Stock market forces shown to drive cryptocurrency returns

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Having examined the impact of various factors on cryptocurrency

returns, HSE economists found that fluctuations in cryptocurrency prices can be better explained by equity market risks than by factors specific to the crypto market, suggesting greater linkages between cryptocurrency and equity markets than previously believed. The study is published in a special issue of *International Finance Review* titled "Fintech, Pandemic, and the Financial System: Challenges and Opportunities."

In recent years, cryptocurrencies have become a staple of investor portfolios. But since cryptocurrencies differ significantly from conventional assets, economists have been trying to understand which factors affect cryptocurrency returns, whether the crypto market offers higher returns for increased price volatility, and to what extent the stock and crypto markets influence each other.

Previous studies have examined a broad spectrum of factors including fluctuations in exchange rates and precious metal prices, the value of Bitcoin as the largest cryptocurrency, macroeconomic and network factors, the age and capitalization of specific cryptocurrencies, their sensitivity to declines in other crypto rates, and more, but the results were not definitive.

"Despite crypto being a relatively young market, academic literature has already introduced multifactor models that can explain cryptocurrency returns by their sensitivity to risk factors such as size, uncertainty, volatility, and momentum. These factors are specific to the cryptocurrency market, which is considered independently from other financial markets. In contrast, our study examines both the factors specific to the cryptocurrency market and the most common equity market factors to explain returns on cryptocurrencies," says Victoria Dobrynskaya, co-author of the paper, Assistant Professor, HSE Faculty of Economic Sciences.

The new study examined a comprehensive sample of nearly 2,000

cryptocurrencies with a market capitalization of over $1 million. The authors gathered daily price data for years between 2014 and 2020 and computed weekly returns for each cryptocurrency in the sample, provided that their capitalization was sufficiently high (meaning the currencies were not necessarily included in the sample for the entire period).

The study period began when a sufficient number of large cryptocurrencies were available for analysis (more than 20 in 2014) and encompassed the ups and downs of the cryptocurrency market and the initial year of the pandemic. As such, the findings are expected to reflect real trends rather than short-term market fluctuations. The researchers gathered similar data for the global stock market.

"We conduct a comparative analysis of factors of both markets and compare cryptocurrency factors to their equity counterparts. For example, we compare how the volatility factor of the cryptocurrency market is related to the volatility factor of the stock market. We then test the explanatory power of all factors and run so-called 'factor horse races.' It turns out that the cryptocurrency market is not isolated from the stock market, particularly so after the COVID-19 pandemic, and the primary stock market risks—especially the downside risk—are more significant than the crypto market risks for explaining cryptocurrency returns cross-sectionally," says Victoria Dobrynskaya, co-author of the paper, Assistant Professor, HSE Faculty of Economic Sciences.

The findings confirm the high volatility of cryptocurrencies. Even after excluding a small proportion of outliers, the weekly returns on individual cryptocurrencies have ranged from as small as -100% (indicating that the price dropped to zero within a week) to as large as 7189%. However, when compared to the equity market, the cryptocurrency market exhibits significantly higher average and median returns, with annual rates of 88% and 73%, respectively, as opposed to 12% and 20%.

The researchers used the collected data to construct cryptocurrency-specific factors (market, size, momentum, volatility) using similar methodology, which is common for the equity market. They used both sets of factors (equity- and cryptocurrency-specific) to explain cryptocurrency returns.

Their calculations reveal that the stock market risk plays a more important role than the cryptocurrency market risk, even though both risks have a significant impact on returns. Cryptocurrencies appear more responsive to stock market decline than to its growth. However, the authors did not find any significant correlation between returns on cryptocurrencies and other commonly used factors in the stock market, such as size, value, profitability, and stock volatility.

On the other hand, factors such as cryptocurrency size and uncertainty of the cryptocurrency market do have a significant impact.

According to the authors' estimates, a portfolio that invests in small cryptocurrencies and sells the largest cryptocurrencies in a short position has the average annual return of 61% in the studied period. However, the momentum portfolio has been shown to generate a positive, but statistically insignificant return. This was mainly due to a few past-loser cryptocurrencies that have experienced significant growth in recent years.

Additionally, the authors demonstrated that factors associated with the global stock market or the stock market of North America have a stronger explanatory power for the cryptocurrency market, compared to factors associated with the stock markets of Europe and Asia.

More information: Victoria Dobrynskaya et al, Cryptocurrencies Meet Equities: Risk Factors and Asset-pricing Relationships, *Fintech, Pandemic, and the Financial System: Challenges and Opportunities*

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