The Impact of Social Media on Venture Capital Financing: Evidence from Twitter Interactions
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Abstract
We examine how information acquisition through social media affects venture capital (VC) investments into VC-backed startups. We collect a unique data set from Twitter API to measure the impact of portfolio companies owned social media (OSM) and earned social media (ESM) on the structure of VC investments. We find evidence consonant with the hypothesis that startup firms’ social engagement affects the staging of VC financing, the VC syndicate structure, and the probability of a successful exit. If a portfolio company’s social media accounts are more active, and the company has a higher engagement volume with its followers, VC firms reduce the extent of stage financing and are less likely to syndicate with each other in financing such a portfolio company. In particular, our results demonstrate that entrepreneurs with higher OSM and ESM engagement have fewer VC financing rounds, a smaller number of VCs in their VC syndicate, a lower probability of VC syndication, a higher probability of an IPO exit and a higher amount total funding across all rounds. Our findings are robust to a variety of alternative model specifications, subsamples, controlling for entrepreneurship in staging and syndication, selection biases and machine learning approaches.

Motivation
Social media affects:
• Monetary, policy expectations of market participants (Bauch et al., 2019) • Brand awareness, consumer satisfaction and purchase intent (Colker et al., 2018)

Purchase Intent
Consumer Sentiment
Satisfaction
Higher Firm Performance
Higher Performance on Equity Value

To the best of our knowledge, no empirical study on the impact of social media and VC investment structures.

Probability of successful exit
Total funding of portfolio firms

Research Questions
1. Do VC investors acquire information through social media accounts of startups? 2. Can startups attract venture capital investors’ attention through social media? 3. How is Earned Social Media (ESM) and Owned Social Media (OSM) affect VC financing? 4. Are VC firms less likely to stage-finance and syndicate with each other when social media accounts of startups are more informative?

Our expectations:
• Less Asymmetric Information → Less Stage Finance • Less Asymmetric Information → Power Members in VC syndicate

Contribution of Our Study:
1. Prior literature that explores the impact of social media on VC investors’ investment structure 2. VC staging and VC syndication 3. No study testing social media impact on VC for the post-crisis financial crisis

If in the first paper used Twitter data in VC investment structure literature

Data & Hypotheses
Scope: Only VC-backed firms in US. Period: 2010 - 2018

Distance:
• Twitter API
• Thomson Reuters SDC Platinum - VentureExpert
• Capital IQ, Bloomberg, Computo, ProCO, Crunchbase

Our Sample:
• Portfolio firms-social media count
• Round-level VC investments
• 1538 startups with Twitter accounts
• 196 startups have an active Twitter account before first capital infusion

Methodology & Results
Descriptive variables:
• Number of rounds
• Syndication dummy
• Total funding across all rounds

Independent variables:
• OSM and ESM

Control variables:
• Firm age, stage, Tobin’s Q; R&D Ratio, Tangibility Ratio. VC age, VC reputation measures, year, industry, state fixed effects

Baseline estimation model with OSM and ESM:
\[ Y_i = \beta_1 + \beta_2 \text{Twitter Dummy} + \text{Controls} + \epsilon_i \]

Baseline estimation model with only OSM and ESM:
\[ Y_i = \beta_1 + \beta_2 \text{OSM} + \text{Controls} + \epsilon_i \]

Baseline estimation model with OSM and ESM:
\[ Y_i = \beta_1 + \beta_2 \text{OSM} + \beta_3 \text{ESM} + \text{Controls} + \epsilon_i \]

Baseline estimation model with OSM and ESM and power sentiment interaction:
\[ Y_i = \beta_1 + \beta_2 \text{OSM} + \beta_3 \text{ESM} + \beta_4 \text{Power Sentiment} + \text{Controls} + \epsilon_i \]

Hypotheses:

1. The higher an entrepreneurial firm's ESM (OSM) volume with power sentiment before the first capital infusion from VCs, the fewer the number of financing rounds it receives and the lower the probability of VC syndication.

2. The higher ESM (OSM) volume, the higher total funding across all rounds.

3. The higher ESM (OSM) volume, the lower the probability of VC syndication.

4. The higher ESM (OSM) volume, the higher total funding across all rounds.

5. The higher an entrepreneurial firm's ESM (OSM) volume with power sentiment before the first capital infusion from VCs, the fewer the number of financing rounds it receives and the lower the number of VC firms in the VC syndicate.

Results cont.

Conclusion
H1: The higher OSM (ESM), the fewer the number of financing rounds it receives.
H2: The higher ESM (OSM) volume, the fewer the number of VC firms in the VC syndicate.
H3: The higher OSM (ESM) volume, the lower the probability of VC syndication.
H4: The higher ESM (OSM) volume, the higher total funding across all rounds.

High OSM More social funding across rounds
High OSM More funding across rounds

References

References