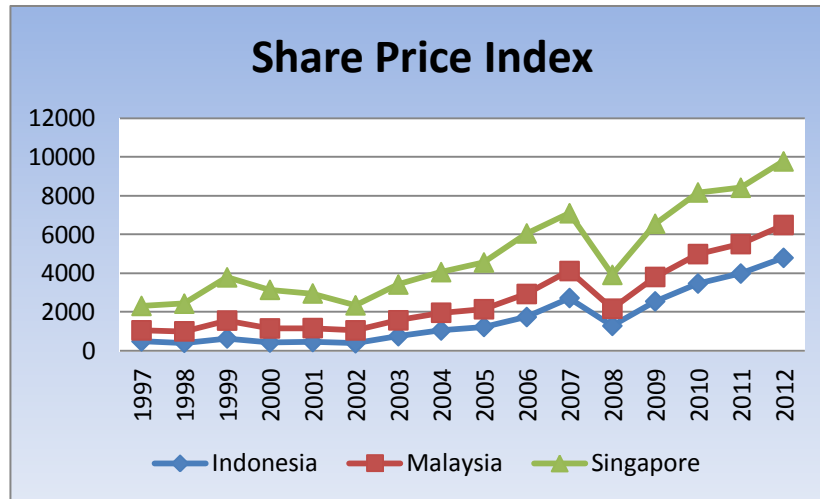
The establishment of the ASEAN Economic Community (AEC) causes investment growing rapidly, especially in the ASEAN countries. One of the investments form that growing rapidly is the investment in capital market, therefore it is important for policy makers and investors to determine the factors that influence the price movement in the capital market. The common capital market indicator is the stock price index. This research examined stock price index in Indonesia, Singapore, and Malaysia. The reasons to choose those ASEAN countries are: a good stock price growth, political stability, has been established long enough and regional proximity.

Independent variables which are suspected to affect the stock price index in these three countries are inflation rate, interest rate, exchange rate, per capita income, and Hang Seng index.

## Discussion and hypothesis

Jones (2011) defined investment as the commitment of funds to one or more assets that will be held over some future time period. While Jogiyanto (1990) stated investment as consumption delay to put into productive assets during a certain time period. In financial management, investment often refers to investing money in fixed assets, mutual funds and/or marketable securities. The most common investment which is widely known is investing in market share. The benchmark for investors to invest in market share is the share price index. In Indonesia share price index can be seen on the JCI from JSX (Jakarta Stock Exchange). While the price index movement in Singapore and Malaysia can be seen from the STI (Straits Times Index) and the KLSE (Kuala Lumpur Stock Exchange).

Here is a graph of the annual movement of share price index in Indonesia, Singapore, and Malaysia.



It can be seen that during the 16 years of its share price index in these three countries is likely to increase, although it's declined in 2008, but in subsequent years all three have increased unidirectional.

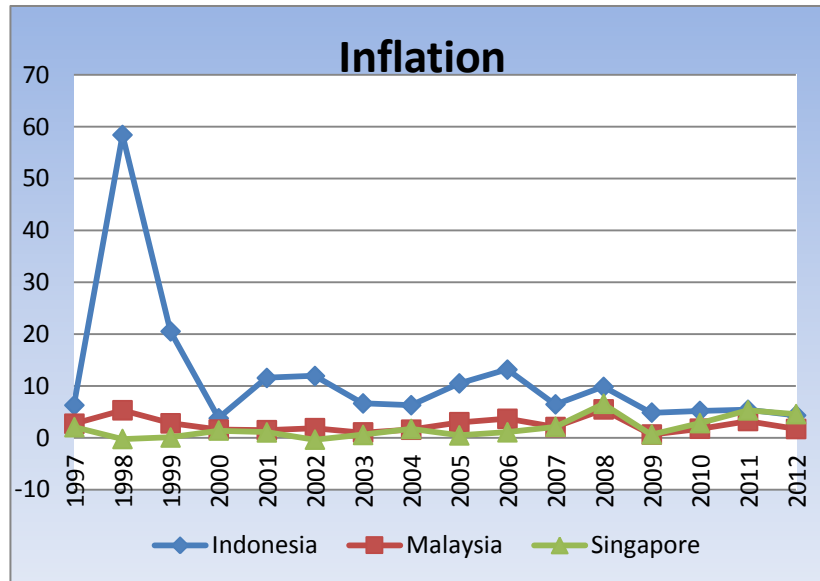
According to the theory of share price index is influenced by a number of factors such as:

- Sunariyah (2006) said stock prices index in a country is affected by interest rates and world energy prices. Pranoto (2004) also stated the interest rate affects stock returns.
- Samsul (2008) expressed a lot of factors that can affect the movement of the stock index in the country, among other domestic interest rates, foreign exchange rates, international economic conditions, a country's economic cycle, inflation rates, tax laws, and the amount of money in circulation.

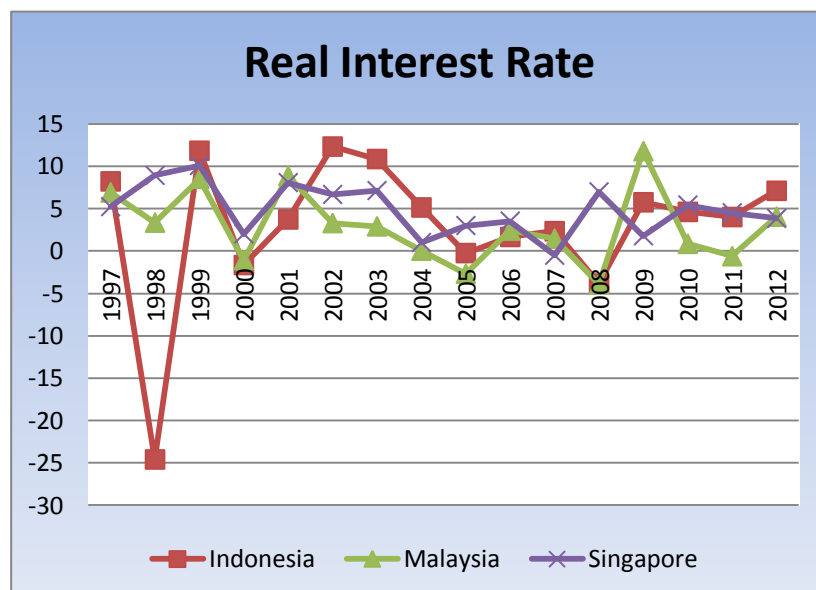
Inflation rates in a country that is higher than other countries will result in increasing demand for imported goods; this also will increase the foreign exchange rate to rise against the local currency. When the foreign currency exchange rate tends to increase investors would prefer to invest in foreign currency rather than invest it in share market, this will result in the share price decline. The decrease of the share price will lower the stock price index.

The graph below shows Indonesia's inflation rate rose sharply in 1998 due to the economic crisis that hit Asia, in subsequent years the inflation rate in Indonesia is more stable, although still higher than Malaysia and Singapore.



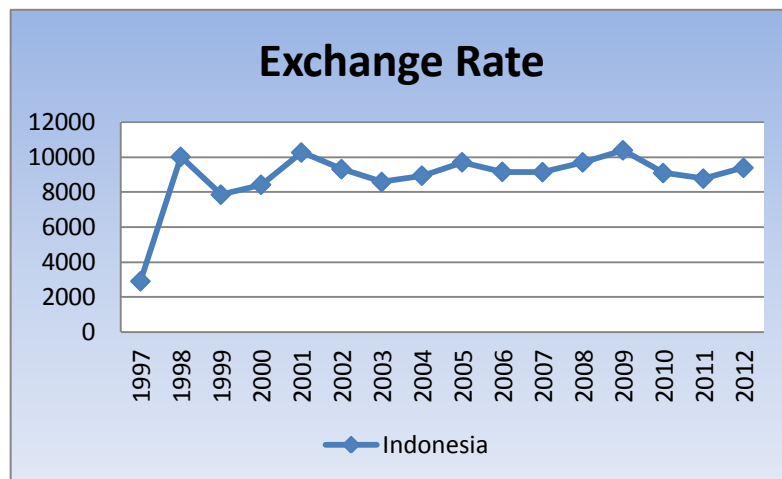
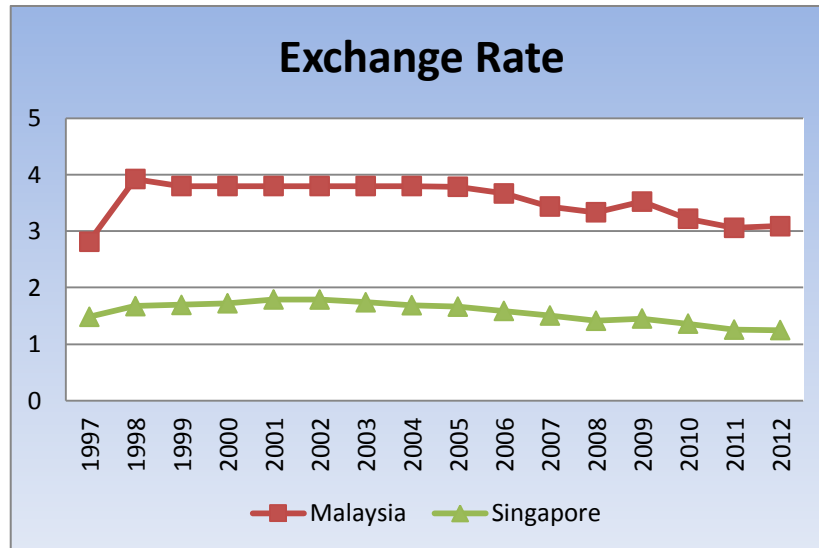


The graph below shows the interest rates on deposits in a country that is relatively higher than other countries would invite foreign investors to save in that country, but the interest rate is also affected by inflation. When the inflation rate is higher than deposit rates, there will be a negative real interest rate. Negative real interest rate in Indonesia occurred in 1998 and 2008, while in Malaysia it occurred in 2005 and 2008.

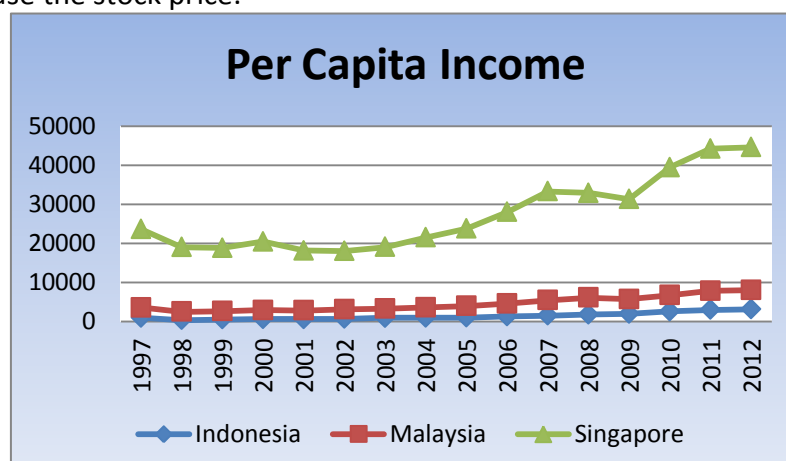


The following chart illustrates the exchange rate currency exchange rate of Singapore dollar, Malaysian ringgit and Indonesian rupiah against the US Dollar. The appreciation of the US dollar against the rupiah push up the stock price index JCI, this is because many foreign investors engaged in the Indonesian stock market. Depreciation of the rupiah against the US dollar make the Indonesia share price cheaper and it encourages foreign players to buy more shares at the Jakarta Stock Exchange, which resulted in increased stock price index JCI. This paper will investigate whether the same thing also happens in stock price index in the KLSE and STI.

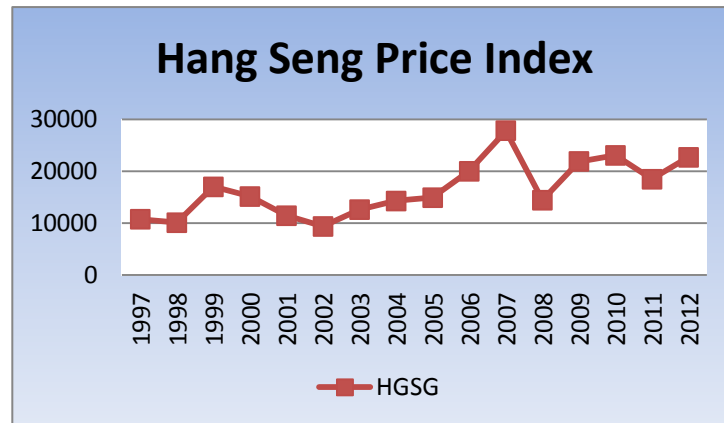




The following chart illustrates when people's income increases, the demand on various products and services will also increase, demand for stocks will increase and this will supposedly increase the stock price.



According to Mansur (2005) the event and dynamics of stock prices between the stock exchanges market and others will also influences the stock exchange market of neighboring countries. One of the stock exchanges markets that have a major influence Southeast Asia is the Hang Seng stock market. Here is the movement of the Hang Seng stock price index from 1997 until 2012.



A number of previous studies which proved the relationship of various macroeconomic variables on stock price index are:

- Sudarsana & Candraningrat (2014) concluded SBI variable interest rate, exchange rate, and inflation is negatively and significantly affect on the JCI, while the Dow Jones Variables has a positive significant effect on JCI.
- Lailia, Hilya & Darminto & Hidayat, R. Rustam (2014) also concluded the Interest Rate, Dollar Exchange Value have significant negative effect while the Straits Times Index has a significant positive effect on JCI, in this study Inflation does not have a significant influence on JCI.
- Astuti & Aprianti & Susanta (2013) concluded that the level of interest rate (SBI) and the exchange rate impact significantly and negatively on Stock Price Index (CSPI), while no significant effect on inflation JCI.
- Haryogo, Ardy (2013) concluded Dow Jones and Exchange Rate against USD (Exchange) both have significant effect on the dependent variable JCI.
- Kewal, Suramaya Suci (2013) concluded inflation, interest rates and GDP growth SBI does not have a significant effect on the JCI, while the exchange rate has a significant negative effect on JCI.
- Nofiatin (2013) concluded that there is a negative relationship between inflation and stock index, a positive relationship between interest rates and exchange rates with JCI, and there was no correlation between GDP and the money supply with JCI.
- Amperaningrum & Agung (2011) concluded SBI interest rate has a positive relationship with the banks, while the exchange rate and inflation has a negative relationship with banks.
- Hsing (2011) concluded that there is a long-term negative relationship between the price index and inflation.
- Jeong & Kim (2011) concluded DOW index and volatility index(VKOSPI) show the bi-directional effects to each other and it also has predictive power for VKOSPI, and international oil price (Dubai oil), exchange rates have predictive power for VKOSPI but not vice versa.
- Tripathy (2011) suggests that any change of exchange rate, interest rate and international market significantly influencing the stock market in the economy and vice versa.
- Chabachib, H.M. & Witjaksono, Ardian Agung (2011) concluded Oil Price, Gold Price, Dow Jones Index, and Hang Seng Index have positive impact to IHSG movement,



while SBI Rate, Rupiah Exchange Rate, and Nikkei 225 Index have a negative impact to IHSG movement.

- Nasir & Achmad (2011) concluded SBI interest rate have a positive influence on JCI.
- Mansur, Moh (2009) concluded SBI interest rate and the US dollar exchange rate have a significant influence on JCI.
- Kandir (2008) concluded that the exchange rate affects positively to the return of all the existing portfolio
- Abbas Valadkhani, Surachai Chancharat and Charles Havie (2006) concluded that the level of interest rates, the baht exchange rate, consumer price index and the amount of money supply did not have a significant influence on the movement of capital markets Thailand
- Gan & Zhang (2006) concluded investor commonly believe macroeconomic event has a big contribution to share price volatility.
- Hooker (2004) concluded that the interest rate negatively affect the market return.
- Chiarella and Gao (2004) also concluded that the interest rate negatively affect the market return.
- Wongbangpo and Sharma (2002) conclude that there is a negative relationship between stock prices and interest rates in the Philippines, Singapore, and Thailand, while the positive relationship occurred in the country of Indonesia and Malaysia.
- Gjerde and Saettem (1999) concluded changes in real interest rates negatively affect the stock price, on the other hand the real interest rate changes also affect the rate of inflation.

The following table is made to facilitate reviewing various different conclusions between the results of research:





**Table 1. The Effect of Macroeconomic Variables in Multiple**

	<b>SIG -</b>	<b>SIG +</b>	<b>NOT SIG</b>
<b>INFLATION</b>	Ni Made et al Hsing Ike Nofiatin Amperaningrum & Agung	Nasir & Mirza	Ria Astuti <sup>1</sup> , Apriatni E.P2 & Hari Susanta <sup>3</sup>  Suramaya Suci Kewal  Hilya Lailia Darminto  R. Rustam Hidayat
<b>INTEREST RATE</b>	Ni Made et al Hooker Tripathy Ria Astuti <sup>1</sup> , Apriatni E.P2 & Hari Susanta <sup>3</sup> Chiarella & Gao H. M. Chabachib dan Ardian Agung Witjaksono	Ike Nofiatin  Amperaningrum & Agung  Nasir & Achmad	Suramaya Suci Kewal  Valadkhani,
<b>EXCHANGE RATE</b>	Ni Made et al Jeong & Kim Tripathy Ria Astuti <sup>1</sup> , Apriatni E.P2 & Hari Susanta <sup>3</sup>  H. M. Chabachib dan Ardian Agung Witjaksono  Amperaningrum & Agung  Hilya Lailia Darminto R. Rustam Hidayat  Suramaya Suci Kewal  Ardy Haryogo	Ike Nofiatin  Kandir	Moh Mansur  Nasir & Mirza  Valadkhani,
<b>GDP</b>			Ike Nofiatin Suramaya Suci Kewal
<b>OTHER INDEXES</b>		Ni Made et al Tripathy  Ria Astuti <sup>1</sup> , Apriatni E.P2 & Hari Susanta <sup>3</sup>  Chabachib, H.M. & Witjaksono, Ardian Agung (2011)  Hilya Lailia Darminto R. Rustam Hidayat	





## Results

The presence of a variety of results with different conclusions encourages the study conducted in these three countries to examine the effect of macroeconomic variables on stock price index. The hypotheses of this research are:

- H1: The increase of inflation rate will have a negative effect on the stock price index JCI-STI-KLSE
- H2: The increase of interest rate will have a negative effect on the stock price index JCI-STI-KLSE
- H3: The increase of the exchange rate will have a positive effect on stock price index JCI-STI-KLSE
- H4: The increase of per capita income will have a positive effect on stock price index JCI-STI-KLSE
- H5: The increase of the Hang Seng price index will have a positive effect on stock price index JCI-STI-KLSE

## Procedures for collecting data

### Data

This research used secondary data obtained from the World Bank.org with sample data retrieval from 1997 to 2012 using systematic sampling. Independent variables in this study are: inflation rate, interest rate, exchange rate, per capita income of the three ASEAN countries - Indonesia, Singapore and Malaysia - and the Hang Seng price index. Dependent variables are the price index of the JCI, STI, and the KLSE.

### Construction of Model

The method used in this research is descriptive and explanatory study. Data analysis method is using multivariate regression analysis. Hypothesis testing is using t test, with a significance level of 5%.

## Results

Table below shows the p-value that less than 5%:

**Table 2. THE RESULT**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-488.7928	367.1025	-1.331489	0.1902
EXRATE	0.118753	0.031347	3.788346	0.0005
PCI	0.049365	0.008924	5.531392	0
HGSG	0.088584	0.019394	4.567535	0
INF	-34.76391	16.96773	-2.048825	0.0468
INT	-10.44588	21.44721	-0.487051	0.6288
R-squared	0.674812	Mean dependent var		1645.8
Adjusted R-squared	0.6361	S.D. dependent var		1054.3
S.E. of regression	635.9968	Akaike info criterion		15.865
Sum squared resid	16988663	Schwarz criterion		16.099
Log likelihood	-374.7536	Hannan-Quinn criter.		15.953
F-statistic	17.43125	Durbin-Watson stat		0.5057
Prob(F-statistic)	0			

From the table above can be made regression equation as follows:

JSK Price Index = -488.7928 – 34.76391 Inflation Rate – 10.44588 Interest Rate + 0.118753 Exchange Rate + 0.049365 Per Capita Income + 0.088584 Hang Seng Price Index





Adjusted R-square value of 0.6361 indicates that the variation in the dependent variable can be explained by variation in the independent variable by 63.61 %, while the rest is explained by other independent variables.

F-statistic that has a significance value of 0.000 indicates the influence of the exchange rate, per capita income, the Hang Seng index, interest and inflation simultaneously against price index JCI-STI-KLSE (JSK).

From the table it can be seen that almost all of the variables have a significance level of less than 0.05 except for the variable of interest. This shows that the partial exchange rate, per capita income, the Hang Seng price index and inflation significantly affect the price index JCI-STI-KLSE (JSK).

## Conclusion

The results of this study showed that the increase in inflation negatively affect on the stock price index JCI-STI-KLSE. In addition, the results of this study also support the research of Sudarsana & Candraningrat (2014), Nofiatin (2013), Amperaningrum et al (2011), and Hsing (2011) which suggests that the increase in inflation is a negatively affect on the price index of JCI.

The results of this study showed that the increase in interest rates negatively affect on the stock price index JCI-STI-KLSE, but does not have a significance level of less than 0.05. The results of this study also support the research of Kewal, Suramaya Suci (2013), Hooker (2004), Tripathy (2011), and Chiarella & Gao (2004) which suggests that the SBI rate has no significant effect on the JCI. That is because the real interest rate is negative, or in other words the increase in inflation is higher than the increase in the interest rate so that the effect of greater inflation affect stock price index JCI-STI-KLSE negatively.

The results of this study showed that the increase in the exchange rate (increase in exchange rate of US Dollar against the Rupiah, Singapore Dollar and the Ringgit) positive effect on stock price index JCI-STI-KLSE. In addition, the results of this study also support the research of Nofiatin (2013) and Kandir (2008) who argued that there is a positive relationship between the exchange rate with JCI. Depreciation of the Rupiah, Singapore Dollar, and the Ringgit against the US dollar made share price on those three countries getting cheaper, and it encourages foreign players to buy more shares which resulted in JCI stock price index, the KLSE and STI increases.

The results of this study showed that the increase in per capita income positively affect on stock price index JCI-STI-KLSE, that's because when people's income increases, the demand on various products and services will also increase, demand for stocks will increase and improve the stock price.

The results of this study showed that the increase in the Hang Seng Price Index positively affect on stock price index JCI-STI-KLSE. The results of this study also support the research of Chabachib, HM & Witjaksono, Ardian Agung (2011) which suggests that the Hang Seng Index have a positive impact to the JCI movement.

## International and Managerial Implications

International implications of this research is the decision maker in government in Indonesia, Singapore and Malaysia should be able to control inflation in their countries so that the increase in inflation is not too large, because it has a negative effect on the stock price index in the three countries. Interest rates should also be adjusted for inflation, because the negative real interest rate will be a negative effect on the stock price index.





Exchange rate depreciation against the US dollar does raise the stock price index, but in the long term can lead to volatile stock price movements. The increase in per capita income, which reflects the increase in purchasing power, must also be accompanied by keeping inflation low because if inflation is too high it will reduce the purchasing power of the people who later will reduce demand for stocks that will decrease the stock price index in each country.

Managerial implication of this research is the investment manager should give more attention to macroeconomic factors such as inflation rate, interest rate, and exchange rate before investing in the stock market. In addition, managers also need to pay attention to the movement of the other price index due to movement in the Hang Seng index price has a significant effect on the price index-STI-KLSE Composite Index.

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## Appendix

Country	Year	Index	Inflation rate	Interest rate	Exchange Rate	PCI	Index HGSG
Indonesia	1997	485.94	6.229896168	8.21363024	2909.38	936.7615935	10722.8
Indonesia	1998	411.93	58.38708718	-24.60021767	10013.6225	384.1809522	10048.58
Indonesia	1999	636.37	20.48911753	11.82652979	7855.15	554.8244808	16962.1
Indonesia	2000	425.61	3.720024005	-1.654214472	8421.775	603.997059	15095.53
Indonesia	2001	451.64	11.50209251	3.719985957	10260.85	577.8901927	11397.21
Indonesia	2002	388.44	11.87875643	12.3224125	9311.191667	701.4466495	9321.29
Indonesia	2003	752.93	6.585719187	10.85207335	8577.133333	908.7139431	12575.94
Indonesia	2004	1046.48	6.243520926	5.134404754	8938.85	959.1794242	14230.14
Indonesia	2005	1230.66	10.45195661	-0.245734399	9704.741667	1019.042521	14876.43
Indonesia	2006	1740.97	13.10941528	1.65815361	9159.316667	1308.27681	19964.72
Indonesia	2007	2721.94	6.407448459	2.339674108	9141	1533.700908	27812.65
Indonesia	2008	1285.48	9.776585195	-3.852246022	9698.9625	1764.310778	14387.48
Indonesia	2009	2549.03	4.813524326	5.747953173	10389.9375	1964.965154	21872.5
Indonesia	2010	3470.35	5.1327549	4.613519059	9090.433333	2560.577896	23035.45
Indonesia	2011	3985.21	5.357499604	4.00676222	8770.433333	2993.354687	18,434.39
Indonesia	2012	4795.79	4.279511959	7.100935727	9386.629167	3109.307907	22,656.90
Malaysia	1997	569.51	2.662514597	6.905510855	2.813191667	3534.492184	10722.8
Malaysia	1998	591.43	5.270342003	3.350316521	3.924375	2521.911114	10048.58
Malaysia	1999	922.1	2.744561302	8.514752388	3.8	2639.862226	16962.1
Malaysia	2000	727.73	1.534740237	-1.085790379	3.8	2870.776718	15095.53
Malaysia	2001	718.82	1.416784732	8.848207481	3.8	2841.953364	11397.21
Malaysia	2002	664.77	1.807872463	3.296312379	3.8	3094.517693	9321.29
Malaysia	2003	818.94	0.992816208	2.906032393	3.8	3274.390682	12575.94
Malaysia	2004	916.27	1.518542199	0.034267781	3.8	3577.215568	14230.14
Malaysia	2005	914.01	2.960865088	-2.672968815	3.787091667	3968.838892	14876.43
Malaysia	2006	1189.35	3.609235642	2.409344183	3.668176958	4564.663048	19964.72
Malaysia	2007	1393.25	2.027353178	1.456547823	3.437569382	5458.759543	27812.65
Malaysia	2008	884.45	5.440782211	-3.903775982	3.335833333	6130.424238	14387.48
Malaysia	2009	1259.16	0.583308406	11.78250584	3.524502911	5683.980556	21872.5
Malaysia	2010	1519.94	1.710037175	0.847359744	3.221086915	6740.151542	23035.45
Malaysia	2011	1521.29	3.2	-0.613573757	3.060003011	7814.096768	18,434.39
Malaysia	2012	1694.16	1.655361757	4.047617519	3.088800867	8026.79356	22,656.90





Country	Year	Index	Inflation rate	Interest rate	Exchange Rate	PCI	Index HGSG
Singapore	1997	1259.9	2.003586185	5.232890356	1.484805833	23624.09411	10722.8
Singapore	1998	1428.14	-0.267502293	8.920080416	1.673601667	19029.89057	10048.58
Singapore	1999	2230.28	0.016709834	10.09232131	1.694956667	18802.63741	16962.1
Singapore	2000	1991.29	1.361623924	2.018648861	1.723963333	20415.43643	15095.53
Singapore	2001	1786.89	0.997197956	8.072198266	1.7917225	18116.1475	11397.21
Singapore	2002	1291.44	-0.391676867	6.677971435	1.790588333	18026.54728	9321.29
Singapore	2003	1848.36	0.5079053	7.136167026	1.742183333	19079.43598	12575.94
Singapore	2004	2096.32	1.662727199	1.007288172	1.690228333	21516.74076	14230.14
Singapore	2005	2412.08	0.425106277	3.00689269	1.6643975	23774.05833	14876.43
Singapore	2006	3125.56	1.020916335	3.531769737	1.588933333	28039.07004	19964.72
Singapore	2007	2981.75	2.095144195	-0.501595468	1.507101667	33316.74139	27812.65
Singapore	2008	1746.47	6.518590053	6.975659728	1.414860833	32864.26226	14387.48
Singapore	2009	2745.35	0.60362173	1.795752326	1.454514713	31321.0069	21872.5
Singapore	2010	3179.72	2.8	5.428484038	1.363508333	39431.53401	23035.45
Singapore	2011	2906.69	5.252918288	4.515988453	1.257775877	44198.74429	18,434.39
Singapore	2012	3282.66	4.528650647	3.85179325	1.249676204	44606.85657	22,656.90

