

What's behind the falling number of public companies?

- The number of publicly listed U.S. companies has fallen by about 50 percent in the last 20 years. But focusing solely on this decreasing number masks some important trends.
- A closer look at these market and regulatory trends reveals that micro-cap companies account for most of the decline.
- We find that the shrinking number of public companies has not materially changed the concentration and diversification of the investable U.S. market.

In 1996, the number of publicly listed U.S. companies exceeded 7,000. By the end of 2016, that number had dropped below 3,800.¹ There is conjecture that burdensome regulations impede companies from going public and obtaining funding.² However, the declining number alone doesn't tell the whole story.

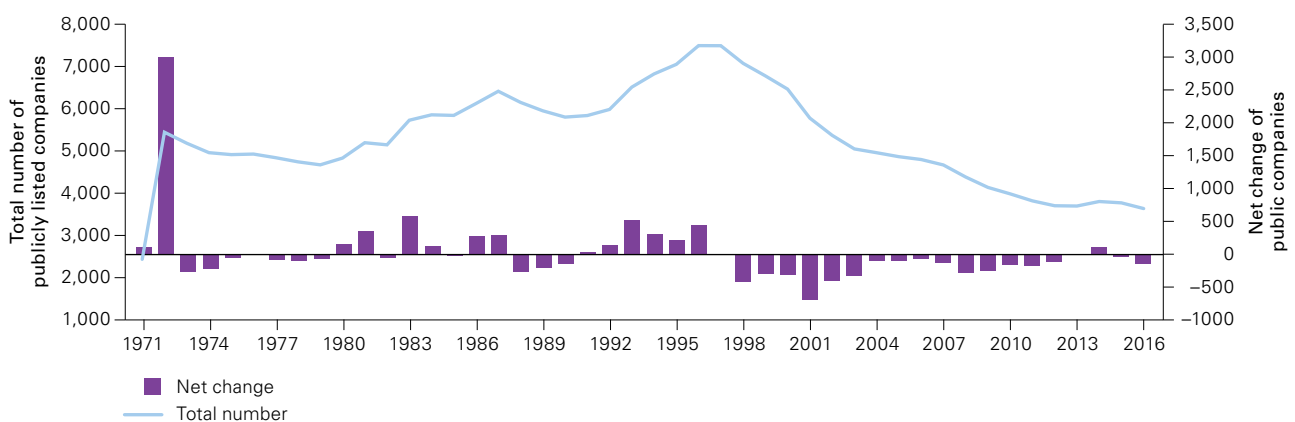
In this research note, we show that the decline appears to be largely limited to micro-cap companies and that the focus on the number of companies—rather than market capitalization—does not fully measure the equity market's health. Our research suggests that despite the decrease, the concentration and diversification in the investable U.S. equity market has not materially changed. However,

while our research reviews potential causes of the decrease, it does not intend to draw conclusions regarding the economic effects of the decrease.

To what extent is the number really shrinking?

Although it is true that the number of public companies has been falling since 1996, the headline number, if accepted at face value, is misleading. **Figure 1** shows that the severity of the trend depends on the time horizon of the analysis. When viewed relative to 1996, it appears that the number of publicly listed companies has fallen by more than half.³ However, the number of public companies in 1996 could very well be viewed as a

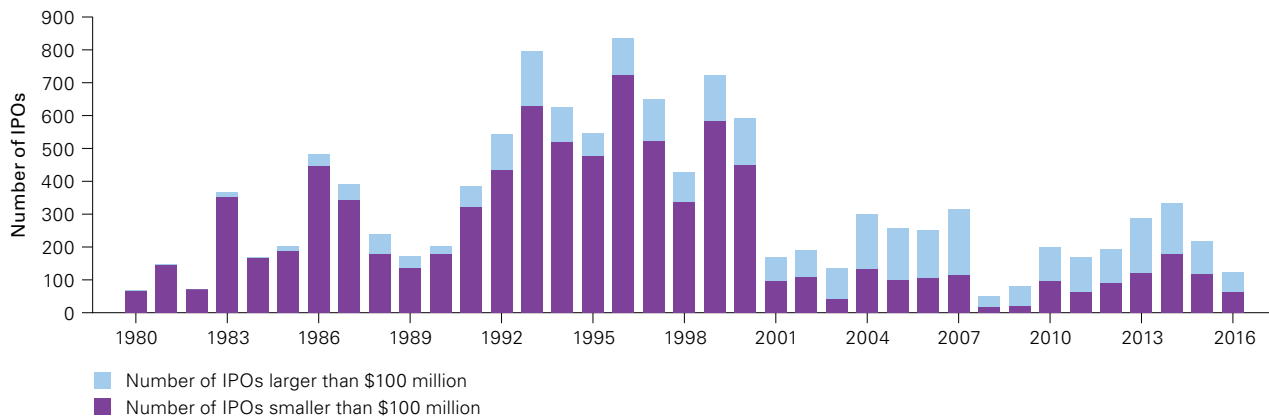
Figure 1. The existence of a trend depends on the time horizon



Notes: Publicly listed companies include those traded on NYSE, AMEX, and NASDAQ. Pink sheet stocks are traded over the counter and, thus, are not included in the chart.
Source: Vanguard calculations based on data from CRSP.

¹ Center for Research in Security Prices (CRSP).
² See Piwowar (2017).
³ Publicly listed companies are those on file with CRSP and traded on NYSE, AMEX, and NASDAQ; they exclude American depositary receipts and closed-end funds.

Figure 2. Larger IPOs have remained relatively stable



Note: Setting the threshold at \$50 million yields a similar trend.

Source: Vanguard calculations based on data from Bloomberg.

high point, rather than a normal amount, because of the economic boom in the 1990s leading up to the tech bubble. When viewed relative to 1972, the decline shrinks to one-third. Moreover, the spike in the number of publicly listed companies in 1972 occurred because NASDAQ went public and the 3,000-plus companies that previously traded over the counter became publicly listed.

The blame for the decline is often focused on the drop in the number of initial public offerings (IPOs).⁴ But this largely ignores analysis of additional characteristics of those companies, such as their size. Figure 2 shows the number of IPOs according to company size. Smaller firms, defined as those with gross IPO proceeds under \$100 million—which essentially makes them micro-cap companies—fell precipitously following the tech bubble.⁵

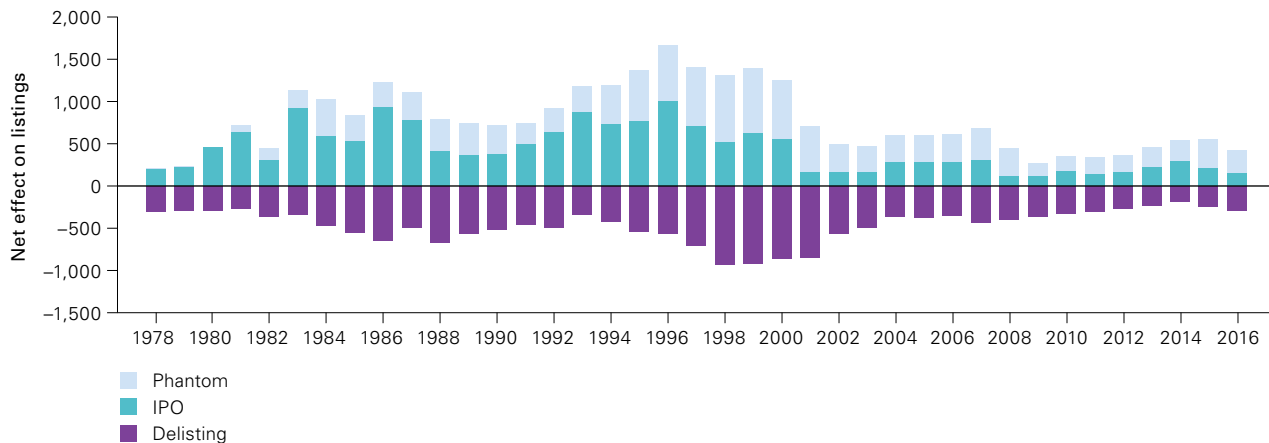
The disappearance of small- and micro-firm IPOs was the main reason the total number of stocks declined between 1996 and 2016, consistent with what Ritter (2011) has noted. Meanwhile, larger firms continue to keep a healthy pace of IPOs. Since 2003, there have been more large-firm IPOs than smaller ones in all but one year.

It appears that companies are choosing to be acquired by larger public companies rather than go public themselves. Figure 3, on page 3, shows the change in the number of publicly listed companies by accounting for those companies that were acquired in lieu of going public. An IPO is considered a net addition to public equity (positive bars), while a delisting from a public exchange is considered a net subtraction (negative bar). Measuring just these two actions shows that the net

⁴ See VanderMey (2017) and Brown et al. (2017).

⁵ For context, the bottom of the range of the Russell 2000 Index for the 2016 reconstitution was \$132.9 million and for the 2017 reconstitution was \$143.6 million, according to FTSE Russell (2017).

Figure 3. Private companies often “go public” as part of a larger company



Notes: “Phantom” means private companies that are bought by public companies. Reasons for delisting include voluntary (companies choose to delist), cause (companies are forced to delist), and merger (companies are delisted because of acquisition).
Sources: Vanguard calculations based on data from Thomson Reuters and CRSP. Data on public companies buying private companies are from Thomson Reuters’ M&A database.

difference in the number of publicly listed companies is generally negative, confirming a trend of a decline. However, if we include the number of private companies that were acquired by public ones—what we call “phantom” companies—the number of net additions becomes positive. In other words, focusing only on the number of public companies eliminates a group of private companies—about 500 each year—that essentially join the public market as part of a bigger company through merger and/or acquisition.

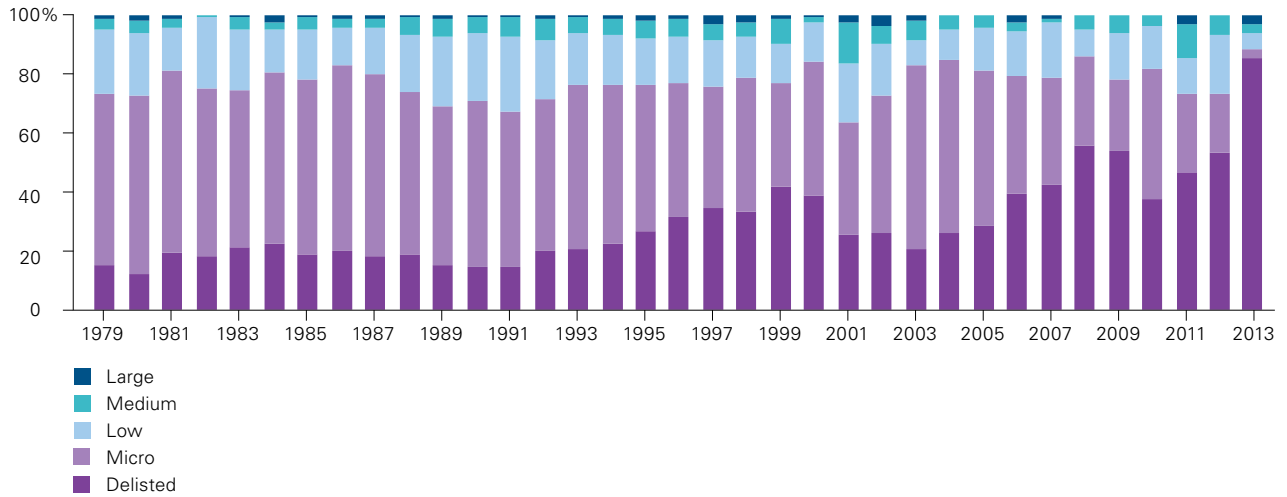
Even after going public via an IPO, most companies remain small relative to other publicly listed companies. **Figure 4a**, on page 4, shows that only a very small

percentage of companies grow to become small-, mid-, or large-cap. The overwhelming majority of companies either remain micro-cap or delist, and it appears that of those two outcomes, a growing portion was delisted.

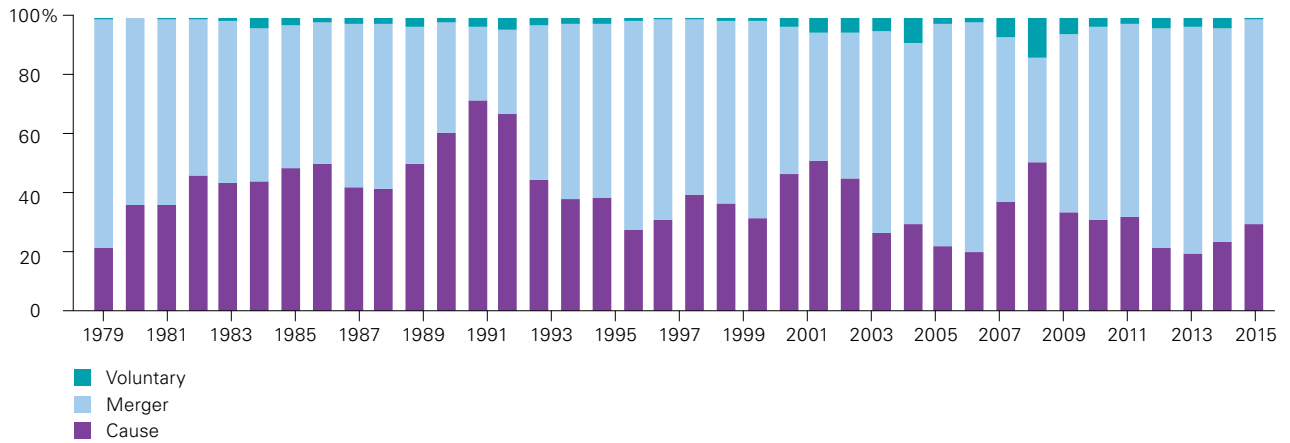
However, a firm’s being delisted does not necessarily mean it is no longer represented in the public market. **Figure 4b**, on page 4, indicates that mergers are the cause of a growing proportion of delisted firms. Even though these companies cease to exist from a “count” perspective, they continue to exist from a “company value” perspective because their business enterprise exists as part of another public company.

Figure 4. The smallest companies stay that way, while those that delist usually merge

a. Stocks' size group three years after their IPO



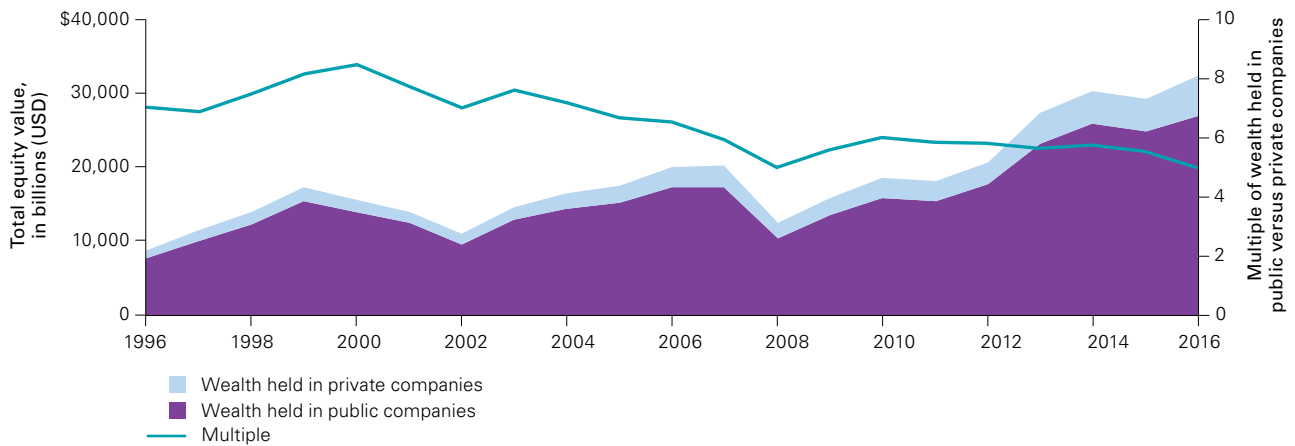
b. Stocks' reasons for delisting



Notes: Large, mid, low, and micro are defined by CRSP. The first and second deciles are defined as large-cap; the third, fourth, and fifth are defined as mid-cap; the sixth, seventh, and eighth are defined as low-cap (i.e., small-cap); and the ninth and tenth are defined as micro-cap. Only securities that had portfolio assignments at year-end were used. Voluntary means companies choose to delist, merger means companies are delisted because of acquisition, and cause means companies are forced to delist.

Source: Vanguard calculations based on data from CRSP.

Figure 5. Size of private equity has been growing relative to public equity



Source: Vanguard calculations based on Federal Reserve Board Flow of Funds.

Weighing the effect of regulatory and structural changes

Reasons for the decrease in IPOs and the number of publicly listed companies tend to focus on the compliance and regulation costs of being public. This appears to have some validity. Evidence suggests that even though changes to market structure and the regulatory landscape have led to a diminishing benefit of going public, this has coincided with an increasing benefit of staying private.⁶

Consequently, **Figure 5** shows the multiple of public-to-private equity value has been on a downward trend. However, the overall value of public equity markets has continued to grow—just not at the same pace as that of private equity markets. Put another way, public market equity isn't suffering in absolute terms; rather, it's lagging in relative terms.⁷

Implications for investors

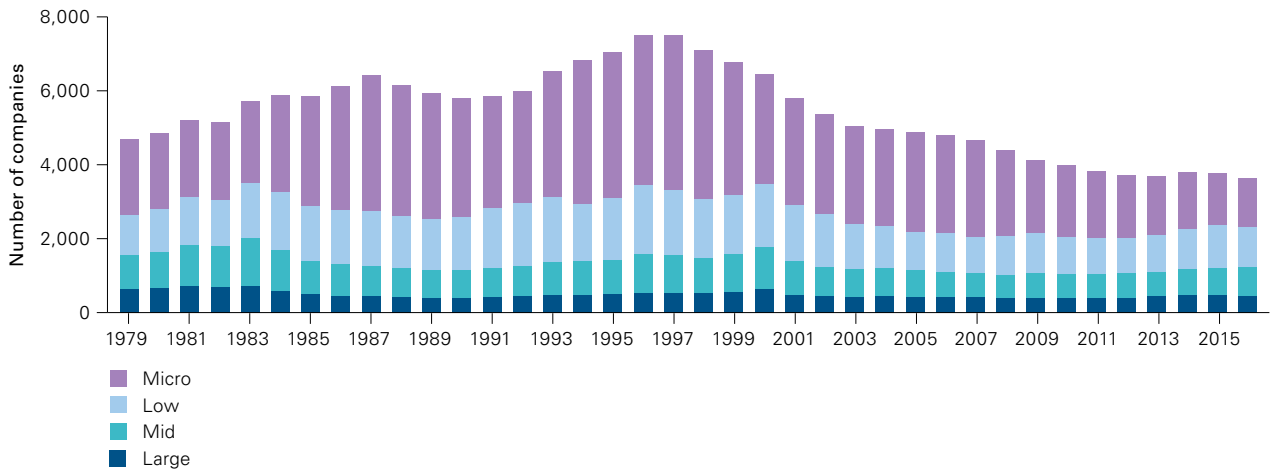
Despite the drop in the number of publicly listed companies, there appear to be few, if any, implications for investors. The investable U.S. equity market—the large-, mid-, and small-cap stocks that reflect investors' investable opportunity set—has remained a relatively constant proportion of the total U.S. equity market, and it has also maintained a consistent level of concentration among its constituents. These proportion and concentration effects are measured in terms of a company's *value*, and they are sometimes overlooked by a focus on the shrinking *number* of public companies.

⁶ See the Appendix and, notably, Figure A-I for a more detailed discussion.

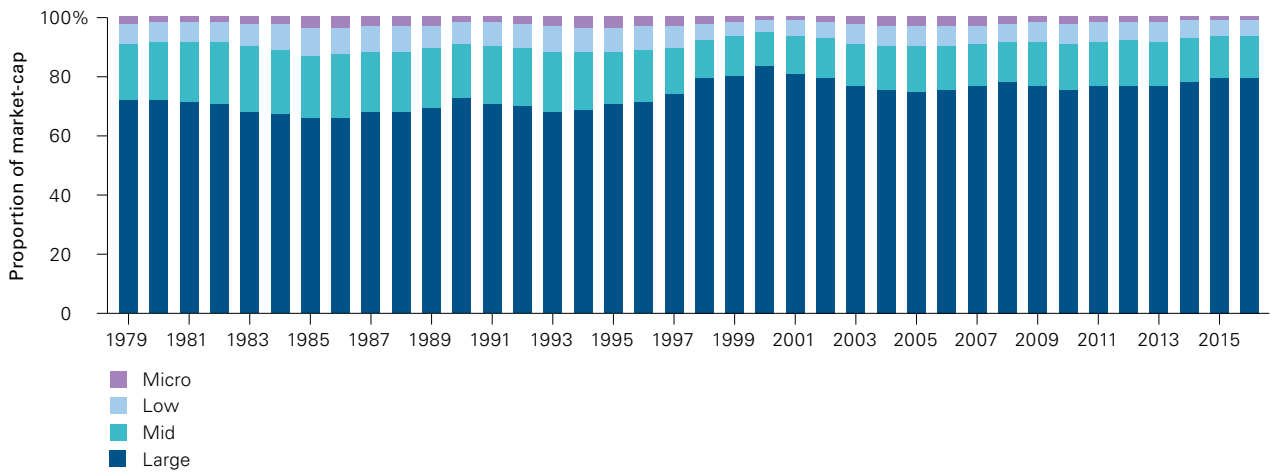
⁷ These structural and regulatory changes might also explain why companies stay private for longer periods and why the size of private equity markets has grown by more than that of public equity markets. See the Appendix and, notably, Figure A-II for a more detailed discussion.

Figure 6. For micro-caps, number is not the same as proportion

a. Number of public companies grouped by size



b. Market-cap proportion of companies grouped by size



Notes: Large, mid, low, and micro are defined by CRSP. The first and second deciles are defined as large-cap; the third, fourth, and fifth are defined as mid-cap; the sixth, seventh, and eighth are defined as low-cap (i.e., small-cap); and the ninth and tenth are defined as micro-cap. Only securities that had portfolio assignments at year-end were used.

Source: Vanguard calculations based on data from CRSP.

Figure 6a, on page 6, shows that the total number of micro-caps has been falling. However, Figure 6b, on page 6, shows that micro-caps' proportion of overall market capitalization has stayed relatively stable, at around 1.5%. It is important to note that these smallest firms are not considered investable for most mutual funds and are not included in many indexes because of their illiquidity and the regulatory constraints on the amount of ownership that may be acquired. In other words, the shrinking number of publicly listed companies consists almost entirely of those securities that would not have been invested in by active and passive funds anyway.

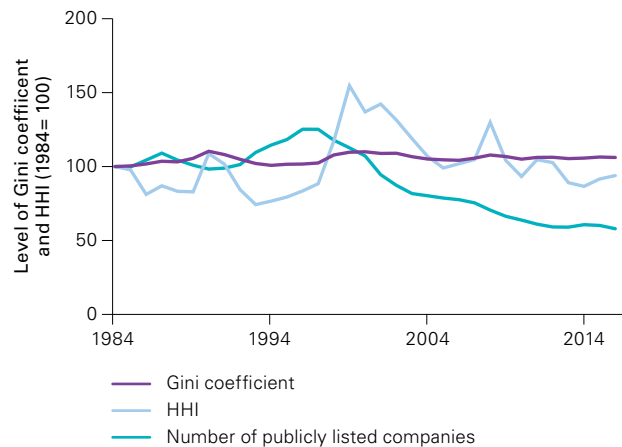
It does not appear that the investable market has become more concentrated as a result of a smaller number of public companies, either. We adopted two concepts from social and industrial economics: the Gini coefficient⁸ and the Herfindahl-Hirschman Index (HHI).⁹ Applied to our analysis of equity market concentration, the Gini coefficient and HHI would become larger if the market were more concentrated. Figure 7 plots the year-on-year changes of the Gini coefficient and the HHI, as well as the change in the number of public companies. Despite the fact that the number of public companies has been declining, neither the Gini coefficient nor the HHI shows a trend of higher level of market inequality or concentration.

Conclusion

In this research note, we explored some causes of—and implications for—investors related to the shrinking number of public companies. Our analysis suggests that the falloff in publicly listed companies has been a micro-cap phenomenon and that the focus on the shrinking number of public companies ignores the overall market capitalization of the public equity market.

We believe the headline number is shrinking in part because of the increasing benefits—from a company's perspective—of remaining private. Despite the trend, however, we do not believe that the public market has become less investable or more concentrated.

Figure 7. Degree of concentration of public equities in the investable market has no noticeable trend



Notes: FactSet started reporting the weight of companies in the Russell 3000 Index in 1984. The chart shows the levels of Gini coefficient, HHI, and the number of publicly listed companies, all of which were indexed to a value of 100 in 1984.

Source: Vanguard calculations based on data from FactSet.

⁸ Gini coefficient is a statistical measure of the degree of variation represented in a set of values, used especially in analyzing income inequality. See Cingano (2014) for the analyses on Gini coefficient and income inequality.

⁹ HHI is a measure of market concentration within an industry. See Rhoades (1993) for a description of HHI.

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Appendix

Figure A-I. Major structural and regulatory changes of public and private equity markets

Public market regulation and structural events	
1996	Introduction and growth of online brokerage accounts might have reduced the incentive for small-cap market makers.
2000	The SEC's fair disclosure mandate might have caused a deterioration of research coverage for small companies.
2001	Decimalization might have reduced the incentive for small-cap market makers and research coverage.
2002	The Sarbanes-Oxley Act (SOX) might have raised compliance costs for issuers.
2003	The Global Settlement separated research and investment banking, possibly reducing incentives to provide research coverage for small companies.
2005	The SEC's Regulation National Market System provided investors with equal access to information, contributing to increased fragmentation and "dark" pools of liquidity.
Private market deregulation	
1982	SEC Regulation D provided several safe harbors from registration.
1990	SEC Rule 144A allowed resale of private securities without restriction to qualified institutional buyers.
1996	A change to Section 3(c)7 of the Investment Company Act of 1940 effectively removed the 100-investor cap for private investment funds, although investors are still subject to status as a "qualified purchaser."
2012	The Jumpstart Our Business Startups (JOBS) Act raised the shareholder ceiling of private companies from 500 to 2,000.
2015	NASDAQ acquired SecondMarket to facilitate the exchange of shares for private companies.

Source: Mauboussin, Callahan, and Majd (2017) and De Fontenay (2017).

Earlier analyses into the shrinking number of public companies largely focused on the growing regulatory burden that lessened the incentive for companies to go public. For example, the Sarbanes-Oxley Act (SOX) in 2002 is commonly blamed for raising compliance costs for issuers.¹⁰ Other regulations, such as the 2003 Global Settlement, which settled allegations of conflicts of interest between investment banking and securities research at brokerage firms, reduced research coverage for small firms and might have dampened market-making.¹¹

However, more recent research has noted that the decline in the number of publicly listed companies predates these regulations and has shifted attention to changes that occurred before SOX.¹² For example, Weild and Kim (2009) contended that the collective changes in regulation and market structure led to a "perfect storm," reducing the incentive to go public. Additionally, the shrinking number of public companies seems to take place only in the United States; the numbers are trending higher in many other major countries, although their regulations on the public market have been tightening.¹³

It is possible that the challenge for private companies isn't necessarily that they face higher costs as public companies but that they enjoy relatively more benefits from remaining private. Loosening regulation on the private market has allowed private companies to garner benefits usually enjoyed by public companies. For example, Rule 504 of Regulation D adopted by the SEC in 1982 provided an exemption for certain types of investors to invest in the private market. Since then, however, the exemption has allowed a growing number of individual investors to participate in the private market.¹⁴

¹⁰ Zhang (2007) found negative cumulative abnormal returns following the passage of SOX; Engel, Hayes, and Wang (2007) observed an increase in decisions to go private after SOX.

¹¹ See Mauboussin, Callahan, and Majd (2017).

¹² Mauboussin, Callahan, and Majd (2017) and Doidge, Karolyi, and Stulz (2017) noted that half of what can be referred to as the "listing gap" occurred before SOX became law.

¹³ See World Bank (2017) for data on total listed domestic companies in each nation since 1975; Doidge, Karolyi, and Stulz (2017) observed a similar pattern, although their data were up until 2013.

¹⁴ See De Fontenay (2017).

Liquidity in private securities has increased in part because the adoption of SEC Rule 144A facilitated the resale of private securities, and the emergence of exchanges catering to private company investors allows investors to trade their shares.¹⁵ Also, the JOBS Act increased the cap—from 500 to 2,000—on the number of shareholders that requires companies to go public, thus allowing private companies to broaden their investor base. Finally, increasing the financial disclosure requirement from public companies creates a positive externality to their private counterparts.¹⁶

As a result, the “time to exit” for private equity has been increasing since 2006 across several exit strategies, as shown in **Figure A-II**. For example, in 2006, private equity waited only three years before realizing its exit strategy through IPO. By 2015, that wait was seven years. As a result, companies that go public are in a much more mature stage. Exits via secondary buyout and corporate acquisition have followed a similar trend.

Realizing the pressing need to limit the costs of going public, the SEC recently extended to larger companies a confidentiality exemption that previously had been granted only to small companies and start-ups. The exemption allows larger firms to keep their financing intentions, business strategy, and operating performance private while the SEC reviews their offering prospectus.¹⁷ This might be a step in the right direction, but reversing a tide three decades in the making still poses a challenge.

Figure A-II. It has been taking longer for companies to go public



Notes: The oldest data available from open-source PitchBook data are from 2006. The 2016 data had not been published when this paper was prepared. The chart represents the three options for private equity to exit: IPO, corporate acquisition, and secondary buyout.

Source: Vanguard calculations based on data from PitchBook.

¹⁵ See Bauguess, Gullapalli, and Ivanov (2015).

¹⁶ See Oesterle (1999) on how the information disclosed by publicly listed companies becomes a positive externality for private firms in a similar industry.

¹⁷ See Bullock (2017).

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