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Ephemeral Returns: Social Network Valuations and Perceived Privacy

Research-in-Progress

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Abstract

This paper investigates the valuations of social media platforms (SMPs) in light of the recent initial public offering (IPO) of Snapchat. Innovative platforms with unproven business models and non-voting shares commanding relatively high valuations at IPO stage as well as a shift in investor profile towards personal rather than institutional investors have eerie connotations with the tech bubble of 2000. We posit that investors value a passive audience for SMPs rather than an active user community and apply potentially unrealistic customer lifetime values and expected user growth in a highly competitive market. We also posit that investors overestimate willingness to participate, the potential success in the adoption of paid services and do not account fully for perceived or real privacy features.

Keywords: Initial Public Offering, Firm Valuation, Willingness to Participate, Privacy/Information Privacy, Community Engagement

Introduction

The recent IPO of Snapchat (Snap Inc.), March 2nd 2017, demanded relatively high market multiple valuations despite the issue of non-voting dual class shares. These shares remove the voting rights of ordinary shareholders and have been shown to incentivize empire-building and increase the likelihood of management making shareholder-value destroying decisions (Wen 2014). Snapchat has highlighted the rise in valuations of social media platforms (SMPs). Changes in investor profile have also been highlighted with many personal investors and product users purchasing shares in what would be considered a high-risk IPO (Graham 2017) are raising alarms in certain circles of the possibility of pre-2000 bubble valuations of technology firms. The prominence of personal investors compared to institutional investors has been identified as a hall mark of the dot com valuation bubble (Griffin et al. 2011).

Multiple social media platforms (SMPs) have emerged in recent years vying for a consistent monthly active user base. SMPs are generally viral in their adoption by users (adoption grows faster as more users adopt before reaching critical mass) through the use of free or once-off payment smartphone applications and web-based profiles. Their associated social media business models rely upon future cash flow from advertising revenue, user micro-transactions, and optional application purchase fees. We argue that these platforms fall into three categories depending on their level of interaction; private, semi-private or public. These platforms also have associated privacy features that may affect valuation, such as end-to-end encryption or ephemeral communications (self-destructing). Ephemeral communications can be defined as those lasting a very short time, in SMP terms, this period ranges from 1 second up to 24 hours and can be unsecured (Snapchat) or self-destructing (Telegram).

Analysts and the market generally find the valuation of these companies to be extremely difficult due to the uncertainty of future revenue streams and the infancy of the business model (Cao et al. 2014). Traditional measures of firm value such as; relative valuation, discounted cash flow (DCF) (Romanova et al. 2012) and more recently real options methods (Doffou 2015) fail to adequately measure the value of many highly innovative technology enabled firms. Problems exist in forecasting growth rates in users and the potential adoption of freemium or premium features (Shi et al. 2016).

In this paper, the research examines the valuation of messaging platforms and SMPs. We propose that underwriter's expectations are in line with company performance and future earnings, however irrational exuberance on behalf on some investors drives prices high above the IPO price in the post-IPO months and potentially inflated estimations exist in the expected adoption of premium or paid features in the business model of social media platforms. We also investigate whether markets place a premium on the use of perceived or real privacy features.

An alternative valuation model for SMPs is explored, combining the existing theory and models of valuing technology based companies via DCF (Romanova et al. 2012), real options (Doffou 2015) and customer lifetime value (CLV) (Schulze et al. 2012). The paper concludes by outlining next steps.

Literature Review

Many contributions have been made to attempts to value internet-based or highly innovative IT enabled firms. These valuations focus on traditional company valuation methods including DCF (Romanova et al. 2012) options valuation (Cao et al. 2014; Doffou 2015; Schwartz and Moon 2000, 2001), customer lifetime value (Schulze et al. 2012) and value per monthly active user used by industry. However, the problem with many of these methods lies in the uncertainty and possible range of measurements, in particular, user numbers. These efforts also treat any internet based company equally in their valuation. However, we argue that aggregation of these firms may be over simplistic as many operate across all sectors of traditional business and have different risks associated with each industry and some (e.g. SMPs) operate in entirely new sectors that have developed since the creation of the internet. This research analyses the effectiveness of these models in valuing a set of SMPs while also investigating possible value mitigating factors such as privacy as users have been shown to value privacy highly and avoid advertising deemed too customized to the individual (Jeong and Kim 2017; Jung 2017).

We also investigate the competitive advantage of these firms and their ability to protect these advantages while other companies attempt to compete them away (Acemoglu and Cao 2015; Mithas et al. 2016). These advantages most often come in the form of innovative and unique features that are difficult and

complicated to protect (Sherwin 2016) and are thus are often cloned by competitors. We focus on the strategy of Facebook in its acquisition of Instagram, offer to purchase Snapchat and subsequently use Instagram to mimic features of Snapchat.

Some of the companies chosen for analysis may potentially be good candidates to empirically test the value proposition of dual class shares for SMPs. Nuesch (2016) finds that dual class shares can improve firm performance where external financing is needed and suggests that this may benefit social media firms in particular, whereas Wen (2014) finds that dual class shares have been shown to incentivize empire-building and increase the likelihood of management making shareholder-value destroying decisions.

Many SMPs also rely on advertising as the key source of revenue which is heavily correlated with user numbers for the firm and followers for individuals (Tang et al. 2012). However, this model fails to justify high valuations in the industry. Much of the valuation potential is expected in the form of further growth in user base and the ability to monetize consumers. The move from a new product diffusion model (Shi et al. 2016) or free model to a freemium or premium business model can be uncertain and dependent on factors such as service quality (Hamari et al. 2017) and community engagement (Oestreicher-Singer and Zalmanson 2013) with the failure of this business model potentially causing the failure of the business (Cziehso and Schaefers 2016).

Methodology

We begin by analyzing the IPO and acquisition valuation of selected SMPs. We propose to analyze the initial public offering (IPO) of Snapchat (Snap Inc.) on the New York Stock Exchange (NYSE), focusing on underwriter expectations in the period leading up to the IPO and subsequent performance of the stock from the first day of trading for a period of six months. We will compare this performance to the IPOs of Twitter, LinkedIn, Line and Facebook. We also include the valuations of WhatsApp, WeChat, Skype, and Instagram. Valuations are taken at IPO or acquisition dates for the firms to show an accurate market valuation, funding round valuations are not considered due to the different associated risks between venture capital and IPO stages (Bayar and Chemmanur 2011).

Comparable companies were chosen on the basis of multiple similarities in the business model and their respective success factors (DeLone and McLean 1992) as well as the type of network and privacy level adopted by the SMP. These companies which at the time of IPO had uncertain future revenue streams and projections around numbers of users. Valuations of these companies are also highly dependent on the numbers of regular platform users. We also compare firms by the privacy level offered by the service.

Social Network Characteristics

Our results were analyzed by separating SMPs based upon their level of interpersonal connectivity. Platforms were divided into three categories: private, semi-private and public networks (*Figure 1*). Private platforms allow users to communicate with selected users individually or in groups, where users are identified by e-mail or phone numbers with optional profile elements (WhatsApp, Viber, Kik, etc.). Semi-private platforms allow users to communicate individually or in groups with added functionality for tracking other user activity in an opt-in style public profile (Snapchat, Instagram, Snow, etc.). Semi-private network users are identified by a private profile or an opt-in public profile. Finally, public platforms allow users to communicate individually, in groups or to a public audience. User profiles in public networks tend to be extensive in detail and users can be identified using multiple means (email, name, username, phone number, etc.). Public networks often offer the ability to opt-out of a public and into a semi-private profile (Facebook, Twitter, LinkedIn, etc.).

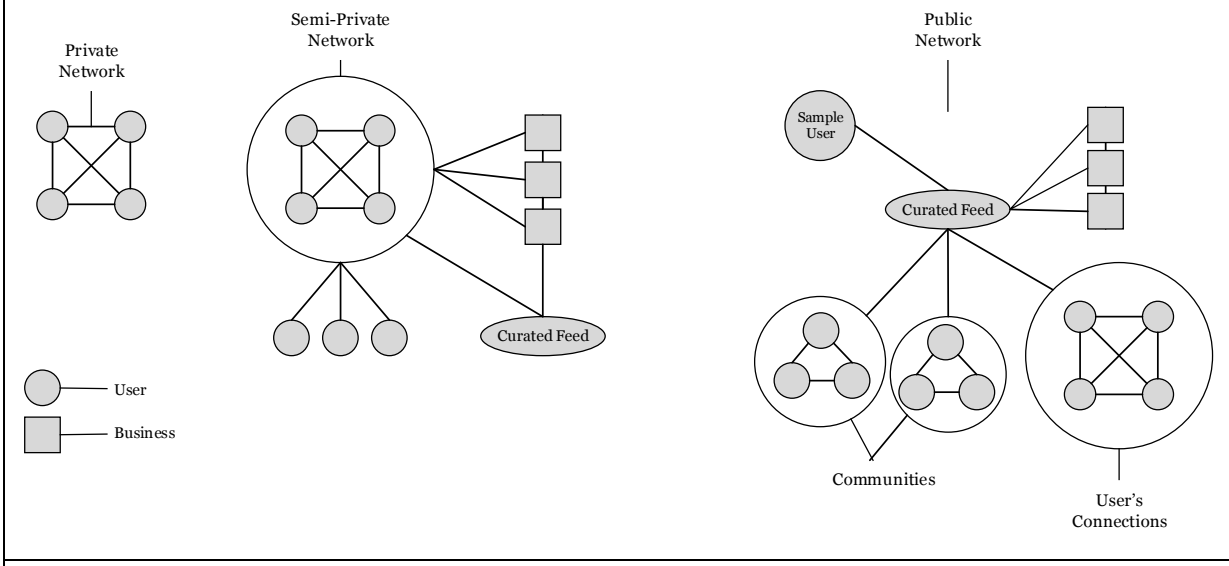

Figure 1. Network Characteristics Model

Network characteristics allow external interaction at differing levels. External interactions can be separated by the multiple entities involved based on their individual goals; businesses intend to communicate information about their product or service to users via advertising, other users intend to communicate to individuals or a public audience and communities engage for the purpose of gaining greater exposure. Each level of communication exposes extra points in the network that can be monetarily exploited.

Private networks tend to be messaging and communication platforms used as a cheap or free alternative to traditional communications such as SMS or calls. The direct nature of communication of these platforms to exchange timely information may increase the levels of engagement and trust building of these platforms. Private networks with high levels of trust may provide increased advertising opportunities for a broad range of firms, such as financial and healthcare. Semi-private networks advance messaging platforms with the ability for businesses to advertise directly to users using profile information to identify suitable market segments if the user opts to view these advertisements through a curated feed.

Public networks allow users to communicate to a wide audience including; their private network of connections, communities, individuals, and businesses. Public networks also integrate a curated feed with updates from your network, this feed tends to be the main hub of activity for the user. The nature of the public feed may reduce the rate of user engagement as information is not as time sensitive as private networks. Businesses can advertise to wide market segments without the need for the user to opt-in. The value proposition for SMPs lies in the use, interaction and suitability of the curated feed, advertising is likely to be more valuable if users actively engage their feed (Phua et al. 2017).

Investigating levels of user trust in SMPs and in particular a cross section of user demographics would allow further input to the existence of the privacy paradox (Dienlin and Trepte 2015) and whether younger users fail to adequately value their privacy. This evidence conflicts with other research (Jeong and Kim 2017; Jung 2017) which finds that ad relevance deemed too customized to the individual may cause avoidance by users.

Security Features and Transmission Characteristics

Users of SMPs are likely to place a premium on the value of their data and thus are more likely to adopt a platform that they trust or that uses privacy features. We investigate the privacy of each platform to identify if a premium on privacy exists related to user communications and ad relevance (Jeong and Kim 2017). In particular, we investigate if users adequately differentiate between perceived and real privacy of platforms as it is possible users may regard ephemeral communications as being private, however, this may not necessarily be the case.

As can be seen in Table 1, many platforms adopt end-to-end encryption in response to the increasingly compromising nature of data transmitted by individuals in messaging, e-commerce and other communications. End-to-end encryption ensures that data sent by one individual to another is protected at all points in the transmission (sender, network, receiver, etc.) (Lo et al. 2008). This feature is often a key selling point of platforms and automatic for all users (Signal, Telegram, etc.). However, some platforms require users to opt-in to this feature, with users often unaware of its availability or the necessity to opt-in (Facebook, Line).

Mass adoption of social media and the early age adoption of these platforms has led to concerns from several parties in the security and privacy of transmitted information. Ethical standards of these platforms, with many users under the legal age of consent, require a high level of protection around user information and sent data (Dowdell et al. 2010; Hasinoff and Shepherd 2014). Further investigation may be required to discover user attitudes to privacy and understanding that ephemeral messaging is not necessarily encrypted. We anticipate the need to perform an in depth survey of user privacy perception versus real privacy and further investigation of platform providers privacy features and protocols.

Platforms	**End-to-End Encryption**	**Ephemeral Messaging**	**Contact Verification**	**Code Audit**
Facebook	x*			x
Instagram				
KakaoTalk	x			
Kik				
Line	x*			
Signal	x		x	
Skype				x
Slingshot		x		
Snapchat		x		
Snow		x		
Telegram	x		x	x
Twitter				
Viber	x	x		x
WeChat				
Whatsapp	x		x	x
Wickr	x	x	x	x
* Requires opt-in				

Table 1. Platform Privacy Features

Valuation Models

To value the selected companies we will use valuation models that have been empirically tested for accuracy in the field of highly innovative technology enabled companies. We first use a traditional DCF approach combined with risk factors (Romanova et al. 2012). Second, we use a model which incorporates customer lifetime value of the platform (Schulze et al. 2012). Finally, we use a modified Schwartz and Moon model developed by Doffou (2015) which combines real options, DCF and risk weightings. These models are will be used to value Facebook, Snapchat, Twitter, Line, and LinkedIn at the date of IPO in the New York Stock Exchange (NYSE). The models above provided a wide variance of valuations as can be seen in table 2 below.

Company	Market Value (IPO/acquisition)	Romanova et al.	Schulze et al.	Doffou
Facebook	333.5bn	270.7bn	302.5bn	290.2bn
Twitter	24.9bn	11.6bn	12.0bn	19.2bn
Instagram	1.0bn*	0.8bn	1.8bn	2.3bn
Snapchat	28.3bn	12.3bn	11.8bn	11.8bn
Line	8.7bn	5.2bn	3.4bn	4.3bn
Whatsapp	19.0bn*	1.7bn	0.6bn	0.9bn
Skype	8.5bn*	1.8bn	2.0bn	4.4bn
WeChat**	83.6bn	74.0bn	67.6bn	69.2bn
*Value at acquisition **Half of Tencent value				

Table 2. IPO/acquisition and theoretical model valuations

Preliminary Findings

Investor profiles vary widely with worrying trends toward personal investors and away from institutional investors, evident in the recent glut of purchases by Snapchat users and millennials of shares in Snapchat's IPO (Graham 2017). The trend of personal investors cherry picking high-risk stocks was a hall mark of the dot com bubble in 2000 (Griffin et al. 2011). Market valuations of SMPs provide a wide range of implied values per MAU. However many companies only disclose figures for MAUs and not for DAUs, as can be seen in Table 3. User engagement appears to not be factored into current market prices with the percentage of users who use SMPs on a daily basis providing a wide range. This percentage serves to highlight the active (DAU) and passive (MAU) audience for these platforms with active users more likely to utilize features and engage in the platform and community leading to a higher likelihood of monetization (Di Gangi and Wasko 2016; Khan 2017). WeChat has proven a micro-transactional business model in Asian economies and boasts DAUs of 768m, 90.78% of MAUs.

Users potentially appear to apply a premium to perceived privacy in their use of social networks, whether the privacy feature is an end-to-end encryption on messaging or the ephemeral nature of communications, networks with higher privacy features tend to attract a larger number of users. This area is in need of further investigation in future work as to whether users comprehend perceived privacy versus actual privacy and any opt-in requirements. Using our analysis of privacy features (Table 1), we have provided a score for SMPs for privacy on a scale of 0-3 (lowest to highest privacy).

Comparable Firms	SMP Type	Platform Privacy	DAU's	MAU's	Company Value	Value per MAU	Daily %
Snapchat	Semi-Private	0	158m	301m	28.3bn	94.02	52.49
Viber	Private	2	-	260m	0.9bn	8.57*	-
KakaoTalk	Private	1	-	140m	1bn	67.50*	-
WeChat	Private	0	768m	846m	83.6bn	98.82	90.78
Line	Private	1	134m	218m	8.7bn	39.91	61.46
WhatsApp	Private	3	1,000m	1,300m	22bn	31.66*	76.92
Kik	Private	0	150m	300m	-	3.33**	50.00
Telegram	Private	3	-	100m	-	-	-
Instagram	Semi-Private	0	200m	700m	1bn	33.33*	28.57
Facebook	Public	2	1,227m	1,860m	333.5bn	179.30	65.96
Skype	Private	0	100m	300m	8.5bn	28.33*	33.33
Twitter	Public	0	100m	215m	24.9bn	115.81	46.51
Wickr	Private	3	-	.088m	-	-	-
Signal	Private	2	-	.41m	-	-	-
Snow	Semi-Private	0	-	40m	.18bn	4.50	-
*Values per user at date of acquisition **Values per user at most recent funding round							

Table 3. Platform usage statistics

Contribution to Theory

This paper potentially contributes to the three schools of theory. First, the research contributes to the methodologies for the valuation of highly technology enabled companies (Doffou 2015; Romanova et al. 2012; Schulze et al. 2012). Secondly, there is a contribution to the value of perceived privacy in social media and information sharing (Jeong and Kim 2017; Jung 2017; Khan 2017). Finally, we contribute to the theory of valuation bubbles, speculative growth and supernormal returns on shares in innovative environments and uncertain business models (Bouwman et al. 2012; Griffin et al. 2011; Ofek and Richardson 2003).

We argue that many tech start-ups are themselves mature companies at IPO stage and that estimations of new user generation overestimate future returns of the company. We also argue that the generation of users is dependent on the free availability of the service and that the use freemium services contribution to market value is volatile and unpredictable (Oestreicher-Singer and Zalmanson 2013) as the willingness to pay for premium services and change of business model has high associated risk factors (Ngobo et al. 2012; Wang et al. 2014).

We also posit a new theory that viral user adoption leads to a perceived market assumption of disruptive technology, a new market and value network that threatens an existing market and value network, exponential user adoption and an associated premium on valuation regardless of the actual level of disruption caused by the new technology and the risks associated with attempts to monetize the user base.

Updated Valuation Model

Current valuation models that we have used in our methodology tend to override differences in the underlying business models of firms in order to create an industry wide solution for valuation of SMPs. We recommend that a specific model is developed by augmenting the traditional DCF model for risk factors and business model features of social networks.

A future model would separate revenue streams from advertising and customer spend via micro-transactions. Customer spend should be modified from the empirical measure of customer lifetime value (Schulze et al. 2012), to account for the risk that some users may not wish to pay for premium features resulting in a low willingness to pay (Ngobo et al. 2012; Oestreicher-Singer and Zalmanson 2013; Parent et al. 2011; Wang et al. 2014). A user base should also be calculated using a growing perpetuity formula discounted at the rate of expected user falloff in participation to gauge the daily active user base in perpetuity. Quarterly past observations of user number would be incorporated over a minimum period of 8 quarters. The equation would then be discounted based on the platforms contribution to two factors; reducing the prevailing degree of separation (DoS) of the highest performing competitor (Daraghmi and Yuan 2014; Kwak et al. 2010), and the publicity of user profiles. Publicity of user profiles would allow for a more integrated community and active participation in platform usage leading to greater benefits to advertisers and a higher willingness to pay and advertising revenues (Oestreicher-Singer and Zalmanson 2013; Phua et al. 2017). Privacy of user profile will be analyzed to determine whether users are more likely to interact with a broader range of advertising and whether user engagement levels in platforms increases advertising revenues through a higher rate of interaction. Valuations of companies should scale to the centrality of the curated feed of information for users, private networks should have low valuations with revenues restricted to users' willingness to use microtransactions, semi-private networks should be valued higher with similar micro-transactions as well as advertising revenue, and public networks should be valued highest with higher advertising revenues and a community basis to increase willingness to pay. SMPs should also gain a higher valuation with patents on features that are deemed to give rise to competitive advantage.

$$Share\ Price = \int (User\ Engagement, Privacy, Patents, Investor\ Control, User\ Trust)\left[User\ Base\big(Advertising\ Revenue + (CLV(WTP))\big)\right]$$

Contribution to Practice

This research potentially contributes to the practice of equity analysis and firm valuation at all stages of valuation. Innovative technology firm valuations are particularly difficult with little historic returns or financial accounts to analyze. This valuation is further complicated by the uncertainty of the user base growth projections and the assumptions of the firm's ability to monetize users. A specific model to value SMPs would greatly reduce risk and volatility in the sector with Twitter and Facebook, in particular, having consistently large trading volumes. With many SMPs likely to enter IPO stages in the coming months and years, a true valuation of risks and potential value for these firms is necessary.

Next Steps

Some preliminary investigations have taken place in the evaluation of platforms and the active or passive nature of their user base. We have also begun to investigate the value of perceived privacy features by users as well as their awareness of their ability to opt-in to security measures.

Further investigation is ongoing in the area of valuations using empirically tested models (Doffou 2015; Romanova et al. 2012; Schulze et al. 2012) and results are awaited for these tests to fully gauge the market's estimation of SMPs value.

We propose the investigation of the following hypotheses on the valuations of SMPs;

Hypothesis 1: Privacy levels of platforms positively influence valuations of SMPs

Hypothesis 2: Platform engagement levels positively influence valuations of SMPs

Hypothesis 3: Platform trust positively influences valuations of SMPs

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