

## Underpricing of Initial Coin Offering

Since 2013 Initial Coin Offerings have allowed companies to attract financing with the help of crypto currencies. In August 2017, the total capitalization of the crypto currency market exceeded \$ 150 billion. From the 1st quarter of 2015 to November 2017, the volume of funds raised amounted to \$3.78 billion<sup>1</sup>. Statistics of ICO shows that demand continues to grow with claims of over \$15 billions raised in the first half of 2018<sup>2</sup>. The increasing number of projects financed by ICO as an alternative method to IPO is caused by several reasons: the possibility of reselling the received tokens at a higher price after the launch of the project or earlier; the possibility of obtaining the company's services at lower prices; the increased popularity of crypto currencies (e.g. Bitcoin, Ethereum, etc.); the expectation of high profitability; the high speed of transactions (including the speed of attracting initial investments) and anonymity. However, due to differences in regulation between the IPO and ICO, the ICO market attracts smaller investments on average (average investments in ICO projects equal to \$19 million<sup>3</sup> in comparison with the average size of IPO - \$207.2 million<sup>4</sup>) and there exists more chance for manipulation in the market, which leads to the fact that the results relevant to the IPO market cannot be applied directly to ICO. Due to the fact that blockchain technology and crypto currencies are new tools in finance, and the data for research has just begun to appear, there is a limited number of academic papers in this area of studies. Moreover, they are devoted mainly to the description of the mechanisms of the ICO, the advantages and risks of ICO, the review of existing ICO and crypto exchanges, legislation. The absence of fundamental works emphasizes the relevance and scientific novelty of the forthcoming research. Particularly, the contribution to the existing literature is the identification of factors that affect the underestimation of tokens on the first day of trading. In order to achieve this goal we carry out a comparative analysis of the primary issue of coins (tokens) and the primary public offering, then we classify the factors that affect the formation of the ICO token price; for empirical part of the work we collect a sample of ICO companies and as a result identify the determinants of underestimation of tokens. **Scientific novelty** consists in obtaining the following results the formation of the model evaluation factors to the underestimation ICO and its classification.

Due to the lack of published works on ICO underpricing, the study is based on similar works for Initial Public Offerings (IPO). The greatest contribution to the study of underestimation of the IPO belongs to the works of John Ritter(1991). He showed that the value of shares in the first day after the initial placement increased by 16% on average. Barber and Odean (2007) found that the more mass media talks about an IPO, the more shares are bought. Barberis and Schleifer (2003) noted that the media's attention after the IPO leads to overestimation of the share price and to the formation of bubbles. Loughran, Ritter, Rydqvist (2008) showed that in China, the average underestimation was 164.5% (for the period 1990-2005), in India - 92.7% (1990-2007), in the US and the UK – about 17% (1960-2006), so the amount of the underestimation depends on the region of the company, which is placing the shares. The first works on ICO are devoted to the analysis of risks of this method of raising capital (Yadav (2017), Dirk A. Zetzsche (2017) and Wulf A. Kaal & Marco Dell'erba (2017)),

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<sup>1</sup> [http://www.ey.com/Publication/vwLUAssets/ey-research-initial-coin-offerings-icos/\\$File/ey-research-initial-coin-offerings-icos.pdf](http://www.ey.com/Publication/vwLUAssets/ey-research-initial-coin-offerings-icos/$File/ey-research-initial-coin-offerings-icos.pdf)

<sup>2</sup> <https://assets.ey.com/content/dam/ey-sites/ey-com/global/news/2018/10/ey-ico-research-web-oct-17-2018.pdf>

<sup>3</sup> <https://vc.ru/31327-anti-hayp-ico-v-paradigme-venchurnyh-investiciy>

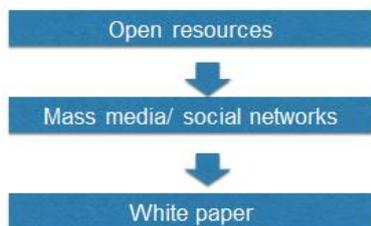
<sup>4</sup> <http://www.interfax.ru/business/592333>

information about the global crypto currency market and forecasts is presented by Dr Garrick Hileman and Michel Rauchs (2017), the study of individual countries (China, Korea) is presented by Adrian (Wai-Kong) Cheung, Eduardo Roca and Jen-Je Su (2015), Nicolas T. Courtois (2016), Gareth W. Peters (2016), legal aspects of ICO are reflected in the work of Wulf A. Kaal (2018). Demelza Hays (2017)<sup>5</sup> report revealed that the ICO was overvalued on average. Only 5 out of 21 ICO in 2013 showed positive yield on the first day of issue.

The study presents the following structure of hypotheses:

Hypothesis	Details
H.1 The availability for investment not only by institutions but also by individuals causes a large underpricing in the national IPO , and in the case of ICO creates a large revaluation, as private investors believe in the high yield of the token and are ready to overpay	
H.2 Discussion in the mass media of the forthcoming deal or release of the tokens have a positive effect on the underpricing of tradable tokens	In the case of the IPO, it was found that the assessment in the media is positively correlated with the price of shares (negative assessment affects underestimation, positive for revaluation). This effect is the most powerful by the end of the IPO and the most powerful influence is exerted by Newspapers from all other types of media . Given that the information noise around the ICO is even higher, since this is a new way to attract funding, we assume that the effect of the media will be the same or stronger, and social networks and media for the ICO will have the greatest impact
H.3 The absence of an audit of white papers negatively affects the underestimation of the ICO.	Private investors do not have the competence and cannot fairly estimate the proposed value without external expertise
H.4 The availability of information about the country from which the project attracts funding through ICO has a positive impact on the underestimation	ICO is not approved method of raising funds in all countries due to problems with legislation and regulation, means that transactions cannot be carried out in the country, and in case of conflict between investors and companies, investors cannot be protected by the contract and return their money through the court
H.5 The expected volume of issues has a positive effect on the underestimation of the ICO.	By analogy with the IPO, investors are afraid that the company may not pay them, and therefore with a larger volume of issues they will expect a greater underestimation ;
H.6 Existence of dividends from the ownership of the tokens has a positive effect on the underestimation of the ICO	Dividends are not always a signal to the investor that he/she will be able to get back at least part of the initial investment . The results of a study by Michaely and Shaw (1994) showed that the companies, whose IPO underestimation is lower, are ultimately more successful. So, they have greater profits and faster initiate dividend payments.

**Methodology.** As ICO market is unregulated, there is no single source of ICO data, therefore the study is conducted on a sample of companies that carried out ICO in the period



from 2013 to the first quarter of 2018 and the data are presented on the ICOscoring platform , in the list of Coinschedule and Coindesk. All data is collected manually from ICODrops, ICOBench, Smith+Crown, Coinmarketcap, ROI ICO Stats and company`s white papers. Regression analysis will be used to provide empirical analysis. Nowadays, information is collected for the top 147 ICO projects from 2015.

<sup>5</sup> <http://cryptoresearch.report/wp-content/uploads/reports/The-Rise-of-ICO-conference-Presentation-by-Demelza-Hays.pdf>

**Main regression equation is the following:**

$$O_i = a_0 + a_1PrIn_i + a_2Media_i + a_3Leg_i + a_4country_i + a_5Volume_i + a_6Audit_i + a_7Div_i$$

where  $O_i$  underestimation of token at the first trading day.

$$O_i = \frac{P_1 - P_0}{P_0}, \text{ where } P_1 - \text{close price, } P_0 - \text{price of initial offering;}$$

**PrIn<sub>i</sub>** – dummy variable, which shows the existence of private investors. This factor cannot be always identified, but it is often available in open sources (in the media it can be identified the largest private investors);

**Media<sub>i</sub>** – the amount of news about issue of tokens;

**Leg<sub>i</sub>** – category variable, existence of legislation for ICO;

**country<sub>i</sub>** – country, where company is located;

**Volume<sub>i</sub>** – expected volume of tokens, determined by  $Volume_i = (V - V_{OP})P^e$ , this is factor which is introduced by Hanley (1993);

**Audit<sub>i</sub>** – category variable, existence of white paper and audit;

**Div<sub>i</sub>** – Dividend size to be paid on a single token.

We start testing the hypothesis with the simplest ones: 3 and 4. The majority of projects located in Singapore, where ICO is allowed, but heavily regulated. In November, the Monetary Authority of Singapore offered a guide on Digital Token Offerings, which indicated how altcoins should be treated under current securities laws. This includes altcoins that either infer an ownership interest of a corporation or product, debt, or a share in an investment scheme. On the second place is USA, where ICO rules vary widely from state to state. On the federal level, there are no current regulations banning ICOs specifically, although ICOs are expected to be registered and licensed the same as if they were not ICOs. Some SEC commissioners hold the position that most ICOs are securities and should be treated as such. ICOs are expected to adhere to AML/KYC practices. Failure to adhere to these practices may leave an ICO open to legal action or possible seizure. But the regression did not show the significance of this factor. We continue to investigate the data and collect more due to the fact that legislation and country may be correlated, absence of white papers for some ICOs, selection bias.