

Research on the method of predicting the overvaluation of unicorn enterprises in China

Meichen Ai

College of management, Shanghai University, Shanghai 201800, China

ABSTRACT. unicorns are a group of innovative enterprises that develop rapidly in a short period under the background of new economy, have innovation strength and industry influence, and have broad prospects for future development. The pursuit of unicorns in the capital market has led to a serious bubble in the valuation of unicorns, leading to the question of the overvaluation of unicorns. In this context, this paper studies the research method of whether the value of unicorns is overestimated before listing. For unicorn overvalued enterprise value problem, this paper argues that in the same period in the secondary market for the unicorn has reference significance value evaluation, selection and unicorn similar comparable enterprise business enterprise value as the benchmark, the innovative forecasting method is proposed: when unicorn pre-ipo valuations are higher than comparable enterprise valuation, can foresee the unicorn the value of listed companies before may be overrated, investors face the possibility of loss.

KEYWORDS: UNICORN, VALUE, OVERVALUATION FORECAST

1. Unicorn IPO party

2018 was a historic year, when unicorns staged a collective IPO bonanza. In the first three quarters of 2018, unicorns represented by pinduoduo, Meituan review, xiaomi group and iQIYI went public in a "cluster".

There are several reasons why unicorns are going public so heavily. First of all, from the macro background, in the past few years, the unicorn crazy growth is based on the primary market with capital reserves, but in 2018, the primary market recession entrepreneurs on capital environment generally does not look good, so the unicorn to the secondary market, through various channels such as issue, or to add to establish stable funding environment for enterprise development. Secondly, many unicorns have very high valuations after multiple rounds of financing, so it is not easy to find the next capital to take over, so they have to go to the capital market to continue to raise funds. Thirdly, the early investors of these enterprises have the desire to cash out, and IPO is undoubtedly the best way.

2. Fall on its first day of trading

Behind the surging IPO boom, the IPO after breaking the situation is also repeatedly. Ten of the 17 unicorns fell below their offer price, or 58.8 per cent, from the offer price. See cent piece piece, the unicorn that Hong Kong stock appears on the market breaks the phenomenon most apparent, 8 in have 7 enterprises break. Three of the eight U.S. unicorns fell below their offering price. Ningde times, which is listed on the a-share market, performs better and gains significantly. In addition to the solid foundation of the company itself, the issuance system difference between a-share and overseas markets plays A certain role. Why do nearly half of unicorns break? This paper will analyze the reasons from the macro environment and the micro perspective of the enterprise.

(1) Macro environmental impact

As the overall situation of the global capital market is not optimistic in 2018, both the a-share market and the Hong Kong stock market will see A sharp decline, which will affect the new shares. In 2018, for example, trade frictions shifted from impulse to action and became the primary risk in global markets, driven by unilateralism and protectionism driven by the trump administration. In addition to the high-profile trade frictions between China and the United States, the United States is also in dispute with other countries around the world, including Europe, Japan, Russia, Canada and other countries over steel, aluminum, auto tariffs and other issues. The trade frictions provoked by the United States not only affect the economic development of the United States and the countries directly involved in the trade disputes, but also have a huge impact on the global economy.

(2) Enterprise micro perspective

The primary reason for the poor performance of these Hong Kong unicorns is that valuations are too high, and the fundamentals of the companies are not strong enough to support excessive share prices, so the market deflated the bubble. Before the listing, unicorns experienced multiple rounds of financing, which made them extremely hot in the primary market and enjoyed the dividends of the primary market. As long as there was money to burn, unicorns dared to subsidize users to attract attention, and then they could continuously attract financing to increase the valuation, and bubbles were accumulating. By the time it went public, however, the bubble had peaked. However, after listing, unicorns wanted to release all the performance in the primary market, but investors suddenly found that the development of these companies was not as fast as they had imagined, the industry dividend was no longer, and the excessive expectations would calm down, and the corresponding unicorns' stock prices would return to rationality, which led to a large-scale breakout. Not only in China, a recent survey by the us national bureau of economic research found that, on average, about half of unicorns appear to be overvalued. A recent study by Gornall and Strebulaev collected financing data on 135 unicorns in the United States and concluded that nearly half of their post-investment valuations were overvalued. There are some high-profile unicorns: airbnb is 15% overvalued, Dropbox is 21% overvalued, Flipboard is 95%

overvalued, SpaceX is 59% overvalued, Uber is 12% overvalued, WeWork is 19% overvalued and so on. This suggests that unicorns are indeed overvalued.

Second, the primary market is more external, supporting the imagination space with diversification, and supporting the valuation with market size and user data; What secondary market values is inside however, pay attention to business model and scale profitability. From a corporate micro perspective, many companies break even immediately after the IPO because their business models are not yet mature and their future scale profitability is unclear.

Hong kong-listed xiaomi, for example, has stressed that it is not a hardware company but an Internet one. But xiaomi's Internet business accounts for only a small portion of its revenue, and mobile phones are still the most important part of the company's huge revenues. In terms of the future development plan, xiaomi plans to continue to expand its market share with low-margin hardware, promising that the comprehensive net profit margin of hardware products will not exceed 5%, with low profitability. Moreover, xiaomi's Internet business relies heavily on the growth of mobile phone business, and the profit mode of Internet business is still unclear. To enjoy such high valuations with such profitability and an as-yet-undefined business model is obviously hard to sustain.

Hong Kong stock investors are more rational is also an important reason. Unlike the a-share market, the Hong Kong and us stock markets are dominated by institutional investors. No matter how fantastic the business model and development prospects are, the performance of A company in the Hong Kong stock market ultimately comes down to the company's earnings and cash flow strength. Along with the movement of the target, the sink node timely notifies the sensor nodes in the relevant detection area to join in the process of target tracking. Figure 1 is the flow chart of the moving target tracking process.

3. Prediction method and test of overvaluation

In the data of unicorns' road show PPT and management interviews, it is not difficult to find that many unicorns choose similar enterprises to carry out bidding in the development process. Although it is impossible to find very similar enterprises in the market, this paper considers that the valuation of unicorns in the secondary market during the same period is of reference significance. Based on the rationality of the valuation before the listing of unicorns, the dynamic valuation of comparable enterprises in the secondary market during the same period can be taken as the benchmark.

When investors are optimistic about the prospects of unicorns, they believe that their business model and hot style can make the value of unicorns exceed the value of similar enterprises in the market, so they give an excessive valuation when raising funds, even exceeding the valuation of comparable enterprises. However, comparable enterprises generally choose companies with similar main businesses to unicorns, which rank at the top of the industry. Such enterprises are tempered by the secondary market, with complete and true information disclosure, and the valuation

bubble has evaporated after the test of the market. On that basis, investors are largely overvaluing the unicorn. To sum up, this paper believes that when the pre-ipo valuation of unicorns is higher than that of comparable enterprises, it can be predicted that the pre-ipo value of unicorns may be greatly overvalued. Next, this paper compares the valuation of the last round of financing before the listing of unicorns with that of comparable enterprises in the same period, and then combines the valuation of unicorns after the listing to verify whether this prediction criterion is valid.

3.1 Selection of samples

In this paper, unicorns listed in 2018 are selected as samples. These unicorns are selected because compared with the initial stage, unicorns developed to the middle and later stage have more regularity in valuation methods. In addition, the difficulty of unicorn valuation lies in the lack of relevant information disclosure, such as financial data. In this paper, unicorns that have been listed can get more real and complete information through their prospectuses, and it is easier to collect important financial data before listing.

After finishing the 16 samples, respectively is Meituan, MI, Pinduoduo, Ningde era, Ping An Health, NIO, iQIYI, UXIN, HUYA, bilibili, QIJIA net, Babypree, 51 Credit Cards, Yingke, Liepin net, TouchPal, involved in electronic commerce, entertainment, finance, science and technology, intelligent hardware and other industries.

3.2 Selection of indicators

(1) Conditions for judging that the value of unicorns is overvalued

Based on the availability of data, this paper selects the last financing of unicorns before listing and compares the market value of the stock on the day the ban was lifted after listing. If the last financing valuation is greater than the market value of the company's stock on the day the ban is lifted after listing, it indicates that the value of the unicorn has declined, the pre-listing value is overvalued, and investors are likely to face floating loss risk. If the last financing valuation is less than the market value of the company's stock on the day the ban is lifted after listing, it indicates that the value of the unicorn has increased compared with that before listing. The pre-listing value is not overvalued, and investors have a greater possibility of floating profit.

The lifting of the ban on the IPO limited shares refers to the right of the IPO limited shares to regain the listing circulation after the expiration of the limited shares. IPO IPO restricted shares are the shares held by the original shareholders before the company's initial public offering, which are restricted to be circulated in the secondary market. This is a system formulated by the market to protect the investors in the secondary market. Investors in the public market know less about the information disclosed by enterprises than these shareholders, and the information

is not symmetrical. Therefore, listed companies are required to disclose information publicly for a certain period of time to ensure that internal and external investors receive the information before these shares can be circulated. The reason for choosing the market value on the day of lifting the ban is that the information of the listed company has been disclosed for a long time, and the market value of the company on that day can better reflect the valuation of the capital market on the enterprise.

(2) Selection of pre-ipo valuation indicators

Unicorns are compared with comparable companies in the secondary market before and during the same period. The price-to-sales ratio, which is the market price per share divided by sales per share, tells investors how much revenue can support the stock price. The price-to-sales ratio can be used to compare the performance of companies of the same type, and the introduction of price-to-sales ratio index can be more reasonable and representative to evaluate the overall stock market.

This paper selects the price-to-sales ratio for three reasons: first, the profitability of unicorns is poor at present, and they are still in the state of loss even before listing. The price-to-sales ratio index will not be negative in the process of use, as the price-to-earnings ratio index and other net income indicators. Second, the price-to-sales ratio index is more reliable, not because the company to the accounting accounts for artificial adjustment and there are large fluctuations, is a stable stock selection index. Thirdly, the price-to-sales ratio is sensitive to the strategic changes of the enterprise and will soon reflect in the value.

3.3 Selection of comparable enterprises in the secondary market during the same period

When choosing comparable enterprises in the secondary market of the same period, this paper takes the similarity of business contents as the main standard, and analyzes the similarity and comparability of the two through relevant data. The specific selection basis is as follows.

(1) iQIYI & bilibili - netflix

Netflix is the world's largest streaming service. Currently, it is an online streaming service provider that provides high-quality video services for users by charging membership fees.

Wang xiaohui, iQIYI's chief content officer, said in a media interview after a press conference: "we want to enter a great entertainment company, just like Netflix." In terms of business content, iQIYI and netflix also follow an original content strategy. At the end of 2018, netflix's original content assets were \$6.01 billion, accounting for 23% of content assets, while iQIYI's original content assets were rmb37.36, accounting for 32.4% of content assets, slightly higher than netflix's, according to their respective financial reports. When it went public, netflix and iQIYI were similar in that they were not yet profitable, and several major turning

points in both cases came from homemade content. Netflix bought all kinds of Copyrights crazily when the market was in a downturn, and its homemade shows were a step to change the market, which paved the way for its own rise. IQIYI also led to the creation of custom content, especially variety, which gained a large number of users and paid members.

Bilibili is a video sharing as the main content of the secondary community site. There are no very similar businesses in the market, but bilibili also makes sense to bid for netflix because its main revenue point is homemade content.

(2) Meituan & Pinduoduo & baby tree - Alibaba

Meituan alibaba.com is mainly due to its overlapping business, which mainly focuses on in-store, takeaway, fresh food and wine travel. The most notable is the direct competition between Meituan takeaway and ele. me, and the fight between Meituan wine travel and ali flying pig in OTA field. In terms of innovative business, ali and meituan have also successively laid out Meituan baby elephant and box horse fresh. Since the two businesses overlap a lot, we choose Alibaba as Meituan's benchmarking enterprise.

Pinduoduo from the user overlap degree, pinduoduo users and taobao overlap degree is very high, up to 80%. Pinduoduo products, from the beginning is aimed at low - and middle-income users, from the sinking market to grab a large number of users at the bottom of the flow. According to alibaba's latest earnings report, 77% of taobao's annual active user growth came from the sinking market. These new users will be in direct competition with existing users. Based on the overlap of user groups, we choose pinduoduo and alibaba.

(3) HUYA&Yingke - YY

Huya has the same business model as YY, a subsidiary of happy gathering times. YY live broadcasting is a national entertainment live broadcasting platform including music, technology, outdoor, sports and games. Canine teeth in its prospectus that he is a dedicated to technology-driven entertainment play ceremonies live interactive platform, has 200 million registered users, to provide users with high definition, smooth and rich interactive video broadcast services, covering e-sport, music, sports, beauty, outdoor, reality, variety, entertainment, food and other diversified popular content. So there are business similarities. In addition, huya's prospectus shows an average of 86.7 million MAUs in the fourth quarter of 2017. According to the financial report of the fourth quarter of 2017, YY's monthly active user number (MAU) of mobile video live broadcast was 76.5 million, and the number of MAU of both was similar.

(4) MI - Apple

Xiaomi's products and business model are most similar to apple's, with phones as the main sales revenue, as well as other electronic products and Internet services. In the primary market, many VCS compare xiaomi to apple. In the release of the first generation of millet mobile phone, lei jun, who took the stage to give a speech, whether in dress or PPT style, is highly similar to the style of apple mobile phone

launch. Because of this, people in the circle gave the thunder army a very appropriate nickname: rebus. Even in other ways, xiaomi has come to resemble apple, intentionally or not, reflecting its ambition to catch up.

(5) Ningde - Guoxuan High-Tech

Ningde times and Guoxuan High-Tech are A - share listed power battery enterprises. Ningde's products are lithium ion batteries, lithium polymer batteries, fuel cells, power batteries, etc. Both are based on lithium iron phosphate plus ternary materials and square cells. According to statistics, in terms of the battery loading capacity of new energy special vehicles in November 2019, ningde times ranks the first with the loading capacity of 173,717KWh, and Guoxuan High-Tech ranks the second with the loading capacity of 170,773KWH. Based on the similarity of the two enterprises' businesses and the similarity of their market positions, Guoxuan High-Tech is of great significance to the era of standard Ningde.

(6) Ping An Health -- Teladoc

Ping An Health is an online medical "family doctor" as the core business, through the combination of "Internet + medical +AI", to provide doctor consultation, diagnosis and treatment and hospital registration related services, customers include a large number of ping an insurance policy customer consultation. "Family doctor" provides online medical consultation, which is completed by artificial intelligence assisting its own medical team and external doctors. Its counterpart was Teladoc, the first and largest telemedicine company in the United States. Teladoc is also the world's first public online consulting company. As the benchmark of Internet healthcare in the United States and the counterpart of many Internet healthcare companies in China, Teladoc provides users with 24-hour online consultation service.

(7) NIO -- Tesla

NIO's counterpart in the U.S. stock market is tesla, which is mentioned more than 10 times in its prospectus. NIO's product strategy is basically similar to that of tesla, following the "from high to low" steps. Tesla first launched the Roadster show brand and then used the MODEL S and the much cheaper MODEL 3 to capture the market. In addition, the vehicles released by the two companies also have a high degree of similarity. In fact, the ES8 released by nextev is similar to tesla's Model X in terms of size, performance, battery pack capacity, body, advanced self-driving hardware and other aspects. And NIO's IPO in the United States may be the same as tesla, an American electric vehicle company that realized its IPO with a large loss. In its history, tesla electric vehicle company has only made a profit for a few quarters, and the rest of the time was in the state of loss. Instead of delisted, its stock price increased several times. This may be an important reason for NIO's IPO in the us.

(8)UXIN-- Carvana

In this paper, the company selected to deal with UXIN is Carnana, a second-hand car trading platform in the United States. From the perspective of business content,

uxin used-car is a B2C e-commerce platform, focusing on online trading service provider of used-car. Its core business covers online trading of used-car, e-commerce retail platform of used-car, and financial derivative service of used-car. Carvana company adopts the integrated business model in the automotive vertical field to provide the vehicle purchase solutions to the needs of consumers. Integrated purchase, repair, car sales credit and other functions, to provide consumers with vehicle research and purchase, distribution appointment, finance and quality assurance one-stop service. Like Carvana, uxin's unique competitiveness is to realize the national circulation of second-hand cars based on the online and digital whole process. In addition, the cross-regional car buying services of Carvana and UXIN are both based on VR. The so-called VR car viewing refers to the application of VR technology to the second-hand car industry to achieve an immersive feeling similar to that of watching a car on site. In general, the digital display of vehicle sources based on VR mode, the nationwide purchase of remote home delivery, and the one-stop transaction service, etc., Carvana can almost achieve the standard matching with UXIN.

(9) 51 credit card -- Capital One Financial Corporation

Capital One is One of the top 10 financial holding groups in the United States, specializing in credit CARDS, home loans, auto loans, savings and other consumer finance businesses. The company is committed to helping the credit card in the 1990s large-scale marketing, through periodic credit card compensatory, using low interest or interest-free strategy, attracting a large number of users, with a history of interest-bearing balance and eventually make these users, the rapid growth of the third largest U.S. credit card companies, is believed to deduce the perfect case of consumer finance. Credit card evolved from managing credit card bills for users in the early days to directing the flow of credit card customers for Banks, and eventually evolved into China's largest peer-to-peer lending platform for credit card users, known as "China's version of Capital One".

(10) LIEPIN - 51job

Both liepin and 51job are influential hr service providers in China. Both of them use network media and advanced mobile terminal information technology, together with experienced professional consultants to provide a full range of professional human resources services, including recruitment of headhunters, training assessment and personnel outsourcing, and have more similarities in business model.

(11) TouchPal -- NUAN news

The company has two main products: one is input method, with more than 100 million users and the second largest global shipment; Second, number assistant, the number of users over 10 million. Among them, touch the treasure to the input of science and technology with many manufacturers such as samsung, HTC, zte, huawei's cooperation, the basis for its revenue, and touch the treasure input method was originally developed for English input, main overseas market, so domestic users but not much, but the world has more than 80 countries and regions of the user are in touch with treasure invention of mobile phone input method.

As a giant of voice technology and input method in the United States, because its business scope is similar to that of TouchPal and user groups are also similar, therefore, NUAN sees TouchPal technology as a competitor, and the input method of mobile phone factory is the main battlefield for both sides. NUAN had challenged the company to secure its position in the U.S. market when it first entered the market. Based on the similarity of their business scope, it makes sense to choose NUAN si as the target company of touchtreasure.

3.4 Test of pre-judgment method

By comparing the unicorn on the market after the last round of financing before valuation and enterprise listed stocks lifting the ban after the day's market value, this paper found that there are eight unicorn valuation after the last round of financing is greater than the enterprise listed stocks lifting the ban after the market value of the day, the last round of investors face was negative, also suggests that unicorn the value of listed companies before overvalued. At the same time, the other eight companies did not show a decline in value, and the last round of investors were facing a gain. Overall, nearly half of the unicorns were overvalued, as shown in figure 1.

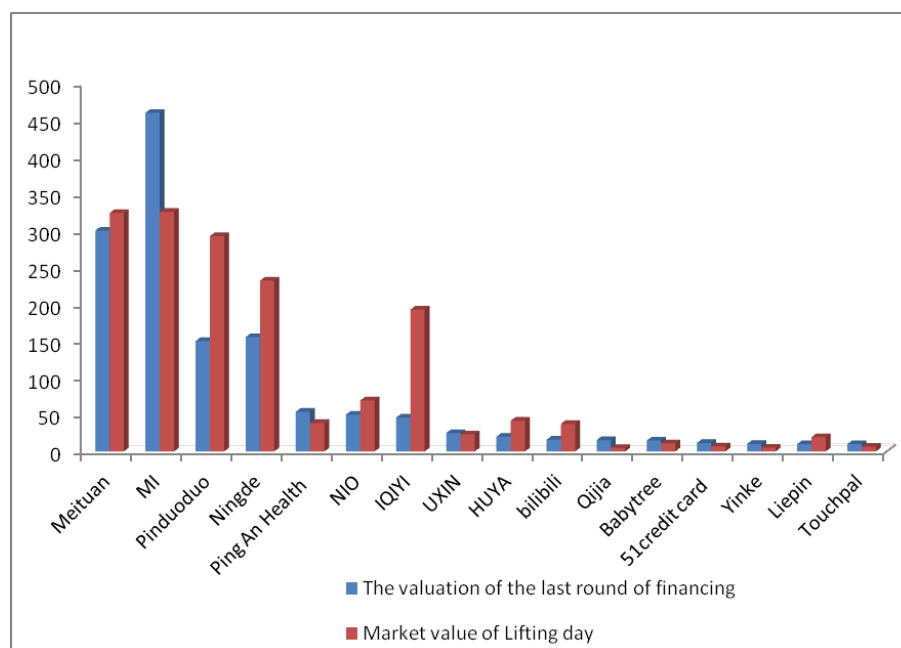


Figure. 1 Valuation comparisons for unicorns

The valuation index of unicorns' pre-ipo financing is compared with the price-to-

sales ratio of the corresponding companies, as shown in table 1. The price-to-sales ratio of 8 enterprises is less than that of benchmarking enterprises, and that of 8 enterprises is greater than that of benchmarking enterprises.

Table 1 Price-to-sales ratio comparison results

Name	Price-to-sales ratio	Comparable enterprise	Price-to-sales ratio	The inspection results	The actual results	Correct or not
Meituan	5.70	Alibaba	7.75	low	not overvalued	Y
MI	1.69	Apple	3.35	low	overvalued	N
Pinduoduo	7.86	Alibaba	8.20	low	not overvalued	Y
Ningde	21.92	Guoxuan High-Tech	37.93	low	not overvalued	Y
Ping An Health	11.12	Teladoc Health Inc	5.92	high	overvalued	Y
NIO	6.94	Tesla	2.40	high	not overvalued	N
IQIYI	1.82	Netflix	5.27	low	not overvalued	Y
UXIN	8.81	carvana	1.87	high	overvalued	Y
HUYA	2.95	YY	3.33	low	not overvalued	Y
bilibili	4.46	Netflix	5.27	low	not overvalued	Y
Qijia	204.65	none	无	high	overvalued	Y
Babypree	19.90	Alibaba	8.20	high	overvalued	Y
51 credit card	13.85	Capital One Financial	1.42	high	overvalued	Y
Yingke	1.61	YY	3.33	low	overvalued	N
Liepin	11.71	51 job	5.26	high	not overvalued	N
Touchpal	26.79	NUAN	3.13	high	overvalued	Y

According to the comparison of the price-to-sales ratio between unicorn companies and benchmarking companies and whether the pre-ipo value of unicorns is overvalued, among the 8 unicorns whose pre-ipo last round valuation is lower than that of comparable companies in the secondary market in the same period, 6 have not been overvalued; Among the eight companies whose last round of valuation before listing was higher than that of comparable companies in the secondary market in the same period, 6 unicorns showed a decline in value. In general, on the premise of correctly judging the fundamentals and competitiveness of enterprises, the accuracy rate of judging whether they are overvalued based on the benchmark of comparable companies in the secondary market in the same period is 75%.

Table 2 forecast results

Comparison		The inspection results		Total	Misjudgment rate
		overvalued	not overvalued		
The actual results	overvalued	6	2	8	25%
	not overvalued	2	6	8	

4. Conclusion

The conclusion of this paper is that the valuation of comparable companies in the secondary market during the same period can be used as a benchmark for the pre-listing financing valuation of unicorns, so as to predict whether the pre-listing value of unicorns is overvalued. The market performance after listing will make investors lose or gain before listing. If the valuation of the last round of financing before the listing of unicorns is higher than that of comparable companies, after the listing of unicorns, investors will face a greater risk of floating loss, that is, the pre-ipo value is overvalued. If the valuation of the last round of financing before the listing of a unicorn company is lower than that of comparable companies, after the listing of the unicorn company, investors will face a greater possibility of floating profit, that is, the pre-ipo value is not overvalued.

References

- [1] Rogerson W. Intertemporal cost allocation and managerial investment incentives: A theory explaining the use of economic value added as a performance measure[J]. *Journal of Political Economy*, 1997, 105 (4) : 770—795.
- [2] Huang luwei. Comparison between absolute valuation method and relative valuation method -- empirical analysis of stocks based on p/e method and free cash flow model [J]. *Times finance*,2014(02):107-108.
- [3] Bartov E, Mohanram P, Seethamraju C. Valuation of Internet Stocks—An IPO Perspective[J]. *Journal of Accounting Research*, 2002, 40(2):321-346.
- [4] Bhattacharya N , Demers E , Joos P . The Relevance of Accounting Information in a Stock Market Bubble: Evidence from Internet IPOs[J]. *Journal of Business Finance & Accounting*, 2010, 37(3-4):291-321.
- [5] Bao qing, Xu Yang, Liu jianfeng. International comparison and demonstration of valuation methods for emerging industries [J]. *Securities market guide*, 2012(03):49-55.
- [6] Wen subin, Jiang angel, Liu yijuan. Enterprise EVA value evaluation model and application [J]. *Friends of accounting*,2018(02):147-151.
- [7] Sousa M , Pinho M . Is Internet Industry Facing an IPO Bubble 2.0?[J]. *Social Science Electronic Publishing*, 2014.
- [8] Jan Pekař.Importance of managerial accounting from high growth online company valuation perspective[J].*European Financial& Accounting Journal*, 2017(3):129-144.