The Rise of the Unicorns - How Media Affects Start-up Valuations

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Abstract

Within the last years, start-ups have achieved extraordinary high valuation levels which have never been seen in such dimensions before. These high-valued start-ups with valuations above or equal to US$1bn are also called unicorns. Similarly, media coverage of start-ups has increased significantly. In this paper the impact of media coverage on global unicorn valuations between 1990 and October 2015 is empirically analyzed. In addition, the impact of technology advancements on the media and start-ups is discussed. The here presented results indicate that technology advancements increase media coverage for start-ups. Investors which are typically not primarily active in the VC market are most affected by increasing media coverage. Start-up and especially unicorn valuations are driven to a large extent by increasing media coverage before a funding round. These results add new insights on the driving factors of start-up valuations and are consistent across a variety of different regression models and robustness checks.

JEL Classifications: D8, G14, G24, G32, M13
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1. Introduction

Unicorns are a rare species. According to fairy tales, it is nearly impossible to see at least one of them in your lifetime. That is the reason why journalists, investors, entrepreneurs and other market participants call start-ups with a valuation above or equal US$1bn unicorns (Lee, 2013). With only a couple of employees, a basic business idea, no or only marginal revenues (not to speak of profitability), it should be hard to attract venture capital (VC) funding and achieve sky-rocketing valuation levels. Not even in the Dot-com phase, start-ups achieved valuations levels in the dimensions we see them nowadays. Nevertheless, times seem to have changed. As of October 2015, according to Crunchbase[1], 153 start-ups are in the so-called "unicorn club". Altogether, these VC-funded start-ups offer a current post-money valuation of about US$529bn with a total funding of US$79bn. This is about 10% of the entire NASDAQ 100 index or more than 40% of the German DAX 30 index market capitalization[2]. So, unicorns seem not to be too rare. Apparently, they are popping up in a nearly weekly manner or as the Fortune magazine stated: "They seem to be everywhere." (Griffith and Primack, 2015)

Where are these unicorns coming from? What factors are relevant for this high valuation levels? This paper tries to empirically investigate the effect of media coverage on start-up valuations. Empirical evidence shows that media coverage is especially affecting investor behavior in an environment of high uncertainty (Hillert et al. 2014). Uncertainty is highly pronounced in the area of start-ups and VC valuations. Here, especially the effect for high valued start-ups (unicorns) is analyzed. This is the first empirical study which focuses explicitly on the unicorn phenomenon. In doing so, I first analyze the driving factors behind media coverage. Thereafter, I try to answer the question which investors are affected the most by the media. In the end, the effect of media coverage on unicorn valuations is tested. Univariate and a variety of multivariate regression analyses and robustness checks are used. Certain statistical and sample-related challenges are addressed. The global sample is primarily based on Thomson VentureXpert, Crunchbase and LexisNexis data for the time between 1990 and 2015.

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[1] Crunchbase is one of the world's most comprehensive publicly available dataset of start-up activity. The dataset includes about 650k profiles of people and companies in the start-up and VC industry.
[2] As of 26. October 2015 based on Thomson Reuters Eikon.

The here presented results indicate that media coverage is positively affected by technological advancement. The technological change induced by the internet, mobile business, cloud computing or social media fosters the speed of communication and the amount of available information. Information asymmetries might be lowered. Apparently, non-PE/VC investors which are typically not very experienced in the field of VC investments are majorly affected by exceptional media coverage. These investors tend to be invested in start-ups with more media coverage and also with unicorn valuations. This finding might indicate some kind of valuation overreactions in the area of unicorns.

Based on the results, the rise of the unicorns seem to be significantly affected by increasing media coverage. High levels of media coverage might close information gaps between founders and investors. Lower information asymmetries might lower risk levels and increase valuations. In addition, based on Petkova et al. (2013), media coverage also serves as legitimacy for start-ups. Legitimacy should be more pronounced when media coverage is high. Brown and Wiles (2015) provided first descriptive findings that increasing later stage investments (so called "private IPOs") and available VC capital are replacing IPOs in the start-up sector. I provide the first empirical and supportive findings on this relation. Moreover, I show that especially media coverage is one of the key drivers within unicorn transactions. As a result, media coverage might serve as a channel through which technology change affect financing and valuations of start-ups.

This paper contributes to different literature streams in the following way: First, it provides new evidence on a direct relation between technological change and media coverage of start-ups. Second, the findings extent the literature of media influence on start-up investors. Third, the paper adds new insights to the knowledge of media effects on valuation. Especially for extreme situations like current unicorn valuations. Forth, media coverage as a potential channel of how technology advancements affect start-up financing and valuation levels is introduced. Fifth, descriptive findings on the major drivers of the unicorn phenomenon based on Brown and Wiles (2015) can be supported based on first empirical tests in that area.

The paper is structured as follows: in Section 2, an overview of the literature and theories is provided. Based on that, hypotheses are developed thereafter. Section 3 deals with the used data and methodology to test the developed hypotheses. The results are presented in Section 4. Section 5 concludes.

2. Literature Review

A lot of opinions, theories and commentaries are stated in public media which try to explain the unicorn phenomenon. In order to understand the drivers of VC valuations, the effect of technology on media and the effect of media on investors and valuations, the literature of these topics is discussed as follows: First, a general overview of known and possible valuation drivers in the VC area is provided. Second, potential reasons and findings on unicorns are discussed. Third, the impact of technology on media is illustrated. Forth, media effects on organizations and investors are summarized. Fifth, an overview of potential effects of media on valuation levels is provided. In the end, hypotheses are developed based on the presented literature findings.

2.1. VC Valuation Drivers

What is known about the drivers of start-up valuations and VC activity? Firstly, there is a direct link between the entire public market valuation and VC funding for start-ups. Within hot markets, more capital for VCs is available (Nanda and Rhodes-Kropf, 2013). According to Gompers et al. (2008), valuations and VC activity is associated with public equity markets. Based on Jeng and Wells (2000), increasing IPO valuations lead VCs to raise more funds. Especially for younger VCs, this effect is particularly strong (Kaplan and Schoar, 2005). Also the returns of VCs are highly correlated with entire market returns (Cochran, 2005 and Kaplan and Schoar, 2005). In addition, VC activity increases with increasing economic growth (Gompers and Lerner, 1999).

Secondly, it is important to understand the implications of increasing VC activity (fundraising and investments) for risk and valuation levels. As Gompers and Lerner (2000) point out, capital inflows into VCs increase the valuation levels of new investments. Additionally, VCs invest in more risky firms in hot periods (Nanda and Rhodes-Kropf, 2013; Gupta (2000) and Nanda and Rhodes-Kropf, 2014). According to Nanda and Rhodes-Kropf (2013), there is a causal relation between hot markets and the increase in VC capital towards shifting investments to more novel and innovative start-ups. Costs of experimantation are lower.

Based on the previously discussed literature, the public market affect fundraising and investments, which also has a direct effect on valuation and risk levels of the portfolio companies. Furthermore, other drivers within the VC industry or the VCs itself affect valuations. Based on an equilibrium model of Inderst and Müller (2004), valuation is also

driven by contracting and bargaining as well as outside options and scarcity of VC. Within the model, capital market characteristics affect the relative supply and demand for capital. These characteristics affect bargaining powers and ownership shares. This affects the pricing and value creation in start-ups. Valuation levels increase and VCs invest in start-ups with lower quality. This would be in line with the findings of Gupta (2000), who describes that VCs invest in lower quality firms in hot times. In addition to that, Cumming and Dai (2011) find a convex U-shaped relationship between fund size and valuation.

Next to these findings, there is also some empirical evidence that VC investors overreact or are engaged in some kind of herd behavior. Under certain circumstances, VCs simply follow the investment decisions of other market participants and ignore private information. Managers might do so due to reputational reasons as it might be harmful for them for being perceived in the market as a contrarian. Overreactions and misvaluations can be the consequence (Scharfstein and Stein, 1990). Similarly, according to Gupta (2000), the volatility within the VC industry is a symptom of overreaction by VCs and entrepreneurs to perceived investment opportunities.

From a more general perspective, valuation can also be driven by a variety of other factors. Based on Gompers and Lerner (1999), R&D expenditures, reputation of a VC, but also taxes can have an effect on VC fundraisings which affect valuation levels as previously described. With regard to R&D expenditures or taxes, Harford (2005) shows that economic, regulatory or technology shocks can lead to merger waves. This is not directly linked to the VC industry, but provide a potential explanation for VC investments and valuation levels.

Another model is based on Miller (1977) on valuation effects for IPOs. According to the model, a limited supply of companies increase valuation levels when the "true" value is uncertain, short selling constraints and heterogeneous believes are prevalent. Only the most optimistic investors with the highest valuations receive a certain share in a company.

2.2. Unicorns

The literature focusing on unicorns is relatively new with a very limited number of articles. Brown and Wiles (2015) analyze the unicorn phenomenon on a descriptive basis. They point out that capital markets for private equity investments are changing. An increasing liquid and available later stage VC investment market (or as they call it "private IPO" market) might be responsible for the high valuation levels and the appearance of unicorns. IPOs are postponed as private funding is available and less expensive. The major forces which drive

the private IPO market are costly IPO regulations, IPO costs, analyst coverage, low interest rates and search for yield from investors, poor performing small IPOs and mainstream acceptance for private equity investments. In addition, based on Gao et al. (2013), they mention a close connection between technology advancements, reduced market entry barriers for technology companies and unicorn valuations. With respect to technological advancements and globalization, Gao et al. (2013) point out that with increasing speed of communications, technology and global markets, small companies need to grow faster than in the past due to the "winner-take-all" principal. Only the fastest growing companies with the highest market share survive. This has implications how companies finance themselves.

Similar to Brown and Wiles (2015), a variety of experts and journalists perceive new technologies like the internet, cloud computing and the increasing usage of mobile devices as key driving force of unicorn valuation (Grabow, 2015; Bender et al., 2015; Thompson, 2015 and Griffith and Primack, 2015). Another force might be the so called "fear-of-missing-out" (FOMO) mentioned by Frier and Newcomer (2015), Janeway (2015), Thompson (2015) and Gurley (2015). As Amazon, Apple, Facebook or Google partially demonstrated, technology markets seem to be often characterised by a "winner-take-all" principal, i.e. only the largest market player survives and takes the major market share. With a new or more innovative business model, service or technology, new entrants try to disrupt the prevailing system. VCs might fear to miss the next Google, Facebook or Apple. Missing out such a "blockbuster" deal would have negative implications on fund performance and reputation expressed in lower levels of future VC fundraisings. In that relation, Facebook's IPO in 2012 with a valuation of about US$122bn is often seen as a "super-unicorn" or a catalyst for other start-up valuations (Lee, 2013).

Liquidation protections are additionally affect unicorn valuations. In a recent study of Fenwick & West LLC, Kramer et al. (2015) analyze the terms of various unicorns. Based on the results, investors seem to have implemented significant downside liquidation protections within the contracts. Liquidation preferences, IPO conversion provisions or anti-dilution adjustments protect the investors in case of further funding rounds, acquisitions or IPOs. Higher values can be accepted more easily by the investors, as the transactions bear less risks. Brown and Wiles (2015) also refer to liquidity protections as important driver of valuations. In a case study about the unicorn Square, Inc. Rauch (2016) illustrates the valuation effects of

such protections. As a result, the valuation levels should be treated carefully as a direct comparability with other transactions and protections might not be possible.

2.3. *Effects of Media on Organizations and Investors*

After having discussed valuation driving factors in the VC and unicorn environment, the potential effects of the media on organizations and valuations should be discussed next. Based on a variety of studies, media per se can have an effect on companies, investors and valuations. However, the effect is studied in only a few VC related articles.

In general, media tries to find broad topics in order to reach as many interested people as possible (Carroll, 1985). According to Suchman (1995), there is a need of new organizations to be perceived and appear desirable in order to gain legitimacy. This might be achieved via the media. Media coverage provide information about organizations to a large number of stakeholders (Petkova et al., 2013). In addition, media coverage reduces information asymmetries (Tetlock, 2010) and directly affects information collection, processing and interpretation of investors (Engelberg and Parsons, 2011 and Tetlock, 2007). Media coverage and legitimacy might be beneficial as companies with legitimacy have better access to resources like financial capital, employees or business partners (Deeds et al., 2004; Williamson, 2000; Williamson et al., 2002 and Pollock and Gulati, 2007).

How does the media help to increase legitimacy? Attention is a scarce resource (Ocasio, 1997). Communication processes contribute to attention and organizational legitimacy (Suchman, 1995). Media can be viewed as intermediary and is responsible for allocation of attention to new organizations: The media actively selects specific news about certain topics, events, actors, companies, etc. which increase public attention (Hoffman and Ocasio, 2001; Kennedy, 2008 and Pollock et al., 2008). With this selection mechanism, media channels public attention towards specific organizations and away from others (Rindova et al., 2007). The public opinion about an organization is reflected in media coverage. Therefore a measure of legitimacy is provided (Baum and Powell, 1995 and Elsbach, 1994). The legitimating role of media in the context of broad stakeholder audiences with limited information about young companies is analyzed by Pollock and Rindova (2003) for IPO investors. The role of an intermediary when media coverage is perceived as an external "critic" is important for stakeholders who have to make decisions under uncertainty. This increases the legitimacy and credibility of new organizations especially within an environment of limited information (Zuckerman, 1999). In addition, firms which are using Twitter for communications are more

likely to increase the perceived quality of the firm and reduce uncertainty (Fischer and Reuber, 2014). Consequently, media is a distinct legitimation mechanism (Petkova et al., 2013).

2.4. Technology and Media

Globalization and technological change affect companies, investors and other market participants in many ways. Moreover, technology also affects the information availability and perception. Technology in form of the internet changes the media business landscape and usage of media (Küng et al., 2008 and Dimmick et al., 2004). The internet affects the consumption and perception of news, news content, the user itself, regulation and business models (Küng et al., 2008). The media industry has undergone a fundamental shift over the past decade. New online distribution channels have been created. But not only had the internet changed the media market and user behavior. Also mobile devices like smartphones affect the consumption of news (Xu et al., 2014).

2.5. Media and VC Valuations

So far, the effects of technology on media and media on organizations were illustrated. Next, I want to describe what is known about the effects of media on valuation levels also focusing on the VC and start-up field. Important factors for a VC due diligence have been analyzed in many studies. Nevertheless, the effect of external perception of start-ups on VC valuations are less covered in the literature. Even though more information (also coming from external media sources) within a due diligence process might affect valuations. Based on the findings of Petkova et al. (2013), media attention in early stages of new organizations affect the perceived valuation of well-informed experts like VCs. VCs benefit from external indicators of public recognition of start-ups and they incorporate media coverage in their due diligence processes. According to Petkova et al. (2013), VCs and the perceived valuation of start-ups are affected by media coverage in two ways: First, media coverage signals public interest which might positively influence stakeholders like customers, employees, etc. Second, new information become widely available. This reduces information-provision costs and provide legitimacy and credibility. Interestingly, news with positive as well as negative tone have a positive effect on VC funding. Berger et al. (2010) find supporting results as even negative reviews about books of new and unknown authors increase their sales. Publicity increases awareness. Media channels public attention toward specific organizations and away from others. From a stakeholder perspective, this increases the importance and valuation of these

organizations (Rindova et al., 2007). However, the causality can also be the other way around. A positive effect of valuation on public attention is described by Demers and Lewellen (2003).

To the best of my knowledge, the study from Petkova et al. (2013) analyzing 398 U.S. based start-ups between 1997 and 2004 is the only study conducted with the focus on the effect of media on VC funding. Additionally, there is empirical evidence that marketing can have a postive effect on valuation levels. In the field of IPOs, Cook et al. (2006) find a close relationship between involvement of investment banks, marketing of IPOs and valuation. Well promoted IPOs induce sentiment investors and consequently increase the valuation. Receiving media attention is beneficial even when the content is negative. Higher attention creates awareness and lead the focus on specific organizations and away from competitors. In line with Cook et al. (2006), Pollock and Rindova (2003) show that media coverage before an IPO increase valuation levels and liquidity.

Hillert et al. (2014) find that media coverage can have an effect on investors and can lead to overreactions and biases especially in an environment of high uncertainty. They provide evidence that media coverage affects investors and increase momentum in stock returns. In line with Daniel et al. (1998), Hillert et al. (2014) indicate that high media coverage might induce investor overreactions as signals from the media confirm (contradict) investor's initial private information. This might be considered as evidence of one's own skills and overconfidence is more pronounced. Disconfirming news will be largely neglected.

2.6. Hypotheses

Based on the above described findings and theories, I derive three hypotheses in order to describe the effect of technology on media, the effect of media on investors and the effect of media on start-up valuations. The aim is to provide evidence on unchartered driving factors which can explain the unicorn phenomenon. In doing so, I combine the three research fields of technology, media and VC valuations. Oftentimes a causal relation cannot directly been stated and analyzed here, but the logic of the hypotheses and market mechanisms is assumed to work as follows: Technology and innovations have advanced significantly over the last years. With technological advancements like the internet, mobile phones, cloud computing or social media platforms the amount of available information on firms increased. Information can be distributed globally in a faster way than in the past. Blogs and websites covering news on firms foster the effect and increase media coverage for firms. Especially in a technology oriented field like start-ups, this effect is assumed to be very much pronounced.

Hypothesis 1: Technological advancements increase media coverage of start-ups.

Information are especially valuable in an opaque and uncertain environment (Hillert et al., 2014). The valuation and the decision to invest in a certain start-up takes place in such an opaque and uncertain situation. Information on the start-up are limited and information asymmetries between the founders and the investor are quite large. A growing amount of information via increased media coverage might be able to lower these information asymmetries. Especially inexperienced non-PE or VC investors in the field of start-ups rely on and might be stronger affected by the increasing amount of information.

Hypothesis 2: Non-PE/VC investors are stronger affected by media coverage than PE/VC investors.

Based on Petkova et al. (2013), media can affect a start-up in the following ways: First, media coverage and attention on a large scale is a scarce resource (Ocasio, 1997) and signals that the start-up, its products, the technology, the founder team, or other aspects are of interest and relevance for stakeholders. Second, large scale media coverage act like an information intermediary (Zuckerman, 1999), which reduces information-provision costs. In an environment of limited information and expertise, media coverage brings a credibility and legitimacy advantage to the covered start-up. These effects might favor market access, customer acceptance, increasing sales, hiring employees, finding investors and increase valuation. Therefore, increasing media coverage is assumed to be positively related to start-up valuations.

Hypothesis 3: Increasing media coverage has a positive effect on start-up valuations.

As media coverage and technology increased significantly over the last years, the assumed positive relation between media coverage and valuation should be explicitly prevalent in the area of unicorn valuation. The effect of media attention might be another important explanatory variable for unicorns, next to the already mentioned driving forces like "private IPOs" (Brown and Wiles, 2015), driven by low interest rates, high stock market valuations, new investors and the search for returns.

Based on the described theories, I test the stated hypotheses with a specific data set and methodology which are described in the next section.

3. Data and Methodology

3.1. Data

In order to analyze and test the proposed hypotheses, I use the Thomson VentureXpert database for information on global VC-backed transactions between 1990 and October 2015 like dates, companies, funding amounts, rounds, investors and valuations. Furthermore, total investments and fundraisings are drawn from this database. Incomplete or missing data for unicorns are manually corrected or added by using Crunchbase data[3]. Industry financials and stock market data are drawn from Compustat and CRSP. Additionally, information on the global IPO market are provided by ThomsonOne. Interest rates are accessed via WRDS from the Federal Reserve Bank. In total, the sample consists of 14,497 VC deals with total VC investments of about US$1,013bn and 276 transactions with disclosed valuations above or equal to US$1bn (i.e. unicorns). A sample overview over time is provided in Table 1

(Table 1)

Similar to Petkova et al.(2013), I hand collected the media coverage information for 8,356 VC transactions from LexisNexis. Due to missing information which are needed for the baseline regression and lack of data prior 1995, 6,141 transactions were excluded. By grouping duplicates and excluding non-business news, the number of articles, which include the name of the start-up are counted. The used time period begins with the last previous funding round or 12 months before the investment date until one day before the investment date. To account for media coverage related to a previous funding round, a time gap of one month after the last funding round was included. 12 months are used as proxy for the average time between different funding rounds based on Gompers & Lerner (2004). A graphic illustration of the different time periods is provided in Figure 1.

(Figure 1)

For certain start-ups, adjustments for the searched company name needed to be applied. For example, by searching for the media coverage for the company "Box", the searched name needed to be adapted to "Box Inc". Otherwise, non-related articles would be included. In total, I made 1,829 adjustments. Non-directly attributable articles could be found for 52 companies. In accordance with Petkova et al. (2013), I divided the total media coverage

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[3] Crunchbase data as of 26.10.2015.

of a company by the days of the total media coverage time period. As a result, the sample includes media coverage information for 8,294 transactions with an average of 0.17 articles per day (median: 0.04; minimum: 0; maximum: 60.87).

In order to measure the effect of technological change and advancement, I construct the same time trend variable as described in Gao et al. (2013). They introduce a time trend variable in order to account for the increasing importance of economies of scope and the speed to the product market. This time trend has a significant negative effect on IPOs of small companies. As they describe, a direct measure like to number of granted patents would be ideal. However, patent data suffers from effects from changes in the patent law (Gao et al., 2013). The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward.

For further robustness tests, I also use a variety of different measures for technological advancements: First, I use the quarterly sold units of Apple's iPhone. Mobile technology is key for information availability, new business ideas and the speed of communication. Especially in the years, starting from 2007, the mobile technology grew strongly on a global basis. Second and similar to Boulton et al. (2016), I use the internet penetration (i.e. internet users per 100 people) from the World Bank of the major regions North America, Europe, APAC (Asia and Pacific) and the rest of the world. Internet penetration might be a measure for technology advancements and information availability. Third and again similar to Boulton et al. (2016), daily newspaper circulation in the U.S. from the Editor and Publisher International Yearbook serves as negative measure of technological change. As internet news are cheaper, faster and everywhere accessible, newspaper circulation rates decreased significantly with the rise of the internet. Fourth, Google's advertising revenues are taken into consideration. Google is a global internet company with both a search engine and also mobile phone software. Hence, Google's advertising revenues from these sources might serve as an indicator for technological change, growing mobile business and the increasing flow of information. Another feature of these measures for technology advancements is the exponential characteristic which might be advantageous over the linear *Time Trend* variable.

The occurrence of unicorns and transaction valuations over time are illustrated in Figure 2. In addition, the current 15 largest unicorns with a last disclosed (most prevalent) valuation since 2012 are displayed in Table 2[4].

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[4] As of 26.10.2015.

(Figure 2)

(Table 2)

3.2. Methodology

First, the hypotheses are tested by using univariate differences-in-means tests and multivariate logit, OLS and firth model regressions thereafter. The major dependent variable for hypothesis (1) is the natural logarithm of media coverage per day (*LN Media Coverage / Day*). For hypothesis (2), I use the percentage of non-PE or VC investors per funding round (*% of Non-PE/VC Investors*), which are bank affiliates, endowments, pension funds, government programs, individuals, insurance firm affiliates, investment managers, non-private equity firms, SBICs, service providers, university programs and other investors. These investors are typically not active in the PE or VC business and are assumed to have less experience and information compared to PE funds, VC funds, corporate VCs or incubators. For hypothesis (3), the major dependent variable is a dummy indicating if a deal is a unicorn (private VC funded transaction with a valuation at transaction above or equal to US$1bn) or not. Consequently, one portfolio company can be included several times, but only with one specific transaction value. Additionally, the natural logarithm of transaction value also serves as dependent variable in further tests using robust OLS regressions.

For robustness reasons, I also use unicorn dummy variables indicating only the first or the last unicorn valuation at transaction a company achieved. In additional tests, I split the sample by time, analyzing deals pre and post the Facebook IPO which is treated here as a catalyst or compare only large transactions (deals with valuations at transaction above US$250mn). To address potential statistical problems arising out of the small share of unicorn deals compared to non-unicorn deals, I use the firth model. The firth model is based on a penalized likelihood approach to reducing small-sample bias in maximum likelihood estimation. Especially within logistic regressions, penalized likelihood also has the attraction of producing finite, consistent estimates of regression parameters when the maximum likelihood estimates do not even exist because of complete or quasi-complete separation.

3.2.1.   Model (1) – LN Media Coverage / Day

The baseline robust OLS regression model (1) for hypothesis (1) can be described as follows:

(1) *LN Media Coverage / Day$_i$ = a$_i$ + b$_i$*Time Trend + c$_i$*Media Controls + d$_i$*Fixed Effects + ε$_i$*

As explained above, *LN Media Coverage / Day* is the natural logarithm of media coverage per day. *Time Trend* is the major explanatory variable measuring technological changes. The variable is based on Gao et al. (2013) and is used to measure the increasing importance of economies of scope and the speed to the product market. The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward. I also use different measures of technology changes in the robustness section. As *Time Trend* is linear, also exponential variables are used. In order to control for certain important factors influencing media coverage, *Media Controls* include the following variables: *LN Age (Mth)* is the natural logarithm of the company's age at funding expressed in months. Based on Hillert et al. (2014) and Petkova et al. (2013), firm size affects media coverage positively. Due to the limited information on the company level and similar to Petkova et al. (2013), I use *LN Age (Mth)* as a measure of firm size. Size and age are typically highly correlated when analyzing start-ups. To account for the differences in the media coverage search process, I introduce the dummy variable *Adj. Media Search* which indicates if adjustments in the start-up name search needed to be performed (1) or not (0). Demers and Lewellen (2003) point out that the business model of a company can have an effect on the media coverage. Therefore, a dummy variable *B2C* is included which is (1) for business-to-customer and (0) for business-to-business models. The dummy is based on specific SIC codes following Lev et al. (2010).

Previous funding levels from VCs might also attract different levels of media coverage. Therefore the total funding amount a company has received so far (expressed in terms of the natural logarithm and 2009 price levels) *LN Total Funding to Date (Adj.)* is included in the regression model. With a similar logic and based on Gompers and Lerner (2004) and Petkova et al. (2013), I control for the effect of the number of funding rounds a company has received so far (*# Rounds*) and the number of investors in the respective funding round (*No. Investors Invested per Round*). More rounds and more investors might also have a positive effect on media coverage. Furthermore, the experience of invested VCs might matter when measuring media coverage (Petkova et al., 2013). *% of High Experienced Investors per Round* is the percentage of highly experienced investors per funding round. High experience is measured via a dummy which is (1) when the investor's age is above the median investor age in the respective year of

the entire sample. The dummy is (0) when the age is below the median. The percentage is measured by calculating the average of highly experienced investors per funding round.

To account for general VC market characteristics which might affect also media coverage, I include the raised capital by VCs three years before the investment date expressed in terms of the natural logarithm and 2009 price levels (*LN VC Fundraisings Qrt (t-3 years) (Adj.)*). I use a three year time gap to control for investment opportunities during the fund's most active investment phase similar to Hochberg et al. (2007). As hot VC markets and valuation levels might have an effect on media coverage, I control for momentum effects on start-ups. The shorter the time between funding rounds, the higher might be the demand from investors. Additionally, a shorter time might also indicate higher growth expectations a start-up offers. Therefore, I include the time since the last funding round expressed in terms of the natural logarithm (*LN Time Since Last Funding Round*). This variable might also incorporate some kind of the above described "fear-of-missing-out". The last variable included in the regression model is the industry valuation level. As hot markets with higher valuations might also affect media coverage, *Log P/E Industry* is included.

Fixed Effects include geographical fixed effects (North America, Europe, APAC and rest of the world), the investment stage (seed, early stage, expansion, later stage, acquisition or public market), time periods (recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015)) and industry fixed effects (12 Fama-French industries).

3.2.2.   Model (2) – % of Non-PE/VC Investors

The baseline robust OLS regression model (2) for hypothesis (2) can be described as follows:

(2) *% of Non-PE/VC Investors$_i$ = a$_i$ + b$_i$*LN Media Coverage / Day + c$_i$*Controls + d$_i$*Fixed Effects + ε$_i$*

In order to analyze hypothesis (2) and the effect of media coverage on investors, *LN Media Coverage / Day* is the major explanatory variable in this regression model. The dependent variable is *% of Non-PE/VC Investors*. These investors are assumed to be not typically involved in VC- or start-up related investments.

The *Controls* include already explained variables from model (1) which are assumed to affect the type of investors as well: *% of High Experienced Investors per Round*, *No. Investors Invested per Round*, *LN VC Fundraisings Qrt (t-3 years) (Adj.)*, *Log P/E Industry*, *LN Age (Mth)* and *Time Trend*. As described by Brown and Wiles (2015), valuation and unicorns might also be driven by differences in investment behavior. In times of more later stage investments, inexperienced investors might also be involved. When more later stage capital is available, financing via the usage of public equity markets (IPOs) might face lower demand from the start-up side. As less IPO investment opportunities for non-PE or VC investors are available these investors might enter the VC market in search of returns. A potential decreasing dependence of start-ups on the equity markets might also be measured by the share of global VC-backed IPOs in a certain industry (*Global VC-Backed IPOs*). IPO data are drawn from ThomsonONE.

In addition, the general market environment might have an effect on inexperienced VC investors. These investors might search for returns outside their normal investment area in times of low interest rates (Brown and Wiles, 2015). To control for this potential effect, the effective federal fund rate (*FED Rate*) is included. With a similar logic, these investors might also be affected by the general market valuation level. I included the S&P500 return over the last twelve months by the month end (*Return S&P500 LTM*) to account for this effect.

Lastly, due to the possibility that investors might anchor on unicorn deals (based on the findings of Scharfstein and Stein (1990)), I include the time since the last unicorn took place (*LN Time Since Last Unicorn*). The shorter the time between the unicorn transactions, the more an investor might be influenced by a previous unicorn transaction. The measure might also be understood as a potential measure for herding behavior of investors. The *Fixed Effects* are the same as described for model (1).

3.2.3. Model (3) – Unicorn

The baseline robust logit regression model (3) for hypothesis (3) can be described as follows:

(3) $Unicorn_i = a_i + b_i * LN\ Media\ Coverage\ /\ Day + c_i * Controls + d_i * Fixed\ Effects + \varepsilon_i$

Unicorn is the above described dummy variable, (1) if private VC funded transaction has a valuation at transaction above or equal to US$1bn and (0) otherwise. Again, *LN Media*

Coverage / Day is the major explanatory variable in this regression model. I want to make sure that the effect of media coverage on unicorns can be interpreted as clear as possible. Therefore, I include several other control variables which are also explained in the previous models (1) and (2). Based on Brown and Wiles (2015), the most important control variables might be *LN Later Stage Investments Qrt* and *Global VC-Backed IPOs* when analyzing unicorns. As described by Brown and Wiles (2015), unicorns might also be driven by differences in investment behavior. The variable *LN Later Stage Investments Qrt* is introduced with the following intuition: The more later stage investments are performed (investments after the third funding round), the more capital seems to be available at this funding stage. Financing via the usage of public equity markets (IPOs) might face lower demand from the corporate side. If additionally new investors enter the market or are more active in search of returns, this effect might be reinforced. A low share of VC-backed IPOs (*Global VC-Backed IPOs*) together with more later stage investments might show a decreasing dependence on public equity capital markets. Other and probably more preferred and less costly financing alternatives in form of later stage funding might be available.

As previously described, the following control variables are included as well: *% of High Experienced Investors per Round*, *No. Investors Invested per Round*, *LN VC Fundraisings Qrt (t-3 years) (Adj.)*, *Log P/E Industry*, *LN Age (Mth)*, *LN Time Since Last Unicorn*, *FED Rate*, *Return S&P500 LTM* and *Time Trend*. The *Fixed Effects* are the same as described for model (1) and (2).

3.3. Exceptional Media Coverage

Unicorns and investors might be affected by some kind of "buzz" or "hype". An exceptional large amount of news in the media on start-ups might have an effect on the behavior of market participants. I try to test this effect by introducing a measure for this kind of exceptional media coverage. By estimating the coefficients from model (1), I predict the media coverage per day for every transaction. *Exceptional Media Coverage* is then defined as the difference between the actual and the predicted *LN Media Coverage / Day* variable. If the difference is larger than zero, a start-up received more media coverage than expected. This might be an indicator for some kind of "buzz". In addition, this measure might also serve as an indicator for a more pronounced "fear-of-missing-out".

4. Results

4.1. Univariate Results

First, the above described effects on media coverage, non-PE/VC investors and unicorns are tested on a univariate basis with differences-in-means tests. As can be seen in Table 3, all three hypothesis can be supported by the univariate findings.

(Table 3)

Media coverage per day is significantly correlated with the different measures for technological changes (column (1)). Supporting hypothesis (2), exceptional media coverage is significantly correlated with the share of non-PE/VC investors (column (2)). A positive, but no significant effect of media coverage per day can be found. For hypothesis (3), the results indicate a strong positive correlation between media coverage per day and the occurrence of unicorns (column (3)). Figure 3 displays the close correlation between transaction valuation and media coverage per day.

(Figure 3)

Additionally, unicorns are significantly positively correlated with technological advancement measures and have significantly more non-PE/VC investors compared to non-unicorns. Other basic relations between relevant factors for unicorns are displayed in Table 4.

(Table 4)

The table provides an overview of the sample as well as univariate tests to illustrate the difference between unicorns and non-unicorns. As can be seen, unicorns have significantly more media coverage, non-PE/VC investors and are positively correlated with technological change. Interestingly, unicorns have also more experienced VC investors. Moreover, unicorns appear more in times of later stage investments. This is in line with the findings of Brown and Wiles (2015). The same holds for the result that unicorns appear more in times of lower global VC-backed IPOs. Unicorns take place in times in which later stage investments are more pronounced and VCs use IPOs less as exit strategy. Summarizing the other univariate results, unicorns have more investors per round. They appear in times of higher fundraisings in prior years, lower P/E valuation levels and lower interest rates. Unicorns are older compared to non-unicorns. Additionally, the time since the last unicorn valuation is significantly shorter for unicorns compared to non-unicorns supporting the anchoring theory. All these results are

highly significant. There is no evidence that unicorns appear significantly more in times of hot markets.

In order to analyze how these factors together affect media coverage, non-PE/VC investors and the unicorn probability, I test the effects also on a multivariate basis in the next section.

4.2. Multivariate Results

4.2.1. Media Coverage

In order to analyze the driving factors of the unicorn phenomenon I employ different regression models. The baseline models are stated in section 3. A correlation matrix of the used variables is provided in Table 5.

(Table 5)

Starting with analysis for hypothesis (1) a robust OLS regression is performed to test the effect of technological change on media coverage. According to the results, illustrated in Table 6, media coverage per day is significantly and positively affected by technological change. All used measures for technological advancements are significant and positive (except newspaper circulation which is in the same logic negatively correlated). These results support hypothesis (1).

(Table 6)

Other significant major driving factors of media coverage per day next to the technological change measures are: adjustments for media search (-), the business model B2C (+), the total funding received so far by the company (+) and the time since the last funding (-). Other control variables are not significant. All the regression models include time fixed effects. Hence, the significance of the technology measures indicate a strong effect of evolving technological change on the media coverage of VC funded start-ups.

4.2.2. Non-PE/VC Investors

After having tested the driving factors on media coverage, the next step here is to test if non-PE/VC investors are more prone to media coverage than other investors. I test hypothesis (2) by using the robust OLS regression model (2) as described above. The results are illustrated in Table 7.

(Table 7)

In contrast to the univariate tests, both media coverage per days as well as exceptional media coverage are significantly positively related to the share of non-PE/VC investors. This is supporting for hypothesis (2). Non-PE/VC investors which might be less experienced in the start-up field are more invested in start-ups which faced high media coverage. By controlling for a variety of other potential variables, non-PE/VC investors might be more affected by "buzz" or some kind of media "hypes". Based on the multivariate results, these investors tend to invest more in times of higher later stage investments. This would be in line with Brown and Wiles (2015) indicating that later stage investments might also be affected by new investors entering the VC market. Furthermore, the coefficient for the variable measuring anchoring, *LN Time Since Last Unicorn*, is significantly negative. Non-PE/VC investors might therefore be more affected by anchoring behavior. These investors tend to invest more shortly after unicorn transactions are disclosed. Other results indicate that non-PE/VC investors invest together with experienced VC investors, invest with less investors per round and invest in older start-ups.

4.2.3. Unicorns

In the last step, I test hypothesis (3) and the effect of media coverage on unicorn valuations. The basic model here is the robust logit regression model (3). For further robustness tests, hypothesis (3) is also tested by using a robust OLS regression with *LN Transaction Value* as continuous dependent variable and a firth model with the *Unicorn* dummy as dependent variable. As described above, the firth model addresses potential statistical problems arising out of the small share of unicorn deals compared to non-unicorn deals. The firth model is based on a penalized likelihood approach to reducing small-sample bias in maximum likelihood estimation. The results are displayed in Table 8 and provide a strong support for hypothesis (3).

(Table 8)

In all three models, media coverage is significantly positively related to the appearance of unicorns or transaction valuations. An increase in media coverage per day by 1% increase the unicorn probability by 2.5% and the transaction value by US$6.6mn. After controlling for a variety of firm, market, investor and other relevant characteristics, media coverage before a funding round seems to drive valuation levels upwards. In combination with the previous findings for hypothesis (1) and (2), it might be the case that technology affects media coverage.

Media coverage also has an influence on specific investors which are especially invested in unicorns. As a consequence, technological change might have an accelerating effect on media coverage and valuation levels. The results in column (1) also indicates that unicorns appear especially in times of advanced technology. Based on the results, high levels of media coverage might close information gaps between founders and investors. Lower information asymmetries might lower risk levels and increase valuations. In addition, based on Petkova et al. (2013), media coverage also serves as legitimacy for start-ups which should be more pronounced when media coverage is high.

Furthermore, the results support the findings of Brown and Wiles (2015). Later stage investments are an important driving factor of unicorns and VC valuations. These later stage investments are also assumed to be fueled by new investors like non-PE/VC investors entering the VC market. The results for the impact of the global IPO market are mixed, but negatively related to unicorn appearance (column (1) and (3)) which is in line with Brown and Wiles (2015). The findings presented here add new insights on the appearance of unicorn valuations in the VC markets. Not only are increasing later stage investments responsible for increasing valuation levels; to a large extent media coverage foster the rise of the unicorns. By adding *LN Media Coverage / Day* to the baseline regression model (3), the R² increases from 43% to 57% indicating the relevance of this variable.

4.3. Robustness Section

4.3.1.   Sample Split, Sub-Sample and Other Robustness Checks

As time, comparability of transactions, exceptional media coverage and technology might play an important role in the analysis, I perform the following robustness checks in order to test the unicorn appearance: First, the sample is split by the time before and after the Facebook IPO. The IPO of Facebook in 2012 is oftentimes perceived by market participants as a catalyst. Since the IPO, the technology and start-up area attract a much higher attention at the investor level. Investments in that field might appear more attractive. Second, a sub-sample is created using only large deals (above a transaction value of US$250mn). Unicorns are quite different from small start-ups. By focusing on large deals, the difference between comparable large firms should be tested in a more robust way. Third, I test the effect of "buzz" by replacing the *LN Media Coverage / Day* variable with *Exceptional Media Coverage*. Forth, a different measure for technology advancement is used by replacing *Time Trend* with *LN iPhone Unit Sales (Qrt) (mn)*. Sold iPhone's might be a reasonable proxy for technology advancements

especially for an increasing trend towards mobile products, business models and services. With mobile devices, companies have a wider field of doing business and information can spread faster. The results are displayed in Table 9.

(Table 9)

The results with the sample split by time (post vs. pre the Facebook IPO) in column (1) and (2) indicate that the effect of media coverage is robust and significantly positive in both periods. Hypothesis (3) is supported. Interestingly, unicorns face more investors per round after the Facebook IPO and technology advancements play a more important role. Additionally, the share of invested experienced investors dropped and is not significant after the Facebook IPO anymore. This would speak for more inexperienced investors entering the market and investing in high valued start-ups after the Facebook IPO. Nevertheless, due to a much lower number of observations in the post-Facebook IPO period, the results should be interpreted carefully.

In the second test (column (3)), the probability for being a unicorn is only tested for large firms. The major results from the baseline model hold and hypothesis (3) is supported. Next to the positive influence of media coverage, later stage investments, global IPO environment for VC-backed firms and technology advancements play an important role.

Thirdly, *LN Media Coverage / Day* is replaced by *Exceptional Media Coverage* in order to test the effect of exceptional media coverage ("buzz" or "hype"). The results in column (4) indicates a very strong and positive effect on the probability of being a unicorn. Apparently, these start-ups are exceptionally often mentioned in the media, which might affect also valuation levels. A causal link cannot be stated here, but according to the results unicorn investments and valuations might be prone for overreactions.

In the last test in column (5), *Time Trend* is replaced by *LN iPhone Unit Sales (Qrt) (mn)*. The significantly positive results for the effect of technology advancements on unicorns are comparable to the results with *Time Trend* from column (1).

4.3.2. First and Last Time Unicorns

The dependent unicorn dummy variable is set up in a way that every valuation at transaction date above or equal US$1bn is recognized. As a result, individual start-ups can be recognized several times as long as further valuations in funding rounds are above or equal US$1bn. To test that the results are not driven by only a small sub set of unicorns, I test the

effects only for first and last time unicorn valuations respectively; i.e. only the first or last unicorn valuation of an individual start-up is recognized with (1) in the dummy variable. The results are displayed in Table 10.

(Table 10)

The findings are very similar to the baseline model (3) and hold across all models and restrictions (first or last time unicorns). Hypothesis (3) is supported.

4.3.3. Two-Stage Least-Squares Regression

Media coverage might be endogenous and also driven by an omitted variable. Similar to Petkova et al. (2013), media coverage might also be affected by unobserved resources or capabilities. To address this potential endogeneity problem, a two-stage least-squares regression with an instrumental variable is performed. In the first stage, I predict the influence on media coverage by using all explanatory variables from the baseline model (3) and a specific instrumental variable. In line with Petkova et al. (2013), I use the location of a start-up as an instrument. More precisely, the instrument is the distance from the start-ups headquarter to the City of San Francisco (*LN Distance San Francisco*) based on the ZIP-codes. The intuition behand this instrument is as follows: Start-ups closer to the San Francisco bay area might attract more media coverage. Silicon Valley is fairly close, start-up related newspapers, blogs, and industry experts are majorly situated in this area. The closer a start-up is located to this area, the higher is the probability that these experts and the media know these start-ups. Nevertheless, the valuation per se should not be affected by the location. Based on the performed underidentifcation (Anderson LM F statistic) and weak instrument tests (Cragg-Donald Wald F statistic), the quality of the instrument is strong.

First Stage: Linear OLS Regression for Media Coverage and Distance to San Francisco as Instrument

(4) *LN Media Coverage / Day$_i$ = a$_i$ + b$_i$*Controls from Model (3) + c$_i$*LN Distance San Francisco + d$_i$*Fixed Effects + ε$_i$*

In the second stage, the instrumented media coverage variable is included in the baseline regression analysis (model (3)). In doing so, the standard errors are consistent under homoscedasticity.

Second Stage: Estimate influence of instrumented Media Coverage on Unicorns

(5) *Unicorn$_i$ = a$_i$ + b$_i$*LN Media Coverage / Day + c$_i$*Controls from Model (3) + d$_i$*Fixed Effects + ε$_i$*

For robustness reasons, I perform the second stage also with the continuous transaction value instead of the unicorn dummy as dependent variable. With this two-stage least-squares regression, I try to address potential problems of endogeneity with the media coverage variable. As illustrated in Table 11, the results for the effect of media coverage on unicorns and valuation levels are consistent with the previous findings and significantly positive.

(Table 11)

As expected, distance to San Francisco is significantly negatively correlated with media coverage (column (1)). The Anderson LM and Cragg-Donald Wald F statistics are significantly above the critical value of the Stock-Yogo weak ID test for 10% maximal IV size of 16.38 (Stock and Yogo, 2005). In addition, major findings from the baseline model (3) on the effect of later stage investments and global IPO environment can also be found in the stated results in Table 11.

4.3.4. Different Valuation Measures

The major dependent variables in order to test Hypothesis (3) are *Unicorn* and *LN Transaction value (Adj.)*. These variables are based on the absolute transaction value. In order to set the valuation levels into relation to previous valuations or start-up specific fundamentals, I test Hypothesis (3) also with the *Change of Transaction Value*, *Transaction Value / Number of Employees (TV/Employees)* and *Transaction Value / Age (TV/Age).* As only limited information on fundamentals are available for the start-ups in the sample (no financials like sales, assets, profitability, etc.), I use the number of employees and age as proxies for size. In doing so, a comparison of previous valuation levels and also to other start-ups is possible. To test the influence of media on these valuation variables, I replace the dependent variable from model (3) with the here introduced variables respectively. Robust OLS regressions are used here. The results are displayed in Table 12.

(Table 12)

The findings are very similar to the baseline model (3). Media coverage and also exceptional media coverage have a positive and significant effect on the change in valuation and the multiples for employees and age. Hypothesis (3) is supported.

5. Conclusion

Within the last years, a large number of start-ups achieved extraordinary high valuations which have never been seen before in such dimensions. These start-ups are named "unicorns" referring to the rare and precious horned horses in fairy tales. Where are these unicorns coming from and what factors are relevant for this high valuation levels? This paper tries to empirically investigate the effect of media coverage on start-up valuations. Especially the effect for these high valued unicorns is analyzed. In doing so, I first analyze the driving factors behind media coverage and which investors are majorly affected by that. Thereafter, I test the effect directly on the probability of a unicorn in the cross section.

Based on the here presented findings, the rise of the unicorns seem to be significantly affected by media coverage. High levels of media coverage might close information gaps between founders and investors. Lower information asymmetries might lower risk levels and increase valuations. In addition, based on Petkova et al. (2013) media coverage also serves as legitimacy for start-ups which should be more pronounced when media coverage is high. Next to the findings provided by Brown and Wiles (2015) on the importance of increasing later stage investments replacing IPOs, media coverage is one of the key drivers within unicorn transactions.

Furthermore, the here presented results indicate that media coverage is positively affected by technological advancement. The technological change induced by the internet, mobile business or social media fosters the speed of communication and the amount of available information. Apparently, non-PE/VC investors which are typically not very experienced in the field of VC investments are majorly affected by exceptional media coverage. These investors tend to be invested in start-ups with more media coverage and also with unicorn valuations. This finding and the result that unicorns have exceptional high media coverage might indicate some kind of valuation overreactions.

This paper contributes to the literature in the following way: Different literature streams from the fields of technology, media and start-up valuations are combined. The paper is the first attempt to explain the unicorn phenomenon with the effect of the media. Moreover,

descriptive findings on the major drivers of the unicorn phenomenon based on Brown and Wiles (2015) can be supported with first empirical tests in that area. Nevertheless, a variety of unobservable factors might also be highly relevant for the valuation of unicorns and start-ups. Liquidation protections, founder team, company and industry characteristics and a variety of other factors might have an incremental effect. Due to constraints in data availability, these factors could only partially been addressed here, but call for further research.

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Appendix

Table 1 - Sample Overview Over Time

 # VC Deals: Global number of venture capital (VC) financed transactions. *Total Transaction Value (US$bn):* Sum of transaction values of all global VC financed transactions in US$bn. *Age (Years):* Age of portfolio companies at investment date. *VC Investments (US$bn):* Sum of quarterly global VC investments in US$bn. *% Later Stage Investments:* Share of quarterly global later stage investments by VCs (investments after third funding round) as percentage of total global VC investments in a quarter. *Industry P/E:* Median quarterly price / earnings ratio within 12 Fama French industries based on last twelve months earnings. *Federal Fund Rate:* Effective federal funds rate. *% VC-Backed IPOs Global:* Average quarterly share of global VC-backed IPOs within a 12 Fama French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *# Unicorns:* Number of global VC-funded transactions with a valuation at transaction of above or equal to US$1bn. *Total Unicorn Value (Last Available):* Sum of last available unicorn valuations at transaction date.

Year	# VC Deals	Total Transaction Value (US$bn)	Age (Years)	VC Investments (US$bn)	% Later Stage Investments	Industry P/E	Federal Funds Rate	% VC-Backed IPOs Global	# Unicorns	Total Unicorn Value (Last Available)
1990	433	1.3	1.6	3.6	41%	14.4	8.2%	39.0%		
1991	461	2.9	2.0	2.9	41%	18.7	5.8%	35.4%		
1992	715	6.5	1.8	4.8	48%	19.7	3.7%	33.4%		
1993	332	8.0	1.6	4.4	34%	20.3	3.2%	35.0%		
1994	423	10.5	1.8	4.9	32%	19.2	4.2%	28.1%		
1995	247	19.4	2.7	7.8	35%	20.9	5.8%	30.1%	1	2.8
1996	351	25.3	1.9	16.4	20%	22.4	5.6%	30.5%		
1997	482	34.1	2.2	16.0	35%	23.7	5.7%	20.6%	1	1.1
1998	721	55.2	2.0	26.4	38%	22.9	5.4%	16.3%		
1999	1,527	171.3	1.8	60.7	33%	23.5	5.1%	28.7%	5	6.4
2000	1,502	305.4	1.6	116.6	29%	26.0	6.3%	23.7%	12	9.6
2001	641	114.8	2.2	56.6	35%	24.3	4.0%	10.1%	5	6.3
2002	219	34.3	2.8	33.2	37%	25.1	1.7%	13.6%	2	2.7
2003	157	28.0	3.2	29.7	41%	24.2	1.1%	14.1%	2	2.7
2004	156	21.4	3.8	34.9	43%	26.8	1.4%	31.2%		
2005	624	36.3	2.3	37.9	40%	24.7	3.3%	37.1%	2	4.0
2006	997	57.5	2.3	47.4	40%	25.3	5.0%	37.4%		
2007	936	73.1	2.2	56.1	38%	24.9	5.0%	29.9%	3	19.3
2008	728	44.7	2.5	55.7	47%	18.7	2.1%	16.5%	4	1.0
2009	436	44.3	3.3	36.9	53%	18.4	0.2%	16.7%	5	11.7
2010	992	39.8	4.3	53.6	38%	19.1	0.2%	21.5%	2	
2011	509	71.7	3.6	55.3	52%	18.7	0.1%	25.6%	15	13.3
2012	239	61.6	3.3	43.8	55%	19.3	0.1%	26.5%	15	8.3
2013	227	83.4	3.6	43.8	57%	23.0	0.1%	28.0%	19	8.6
2014	234	289.6	4.3	78.1	62%	24.6	0.1%	30.1%	65	140.0
2015	208	462.6	3.1	85.4	58%	24.5	0.1%	20.6%	118	431.4
Total	14,497	2,103.2	2.2	1,013	43%	22.3	3.7%	26.4%	276	669.2

Figure 1 – Media Coverage Methodology
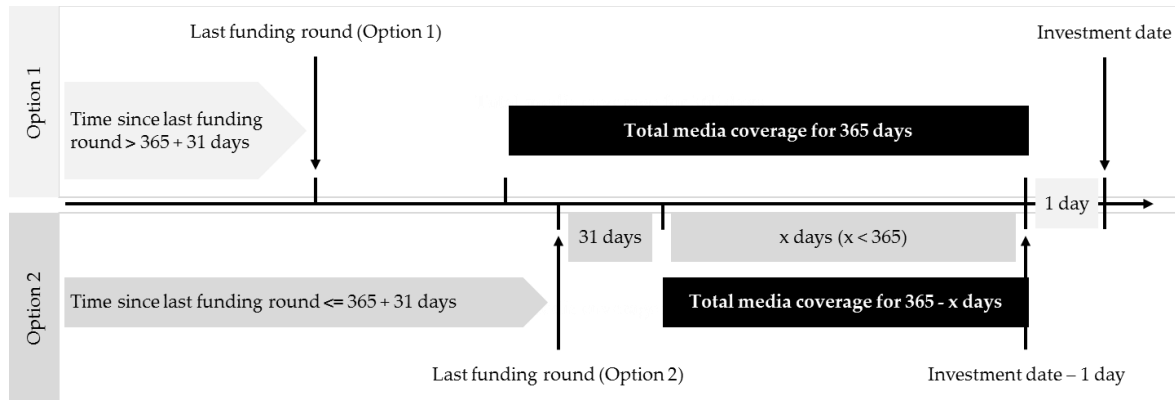
Figure 2 - Unicorns and Total Value at Transaction over Time

 # Unicorn Valuations: Number of deals with value at transaction above or equal to US$1bn. *Total Value at Transaction (in USD$mn):* Sum of unicorn valuations at transaction date within a year.
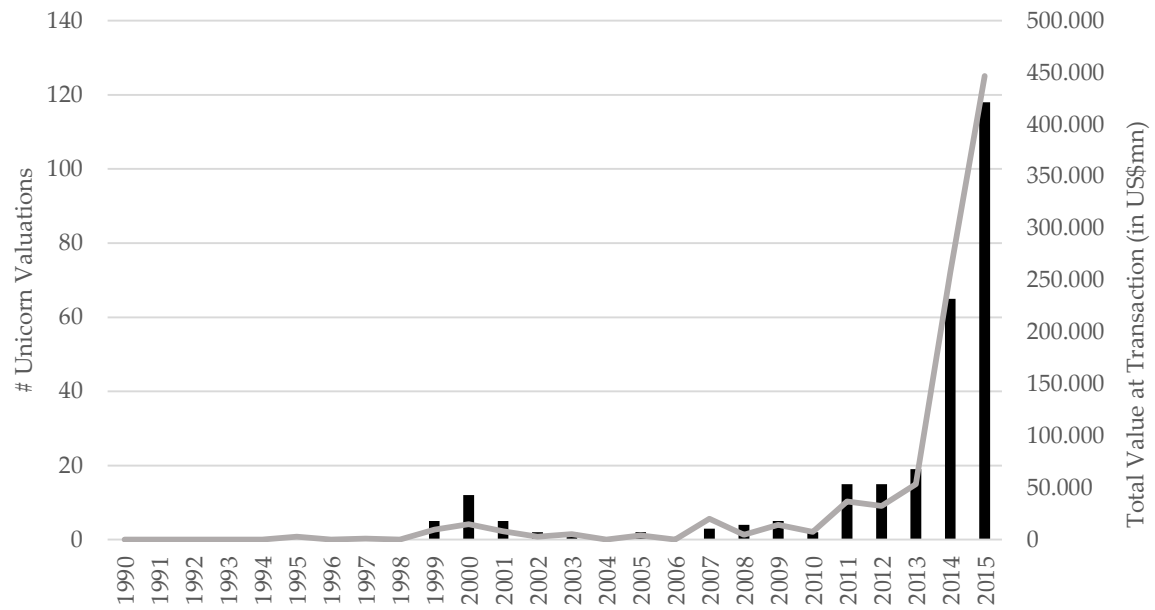
Table 2 - Top 15 Unicorns Since 2012

Top 15 global unicorns (VC-funded transactions with a valuation at transaction of above or equal to US$1bn) with a last unicorn valuation disclosed since 2012.

Rank	Investment Date	Company	Value at Transaction (US$bn)	Total Funding (US$bn)	Nation
1	01.09.2015	Uber Technologies Inc	51.0	6.6	United States
2	28.12.2014	Xiaomi Technology Co Ltd	45.0	1.5	China
3	03.07.2015	Ant Financial Services Group	29.0		China
4	30.06.2015	AirBnB Inc	25.5	2.3	United States
5	23.07.2015	Palantir Technologies Inc	20.0	1.5	United States
6	01.09.2015	Didi Kuaidi	17.4	4.4	China
7	28.05.2015	Snapchat Inc	16.0	1.2	United States
8	01.07.2015	Flipkart Online Services Pvt Ltd	15.0	3.1	India
9	08.05.2015	Pinterest Inc	11.2	1.4	United States
10	19.02.2014	Dropbox Inc	10.4	0.6	United States
11	20.01.2015	Space Exploration Technologies Corp	10.3	1.1	United States
12	17.06.2015	Wework Companies Inc	10.0	0.8	United States
13	01.04.2015	Lufax	9.7	0.5	China
14	01.06.2014	Theranos Inc	9.0	0.1	United States
15	10.06.2015	Spotify AB	8.5	1.4	Sweden
Total			288.0	26.4	

Table 3 – Univariate Results

LN Media Coverage / Day: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *% of Non-PE/VC Investors:* Percentage of non-PE or VC investors per funding round which are: bank affiliates, endowments, pension funds, government programs, individuals, insurance firm affiliates, investment managers, non-private equity firms, SBICs, service providers, university programs and other investors. *Unicorn*: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *LN iPhone Unit Sales Qrt (mn)*: Natural logarithm of quarterly sold units of Apple's iPhone in millions. *Internet Penetration:* Internet users per 100 people from World Bank data of the major regions North America, Europe, APAC (Asia and Pacific) and the rest of the world. *Newspaper Circulation:* Daily newspaper circulation in millions in the U.S. from the Editor and Publisher International Yearbook. *LN Google Ad. Revenues (US$bn):* Natural logarithm of Google's global advertising revenues in US$ billions. *Exceptional Media Coverage:* Difference between the actual number of articles per day per and the predicted number of articles per day.

*** p<0.01, ** p<0.05, * p<0.1.

	(1) *Differences-in-means* **LN Media Coverage / Day**	(2) *Differences-in-means* **% of Non-PE/VC Investors**	(3) *Differences-in-means* **Unicorn**
Time Trend	0.217***	-0.112***	0.151***
Observations	*8,294*	*12,087*	*12,663*
LN iPhone Unit Sales Qrt (mn)	0.047***	-0.014***	0.043***
Observations	*8,294*	*12,087*	*12,663*
Internet Penetration	0.112***	-0.114***	0.045***
Observations	*8,170*	*11,962*	*12,455*
Newspaper Circulation (mn)	-0.007***	0.006***	-0.004***
Observations	*8,170*	*11,962*	*12,455*
LN Google Ad. Revenues (US$bn)	0.023***	-0.017***	0.021***
Observations	*8,294*	*12,087*	*12,663*
LN Media Coverage / Day		0.009	0.338***
Observations		*7,887*	*8,294*
Exceptional Media Coverage	1.000***	0.063***	0.216***
Observations	*7,836*	*7,836*	*7,836*
% of Non-PE/VC Investors			0.009**
Observations			*12,087*

Figure 3 – Transaction Value vs. Media Coverage per Day

Transaction Value (Adj.) in US$bn: Value at transaction in US$bn adjusted for inflation (2009 price level). *Media Coverage / Day*: Media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round.

Table 4 – Sample Overview and Univariate Results

Unicorn: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *Transaction Value (Adj.):* Value at transaction in US$bn adjusted for inflation (2009 price level). *LN Media Coverage / Day*: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year)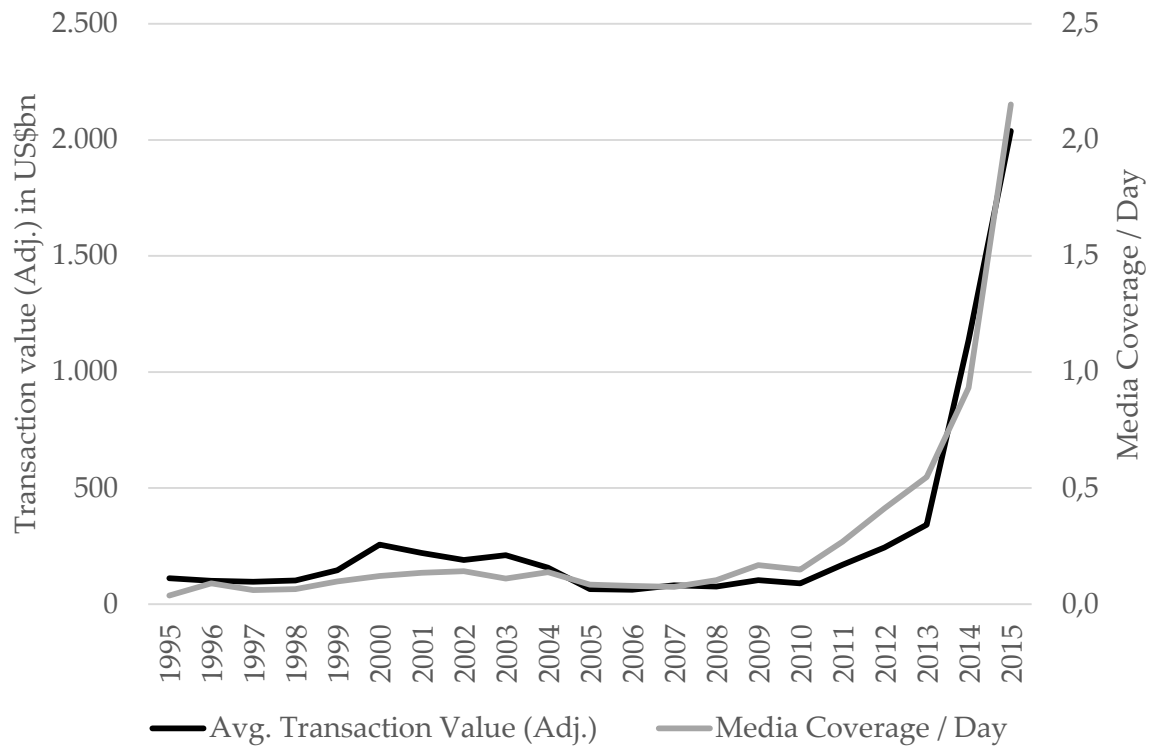 and one day before latest funding round. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *% of Non-PE/VC Investors:* Percentage of non-PE or VC investors per funding round which are: bank affiliates, endowments, pension funds, government programs, individuals, insurance firm affiliates, investment managers, non-private equity firms, SBICs, service providers, university programs and other investors.

*** $p<0.01$, ** $p<0.05$, * $p<0.1$. P-values in parentheses.

Variable	Obs	Mean	Std. Dev.	Min	Max	Unicorn	Non-Unicorn	Diff.
# VC Deals	14,497					276	12,387	
Transaction Value (Adj.)	12,634	180	912	0	46,659	3,156	114	3,042***
LN Media Coverage / Day	8,294	0.1	0.2	0.0	4.1	87%	8%	0.786***
LN Later Stage Investments Qrt (Adj.)	14,497	8.2	1.0	5.8	9.7	9.2	8.3	0.843***
% of High Experienced Investors per Round	12,087	50%	32%	0%	100%	56%	50%	0.068**
No. Investors Invested per Round	12,087	4.4	3.2	1.0	33.0	5.0	4.4	0.635**
LN VC Fundraisings Qrt (t-3 years) (Adj.)	12,888	8.5	1.2	2.9	10.7	9.2	8.4	0.858***
Global VC-Backed IPOs	14,476	26%	16%	0%	73%	22%	26%	-0.043***
Log P/E Industry	14,488	3.3	0.5	-2.1	5.0	3.1	3.4	-0.242***
Return S&P500 LTM	14,055	8%	15%	-59%	41%	8%	8%	0.001
Federal Funds Rate	13,008	3.7	2.3	0.0	10.4	0.8	3.9	-3.098***
LN Days Since Last Unicorn	12,046	4.2	1.6	0.0	6.7	2.2	4.3	-2.115***
LN Age (Mth)	13,482	3.8	0.9	0.0	7.6	4.2	3.8	0.429***
Time Trend	14,497	0.51	0.26	0.01	1.04	0.92	0.52	0.402***
% of Non-PE/VC Investors	12,087	0.20	0.27	0.00	1.00	0.26	0.20	0.057**

Table 5 – Correlation Matrix and VIF Analysis for Multicollinearity

Unicorn: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *LN Transaction Value:* Natural logarithm of value at transaction in US$bn adjusted for inflation (2009 price level). *LN Media Coverage / Day*: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012).

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)	Unicorn	100%												
(2)	LN Media Coverage / Day	52%	100%											
(3)	LN Later Stage Investments Qrt (Adj.)	14%	14%	100%										
(4)	% of High Experienced Investors per Round	2%	2%	0%	100%									
(5)	No. Investors Invested per Round	2%	4%	11%	1%	100%								
(6)	LN VC Fundraisings Qrt (t-3 years) (Adj.)	10%	11%	63%	0%	3%	100%							
(7)	Global VC-Backed IPOs	-4%	-4%	-18%	1%	4%	-22%	100%						
(8)	Log P/E Industry	-7%	-5%	16%	5%	20%	-14%	12%	100%					
(9)	Return S&P500 LTM	0%	-2%	-11%	-3%	0%	-29%	21%	14%	100%				
(10)	Federal Funds Rate	-20%	-17%	-21%	2%	15%	-47%	13%	45%	28%	100%			
(11)	LN Days Since Last Unicorn	-21%	-15%	-50%	-1%	-6%	-29%	9%	-1%	17%	24%	100%		
(12)	LN Age (Mth)	7%	8%	4%	-1%	-2%	11%	-5%	-12%	-3%	-21%	-2%	100%	
(13)	Time Trend	25%	19%	70%	-4%	-9%	63%	-13%	-34%	-19%	-71%	-27%	17%	100%

Table 6 – OLS Regression Results – Media Coverage per Day

LN Media Coverage / Day: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *LN iPhone Unit Sales Qrt (mn)*: Natural logarithm of quarterly sold units of Apple's iPhone in millions. *Internet Penetration:* Internet users per 100 people from World Bank data of the major regions North America, Europe, APAC (Asia and Pacific) and the rest of the world. *Newspaper Circulation:* Daily newspaper circulation in millions in the U.S. from the Editor and Publisher International Yearbook. *LN Google Ad. Revenues (US$bn):* Natural logarithm of Google's global advertising revenues in US$ billions.

Controls include: *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Adj. Media Search*: Dummy variable. (1) if adjustments needed to be made in LexisNexis due to not unique and directly identifiable company names (i.e. search term used "Box Inc." instead of "Box"). (0) if no adjustments were made. *B2C*: Dummy variable. (1) if the company has a business to customers (B2C) and (0) if the company has a business to business (B2B) business model (based on Lev et al. (2010)). *LN Total Funding to Date (Adj.)*: Natural logarithm of total funding received at the investment date adjusted for inflation (2009 price level). *# Rounds*: Number of already received funding rounds at investment date. *No. Investors Invested per Round*: Number of investors invested per funding round. *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *LN Time Since Last Funding Round*: Natural logarithm of time since the last funding round measured in months. *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. *** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses. Constant and Controls not displayed due to space constraints.

	(1)	(2)	(3)	(4)	(5)
	OLS	*OLS*	*OLS*	*OLS*	*OLS*
	LN Media Coverage / Day	**LN Media Coverage / Day**	**LN Media Coverage / Day**	**LN Media Coverage / Day**	**LN Media Coverage / Day**
Time Trend	0.278***				
	(0.000)				
LN iPhone Unit Sales Qrt (mn)		0.051***			
		(0.000)			
Internet Penetration			0.136***		
			(0.000)		
Newspaper Circulation (mn)				-0.008***	
				(0.000)	
LN Google Ad. Revenues (USDbn)					0.023***
					(0.000)
Controls	Yes	Yes	Yes	Yes	Yes
Geography FE	Yes	Yes	Yes	Yes	Yes
Investment Stage FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	7,836	7,836	7,772	7,772	7,836
R-squared	0.173	0.173	0.161	0.161	0.172

Table 7 – OLS Regression Results - % of Non-PE/VC Investors

% of Non-PE/VC Investors: Percentage of non-PE or VC investors per funding round which are: bank affiliates, endowments, pension funds, government programs, individuals, insurance firm affiliates, investment managers, non-private equity firms, SBICs, service providers, university programs and other investors.

LN Media Coverage / Day: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *Exceptional Media Coverage:* Difference between the actual number of articles per day per and the predicted number of articles per day. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012).

*** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses.

	(1) OLS % of Non-PE/VC Investors	(2) OLS % of Non-PE/VC Investors
LN Media Coverage / Day	0.039***	
	(0.008)	
Exceptional Media Coverage		0.063***
		(0.000)
LN Later Stage Investments Qrt (Adj.)	0.020*	0.021*
	(0.095)	(0.090)
% of High Experienced Investors per Round	0.197***	0.198***
	(0.000)	(0.000)
No. Investors Invested per Round	-0.007***	-0.007***
	(0.000)	(0.000)
LN VC Fundraisings Qrt (t-3 years) (Adj.)	-0.005	-0.005
	(0.289)	(0.292)
Global VC-Backed IPOs	0.001	0.001
	(0.972)	(0.975)
Log P/E Industry	0.010	0.011
	(0.236)	(0.221)
Return S&P500 LTM	-0.037	-0.036
	(0.153)	(0.158)
Federal Funds Rate	-0.001	-0.002
	(0.667)	(0.615)
LN Days Since Last Unicorn	-0.005**	-0.005**
	(0.032)	(0.031)
LN Age (Mth)	0.009**	0.009**
	(0.037)	(0.039)
Time Trend	-0.116	-0.107
	(0.178)	(0.214)
Constant	0.096	0.091
	(0.320)	(0.342)
Geography FE	Yes	Yes
Investment Stage FE	Yes	Yes
Time FE	Yes	Yes
Industry FE	Yes	Yes
Observations	7,840	7,836
R-squared	0.105	0.106

Table 8 - Regression Results - Unicorns

Unicorn: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *LN Transaction Value*: Natural logarithm of value at transaction in US$bn adjusted for inflation (2009 price level). *LN Media Coverage / Day*: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. For the Firth Method time FE include the dotcom phase, financial crisis and the time after the Facebook IPO. Industry FEs are excluded. *** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses.

	(1) *Logit* **Unicorn**	(2) *OLS* **LN Transaction Value**	(3) *Firth Method* **Unicorn**
LN Media Coverage / Day	3.049***	1.856***	2.936***
	(0.000)	(0.000)	(0.000)
LN Later Stage Investments Qrt (Adj.)	2.114***	0.395***	2.341***
	(0.000)	(0.000)	(0.000)
Global VC-Backed IPOs	-2.116	0.327***	-2.646***
	(0.200)	(0.002)	(0.009)
No. Investors Invested per Round	0.090**	0.060***	0.078**
	(0.013)	(0.000)	(0.031)
LN VC Fundraisings Qrt (t-3 years) (Adj.)	-0.332	0.085***	-0.435
	(0.411)	(0.000)	(0.126)
% of High Experienced Investors per Round	0.524	0.431***	0.556
	(0.238)	(0.000)	(0.157)
Log P/E Industry	-0.199	0.052	-0.173
	(0.530)	(0.154)	(0.589)
Return S&P500 LTM	0.488	-0.564***	-1.703
	(0.782)	(0.000)	(0.186)
Federal Funds Rate	-0.436*	-0.005	-0.129
	(0.065)	(0.690)	(0.405)
LN Days Since Last Unicorn	-0.024	-0.035***	0.010
	(0.831)	(0.000)	(0.931)
LN Age (Mth)	-0.482**	0.004	-0.358*
	(0.021)	(0.767)	(0.062)
Time Trend	13.586**	-3.390***	2.558
	(0.013)	(0.000)	(0.278)
Constant	-21.940***	0.161	-20.039***
	(0.000)	(0.614)	(0.000)
Geography FE	Yes	Yes	Yes
Investment Stage FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Industry FE	Yes	Yes	No
Observations	7,733	7,840	7,887
R-squared		0.460	
Pseudo R2	0.571		

Table 9 - Sample Split, Sub-Sample and Other Robustness Checks

Unicorn: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *LN Media Coverage / Day*: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *Exceptional Media Coverage*: Difference between the actual number of articles per day per and the predicted number of articles per day (based on model from Table1). *LN iPhone Unit Sales Qrt (mn)*: Natural logarithm of Apple's iPhones sold in a quarter (in millions). *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. For the Firth Method time FE include the dotcom phase, financial crisis and the time after the Facebook IPO. Industry FEs are excluded. *** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses. Constant not displayed.

	(1) Logit (Post FB IPO) Unicorn	(2) Logit (Pre FB IPO) Unicorn	(3) Logit (Large Deals) Unicorn	(4) Logit Unicorn	(5) Logit Unicorn
LN Media Coverage / Day	3.483***	3.266***	1.731***		3.040***
	(0.000)	(0.000)	(0.000)		(0.000)
LN Later Stage Investments Qrt (Adj.)	1.806	1.035	1.849***	1.947***	2.697***
	(0.514)	(0.163)	(0.002)	(0.000)	(0.000)
Global VC-Backed IPOs	0.087	-1.443	-2.936**	-2.176	-2.135
	(0.982)	(0.525)	(0.048)	(0.184)	(0.204)
No. Investors Invested per Round	0.338***	-0.009	0.048	0.108***	0.091**
	(0.000)	(0.865)	(0.380)	(0.002)	(0.012)
LN VC Fundraisings Qrt (t-3 years) (Adj.)	-2.310	-0.020	0.129	-0.287	-0.389
	(0.190)	(0.962)	(0.776)	(0.457)	(0.249)
% of High Experienced Investors per Round	-0.381	1.376**	0.211	0.686	0.500
	(0.585)	(0.034)	(0.728)	(0.120)	(0.270)
Log P/E Industry	-0.902	-0.251	-0.258	-0.228	-0.254
	(0.696)	(0.385)	(0.442)	(0.427)	(0.392)
Return S&P500 LTM	-11.711*	0.769	-1.572	0.331	0.212
	(0.069)	(0.675)	(0.263)	(0.842)	(0.893)
Federal Funds Rate	-27.212	-0.250	0.101	-0.420*	-0.346
	(0.191)	(0.258)	(0.636)	(0.068)	(0.128)
LN Days Since Last Unicorn	0.093	-0.143	-0.124	-0.040	-0.035
	(0.737)	(0.159)	(0.386)	(0.704)	(0.764)
LN Age (Mth)	-0.822	-0.596**	-0.245	-0.540***	-0.446**
	(0.138)	(0.010)	(0.476)	(0.010)	(0.031)
Time Trend	41.012*	7.703	8.139***	13.740***	
	(0.091)	(0.139)	(0.002)	(0.007)	
Exceptional Media Coverage				2.840***	
				(0.000)	
LN iPhone Unit Sales Qrt (mn)					0.704*
					(0.091)
Geography FE	Yes	Yes	Yes	Yes	Yes
Investment Stage FE	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Observations	377	6,836	591	7,543	7,733
Pseudo R2	0.581	0.448	0.504	0.547	0.567

Table 10 - First and Last Time Unicorn

First Time Unicorn: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn for the first time, (0) otherwise. *Last Time Unicorn:* Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn at the last valuation date, (0) otherwise.

LN Media Coverage / Day: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *Exceptional Media Coverage*: Difference between the actual number of articles per day per and the predicted number of articles per day (based on model from Table1). *LN iPhone Unit Sales Qrt (mn)*: Natural logarithm of Apple's iPhones sold in a quarter (in millions). *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. For the Firth Method time FE include the dotcom phase, financial crisis and the time after the Facebook IPO. Industry FEs are excluded. *** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses.

	(1) Logit First Time Unicorn	(2) Logit Last Time Unicorn
LN Media Coverage / Day	2.874***	3.158***
	(0.000)	(0.000)
LN Later Stage Investments Qrt (Adj.)	2.210***	2.570***
	(0.000)	(0.000)
Global VC-Backed IPOs	-3.370*	-3.089
	(0.084)	(0.164)
No. Investors Invested per Round	0.098**	0.087**
	(0.012)	(0.046)
LN VC Fundraisings Qrt (t-3 years) (Adj.)	-0.419	-0.550
	(0.334)	(0.213)
% of High Experienced Investors per Round	0.391	0.012
	(0.427)	(0.983)
Log P/E Industry	-0.029	-0.023
	(0.941)	(0.965)
Return S&P500 LTM	-0.352	-1.660
	(0.864)	(0.446)
Federal Funds Rate	-0.257	-0.657**
	(0.317)	(0.018)
LN Days Since Last Unicorn	0.059	-0.090
	(0.641)	(0.534)
LN Age (Mth)	-0.397	-0.215
	(0.111)	(0.409)
Time Trend	13.325**	14.915**
	(0.031)	(0.011)
Constant	-23.154***	-21.485***
	(0.000)	(0.001)
Geography FE	Yes	Yes
Investment Stage FE	Yes	Yes
Time FE	Yes	Yes
Industry FE	Yes	Yes
Observations	7,642	7,499
Pseudo R2	0.511	0.557

Table 11 – Two-Stage Least-Square Regression

LN Media Coverage / Day: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *Unicorn*: Dummy (1) if private VC-funded valuation at transaction is larger or equal US$1bn, (0) otherwise. *LN Transaction Value:* Natural logarithm of value at transaction in US$bn adjusted for inflation (2009 price level). *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *LN Distance San Francisco*: Instrumental variable for LN Media Coverage / Day. Natural logarithm of distance to San Francisco measured in kilometers. For companies outside of the USA, the distance is measured via the middle of each country by using Google Maps. *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. For the Firth Method time FE include the dotcom phase, financial crisis and the time after the Facebook IPO. Industry Fes are excluded. *** $p<0.01$, ** $p<0.05$, * $p<0.1$. P-values in parentheses.

	(1) First Stage **LN Media Coverage / Day**	(2) Second Stage **Unicorn**	(3) Second Stage **LN Transaction Value**
LN Media Coverage / Day		0.542***	8.092***
		(0.000)	(0.000)
LN Later Stage Investments Qrt (Adj.)	0.015	0.019***	0.301***
	(0.139)	(0.002)	(0.000)
Global VC-Backed IPOs	0.017	-0.030**	0.228
	(0.472)	(0.042)	(0.211)
No. Investors Invested per Round	0.004***	-0.001	0.035***
	(0.000)	(0.104)	(0.000)
LN VC Fundraisings Qrt (t-3 years) (Adj.)	0.002	-0.005**	0.075***
	(0.613)	(0.032)	(0.005)
% of High Experienced Investors per Round	0.018**	0.004	0.319***
	(0.019)	(0.430)	(0.000)
Log P/E Industry	0.004	-0.002	0.035
	(0.602)	(0.727)	(0.580)
Return S&P500 LTM	-0.023	-0.002	-0.404**
	(0.321)	(0.888)	(0.025)
Federal Funds Rate	-0.006*	-0.004**	0.033
	(0.057)	(0.049)	(0.169)
LN Days Since Last Unicorn	0.001	-0.001	-0.039***
	(0.694)	(0.395)	(0.008)
LN Age (Mth)	-0.002	-0.002	0.022
	(0.543)	(0.399)	(0.391)
Time Trend	0.187**	0.132***	-4.527***
	(0.011)	(0.008)	(0.000)
LN Distance San Francisco	-0.005***		
	(0.000)		
Geography FE	Yes	Yes	Yes
Investment Stage FE	Yes	Yes	Yes
Time FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Observations	7,613	7,613	7,613
R-squared	0.104	0.028	-0.658
Anderson LM statistic	28.590		
Cragg-Donald Wald F statistic	28.554		

Table 12 – Different Valuation Measures

Change Transaction Value: (Value at transaction in US$bn adjusted for inflation (2009 price level)) / (Previous value at transaction in US$bn adjusted for inflation (2009 price level) from a previous funding round) - 1. *TV/Employees:* Value at transaction in US$bn adjusted for inflation (2009 price level)) / number of employees. *TV/Age:* Value at transaction in US$bn adjusted for inflation (2009 price level)) / age in months. *LN Media Coverage / Day*: Natural logarithm of media coverage per day. Media coverage is measured similar to Petkova et al. (2013) with number of media articles from LexisNexis between one month after last funding (maximum of one year) and one day before latest funding round. *Exceptional Media Coverage*: Difference between the actual number of articles per day per and the predicted number of articles per day (based on model from Table1).

Controls include: *LN Later Stage Investments Qrt*: Natural logarithm of total quarterly global later stage investments by VCs (investments after third funding round) in US$mn adjusted for inflation (2009 price level). *Global VC-Backed IPOs*: Average quarterly share of global VC-backed IPOs within a 12 Fama-French industry as percentage of total number of global IPOs (using only IPOs with common, ordinary or class A shares). *No. Investors Invested per Round*: Number of investors invested per funding round. *LN VC Fundraisings Qrt (t-3 years) (Adj.)*: Natural logarithm of total global funds raised by venture capital funds per quarter three years before investment date. Adjusted for inflation (2009 price level). *% of High Experienced Investors per Round*: Percentage of highly experienced investors per funding round. High experience is measured as above median investor age per year. The percentage is calculated by calculating the average of highly experienced investors per funding round. *Log P/E Industry*: Logarithm of quarterly industry price/earnings ratio. Price/earnings ratio is calculated by the sum of total quarterly industry market capitalization divided by the sum of total quarterly industry earnings. *Return S&P500 LTM*: S&P500 return over the last twelve months (by month end). *Federal Fund Rate*: Effective federal funds rate. *LN Days Since Last Unicorn*: Natural logarithm of days since the last unicorn valuation was disclosed. *LN Age (Mth)*: Natural logarithm of company's age in months measured as time difference between latest funding and founding date. *Time Trend*: The variable equals 0.01 in the first quarter of 1990 and increases by 0.01 for each quarter onward (based on Gao et al., 2012). *Geography FE*: Include dummy variables for continents: North America, Europe and Asia-Pacific. *Investment Stage FE*: Fixed effects for the different investment stages: seed, early stage, expansion, later stage, acquisition or public market. *Time FE*: Include dummy variables for the recession period 1990 – Mar 1991, Apr 1991 – Aug 1998, dot-com phase (Sep 1998 – Aug 2000), recession period Sep 2000 – Nov 2001, Dec 2001 – Nov 2007, the financial crisis (Dec 2007 – Jun 2009), Jul 2009 – 17. May 2012 and the time after the Facebook IPO (18. May 2012 – 23. Oct 2015). *Industry FE*: Fixed effects for the 12 Fama-French industries. *** p<0.01, ** p<0.05, * p<0.1. P-values in parentheses. Robust OLS regression. Constant not displayed.

	(1)	(2)	(3)	(4)	(5)	(6)
	OLS	*OLS*	*OLS*	*OLS*	*OLS*	*OLS*
	Change Transaction Value	**Change Transaction Value**	**TV/Employees**	**TV/Employees**	**TV/Age**	**TV/Age**
LN Media Coverage / Day	0.479*		2.824***		23.287***	
	(0.069)		(0.004)		(0.000)	
Exceptional Media Coverage		0.591**		2.623**		21.108***
		(0.032)		(0.011)		(0.000)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Geography FE	Yes	Yes	Yes	Yes	Yes	Yes
Investment Stage FE	Yes	Yes	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,096	4,093	2,070	2,067	7,840	7,836
R-squared	0.034	0.035	0.097	0.096	0.124	0.114