



CHALLENGES IN THE VALUATION OF VC-BACKED COMPANIES: WHY RELYING ON POST-MONEY VALUATIONS IS OFTEN INAPPROPRIATE

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Introduction

Valuation of privately held companies can be challenging, especially when those companies are growing rapidly and involve new technologies and markets. In contrast to publicly traded companies, there is no readily available market price, and using commonly accepted methodologies such as discounted cash flow (DCF) or multiples valuation may be difficult due to lack of financial information and/or appropriate comparables. Instead, market participants often rely on the so-called *post-money valuation*, which is calculated by taking the price per share paid in a given external financing round and multiplying it by the total number of shares outstanding (on a fully diluted basis) of the company being valued.

However, this methodology is not appropriate for the vast majority of venture capital (VC) backed firms because these firms typically issue different classes of stock. These classes of stock can have substantially different values depending on the way they are structured and on their rights and preferences. Assuming that all shares are worth the same as the ones issued in the most recent external financing round can result in a substantial overvaluation of the company, as investors typically receive convertible preferred shares, while founders and employees receive common shares or options on common shares. In addition, the most recent investors often receive the most favorable terms compared to investors in earlier funding rounds. Recent research has found that, in a sample of 135 U.S. unicorns, the use of post-money valuation resulted in an average overvaluation of approximately 48 percent, with almost half of those companies losing their unicorn status when an appropriate valuation methodology was used.¹

Accurate valuation estimates are likely to become central in an increased number of disputes in the next few years for at least two reasons. First, the number of highly valued VC-backed companies has been steadily increasing as more of these companies stay

private longer. For example, in 2020 and 2021 alone over 310 companies in the U.S. became unicorns. Second, more recently there have been signs of a significant cool-off in private markets amid increasing volatility, dampening the high valuations reached in years prior.

Growing Importance of VC-Financing and Potential for Disputes Related to Valuation

Venture capital plays a central role in the financing of innovation and high-growth companies in the U.S. Recent research shows that VC-backed companies account for 41 percent of total U.S. market capitalization, and include some of the largest public companies in the world such as Microsoft, Amazon, Alphabet, Meta, and Tesla.² VC financing has grown substantially over the last fifteen years and, together with the growth of other private capital sources,³ has enabled companies to remain private for longer.⁴ Further, as the VC market grew, it attracted the attention of a broader set of investors than what was historically the case, including mutual funds and individual investors.

Disputes involving VC investors and other stakeholders—including limited partners (investors in VC and private equity funds), entrepreneurs, other investors, lenders, competitors, and tax authorities, among others—often center around the valuation of a company at the time of a round of financing. Using post-money valuations in such cases is usually inappropriate; instead, a methodology that appropriately accounts for the complexity in the capital structure of VC-backed firms is required.

The Gornall-Strebulaev Methodology

Will Gornall and author Ilya Strebulaev developed a valuation methodology that explicitly models the features of each class of stock issued by a VC-backed firm, thereby allowing for the recovery of an accurate estimate of the company's value from

¹ Will Gornall and Ilya A. Strebulaev, "Squaring Venture Capital Valuations with Reality," *Journal of Financial Economics* 135, 1 (2020): 120-143 ("Gornall and Strebulaev (2020)"), available at <https://www.gsb.stanford.edu/faculty-research/publications/squaring-venture-capital-valuations-reality>. A unicorn is a VC-backed company that reaches a reported valuation of \$1 billion or more while remaining private.

² Will Gornall and Ilya A. Strebulaev, "The Economic Impact of Venture Capital: Evidence from Public Companies," Working Paper, June 2021.

³ See e.g., Sirio Aramonte and Fernando Avalos, "The Rise of Private Markets," *BIS Quarterly Review*, December 6, 2021, https://www.bis.org/publ/qtrpdf/r_qt2112e.htm.

⁴ See e.g., Michael Ewens and Joan Farre-Mensa, "The Deregulation of the Private Equity Markets and the Decline in IPOs," *Review of Financial Studies*, Forthcoming, February 7, 2020: 5463-5509. Available at SSRN: <https://ssrn.com/abstract=3017610>.

the fair price of one class of stock.⁵ The Gornall-Strebulaev methodology is the foundation of an academic article published in 2020 in the *Journal of Financial Economics*.⁶

As noted above, the Gornall-Strebulaev methodology requires a fair price for at least one of the series of stock issued by a VC-backed company. This fair price is often taken to be the price in an investment by informed, sophisticated, independent parties (such as VC funds), typically as part of an external financing round. The intuition behind the methodology is that the value of a company at the time it raises external financing should be consistent with the price and terms of such financing.

Armed with the fair price of a class of stock, the Gornall-Strebulaev methodology relies on a state-of-the-art option pricing methodology to model the expected payoff of the different classes of stock issued by a VC-backed firm at the time of exit (via liquidation, M&A, or an IPO). Crucially, the methodology allows for substantial flexibility in incorporating the payout structures and rights of each class of stock, arriving at an implied (fair) valuation of the company as a whole and for each class of stock.⁷

Preferred Convertible Stock

VC-backed firms typically issue a new series of preferred convertible stock with each new round of outside financing. Preferred convertible stock issued by private firms is very different from the common or preferred equity issued by companies that are listed on public exchanges. In particular, preferred convertible stock has (1) a liquidation preference, meaning that in case of liquidation of the company, its holders have priority over other

investors in receiving a payout (typically the dollar amount they invested); and (2) an option to convert into common stock, allowing the holders to benefit from increases in the equity value of the company. In most cases, conversion into common stock may also be forced by the company if there is an IPO meeting certain criteria.

The Gornall-Strebulaev methodology can account for the liquidation preference and conversion rights of convertible preferred stock issued by VC-backed firms. Importantly, it can also account for other features that are commonly observed in convertible preferred stock series. For example, certain series provide the potential for a more favorable payout in case of an IPO, such as the right for additional shares in a “low priced” IPO (called IPO ratchet) or the right to benefit from both the payout upon conversion and the liquidation preference (called participation). Other contractual features that convertible preferred stock series often include offer additional protection in downside scenarios, such as protection from down-rounds (known as anti-dilution) and protection from automatic conversion at IPO. The latter exempts the preferred stock from automatic conversion at IPO if the IPO does not reach certain thresholds in terms of price or proceeds.

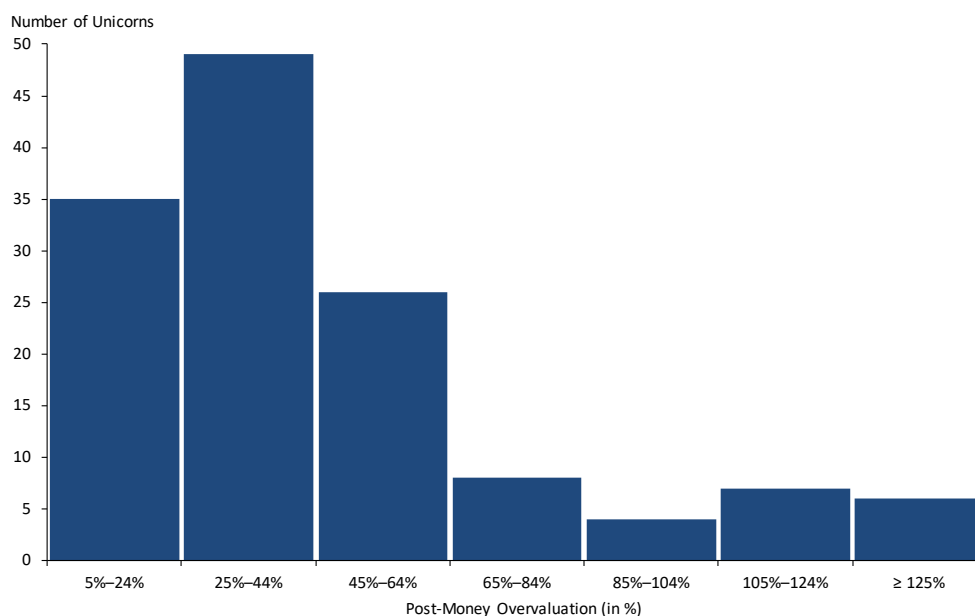
These and other rights can make a series of preferred stock more valuable than, and potentially less representative of, the remaining classes of stock, making a naive post-money valuation—which ignores differences between classes of stock—inappropriate. The chart in Exhibit 1 shows the difference (in %) between the post-money valuations and the valuations estimated using the Gornall-Strebulaev methodology for the 135 U.S. unicorns described in Gornall and Strebulaev (2020). The average unicorn post-money valuation is 48 percent above its fair value as estimated using the Gornall-Strebulaev methodology. The post-money valuation was at least 100 percent higher than the value given by the Gornall-Strebulaev methodology for more than 10 percent of the unicorns that were analyzed.

⁵ An important precursor to the Gornall-Strebulaev methodology is covered in Metrick (2007), who implements an option-pricing method to value securities of VC-backed firms. See Andrew Metrick, *Venture Capital & the Finance of Innovation*, 1st ed. (New York: John Wiley & Sons, 2007).

⁶ Gornall and Strebulaev (2020).

⁷ The methodology also requires certain other inputs, including the expected volatility of a company’s value, that may need to be adjusted depending on the firm being considered.

Exhibit 1: Difference (in %) Between Post-Money Valuations and Valuations Estimated with Gornall-Strebulaev Methodology



Source: Gornall and Strebulaev (2020)

While the Gornall-Strebulaev methodology was designed to be used in the context of capital raising rounds, when a fair price for a series of stock may be available, it can also be used as a starting point for a valuation on a different date. In those cases, adjustments to the valuation or a combination with other valuation techniques may be required, depending on the characteristics of the firm and its growth.

Conclusion

VC financing has long been an important feature of capital markets for high-growth companies in the U.S., but its importance has grown substantially over the past fifteen years, and more companies delay their IPOs and reach very high valuations while private. Valuation of VC-backed private companies can be challenging because of the lack of financial information and because of the distinctive characteristics of those firms. Thus, market participants often rely on the price of new financing rounds to back out the total value of the company as given by the post-money valuation, which is calculated by multiplying the per-share price of the latest round of financing by the total number of (fully diluted) shares outstanding. However, this metric does not appropriately reflect the complexity and heterogeneity of the preferred convertible stock issued by VC-backed companies. Using an appropriate methodology to value the company at the time of a financing round, such as the Gornall-Strebulaev methodology, can and often does result in valuations that are substantially below those implied by the post-money valuation.⁸ These differences can be central to many types of disputes involving VC-backed companies, their investors, employees, founders, and tax authorities, among others.

⁸ Conceptually, the Gornall-Strebulaev methodology is similar to the backsolve methodology that is often used in the context of 409A valuations in the sense that it can back out the value of the whole company and of each equity claim from the price of a single equity claim. However, there are some important differences. Among other things, the Gornall-Strebulaev methodology explicitly models the distribution of the value of the company over time, allowing for a more reliable incorporation of more complex features and providing an interval for the valuation of each class of stock, rather than a single point estimate. Further, 409A valuations often (erroneously) include approved but unissued stock options in their calculations, while the Gornall-Strebulaev methodology does not.

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Ilya Strebulaev is the David S. Lobel Professor of Private Equity and a Professor of Finance at Stanford Graduate School of Business. Professor Strebulaev is an expert on venture capital and private equity, innovation, investment, financial decision making, strategic financial decisions, and corporate finance. He has particular interest in how young companies are financed, including via venture capital (VC) and special purpose acquisition companies (SPACs). Professor

Strebulaev's recent research has examined the valuation of VC-backed companies, decision making by startup investors, returns to VC investors, and the impact of VC investments.

Professor Strebulaev is a coauthor on the paper discussed in this article: Will Gornall and Ilya A. Strebulaev, "Squaring Venture Capital Valuations with Reality," *Journal of Financial Economics* 135, 1 (2020).



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Manuel Vasconcelos is a principal in Cornerstone Research's Washington, DC office. Dr. Vasconcelos specializes in complex matters that affect large financial institutions and other participants in capital markets. He focuses on market manipulation and trading conduct; valuation (including damages); and entrepreneurial finance and venture capital (VC). Dr. Vasconcelos works on matters across a range of cash and derivatives markets, including fixed-income, equities, natural

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