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Social networks parameters as the main drivers of cryptocurrencies

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“We have elected to put our money and faith in a mathematical framework that is free of politics and human error.”

-Tyler Winklevoss, Co-creator of Facebook,
investor

Part 1: Introduction

1.1 Trust and economic activity

Trust

- is willingness to refrain from opportunistic behavior (Guiso, Sapienza and Zingales, 2008; Dell, 2011);
- is one of the main non-economic factors determining economic growth (Polterovich, 2017);
- has a positive effect on economic growth (La Porta et al., 1997; Tabellini 2010; Beugelsdijk, 2006);
- affects the execution of obligations by citizens (La Porta, 2006);
- affects conflicts and cooperation (Aumann and Schelling, 2005);
- towards the government has a positive effect on the desire of the population to accumulate (Nepp, Zumash, Okrah, 2017).

Part 1: Introduction

1.2 Trust and financial markets

Trust

- affects decision making by investors (Pevzner et al., 2015);
- affects the amount of investment (Alesina and Perotti, 1995);
- has a positive effect on the number of transactions in the stock market (Guiso et al. 2003);
- affects investor activity in financial markets (Aggarwal and Goodell, 2011);
- has an impact on the demand for low-risk assets (Guiso, 2008).

Part 1: Introduction

1.3 Trust and cryptocurrency

Trust?

- Popularity affects Bitcoin price (Ciaian, Rajcaniova, d'Kancs, 2017; Kristoufek, 2013);
- Tone of mention in media affects Bitcoin price (Polasik, 2014);
- Sentiment of internet users affects Bitcoin price (Stenqvist, Lonno, 2017).

Part 1: Introduction

1.4 Classical trust measurement

INDICES

- Trust indices of La Porta (Yale University) (La Porta, et al. 2003)
- Indices of Guiso, Gianetti (University of Cambridge), (Guiso, et al. 2003)
- Indices of trust to government (CIA World Factbook)
- Index of trust to business, Deutsches Institut für Wirtschaftsforschung (DIW, Germany)

SOCIAL SURVEY

- World Values Surveys of the World Bank (since 1980),
- Survey on 5 types of trust in 120 countries (Guiso, 2006)

Part 1: Introduction

1.5 Trust measurement on cryptocurrency market

POPULARITY:

- Search queries in **Wikipedia** (Garcia, 2014)
- Search queries in **Google Search** (Kristoufek, 2013)
- Mentions of Bitcoin in **Twitter** (Li, Wang, 2017)



SENTIMENT:

- **Likes** in social networks equal to the brand trust (Halaszovich, Nel, 2017);
- **Reshares** in social networks equal to the brand trust (Phua, Ahn, 2018);
- **Investor sentiment** influences an exchange rates of classical currencies (Heiden et al, 2012)

Part 1: Introduction

1.6 Relevance of the research

1. The topic of measuring trust in global markets is still relevant
2. Researches that determine the effects of popularity on Bitcoin price are based on data up to 2016. (before the explosive growth and fall in 2017-2018)



The impact of trust and popularity in the case of explosive growth in Bitcoin market has not been studied

Part 2: Data and Methodology

2.1 Hypotheses

H1: Trust of internet users has a positive impact on Bitcoin price

H2: Popularity has a positive impact on Bitcoin price in case of growth

H3: Popularity has a negative impact on Bitcoin price in case of falling price

H4: The impact of popularity on Bitcoin price increases over time

Part 2: Data and Methodology

2.2 Institutional variables

POPULARITY:

General, among Internet users:

Google Trends

«Professional», among bitcoin users:

Number of comments in Facebook

SENTIMENT:

General, among Internet users::

Number of likes in Facebook

«Professional», among bitcoin users:

Number of reshares in Facebook

Part 2: Data and Methodology

2.3 Other variables

- Number of Bitcoin transaction, USD/EUR, Dow Jones (Ciaian, 2017);
- Gold Price, NASDAQ, EUR/USD, USD/CNY, Oil Price(Ciaian, 2018);
- Total number Bitcoins, S&P500, Eurostoxx, DOW30, NASDAQ, SSE, Nikkei225, FTSE100, GBP/USD, JPY/USD, CHF/USD, EUR/USD (Jang, Lee, 2013);
- Difficulty of mining: US inflation; US GDP (Li, Wang, 2017).

Part 2: Data and Methodology

2.4 Model

$$Prc = \beta_0 + B + T + C + \varepsilon$$

B – Bitcoin market variables:

$$B = \beta_1 Trns + \beta_2 Dfclt$$

T – Institutional variables

$$T = \beta_3 \ln(GTrnd) + \beta_4 FBLks + \beta_5 FBShrs + \beta_6 FBCmn$$

C – Global economic climate variables

$$C = \beta_7 FSI + \beta_8 \ln(Euro) + \beta_9 \ln(Oil) + \beta_{10} Gold$$

ESTIMATION

GARCH (Bollerslev, 1986)



Part 3: Empirical Results

3.1 General sample

Variable	Coef.	P-value
<i>Trns</i>	+	0.007***
<i>Dfclt</i>	-	0.050**
<i>GTrnd</i>	+	0.351
<i>FBLks</i>	+	0.083*
<i>FBShrs</i>	+	0.060*
<i>FBCmn</i>	-	0.001***
<i>FSI</i>	+	0.842
<i>Euro</i>	+	0.249
<i>Oil</i>	+	0.927
<i>Gold</i>	-	0.109
<i>ARCH lag1</i>	+	0.000***
<i>GARCH lag1</i>	+	0.000***



Part 3: Empirical Results

3.2 Stable and unstable periods

Stable

Variable	Coef.	P-value
<i>Trns</i>	+	0.011**
<i>Dfclt</i>	+	0.778
<i>GTrnd</i>	+	0.468
<i>FBLks</i>	+	0.119
<i>FBShrs</i>	+	0.032**
<i>FBCmn</i>	-	0.244
<i>FSI</i>	+	0.719
<i>Euro</i>	+	0.292
<i>Oil</i>	+	0.848
<i>Gold</i>	-	0.126
ARCH lag1	+	0.000***
GARCH lag1	+	0.000***

Unstable

Variable	Coef.	P-value
<i>Trns</i>	-	0.976
<i>Dfclt</i>	-	0.001***
<i>GTrnd</i>	+	0.087*
<i>FBLks</i>	+	0.166
<i>FBShrs</i>	-	0.055*
<i>FBCmn</i>	-	0.002***
<i>FSI</i>	-	0.605
<i>Euro</i>	-	0.545
<i>Oil</i>	+	0.873
<i>Gold</i>	+	0.159
ARCH lag1	+	0.000***
GARCH lag1	+	0.000***



Part 3: Empirical Results

3.3 Unstable period

Growth

Variable	Coef.	P-value
<i>Trns</i>	+	0.958
<i>Dfclt</i>	+	0.581
<i>GTrnd</i>	+	0.116
<i>FBLks</i>	-	0.848
<i>FBShrs</i>	+	0.032**
<i>FBCmn</i>	-	0.003***
<i>FSI</i>	+	0.234
<i>Euro</i>	+	0.408
<i>Oil</i>	+	0.367
<i>Gold</i>	-	0.608
ARCH lag1	+	0.000***
GARCH lag1	+	0.000***

Fall

Variable	Coef.	P-value
<i>Trns</i>	+	0.325
<i>Dfclt</i>	-	0.872
<i>GTrnd</i>	-	0.185
<i>FBLks</i>	+	0.172
<i>FBShrs</i>	-	0.721
<i>FBCmn</i>	-	0.364
<i>FSI</i>	-	0.229
<i>Euro</i>	-	0.610
<i>Oil</i>	+	0.258
<i>Gold</i>	-	0.679
ARCH lag1	+	0.008***
GARCH lag1	+	0.000***

Part 4: Discussion

H1: Trust of internet users has a positive impact on Bitcoin price

+ -

H2: Popularity has a positive impact on Bitcoin price in case of growth

+

H3: Popularity has a negative impact on Bitcoin price in case of falling price

+ -

H4: The impact of popularity on Bitcoin price increases over time

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Thank you
for your attention!

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