# Identifying Cryptocurrency Regulation Effects on Bitcoin Price : An Empirical Case in South Korea

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#### Abstract

The study examines the effects of the regulation on cryptocurrency market, investigating a case in South Korea. As South Korea has one of the largest market share of the cryptocurrency market for the time being, its regulation in South Korea affected the entire markets around the World. This research in progress will use the method of difference-in-differences to assess the effects of regulation to the market. The findings indicate that there is a significant reduction of the Bitcoin price and the price volatility was significantly reduced by about 58% after the regulation of the cryptocurrency market. More so the trading activity indicates a huge decline after regulation was implemented.

## I. Introduction

The cryptocurrency market shows a weak position since the start of the year 2018 in spite of a strong price increase the previous year. Various research has discussed the market volatility (Eswara 2017, Blau 2017). As response to the highly unregulated market, several governments have discouraged its citizens to invest or to buy bitcoins and altcoins as they see it as a highly risky investment. Regulation of the cryptocurrency market has been seen as a remedy to the problems of high volatility, money laundering, and fraudulent activities has been the characteristic of the market.

The purpose of this research is to ascertain the effects of Cryptocurrency regulation on the price of bitcoin soon after the South Korean government regulated the cryptocurrency market. The research will also go ahead to assess the effect of network externalities and trading volume of bitcoin during the period after regulation was implemented on the bitcoin price.

This research paper will be organized in the following four additional sections. In the second section the paper will look at the previous literature. In the third section, methodology shall be presented, data sources shown. After the data and methodology are presented, the fourth section will analyze the findings or results presented by the various tests conducted. Finally, the conclusion of the research shall be presented to provide an overview of the findings.

#### **II. Literature Review**

Cryptocurrency has been an interesting subject for the media, academia and governments for the past few years. The year 2017 has been one of the best period for the cryptocurrency market, gaining more than 1200%. The market is mostly decentralized as it has no central bank which controls the cryptocurrencies, and this makes it sensitive to (economic, social and political) and fake (rumors) news (Scaillet, 2017). Positive news results in the increase of the cryptocurrency but any negative news will also lead to a decline in the value.

Gandal et al. (2017) assessed the effects of price manipulation in the Bitcoin Ecosystem. The research raised concerns on unregulated bitcoin exchange, Mt Gox. It was noted that the potential for price manipulation of Over-The-Counter (OTC) markets is a significant concern for

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regulators. The OTC trading is the trading activity which happens on a peer-to-peer level without the involvement of a stock exchange. White (2016), in the SEC white paper the paper noted that OTC stocks are also frequent target for market manipulation by fraudsters. Gandal et al. (2017) in conclusion advocated for a regulated bitcoin market due the risks surrounding unregulated exchanges.

In the research of Blau (2017), when he looked at the price dynamics and speculative trading in bitcoin, the study ascertains that the value of bitcoin which started at few cents in 2009 grew up to above \$1100 at the end of 2013. However, it went down 60% down in the subsequent months a sign of huge volatility. The rise and fall on an asset was said to appropriately represent presence of an asset bubble. Interestingly the results of the study do not find that during that period, speculative trading (a common situation in unregulated market) was significantly high.

Pieters and Vivanco (2017) studied the differences in price across 11 different markets which could make a sum of 26% global trade of Bitcoin trade volume. In the examination of these markets, they found out that those which do not require customer identification for establishing an account are more likely to deviate from representative market prices than those which do. The element to predict the timing or the size of deviation could not however be identified. Their study concluded that standard financial regulations, specifically know your customer regulations, can have a non-negligible impact on the market of Bitcoin.

### III. Data and Methods

This randomized field study on causality uses the experiment approach, which is gaining ground in the IS literature (Grahl et al., 2013). The difference-in-differences method is used to compare the differences between the treatment and control groups. This method is useful in identifying the causal effects of treatment on two different groups, clarifying the issue of identification (Angrist and Pischke, 2009). Pischke (2007) uses this method to empirically investigate the effects of school term length on academic performance regarding a sudden policy change in Germany. (Angrist and Evans 1998) examine the effects of changes in state abortion laws on teen pregnancy with the method. Reinstein and Snyder (2005) use the method to

identify the effects of movie critics' reviews on ticket sales (i.e., box office performance). In the field of IS, Rishika et al. (2013) adopt the method to examine the effects of customer participation in a firm's social media efforts to quantify the impact of social media participation on customer profitability. More recently, Ye et al. (2014) use the method to investigate how the design of reputation systems influences the behaviour of sellers in the context of online auctions. This study also implements the propensity score matching method for robustness checks. Simply put, this study implements the difference-in-differences method as an ordinary least square estimator.

The figure 1 gave us an overview of Bitcoin performance after the South Korean regulation was implemented. The data was collected from Coinmarketcap.com from December 2017 to March 2014. The period December to end of January is before the regulation of the cryptocurrency in South Korea. In December the price of Bitcoin rose to just above \$20 000, however due the higher increase of the prices, the South Korean Government announced an emergency meeting on its Regulation which lead to also to a rapid reduction of the price. On the 14th of March after the regulation was implemented, the price rests at below \$9000, a percentage loss of value to about 114%.The standard deviation of the bitcoin for the total period from December to March was \$2578.





# **IV. Preliminary Results**

The figure 2 shows the movements of the Bitcoin prices for the period 1 February to 14 March after the regulations had started implementation. The graph shows the highest price just above \$12 000 and the lowest prices above \$8 000 with a population standard deviation of \$1 073. This result indicates a reduced Bitcoin price standard deviation by about 58%.

For the period 1 December to 14 March the figure 3 indicates high price daily differences. This indicates high price volatility in the market for the period 1 December to about February 7. From hence the price volatility was significantly reduced.

Finally, the figure 4 show the Volume of the bitcoin before and after regulation, again similarly to the price differences, the trading volume was significantly reduced from the highest of close to 24 billion in December before regulation with average of about 13.2 billion, compared to a low of about 5.4 billion after regulation with average of 7.7billion. The graph of trading volume and price differences are showing the same shape for the period, which shows how corelated the volume was to the price volatility and Bitcoin price.



Figure 2. Bitcoin Price Changes after Regulation



Figure 3. Daily High and Low Bitcoin Price Difference



Figure 4. Bitcoin Trading Volume Trends

# V. Discussions

Basing on the pilot research implemented in this study the regulation of Cryptocurrency shows that it has a significant effect to the cryptocurrency market. There is significant decrease in the Bitcoin value after the South Korean cryptocurrency regulation. More so, the price volatility was significantly reduced, exhibited by using population standard deviation which exhibited about 58% reduction effect. The following research in progress will be beneficial to the have become cautious about the governments which cryptocurrencies and are either seeking ways to regulate or ban them. Looking at countries such as China and India which decided to ban cryptocurrencies, this research shall help them change their initial decision and consider regulating the market compared to banning it. This research shall also add value to the research as one of the first studies on asses the effectiveness of regulation of the cryptocurrency market.

### References

- Eswara, M.(2017). Cryptocurrency Gyration and Bitcoin Volatility..
- Blau, B. M.(2017). Price dynamics and speculative trading in bitcoin. *Research in International Business and Finance*, 41 (2017): 493-499.
- Pieters, G., & Sofia, V.(2017). Financial regulations and price inconsistencies across Bitcoin markets. *Information Economics and Policy*, 39 (2017): 1-14.
- Scaillet, O.livier, Adrien Treccani, and Christopher Trevisan(2017). High-frequency jump analysis of the bitcoin market.
- Gandal, Neil, et al(2018). Price manipulation in the Bitcoin ecosystem. Journal of Monetary Economics.
- Pieters, G., & Sofia, V.(2017). Financial regulations and price inconsistencies across Bitcoin markets. *Information Economics and Policy*, 39, 1-14.
- Grahl, Jörn, Franz Rothlauf, and Oliver Hinz. "How do social recommendations influence shopping behavior? A field experiment." Google Scholar (2013).
- Angrist, J. D., & William N. E.(1996). Children and their parents' labor supply: Evidence from exogenous variation in family size. No. w5778. National bureau of economic research, 1996.
- Pischke, J. S.(2007). The impact of length of the school year on student performance and earnings: Evidence from the German short school years. *The Economic Journal*, 117.523, 1216-1242.
- Reinstein, David A., and Christopher M. Snyder. "The influence of expert reviews on consumer demand for experience goods: A case study of movie critics." *TheJournal of Industrial Economics* 53.1 (2005): 27-51.
- Rishika, et al.(2013). The effect of customers' social media participation on customer visit frequency and profitability: an empirical investigation. *Information Systems Research*, 24.1, 108-127.
- Ye, Shun, Guodong Gao, and Siva Viswanathan92013). Strategic behavior in online reputation systems: evidence from revoking on eBay.