SOCIOECONOMIC CHARACTERISTICS OF CRYPTO INVESTORS AND FINANCIAL CONSEQUENCES OF CRYPTO TRADING: A LITERATURE REVIEW

13 February 2023

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Abstract

The research literature on cryptocurrencies continues expanding with the growing popularity of this type of assets among investors. A particular interest has been attracted to the overall effect of the crypto-trading on the financial sector and social factors that stand behind crypto-traders that may explain their increasing interest in the use of non-traditional investment ways. Therefore, it is the right moment to look back at prominent studies on crypto trading from two perspectives, socio-economic factors that are the most characteristic to the general cryptocurrency trader and the financial consequences that crypto-trading brings to the broader market.

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1. Introduction

Technological developments change our habits and affect our lives. This destiny has not bypassed the financial industry as well, and the most recent and popular example is the spreading use of blockchain and trading of cryptocurrencies. The latter is not regulated by the central banks and hence is considered to be highly speculative and possesses an increasing risk of losses for investors and the broader economy.

Although numerous studies have shown a significant disadvantage of this type of asset as the source for investing in comparison to more traditional stocks or bonds, private investors still prefer the former to the latter one. It is hence interesting to know the profile and characteristic features of an "average" crypto trader. Particularly, what motives stand behind private investors' choice of being involved in a risky market.

This paper aims to find the socioeconomic characteristics of individual participants of the cryptocurrency market. In particular, among others, we collect the literature findings on their demographic, age, education, and income level characteristic features. In the second part of the paper, we summarize the conclusions of various studies regarding the financial consequences of cryptocurrency trading for the broader market and whether financial cycles typical for traditional assets are characteristic of cryptocurrencies.

The choice of combining these two subtopics in one study stems from two observations. First, the very phenomenon of cryptocurrencies is rather new and expanding. Hence, it is the right moment to collect the findings of the most prominent research from both perspectives in one paper. Second, the socio-economic characteristics of participants of a certain market segment – in this case, the crypto market - may shape a broader market as a whole. Therefore, it is important to know what is typical to crypto traders that in the end significantly influence the financial market.

The rest of the paper is structured as follows. Section 2 continues with summarizing the findings of the existing literature on socio-economic factors that drive participation in the cryptocurrency market. Section 3 describes the most recent models and their estimates on the consequences of the crypto market for the broader financial market. Section 4 concludes.

## 2. Socio-Economic Factors Behind Crypto Investors

With the increasing demand for digital assets, it is important to understand the socio-economic factors that influence crypto investors' behaviour. These factors include income, educational level, age and gender, among others and will be investigated further in this section.

2.1. Income

When looking at cryptocurrencies, a reasonable assumption is that people follow general investment patterns. Therefore, it is expected to see higher earners investing more in cryptocurrency because of their increased financial stability and greater access to investment resources. Higher-income individuals may also be more risk-tolerant and have a greater willingness to invest in speculative assets such as cryptocurrency (Xi et al., 2020).

According to Xi et al. (2020), individuals with higher incomes tend to be more likely to invest in cryptocurrency. Their survey on the Australian population reveals that individuals who have already invested in cryptocurrencies have an average annual income of 52,000 to 130,000 AUD. Similarly, the study of Auer and Tercos-Lucas (2022) on the American population finds that having a higher income increases the probability of knowing at least one cryptocurrency by 2.3 to 3.1 percentage points. Interestingly, they also find that the income level varies by cryptocurrency ownership, with owners of XRP having the higher income and owners of BCH the lowest (Figure 1).

Figure 1:
Income average by crypto owner
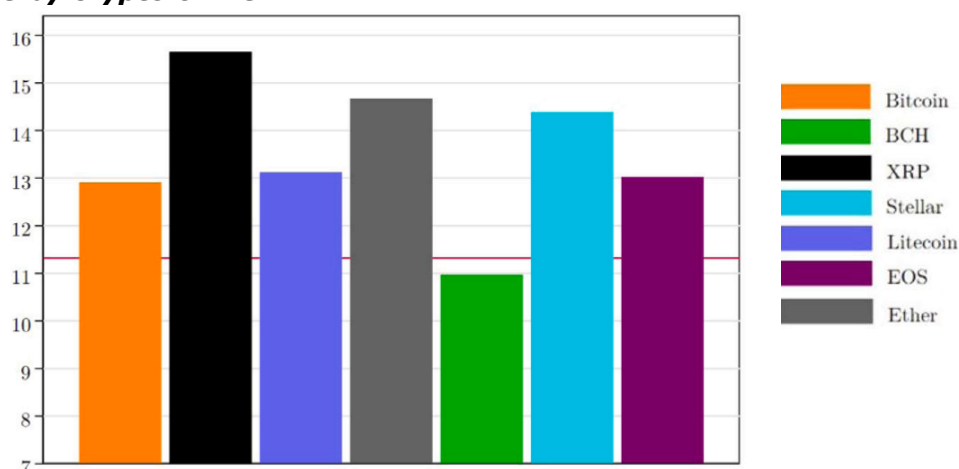
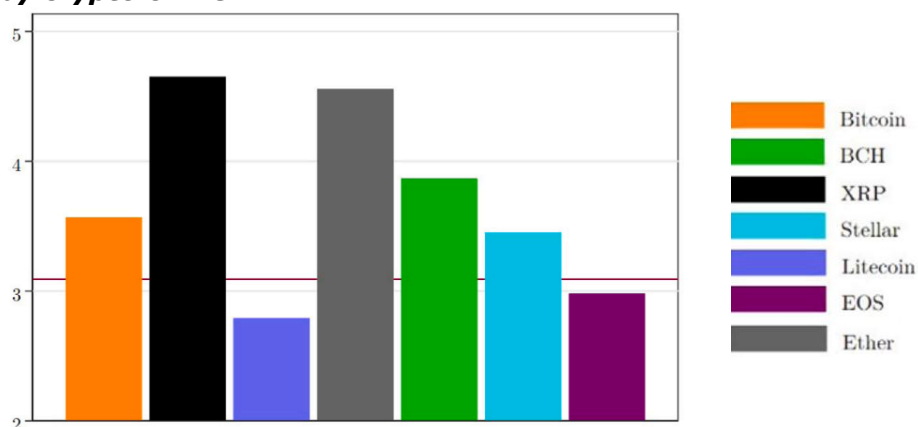Source: retrieved from Auer and Tercos-Lucas (2022)

However, a study by Abdullah et al. (2020) finds that cryptocurrencies have a negative effect on income inequality. They criticize the traditional fiat money and the increase in wealth inequality due to their inflationary effect. They compare them with cryptocurrencies such as Bitcoin which have algorithms able to adjust to inflation. It appears that cryptocurrencies are generally deflationary and thus increase purchasing power of their holders (Abdullah et al, 2020). They also conclude that because the cryptocurrency monetary system is based on the mining process and not on debt, it allows for wider accessibility and inclusion of the population.

2.2. Education

Education level is another socio-economic factor that has been shown to impact cryptocurrency investment behaviour. The results from Auer and Tercos-Lucas (2022) study show that individuals with a higher level of education are more likely to invest in cryptocurrency (see Appendix, Table 1, for the education attainment classification). It aligns with general investment patterns which find that one more year of education increases risk-taking and financial participation by 2 percent (Black et al., 2018). They also show that different levels of education can be associated with specific cryptocurrencies. From the survey, the owners of Litecoin have the lowest level of educational attainment while owners of XPR have the highest (Figure 2).

This disparity can be attributed to the greater understanding of financial markets and investment strategies among individuals with higher levels of education. Higher-educated individuals may also have a greater understanding of the technical aspects of cryptocurrency and be more confident in their investment decisions as well as have higher earnings.

Figure 2:
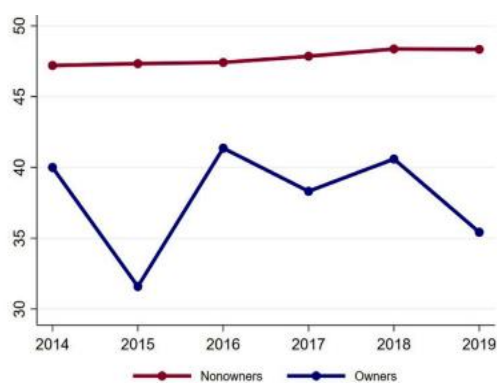***Education average by crypto owner***

Source: retrieved from Auer and Tercos-Lucas (2022)

2.3.   Age

Age is another important socio-economic factor associated with crypto-investors. Younger individuals tend to be more likely to invest in cryptocurrency, with data showing that roughly 42 percent of individuals aged 18-34 are familiar with cryptocurrency, compared to only 15 percent of those aged 65 and over (Blockchain Capital, 2018). A study on the Chinese population provides similar results, with the population of 18-30 years old having an increased probability to invest in crypto. However, they also found an increased interest and likelihood of investing in the future for people aged 40 and over. This may mean that this population group has now access to more disposable income. Auer and Tercos-Lucas (2022) confirm the age discrepancies between crypto owners (Figure 3). Their study reveals that one more year of age decreases the probability of crypto ownership by 0.1 percentage point. This difference in investment is probably due to the greater willingness to take risks and the greater exposure to technology and digital assets among younger individuals. Younger individuals may also have a greater understanding of the potential for high returns associated with cryptocurrency investment. However, Auer and Tercos-Lucas (2022) argue that the difference is due to preferences in investment behaviour rather than a lack of knowledge of the older generation (Figure 3).

Figure 3:
a) Age of owners vs age of non-owners cryptocurrencies   **b) age with knowledge about ve without knowledge**
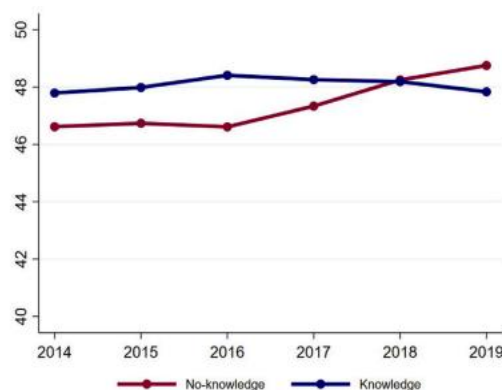
Source: retrieved from Auer and Tercos-Lucas (2022)

2.4.   Gender

Gender can also play a role in the likelihood of investing in crypto-currency. According to a survey of the Australian population by Xi et al. (2020), men are more likely to invest in cryptocurrency than women. The survey also found that female respondents are more likely to never invest in cryptocurrencies in the future. Auer and Tercos-Lucas (2022)

discovered that being a man increased the probability of at least one cryptocurrency ownership by 2 to 2.2 percentage points. They also show that being married increases the likelihood of women investing in crypto.

However, the study reveals that there was a knowledge gap between women and men in 2014 and that this gap has been decreasing over time (Figure 4). This means that the gap in investment behaviour is unrelated to knowledge but is due to investment preferences. These preferences can be attributed to traditional gender roles and societal expectations regarding financial behaviour. Women may also have a greater risk aversion and be less confident in their investment decisions, leading to lower levels of participation in cryptocurrency investment (Xi et al., 2020).

Figure 4:
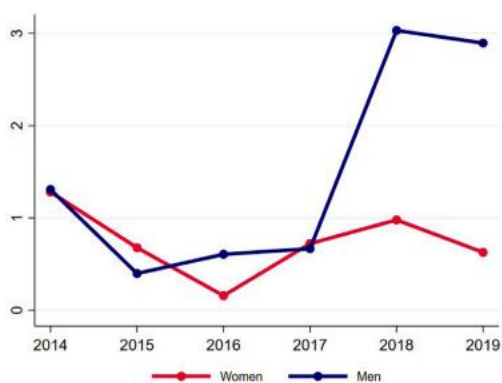***a) % who own cryptocurrency***   ***b) % with knowledge about***
cryptocurrencies   ***cryptocurrencies***
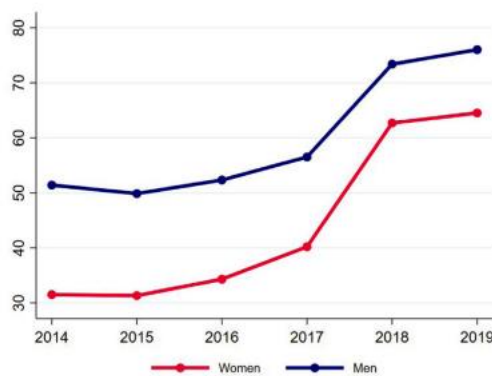
Source: retrieved from Auer and Tercos-Lucas (2022)

In conclusion, socioeconomic factors play a significant role in the likelihood of an individual investing in cryptocurrency. Understanding the behaviour and motivations of crypto-investors can help inform policymakers and companies in making cryptocurrencies a safe and accessible investment to all.

3. Financial Consequences of Large-scale Crypto Trading

3.1. Quantity of Cryptocurrencies

The total market capitalisation of all cryptocurrencies remained well below 50 billion USD until the end of 2020 when it suddenly began growing exponentially (Auer et al., 2022). Spiking in early 2021, it reached a capitalisation of roughly 200 billion USD. However, a rapid decline followed, almost bisecting total value. Nonetheless, afterwards the market cap started climbing again and peaked at 240 billion USD in late 2021. From this point onwards, it began to decrease once more but in a less rapid fashion. The total amount of active cryptocurrencies followed an exponential growth path as well but without any noteworthy slumps. Passing the mark of 2,000 in 2018, the total quantity began growing rapidly in 2020 and reaching more than 8,000 in early 2022. In spite of the great number of currencies, a few large ones make up the overwhelming majority of the total crypto value. By far the most important coin is Bitcoin, followed by Ethereum. One striking feature that distinguishes cryptocurrencies from other asset classes is their tremendous volatility, which is the other factor that affects the crypto market capitalisation next to total number of currencies tremendously (Figure 5).

Figure 5:
Record capitalisation and growth in cryptocurrencies amid market volatility
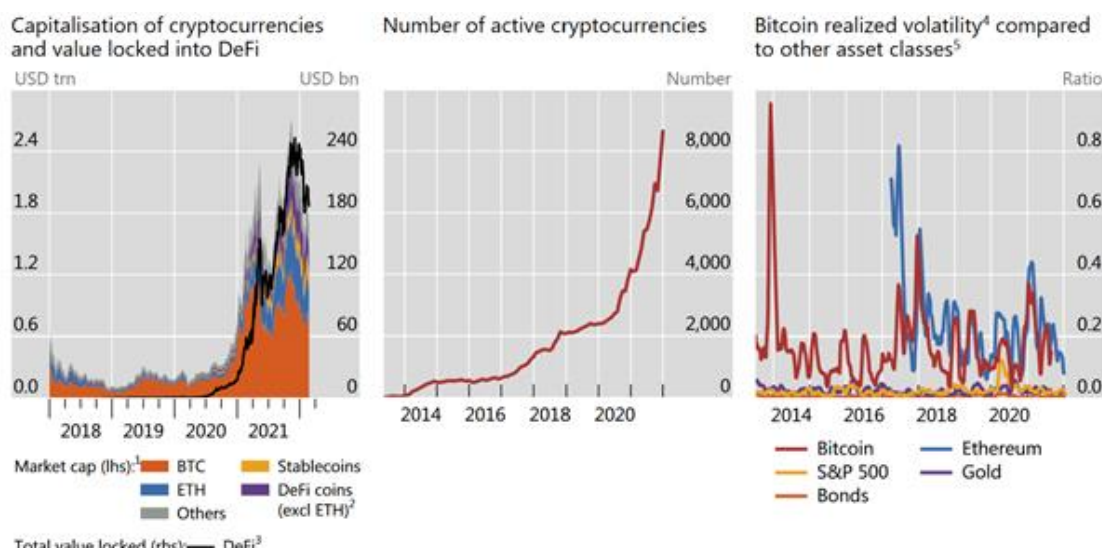
[1] As of 22 February 2022. Categories comprise the largest eight stablecoins, 59 DeFi coins and 58 other cryptocurrencies. [2] See Auer (2022) for a list of included coins under this definition. [3] Total value locked refers to the size of capital pools underpinning DeFi protocols. The sample includes 679 protocols. [4] Ninety-day moving averages coefficient of variation, i.e. ratio between the ninety-day standard deviation and the corresponding ninety-day mean. [5] Bitcoin and Ethereum compared with gold, the S&P 500 index and the Bloomberg Barclays US Aggregate Bond Index (bonds).

Source: retrieved from Auer R. And al. (2022)

3.2. Regulatory Aspects of Cryptocurrency

Due to the enormous volatility of cryptocurrency and the relatively new underlying technology, which is quite obscure for most people and investors, stricter regulation of this asset is frequently demanded (Auer and Claessens, 2018). However, cryptocurrencies are generally believed to be out of reach for regulatory institutions of singular nations. Nonetheless, it can be observed that the crypto market responds heavily to news and announcement from the public sector relating to a stricter legal framework for crypto assets. Next to that, news connecting cryptocurrency to criminal activities like money laundering and financing of terrorism have adverse effects on the market valuation. It is the belief that a minimum level of regulation will create security and boost consumer confidence. Whereas the news about a general legal framework for crypto causes an increase in market capitalisation. So it appears that at least a large chunk of crypto investors believe that crypto products are affected by state regulation. This is also because they rely on institutions like banks or exchanges that are within the jurisdiction of specific states as part of their vital infrastructure. It is the ambition of policymakers to achieve a certain level of consistency across fragmented financial jurisdictions all over the world. This is to avoid leakages and migration of crypto-based companies from more heavily regulated states to more lenient ones. Responsible for this coordination is for example the Financial Transaction Task Force (2015). Nonetheless, they do not pose a macroeconomic stability risk at this point (Carney, 2018). Despite the current unproblematic situation it is advised to remain vigilant.

3.3. What Affects Markets Inclination to Adopt Cryptocurrencies?

Taking into account a variety of plausible factors, including the regulation and public sector engagement, public interest and the digital infrastructure, the innovation capacity, industrial characteristics, development and financial inclusion, as well as cross-border transactions, a regression has been run to predict the countries involvement in cryptocurrency (Auer et al, 2022).

It can be observed that a high-quality digital infrastructure is vital for implementing cryptocurrencies. Additionally, the state of development of the financial institutions as well as their level of inclusion are highly significant for the spread of crypto. Oppositely, industrial characteristics indicating a developing market like a large informal economy seem to hamper this process. Similarly, high remittances indicate weakly developed economies and appear to slow down cryptocurrency usage. Surprisingly irrelevant are the legal status of cryptocurrencies and the public interest in Bitcoin, measured with search intensity. This indicates that the implementation of crypto is mainly driven by institutional

investors, and indicators portraying the interest and confidence of private investors are almost negligible (Figure 6, Appendix 2).

Figure 6:
Regression

Dependent variable: log total crypto exchanges turnover per country GDP				
	Estimate	z-value	Observations	Pseudo R2
Regulation and public sector engagement				
Cryptocurrency legal status	–0.017	(–0.223)	627	0.000
Central bank digital currency (CBDC) project	0.738***	(8.398)	497	0.048
Public interest				
Bitcoin search intensity	0.010**	(2.356)	581	0.003
Digital infrastructure				
Mobile cellular subscriptions	0.013***	(5.677)	490	0.036
Broadband subscriptions	0.035***	(7.675)	480	0.044
Innovation capacity				
Innovation output score	0.057***	(10.819)	395	0.077
Fast payment system	1.305***	(9.601)	533	0.065
Industrial characteristics				
Government effectiveness	0.639***	(9.369)	600	0.061
Informal economy	–0.047***	(–6.646)	368	0.039
Development and financial inclusion				
GDP per capita	0.366***	(8.510)	512	0.038
Account ownership	0.031***	(10.425)	437	0.094
Financial development	3.262***	(10.929)	470	0.084
Cross-border transactions				
Remittances	–0.063***	(–3.431)	444	0.018
Trade openness	0.005***	(4.506)	470	0.011

Notes: ***/**/* denotes results that are significant at the 1/5/10% level. z-values based on robust standard errors, double clustered by country and year. Data on legal status, CBDC project, account ownership, informal economy and financial development are time-invariant due to a lack of data.

Source: retrieved from Auer R. And al. (2022)

3.4. Central Banks and Cryptocurrency

Given the fact that cryptocurrencies can indeed be considered as a currency, it seems plausible that central banks of various countries also want to have a say in it (Auer and Böhme, 2020).

It can be observed that the speeches delivered by officials turn out to be increasingly positive in 2020 compared to for example 2018. Furthermore, it is apparent that the overall number of speeches on this specific topic increases noteworthy. In other words, cryptocurrency as a whole seems to gain importance for the policymakers at the various central banks (Figure 7).

It is crucial to note that there is generally a distinction between retail central bank digital currencies (CBDC) and wholesale CBDC. Wholesale currencies are intended for institutional investors like banks which carry deposits with a central bank. They are supposed to facilitate efficiency and ensure liquidity as well as minimise risk. Retail CBDCs are targeting private investors and the general public. The underlying technology is known as DLT (distributed ledger technology) and guarantees anonymity as well as access at any given time. In addition, they are feasible for interest rates.

The primary intention of the central banks differs across different countries. In advanced countries where cash payments are in decline one purpose of cryptocurrencies is to provide a public alternative for contactless payment. Another driving force is the desire to facilitate stability, efficiency, and security for domestic payments. In emerging markets, another important factor comes into play. The central bank wants to ensure the inclusion of all citizens in the cashless financial ecosystem that otherwise might have been denied access by private enterprises.

Several central banks have run or are running pilot projects, mostly with retail cryptocurrencies. Notable ones are from the Swedish Riksbank, the People's Bank of China and the Bank of Canada. However, none of these currencies are broadly and well-functioning in use to this day.

Figure 7:

Speeches on CBDCs have turned more positive since late 2018

Number of speeches   Graph 4

Cumulative count of speeches: Positive stance: Negative stance: — Net, positive–negative
                                   ▣ Retail CBDC   ▣
                                   ▣ Wholesale CBDC   ▣

Search on keywords "CBDC", "digital currency" and "digital money". The classification is based on the authors' judgment. The score takes a value of −1 if the speech stance was clearly negative or in case it was explicitly said that there was no specific plan at present to issue digital currencies. It takes a value of +1 if the speech stance was clearly positive or a project/pilot was launched or was in the pipeline. Other speeches (not displayed) have been classified as neutral.

Sources: centralbanking.com; Central bankers' speeches; central banks' websites; authors' calculations.

Source: retrieved from Auer R. and al. (2022)

4. Conclusion

This paper collects the findings of studies on the socio-economic characteristics of crypto-traders and the financial consequences of crypto-trading for the broader market. Reviewed studies report that a typical crypto-trader is one with higher education, a young man with a relatively high-income level. Regarding the characteristic features of the crypto-market, the trading volume is heavily dependent on news containing updates on regulation by the monetary authorities and episodes of money laundering by the use of cryptocurrencies.

Scholars also found the relationship between the state financial institutions and the degree to which cryptocurrencies are traded. For instance, in economies with a high proportion of a shadow market, cryptocurrencies are used for financing illegal activities and letting dirty money circulate in the economy. Finally, central banks play a vital role in adopting cryptocurrencies in one or another way. In particular, if the purpose is to introduce an advanced cashless payment system on the basis of blockchain which can be secured by the central bank, it does not fully substitute anonymized crypto-trading that yields higher returns than traditional financial assets although is much more volatile. In that way, central banks are intended to make crypto-trading a centralized process which goes in contradiction with the very philosophy of this phenomenon. Hence, a question arises about how policymakers will address the response of the market to the introduction of such an alternative by the possible introduction of another, more flexible and quirky investment platform. In any case, the broader financial industry will still be exposed to the risk represented by the decentralized market because of the challenge that central banks face: they can introduce centralized analogues for cryptocurrencies but then allow for developing other alternatives for crypto-trading which necessarily are going to be created considering appealing feature of decentralization.

Research on socio-economic patterns behind crypto-trading has been extensively done to date. However, an area that still may be studied deeper is policy-making in the field of regulation of crypto-trading and finding less harmless alternatives of it that satisfy younger generations putting a high value on the free market and broader society that is exposed to risks that the crypto-market represents.

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Appendix

Table 1: Education attainment classification

Category	Education level
1	12th grade (no diploma) or less.
2	High school graduate - high school diploma or the equivalent.
3	Some college but no degree.
4	Associate degree in college (occupational/vocational program or) academic program or bachelors degree.
5	Master's degree, professional school degree or Doctorate degree.

Retrieved from Auer R. and Tercos-Lucas D. (2022)

Table 2
Regression for drivers of cryptocurrency adoption:

Dependent variable: Share of respondent banks with cryptocurrency exposures	Estimate	z-value	Observations	Pseudo R2
Regulation and public sector engagement				
Cryptocurrency legal status	−0.541	(−1.512)	51	0.019
Central bank digital currency (CBDC) project	0.613***	(2.915)	51	0.055
Public interest				
Bitcoin search intensity	0.001	(0.102)	51	0.000
Digital infrastructure				
Mobile cellular subscriptions	0.003	(0.285)	50	0.001
Broadband subscriptions	0.042***	(2.875)	51	0.044
Innovation capacity				
Innovation output score	0.069***	(3.228)	51	0.100
Fast payment system	4.221***	(14.714)	51	0.005
Industrial characteristics				
Government effectiveness	0.558***	(3.117)	51	0.037
Informal economy	−0.117**	(−2.217)	51	0.110
Development and financial inclusion				
GDP per capita	1.393***	(2.407)	51	0.089
Account ownership	0.030***	(4.066)	51	0.039
Financial development	9.834***	(3.334)	51	0.170
Cross-border transactions				
Remittances	−0.555**	(−2.034)	49	0.039
Trade openness	−0.002	(−0.446)	51	0.004