Cryptocurrency in lower-middle-income countries: a monetary theory and regulation perspective

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Abstract: This study analyses the role of monetary policy and financial openness toward the regulation of the cryptocurrency development market. We used panel data in low-middle-income countries from 2010 to 2019. Using an ordered probit model represents a comprehensive extension of probit analysis capable of handling scenarios of more than two outcomes of an ordinal dependent variable featuring a naturally ordered set of potential values. The findings suggest that de facto financial openness, government effectiveness, and macroeconomic variables such as inflation, interest rates, and trade openness significantly affect the regulation of the cryptocurrency development market while economic growth variables are insignificant. The higher the de facto financial openness, the greater the chances of countries banning the use of crypto to minimise the risks posed. Monetary policy through high-interest rates will lower crypto regulation to be banned meaning it will increase crypto regulation to be liberalised.

Keywords: cryptocurrency; financial openness; monetary policy; law perspective.

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1 Introduction

Cryptocurrencies themselves are created to reduce transactions that depend on third-party services and are decentralised in addition to that the transactions require no fees and no transfer conditions or limits and can be sent anywhere over the internet. No country directly has access to users and directly regulates cryptocurrencies and this is what attracts users (Andrianto, 2017; Georgiou, 2020; Sharov, 2018).

Since there are still many countries that have not directly allowed the use of cryptocurrencies. The cause is the unclear legality and the number of countries waiting for action or policies from other countries on whether to authorise or prohibit cryptocurrency transactions. In terms of legality, each country takes a different attitude toward the implementation of digital currencies, namely:

1 legal

2 illegal

3 neutral or alegal

4 limited or retributed

5 no classification is known (Bindseil, 2019).

Although many central banks have warned their citizens about using cryptocurrencies and rejecting the status of crypto as a currency, there are still many countries that use it as an asset currency. The reason for policymakers is to look at it in terms of low liquidity, the market risk from volatility, and the operational risk of cryptocurrencies. (Cvetkova, 2018; Jabotinsky, 2020) indicate that crypto can be traded legally if it complies with existing regulations in the country concerned and has links with financial instruments.

Inside of 251 countries that have recognised and know virtual currencies, there are as many as 110 countries (around 43%) that recognise digital currencies as legal currencies, for example such as Belgium, Denmark, Brunei Darussalam, Finland, Estonia, Greece, Iceland, Japan, Ireland, Singapore, Spain, Italy, South Africa, The UK and Switzerland (Bindseil, 2019; Zubaidi and Abdullah, 2017). Meanwhile, several countries that legalise digital currencies as commodities are Israel, Hong Kong, Brazil, France, Norway, the Netherlands, New Zealand, Sweden, Thailand, Zimbabwe, Turkey and Thailand. In addition, digital currencies are also legally recognised as property in several countries such as Poland, the USA and Australia. Countries that treat digital currencies as goods that can be exchanged for other goods are the Philippines, Canada, Germany and Austria. In addition, some countries stipulate non-legal digital currencies as currencies namely

Pakistan, Algeria, Afghanistan and Vanuatu. Then some stipulate limited as commodities, namely China, Indonesia, Samoa, Egypt and countries that set limited as property, namely India (Bindseil, 2019).

The quality of government institutions in a country is likely to influence the attitude as well as the policies taken towards the acceptance of cryptocurrencies. According to Auer and Claessens (2018) and Shovkhalov and Idrisov (2021), they states that differences in the legal system affect the development of financial markets. Financial markets thrive when legal institutions protect property rights and there are contracts (Poyser, 2019). More flexible institutions can support financial innovation. Thus, according to these findings, it is presumed that the institutions and quality of government institutions that support financial development are more likely to support the emerging cryptocurrency industry.

The development and rise of cryptocurrencies in modern financial markets as well as the ever-discussed use of crypto have led to pros and cons in various countries. So, through this research, it was tested whether effective governance is more supportive of financial developments such as policies that do not limit the use of emerging cryptocurrencies too much. In addition, de jure financial openness has a relationship with decisions or policies on the acceptance of cryptocurrencies. Countries that have a liberal capital flow policy may be more open to the development of new financial instruments to compete in the international market. Mazambani and Mutambara (2020) show that capital liberalisation contributes to financial development through financial innovations. According to Jabotinsky (2020), more financially open countries tend to be more open to accepting cryptocurrencies.

The objectives of the study are divided into two, namely:

a understanding the development of cryptocurrencies regulation among low middle-income countries

b analysing the relationship between monetary policy, financial openness, and the degree of development of cryptocurrencies in low middle-income countries.

The results of this study are expected to be useful to look at the regulation of cryptocurrencies in various countries as well as the extent to which countries accept crypto and financial developments through aspects of legal institutions and financial openness in various countries. Thus, each country can take a stand on the development of cryptocurrencies and balance between following financial innovations while reducing economic risks in their respective countries.

2 Literature review

Modern monetary theory is a series of new thoughts or discoveries that offer an understanding of the explanation of dynamics in modern monetary systems such as fiat money. The foundation of MMT is the economic theory initiated by John Maynard Keynes in the era of 1930 to the 1940s (Rose, 2015). In this theory, there is a lot of discussion about the importance of new actions or innovations in the economy that are not in line with conventional economics (Malherbe et al., 2019). The essence of the MMT is the sovereignty of the government in monetary terms, the country that issues the

currency, and the absence of limits on the fear of bankruptcy (Baur et al., 2018; Yussof and Al-Harthy, 2020).

Modern Monetary Theory assumes that cryptocurrencies such as bitcoin are P2P network that has account units and resembles commodities (Othman et al., 2020). This creates confusion over the framework of modern monetary theory because bitcoin has no issuer as well as being responsible for controlling its circulation. Then the supporters of MMT do not believe bitcoin can be used as a substitute or alternative to banknotes or monetary instruments (Shovkhalov and Idrisov, 2021). But they think that cryptocurrencies have other uses (Shovkhalov and Idrisov, 2021). Because as previously explained, the essence of MMT is that the government is free to print money according to the needs of the state, but it is different from cryptocurrencies that have a limited amount.

Based on the modern money theory Stephanie Kelton makes a comparison between cryptocurrencies and fiat money systems (Nguyen et al., 2019). He thinks that the use of fiat money is due to the support or ability of the government to foster public trust in currencies while cryptocurrencies are not, so this belief is voluntary. Similarly, cryptocurrency can be used as an alternative payment depending on the existing trust or the trust of the user. If people can trust government-issued currencies and then exchange them for cryptocurrencies (which cannot be used to pay taxes) and can trust cryptocurrencies can be used for exchange then there is no reason for the government not to use or accept and utilise this technology (Honak, 2021; Rose, 2015; Vozniuk and Tytko, 2019).

Study by Dupuis and Gleason (2021) shows that institutions or legal institutions with effective governance are related to the regulatory stance taken by the government, which is not too restrictive in the use of cryptocurrencies, while financial openness results are insignificant. This means a certain level of institutional quality may be required before opening to new financial technologies. The benefits and risks of cryptocurrencies will help the attitude of regulators in making decisions to accept cryptocurrencies or not. In research by Yussof and Al-Harthy (2020), it was recommended that Malaysia accept cryptocurrencies due to global trends and developments.

The legality and acceptance of crypto in various countries are classified into various forms such as digital assets for investment and commodities. When cryptocurrency is recognised as one of the digital investment assets, there will be several other factors such as monetary variables that influence the decision to use it. Interest rates and expectations of future value are the important factors determining the decision to invest (Dupuis and Gleason, 2021). Or it can be said that the interest rate is one of the determinants of a person's decision to invest or save.

Macro interest rate theory has a basic understanding, namely the price of using the money for a certain period. Interest rates and the role of time are interrelated in the economy. The emergence of interest rates occurs because of the penchant for owning money now. Meanwhile, based on the classical theory, it is stated that interest is the price of investment funds that occur in the market. According to Keynes's theory, the interest rate is a monetary phenomenon determined by the demand and supply that is in the money market. The increase in interest can reduce the present value of future profit income so that it will decrease the stock if it is marketed capital or decrease the profit return on crypto in digital crypto assets. This is because investors will instinctively be more interested in investing in other forms of investment such as saving in a bank than investing in stocks or other investments (Gambetti and Giusberti, 2019). Conversely, a

reduction in interest rates will increase the money supply in society because people tend to choose to allocate or rotate their money to sectors that are considered productive. Recent studies have delved into the interconnectedness of cryptocurrencies and their underlying functions. De Pace and Rao (2023) present compelling evidence of notable yet controlled volatility across all seven cryptocurrencies. Notably, during 2018 and the latter half of 2019, numerous cryptocurrencies encountered concurrent periods of instability, underscoring this as a prevailing attribute of these markets. Cryptocurrency returns exhibit substantial volatility, an upside leverage effect, skewed distribution, high kurtosis, and a positive autocorrelation in both returns and squared returns (López-Martín et al., 2022). Conversely, Jalan et al. (2023) explore the impact of interpersonal trust on cryptocurrency interest. Our own findings underscore a positive and statistically significant correlation between trust and cryptocurrency interest and adoption, thereby emphasising the pivotal role of trust in fostering the expansion of financial markets. Cryptocurrencies are considered inflation-resistant assets with a low-interest rate and the value of the deposit of assets that can be used as hedging. However, when the phenomenon of increasing interest rates by the Fed tends to cause a weakening in fiat currencies which has an impact on stock and crypto market conditions, the decline in crypto investment that occurs can also be caused by investors' consideration in choosing to secure their capital from assets with high risk and looking for alternative investment instruments that are safer and more profitable due to the uncertain value or volatility of crypto. The difference in the volatility of crypto and stocks can be seen from the volatility restriction mechanism that occurs in the market. When the stock market is out of control and causes a halt in trading, a temporary suspension of trading will mean volatility safeguards, while crypto assets do not have volatility control because their value moves according to demand and supply because of which their value can move high or drop drastically.

3 Data and variables

3.1 Data

This study discusses the relationship between legal and institutional developments as well as financial openness to the degree of development of the cryptocurrency market within the scope of countries that are included in the category of lower middle income obtained from World Bank publications. The reason why researchers choose the population of countries with the lower middle-income category is to see the extent of the country's competitiveness in accepting financial innovations, especially cryptocurrencies whose use is currently attracting worldwide attention.

From the population of 50 countries included in this category, researchers sampled as many as 30 countries. The sample determination technique is to use purposive sampling techniques. Purposive sampling is a technique for determining samples with certain considerations based on certain characteristics that are applied based on research objectives or research problems. The following criteria: countries with a cryptocurrency regulatory index where the classification of the economy based on the government's attitude towards cryptocurrencies is divided into 3, namely: the value of 0 when 'prohibited', the value of 1 when 'regulated', and the value of 2 when 'fully liberalised or

exempted'. Each of the classifications of cryptocurrency regulatory indices is taken by ten countries per classification.

The research data used is secondary data for the period 2010 to 2020. The data used in this study are:

a cryptocurrency regulation index which is an economic classification based on the government's attitude towards cryptocurrencies divided into 3 as follows: value 0 when 'prohibited', value 1 when 'regulated', and value 2 when 'fully liberalised or exempted'

b financial openness is taken from the disclosure of capital accounts developed by Chinn-Ito where the data is updated until 2019

c government effectiveness

d economic growth

e inflation

f trade openness

g monetary policy rates.

Table 1 Variable operational definition

Variable	*Definition*	*Data source*
Crypto regulation index (cc)	of a financial system that is	corresponds to higher quality.
Financial openness (*FO*)	more sophisticated and open to foreign capital and integrated with the foreign financial system. The measurement of financial openness is obtained from	the yield of gross domestic product is divided by the midyear population over a certain period measured according to constant prices. Global Legal Research Center
Government effectiveness (*Bquality*)	the ratio of the sum of capital inflows and capital outflows to GDP.	International Monetary Fund (IMF)
Economic growth (*EG*)	One of the aggregate indicators of governance that shows a whole is the quality and credibility of the government in terms of public and civil services, legislation, and policy formation published by the WGI. The effectiveness of the government is calculated from various data sources and reported in percentile ratings	The Worldwide Governance Indicators (WGI) World Bank
An index that measures the economic degree of de jure measures openness to cryptocurrencies.		
Inflation (*INF*)	The level or measure of receipts where the percentile Inflation by consumer price indicates an annual percentage change in the average consumer to	acquire a certain amount of goods and services. World Bank
Trade openness (*TO*)	the ratio of the sum of total exports plus imports of goods and services to gross domestic	product (Real GDP). World Bank
Interest rate (*R*)	The interest rate used is the real	interest rate as proxy of monetary policy. International Monetary Fund (IMF)

3.2 Model specification

The analysis technique in this study used the ordered probit model. The probit model is a qualitative response model based on the probability function of the normal distribution (Mangun et al., 2018). Ordered probit regression can also be interpreted as an analysis used to see the relationship between dependent variables that are categorial (qualitative) and independent variables that are qualitative or quantitative. Then the regression equation for this study is as follows:

$$Pi\ cc\ Xi\ R\ Bquality\ FO\ X(\ )\ 1|\ ) = = ++ + + + \Phi(\ )\ \beta\beta\ \beta\ \beta\ \beta_{01234}\varepsilon$$

where *Pi*(*cc*) is cryptocurrency regulation indices; *R* is interest rate; *Bquality* is legal and institutional developments; *FO* is financial openness; *X* is macroeconomics variables such as economic growth (EG), inflation (INF), and trade openness (TO); Φ is normal distribution; β_0 is interception; β_1, β_2, β_3 is slope; and ε is error term.

4 Results and discussion

The acceptance of cryptocurrencies varies across different countries, with notable disparities observed in nations falling within the lower middle-income category, each adhering to distinct regulatory frameworks. A study conducted by Shovkhalov and Idrisov (2021) furnishes a comprehensive analysis of the cryptocurrency regulations adopted by various countries. Particularly in lower middle-income countries, there exists a divergence in the approach to cryptocurrency regulation, as evidenced by the categorisation system: countries with a value of 0 are classified as ‘prohibited’, those with a value of 1 are deemed ‘regulated’, while those with a value of 2 are recognised as having ‘fully liberalised or exempted’ the utilisation of cryptocurrencies.

In the lower middle-income category, several countries, including Algeria, Bangladesh, Bolivia, and Indonesia, enforce a prohibition on the utilisation of cryptocurrencies. This restriction becomes evident through regulatory frameworks established by the respective governing bodies in each nation. For instance, the central

bank of Indonesia has explicitly disallowed the use of cryptocurrencies through a circular, which not only forbids the purchase, sale, and trading of bitcoin but also its application as a method of payment. This stance is grounded in the inherent riskiness of cryptocurrencies, which can potentially disrupt financial stability through their susceptibility to various risks and losses. Correspondingly, the central bank of Bangladesh has issued a statement deeming cryptocurrencies illegal, highlighting concerns that transactions involving crypto can facilitate money laundering violations.

Countries including Angola, Benin, the Philippines and Myanmar have implemented regulatory frameworks governing the utilisation of cryptocurrencies. An illustrative case is that of the Philippines, where the Central Bank has issued comprehensive guidelines pertaining to virtual currencies. These guidelines explicitly state that cryptocurrencies lack backing from central banks and are devoid of state guarantees. Nevertheless, recognising their role as conduits for specific financial service providers, the guidelines necessitate that entities engaged in crypto transactions and those offering crypto-related services undergo registration with the Central Bank of the Philippines. This proactive step aims to mitigate the inherent risks associated with such activities.

Countries that embrace a policy of liberalisation for cryptocurrency usage include India, Honduras, Belize, and Cambodia. For instance, Honduras, through a response from its central bank, clarified that cryptocurrencies lack official support from the central bank, resulting in the absence of guarantees or arrangements for their utilisation. Consequently, all transactions conducted by users entail responsibility and risk for the parties involved in the transactions. In contrast, Belize lacks specific legislation governing cryptocurrencies. Instead, trade transactions are overseen by the international financial services sector, with no provisions for issuing permits or rules for companies engaged in crypto exchanges and transactions. This divergence in regulatory approaches arises due to the interplay of payment system regulations specific to each country and their respective governing authorities. The uncertainty surrounding security, transaction legality, and investor protection has led policymakers to approach cryptocurrency operations with caution.

The decision of the regulation in cryptocurrencies of each country can be influenced by the quality of the government bureaucracy in the country, which can be seen from the effectiveness of the government. The quality of state government plays a role in the development of financial markets. The development of financial markets must be supported by guarantees from government institutions as well as a safe economy and controlled risks. Contract making and protecting property rights can increase the confidence of economic actors (Nee and Opper, 2009). Research conducted by Batuo et al. (2018) stated that political stability and good governance in a country will increase the acceptance of the new financial system.

Countries with the lower middle-income category are classified as having a low level of government effectiveness. Based on data obtained through the world bank, the country which is included in the lower middle-income category has the highest level of government effectiveness out of 30 countries sampled in 2019, namely Bhutan country, which is 0.31 points while the lowest is the Comoros country of –1.67 points. Based on calculations made by researchers after data on government effectiveness in lower middle-income countries averaged from 2009 to 2019, it can be seen in Figure 1 that on average the country that has the highest level of government effectiveness is still in the country of Bhutan at 0.45 points while the country with the lowest level of government effectiveness on average is Haiti at –1.83 points. More details can be seen in Figure 1.

Figure 1 Average level of government effectiveness in lower middle-income countries (see online version for colours)

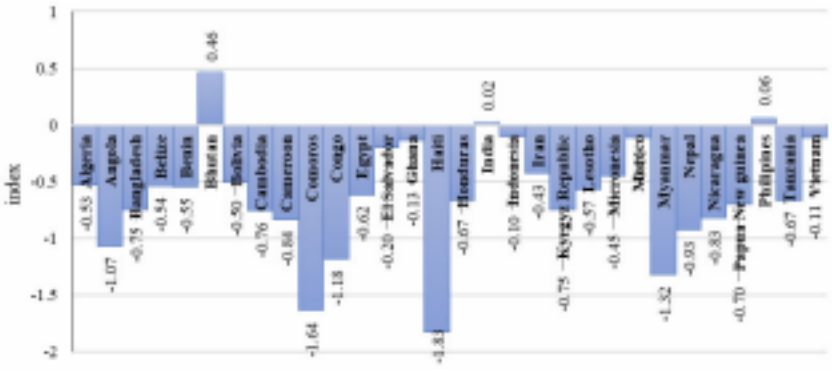

Table 2 Results of correlation matrix

	FO	*Bquality*	*Growth*	*Inf*	*TO*	*R*
FO	1.0000					
Bquality	–0.0605	1.0000				
Growth	0.0034	0.2003	1.0000			
Inf	–0.1597	–0.0447	–0.1307	1.0000		
TO	0.4306	0.2175	–0.0866	–0.1671	1.0000	
R	0.1210	–0.0577	–0.0577	–0.1885	0.1372	1.0000

The initial test conducted is a multicollinearity assessment to ensure the absence of intercorrelation among the data. The outcome is presented in Table 2, where the dependent and independent variables exhibit no significant correlation, substantiated by the lack of any value exceeding 0.8.

Moreover, Table 3 outlines the results of the ordered probit regression, founded on probability values. These results indicate, in part, that five variables – financial openness, government effectiveness, inflation, trade openness and interest rates – exert an influence on cryptocurrency regulation within lower middle-income countries. Conversely, the variables related to economic growth display no substantial effect.

Table 3 reveals threshold values that diverge from conventional linear regression outcomes, signifying determinants for categorising variables within the cryptocurrency regulatory index. The transition from regulated to prohibited cryptocurrency regulation is identified through the first cutpoint, denoted by a value of –0.43. Similarly, the shift from prohibited to liberalised crypto regulation is discernible at the second cutpoint, represented by a value of 0.68. The positive coefficient on the second cutpoint implies a tendency for the latent variable to increase with higher values of a specific variable, subsequently elevating its category.

Table 3 Results of probit ordered regression.

Dependent variable = *Pi*(*cc*)					
Variables	*Coefficient*	*Std. error*	*P > |z|*	*95% conf.*	*Interval*
FO	0.077	0.020	0.000***	0.039	0.116
Bquality	–0.563	0.143	0.000***	–0.842	–0.283
EG	–0.010	0.021	0.649	–0.052	0.032
INF	–0.049	0.014	0.001***	–0.076	–0.021
TO	–0.008	0.002	0.001***	–0.012	–0.003
R	0.040	0.010	0.000***	0.0194	0.060
/cut1	–0.436	0.266	–0.957	0.085	
/cut2	0.682	0.267	0.158	1.206	
Simultaneous test	X^2	*Prob.*			
LR test	82.70	0.000			

Notes: ***Significant at 1%.
**Significant at 5%.
*Significant at 10%.

Furthermore, Table 3 reports the results of the simultaneous test, indicating that the collective influence of de facto financial openness, government effectiveness, economic growth, inflation, trade openness, and interest rates encompasses 82.70% of the cryptocurrency regulatory index variation. The remaining 17.3% is attributed to external variables not covered within the study.

Furthermore, Table 4 presents the outcomes of the ordered probit regression and marginal effect analysis. The variable of de facto financial openness exhibits a positive correlation with the cryptocurrency regulatory index, as demonstrated by the highest opportunity marginal effect value. In essence, greater financial openness corresponds to stricter regulations on cryptocurrency usage. Specifically, an increase of 1 point in financial openness heightens the potential for prohibition by 20 points, while concurrently diminishing the potentials for both prohibition and liberalisation by 3.7 and 17 points, respectively. Study conducted by Cubillas and González (2014) reveals that financial liberalisation spurs bank risk-taking across both developed and developing nations. In developed countries, competition fosters risk-taking among banks, whereas in developing countries, opportunities for bank risk-taking are presented.

Table 4 Probit ordered regression results and marginal effect.

			Marginal effect		
Variables	*Coefficient*	*Forbidden*	*Set*	*Freed*	
FO	0.077	0.209	–0.037	–0.171	
Bquality	–0.563	0.004	–0.001	–0.002	
Growth	–0.010	0.018	–0.003	–0.015	
Inf	–0.049	0.028	–0.001	–0.002	
TO	–0.008	–0.015	0.003	0.012	
R	0 .040	–0.029	0.005	0.024	

The study also found that the increase in government activity was associated with a higher chance of lowering the chances of cryptocurrency regulation being banned by 3.6 points and conversely the possibility of being banned and liberalised would increase by 0.06 and 0.23 points, respectively. So the higher the effectiveness of the government in the lower middle-income country, the government will choose to exempt or liberalise the use of cryptocurrencies or it can be said that the better and more sophisticated the quality of government in the lower middle-income country will reduce its chances of being banned and regulated. Nee and Opper (2009) said that the quality of the bureaucracy influences the development of financial markets. Business processes that use the financial sector in the era of the digital economy are implemented faster and easier to use, and regulations that are not too strict but still by following per under the regulations that have been determined by the relevant regulators (Margiansyah, 2020).

Research conducted by Klein and Olivei (2005) shows that the relationship between the movement of capital and financial development is significant in countries with a high level of institutional quality, that is, industrialised countries. Meanwhile, cryptocurrency regulation requires vigilance in the development of the cryptocurrency market because assets can cause destabilisation in the financial market, as well as decentralisation or no third party, is responsible (Shovkhalov and Idrisov, 2021). A higher level of democracy

may imply better and more sophisticated legislation (Raban, 2015), which can also contribute to the development of more advanced finances.

Inflation negatively affects the formation of cryptocurrency regulation, where increasing inflation, based on the highest chances obtained, the government will lower the ban on the use of cryptocurrencies and vice versa the possibility of being regulated and released or liberalised will increase by 0.05 and 0.23 points, respectively. Study by Vaddepalli and Antoney (2017) state that there is a link between inflation and cryptocurrencies because crypto can be used as a store of value or a hedge for the value of money in the event of inflation that can harm the value of users' money. In study by Dupuis and Gleason (2021) also stated that high inflation can encourage the use of cryptocurrencies compared to banknotes or other assets.

The latest literatures also support that high inflation can make the domestic currency less attractive as a store of value (Alnasaa et al., 2022). When inflation increases and the exchange rate decreases against foreign currencies it can lead to a weakening of the pace of economic growth as well and will eventually affect the turnover of cryptocurrencies due to the factor of reduced return on investment in the crypto asset market (Ilham et al., 2022).

The variable of trade openness has a positive effect on the chances of crypto being banned in lower middle-income countries, where the highest probability has been obtained, namely on the prohibited criterion which means that when there is an increase in trade openness by 1 point, it will increase the chances of crypto regulation to be banned by 0.15 points while on the contrary the chances of being regulated and exempted decrease by 0.26 and 0.12 points, respectively.

The increasing interest rate variable in lower middle-income countries will lower crypto regulation to be banned by 0.8 points while for regulated and liberalised it increases by 0.05 and 0.23 points, respectively. In a sense, the chances of accepting cryptocurrencies to be liberalised or exempted are greater than regulated, so an increase in interest rates in lower middle-income countries will make regulators less vigilant about the use of crypto. Cryptocurrencies are currently popular with investors and are used as one of the asset stores of value or investment. As we know investment and interest rates are inversely proportional, which is when interest rates increase then investments tend to decrease (Setiawan and Sundoro, 2019).

Study by Saksonova and Kuzmina-Merlino (2019) states that all currencies in the world are connected so changes in one currency will affect other currencies. Although cryptocurrencies are not yet included in the standard currency, their value will be affected when the interest rate for the standard currency used is changed by the central bank or government. The value of cryptocurrencies is directly related to their demand and availability. Because the higher interest rates offered by central banks will encourage people to hold standard currencies rather than cryptocurrencies, and cryptocurrencies can become less valuable.

The hesitance of investors to invest or engage with cryptocurrencies, attributed to rising interest rates, has led various countries to pay limited attention to such transactions. By curbing transaction volume, these countries aim to mitigate the risk of potential losses inherent in cryptocurrency-related activities. This reduction in transactions also contributes to maintaining the stability of the financial system within specific nations. Consequently, a nexus emerges between elevated interest rates and governmental exemptions for cryptocurrency usage. This approach grants users a degree of freedom

while necessitating them to bear the associated risks themselves.

The variable of economic growth demonstrates no discernible correlation with decision-making processes related to cryptocurrency regulation. To validate the findings of this study, all independent variables were employed over three, four, and five-year periods, recognising that the implementation of new laws necessitates an adjustment period. These findings are presented in Table 5.

Table 5 Results of regression ordered probit with 3-, 4- and 5-year lag

Independent variables	*3-year lag*	*4-year lag*	*5-year lag*
FO	–0.5021	–0.4297	–0.3529
Bquality	–0.0039	0.0141	0.0003
Growth	–0.044	–0.0453	–0.0413
Inf	–0.0065	–0.0067	–0.0080
TO	–0.0406	0.0424	0.0490
R	–0.0676	0.0683	0.0853

The results of the lag or time-lapse selection in this study found that de facto financial openness has no connection with indices or the determination of cryptocurrency regulation while the government's effectiveness variables are entirely significant in time-lapse selection. The variables of economic growth that were originally unrelated but at the time of the use of the interval become influential in the entire selection of the time-lapse. The variables of inflation and trade openness also have a significant influence on the entire selection of time-lapse whereas the variables of interest rates are insignificant in the entire selection of time lapse. There are differences in the results of the relationship where in regress ordered probit without using time intervals, it is found that the results of all independent variables, namely de facto financial openness, government effectiveness, inflation, trade openness, and interest rates have a significant effect on the determination of cryptocurrency regulation while the insignificant variable is economic growth. However, after using different lags on independent variables, de facto financial openness, and interest rates have no significant effect while economic growth has a significant effect on the entire selected time-lapse. This difference can occur due to the time required for the adjustment of the new laws created for the acceptance of cryptocurrencies so that there are differences in results.

The results can be used for policy discussions in adopting new financial technologies that are in line with the development of financial markets. Study by Marian (2015) proposed determining the regulation that it is necessary to impose fees on anonymity to limit the potentially illegal use of cryptocurrencies, as well as tax avoidance, money laundering, or terrorism financing without compromising the innovations that crypto can and offer. These findings suggest the quality or effectiveness of governments contributing to financial development implies that at some level institutional quality may be required before opening to new forms of financial technology. Cryptocurrencies are recognised as a speculative form of financial instrument that is at risk. Its current situation which is widely unknown can also prevent policymakers from conducting thorough surveillance to avoid vulnerabilities throughout the system. Finally, the decentralised and international nature of the cryptocurrency industry requires international cooperation to avoid regulatory performances and ensure the supervision of digital currency trade.

5 Conclusions and remarks

The regulation of cryptocurrencies among lower-middle-income countries is indubitably an evolving phenomenon. The unclear legality of cryptocurrencies creates a difference in the acceptance of cryptocurrencies in lower-middle-income countries. The results of this study concluded that in monetary theory perspective, monetary policy has a significant effect to cryptocurrency regulation. Monetary policy through high interest rates affects investors in using cryptocurrency, consequently when interest rates are high will decrease the interest in the use of money for speculative purposes such as investment in the form of crypto. Therefore, the higher the interest rate will lower the regulation of crypto to be banned or the chances of acceptance of cryptocurrency to be liberalised or liberated are greater than regulated so that the increase in interest rates in lower middle-income countries will make the regulators not too supervise the use of crypto. Other findings concluded that macroeconomic variables and governance that affect cryptocurrency regulation. As financial openness gets higher, crypto regulation in lower-middle-income countries will tend to be banned to maintain financial stability in the country from the negative impact of crypto use. In addition, high governance or government effectiveness will increase the acceptance of crypto by way of exemption because the better and more sophisticated the quality of government in lower middle-income countries will reduce its chances of being banned and regulated due to non-strict procedures and regulations that remain in line.

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References

Alnasaa, M., Gueorguiev, N., Honda, J., Imamoglu, E., Mauro, P., Primus, K. and Rozhkov, D. (2022) 'Crypto-assets, corruption, and capital controls: cross-country correlations', *Economics Letters*, Vol. 215, p.110492, https://doi.org/10.1016/j.econlet.2022.110492.

Andrianto, Y. (2017) 'The effect of cryptocurrency on investment portfolio effectiveness', *Journal of Finance and Accounting*, Vol. 5, No. 6, https://doi.org/10.11648/j.jfa.20170506.14. Auer, R. and Claessens, S. (2018) 'Regulating cryptocurrencies: assessing market reactions', *BIS Quarterly Review*, September, Vol. 27, pp.51–65.

Batuo, M., Mlambo, K. and Asongu, S. (2018) 'Linkages between financial development, financial instability, financial liberalisation and economic growth in Africa', *Research in International Business and Finance*, October, Vol. 45, pp.168–179, https://doi.org/10.1016/j.ribaf.2017.07.148.

Baur, D.G., Hong, K. and Lee, A.D. (2018) 'Bitcoin: Medium of exchange or speculative assets', *Journal of International Financial Markets, Institutions and Money*, Vol. 54, pp.177–189, https://doi.org/10.1016/j.intfin.2017.12.004.

Bindseil, U. (2019) 'Central bank digital currency: Financial system implications and control', *International Journal of Political Economy*, Vol. 48, No. 4, pp.303–335, https://doi.org/10.1080/08911916.2019.1693160.

Cubillas, E. and González, F. (2014) 'Financial liberalization and bank risk-taking: international evidence', *Journal of Financial Stability*, Vol. 11, No. 1, pp.32–48, https://doi.org/10.1016/j.jfs.2013.11.001.

Cvetkova, I. (2018) 'Cryptocurrencies legal regulation', *BRICS Law Journal*, Vol. 5, No. 2, https://doi.org/10.21684/2412-2343-2018-5-2-128-153.

De Pace, P. and Rao, J. (2023) 'Comovement and instability in cryptocurrency markets', *International Review of Economics and Finance*, July, Vol. 83, pp.173–200, https://doi.org/10.1016/j.iref.2022.08.010.

Dupuis, D. and Gleason, K. (2021) 'Money laundering with cryptocurrency: open doors and the regulatory dialectic', *Journal of Financial Crime*, Vol. 28, No. 1, pp.60–74, https://doi.org/10.1108/JFC-06-2020-0113.

Gambetti, E. and Giusberti, F. (2019) 'Personality, decision-making styles and investments', *Journal of Behavioral and Experimental Economics*, June, Vol. 80, pp.14–24, https://doi.org/10.1016/j.socec.2019.03.002.

Georgiou, G.C. (2020) 'Cryptocurrency challenges sovereign currency', *World Economics*, Vol. 21, No. 1, pp.117–141.

Honak, I. (2021) 'Theoretical substantiation of the definition of cryptocurrency as money', *Innovative Economy*, Vols. 5–6, https://doi.org/10.37332/2309-1533.2021.5-6.18. Ilham, R.N., Sadalia, I., Irawati, N. and Sinta, I. (2022) 'Risk and return model of digital cryptocurrency asset investment in Indonesia', *Al Qalam: Jurnal Ilmiah Keagamaan Dan Kemasyarakatan*, Vol. 16, No. 1, p.357, https://doi.org/10.35931/aq.v16i1.854. Jabotinsky, H.Y. (2020) 'The regulation of cryptocurrencies: between a currency and a financial product', *Fordham Intellectual Property, Media and Entertainment Law Journal*, Vol. 31, No. 1, pp.118–165.

Jalan, A., Matkovskyy, R., Urquhart, A. and Yarovaya, L. (2023) 'The role of interpersonal trust in cryptocurrency adoption', *Journal of International Financial Markets, Institutions and Money*, December, Vol. 83, p.101715, https://doi.org/10.1016/j.intfin.2022.101715.

Klein, M.W. and Olivei, G. (2005) 'Capital account liberalization, institutional quality and economic growth', *Journal of International Money and Finance*, Vol. 27, No. 6, pp.861–875.

López-Martín, C., Arguedas-Sanz, R. and Muela, S.B. (2022) 'A cryptocurrency empirical study focused on evaluating their distribution functions', *International Review of Economics and Finance*, April, Vol. 79, pp.387–407, https://doi.org/10.1016/j.iref.2022.02.021. Malherbe, L., Montalban, M., Bédu, N. and Granier, C. (2019) 'Cryptocurrencies and blockchain: opportunities and limits of a new monetary regime', *International Journal of Political Economy*, Vol. 48, No. 2, pp.127–152, https://doi.org/10.1080/08911916.2019.1624320. Mangun, N., Anwar, C., Moelyono, M. and Jokolelono, E. (2018) 'Analyzing the degree of social-economic transformation of displaced community using probit model: a case analysis', *European Research Studies Journal*, Vol. 21, No. 2, https://doi.org/10.35808/ersj/1000. Margiansyah, D. (2020) 'Revisiting Indonesia's economic diplomacy in the age of disruption: towards digital economy and innovation diplomacy', *Journal of ASEAN Studies*, Vol. 8, No. 1, pp.15–39.

Marian, O. (2015) 'A conceptual framework for the regulation of cryptocurrencies', *University of*

Chicago Law Review Dialogue, Vol. 82, No. 695, pp.53–68 [online] http://scholarship.law.ufl.edu/facultypub/695.

Mazambani, L. and Mutambara, E. (2020) 'Predicting FinTech innovation adoption in South Africa: the case of cryptocurrency', *African Journal of Economic and Management Studies*, Vol. 11, No. 1, https://doi.org/10.1108/AJEMS-04-2019-0152.

Nee, V. and Opper, S. (2009) 'Bureaucracy and financial markets', *Kyklos*, Vol. 62, No. 2, pp.293–315, https://doi.org/10.1111/j.1467-6435.2009.00437.x.

Nguyen, T.V.H., Nguyen, B.T., Nguyen, K.S. and Pham, H. (2019) 'Asymmetric monetary policy effects on cryptocurrency markets', *Research in International Business and Finance*, Vol. 48, https://doi.org/10.1016/j.ribaf.2019.01.011.

Othman, A.H.A., Alhabshi, S.M., Kassim, S., Abdullah, A. and Haron, R. (2020) 'The impact of monetary systems on income inequity and wealth distribution: a case study of cryptocurrencies, fiat money and gold standard', *International Journal of Emerging Markets*, Vol. 15, No. 6, https://doi.org/10.1108/IJOEM-06-2019-0473.

Poyser, O. (2019) 'Exploring the dynamics of bitcoin's price: a Bayesian structural time series approach', *Eurasian Economic Review*, Vol. 9, No. 1, https://doi.org/10.1007/s40822-018-0108-2.

Raban, O. (2015) 'The rationalization of policy: on the relation between democracy and the rule of law', *Legislation and Public Policy*, Vol. 18, pp.46–65.

Rose, C. (2015) 'The evolution of digital currencies: bitcoin, a cryptocurrency causing a monetary revolution', *International Business & Economics Research Journal (IBER)*, Vol. 14, No. 4, https://doi.org/10.19030/iber.v14i4.9353.

Saksonova, S. and Kuzmina-Merlino, I. (2019) 'Cryptocurrency as an investment instrument in a modern financial market', *St Petersburg University Journal of Economic Studies*, Vol. 35, No. 2, pp.269–282, https://doi.org/10.21638/spbu05.2019.205.

Setiawan, T. and Sundoro, H.S. (2019) 'How is the effect of inflation to interest rate, exchange rate and Indonesia composite index?', *Res. J. Financ. Account*, Vol. 10, No. 10, pp.70–76. Sharov, O. (2018) 'Global cryptocurrency as prospects for world monetary system', *Journal of European Economy*, Vol. 17, No. 1, https://doi.org/10.35774/jee2018.01.116. Shovkhalov, S. and Idrisov, H. (2021) 'Economic and legal analysis of cryptocurrency: scientific views from Russia and the Muslim world', *Laws*, Vol. 10, No. 2, pp.1–17, https://doi.org/ 10.3390/laws10020032.

Vaddepalli, S. and Antoney, L. (2017) 'Are economic factors driving bitcoin transactions? An analysis of select economies', *Journal of Emerging Issues in Economics, Finance & Banking*, Vol. 6, No. 2, pp.2215–2227.

Vozniuk, A. and Tytko, A. (2019) 'Cryptocurrency: present-day challenges and prospects of development', *Economic Annals-XXI*, Vol. 176, Nos. 3–4, https://doi.org/10.21003/ea.V176-05.

Yussof, S.A. and Al-Harthy, A.M.H. (2020) 'Cryptocurrency as an alternative currency in malaysia: issues and challenges', *ICR Journal*, Vol. 9, No. 1, https://doi.org/10.52282/ icr.v9i1.137.

Zubaidi, I.B. and Abdullah, A. (2017) 'Developing a digital currency from an Islamic perspective: case of blockchain technology', *International Business Research*, Vol. 10, No. 11, p.79, https://doi.org/10.5539/ibr.v10n11p79.

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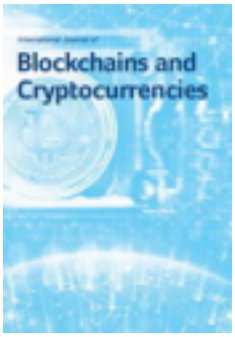

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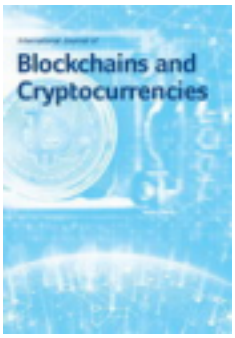

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Cryptocurrency in lower middle-income countries: a monetary theory and regulation perspective

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1 Introduction

Cryptocurrencies themselves are created to reduce transactions that depend on third-party services and are decentralised in addition to that the transactions require no fees and no transfer conditions or limits and can be sent anywhere over the internet. No country directly has access to users and directly regulates cryptocurrencies and this is what attracts users (Andrianto, 2017; Georgiou, 2020; Sharov, 2018).

Since there are still many countries that have not directly allowed the use of cryptocurrencies. The cause is the unclear legality and the number of countries waiting for action or policies from other countries on whether to authorise or prohibit cryptocurrency transactions. In terms of legality, each country takes a different attitude toward the implementation of digital currencies, namely:

1 legal

2 illegal

3 neutral or alegal

4 limited or retributed

5 no classification is known (Bindseil, 2019).

Although many central banks have warned their citizens about using cryptocurrencies and rejecting the status of crypto as a currency, there are still many countries that use it as an asset currency. The reason for policymakers is to look at it in terms of low liquidity, the market risk from volatility, and the operational risk of cryptocurrencies. (Cvetkova, 2018; Jabotinsky, 2020) indicate that crypto can be traded legally if it complies with existing regulations in the country concerned and has links with financial instruments.

Inside of 251 countries that have recognised and know virtual currencies, there are as many as 110 countries (around 43%) that recognise digital currencies as legal currencies, for example such as Belgium, Denmark, Brunei Darussalam, Finland, Estonia, Greece, Iceland, Japan, Ireland, Singapore, Spain, Italy, South Africa, The UK and Switzerland (Bindseil, 2019; Zubaidi and Abdullah, 2017). Meanwhile, several countries that legalise digital currencies as commodities are Israel, Hong Kong, Brazil, France, Norway, the Netherlands, New Zealand, Sweden, Thailand, Zimbabwe, Turkey and Thailand. In addition, digital currencies are also legally recognised as property in several countries such as Poland, the USA and Australia. Countries that treat digital currencies as goods that can be exchanged for other goods are the Philippines, Canada, Germany and Austria. In addition, some countries stipulate non-legal digital currencies as currencies namely

currency, and the absence of limits on the fear of bankruptcy (Baur et al., 2018; Yussof and Al-Harthy, 2020).

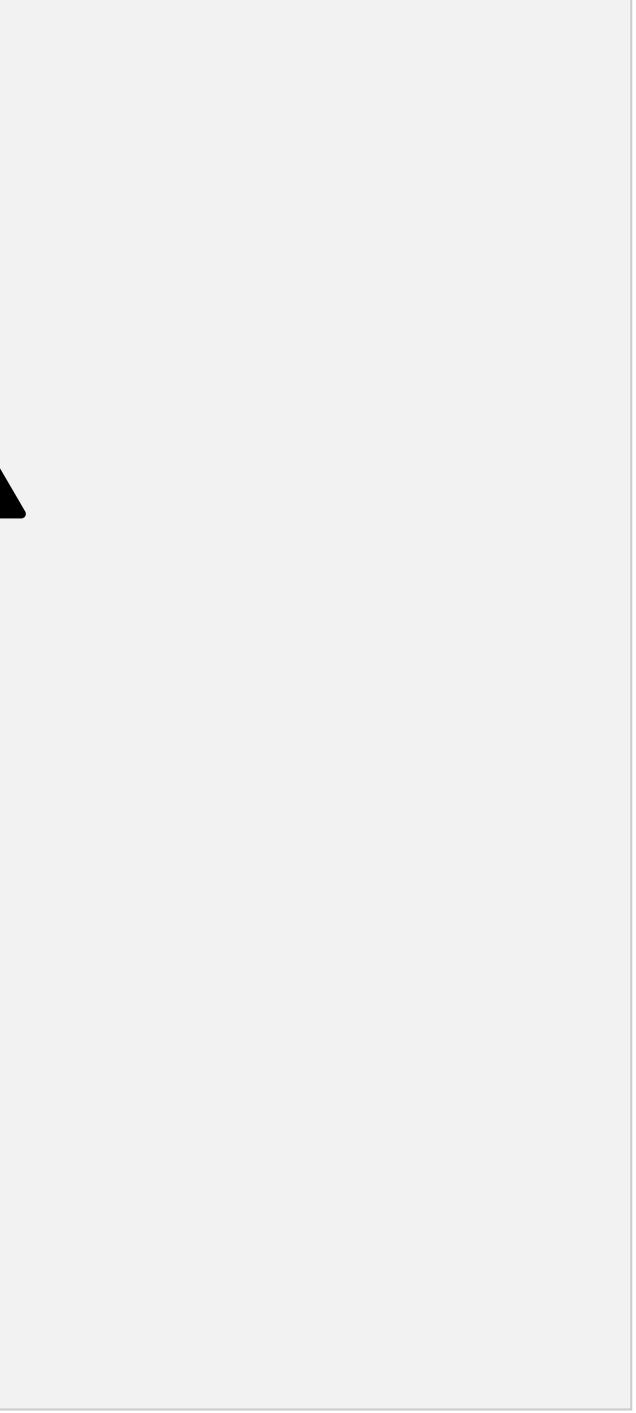
Modern Monetary Theory assumes that cryptocurrencies such as bitcoin are P2P network that has account units and resembles commodities (Othman et al., 2020). This creates confusion over the framework of modern monetary theory because bitcoin has no issuer as well as being responsible for controlling its circulation. Then the supporters of MMT do not believe bitcoin can be used as a substitute or alternative to banknotes or monetary instruments (Shovkhalov and Idrisov, 2021). But they think that cryptocurrencies have other uses (Shovkhalov and Idrisov, 2021). Because as previously explained, the essence of MMT is that the government is free to print money according to the needs of the state, but it is different from cryptocurrencies that have a limited amount.

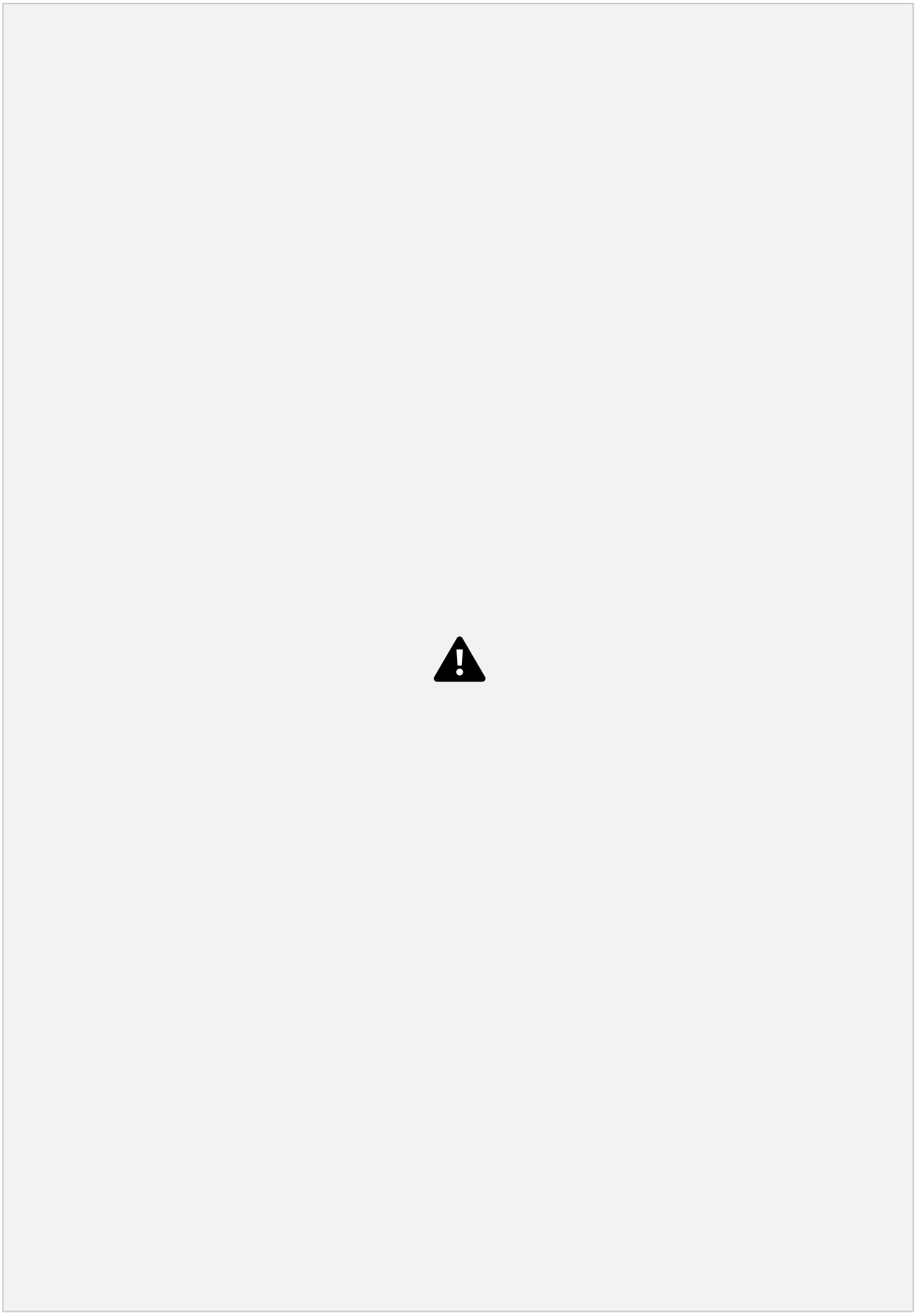
Based on the modern money theory Stephanie Kelton makes a comparison between cryptocurrencies and fiat money systems (Nguyen et al., 2019). He thinks that the use of fiat money is due to the support or ability of the government to foster public trust in currencies while cryptocurrencies are not, so this belief is voluntary. Similarly, cryptocurrency can be used as an alternative payment depending on the existing trust or the trust of the user. If people can trust government-issued currencies and then exchange them for cryptocurrencies (which cannot be used to pay taxes) and can trust cryptocurrencies can be used for exchange then there is no reason for the government not to use or accept and utilise this technology (Honak, 2021; Rose, 2015; Vozniuk and Tytko, 2019).

Study by Dupuis and Gleason (2021) shows that institutions or legal institutions with effective governance are related to the regulatory stance taken by the government, which is not too restrictive in the use of cryptocurrencies, while financial openness results are insignificant. This means a certain level of institutional quality may be required before opening to new financial technologies. The benefits and risks of cryptocurrencies will help the attitude of regulators in making decisions to accept cryptocurrencies or not. In research by Yussof and Al-Harthy (2020), it was recommended that Malaysia accept cryptocurrencies due to global trends and developments.

The legality and acceptance of crypto in various countries are classified into various forms such as digital assets for investment and commodities. When cryptocurrency is recognised as one of the digital investment assets, there will be several other factors such as monetary variables that influence the decision to use it. Interest rates and expectations of future value are the important factors determining the decision to invest (Dupuis and Gleason, 2021). Or it can be said that the interest rate is one of the determinants of a person's decision to invest or save.

Macro interest rate theory has a basic understanding, namely the price of using the money for a certain period. Interest rates and the role of time are interrelated in the economy. The emergence of interest rates occurs because of the penchant for owning money now. Meanwhile, based on the classical theory, it is stated that interest is the price of investment funds that occur in the market. According to Keynes's theory, the interest rate is a monetary phenomenon determined by the demand and supply that is in the money market. The increase in interest can reduce the present value of future profit income so that it will decrease the stock if it is marketed capital or decrease the profit return on crypto in digital crypto assets. This is because investors will instinctively be more interested in investing in other forms of investment such as saving in a bank than investing in stocks or other investments (Gambetti and Giusberti, 2019). Conversely, a





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