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Co-explosivity in the cryptocurrency market

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ABSTRACT

Most of the limited evidence on the exponential price spikes (i.e. price explosivity) in the cryptocurrency market mainly considers the case of Bitcoin, although other cryptocurrencies have gradually eroded Bitcoin's dominance. Importantly, none has been documented as to whether explosivity periods in cryptocurrencies are contemporaneously related. Accordingly, we date-stamp price explosivity in leading cryptocurrencies and reveal that all cryptocurrencies investigated herein were characterised by multiple explosivity. Then, we determine whether explosivity in one cryptocurrency can lead to explosivity in other cryptocurrencies. Results show evidence of a multidirectional co-explosivity behaviour that is not necessarily from bigger to smaller and younger markets.

“Bitcoin is the mother of all bubbles,” Nouriel Roubini.

1. Introduction

Soaring prices in Bitcoin and other cryptocurrencies have occupied the press. In 2016 and 2017, Bitcoin price increased 122% and 1360%, respectively. Other cryptocurrencies inspired by Bitcoin, like Ethereum, Ripple, Litecoin, and Nem surged several thousand percent in price in 2017 alone. Furthermore, Bitcoin's dominance over the cryptocurrency market, which exceeded 85% from 2010 till most of 2015, has gradually faded to the determinants of other leading cryptocurrencies that now constitute more than 50% of the overall cryptocurrency market value.¹

It is often presumed in the financial press that Bitcoin is the biggest bubble in history,² despite some evidence on its role as a valuable asset (e.g., Bouri et al., 2017). Furthermore, the academic literature provides empirical evidence of the presence of bubbles in Bitcoin (Chueng et al., 2015; Fry and Cheah, 2016; Corbet et al., 2017; Su et al., 2018).

Two important studies are worth of noting here. The first (Fry and Cheah, 2016) shows evidence of a spillover from Ripple to Bitcoin that affected the decrease in Bitcoin prices. The second (Corbet et al., 2017) shows that Ethereum is characterised by pricing bubbling. However, none of the existing papers have explored in detail the presence of price bubbling in other leading cryptocurrencies that now constitute an important segment of the cryptocurrency market and, importantly, the possibility that cryptocurrencies co-bubble simultaneously. That is where our paper seeks to contribute via the approach of Phillips et al. (2015) and the logistic regression.

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¹ As of end of December 2017, the total market capitalisation of Ripple, Ethereum, Litecoin, Nem, Dash, and Stellar amounted to over US\$195 billion or 39.11% of the total market capitalisation of all cryptocurrencies versus a 44.80% market share for Bitcoin.

² <https://www.cnbc.com/2017/12/14/bitcoin-may-now-be-the-biggest-financial-bubble-of-all-time.html>.

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