Thank you very much for your review, please find our answers under each comment, in red.

This paper analyzes the statistical properties, Metcalfe's law, Granger causality, and the crash time in the cryptocurrency market, and comes to the conclusions: (1) the existence of heavy tails, (2) the validity of Metcalfe's law, (3) the causalities between Bitcoin price and network size, and (4) the best-fit market crash dates. Although the authors do a lot of work, there are still many areas for improvement in this paper. I have the following comments.
Major comments
(1) The structure of this paper is not well organized, even somewhat messy. One paper should contain one story. I don't find a clear thread to put the three parts into one economic story. The authors say they "refer only to the most recent papers dealing with three areas regarding the cryptocurrencies market", but this is not convincing and the empirical results seem separate from each other.

The paper analyses the cryptocurrencies market from the point of view of the statistical properties of cryptocurrencies price and return.
The first section deals with the fact that the distribution of the cryptocurrencies returns exhibit heavy tails. Indeed, this section may not be directly linked to the other sections and in light of the recommendations, also from other reviewers, we will remove it in the update version of the paper.

(2) What's the most important contribution of the paper? The three parts have been studied in the current literature. But what is the new finding? The authors should add texts to emphasize the contributions and point out the differences between this paper and the published ones.

From our point of view, the most important contribution of the paper is the fact the on the long term, however, on the short term, its validity is questionable.
More, we found to be valid another version of the Metcalfe's law, where the number of users influence the transaction price.
Also, there seems to be a bivariate causality between the number of users and the Bicoin's price.

In the light of the recommendations, our contribution will be emphasized more in the revised version of the paper.

(3) Is it reasonable to regard the used addresses at time t as the connected users? I assume it is the number of unique (from or to) addresses per day (see https://bitinfocharts.com). For example, I have a Bitcoin wallet and receive 100 Bitcoin on Jan 1st 2019. My address is counted as used or active address on Jan 1st 2019. Then I don't receive or send any Bitcoin until Feb 1st 2019 when I spend 10 Bitcoin. One important question is raised: my address isn't counted as used or active address during the period from Jan 2nd 2019 to Jan 31st 2019 but I still think I am a connected not a silent Bitcoin user and contribute to the Bitcoin network. How do the authors tackle this issue?

Normally, we should use the number of users, however, the most reasonable proxy for this it seems to be the number of unique addresses. This approach has been used in many papers, see for example Wheatley, S., Sornette, D., Huber, T., Reppen, M. & Gantner, R. N. Are bitcoin bubbles predictable? Combining ageneralized metcalfe's law and the lppls model.S wiss Finance Inst. Res. Pap. No. 18-22.(2018).

(4) I am curious about Figure 6 where r-square of 500-days is very close to zero around 2015, and Figure 7 where beta of 250-days and 500-days is lower than -1 around 2015. What happened in 2015?

During 2014 and 2015, the relationship between the log(Market_cap) and log(Number_unique_adresses) was not linear (maybe quadratic), please see the figure below.

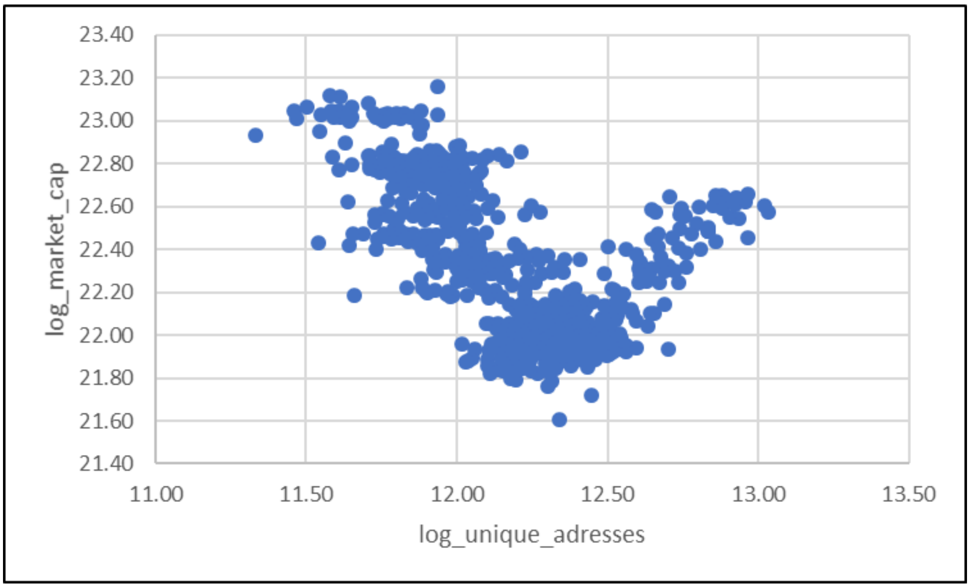

Figure 1. log(Market_cap) vs log(unique_adresses), 2014-2015

(5) I suggest that the authors should remove the LPPL section. The authors have stated that the main conclusion is the validity of Metcalfe's law, but what is the relationship between Metcalfe's law and cryptocurrency bubble?

From our point of view, according to the bidirectional causality between the price and the network size, the expected price increase is a driver for more investors to join the Bitcoin network, which may lead in the end to a super-exponential price growth, possibly due to a herding behaviour of investors.
This super-exponential price growth can be modelled using the LPPL approach.

(6) The title should be changed, don't mention "herding". Because the authors only say the herding is potential or possible and the paper does not use the CASD and CSSA approaches, such as Bouri et al. (2018) and Vidal-Tomás et al. (2018). To be frank, I don't know how to conclude the herding behavior from Metcalfe's law. The logic is far-fetched.

Thank you for this point, we will remove the herding from the title.

Minor comments

(1) The cryptocurrencies listed in Table 1 should be ordered in market capitalization.

Thank you, we will do this.

(2) I use MATLAB 2018b to test the stationarity of log Bitcoin price (Coincapmarket.com) ranging from 2013/04/28 to 2018/10/02, but find the p-value of ADF test is 0.9847. So I think the authors should check the computing process.

Our p-value of 0.36 corresponds to the ADF test with intercept, while for the ADF test with no intercept, the p-value is 0.98 (using Eviews 10), please see below.

Null Hypothesis: LOG_P has a unit root
Exogenous: None
Lag Length: 1 (Automatic - based on SIC, maxlag=26)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.877436	0.9860
Test critical values:	1% level	-2.565869	
	5% level	-1.940948	
	10% level	-1.616616	

*MacKinnon (1996) one-sided p-values.

Figure 2. ADF test without intercept

Null Hypothesis: LOG_P has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, maxlag=26)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-1.790137	0.3858
Test critical values:	1% level	-3.432721	
	5% level	-2.862473	
	10% level	-2.567312	

*MacKinnon (1996) one-sided p-values.

Figure 3. ADF test with intercept

(3) The authors miss some important references. For example, although the paper cites Fry (2015), I don't find it in the reference part; Cheah and Fry (2015) and Fry and Cheah (2016) are also about the bubble of cryptocurrency; the pioneer paper on the inefficiency of Bitcoin (Urquhart, 2016) is related to the statistical properties; Van Vliet (2018) also studies Metcalfe's Law in Bitcoin market; Shen et al. (2019) use VAR and Granger causality, which are linked to Section 3.3.3. The authors should cite them.

Thank you, will do it.

(4) The journal name of Ref [19] should be Journal of Empirical Finance, not Empirical Finance. Ref [26] – [31] should be footnotes.

Thank you!

I suggest that the authors should consider the above comments and revise the paper.

Bouri, E., Gupta, R., & Roubaud, D. 2018. Herding behaviour in cryptocurrencies. *Finance Research Letters*.
Cheah, E.-T., & Fry, J. 2015. Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin. *Economics Letters, 130*, 32-36.
Fry, J., & Cheah, E.-T. 2016. Negative bubbles and shocks in cryptocurrency markets. *International Review of Financial Analysis, 47*, 343-352.
Shen, D., Urquhart, A., & Wang, P. 2019. Does twitter predict Bitcoin? *Economics Letters, 174*, 118-122.
Urquhart, A. 2016. The inefficiency of Bitcoin. *Economics Letters, 148*, 80-82.
Van Vliet, B. 2018. An alternative model of Metcalfe's Law for valuing Bitcoin. *Economics Letters, 165*, 70-72.
Vidal-Tomás, D., Ibáñez, A. M., & Farinós, J. E. 2018. Herding in the cryptocurrency market: CSSD and CSAD approaches. *Finance Research Letters, Forthcoming*.