Unicorns and their IPO: Are they Overvalued?

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ABSTRACT

Unicorns are companies with a high level technology where their market value is more than 1 billion dollars and are not listed on the Stock Exchange. The study aims to measure the changes in market values of unicorns and identify which variables influence their market values in different moments of time. By comparing the market values, it was verified that unicorns before IPO are undervalued in relation to the subsequent periods. Furthermore, the linear regressions show that the level of undervaluation and sales volume appear to influence positively the unicorns market value, while the level of financial leverage seems to have a negative influence. The capital retention after IPO does not show evidence that it influences the unicorns market value.

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Keywords: Unicorn, IPO, Market Value

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JEL classification: G10

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1. INTRODUCTION

The term "unicorn" came about in 2013 when Lee (2013) used the mythological animal's name to characterize technological start-ups worth more than $ 1 billion and are not quoted on the stock exchange. More specifically, Aileen Lee chose the term unicorn to define the statistical rarity of companies by 2013 to reach the value of 1 billion dollars (in Anglo-Saxon terminology, 1 billion dollars). Unicorns exist globally, notably in markets such as Europe, China, India and the United States of America, among others (Grillo, 2016). The digital revolution has reached a scale never before seen and a level of impact that no business, government or industry can ignore. The rapid development and adoption of information technologies are creating new and innovative business opportunities (Lubián & Esteves, 2017). In the corporate ecosystem, coupled with the increase in information and communication technology, there is a growing increase in startup creation. According to Kerai (2017), technological start-ups are often considered to be drivers of value creation, economic growth, and job creation. Taking advantage of this condition, start-ups seek to function as disruptive innovations to match unmet needs in other sectors (Roy, 2018). Many start-up's, being in an initial phase and of great investments, present negative results. In the growth phase, investors are increasingly comfortable absorbing these losses through capital-funded capital increases, creating a dynamic that favours increased valuations (Kenney & Zysman, 2018).

Unicorns are effectively start-ups and, due to business uncertainty, their assessments are often based on their growth prospects (Göbel, 2016). The high levels of technology they present, coupled with the high coverage provided by the media, reduce the asymmetry of information, positively influencing the level of their evaluations (Zörgiebel, 2016). Although evaluations are high, the economic-financial indicators do not translate this evidence, and there are often negative net results. With the use of the term "unicorn", the interest and the curiosity of the investors by the subject grew in a notorious way and at the global level. In the financial markets, enormous scepticism and distrust were generated in the face of these assessments. Lack of transparency and financial information makes it difficult to properly evaluate a company (Kerai, 2017). Some researchers suggest that high scores, compared to the dot.com period, are more reasonable and rational, although some analysts suggest that these levels approach dot.com levels (Bozovic, 2017).

2. Literature Review

2.1. The Unicorns and their evaluation

A startup can be defined as a company created to develop an innovative product or service under conditions of uncertainty (Ries, 2011). Of these companies only a minimal percentage, can get the unicorn label (Mihaela, 2017). Unicorns are start-ups, which have a market value of over $ 1 billion and are not public quoted (Brown & Wiles, 2015). According to Ochoa, Salas and Núñes (2016) unicorns are companies where their market value is over one billion dollars and whose valuation is calculated using different rounds of financing. Gornall and Strebulaev (2015) define unicorn as a venture that, through the raising of venture capital, achieves an evaluation of more than one billion dollars in at least one of the funding rounds. Unicorns have high levels of information technology, particularly at the software and hardware level (Grillo, 2016). Operating in more than one region, its innovative services seek to satisfy the needs not met by the current market players. For Fan (2016) unicorns are considered disruptive innovations, presenting potential to change the way we use services on a day to day basis. The behaviour and strategic thinking that they exhibit in the markets completely break the existing standards. Similarly, Grillo (2016) pointed to disruptive innovations and the way people do things as a form of value creation by unicorns. These companies seek to meet their needs more efficiently. Unicorns can stimulate the economic development of a region, according to Fan (2016). The size and demand for the services they provide generate a need to build infrastructures and services that help them, thus influencing the growth of other industries.

For De Massis, Frattini and Quillico (2016) the unicorns present three common characteristics: they are small companies; led by experienced entrepreneurs; and financed by venture capital. On the other hand, Grillo (2016) stated that these companies have the following characteristics: experienced and entrepreneurial leaders; an organic growth, focusing on increasing production and sales; financing through risk capital; and high levels of research and development. According to Grillo (2016) unicorns are venture capital companies, which is the most widely used source of funding. It is through venture capital that a startup manages to cover its operating expenses, make its investments and continue to grow. According to Gornall and Strebulaev (2015) venture capital is a widely used and highly speculative form of financing. It is used by innovative startups that show a high risk, like unicorns. Underlying this type of financing is the support provided by venture capital investors in terms of strategic orientation. This type of financing helps companies that are not listed, growing and thriving (Grillo, 2016). While the path to sustainable growth is related to the injection of risk capital into startups, they can also grow through strategic decisions such as acquiring other businesses or holding stake in others. The acquisition of WhatsApp by Facebook for $ 22 billion exemplifies one of these operations (Frier, 2014).

Vital (2013) presented a process of financing through venture capital to which these companies are subject.

1. The first investments are financed by friends and family of the creators of the idea, holding these 100% of the company;
2. In the next phase, carried out by Business Angels, the so-called "Seed Investments" serve to consolidate and flow the business idea. After this phase, the company goes through a process of market appreciation, which will allow investors to assess whether the business idea is sustainable, innovative and presents potential for growth. If the evaluation is positive, the startup can have access to the risk capital that will be made by

rounds;
3. The first round is for Series A, serving to optimize business, product and access to vital markets;
4. In the second round, with Series B, the purpose is to raise capital in order to develop the company, expand market horizons and build a solid business model;
5. In a third round, where bank investors and large investment firms already participate, the C Series serve to perfect every aspect of the business and essentially prepare the company for the IPO process if appropriate.
The possibility of obtaining venture capital without the obligation to disclose private information encourages companies to remain private (Kerai, 2017), and is far from public scrutiny. This data translates into more funding rounds than the usual ones.

For Göbel (2016), evaluating a startup appears to be a difficult task because of its short financial track record and uncertainty about its growth potential. Typically, these companies face high levels of volatility. The fact that their market values are too high may be related to aspects such as the level of notoriety, media coverage or the type of capital that is used to develop the business. The valuation of these companies is based on a high level of speculation associated with the expectations of future growth and profitability of their business models. As they are companies that do not operate in the regulated market, there are often asymmetries of information. Previous studies have shown that the high level of media coverage makes leverage evaluations. Zörgiebel (2016) stated that high levels of media coverage can reduce the gap in information between investors and founders. Consequently, the levels of information asymmetry become relatively low, triggering the assessments. This process leads to a gain in legitimacy and credibility. For Rindova, Petkova and Gupta (2013) the value of the evaluation of these companies is affected by media coverage in two different ways. First, media coverage serves the public interest, which can positively influence stakeholders such as customers and employees. Secondly, new information becomes widely available, lowering the costs of obtaining information, with a gain in the legitimacy and credibility of the company. On the other hand, Zörgiebel (2016) noted that risk capital inflows increase valuation levels. Likewise, the entry of an investor in the first phase will allow the entry of more risk capital, which increases the company's valuation (Bartlett, 2015).

Gompers and Lerner (2001) have argued that venture capital has developed as an important factor in financial markets, providing capital for companies that might otherwise have difficulty capturing. Therefore, for Grillo (2016) the value of the company is linked to the amount of capital invested, and its value will be higher or lower depending on the financing rounds to which the company is subject. Currently the most valuable unicorns are Ant Financial worth $ 150 billion, Toutiao (Bytedance) about $ 75 billion, and Didi Chuxing $ 46 billion (December 2019). These companies are credited with the design of "Decacorns", companies with a market value of more than 10 billion dollars (Grillo, 2016). The sectors of activity that incorporate the most valuable unicorns are the E-Commerce / Marketplace, Internet Software & Services, FinTech and more than half (54%) of unicorns are based in the United States of America and about 24% Chinese (Friedman, 2017).

2.2. IPO and the critical factors

According to Ritter J. (1998) an IPO is the sell of shares of a company to the public in a regulated market for the first time. According to Peristiani and Hong (2004) companies

look to IPO as a way of expanding and diversifying their operations or developing new technologies and products. Ritter and Welch (2002) point to market conditions as the most important factor in the capital dispersion decision. The life cycle of the company is also considered as an important factor in this type of decision. From the perspective of the investor, IPO in companies with a high growth potential is seen as an investment opportunity. The issuing companies to make the decision whether or not to carry out the IPO, have several assumptions under consideration. According to Miguel Sousa quoted by Neto (2015, p.3), companies carry out an IPO for the following reasons: - Fund raising in the capital market at a lower cost; - broaden and diversify the portfolio of investments; - raise its image before all Stakeholders; - appreciation by the market of the real value of the company. Through their studies, DeAngelo, Linda and Stulz (2010) analyzed the best phase of the companies for the dispersion of their social capital. The authors point out that the best moment is related to the life cycle of the company and the costs associated with entering the regulated market. In turn, Lowry, Michaely and Volkova (2017) indicated that companies choose to spread their capital to raise the capital needed for their investments.

Ritter J. (1991) argued that the issuer's decision to divest the capital is related to investors' high expectations of their future and potential for growth. Brau, Ryan, and DeGraw (2006) listed a number of reasons that may lead companies to disperse their social capital. One of the reasons is related to the funds needed for the company's growth, both immediate and long term. Another reason is the retention and maintenance of company control. Liquidity, according to them, is also a factor to be taken into account for a company that intends to carry out the IPO. According to Peristiani and Hong (2004), companies that aim to disperse their capital, poor financial performance can be revealing for the future of them. The authors also listed the macroeconomic conditions as an economic slowdown and specific industry facts, such as increased competitiveness, possible causes for the failure of an IPO.

The performance after the issuance of IPO refers to the behaviour of stock prices of the issuing company after the first day of capital dispersion (Sahoo & Rajib, 2010). According to Wong and Sue (2017) short-term and long-term performance are two anomalies present in IPOs. Through their study, Bhabra and Pettway (2003) verified that factors such as the subscriber's reputation, cash flow, research and development expenses, the size of the company, the relative size of the offer and the intrinsic risk factors at the time of offer help to predict performance after the issuance of IPO. Hensler, Rutherford and Springer (1997) studied the effects of certain characteristics on the performance of the companies that performed an IPO. They concluded that the size of the offer, the level of undervaluation, the percentage of capital retention and the period of activity of the IPO are statistically significant and positive in explaining the positive performance after the IPO. According to Hoechle and Schmid (2007) the poor performance of IPO is more pronounced during the first year after the dispersion of capital. This poor performance was explained by the characteristics of the company, such as the Market-to-Book Ratio and the costs of research and development.

Through the study of the performance of IPOs in the Chinese markets, Jing, Liao and Qian (2015) have shown that high initial returns, a high level of financial leverage and a high Price to Earnings Ratio lead to poor performance after IPO.

Opportunities for growth are a critical factor in the evaluation of IPOs. (Myers, 1977) showed through his studies that the market value of the company is positively related to the growth opportunities of the company. The studies by Peristiani and Hong (2004) have shown that firms that maintain high capital retention rates increase the market survival rate. On the other hand, Pyle (1977) proposed an evaluation model in which the current

value of the company is positively related to the percentage of capital retained by the entrepreneur. On the other hand, Thomsonkis, Nounis and Gounopoulos (2012), through the study that analyzed the long-term performance of 254 Greek IPO's, indicated that the subscriber's reputation does not seem to influence performance after IPO's issuance. According to Börner and Pezus (2015) the understatement occurs when the offer price is less than the closing price. As a consequence, investors who buy shares at the offer price are earning initial returns. This phenomenon is often observable in emerging markets. The study developed by Zarafat and Vejzagic (2014), which analyzed the profitability of the companies that carried out IPO belonging to Bursa Malaysia (BM), allowed us to conclude that initial returns and company size are determining variables, helping to explain returns a year later to IPO. The same study pointed to the company's gross revenues as a determinant and explanatory variable of the yields two years after the issue. Gounopoulos, Nounis and Stylianides (2007) stated that the size of the company influences long-term performance in the CYVI performance of the Cyprus Stock Exchange (CYE) during the period 1992-2002. The percentage of capital retained as an important variable up to one year after IPO was also indicated. Through their study, Goergen, Khurshed and Mudambi (2007) concluded that the size of the company is positively related to long-term performance. Subscriber reputation, company operating history, and company age do not account for long-term returns. On the other hand, the undervaluation explains the poor performance in the long run.

The study by Peristiani and Hong (2004) revealed that the company's operating history is a good predictor for post-issuance market survival. During the period between 1999 and 2000, the companies that carried out the IPO presented significantly different characteristics, namely the capital structure and the level of sales and net results, compared to the usual companies that are candidates for IPO (Ljungqvist & William, 2003). The study by Derrien (2005), which analysed the impact of the investor sentiment in the definition of the IPO price in the French stock market during the period of 1999 and 2001 showed that the more favourable the investor sentiment at the time of the offer the higher the price of the shares. The same study showed that investor sentiment may have a significant impact on IPO 's stock prices and their behaviour after IPO. According to Derrien (2005), many of the 803 IPO's conducted in the United States during the period of Dot.com (1999 and 2000) were overvalued so that either the business was either bought at a low price or eventually out of the market . This argument is supported by Purnanandam and Swaminathan (2004), who indicated that the majority of overvalued IPO's exhibit high initial returns but poor performance in the long run.

3. Data and methodology

3.1. Data

To define the companies that constituted the study, we used the unicorn tracker of CBInsights and the website of the NASDAQ market index. The tracker, a list of companies belonging to the unicorns group, has, together with the NASDAQ website selected the companies to include. Through the aforementioned sources, all the companies that stopped being part of the unicorns club were selected after their IPO. The website of the NASDAQ index, aided in the clearance of these companies. It was also necessary to collect the financial data of the companies. Financial data and prospects for unicorn IPO's were collected through online databases such as Datastream, Yahoo Finance, IPO Database, Seeking Alpha and Macrotrends. Prospects of IPOs, accessed through the IPO Database, allowed access to the financial statements of unicorns. Datastream, Yahoo Finance, Seeking Alpha and Macrotrends enabled the collection of market prices and values of unicorns and respective markets, as well as information related to financial ratios and share capital allocation. Financial information was also collected from unicorn websites. Initially the sample counted 309 companies. Subsequently a selection of companies to be considered for the study was carried out. This procedure obeyed four criteria: 1. Only all companies that performed an IPO, have been considered since the CBInsights tracker takes into account all unicorns, including those that were acquired instead of IPO; 2. Only companies that performed IPO in the United States of America market indices, namely, NASDAQ and NYSE, were taken into account; 3. The companies' IPO would have had to be made on a date after the year 2013, inclusive; 4. Finally, given the criteria applied above, the companies that were considered unicorns were exclusively

3.2. Data analysis

3.2.1. Sample

The sample consists of 44 unicorns. Table 1 shows the number of IPO's per year in both market indices in the period between 2013 and 2017. In the NASDAQ index there is an increase in the number of IPO's over the period, and in the year 2017 was where the highest number of IPO emissions was recorded. On the other hand, in the NYSE index no trend is observable. The years where most IPOs occurred were 2013, 2014 and 2015 corresponding to 21.74%, 39.13% and 21.74% of the total IPO emissions, respectively.

Table 1 – Percentage of IPO's by Index and Year for Sample

	NASDAQ		NYSE	
YEAR	**# IPO's**	**%**	**# IPO's**	**%**
2013	2	9,52%	5	21,74%
2014	3	14,29%	9	39,13%
2015	4	19,05%	5	21,74%
2016	5	23,81%	1	4,35%
2017	7	33,33%	3	13,04%
TOTAL	**21**	**100,00%**	**23**	**109,52%**

3.2.2. Sub-sample

The sub-sample consists of 28 unicorns. The purpose of the construction of this sub-sample is based on the comparative method to be applied. All unicorns in this sub-sample have market valuations prior to IPO. According to table 2, the number of IPOs is higher in the NYSE index compared to the NASDAQ. Regarding the NASDAQ index, a greater number of IPOs are observable in the year 2015, 2016 and 2017. For NYSE the year in which the greatest number of IPOs occurred was the year 2014 and 2015, with five issues each.

Table 2 – Percentage of IPO's by Index and Year for Sub-Sample

	NASDAQ		NYSE	
YEAR	**# IPO's**	**%**	**# IPO's**	**%**
2013	1	8,33%	2	12,50%
2014	2	16,67%	5	31,25%
2015	3	25,00%	5	31,25%
2016	3	25,00%	1	6,25%
2017	3	25,00%	3	18,75%
TOTAL	**12**	**57,14%**	**16**	**76,19%**

As in the sample, a higher number of IPOs were observed in the NYSE index compared to the NASDAQ index.

3.3. Variables

For each of the variables of the study data were collected from three different moments. The applied methodology was based on the study of Aussenegg (1997). The defined moments corresponding to the first trading day, the 22nd day (1 month) trading and the 125th day (six months) trading.

3.3.1. Dependent variable

The dependent variable of this study is the market value of the unicorn ($VMerc_i$). In the calculation of this variable, the methodology applied by Bhagat and Rangan (2003) was replicated with some changes. Equation (1) shows how the dependent variable was calculated. The calculation used corresponds,

$$VMerc_{im} = PF_{im} \times NAC_{im} + \varepsilon \quad (1)$$

Where, PF_{im} is the closing price of the unicorn stock *i* at the moment *m* and NAC_{im} is the number of shares of the unicorn *i* at moment *m*.

3.3.2. Explanatory variables

In the definition of the explanatory variables we tried to choose those that best fit the characteristics of the companies under study. Table 3 summarizes the variables chosen by presenting the expected coefficient signal based on the literature.

Table 3 – Explanatory Variables

Abbreviation	Variable name	Expected Signal
RL	Net Income	+
VEND	Sales	+
I&D	Research & Development	+
DEMP	Firm Size	+
SUB	Underestimation Initial	+
ALAF	Financial Leverage	-
RMERC	Return of the Market	+
RCAP	Capital Rate Retained	-

As proxies for profitability, three variables were used. The variable RLit, the net income of each unicorn at different time points. The variable VENDit corresponds to the gross value of sales.
RENTINICIALit corresponds to the initial return on each investor and is calculated as follows (Börner & Pezus, 2015):

$$RENTINICIAL_{it} = \frac{PF_{it}}{PO_i} \quad (2)$$

Where, PF_{it} is the close prise of IPO of unicorn i in the first day of negotiation and PO_i é is the price of IPO of unicorn i.

The proxies for growth expectations were R&Dit and DEMPit. R&D figures are the cost of research and development, while DEMPit is related to enterprise size, as measured by the total value of each unicorn's assets. For the characteristics of the company were used as proxy ALAVFit and RCAPit. The variable ALAVFit corresponds to financial leverage. It is calculated by the ratio of the assets to the debt of each unicorn. RCAPit is the capital retention rate after the IPO. RMERCit concerns the market profitability of each unicorn i at time t. In order to maintain the negative values of some of the variables, it was applied to all variables except the RCAP variable, the natural logarithm, using the methods of Hand (2000). The transformation applied to the variables was as follows,

Ln (Z) = Ln (Z + 1), if Z=0

Ln (Z) = - Ln (- Z + 1), if Z < 0

Where Z is the value of each variable.

3.4. Model

3.4.1. Comparative Study

Through the comparative study it was intended to observe the variation and the trend of the market value of unicorns. For this, the subsample was used and the study was made between five time points, moment before the IPO, moment of the IPO, at the end of the 1st day, at the end of the 22nd day (1 month) and at the end of the 125th day (6 months). negotiation. The calculations used per period were as follows:

$$\Delta\%\ Market\ Value_i = \left[\frac{VMerc_i}{VMerc_{Before\ IPO}} - 1\right] * 100 \qquad (3)$$

Where *i* correspond to period at the time of the IPO, in the end of day 1, the end of day 22 and the end of day 125. The market value corresponds to the average value of the subsample at each moment.

3.4.2. Linear Regression

The other aim of the study is to analyse which factors influence the market value of unicorns. For this, we calculate the follows linear regressions:

$$VMerc_{it}=\alpha_{1+}\beta_2 Ln(RL)_{it}+\beta_3 Ln(VEND)_{it}+\beta_4 Ln(I\&D)_{it}+\beta_5 Ln(DEMP)_{it}+$$

$$\beta_6 Ln(RENTINICIAL)_{it}+\beta_7 Ln(ALAVF)_{it}+\beta_8 Ln(RMERC)_{it}+\beta_9 (RCP)_{it}+\epsilon_i$$

Where *i* correspond to each unicorn and t to each period at the time, in the end of day 1, the end of day 22 and the end of day 125 of negotiation.

4. Results

4.1 Descriptive Statistics

Table 4 presents some variables that may characterize unicorns. Variables such as net income (RL), sales (VEND), research and development (R&D) costs, debt and assets are expressed in thousands of dollars. The underestimated initial variable (RENTINICIAL) is presented as a percentage, while the company age variable is expressed in years.

Table 4 – Statistics Descriptive

millions of USD

Statistics				
	RL1	**RL22**	**RL125**	**Trend**
Average	-53,04	-113,37	8,65	
Median	-24,26	-35,96	-28,15	
	VEND1	**VEND22**	**VEND125**	
Average	166,74	216,62	228,90	
Median	126,44	140,73	135,82	
	I&D1	**I&D22**	**I&D125**	
Average	38,81	71,79	75,27	
Median	23,25	28,21	33,20	
	Debt1	**Debt22**	**Debt125**	
Average	364,36	390,30	441,13	
Median	190,18	195,73	221,77	
	Asset1	**Asset22**	**Asset125**	
Average	560,30	799,92	957,94	
Median	326,85	394,66	506,56	
	RENTINICIAL	**CompanyAge**		
Average	1,4575	9,5		
Median	1,3966	8,5		

At the end of the first day of trading, unicorns averaged a net profit of $ 53.040 million and a median of $ 24.260 million. On average, the net income of unicorns at the end of the 22nd trading day was $ 113.371 million and a median of $ 35.955 million. At the last moment of analysis, the average net income of unicorns stood at $ 8.650 million and the median at $ 28.150 million. Unicorn sales at the end of the first trading day averaged $ 166.736 million. The median was $ 126.442 million. In the remaining two analysis moments, sales volume was $ 216,621 and $ 228,902 million at the end of the 22nd trading day and 125th trading day, respectively. The median in these two moments was $ 140,731 and $ 135,818 million, respectively. There was a positive and growing trend, with sales volume increasing from the first period to the last period. Research and development costs, as well as sales volume, showed an increasing trend. Research and development costs averaged $ 38,814, $ 71,793 and $ 75.272 million at the three time points, respectively. The median was respectively $ 23,252, 28,214 and $ 33,204 million. This supports the idea of the importance of this heading for the development of unicorns. Both asset value and debt value increased in value. The debt value on the first trading

day, the 22nd trading day and the 125th trading day was $ 364.357, 390.299 and $ 441.131 million, respectively. The asset value was $ 560.296 million on the first trading day, $ 799.920 million after 22 trading days and $ 957.939 million after 125 trading days.
Initial profitability measured by the understatement level is 145.75%. This means that investors who bought shares at the offer price yielded an average investment of 145.75%. The median initial profitability was 139.66%. Prior to the issuance of the IPO, unicorns remain private companies for an average of 9.5 years.

4.2. Comparative Study

Table 5 presents the market value of each unicorn at each of the five moments. For this study the subsample was used.

Table 5 –Time Analysis

Company	Stock Exchange	Market Value of Unicorn	Market Value IPO	Market Value in day 1	Market Value in day 22	Market Value in day 125	Trend
Atlassian Corporation Plc	NASDAQ	3.300	4.400	5.797	5.190	5.120	
Coupa Software Incorporated	NASDAQ	1.000	1.700	1.601	1.220	1.220	
Etsy	NASDAQ	2.000	1.800	3.329	2.240	1.380	
FireEye, Inc.	NASDAQ	1.250	2.300	4.229	6.410	10.510	
GoPro	NASDAQ	2.300	3.000	3.859	5.820	7.810	
Horton Works	NASDAQ	1.100	659	1.098	1.220	1.130	
MongoDB, Inc.	NASDAQ	1.600	1.600	1.570	1.470	1.910	
NantHealth, Inc.	NASDAQ	2.000	1.700	2.244	1.560	1.570	
Nutanix, Inc.	NASDAQ	2.000	2.200	2.509	3.430	2.760	
Okta, Inc.	NASDAQ	1.200	1.500	2.134	2.170	2.580	
Roku Inc	NASDAQ	2.100	1.300	2.227	1.810	3.120	
Sunrun	NASDAQ	1.300	1.400	1.044	1.130	843	
Blue Apron	NYSE	2.000	1.895	1.896	448	787	
Box, Inc.	NYSE	2.400	1.700	2.705	2.280	2.010	
Castlight Health, inc.	NYSE	1.400	178	3.445	1.530	1.220	
Cloudera, Inc.	NYSE	4.100	1.900	2.318	2.750	2.170	
Fitbit, Inc.	NYSE	4.100	4.100	4.114	9.200	6.530	
Intrexon	NYSE	1.400	1.410	2.355	2.470	3.120	
Lending Club	NYSE	3.100	5.400	8.468	7.870	6.470	
New Relic, Inc.	NYSE	1.000	1.400	1.565	1.480	1.550	
Pure Storage, Inc.	NYSE	3.600	3.100	3.146	667	3.290	
Quotiente Tecnology	NYSE	1.000	1.200	2.180	1.690	1.240	
Shopify Inc.	NYSE	1.000	1.300	1.265	2.800	2.070	
Snap Inc.	NYSE	19.300	33.000	28.329	26.070	17.920	
Square, Inc.	NYSE	6.000	2.900	4.286	4.600	3.220	
Twilio Inc.	NYSE	1.100	2.000	2.367	3.450	2.540	
Twitter, Inc.	NYSE	8.000	24.600	24.906	32.180	20.930	
Wayfair	NYSE	1.900	2.400	3.122	2.100	2.630	
		2.948	4.001	4.575	4.831	4.202	

The average unicorn market value was $ 2,948 million. At the time of IPO, the average market value that the unicorns presented was US $ 4.002 million, representing an increase of 35.73% over the unicorn market value. This evidence means that unicorns are undervalued compared to the time of IPO, presenting higher market values. The unicorns after the issuance of IPO, at the very end of the first trading day and at the end of the 22nd trading day, had, on average, market values of 4,575 and 4,831 million dollars, respectively. Given the unicorn market value, the values described above represent an increase of 55.19% and 63.85%, respectively. This means that the market value in unicorn and the market value at the time of IPO are undervalued in relation to the market.
At the end of the 125th day the value of the unicorns was on average 4.202 billion dollars, which means an increase of 42.52% over the unicorn value. At this point, there was a correction made by the market, since the market value of the unicorns decreased compared to the market value at the end of the 22nd day. In terms of profitability, the investment in unicorns gave the investor an average yield of 49.32%.
During the period considered, there was an increasing trend in market value, with the market starting to correct the value after 6 months (125th day). The unicorns are thus undervalued both in relation to the moment of IPO and the market, which translates into an increase in value for investors.

4.3. Linear Rgressions

Using the least squares method, multiple linear regressions were used to explain what factors influence the market value of unicorns. Table 6 shows the results achieved by the linear regressions performed. The results were obtained through SPSS software.

Table 6 –Results of Regression Model

Market Value		Regression Model 1	22	125
(Constant)	Coefficient	-27,756	-36,505	-27,757
	Test t	-5,598	-7,098	-8,443
RL	Coefficient	-0,174	-0,386	0,143
	Test t	-0,770	-1,798***	1,318
VEND	Coefficient	2,031	2,580	0,535
	Test t	3,103*	4,451*	1,794***
I&D	Coefficient	0,676	0,606	0,470
	Test t	-1,442	1,378	2,130**
RCAP	Coefficient	1,512	-0,840	-0,545
	Test t	0,586	-0,339	-0,379
DEMP	Coefficient	2,545	3,004	3,576
	Test t	3,358*	4,494*	8,217*
ALAVF	Coefficient	-3,568	-5,421	-2,93
	Test t	-2,979*	-5,146*	-4,685*
RENTINICIAL	Coefficient	6,711	6,713	2,558
	Test t	2,879*	2,891*	2,025***

RMERC	Coefficient	-114,919	21,491	11,777
	Test t	-1,408	1,206	2,391**
	R Squared	0,609	0,700	0,790
	Adjust R Squared	0,520	0,632	0,742
	Durbin Watson	1,782	2,118	2,616
	F Value	6,812*	10,231*	16,460*
	Average VIF	1,462	1,367	1,209

The three regression models present statistical significance, verified through the F statistic. With an adjusted square R of 52.00%, 63.20% and 74.20%, models 1, 22 and 125, respectively, explain a large part of the variability of the market value of the unicorns The results presented by the three models show a positive and significant relationship (at the level of 1%) between the size of the company and the market value. These results suggest that firm size positively influences performance both at the time of IPO and after IPO, supporting the arguments presented by Hensler, Rutherford and Springer (1997), Gounopoulos, Nounis and Stylianides (2007) and Goergen, Khurshede and Mudambi (2007). This evidence also supports the arguments of Bhabra and Pettway (2003) who stated that the size of the company helps predict performance after IPO. In models 1 and 22, sales are statistically significant (at the 1% level), showing a positive relation with the market value. In the regression model 125 sales continue to have a positive relationship with the market value of unicorns, but are only significant at the 10% level. This result supports the studies by Zarafat and Vejzagic (2014), suggesting that unicorn sales influence their market value significantly until the first month after IPO, losing some significance after six months.There is a negative and statistically significant relationship (at the level of 1%) between the level of financial leverage and the market value of unicorns, being transversal to all models. The findings are similar to those reported by Jing, Liao and Qian (2015) in their studies. A higher than-debt ratio, which translates into a high level of financial leverage, impairs the market value of unicorns, leading to poor performance after IPO. The relationship between the level of undervaluation and the market value is positive and significant at the time of IPO (model 1) and until one month after IPO (model 22). After six months, although the ratio remains positive, the level of understatement is significant only at the 10% level. This suggests that, in the short term, initial returns help predict market value, supporting the studies of Hensler, Rutherford and Springer (1997), contradicting the arguments put forward by Jing, Liao and Qian (2015) who stated that the returns performance after IPO, leading to lower market values. TheIn any of the three models, no evidence was found that capital retention helps to explain the market value of unicorns, contrary to what Hensler, Rutherford and Springer (1997), Peristiani and Hong (2004) and Pyle (1977).

The results of model 125 suggest the existence of a positive and significant relationship (at a 10% level) of research and development costs and market profitability with the market value of unicorns. After six months' research and development costs are important to explain the market value of unicorns, in line with the one suggested by Myers (1977).
We also verified the assumptions related to normality, autocorrelation and multicollinearity.
In this study the Durbin Watson test was used to detect the presence of autocorrelation. With values of 1,782, 2,118 and 2,616 for models 1, 22 and 125, respectively, the results suggest that there is no correlation between the residues.
To validate the multicollinearity assumption, the FIV (Variance Inflation Factor) was used. The values found suggest the absence of multicollinearity.

5. Conclusions

The evaluation of the unicorns produces great discussion and scepticism in the financial markets. Some say that the level of evaluation is related to the number of rounds of funding for unicorns, others say that their assessment is linked to the technological potential they present and their potential for growth. In this study, we tried to understand if the unicorns were or not overvalued. A comparative study was made that analysed the market value of unicorns at various points in time. A regressive analysis was also carried out in order to understand what kind of factors could influence the market value of unicorns. The study provides evidence that unicorns have lower market values prior to IPO compared to market values presented at the time of IPO and are therefore undervalued. Compared with the time after IPO, the market values when unicorns are also undervalued. After six months the market value of the unicorns begins to adjust, so possibly with a longer time horizon the adjustment would be greater.

The investigations developed through linear regressions show that the level of undervaluation and the value of sales present positive and significant relationships with the market value of the unicorns. On the other hand, the level of financial leverage is negatively and significantly related to the market value of unicorns. After six months, research and development costs as well as market profitability have a slight significance in explaining the market value of unicorns. The retention of capital has no relation or significance to the market value of unicorns. The results obtained were the converse to what was previously idealized. The unicorns were presumed to be overvalued, which did not happen. The development of this study demystifies the idea presented above, also collaborating in the discovery of significant factors for the market value of unicorns.

The central question of this study was to see if the unicorns were overvalued, so, through the development of the same it was observed that the unicorns are undervalued.

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