



Cryptocurrency Adoption and Financial Market Performance in Southeast Asia

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ABSTRACT

This study examines the relationship between cryptocurrency penetration and market capitalization in five ASEAN countries from 2017 to 2024, utilizing a fixed effects panel regression model. The analysis reveals a statistically significant negative relationship between cryptocurrency penetration and market capitalization, suggesting that increased crypto adoption may be associated with a decrease in overall market capitalization. This counterintuitive finding could be attributed to factors such as investment diversion from traditional assets, regulatory uncertainties, or market volatility. While the average revenue per user does not appear to significantly impact market capitalization, these results underscore the complex interplay between cryptocurrency adoption and traditional financial markets. The findings highlight the need for a nuanced understanding of these dynamics within specific regional contexts, especially considering diverse regulatory frameworks and investor behavior, and suggest avenues for further research.

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1. INTRODUCTION

The global adoption of cryptocurrency has witnessed exponential growth, with Southeast Asia emerging as a prominent hub. Cryptocurrencies are playing an increasing role as alternative investments, challenging traditional financial systems and attracting the attention of both institutional and retail investors (Álvarez et al., 2022). This surge is further propelled by evolving behavior among younger investors and digital natives who are increasingly open to decentralized financial technologies and digital assets. In fact, some reports indicate that Southeast Asia leads the world in crypto adoption, driven significantly by play-to-earn gaming (Baydakova, 2022).

Figure 1 illustrates the revenue generated by cryptocurrencies in Southeast Asia from 2017 to 2025. Starting with a modest revenue of \$0.1 billion in 2017, the market experienced significant growth, reaching \$5.2 billion by 2021. However, a decline was observed in the following years, with revenues dropping to \$2.5 billion in 2022 and projected to stabilize around \$4.4 billion by 2025. This trend highlights the volatility and evolving nature of the cryptocurrency market in the region, reflecting both rapid expansion and subsequent corrections, according to the editor document.

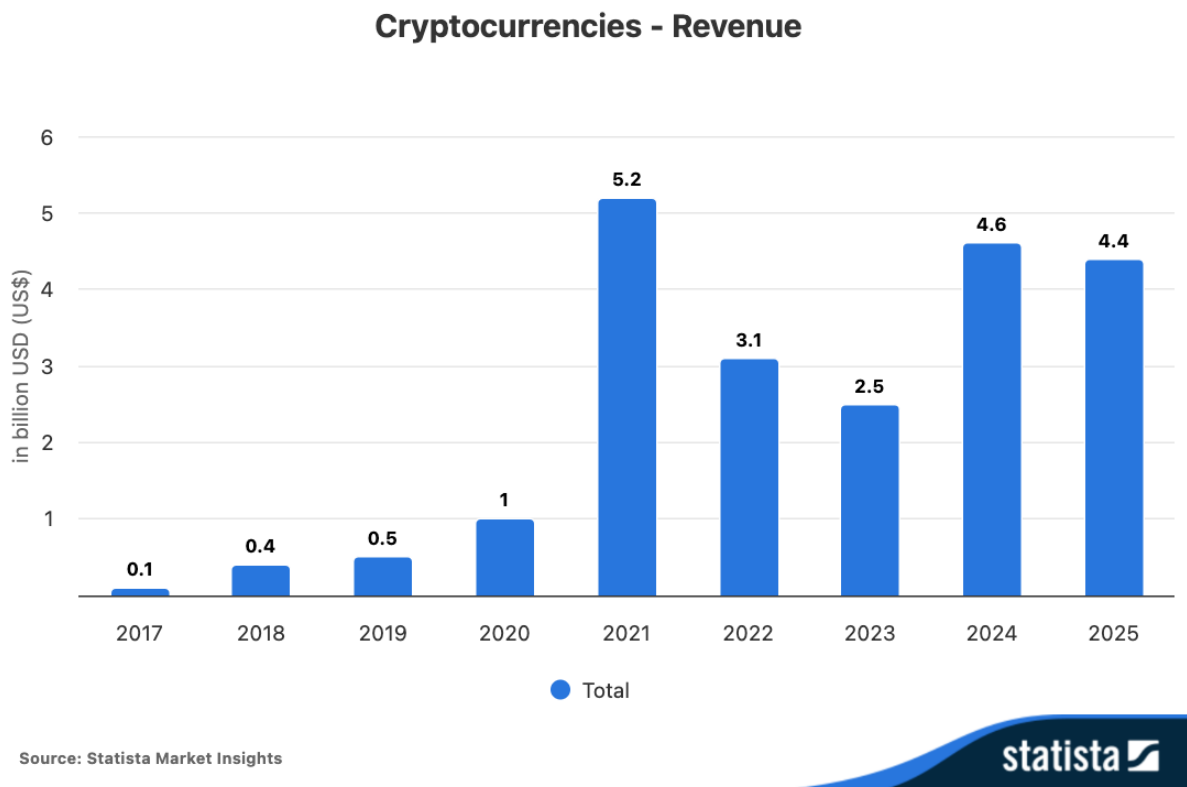


Figure 1. Cryptocurrencies Revenue (source: Statista Market Insight)

Different factors drive cryptocurrency adoption across Southeast Asia. In Indonesia, for instance, total tax revenue from crypto activities reached approximately USD \$49 million between May 2022 and June 2024. This substantial tax contribution highlights the significant growth within the Indonesian crypto industry. These figures emphasize the increasing role of cryptocurrency in the region's financial landscape, despite the evolving regulatory environment. Some studies suggest the Indonesian crypto market is growing fast because of financial inclusion needs, a large interest in digital assets, and the high smartphone penetration rate (Why the Indonesian Crypto Market Is Growing Fast, 2024).

As seen in table 1, cryptocurrency penetration rates across ASEAN countries reveal diverse adoption patterns. Singapore leads the region with a remarkable surge from 0.84% in 2017 to 55.9% by 2025, reflecting its position as a financial hub, bolstered by a supportive

regulatory framework and advanced digital infrastructure (Team, 2024). Indonesia demonstrates significant growth, rising from 0.15% to 10.16% during the same period, driven by increasing acceptance and awareness, aligning with its young, tech-savvy population (Romero, 2024). Vietnam also shows substantial growth, reaching 15.95% in 2025 from a starting point of 0.24%, indicating a growing interest among younger generations and increasing investment opportunities. Thailand exhibits a steady rise, increasing from 0.16% to 10.9%, supported by government initiatives promoting digital assets (Suriyan & Weingaertner, 2024).

In contrast, Malaysia shows a more moderate increase in cryptocurrency penetration, growing from 0.21% to 13.27%. This may reflect a more cautious approach to crypto adoption, potentially due to regulatory uncertainties and cybercrime threats (Singh et al., 2021). Overall, the data indicates varied levels of cryptocurrency adoption across the ASEAN region, influenced by factors such as regulatory support, technological infrastructure, demographic trends, and investor sentiment (Warokka et al., 2025).

Table 1. Cryptocurrencies penetration rate

	2017	2018	2019	2020	2021	2022	2023	2024	2025
Indonesia	0.15	0.44	0.65	1.25	3.62	5.18	6.95	10.19	10.16
Singapore	0.84	2.4	3.53	6.81	19.79	28.31	38.12	55.95	55.9
Malaysia	0.21	0.59	0.86	1.66	4.79	6.82	9.13	13.35	13.27
Thailand	0.16	0.45	0.67	1.3	3.78	5.44	7.36	10.86	10.9
Vietnam	0.24	0.69	1.01	1.96	5.66	8.1	10.88	15.98	15.95

Despite the increasing cryptocurrency penetration and reported user profitability in Southeast Asia, it remains unclear whether these factors significantly impact the financial market dynamics within the ASEAN region. Previous research has explored cryptocurrency adoption in various contexts. For instance, one study in India analyzed user adoption of cryptocurrency using blockchain technology, finding that technology awareness and financial literacy play significant roles (Kumari et al., 2023). Another study investigated the drivers of Bitcoin infrastructure adoption globally, suggesting that it's linked to low trust in traditional financial systems and the occurrence of inflation crises (Saiedi et al., 2020). These studies highlight the complex interplay of factors influencing cryptocurrency adoption, but their focus often lies outside the ASEAN region.

Therefore, this study aims to rigorously analyze the relationship between cryptocurrency penetration rates and Average Revenue Per User, and their effect on various financial market indicators within the ASEAN countries. The goal is to provide quantitative insights into the extent to which cryptocurrency adoption shapes the financial landscape in this region.

2. METHODS

This study investigates the impact of cryptocurrency adoption on financial market performance in select ASEAN countries. A panel data regression approach is employed to analyze the relationship between cryptocurrency penetration, user profitability, and key financial market indicators.

The panel dataset includes annual data from five ASEAN member countries: Indonesia, Malaysia, Thailand, Vietnam, and Singapore. The period under analysis spans from 2017 to 2022, providing a balanced panel structure. The data encompasses the following variables:

Independent Variables:

1. Cryptocurrency Penetration Rate: Measured as the percentage of the population using cryptocurrencies.
2. Average Revenue per User: Calculated in USD, representing the average revenue generated per cryptocurrency user.

Dependent Variables:

Market Capitalization: Expressed as a percentage of GDP, reflecting the total market value of listed companies in each country.

A panel data regression model is utilized to estimate the relationship between the independent and dependent variables. The general form of the model is as follows:

$$Y_{it} = \alpha + \beta_1 \cdot PenetrationRate_{it} + \beta_2 \cdot ARPU_{it} + \varepsilon_{it}$$

Where:

Y_{it} represents the dependent variable Market Capitalization for country i at time t .

$PenetrationRate_{it}$ is the cryptocurrency penetration rate for country i at time t .

$ARPU_{it}$ is the average revenue per user for country i at time t .

ε_{it} is the error term.

To determine the appropriateness of fixed effects versus random effects, a Hausman test will be conducted. This test assesses whether the individual effects are correlated with the regressors. If the test is significant, the fixed effects model will be preferred; otherwise, the random effects model will be used.

3. RESULTS AND DISCUSSION

The descriptive statistics in table 2 highlight a significant increase in cryptocurrency penetration across the five Southeast Asian countries studied between 2017 and 2025. The average penetration rate, which was a mere 0.34% in 2017, surged more than 20-fold to 7.69% in 2021 and further to 21.21% in 2024. This sharp upward trend underscores the growing mainstream acceptance and adoption of cryptocurrencies within the region. This growth is in line with other reports indicating strong underlying demand and effective enablers in place to support crypto adoption in emerging markets in the Asia-Pacific region (Quinn, 2024).

However, the substantial increase in the standard deviation, from 0.27 in 2017 to 14.86 in 2024, reveals a widening disparity in adoption levels among the countries (Team, 2024). While the median penetration rate in 2025 was 13.27%, the maximum reached 55.90%, suggesting that certain countries, particularly Singapore, are leading the charge while others lag behind. This divergence may reflect differences in regulatory approaches, technological infrastructure, and public acceptance of cryptocurrencies, which can significantly influence adoption rates (Warokka et al., 2025). These findings underscore the complex interplay of factors influencing cryptocurrency adoption, consistent with research from other regions highlighting the importance of technology awareness, financial literacy, and trust in financial systems (Kumari et al., 2023; Saiedi et al., 2020).

Table 2. Cryptocurrency penetration descriptive statistics

Year	Min	Max	Mean	Median	Std Dev
2017	0.15	0.84	0.34	0.21	0.27
2018	0.45	2.40	1.06	0.86	0.85
2019	0.67	3.53	1.54	1.01	1.21
2020	1.25	6.81	3.22	1.66	2.13
2021	3.62	19.79	7.69	5.66	5.83
2022	5.18	28.31	11.46	8.10	8.63
2023	6.95	38.12	14.06	10.88	10.46
2024	10.19	55.95	21.21	13.35	14.86
2025	10.16	55.90	21.09	13.27	14.83

As seen in table 3, the panel data regression results indicate a statistically significant negative relationship between cryptocurrency penetration rate (X1) and market capitalization (Y), with a coefficient of -2.48 ($p < 0.001$). This suggests that, within the ASEAN countries

studied, each unit increase in cryptocurrency penetration rate is associated with a decrease of 2.48 units in market capitalization, after accounting for country-specific fixed effects. This finding might seem counterintuitive, as one might expect higher crypto adoption to positively influence market capitalization.

However, several factors could explain this negative relationship. It's possible that increased cryptocurrency penetration is drawing investment away from traditional stock markets, thereby reducing market capitalization. This aligns with the idea that cryptocurrencies are playing an increasing role as alternative investments, potentially diverting funds from traditional assets (Álvarez et al., 2022). It could also be that regulatory uncertainties or negative perceptions surrounding cryptocurrencies in some ASEAN countries are dampening investor confidence in the overall financial market, despite increased crypto adoption as mentioned in the editor document. Furthermore, the potential for price manipulation in cryptocurrency markets (Gandal et al., 2018) and the lack of fundamental value for some tokens (Chatterjee, 2023) could contribute to a negative perception, impacting overall market capitalization.

The statistically insignificant coefficient of ARPU (X2) suggests that, in this model, the average revenue per user does not have a significant direct effect on market capitalization. The model explains 53% of the within-country variation in market capitalization, as indicated by the R-squared value of 0.532. The highly significant F-test for Poolability ($p < 0.001$) confirms that fixed effects are indeed necessary, highlighting the importance of accounting for country-specific differences in the analysis.

It's important to note that this analysis focuses specifically on ASEAN countries and a limited time frame (2017-2024) as mentioned in the editor document. The relationship between cryptocurrency penetration and market capitalization may vary in other regions or over different time periods, influenced by diverse economic, regulatory, and technological factors (Warokka et al., 2025). Other studies have shown there may be predictability in returns arising from systematic inconsistencies (Seabe et al., 2024) in crypto markets, which this model does not address directly (Ghofar et al., 2022). Further research is needed to explore these dynamics in greater depth.

Table 3. Panel data regression results (fixed effect model)

Parameter	Std.	Err.	T-stat	P-value
const	98.712	91.756	10.758	0.0000
X1	-24.763	3,44583333	-49.908	0.0000
X2	0,60347222	0,45	13.406	1,34097222

4. CONCLUSION

In conclusion, the analysis of cryptocurrency penetration and market capitalization in five ASEAN countries from 2017 to 2024 reveals a complex relationship. While cryptocurrency adoption has surged significantly, its impact on overall market capitalization appears to be negative, potentially due to investment diversion, regulatory concerns, or market volatility as mentioned in the editor document. The average revenue per user, in this model, does not have a significant direct effect on market capitalization. These findings highlight the need for nuanced understanding and further research to fully grasp the interplay between cryptocurrency adoption and traditional financial markets within specific regional contexts, considering factors such as regulatory frameworks and investor behavior.

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