

Private Inequity: Private Markets and the Death of the Micro-Cap Stock

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**Abstract**

This paper examines the decline in publicly listed equities in the United States by reviewing factors in both the public and private markets. Public equities have halved in count in the U.S. between the mid-1990s and today, with a paucity of small stocks limiting access to high-growth opportunities for common investors. The paper finds that the decrease in listed equities is more likely to be attributable to a lack of new entrants via IPOs than it is to be due to increased delisting activity via mergers and acquisitions, liquidations, and involuntary delisting. Furthermore, this shift is shown to be driven by micro-cap stocks, which once drove initial public offering volume. The second half of the paper reviews the role of the private markets in abetting micro-caps' abstention of the public markets, identifying growth in follow-on funding and secondary liquidity as potential factors for further analysis.

## Executive Summary

The public markets have long dominated the American financial system, helping companies of varying sizes raise capital and providing an outlet for citizens of all income levels to invest. Over the past 20 to 25 years, however, the public markets have been shrinking; the number of listed companies in the United States has nearly halved over this period. As stated by Jay Clayton (2017), Chairman of the Securities and Exchange Commission, the reduction in listed equities comes with “potential lasting effects... to the economy and society [that] are, in two words, not good.” Main street investors and all but the wealthiest Americans are stuck investing in a diminished asset class, with little to no direct exposure to the private markets.

While the public markets have contracted, an inverse expansion has been ongoing over the past half-century in the private markets. Alternative asset classes such as private equity and hedge funds have transformed from fledgling means of diversification in the mid-20<sup>th</sup> century to go-to strategies for institutional investors and high-net-worth individuals to boost the return profile of their aggregate investment portfolios. In private equity, for example, net asset value grew 7.5x between 2002 and 2019, nearly doubling the growth multiple seen in the public markets over the same period (McKinsey, 2019). Additionally, funding in the form of venture capital and growth equity has emerged as a preferable alternative to listing directly on the public markets. As posited by Nicholas Nassim Taleb (2018), author of *The Black Swan* and *Skin in the Game*, this has encouraged founders to eschew the long-termism of the public markets and cash out in the private markets while their companies are still young, breeding a “form of entrepreneurship [that] is the equivalent of bringing great-looking and marketable children into the world with the sole aim of selling them at age four.”

As young companies gravitate to the private markets, the return profile of public equity investors has been altered for the worse with the loss of a significant source of growth. Whereas the Amazons and Googles of the world once listed on the public markets with room for expansion, this growth is increasingly limited to investors in the private markets as companies avoid the public markets or list after reaching maturity, creating a divide between different classes of investors. This paper reviews factors driving private inequity – the aforementioned split between those who can and can't access the private markets – from both angles, quantifying the reduced count of “micro-cap” stocks (those with market values under \$250 million) and the expansion of private market strategies that serve as alternatives to the public market. The following introduction provides further detail on the paper's methods and structure.

### **Private Inequity: Private Markets and the Death of the Micro-Cap Stock**

Over the last two decades, the public equity market in the United States has experienced a sizable retraction in the number of listed stocks, with studies suggesting that the count of listed stocks today is as much as half the amount in the mid-1990s (Kahle and Stulz, 2017). A number of variables have been reviewed in explaining this change, including industry consolidation (Grullon and Michaely, 2019), regulatory pressures for listed companies (Kettl, 2011), and the burgeoning private markets offering an attractive alternative for leaders looking to raise capital (de Fontenay, 2017). This paper looks at the public market first to see if the withdrawal of publicly listed equities has indeed occurred and what variables are behind it, then looks at the private markets to see if observations support claims made about the private markets, namely its relation to small IPOs.

The first half of this paper reviews data related to this trend, looking to first verify that the count of public equities in the U.S. has halved in the past two decades. Next, listed equities are broken down by size and industry to see if any particular type of stock plays an outsized role in the loss of public equities. Last, reasons for companies exiting (as measured by delisting activity) and entering (as measured by initial public offering activity) the public market are evaluated to determine if the loss of U.S. equities is either attributable to both factors or exclusive to one of the two.

The second half of this paper pulls from 26 interviews conducted with investors, founders, and experts in private market due diligence. First, the paper outlines the methods and results from aggregating and consolidating potential factors. Next, follow-on funding in the form of seed

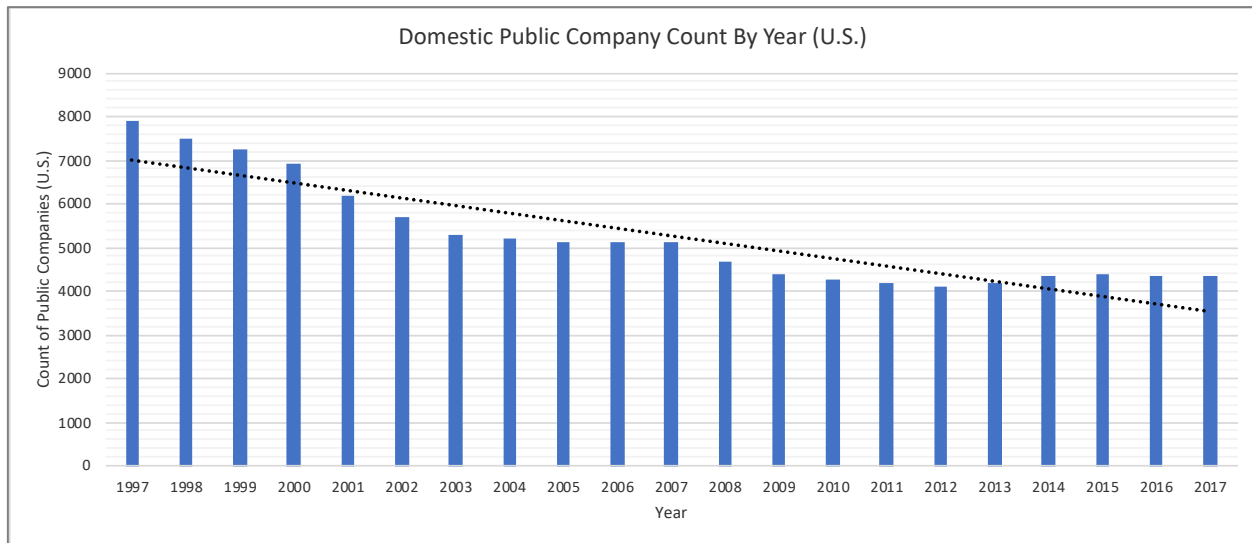
extensions and private initial public offerings (private market financing rounds that exceed \$100 million) are inspected as capital sources providing a service similar to that of a public initial public offering. Last, new investment structures providing secondary liquidity are assessed as means for introducing changes to the dynamic between founders and early-stage investors in the private markets.

**Public Markets**

**Decline in Publicly Listed Stocks**

As a first step, the researcher looked at all stocks listed on US exchanges from 1996-2018, using data from the World Federation of Exchanges (WFE) and CRSP, with no breakdown by individual exchange. This method was chosen because the WFE does not break down data by individual exchange and CRSP queries, when done by exchange, have PERMCOs – the unique identifier for a company – listed multiple times across exchanges due to companies merging, listing on new exchanges, or delisting and later relisting with a new identifier. Instead of using exchange data from CRSP, the researcher searched for all US PERMCOs each year in the period of interest, which included U.S.-listed companies with higher volume on foreign exchanges but was useful in showing if a general trend held. The researcher also looked at data from Bloomberg, which was excluded because the query listed different classes of stocks separately – so, for example, Google was listed three times – and also had companies listed multiple times for each exchange they were listed on.

Figure 1

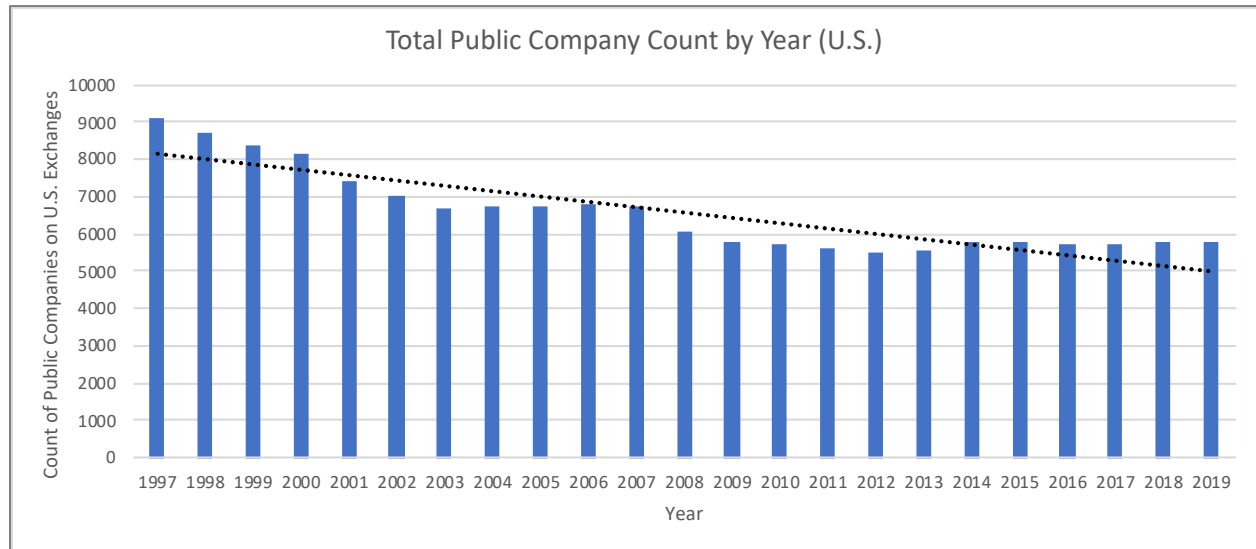


Source: World Federation of Exchanges



As shown in Figure 1, data from the World Federation of Exchanges suggests that public equities in the United States have gone from 8,000 to roughly 4,000 listed stocks in a period of two decades. This observation confirms prior studies' claims that the number of listed stocks has halved since the mid-1990s, but also indicates that the decline has trailed off since 2012.

Figure 2



Source: CRSP data

Figure 2 shows a similar, yet less pronounced, pattern using CRSP data. Listed equities in the U.S. – which, in this case, include some repeats and stocks that are traded more frequently on exchanges in other countries – decline from roughly 9,000 to 6,000 stocks, representing loss of a third of listed public equities. While the WFE data is likely more robust, the CRSP data is useful in showing that the observation remains directionally correct across samples and can be further analyzed to assess what underlying variables are most significant.

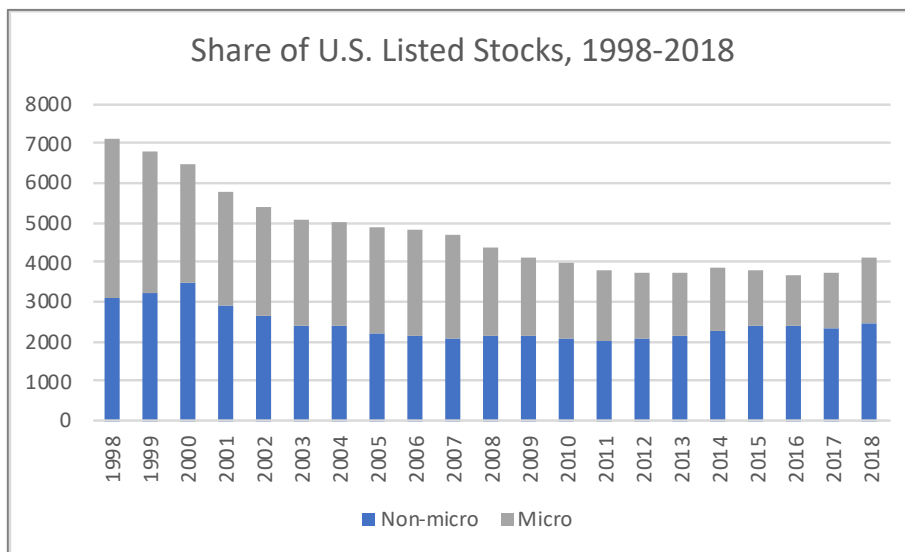
### Micro-Caps

After confirming the validity of the claim that listed stocks have contracted since the mid-1990s, the researcher looked to see if particular types of companies were more likely to leave or refrain

from entering the public markets. This was completed by looking at two variables: size and industry group.

In looking at size, the researcher first looked at using the CRSP database to group companies by decile in a start year – done by breaking all companies down by market cap and dividing them into ten groups with equal amounts of companies – then seeing how the quantity of listed equities within each decile or across sets of deciles changed over time. After review, however, a new method was chosen because each year’s values varied widely across years, so the start date mattered as much as the data itself. Instead, the researcher used common industry benchmarks for size, with a slight adjustment to consolidate information. Typically, large-cap stocks have market capitalizations over \$10 billion, mid-cap stocks have capitalizations between \$2 billion and \$10 billion, small-caps are between \$250 million and \$2 billion, micro-caps are between \$50 million and \$250 million, and nano-caps are under \$50 million. Given that Bloomberg data grouped nano- and micro-caps together, the researcher chose to group the two together as well, referring to all companies with market capitalizations under \$250 million as micro-caps.

Figure 3



Source: CRSP data

Figure 3 filters out stocks that are listed in the U.S. but have higher trading volume on international exchanges. Micro-cap stocks represented roughly 50 percent or more of the total listed equities in the stock market each year from 1985-1998 (not shown in Figure 3). Following this period, micro-caps went from 3,979 stocks in 1998 to 1,664 stocks in 2018 while other classes of stock went from 3,132 stocks in 1998 to 2,472 stocks in 2018. This data suggests that the decline in all listed stocks was driven by a loss of micro-cap stocks, with only a moderate decline in other classes of stock over the period of observation.

### **Delisting and Public IPOs**

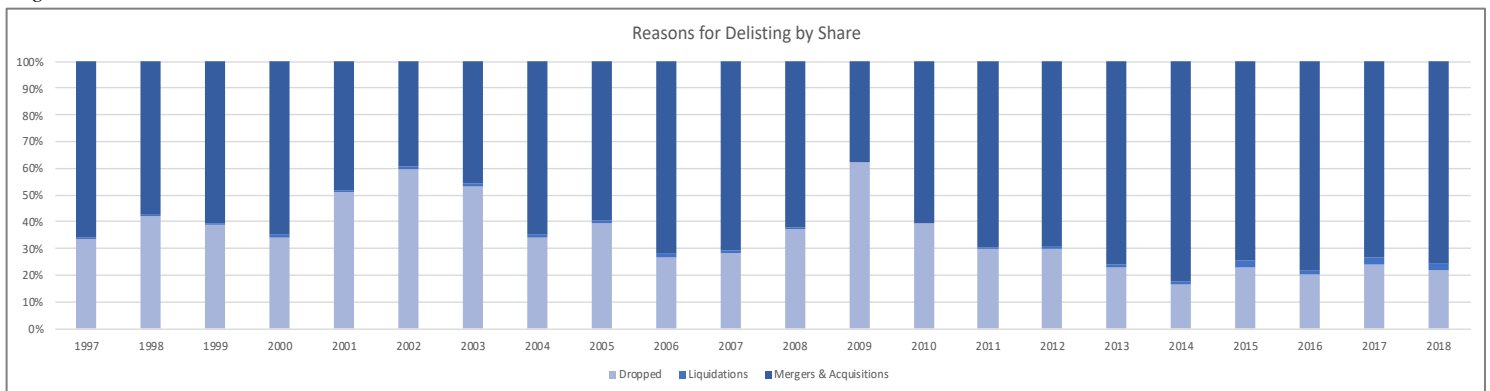
In addition to looking at types of companies leaving or refraining from entering the market, the researcher attempted to determine whether the problem was solely due to more companies leaving the market or if it also was a matter of less companies entering the market. First, delisting data was analyzed in order to understand why and to what extent companies left the public markets from the mid-1990s on. Once this was completed, the researcher reviewed IPO data to see if more or less companies were entering the public markets over the aforementioned period.

#### Delisting (All Stocks)

Data on companies exiting the public markets was collected using CRSP's U.S. stock database. In addition to the overall database mentioned in prior sections, CRSP provides comprehensive information on five types of events: name changes, changes in shares outstanding, distributions, delisting activity, and changes in additional traits on the NASDAQ exchange. The researcher used delisting activity, which occurs when a company is removed from a listed exchange, to

analyze causes for companies leaving the public markets. CRSP lists seven potential causes for delisting activity, three of which were dropped because they were not relevant to the query at hand: companies that are still listed (most of which have removed an additional class of shares), expirations (which only applies to ETFs or REITs that have preordained expiration dates), and exchanges (i.e. buybacks or the removal of warrants, rights, debentures, or notes in exchange for equity). One other cause, domestic companies that list on foreign exchanges, was removed because all the results generated in the query were domestic companies that became foreign but continued to trade on U.S. exchanges. The three causes included in the search were dropped equities, which are delisted at the behest of an exchange due to a violation of listing standards; liquidations, which occur at the behest of a company before ceasing operations or declaring bankruptcy; and mergers and acquisitions (M&A), which take place when a company is bought by or combines operations with another company.

Figure 4

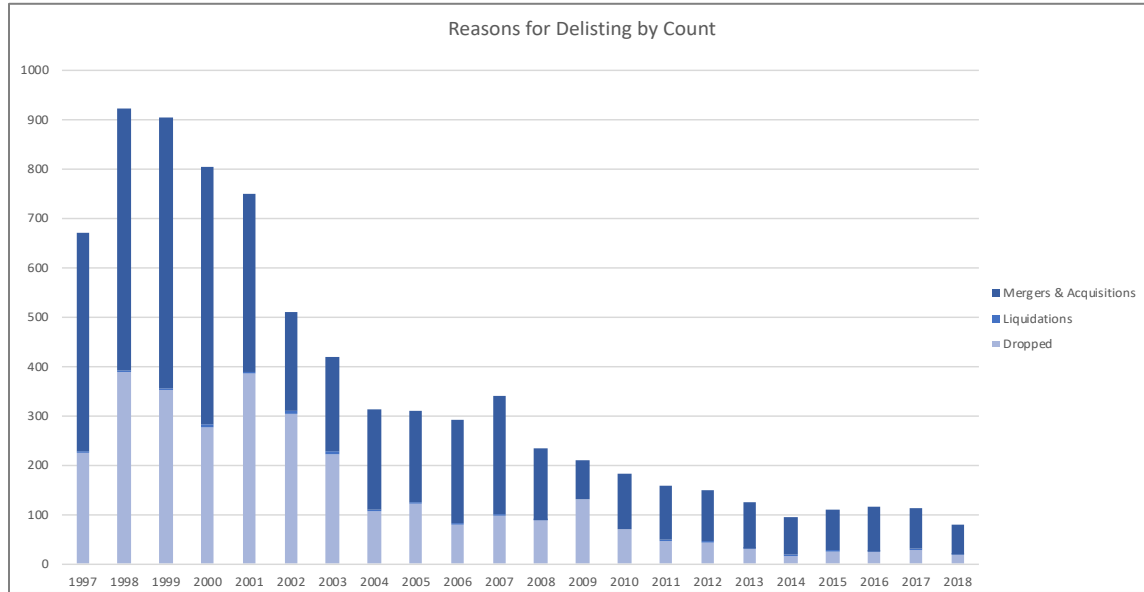


Source: CRSP data

Figure 4 shows that M&A activity has represented the majority of delisting events since 1997 and has accounted for over 60% of delisting activity every year from 2010 on. Dropped equities represented at least 33% of all delisting activity every year since 2005, but tail off and, aside

from 2009, never exceed 40% of delisting events. Liquidations never exceed 4.5% of delisting events from 1997 to 2018.

Figure 5



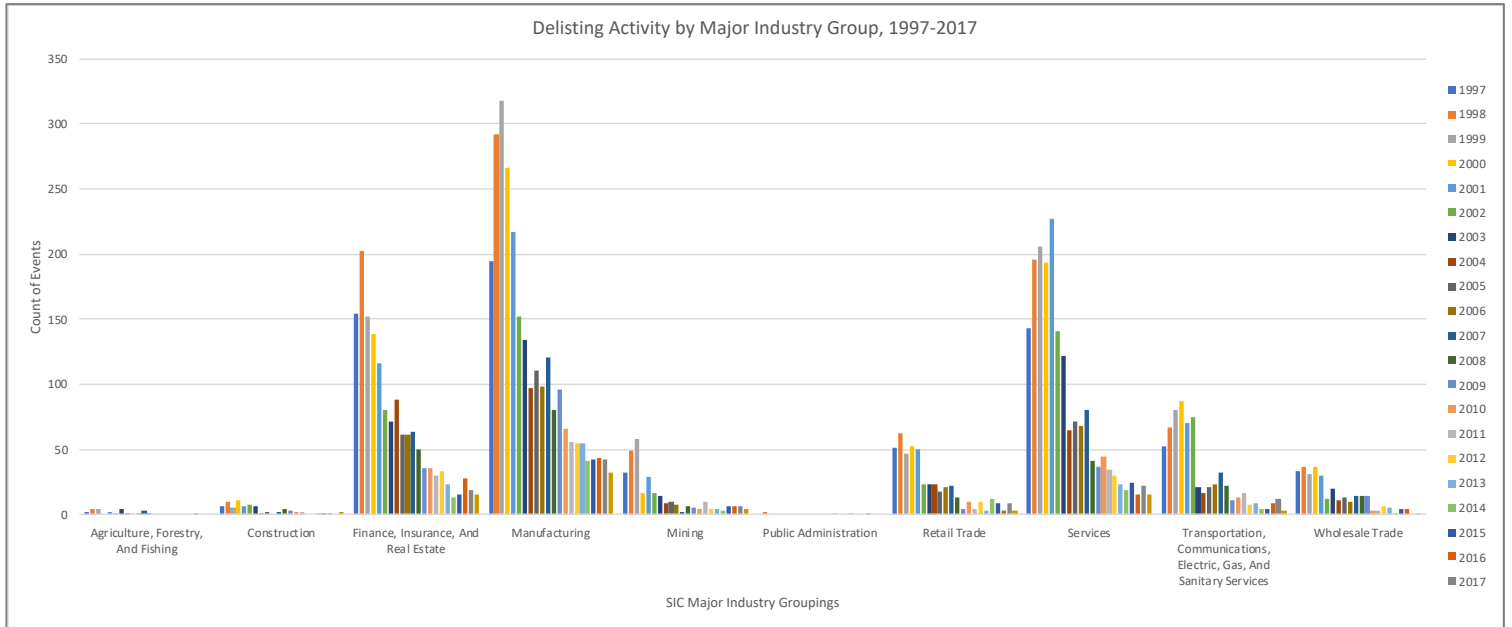
Source: CRSP data

Figure 5 provides additional context on delisting activity, showing that delisting activity peaked in 1998 with 922 events, then experienced a precipitous drop in the early 2000s, with 312 events occurring in 2004. Over the course of a second period, from 2007 to 2014, delisting activity declined from 341 events to 95 events. This data suggests that delisting activity has become less prevalent in the prior two decades, which means that it is presumably not the only factor at play.

In addition to looking at delisting activity market-wide, the researcher looked at stocks on the basis of industry. Industries can be analyzed by searching for the four-digit SIC code associated with a stock and looking at the first two or three numbers. The first two numbers of the SIC code indicate a stock’s main industry – which can fall in one of ten categories – while the first three numbers indicate a specific industry grouping. All four numbers together indicate a stock’s

industry sector. The following query consisted of three steps: the researcher cross listed all delisted stocks with their SIC codes; used the first two numbers of each stock’s SIC code to identify their major industry group; then categorized the total count according to the ten main industry groupings as defined by the SIC.

Figure 6



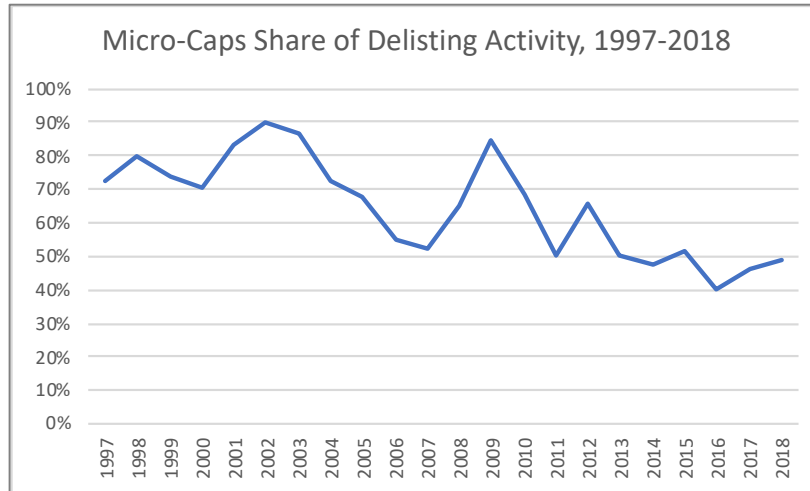
Source: CRSP data using SIC Primary Industry Code groupings

Figure 6 shows that four industries have historically accounted for most delisting activity: Finance, Insurance, and Real Estate; Manufacturing; Services; and Transportation, Communications, Electric, Gas, and Sanitary Services. In all cases, these industries have experienced steady declines in delisting activity, with none running counter to the trend.

Delisting (Micro-caps)

Following an initial review of where delisting activity is most concentrated for all listed equities, the researcher completed the same queries only using data on micro-cap stocks.

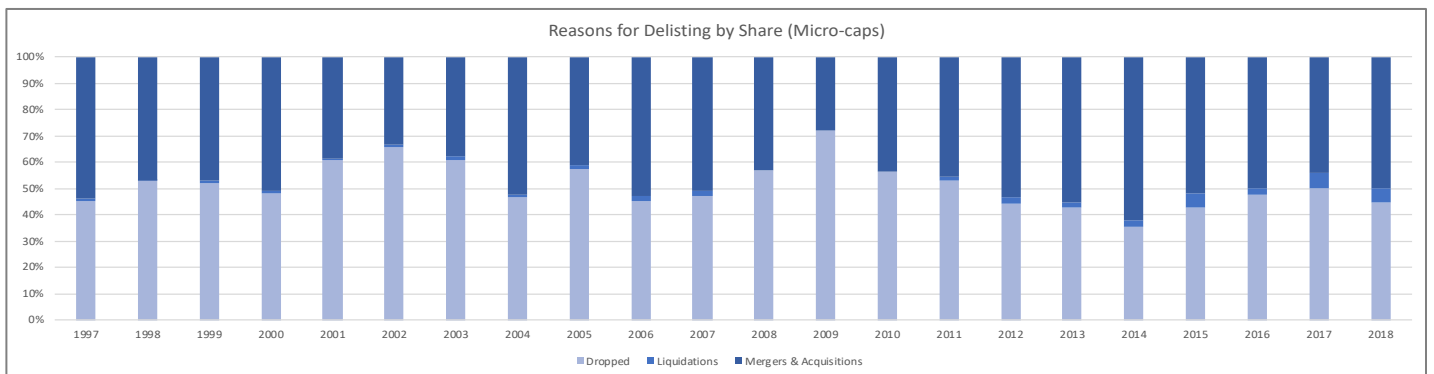
Figure 7



Source: CRSP data

Figure 7 shows that micro-caps have historically accounted for an overwhelming majority of delisting events. It must be noted, however, that over this period delisting activity has declined on the aggregate and that micro-caps have accounted for a smaller share of all activity. While micro-caps accounted for upwards of 80 percent of activity through the 1990s, they stayed around 60% through the 2000s, with the exception of heavy dropping activity surrounding the 2008 financial crisis.

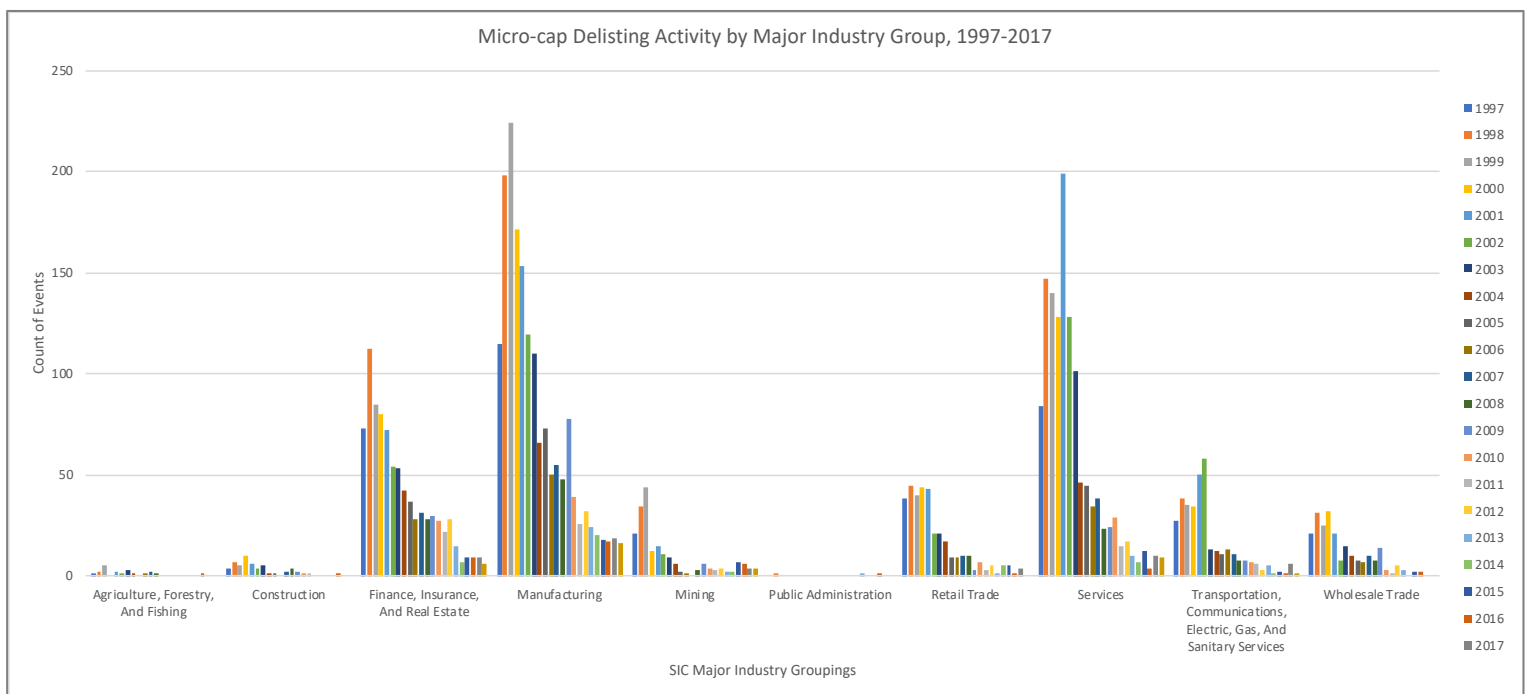
Figure 8



Source: CRSP data

Figure 8 provides additional context on delisting activity for micro-cap stocks. Relative to Figure 3, these data show that, up to the mid-2000s, there was little difference in reasons for delisting between micro-caps and all stocks. Since then, micro-caps have dropped from the market more frequently than other stocks, which are more likely to leave the public markets due to M&A activity.

Figure 9



Source: CRSP data using SIC Primary Industry Code groupings

Figure 9 shows that, relative to the market-wide trend shown in Figure 4, micro-caps in the Service sector experience more frequent delisting activity. Given that many of the subgroupings in this sector – namely Business Services; Personal Services; and Engineering, Accounting, Research, Management, and Related Services – have high concentrations of high-growth tech companies, this appears to indicate that technology companies in the services space are a



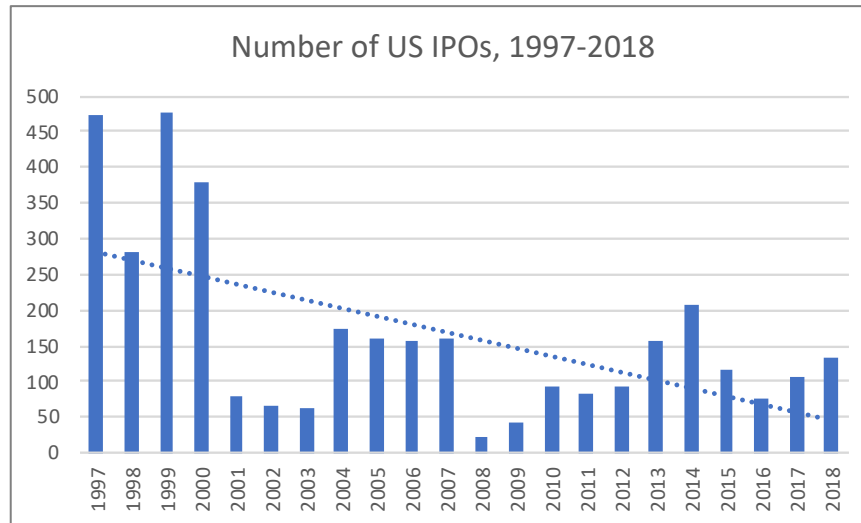
significant factor when considering the loss of micro-caps. This is evidenced when looking at the industry group for the year 2000, as the group's focus on tech-enabled services led to heavy delisting activity in the wake of the 2000 Dot Com market crash.

As seen in Figure 5, delisting activity appears to have been a major factor behind the exodus of stocks from the public markets; however, it has lost significance as this activity has declined steadily over time. Following this observation, the researcher looked to further assess the importance of delisting activity by comparing it to IPO volume, which could offset the effect of such activity.

### IPOs

An initial public offering (IPOs) is the primary method employed by companies entering the public market, occurring when a company first issues new stock, sells current owners' existing shares, or both issues and sells shares to investors in the public market. Four data sources available to the researcher could be used to obtain IPO data, however, each either lacked data or filters so an alternative source was used. According to WRDS, CRSP only covered 76% of IPOs, Compustat covered 55% of IPOs, and GSIOnline's Registrations & Prospectus database has no data after 2007, so each option was insufficient in providing historical coverage (Wharton Research Data Services, 2020). Bloomberg's data included closed-end funds, REITs, and spinoffs, leading to a problem with the quality of data. The researcher instead used data from Jay Ritter, a leading expert in IPO research, who aggregated data from a number of sources and filtered out variables that deplete the quality of IPO data such as the listing of REITs, IPOs with offer prices under \$5.00, closed-end funds, and master limited partnerships (Ritter, 2020).

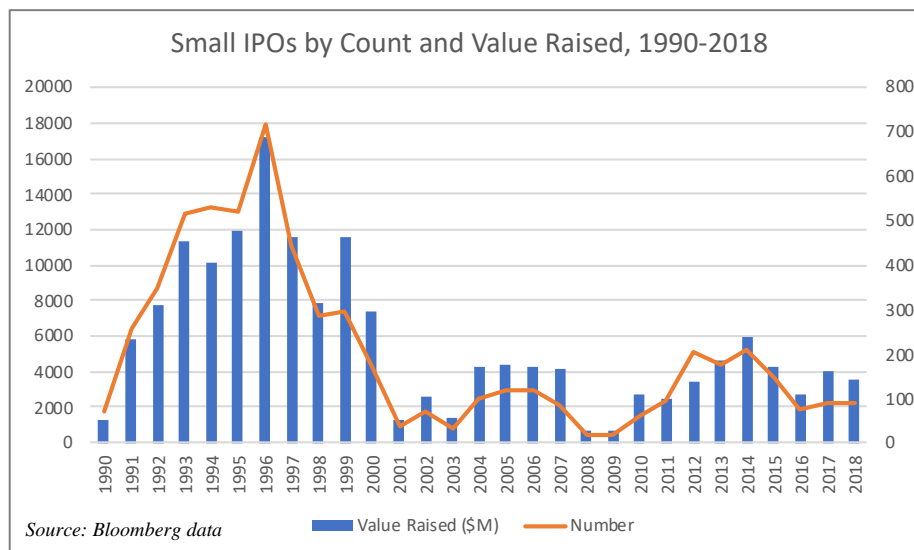
Figure 10



Source: Jay Ritter IPO Statistics

Prior studies have identified a disappearance of small IPOs, namely those under either \$75 or \$100 million, but none use data going beyond 2012 (Rose and Solomon, 2016). While the data used for Figure 10 was of high quality, it did not include a breakdown by size, so – to see if this observation has held since – IPOs were separated by size using Bloomberg data. IPOs were indexed according to three categories: small IPOs (offerings under \$100 million), medium IPOs (offerings from \$100 to \$500 million) and large IPOs (offerings over \$500 million).

Figure 11



Source: Bloomberg data

Figure 12

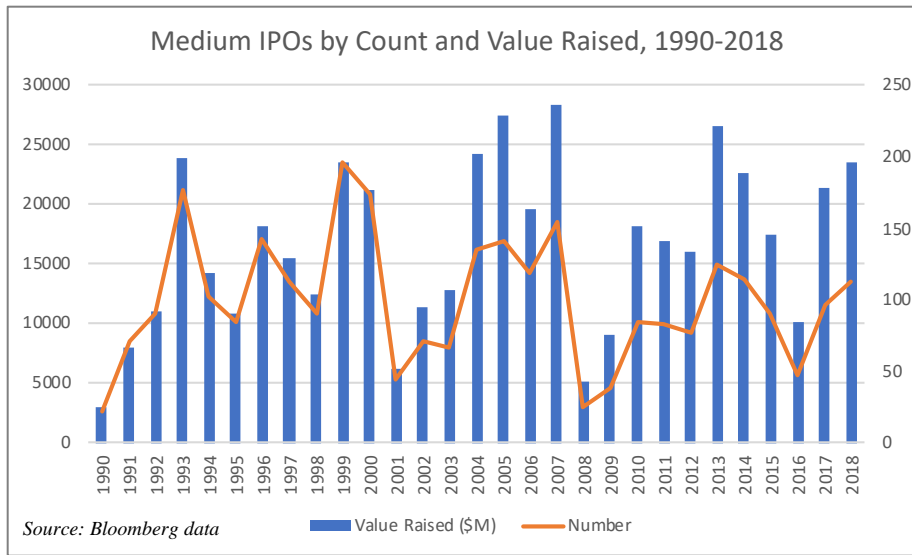


Figure 13

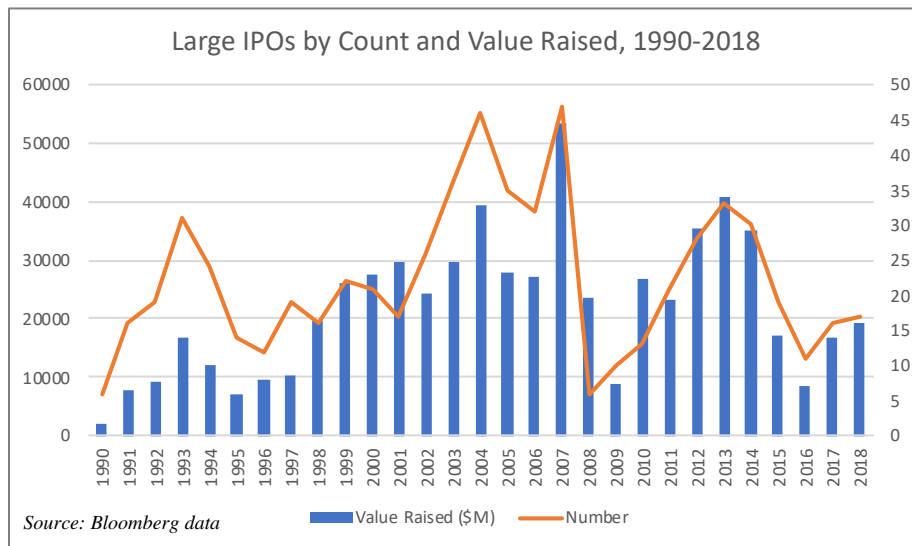


Figure 11 shows a drop-off in small IPOs in both count and total amount raised, following a peak in 1996. Its measure of count also indicates that they make up a considerably larger portion of total IPOs than the other two categories. Medium IPOs and large IPOs, shown in Figures 12 and 13, lack a clear pattern in terms of both count and total amount raised. These findings suggest that the disappearance of small company IPOs has held with time. While small IPOs aren't a perfect proxy for micro-caps, this data indicates that a lack of new entrants among companies likely to be either micro-caps or small-caps (considering that companies normally issue less than half of their total equity in an IPO) has contributed to the lack of publicly listed companies.

### Summary of Key Points Related to the Public Markets

The prior areas of observation suggest that public market entry has acted as a more significant variable in limiting access to micro-caps than companies exiting the public markets via delisting activity. The decline in exits is best illustrated in Figure 5, where delisting activity is shown to decrease 89% market-wide from 1998 to 2017. The preceding evidence also shows that micro-caps have historically accounted for the majority of delisting events, with the caveat that micro-caps have, for most of this time, accounted for the bulk of listed equities and have seen changes in delisting activity that mirror those of the market as a whole. As such, even if it is demonstrably clear that less companies are leaving the market and delisting, the similarities in delisting behavior across companies of all sizes means this evidence fails to explain micro-caps' declining share of all U.S. equities, as seen in Figure 3.

The effect of the aforementioned decline in delisting activity has been offset by an absence of new market entrants through the IPO process. Figure 10 indicates that there has been a sizable decline in IPO activity over the past 20 years, while Figures 11, 12, and 13 show a more complete story, indicating that the limited level of entry via IPO relative to prior decades appears to be driven by micro- and small-cap stocks. This suggests that the problem in the public markets driving private inequity is one of market entry, not exit. This is also particularly concerning when considering Decker et al. (2016), which examines the historical "skewedness" of growth, showing that younger firms in the public markets tend to be high-growth firms, a trend that has changed with a declining count of young companies. With these considerations in mind, the following half of this paper covers the private markets, looking to assess the role such markets have in keeping companies private longer or from entering the public markets altogether.

## Private markets

### Initial Review of Potential Factors

While public market databases provided context for small companies leaving the public markets, the data available via CRSP, Bloomberg, and other sources provided limited insight on the lack of new entrants – the main factor in the decline of publicly listed stocks, micro-caps in particular. Literature has suggested that the public markets have become “less hospitable for young, small companies” (Doidge, Karolyi, and Stulz, 2013) and has also noted that the nature of the IPO decline, particularly for small companies, cannot be completely explained by global technology crises in both 2000 and 2008 (Gao, Ritter, and Zhu, 2013; Doidge, Karolyi, and Stulz, 2017). Media outlets such as Bloomberg, the Financial Times, and the Institutional Investor have made claims that this decline may be partly attributable to the role of the private markets in the declining number of public equities.

The second half of this paper draws from 26 interviews conducted with investors, founders, and experts in private market due diligence. These interviews were used to aggregate then consolidate potential factors into two primary areas of focus. One area of focus, Private Market Liquidity, was then chosen, with two variables being tested: Follow-On Funding and Secondary Liquidity.

The selection of interviewees was largely a matter of accessibility, as the researcher worked with founders, investors, and diligence specialists as part of an internship program at an early- and growth-stage investor in the private markets. As such, he was able to conduct 11 in-person interviews with individuals with ties to the firm. One in-person interview was conducted at

Syracuse University with a former investor. The 14 remaining interviews were conducted via phone or video call. 14 respondents were investors, seven were founders or former founders, and five were experts in private market due diligence. Along with accessibility, individuals were chosen on the basis of prior success in their respective fields, geographic variation, and time in the private markets.

Each interview varied in format based on the interviewee's preferences but had four main components. First, the researcher introduced his findings in relation to micro-caps and explained his interest in understanding how the observations relate to the private markets. Second, the researcher asked his interviewee to list all of the contributing factors in the private markets he or she could think of. Next, interviewees were asked if and how they would rank the factors they identified from most to least relevant. Last, interviewees were asked if they had any other suggestions or useful anecdotes based on prior experiences.

Table A.1, provided in the Appendix, lists the nine most recurrent variables identified by interviewees during the period of aggregation. Following the initial period of aggregation, two variables – venture manager value-add and early-stage mergers and acquisitions – were removed to focus on value derived from the private markets. Next, the remaining variables were grouped into two categories. The first category, Private Market Liquidity, refers to the availability of capital in the private markets for general partners, limited partners, founders, and employees alike. The second category, Regulations and Compliance, refers to both the burden of complying with regulations as a public company, the costs of compliance associated with going public, and the relative lack of restrictions in the private markets.

After this distinction was made, remaining variables that could not be tested or could be grouped with others were removed, as seen in Table A.2, which is provided in the Appendix. The researcher then chose to focus on the first area of study, Private Market Liquidity, for two reasons. First, it could be quantitatively analyzed using private market databases such as Pitchbook, Preqin, and Thomson Reuters/Refinitiv. Second, Regulations and Compliance has been examined in prior research with respect to the decline in IPOs and the growth of the private markets. De Fontenay (2017) indicates that the ability to raise capital privately was significantly enhanced with the deregulation of securities laws in the late 1990s. Ewens and Farre-Mensa (2019) focus specifically on the National Securities Markets Improvement Act (NSMIA) of 1996, noting that the ability to raise large sums of private capital changed founder dynamics but, due to its multi-faceted nature, changes to the IPO decision could not be attributed to any one variable. Once Private Market Liquidity was chosen, the researcher looked to analyze two variables: Follow-On Funding and Private Market Secondary Liquidity.

### **Follow-On Funding: Seed Extensions and Private IPOs**

Within the category of Private Market Liquidity, a recurrent point that came up in interviews was that there is less reason to list in the public exchanges if capital is available in the private markets. One interviewee noted that when he founded his firm in the nascent days of the private markets (the 1970s), most companies would start by raising money from some combination of founders' personal capital, money from family and friends, and seed capital from a venture capital firm or angel investor. That money was expected to last a company until it listed on the public exchange through an IPO. Today, he noted, the time to market has been extended by additional capital at various stages. One stage mentioned with interviewees was shortly after seed

financing, with small rounds being raised opportunistically to increase a company's valuation and delay its need for a large Series A round, pushing its IPO window later. Another stage mentioned was late-stage investing, where companies raise rounds known as private IPOs, providing founders, investors, and employees the same liquidity they get from a public IPO. Additionally, two interviewees drew a distinction between funds and deals, as many follow-on investments – be it a round to add onto a normal seed round or a large round following Series A-C rounds – are deployed through side-cars, special purpose vehicles, and other forms of investment that are not reflected if one is to look at fund-level data. As such, follow-on deals were chosen for analysis instead of the vehicles used to deploy such investments. These deals were segmented into two categories: early stage seed extensions and late stage private IPOs.

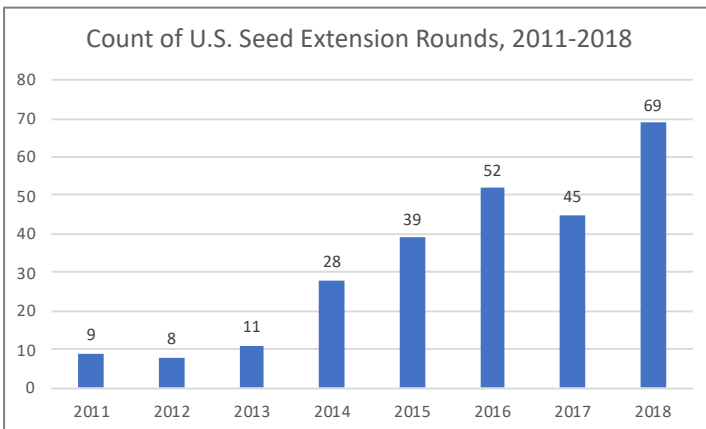
#### Seed Extensions

Seed extensions occur when companies that receive seed funding go on to receive an extra financing round before a raising a Series A round. As mentioned earlier, multiple industry experts stated that, in the past, they believed more seed funding paired with a higher bar for Series A funding – in terms of valuation and the growth of key performance indicators – would lead to more small companies going public instead of raising additional rounds in the private markets. Instead, these same individuals stated that they believed additional funding through seed extensions mitigated this effect and kept small companies in the private markets. The researcher looked to test this claim by using Pitchbook data to measure the growth in the volume of seed extensions over time. Additionally, by analyzing the effect of seed extensions on time between funding rounds, the researcher looked to see if these investments had any relation to the claim that private market liquidity keeps companies private longer.



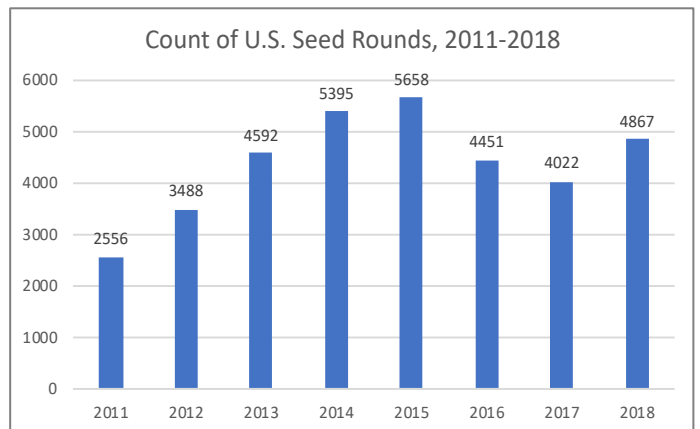
Seed extensions were first analyzed by segmenting all deals in Pitchbook’s database by round then selecting seed rounds. From this point, all initial seed rounds starting in 2011 were selected. Pitchbook began including seed extensions in 2011, whereas seed extensions in prior years had been grouped with initial seed rounds, so data before 2011 was excluded. Once this query was completed, the researcher used the same data set to compare the time between an initial seed round and Series A round for those who had raised a seed extension and all U.S. seed rounds.

Figure 14



Source: Pitchbook data

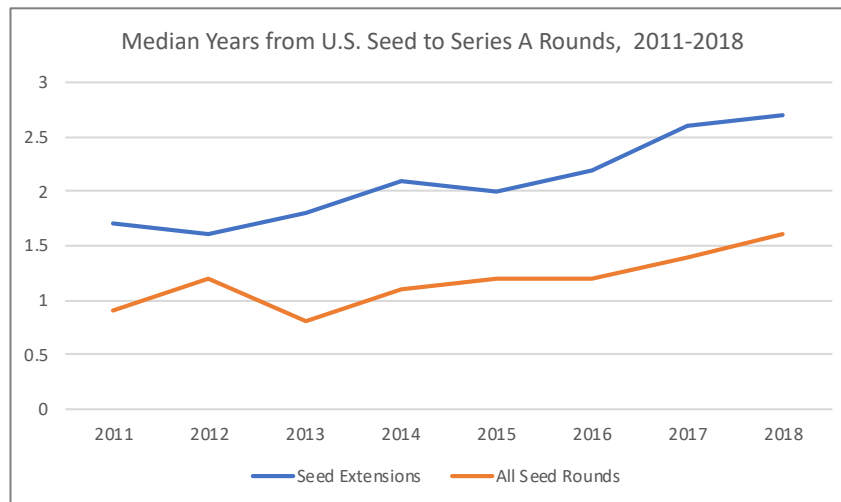
Figure 15



Source: Pitchbook-NVCA Venture Monitor

The observation that there has been clear growth in the number of seed extensions appears to hold, as these financings have grown at an average yearly rate of 41.9% since 2011, as seen in Figure 14. The claim that these rounds have some causal impact on the number of companies going public, however, seems dubious. Figure 15 shows that seed extensions accounted for only 1.42% of total seed rounds in 2018, though their rate of growth – 41.9% per year on average between 2011 and 2018 – exceeds the growth in total seed rounds – 11.5% between 2011 and 2018.

Figure 16



Source: Pitchbook data and Pitchbook-NVCA Venture Monitor

Seed extensions also appear to have an impact on time between seed and Series A rounds, as Figure 16 shows that companies with seed extensions consistently take longer to raise Series A rounds. Again, the scale of seed extensions relative to total seed rounds means that this variable likely has a limited effect on the trend of companies staying private longer and going public less frequently, representing only a fraction of all rounds.

### Private IPOs

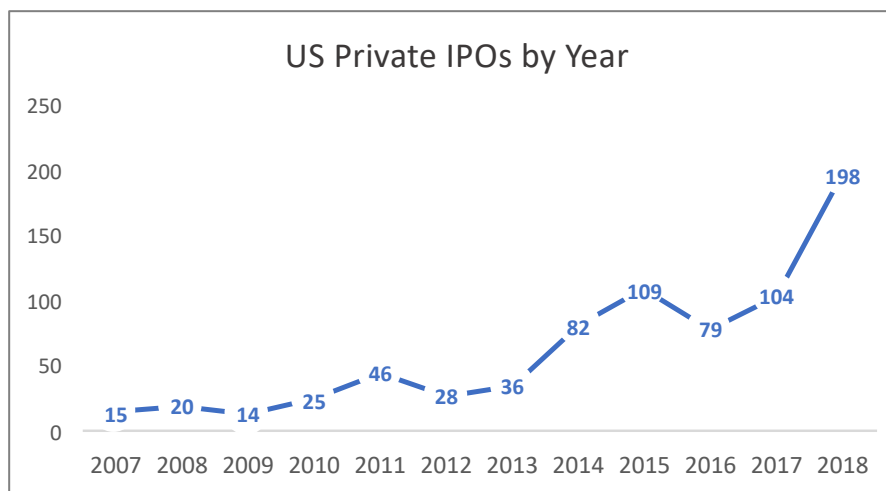
Private IPOs refer to financing rounds in the private markets that exceed \$100 million in capital raised, effectively replacing initial public offerings as a form of financing. Among all factors, these types of rounds were consistently mentioned as the most important reason for the lack of public listings because, as one interviewee stated, “there is no good reason to pay bankers and disclose financials when the money is waiting [in the private markets] at the same valuation.”

Other interviewees mentioned a new class of late stage investors who specialize in raising rounds that replace IPOs, then help founders find strategic buyers or go public an extra two to three

years later at better valuations. Sample transactions given by interviewees include Meritech Capital Partners' investments in Facebook (NASDAQ: FB) and Salesforce.com (NYSE: CRM), as well as OpenView Venture Partners' investments in DataDog (NASDAQ: DDOG) and Twitch Interactive (sold to Amazon in 2014 for \$970 million).

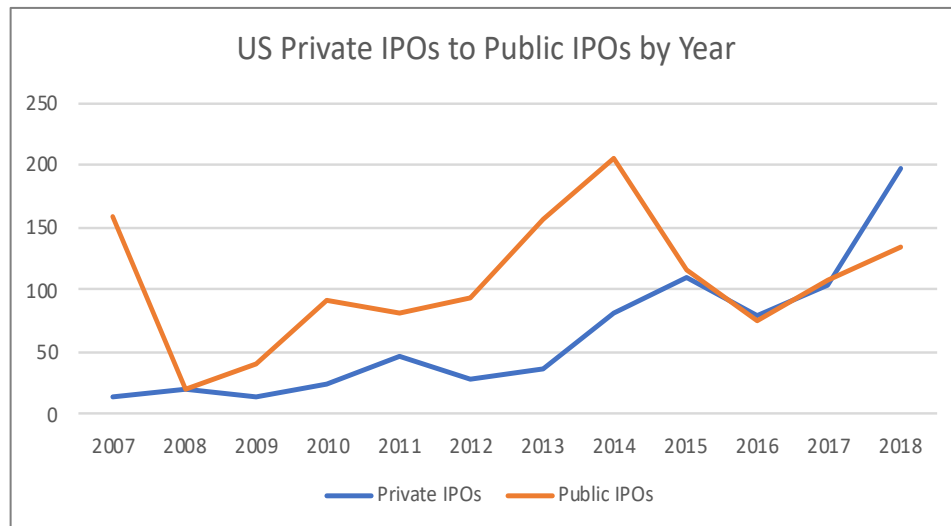
Private IPOs were analyzed using three filters with Pitchbook data: funding type, funding size, and time period. Funding type refers to the type of investor and nature of a fundraising round, as the query excluded funding rounds in which a single corporate buyer funds the majority of a round. This provision prevents late stage control transactions, which normally precede M&A as opposed to a public offering, from skewing the data. For funding size, private IPOs are transactions that exceed \$100 million in funding, so all financing rounds under \$100 million were removed. Last, data from the last eleven years (2007 to 2018) was selected because Pitchbook was launched in 2006 and notes that it may be missing data for queries concerning data prior to 2007.

Figure 17



Source: Pitchbook data

Figure 18



Source: Pitchbook data & Jay Ritter IPO Statistics

Figure 17 shows that the past ten years have witnessed significant growth in private IPOs, representing nearly 200 transactions in 2018. Most of this growth has come in the past five years, with the delta between 2017 and 2018 outpacing the delta between all other years. Furthermore, Figure 18 shows that these financings have outpaced IPOs in the public market as of 2018. Any number of factors – from higher valuations in key private market industries to low interest rates for managers – may be behind this trend, but more important is that large financings have displaced the traditional IPO and have now become a meaningful form of investment in the private markets. For founders, this trend shows that money that was once only available in the public markets at later stages now is available later and later as a company matures.

### Secondary Liquidity: GP-Led Transactions

While follow-on funding referred to a grouping of variables that were frequently mentioned, secondary liquidity was the most frequently mentioned individual factor to come from

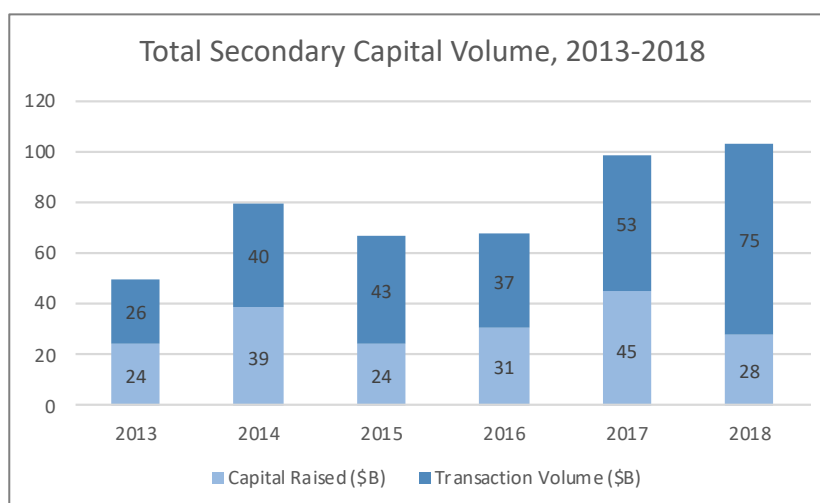
interviews. One interviewee claimed that secondary volume has grown at nearly twice the rate of standard direct or fund investing in the past 10 years. Another interviewee posited that secondaries matter more than follow-on funding because of the nature of relationships in the private markets: managers and their limited partners (i.e. investors in their funds) expect to realize a return over a given horizon, meaning that a company is expected to provide liquidity through an acquisition, IPO, or any other method possible. IPOs are encouraged for this reason – because a manager or limited partner wants to realize their return via the public markets. This observation is backed by prior research indicating that IPOs are investor-driven (Gompers, 1996), with founders preferring to stay private to preserve autonomy and limit exogenous control (Boot, Gopalan, and Thakor, 2006). Secondary transactions, the interviewee noted, are worth considering because they provide similar liquidity with no 180-day lock-up provision, enabling general and limited partners to realize returns while keeping a company private.

Traditional private equity secondaries refer to transactions where a party buys a limited partner's stake in a number of different private equity funds in a process led by the limited partner or a strategic advisor. This strategy is used as a portfolio rebalancing tool for buyers looking to mitigate the J-curve effect, which refers to the observation that funds tend to lose money early on then reach profitability towards maturity. By buying stakes closer to maturity, investors can offset the early losses in other fund investments, while limited partners selling fund stakes can realize their returns sooner. As the market has evolved, more complex transactions have arisen and transformed the secondary investment from a niche strategy to an essential source of later-stage liquidity. The majority of these new strategies – namely asset sales, strip sales, and preferred equity issuances – are known as GP-led transactions because, unlike a standard

secondary sale, the process is led by a fund manager and concerns only one fund or stakes in individual companies within the fund. These transactions allow general partners (i.e. fund managers) to realize returns without an IPO or acquisition occurring, so an increase in GP-led transactions would mean companies have less incentive to realize returns over a specific horizon.

In order to evaluate the growth of secondary liquidity, with a particular focus on GP-led transactions, the researcher used Pitchbook and Preqin data, which were backtested with permission using Greenhill Cogent's secondary transaction database. While Greenhill data went as early as 2006, Pitchbook data on GP-led transactions begins in 2011. Starting in 2013, Preqin also provided fund-level details for secondary transactions specifically, so the researcher first looked at aggregate secondary transaction volume by grouping capital raised for new funds with capital deployed in transactions each year from 2013-2018. The researcher then used Pitchbook data beginning in 2011 to analyze GP-led secondaries by volume as well as its share of total volume. Deal count was excluded given that an individual transaction often includes separate stakes in the same fund that are recorded in each database as being independent of one another.

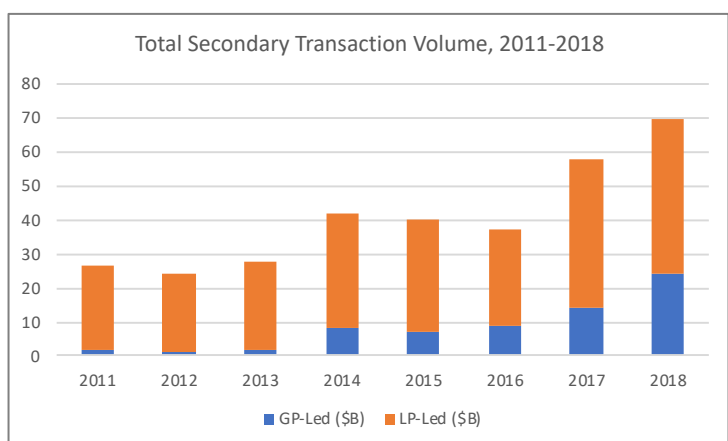
Figure 19



Source: Preqin

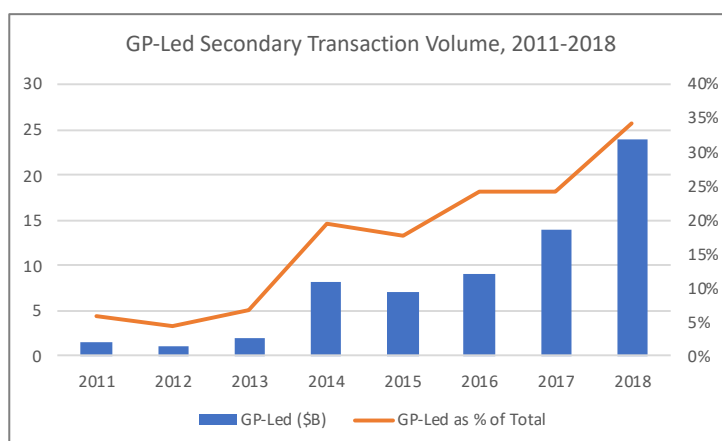
Figure 19 shows that U.S. secondary capital has grown consistently since 2013 at a 38% average annual growth rate. This appears to be driven by an increase in capital deployed, while capital raised shows little change over time. This means one of two things: either older funds are deploying dry powder at increased rates (and are not represented fully on the chart because they raised before 2013) or new players are investing in deals out of vehicles that aren't specific to secondary investments. Given that many secondary transactions occur through SPVs or are consummated as part of flagship funds combining multiple strategies, the latter case would appear to be more feasible.

Figure 20



Source: Pitchbook data

Figure 21



Source: Pitchbook data

Figures 20 and 21 show that GP-led secondary transactions have seen accelerated deployment since 2011, growing at an average yearly rate of 73.3%. The growth of these deals has steadily outpaced that of the rest of the market since 2012 and, by 2018, accounted for roughly 35% of total secondary transaction volume. This indicates that general partners have taken a more proactive stance in liquidating positions in their funds in order to realize returns earlier.

Summary of Key Points Related to the Private Markets

The discretionary nature of disclosure in the private markets prevents one from being able to firmly establish any procedures for quantitative analysis; nevertheless, the information that is available suggests that the private markets have become a feasible alternative to the public markets in several respects. While the increase in GP-led transactions would not directly link to a decline in IPO activity, it is relevant in that early liquidation for LPs and GPs removes incentives for companies to push for liquidation events, be it acquisitions or IPOs. This encourages companies to stay private longer. Hence, it would be misguided to conclude that fewer startups will go public each year should the trend in GP-led transactions continue, but one would be safe assuming that those who do end up listing in the public markets will be older due to less incentives to liquidate early.

Moreover, while Figures 14 and 15 show seed extensions to be a niche consideration as they are dwarfed by total seed volume, private IPOs appear to serve as a relevant alternative to the public IPO process. Figure 17 shows that the strategy's usage increased fivefold from 2013 to 2018 and, as delineated in Figure 18, the total count of yearly private IPOs is now in line with the count of public IPOs. This form of financing offers a more direct point of comparison in considering the decline in small IPOs than GP-led secondaries and appears to now match public offerings in scope. While many companies will still list on the public exchanges once they reach a certain size, private IPOs will, at the very least, prolong time to market.



## **Areas of Further Study**

### **Public Markets**

The first step of this study – looking at the overall decline in listed stocks in the United States – looks at the market in America as a whole, with no breakdown by individual exchange. This occurred because the World Federation of Exchanges does not break down data by individual exchange and CRSP queries done by exchange had duplicate PERMCOs – the unique identifier for a company – between exchanges due to companies merging, listing on new exchanges, or delisting and later relisting. Looking to see if individual exchanges had more delisting activity or less new entrants than others may provide useful information.

Many methods are employed for calculating IPO volume, with simple queries generating low-quality data or missing data on databases such as Bloomberg and CRSP. The researcher used data aggregated and filtered by a leading expert to understand overall IPO volume, but such data did not include a detailed breakdown by market capitalization. The last thorough study using similar filters and assessing companies by size was completed by Rose and Solomon (2016) using data up to 2012, so it would be useful to see how this compares with the Bloomberg data included in this paper.

### **Private Markets**

Given that Pitchbook data does not clearly discriminate between growth equity, LBOs, and late-stage managers and funds, the researcher focused on proxies for growth in follow-on financing as opposed to looking directly at the growth of the three aforementioned fund types. Access to a dataset making a clear distinction between the three for both funds and individual investments

would provide meaningful insights. Additionally, many follow-on deals and most large secondary deals are done through special purpose vehicles (SPVs) or sidecar funds opposed to being part of a firm's primary investment vehicle. Research pooling fund data by type, accounting for SPVs and sidecars, would make it possible to analyze both follow-on and secondary financing at the fund level.

Additionally, this paper identified two groupings for consideration: Private Market Liquidity and Regulations and Compliance. The researcher chose to analyze Private Market Liquidity; however, further study of the costs in auditing for public companies, cost to issuer in the IPO process, and other relevant considerations may prove to be informative as well.

One particular consideration that merits investigation is the principle-agent problem, which was briefly addressed with respect to secondary liquidity. The term refers to a conflict of interest in which one person or company makes decisions on behalf of another – in this case, a company making decisions that are supposedly in the best interest of its investors. Prior research by Gompers (1996) and Boot et al. (2006) indicates that leaders of companies in the private markets prefer staying private; however, the fact that most investors have large stakes in a business and prefer the traditional IPO route leads leaders to consider entering the public markets or selling to corporate buyers. If secondary liquidity and private IPOs make it possible to liquidate stakes without going public, leaders may be less inclined to act in the interest of these investors, instead opting to remain private.

### Conclusion

While there is promise in noting that less companies are leaving the public markets, the inadequacy of entry through the IPO process is upsetting the balance of power between the public and private markets. The absence of small companies threatens public access to equities with the potential to grow exponentially and become highly profitable, which can generate significant returns for investors. This is of heightened concern when noting that the companies that are no longer listing while small and nimble tend to be in services, transportation and communications, and finance, all spaces that are now chock-full of unicorns (e.g. Airbnb, SpaceX, and Stripe, respectively) taking late-stage funding instead of raising capital from everyday investors on public stock exchanges. The growth of generation-defining companies is increasingly concentrated in the hands of those who have the least to gain from it.

This may seem inconsequential if one is to make note of the fact that most Americans are financially illiterate – a 2008 study at Dartmouth, for example, observed that an estimated two-thirds of Americans did not understand the concept of compound interest – but such an approach neglects the fact that most Americans have some hand in the public market (Konrad, 2008). Despite their limited knowledge, many Americans rely on savings plans such as Roth IRAs and 401ks to pay for retirement. Others invest in the public markets with the expectation that future growth will help finance any number of other major life decisions – be it sending a child to college or buying a home for one's family. Even if these investors are unaware of what they hold or are unable to understand the financial landscape, the expected future growth of equities in the public markets is baked into decisions that shape their way of life. Consequently, any regression in this growth may turn out to have far-reaching effects for the average American.

As the private markets grow and strategies such as private IPOs and GP-led secondary transactions increase in prevalence, an increasing portion of the growth once associated with micro-cap stocks is now only accessible to accredited investors. That said, new measures such as direct listings – which come with limited cost to issuer but only apply to companies with available shares exceeding \$250 million in market value – and future adjustments to fund structures and accreditation rules may increase listings or access, respectively. Should no change occur, though, the current subdivision of opportunity between accredited investors in the private markets and regular investors in the public markets will likely continue to widen, with the private markets providing inequitable access to growth.

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## Appendix

Table A.1

Variable	Grouping	Explanation
Later-Stage Funding	Private Market Liquidity	<ul style="list-style-type: none"> <li>• More investors are willing to fund later rounds, with certain managers raising rounds specifically geared toward helping a company find a strategic buyer or list on the public markets</li> </ul>
Secondary Liquidity	Private Market Liquidity	<ul style="list-style-type: none"> <li>• Secondary liquidity is increasingly available for fund managers and limited partners, allowing them to realize returns earlier</li> </ul>
IPO Costs and Complications	Regulations and Compliance	<ul style="list-style-type: none"> <li>• Increased cost to issuer due to higher prices to list on an exchange and to hire bankers, consultants, and other advisors</li> <li>• Ruined economics on the sell-side for smaller companies, which leads to less coverage of an IPO</li> </ul>
Regulatory Compliance Costs	Regulations and Compliance	<ul style="list-style-type: none"> <li>• Increased cost in the burden of complying with audits and other disclosure requirements as a public company</li> </ul>
Private Market Disclosure Requirements	Regulations and Compliance	<ul style="list-style-type: none"> <li>• Limited disclosure requirement in the private markets provide a shield, allowing companies to keep financials secret and avoid costs of compliance they would face in the public markets</li> </ul>
Private Market Valuations	Removed	<ul style="list-style-type: none"> <li>• Higher valuations in the private markets dissuade company leadership from listing on public exchanges and risk facing a devaluation</li> </ul>
Additional Funding Rounds for Founders	Private Market Liquidity	<ul style="list-style-type: none"> <li>• More investors are willing to fund additional rounds, allowing founders and employees to liquidate positions</li> <li>• Additional rounds are being added between standard rounds, through strategies such as seen extensions and bridge rounds</li> </ul>
Venture Capital Value-Add	Removed	<ul style="list-style-type: none"> <li>• Top investment managers can connect companies with strategic buyers and identify managers for subsequent rounds among other services</li> </ul>
Availability of M&A	Regulations and Compliance	<ul style="list-style-type: none"> <li>• The Hart-Scott-Rodino Act raised reportability threshold from \$50M in 2000 to ~\$80M today, making anti-trust less of a consideration and M&amp;A a more effective alternative</li> </ul>

Table A.2

Variable	Grouping	Reason for Removal
Later-Stage Funding	Private Market Liquidity	N/A
Secondary Liquidity	Private Market Liquidity	N/A
IPO Costs and Complications	Removed	· Focus on Private Market Liquidity instead of Regulations and Compliance
Regulatory Compliance Costs	Removed	· Focus on Private Market Liquidity instead of Regulations and Compliance
Private Market Disclosure Requirements	Removed	· Focus on Private Market Liquidity instead of Regulations and Compliance
Private Market Valuations	Removed	· One interviewee made two observations: First, this is cyclical, not systemic. Second, no company would willingly admit to this.
Additional Funding Rounds for Founders	Private Market Liquidity	N/A
Venture Capital Value-Add	Removed	· As noted by one interviewee, measuring this variable is a challenge because most attribution occurs after the fact and rarely do managers discuss this factor in relation to companies that didn't work out
Availability of M&A	Removed	· Focus on Private Market Liquidity instead of Regulations and Compliance