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Global Economic Crises: A Catalyst for Shifting Causal Dynamics Between Interest Rates, Exchange Rates, and Stock Prices in Indonesia

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Abstract
This study aims to analyze the global crisis's effect on the causal relationship between interest rate, exchange rate, and stock price. The sample used in this study is the IDX Composite, rupiah to US dollar exchange rate, and interest rates in Indonesia with monthly data during the observation period from January 2003 until December 2020. The pre-crisis results indicate a one-way causality relationship between exchange rates and interest rates; there is no causal relationship between the IDX Composite and the exchange rate and the IDX Composite and interest rates. The post-crisis results indicate a one-way causality relationship between the IDX Composite and the exchange rate and the IDX Composite and interest rates. Meanwhile, there is a two-way causality between exchange and interest rates. The study results in all periods indicate a one-way causality relationship between the IDX Composite and the exchange rate and IDX Composite and interest rates. Meanwhile, there is no causal relationship between exchange rates and interest rates.

Keywords: *IDX Composite, Exchange Rate, Interest Rate, Global Crisis*

Abstrak

Penelitian ini memiliki tujuan untuk menganalisis hubungan kausalitas antara harga saham, suku bunga, dan kurs. Sampel yang dipakai pada penelitian ini ialah indeks harga saham gabungan (IHSG), kurs (rupiah-USD), suku bunga Indonesia dengan data bulanan selama periode observasi yaitu dari Januari 2003 - Desember 2020. Hasil penelitian sebelum krisis memiliki hasil bahwa terdapat hubungan kausalitas satu arah antara kurs dan suku bunga. Tidak terdapat hubungan kausalitas antara IHSG dan kurs maupun IHSG dan suku bunga. Hasil penelitian sesudah krisis memiliki hasil bahwa terdapat hubungan kausalitas satu arah antara IHSG dan kurs maupun IHSG dan suku bunga. Terdapat hubungan kausalitas dua arah antara kurs dan suku bunga. Hasil penelitian di semua periode memiliki hasil bahwa terdapat hubungan kausalitas satu arah antara IHSG dan kurs maupun IHSG dan suku bunga. Tidak terdapat hubungan kausalitas antara kurs dan suku bunga.

Kata Kunci: IDX Composite, Exchange Rate, Interest Rate, Global Crisis

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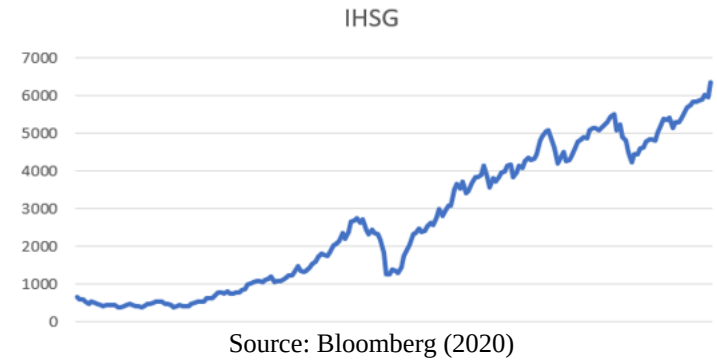
INTRODUCTION

As a developing country, Indonesia experiences significant interconnections between its stock market, money market, and forex market. Changes in one financial sector can quickly spread to others due to the contagious effect (Jayashankar, 2017). The global economic crisis of 2007–2008, originating in the United States, demonstrated this interconnectedness on a global scale. According to Hamid (2009), after the bankruptcy of Lehman Brothers, financial markets worldwide experienced sharp declines, causing major banks to collapse and triggering panic in financial centers across the world. The repercussions were felt in various capital markets, including those in the United States, Asia, and Europe, where panic selling led to drastic drops in stock indices.

Indonesia was not immune to this crisis. The economic downturn was reflected in the movements of its money and capital markets. The IDX Composite, which stood at 2,627.3 at the beginning of 2008, plummeted to 1,355.4 by the end of the year, nearly losing half its value. Simultaneously, the interest rate surged to 9.50% from a previously stable 8% to curb inflationary pressures. Additionally, the Rupiah depreciated significantly against the US dollar, reaching IDR 12,462 per USD in November 2008 from its previous level of IDR 9,000 per USD. These fluctuations highlight the profound impact of the global financial crisis on Indonesia's financial markets.

Understanding the interplay between exchange rates, interest rates, and stock prices is crucial from an economic policy perspective. Financial markets react swiftly to economic shifts, and negative or positive shocks in one market may quickly transmit to another (Sa'diyah & Widagdo, 2020). The dynamic relationships between these variables are particularly relevant in emerging economies like Indonesia, where financial market stability is critical for overall economic resilience (Jayashankar, 2017). Moreover, the extent to which crisis periods alter these relationships remains a key research question. Given this background, this study aims to analyze the impact of global financial crises on the causal relationships between interest rates, exchange rates, and stock prices in Indonesia. Specifically, it seeks to determine whether these relationships shift during crisis periods and how they evolve in post-crisis scenarios. By examining these dynamics, this research contributes to the existing literature and provides valuable insights for policymakers and investors navigating financial market volatility.

The examination of co-movements between exchange rate, interest rate, and stock prices is important from an economic policies perspective as each financial market reacts quickly to the changes in economic fundamentals. Further, examining the dynamic relationship between the stock market, foreign exchange market, and capital market in the case of emerging countries like India is more relevant because negative or positive shocks affecting one market may be transmitted quickly to another through a contagious effect (Sa'diyah & Hilabi, 2022). Besides, it would be interesting to verify whether or not transmissions between the foreign exchange market, the equity market, and money markets behave differently during crisis periods (Jayashankar, 2017). In Indonesia's Economic Outlook (2009), the global financial crisis has affected the Indonesian economy, which is reflected in movements in the money and capital markets. IDX Composite in December 2008 closed at 1,355,4, the difference was almost half that at the starting point of 2008 which was 2,627.3, along with the decrease in the value of the trading volume of shares and the decrease in the value of market capitalization. IDX Composite movement can be seen in Figure 1.



Source: Bloomberg (2020)

Figure 1. IDX Composite Movement (January 2003 – December 2020)

Figure 2 shows the effects of the global crisis in 2008 which caused at the end of 2008 Indonesia's interest rates to increase to 9.50%, from the previous trend which tended to be stable at 8%. This is done to restrain inflation in Indonesia from the impact of the global economic crisis.

Source: Bloomberg (2020)

Figure 2. Interest Rates Movement (January 2003 – December 2020)

Figure 3 shows that the global economic crisis caused a drastic increase in the Rupiah exchange rate against the USD at the end of 2008, to exceed 12 thousand rupiah. In November 2008 12,462 Rupiah per 1 USD which previously tended to be constant at the level of 9000 Rupiah per 1 USD.

Source: Bloomberg (2020)

Figure 3. Rupiah to Dollar Exchange Rate Movement (January 2003 – December 2020)

From the previous description, it can be concluded that there was a phenomenon that the global crisis at the end of 2008 resulted in the IDX composite rising to the lowest level of 1,355,4, interest rates rose to the highest level of 9.50% from the previous which tended to be stable at 8%, and the Rupiah exchange rate rose to a level of the highest was 12,462 Rupiah per 1 USD, which previously tended to be constant at the level of 9000 Rupiah per 1 USD.

Table 1. Research Gap of Previous Studies

No.	Research Gap	Results	Authors
1.	There are differences in previous studies' results between interest rates on stock prices.	Interest rates have a positive effect on stock prices.	Andries et al (2014), Gupta, et.al., (1997)
		Interest rates has a negative effect on stock price.	Jayashankar et.al. (2017), D'Agostino, et al (2005), Bernanke Kuttner (2005), Witjaksono (2010), Sari (2012)
		Interest rates do not affect stock prices.	Valadkhani, et al (2006), Mok (2004), Sangkyun (1997), Manullang (2008)
2.	There are differences in previous studies' results between stock prices on interest rates.	The stock price has a positive effect on interest rates.	Andries et al (2014), Gupta, et.al., (1997)
		The stock price has a negative effect on interest rates.	Jayashankar et al (2017), Gjerde et al (1999), Kandir (2008)
		The stock price does not affect the interest rate.	Valadkhani, et al (2006), Mok (2004), Sangkyun (1997), Manullang (2008)
3.	There are differences in previous studies' results between interest rates on exchange rates.	Interest rates have a positive effect on the exchange rate.	Jayashankar et al (2017), Chinn et al (2004)
		Interest rates has a negative effect on the exchange rate	Gjerde et al (1999)
4.	There are differences in previous studies' results between exchange rates on interest rates.	Exchange rates have a positive effect on interest rates.	Jayashankar et al (2017), Chinn et al (2004)
		Exchange rates has a negative effect on interest rate	Gjerde et al (1999)
5.	There are differences in previous studies' results between exchange rates on stock price.	Exchange rates have a positive effect on stock price	Diamandis et al (2011), Hooker (2004), Gupta, et.al., (1997)
		Exchange rates has a negative effect on stock price.	Jayashankar et al (2017), Ruhendi et al (2003), Witjaksono (2010), Rusbariandi (2012), Sari (2012), Kewal (2012)
		Exchange rates has no effect on stock price.	Valadkhani, et al (2006), Mok (2004), Sangkyun (1997)
6.	There are differences in previous studies' results between stock price on exchange rate.	The stock price has a positive effect on the exchange rate	Diamandis et al., (2011), Hooker (2004), Gupta, et.al., (1997)
		The stock price has a negative effect on the exchange rate.	Jayashankar et al (2017), Ruhendi et al (2003), Witjaksono (2010)
		The stock price does not affect the exchange rate.	Valadkhani, et al (2006), Mok (2004), Sangkyun (1997)

Source: Various Journals and Thesis

Few studies have been conducted to test the causality of interest rates, exchange rates, and stock prices in emerging markets. Therefore, this study was conducted to address this apparent lack of detailed research in emerging markets. The purpose of this study is to test whether there is a global crisis effect on the causal relationship between interest rate, exchange rate, and stock price in Indonesia, to test the existence of a causal relationship between stock price movements and interest rates, and to verify, whether changes in exchange rates affect the stock prices or vice versa.

LITERATURE REVIEW

According to flow-oriented models, exchange rates focus on the trade balance or current account balance. Proponents of this model argue that changes in exchange rates affect international competitiveness and thus affect real output. Furthermore, because the stock price can be interpreted as the present value of future cash flows in the company or industry, it reacts to changes in exchange rates. The Portfolio Balance Model (PBM) by Frankel (1983), states that increases in stock prices affect aggregate demand through wealth and liquidity effects, which in turn lead to higher demand for money with subsequent higher interest rates. High interest rates always encourage the flow of domestic capital, which causes the appreciation of the local currency against the currencies of other countries. Thus, through the PBM approach, it is known that there is a positive relationship between stock prices and the exchange rate, with causality running from stock prices to exchange rates. Based on the Mundell (1963) - Fleming (1962) model, an increase in the interest rate is needed to stabilize exchange rate depreciation and to curb inflationary pressures. A high interest rate policy increases the attractiveness of domestic financial assets as a result of the resulting capital inflows, thereby limiting exchange rate depreciation. A higher interest rate also lowers the net value of future asset returns, so stock prices may fall.

Granger et. al, (1998) stated, theoretically the difference in the direction of the relationship between stock prices and the exchange rate can be explained by the balance portfolio model and the traditional approach. According to the traditional approach, stock prices and exchange rates have a positive relationship, where a changing exchange rate will influence the operating costs and income of a company, which in turn will lead to changes in stock prices. The portfolio balance approach presupposes that stocks are part of wealth, and therefore can influence the behavior of the exchange rate through the law of demand for money by the monetarist model of exchange rate determination (Sa'diyah et al., 2022). This approach presupposes a negative relationship between exchange rates and stock prices, with a causal direction from the stock market to the money market, by the very fast interaction of financial markets. According to the flow-oriented approach theory, if the rupiah exchange rate weakens and the dollar is high, it will weaken stock prices because a lot of domestic cash flows are going out of the country (one of the cash flows coming out of the capital market). When investors sell shares, there will be a lot of supply and little demand, so that will make the stock price fall. Previous studies examined by Andries et al., (2014), and Jayashankar and Rath (2017), show the results that there is a causal relationship between interest rates, exchange rates, and stock prices. Based on the information that has been presented and the flow-oriented approach theory, the first hypothesis of this research is, H1: There is a causal relationship between stock prices and exchange rates.

The SBI rate is the annual interest rate published by Bank Indonesia to serve as a benchmark for interest on loans and deposits. High interest rates reflect the high cost of capital, therefore rising interest rates signal an increasing return from investing in a stock. Tandelilin (2010) said, that the increase in interest rates indicated by investment in a stock, causes investors to take back their investment in stock and move the investment to investments in the form of deposits or savings. Weston and Brigham (1994) say interest rates have an influence on stock prices, high interest rates can increase interest costs resulting in decreased company income which will then make stock prices fall as well. If this is experienced by many stocks, it will give a negative signal to the IDX Composite, this situation can certainly affect investors' interest in moving their investment to the money market or bond market. In this case, interest rates have a negative effect on the IDX Composite. According to Raharjo (2010), the interest rate becomes an attraction for investors to invest in the form of SBI or deposits which will make stock investments competitive (Widagdo & Sa'diyah, 2022). Through the previous explanation, it can be seen that the relationship between the BI rate and stock prices does not have a direct influence.

The BI rate will be responded to by the deposit interest rate, if the BI rate increases, it will be followed by an increase in loan interest rates for debtors. If interest rates tend to rise continuously, it will encourage investors to transfer funds from the capital market to banks. If this happens, then the stock price will also decrease, and vice versa. So the relationship between stock prices and the BI rate is negatively related. According to the Portfolio Balance Model (PBM) theory, an increase in stock prices will have an impact on increasing demand for these shares. An increase in interest rates will increase cash inflows in a country, which will impact an increase in the exchange rate. According to the flow-oriented approach theory, an increase in the exchange rate will impact increasing stock prices. Previous studies conducted by Jayashankar and Rath (2017) and Andries et al., (2014) show that there is a causal relationship between interest rates, exchange rates, and stock prices. Based on the information that has been presented and the PBM theory, the second hypothesis in this study is, H2: There is a causal relationship between stock prices and interest rates.

BI Rate is the interest rate issued by Bank Indonesia; lowering or increasing the BI rate is one of the monetary policies. The BI rate plays a vital role in influencing capital flows. Many investors will look for countries with interest rates that can be profitable if the domestic BI rate is high, it can make foreign capital enter the country, and if the BI rate is low, it can make capital flows into the country flow out of the country. If a lot of capital flows into Indonesia, the supply of US dollars will increase. This incident can cause the US dollar to rise, causing the price to get it to slightly increase in appreciation of the rupiah. The higher the BI rate will strengthen the US dollar or rupiah exchange rate. Krugman (2013) states that rising foreign interest rates will result in the depreciation of the domestic currency, and rising domestic interest rates will result in an appreciation of the currency of a country. According to the Mundell-Fleming model, an increase in interest rates stabilizes a country's exchange rate and suppresses inflation. A high interest rate policy increases the attractiveness of domestic financial assets due to the resulting capital inflows, thereby limiting exchange rate depreciation (Widagdo & Sa'diyah, 2021). A higher interest rate also lowers the net value of future asset returns so that stock prices may fall. Previous studies conducted by Jayashankar and Rath (2017) and Andries et al., (2014) show that there is a causal relationship between interest rates, exchange rates, and stock prices. Based on the information that has been described and the Mundell and Fleming model, the third hypothesis in this study is, H3: There is a causal relationship between exchange rates and interest rates.

From 2007 to 2008 there was a global financial crisis that originated in the US (United States of America). According to Hamid (2009), shortly after the information about the bankruptcy of Lehman Brothers spread, the world financial markets fell to their lowest point. Many of the major banks collapsed and the collapse of various other investment banks in the United States caused a wave of panic in many financial centers around the world. The capital markets of the United States, Asia, and Europe were immediately hit by panic selling which caused the stock price index to drop in various capital markets. In Indonesia's Economic Outlook (2009), the global financial crisis has affected the Indonesian economy, which is reflected in movements in the money and capital markets. Because the global crisis greatly affects financial conditions throughout the world, this study will conduct tests on the pre-crisis, post-crisis, and all periods so we can conclude whether there is an effect of the global crisis on the relationship between the 3 variables. So, the fourth hypothesis in this study is, H4: Global crisis has an

effect on the causal relationship between interest rates, exchange rates, and stock prices in Indonesia. From the description and literature review above, the theoretical framework for this research is:

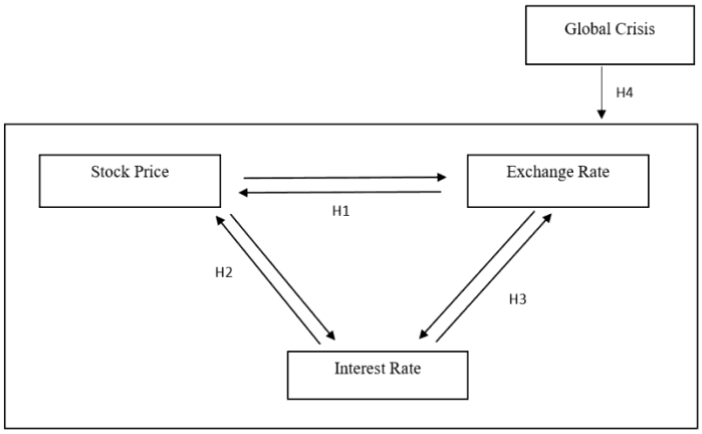


Figure 4. Conceptual Framework

RESEARCH METHOD

All data used in this study is secondary data from January 2003 to December 2020. The data used in this study were obtained from various sources, including bi.go.id, bps.go.id, yahoofinance.com, and Bloomberg. Because the model used is a simultaneous model, this analysis uses the Vector Auto Regression (VAR) method. If the data in this study has met the criteria as stable or stationary data and there are no symptoms of cointegration, the data processing process in the study will continue, but if the data is stationary and experiencing symptoms of cointegration, it will be followed up using the Vector Error Correction Model (VECM) method. By using VECM, this study can effectively capture the interplay between long-run equilibrium forces and short-run crisis-induced adjustments, making it a powerful tool to analyze how global economic crises reshape financial linkages in Indonesia. The advantages of the VAR research method lie in the ability to track the dynamic response between one economic variable to another and the speed of changes in stock prices up and down from one stock exchange that is responded to by stock exchanges in other countries.

RESULT AND DISCUSSION

Table 2. VAR Estimation (Pre-Crisis Period)

Included observations: 106 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DIHSG	DKURS	DSUKU_B...
DIHSG(-1)	0.979308	-0.000132	-8.50E-07
	(0.01718)	(0.06704)	(6.6E-07)
	[56.9868]	[-0.00198]	[-1.29306]
DKURS(-1)	0.011913	0.921203	2.69E-06
	(0.01535)	(0.05987)	(5.9E-07)
	[0.77623]	[15.3869]	[4.57632]
DSUKU_BUNGA__(-1)	-377.5210	-936.5654	0.960670
	(407.261)	(1588.76)	(0.01558)
	[-0.92698]	[-0.58950]	[61.6517]

C	-40.52487 (129.012) [-0.31412]	877.7403 (503.287) [1.74402]	-0.019692 (0.00494) [-3.98938]
R-squared	0.980212	0.734641	0.985955
Adj. R-squared	0.979630	0.726836	0.985542
Sum sq. resids	1048190.	15951846	0.001534
S.E. equation	101.3724	395.4626	0.003879
F-statistic	1684.196	94.12819	2386.847
Log likelihood	-637.9617	-782.2547	440.1726
Akaike AIC	12.11249	14.83499	-8.229672
Schwarz SC	12.21299	14.93550	-8.129165
Mean dependent	1057.676	9275.075	0.110931
S.D. dependent	710.2680	756.6477	0.032257

Source: Primary data processed (2024)

Table 3. VAR Estimation (Post-Crisis Period)

Included observations: 106 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DIHSG	DKURS	DSUKU_B...
DIHSG(-1)	0.943194 (0.01986) [47.4817]	0.138987 (0.03149) [4.41340]	8.00E-07 (2.2E-07) [3.57111]
DKURS(-1)	0.017050 (0.01097) [1.55479]	0.947399 (0.01739) [54.4942]	-4.70E-07 (1.2E-07) [-3.79922]
DSUKU_BUNGA__(-1)	-2420.304 (1815.19) [-1.33336]	5876.223 (2877.72) [2.04197]	1.014558 (0.02046) [49.5885]
C	251.0367 (151.050) [1.66194]	-363.6024 (239.469) [-1.51837]	0.000470 (0.00170) [0.27598]
R-squared	0.978893	0.982441	0.966676
Adj. R-squared	0.978272	0.981924	0.965696
Sum sq. resids	2635486.	6623929.	0.000335
S.E. equation	160.7423	254.8342	0.001812
F-statistic	1576.861	1902.307	986.2964
Log likelihood	-686.8279	-735.6738	520.8567
Akaike AIC	13.03449	13.95611	-9.752013
Schwarz SC	13.13499	14.05662	-9.651506
Mean dependent	4256.301	11112.04	0.064552
S.D. dependent	1090.499	1895.443	0.009782

Source: Primary data processed (2024)

Table 4. VAR Estimation (All Period)

Included observations: 214 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	DIHSG	DKURS	DSUKU_B...
DIHSG(-1)	0.982170	0.051733	-4.75E-08
	(0.01024)	(0.02605)	(2.5E-07)
	[95.9231]	[1.98584]	[-0.19216]
DKURS(-1)	0.011964	0.949634	2.33E-08
	(0.00786)	(0.02000)	(1.9E-07)
	[1.52191]	[47.4814]	[0.12254]
DSUKU_BUNGA__(-1)	-954.3935	828.0786	0.996744
	(447.965)	(1139.74)	(0.01082)
	[-2.13051]	[0.72655]	[92.0875]
C	33.89302	332.4110	-0.000148
	(71.7485)	(182.547)	(0.00173)
	[0.47239]	[1.82096]	[-0.08556]
R-squared	0.994605	0.959145	0.990234
Adj. R-squared	0.994528	0.958562	0.990095
Sum sq. resids	3903036.	25265530	0.002279
S.E. equation	136.3301	346.8603	0.003294
F-statistic	12905.88	1643.395	7097.840
Log likelihood	-1353.461	-1553.303	921.5123
Akaike AIC	12.68655	14.55424	-8.574881
Schwarz SC	12.74946	14.61715	-8.511966
Mean dependent	2644.718	10203.41	0.087763
S.D. dependent	1843.023	1703.940	0.033098

Source: Primary data processed (2024)

From the results of the Granger causality test, it can be seen that there is a one-way causality relationship between IDX Composite and the exchange rate in the post-crisis period and all periods. Findings in the post-crisis period and all periods indicate that the IDX Composite has an influence on the exchange rate, but the exchange rate has no effect on the IDX Composite. These results indicate that if the IDX Composite changes, it will affect the exchange rate. On the other hand, changes in the exchange rate did not affect the rise and fall of the IDX Composite. Meanwhile, the results of the Granger causality test in the period before the crisis showed that there was no causal relationship between the IDX Composite and the exchange rate. These results indicate that if the IDX Composite changes, it will not affect the exchange rate, and vice versa. Therefore, it can be concluded that hypothesis 1 is accepted in the post-crisis and all periods, because there is a one-way causality relationship. The results of this study are in line with the flow-oriented approach theory, this theory explains that if the rupiah exchange rate weakens and the dollar is high it will weaken stock prices because a lot of domestic cash flows go abroad (one of the cash flows that come out of the capital market). When investors sell shares, there will be a lot of supply and little demand, so that will make the stock price fall. In this case, the weakening of the rupiah has no impact on stock prices. The weakening of the rupiah does not make investors sell their shares, so it does not have an impact on stock prices.

From the results of the Granger causality test, it can be seen that there is a one-way causality relationship between IDX Composite and interest rates in the post-crisis period and all periods. The findings in the post-crisis period show that the IDX Composite has an influence on interest rates, but interest rates have no effect on the IDX Composite. These results indicate that if the IDX Composite changes, it will affect interest rates. On the other hand, changes in interest rates did not affect the rise and fall of the IDX Composite. Then the findings in all these periods, show that interest rates have an influence on the IDX Composite, but the IDX Composite has no effect on interest rates. These results

indicate that if the interest rate changes, it will affect the IDX Composite. On the other hand, changes in IDX Composite did not affect the rise and fall of interest rates. These results indicate that if the interest rate changes, it will affect the IDX Composite. On the other hand, changes in the IDX Composite did not affect the rise and fall of interest rates. Meanwhile, the results of the Granger causality test in the period before the crisis showed that there was no causal relationship between IDX Composite and interest rates. These results indicate that if the IDX Composite changes, it will not affect interest rates, and vice versa. Therefore, it can be concluded that hypothesis 2 is accepted in post-crisis and all periods because there is one-way causality.

According to Weston and Brigham (1994), interest rates influence stock prices, high interest rates can increase interest costs resulting in decreased company income which will then make stock prices fall as well. If this is experienced by many stocks, it will give a negative signal to the IDX Composite, this situation can certainly affect investors' interest in moving their investment to the money market or bond market. In this case, interest rates have a negative effect on the IDX Composite. In this case, changes in the IDX Composite do not affect interest rates. According to the Mundell-Fleming model, rising interest rates stabilize a country's exchange rate and suppress inflation.

From the results of the Granger causality test, it can be seen that there is a two-way causality relationship between exchange rates and interest rates in the post-crisis period. The findings in the post-crisis period show that the exchange rate influences interest rates, and vice versa. These results indicate that if the exchange rate changes, it will affect interest rates, and if interest rates change, it will affect the exchange rate. Then from the results of the Granger causality test, it can be seen that there is a one-way causality relationship between exchange rates and interest rates in the period before the crisis. The findings in the pre-crisis period show that the exchange rate has an influence on interest rates, but interest rates have no effect on the exchange rate. These results indicate that if the exchange rate changes, it will affect interest rates. On the other hand, changes in interest rates do not affect the rise and fall of the exchange rate. These results indicate that if the exchange rate changes, it will affect interest rates. On the other hand, changes in interest rates do not affect the rise and fall of the exchange rate. Meanwhile, the results of the Granger causality test in all periods show that there is no causal relationship between exchange rates and interest rates. These results indicate that if the exchange rate changes, it will not affect interest rates, and vice versa. Therefore, it can be concluded that hypothesis 3 is accepted in the pre-crisis and post-crisis periods because there is a two-way and one-way causality.

According to the Mundell-Fleming model, an increase in interest rates stabilizes a country's exchange rate and suppresses inflation. A high interest rate policy increases the attractiveness of domestic financial assets as a result of the resulting capital inflows, thereby limiting exchange rate depreciation. According to the portfolio balance model (PBM), an increase in interest rates will increase cash inflows in a country, this will have an impact on an increase in the exchange rate. In the case of the post-crisis period, two-way causality results between exchange rates and interest rates are obtained. This finding is by the findings of Jayashankar and Rath (2017) which states that there is a causal relationship between exchange rates and interest rates.

This research has important practical implications for policymakers, investors, and financial institutions. By understanding the causal relationships between interest rates, exchange rates, and stock prices, decision-makers can take proactive steps to manage risks and stabilize the economy, especially during global crises. For policymakers, the findings can help adjust monetary and exchange rate policies more effectively. If interest rates have a strong impact on exchange rates and stock prices during crises, Bank Indonesia can implement policies to stabilize the currency and support financial markets. Similarly, if stock prices react sharply to exchange rate fluctuations, regulators can introduce market

safeguards to prevent excessive volatility. Investors and businesses can also benefit from these insights. If your research reveals that exchange rate movements significantly affect stock prices, investors can hedge against currency risks using forex derivatives. Businesses that rely on imports and exports can adjust their pricing and financial strategies to minimize losses from currency fluctuations.

CONCLUSION

This study aims to analyze the impact of the global economic crisis on the causal relationship between interest rates, exchange rates, and stock prices in Indonesia. The findings reveal that after the crisis, a one-way causality exists between the IDX Composite and the exchange rate, as well as between the IDX Composite and interest rates. Additionally, a two-way causality between exchange rates and interest rates emerges in the post-crisis period, indicating a shift in causal dynamics following the crisis. These findings contribute to the existing body of knowledge by demonstrating that global economic crises can alter the direction of causal relationships among key economic variables. This study also supports the flow-oriented approach and portfolio balance model in explaining the interactions between exchange rates, interest rates, and stock prices in emerging markets.

This study has several limitations, this study uses monthly data from January 2003 to December 2020. However, in general, investors use daily data to make investment decisions as a material consideration in making stock trading decisions. Investors use daily data because it is considered more able to provide a picture of the actual situation that is happening at that time. Besides, some variables are not significant in this study, because they cannot meet the assumptions. Also, this study only focuses on the IDX Composite, and the macroeconomic variables used in this study are limited to interest rates and exchange rates only. Based on the limitations of this study, future studies are recommended using data at daily intervals, to obtain more detailed and optimal results, and expand the indexes and countries studied, future research is expected to add macroeconomic variables other than interest rates and exchange rates to obtain new findings about the variables that affect the IDX Composite, interest rates, and the exchange rate itself.

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