

Counterpoint Global Insights

Birth, Death, and Wealth Creation

Why Investors Need to Understand Corporate Demographics

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Introduction

Valuing the equity of a public company is a bold exercise. A company's stock is worth the present value of the cash flows it will generate for its owners until it is no more. Valuation approaches, whether based on multiples or elaborate discounted cash flow (DCF) models, generally assume a company will exist in perpetuity.

Take a price-earnings multiple of 18 as an example. We can translate that into a simple valuation model by assuming the cost of equity is 9 percent, earnings are a proxy for distributable cash, and that the company will grow at a 3.5 percent rate forever ($18 = 1 / (.09 - .035)$).¹ Discounted cash flow models are more complicated, but it is common for most of the value to come from the continuing value, which captures what happens after the explicit forecast period ends. Methods to estimate the continuing value often assume business results that are more of the same.²

A thoughtful valuation requires confronting some empirical realities: most companies do not live that long and do not generate good returns for shareholders while they are alive.

For this discussion, a company is "born" when its stock starts trading on a public exchange and "dies" when it stops trading there. We also examine the time between when founders incorporate a company and when it is born. And a company can die for a good reason, such as being acquired at a large premium, or a bad reason, including going bankrupt. Roughly one-half of public companies have traded for ten years or less over the last century.

Hendrik Bessembinder, a professor of finance at Arizona State University, has documented an extraordinary pattern of wealth creation in public equity markets.³ Nearly 60 percent of companies that have been public in the U.S. over the last century or so have failed to create value, defined as earning total shareholder returns in excess of one-month Treasury bills. And only 2 percent of companies were responsible for more than 90 percent of the aggregate net wealth creation.

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The future may well be different than the past. But these patterns of longevity and value creation are worthy of attention. They hold for international markets as well and are consistent with regularities found in other studies of the social sciences.⁴

These concepts have particular relevance for valuation and portfolio construction. For valuation, it may be time to revisit the basic construction of a DCF model, which typically includes an explicit forecast period plus a simple estimate of continuing value, and tailor projections of cash flows to reflect these observed patterns.⁵ Researchers developed the concept of continuing value nearly a century ago, when computation was slow and costly.⁶ Today, data and technology are relatively inexpensive and allow for a richer exploration of possible end states rather than a simple extrapolation of results following a forecast period.

The data on wealth creation suggest two strategies for portfolio construction. One is to recognize that an investor can capture the skewness, or asymmetry of a distribution, in long-term total shareholder returns by holding a diversified portfolio. Index funds are an effective way to implement this approach. While an index will include stocks with poor returns, it will also have the handful of companies that generate most of the aggregate value.

The other strategy is to build a relatively concentrated portfolio that seeks to include the companies that have the potential to generate high returns and avoid those that do not.⁷ We will share some insights into the characteristics of the winning businesses and their stocks.

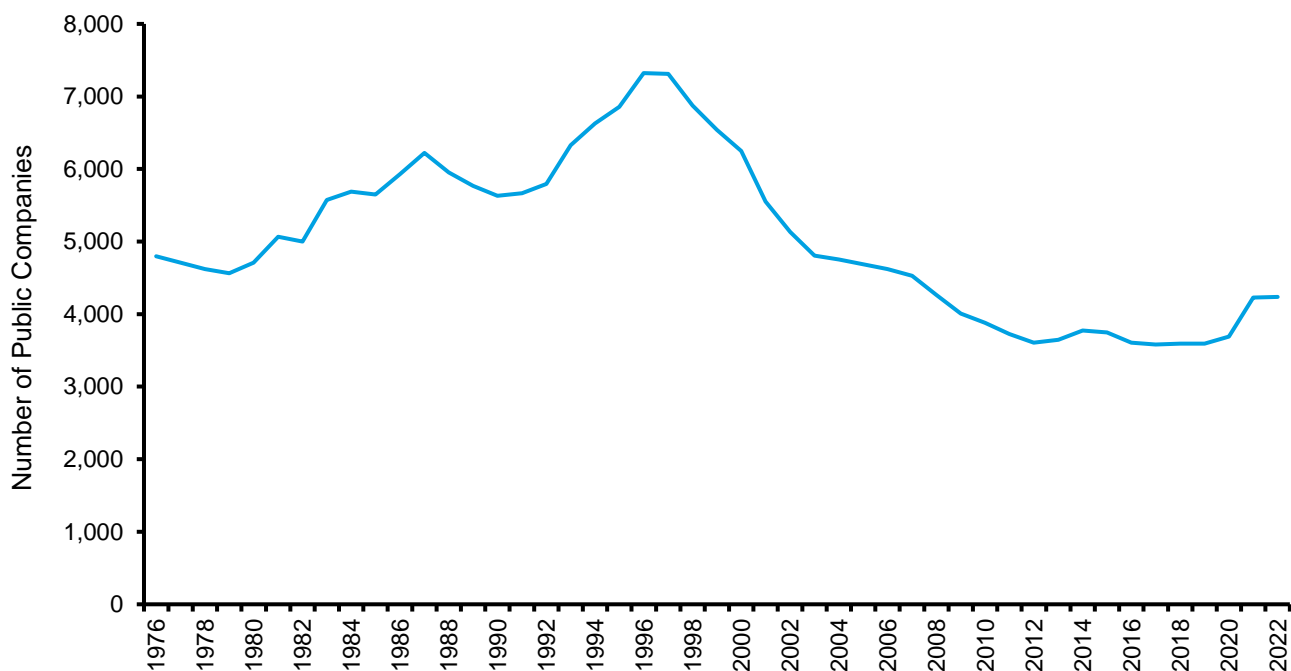
In this report, we examine how companies are born and how long they live, why they die, and patterns of shareholder returns. We focus primarily on the last half century of results in the U.S. and note waves in both initial public offerings (IPOs) and mergers and acquisitions (M&A) that may not repeat. We also discuss how the composition of the U.S. market has changed over the decades and what that means for investors.

How Many Companies Are Born and How Long Do They Live?

We start the discussion on the demographic trends of public companies in the U.S. with a review of how the population has changed over time. Exhibit 1 shows the number of public companies in the U.S. from 1976 to 2022. There were just under 4,800 listed companies in 1976, the total rose to more than 7,300 at the peak in 1996, and the sum has descended to a little more than 4,200 companies today.

The FT Wilshire 5000 IndexSM attempts to include all stocks that trade actively in the U.S., weighted by market capitalization. Wilshire Associates, an investment management consulting firm, launched the index in 1974 and picked the number “5000” to match the investable universe. That index had more than 7,000 constituents at one point in the 1990s but only 3,478 as of March 31, 2023.⁸ There were fewer public companies in the U.S. in 2022 than there were in 1976 notwithstanding that the population in 2022 was 1.5 times that of 1976, real gross domestic product (GDP) per capita was 2.2 times higher, and the number of firms was roughly 1.5 times greater.⁹

The “listing gap” is the difference between how many public companies are listed and an estimate of how many should be listed, given the size of the population and economy as well as listings in other countries. Researchers estimate the gap in the U.S. is 5,800 to 12,200 companies.¹⁰

Exhibit 1: Number of Public Companies in the U.S., 1976-2022

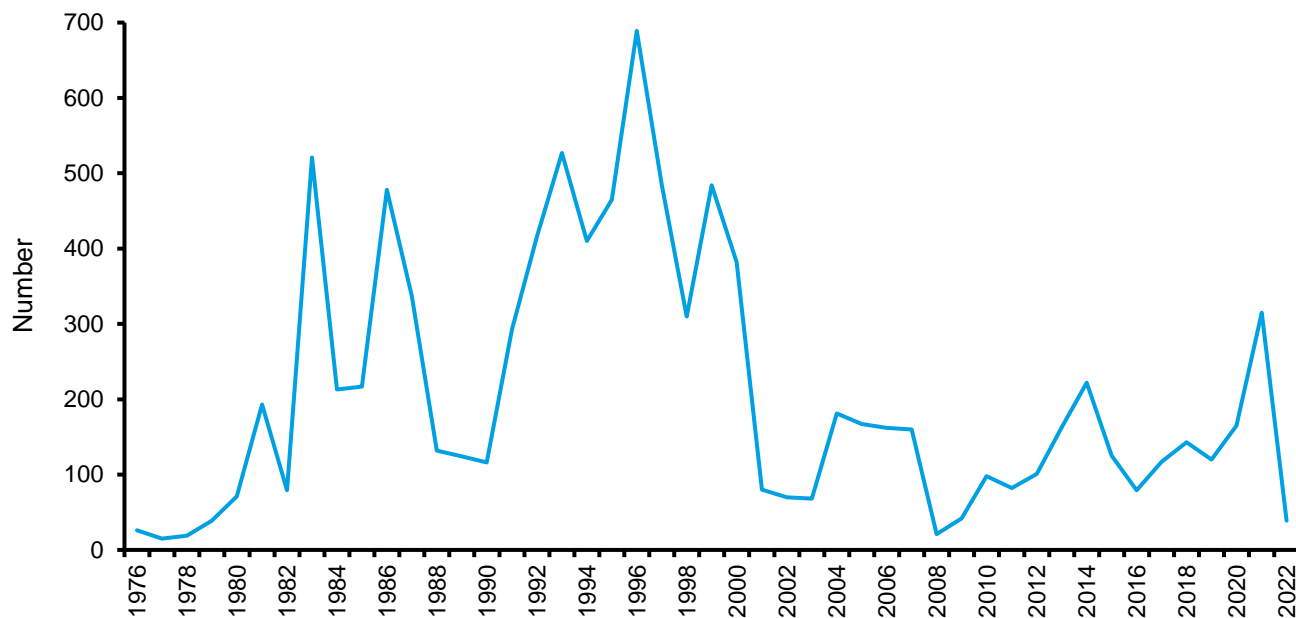
Source: Craig Doidge, G. Andrew Karolyi, and René Stulz, "The U.S. Listing Gap," *Journal of Financial Economics*, Vol. 123, No. 3, March 2017, 464-487; Center for Research in Security Prices; and Counterpoint Global.

Of the firms in the U.S. with 20 or more employees, only 1 percent are public. But they are big and important. For example, the combined sales of the top 100 public companies were nearly 7 times those of the top 100 private companies in 2021.¹¹ And the market capitalization of the U.S. stock market was 1.5 times GDP at the end of 2022. This ratio is off its all-time high but remains well above the long-term average.

We can track births and deaths to see how the demographics of public companies have changed, just as we do with figures for the population of humans. For now, we focus on births and longevity. We explore deaths in the next section.

IPOs accounted for 78 percent of births from 1976 to 2022. Jay Ritter, a professor of finance at the University of Florida, is the leading scholar on IPOs. Exhibit 2 shows Ritter's annual tally of IPOs in the U.S. over this period. Ritter excludes various types of IPOs, including those of special purpose acquisition companies (SPACs).

Exhibit 2: Number of Initial Public Offerings in the U.S., 1976-2022



Source: Jay R. Ritter and Counterpoint Global.

Note: Includes IPOs with an offer price of at least \$5.00 and excludes American depositary receipts, unit offers, closed-end funds, real estate investment trusts, special purpose acquisition companies, natural resource limited partnerships, small best-efforts offers, banks and savings and loan associations, and stocks not listed in the Center for Research in Security Prices database.

Two big waves are apparent, from 1980 to 1987 and 1991 to 2000. There were previous IPO waves in 1959-1961 and 1968-1969. In fact, there were 780 IPOs in 1969 alone, which is 18 percent of the total number of public companies today.¹² Ritter's data show only 39 IPOs in 2022, the fewest since 2008 when the economy was in the throes of the Great Recession.

A SPAC is another way for a company's stock to become publicly listed. SPACs represented 11 percent of the birth of public companies from 1976 to 2022 but were a significant factor for new listings in 2021 and 2022.

A sponsor creates a SPAC and raises capital via a public offering with the intention of merging with a company that is not public. Once a merger is complete, the operating company is a listed public company. A SPAC that fails to find a suitable target within a designated time, usually two years, is liquidated and the sponsor returns the pool of capital to the holders.¹³ Ritter does not count a SPAC as an IPO because it is uncertain whether it will remain as a listed company.

There was a modest wave of SPACs in 2005-2007, with 124 deals, but the market really took off in 2020 and 2021, when there were 861 offerings. To put that into context, the deals that came to market in those two years were about two-thirds of the total number of SPACs ever issued.¹⁴

Exhibit 3 shows the number of SPAC IPOs from 2009 through the first half of 2023 as well as the number that completed or announced a merger, were liquidated, or are still searching for a deal. Of the 613 SPAC IPOs in 2021, the peak year of issuance, 209 have liquidated. There were more than 110 liquidations in the first half of 2023, continuing the trend.¹⁵ The number of SPAC IPOs overstates the birth of public companies even though a majority of SPACs end up as listed companies.

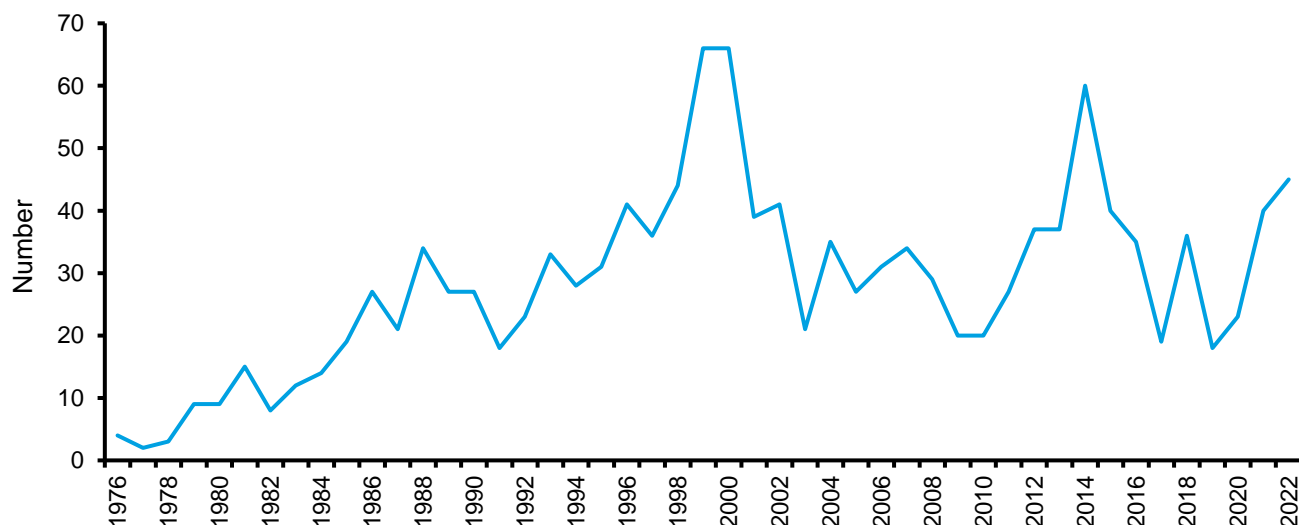
Exhibit 3: SPAC IPOs and Breakdown of Status, 2009-June 2023

Year	Total SPACs	Status				Remained Listed (2009-2022)
		Completed	Announced, Not Completed	Liquidated	Searching	
2009	1	1	0	0	0	100%
2010	7	3	0	4	0	43%
2011	15	12	0	3	0	80%
2012	9	6	0	3	0	67%
2013	10	8	0	2	0	80%
2014	12	8	0	4	0	67%
2015	20	17	0	3	0	85%
2016	13	11	0	2	0	85%
2017	34	31	0	3	0	91%
2018	46	44	0	2	0	96%
2019	59	56	0	3	0	95%
2020	248	172	13	55	8	75%
2021	613	140	118	209	146	42%
2022	86	2	33	6	45	41%
2023	18	0	1	0	17	
Total	1,191	511	165	299	216	58%

Source: SPAC Insider (www.spacinsider.com/data/stats) and Counterpoint Global.

Note: Data as of July 13, 2023.

Spin-offs have made up 11 percent of births from 1976 to 2022. A spin-off is when a public company distributes shares of a wholly-owned subsidiary to its shareholders on a pro-rata and tax-free basis. For example, General Electric, a conglomerate, announced in late 2021 that it intended to split into three companies by doing two spin-offs. In January 2023, the company completed the spin-off of GE Healthcare, and it expects to spin off GE Vernova, its energy business, in early 2024. This will leave only GE Aerospace. Exhibit 4 shows the number of announced spin-offs from 1976 through 2022.

Exhibit 4: Spin-Offs in the U.S., 1976-2022

Source: Hemang Desai and Prem C. Jain, "Firm Performance and Focus: Long-Run Stock Market Performance Following Spinoffs," *Journal of Financial Economics*, Vol. 54, No. 1, October 1999, 75-101; FactSet; Spin-Off Research; Counterpoint Global.

There were more announced spin-offs than IPOs in 2022. Along with 2008, this was one of the only two times this has happened in the last half century.

Our calculation of the number of public companies in the U.S. follows the approach of Craig Doidge, Andrew Karolyi, and René M. Stulz, professors of finance.¹⁶ We take the total number of companies and delistings each year, and calculate the number of new listings that reconciles the annual change. While our number of new listings varies somewhat from those in the Ritter data, the two series are highly correlated.¹⁷

The primary explanation for the lower birth rate of U.S. public companies in the 21st century is the sharp decline in IPOs. For example, from 1976 to 2000 there were 282 IPOs per year, on average. Since 2000, that average has dipped to 124. The main question is why the rate of IPOs has dropped so much in recent decades.

We can analyze the inclination of private companies to go public by assessing the costs and benefits. The costs include exchange fees, regulatory requirements, loss of confidentiality as the result of disclosure, and investor relations. Further, management often feels that being public creates an expectation to achieve short-term financial results, invites media scrutiny, and introduces the possibility of having shareholders that may be demanding. On balance, these are fixed costs and have gone up over time.

The benefits of listing include access to equity capital for internal uses or acquisitions, transparency and enhanced liquidity for stock-based compensation programs, a stock price that reflects current market expectations, and coverage by research analysts.

Doidge, Karolyi, and Stulz consider these costs and benefits and conclude that the propensity to go public in recent years is roughly one-half of what it was in the mid-1990s.¹⁸

Other factors affect the decision to list. Private companies have had more access to capital in recent decades than they did before. For example, investments in private companies by mutual funds and hedge funds rose sharply in the 2000s and 2010s.¹⁹ In the fall of 1996, the U.S. Congress passed the National Securities Markets Improvement Act, which deregulated key securities laws. This allowed investors more flexibility to invest in private companies.²⁰

Increasing regulatory burdens, including expanded disclosure requirements for the boards, management, and accounting firms of public companies in the U.S. as a result of the Sarbanes-Oxley Act of 2002, also contributed to the costs of being public.²¹ But it does not appear that these costs are decisive in the choice to list.²²

Research suggests that large companies have gained strength relative to small companies in recent decades.²³ The evidence shows that it is more difficult than it used to be for small companies to become medium or large, and that the gap in profitability between small and large companies has been growing.²⁴

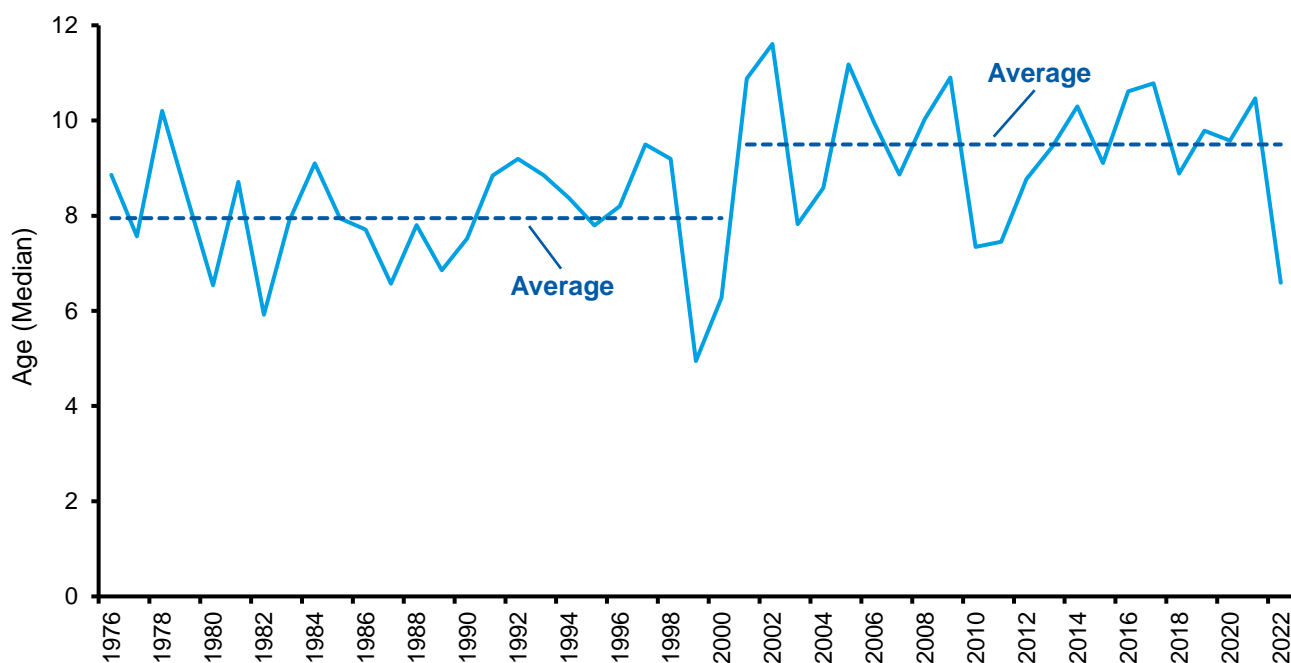
That small companies face limited mobility and profitability means that they may be better off as part of a big company. This is consistent with economies of scope, the idea that overall costs can come down as companies expand their offerings. In recent decades, many small companies found it more attractive to sell their business to a big company than to go public.²⁵ Companies have to be larger, on average, to cover the costs of going public than they had to be in prior decades.

Another consideration is the liquidity demands of mutual funds, which are the predominant buyers of IPOs. Academics suggest that the turning point was in 1998, following the devaluation of the Russian ruble and the Asian financial crisis in the prior year. The argument is that mutual funds were willing to participate in small IPOs

prior to that time but reluctant to do so after. For example, small IPOs were 56 percent of deals from 1994-1998 but only 13 percent from 1999-2003.²⁶

Companies have been waiting longer to come public than they used to as a result of the higher costs of being public, greater access to private capital, limited mobility, and demand for liquidity. Exhibit 5 shows the median age at IPO from 1976-2022. That figure was 7.9 years from 1976 to 2000 and rose to 9.5 years from 2001 to 2022.

Exhibit 5: Median Age at IPO, 1976-2022

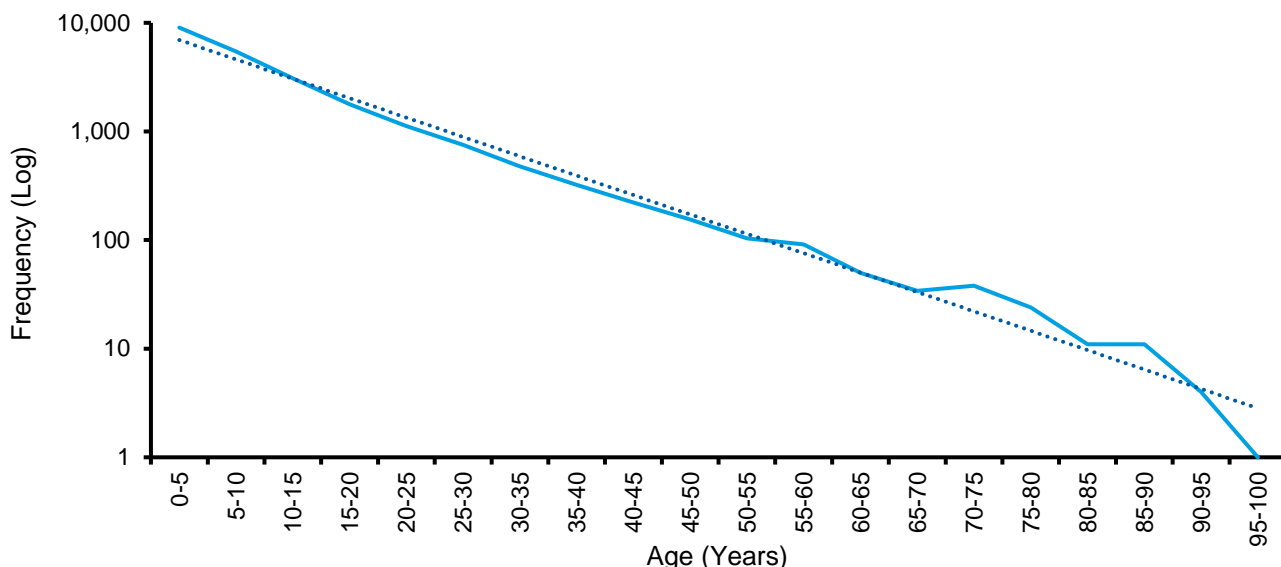


Source: Jay R. Ritter and Counterpoint Global.

One implication of companies staying private longer is that wealth creation has shifted to private markets from the public markets. Importantly, not all investors have access to private markets. To illustrate the point, Amazon's market capitalization was \$749 million when it went public in 1997 and \$1.3 trillion as of June 30, 2023 (in 2022 dollars). The company was three years old when it did its IPO. Essentially all of its wealth creation occurred when it was public. Meta Platforms's market capitalization was \$133 billion when it went public in 2012, 8 years after its founding, and \$622 billion as of June 30, 2023 (in 2022 dollars). The company was called Facebook when it went public but changed its name to Meta Platforms in 2021. One-fifth of the company's wealth creation occurred as a private company.

We now look at how long companies live, defined as the time from new listing to delisting. Exhibit 6 shows the longevity of nearly 23,000 companies that have been public since 1926, based on data from Hendrik Bessembinder. The horizontal axis reflects age at death, and the vertical axis is frequency. Note that the vertical axis is on a logarithmic scale, which means that the percentage change between tick marks is uniform.

Exhibit 6: Longevity of Companies, 1926-2022



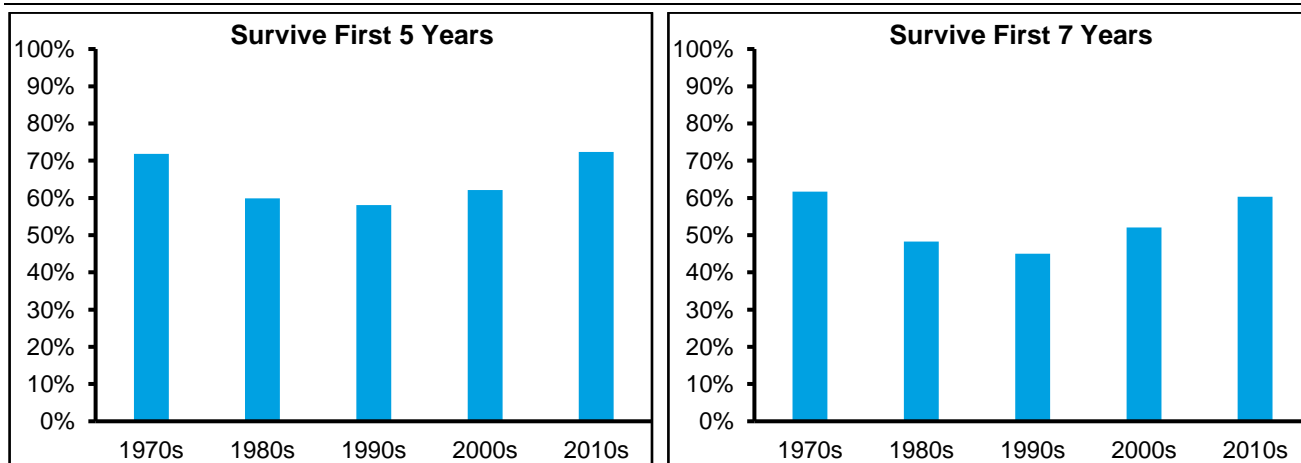
Source: Hendrik Bessembinder and Counterpoint Global.

Note: Initial listing date unknown for the 470 delisted companies with a starting date of July 1926.

An exponential function, where a constant change in the independent variable (age) has the same percentage change in the dependent variable (frequency), fits the data extremely well. But numerous studies show that public companies have a half-life, the time for the population to decrease by half, of about 10 years.²⁷ About five percent of listed companies at the beginning of 2023 are more than 50 years old.

Some studies suggest that corporate longevity has shortened over time.²⁸ Exhibit 7 shows the percentage of companies that survived 5 and 7 years following their IPOs in each decade from the 1970s through the 2010s. The survival rates did decline from the 1970s through the 1990s, but they rebounded in the 2000s and 2010s. If anything, the longevity of public companies has lengthened in the 2000s and 2010s relative to the 1980s and 1990s. This probably has more to do with the composition of public companies than the rate of change in innovation.

Exhibit 7: Percentage of Companies That Survive 5 and 7 Years by Decade, 1970s-2010s

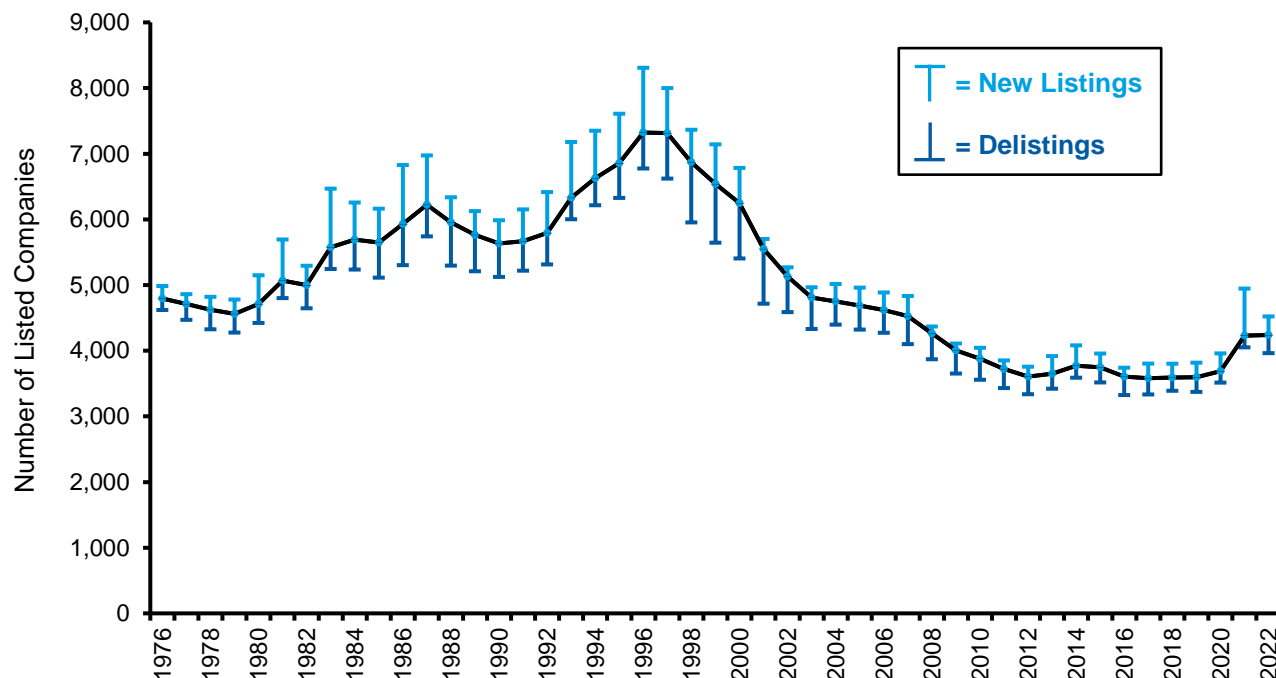


Source: Hendrik Bessembinder and Counterpoint Global.

Why Do Companies Die?

Now that we have a sense of how many companies are born and how long they live, we explore why they die. Exhibit 8 reprises the number of listed public companies in the U.S. from exhibit 1 but adds annual new listings and delistings. When new listings exceed delistings, the overall number of listed companies rises. When delistings exceed new listings, the number of listed companies falls.

Exhibit 8: Number of Listed Companies in the U.S. with New Listings and Delistings, 1976-2022

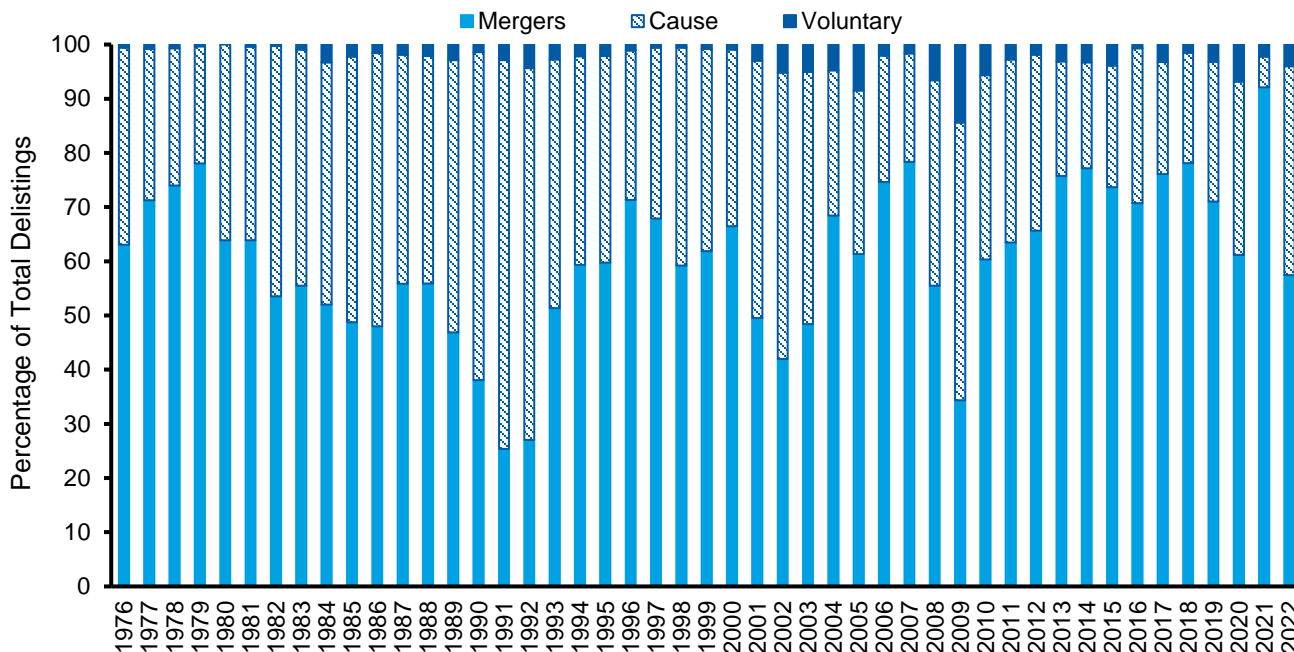


Source: Craig Doidge, G. Andrew Karolyi, and René Stulz, "The U.S. Listing Gap," *Journal of Financial Economics*, Vol. 123, No. 3, March 2017, 464-487; Center for Research in Security Prices; and Counterpoint Global.

New listings were greater than delistings overall from 1976 to 1996, and there were more delistings than new listings for the following two decades through 2017. Since then, the number of listed companies has again risen with a major boost from SPAC issuance.

Exhibit 9 shows the three ways that companies die: mergers, cause, and voluntary. Of the delistings since 1976, mergers explained 58 percent, cause 39 percent, and voluntary 3 percent. There is a rich literature on the reasons that firms die.²⁹

Exhibit 9: Sources of Delistings, 1976-2022

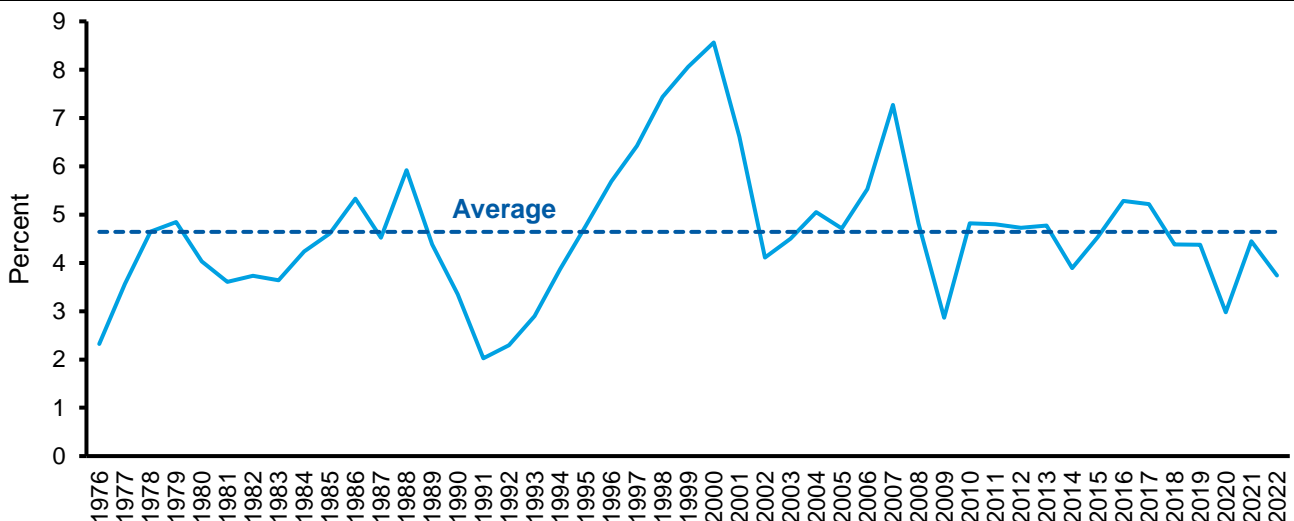


Source: Doidge, Karolyi, and Stulz, "The U.S. Listing Gap"; Center for Research in Security Prices; Counterpoint Global.

M&A is the most common reason companies delist. Exhibit 10 shows the M&A delisting rate, which equals the number of delistings due to M&A divided by the number of listed companies at the beginning of the year. This rate averaged 4.6 percent from 1976 to 2022. This means that M&A directly or indirectly affects most public companies at some point in their lives.

When one public company buys another, the number of companies shrinks but the buyer absorbs the seller's assets. As a result, the aggregate assets controlled by public companies declined at a rate much less dramatic than did the total number of listed companies from 1996 through 2022.³⁰

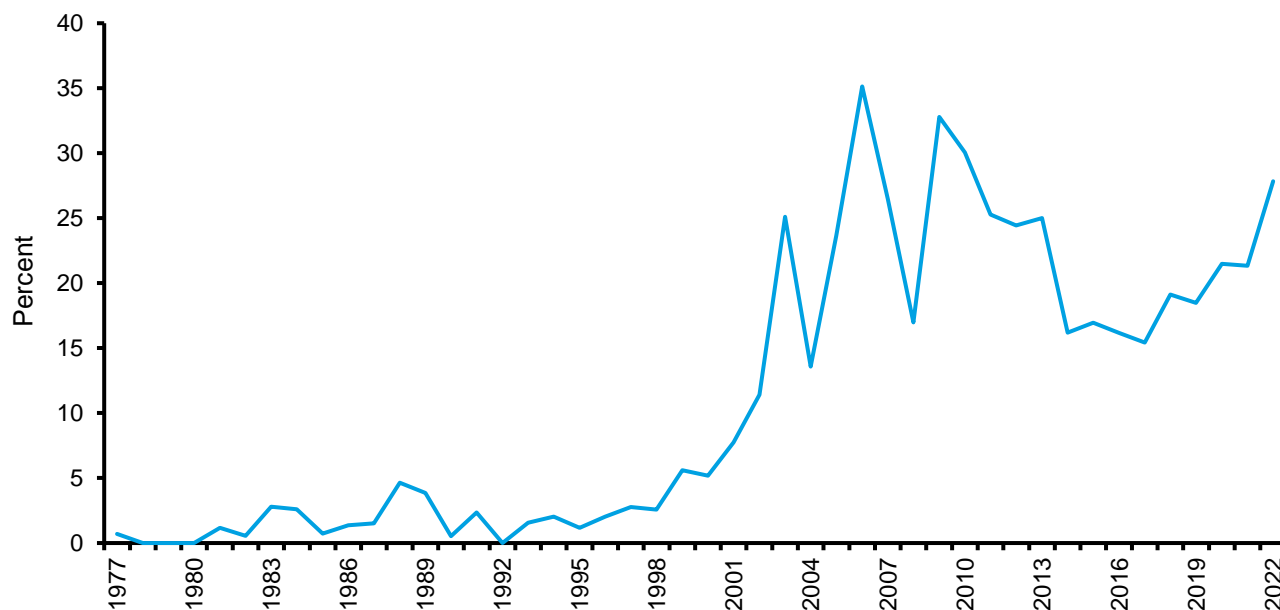
Exhibit 10: M&A Delisting Rate, 1976-2022



Source: Doidge, Karolyi, and Stulz, "The U.S. Listing Gap"; Center for Research in Security Prices; Counterpoint Global.

Most delistings due to M&A are strategic deals, where one company buys another. But financial deals, where a financial sponsor acquires a public company in a buyout, have been on the rise since 2000. Investors call this asset class “private equity” because buyout firms own companies that are not public. Exhibit 11 shows private equity buyouts as a percent of total delistings due to M&A from 1977 to 2022. Buyouts were less than 2 percent of M&A delistings from 1977 to 2000 but have been more than 20 percent since then.

Exhibit 11: Private Equity Buyouts as a Percent of M&A Delistings, 1977-2022



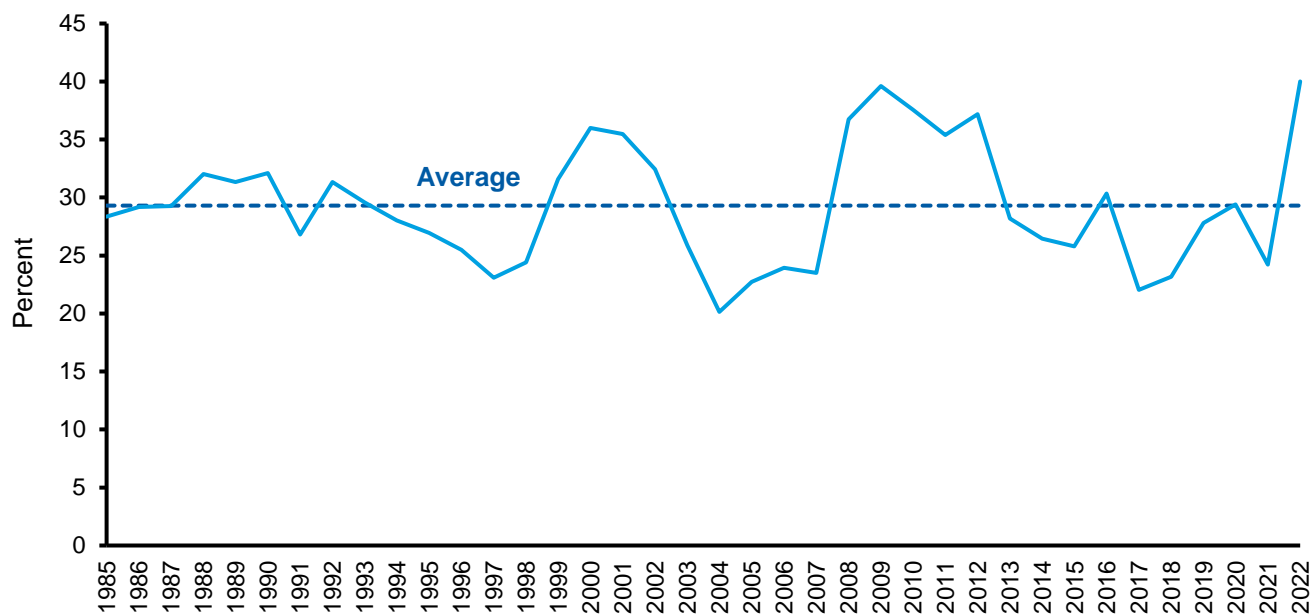
Source: FactSet; Alexander Ljungqvist, Lars Persson, and Joacim Tåg, “Private Equity’s Unintended Dark Side: On the Economic Consequences of Excessive Delistings,” NBER Working Paper 21909, January 2016; Counterpoint Global.

We count an M&A as a death, but shareholders of the selling firm often fare fine. In fact, it is usually better to be a seller than a buyer.³¹ The seller commonly receives a premium to its stock price before the deal is announced and lives on as part of another company.

Exhibit 12 shows the median annual deal premium from 1985 to 2022. The premium is defined as the percentage the buyer offers in excess of the seller’s stock price five days prior to the announcement. The median premium is 29 percent over the full period. The average premium is closer to 45 percent and tends to be higher when there are multiple bidders.³²

Sellers can negotiate from a position of strength or weakness.³³ Companies with strong prospects for growth and profitability can often command a large premium, especially when the buyer provides resources that allow the seller to improve its prospects for value creation. Meta Platforms’s acquisition of Instagram, which at the time had no sales and about a dozen employees and no revenue, for \$1 billion in 2012 is an example. Firms in decline or that are struggling may seek reprieve by merging with a stronger partner. For instance, ten U.S. airlines in 2001 consolidated into the four major carriers today.

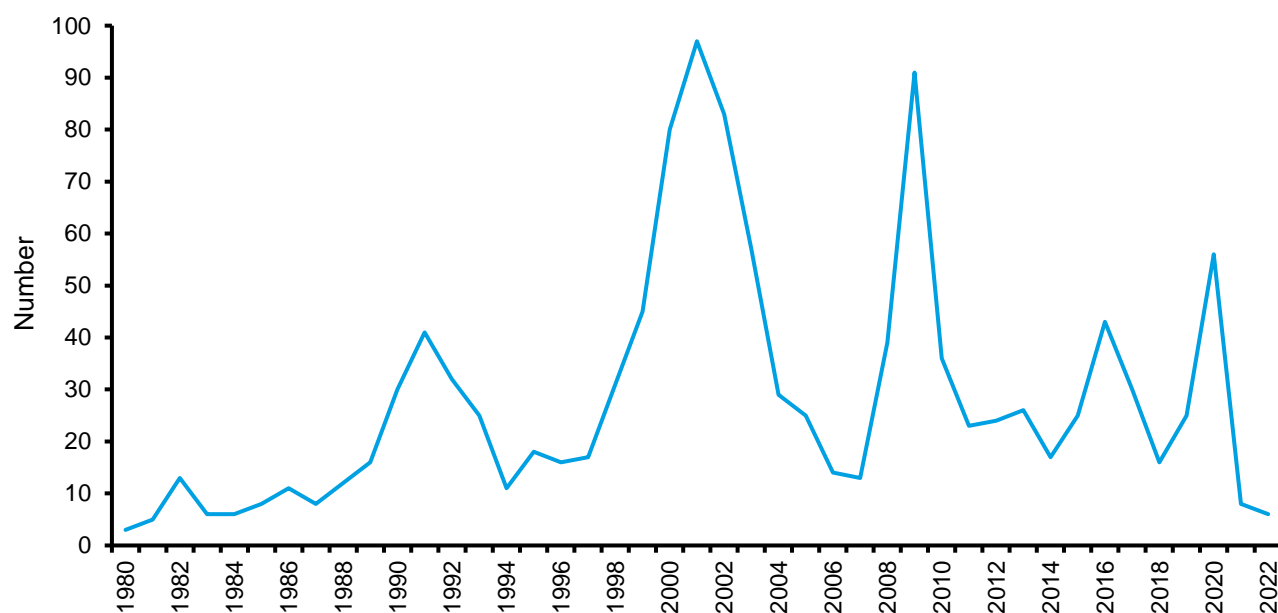
Exhibit 12: Median Deal Premium in the U.S., 1985-2022



Source: FactSet; Patrick A. Gaughan, *Mergers, Acquisitions, and Corporate Restructurings, 7th Ed.* (Hoboken, NJ: John Wiley & Sons, 2017), 611; Counterpoint Global.

A delisting for cause occurs when a company files for bankruptcy or fails to meet certain requirements set by an exchange. Exhibit 13 shows the bankruptcies of public companies with assets of \$355 million or more (in 2022 dollars) from 1980 to 2022. Almost 90 percent of companies in the Russell 3000 were of this size in 2022. Bankruptcies naturally increase during recessions. We estimate that these bankruptcies made up about three-quarters of the delistings for cause since 1976.

Exhibit 13: Bankruptcies of Large Public Companies, 1980-2022



Source: Florida-UCLA-LoPucki Bankruptcy Research Database (<https://lopucki.law.ufl.edu/index.php>); Counterpoint Global.
 Note: Large is defined as companies with assets of \$355 million or more, measured in 2022 dollars.

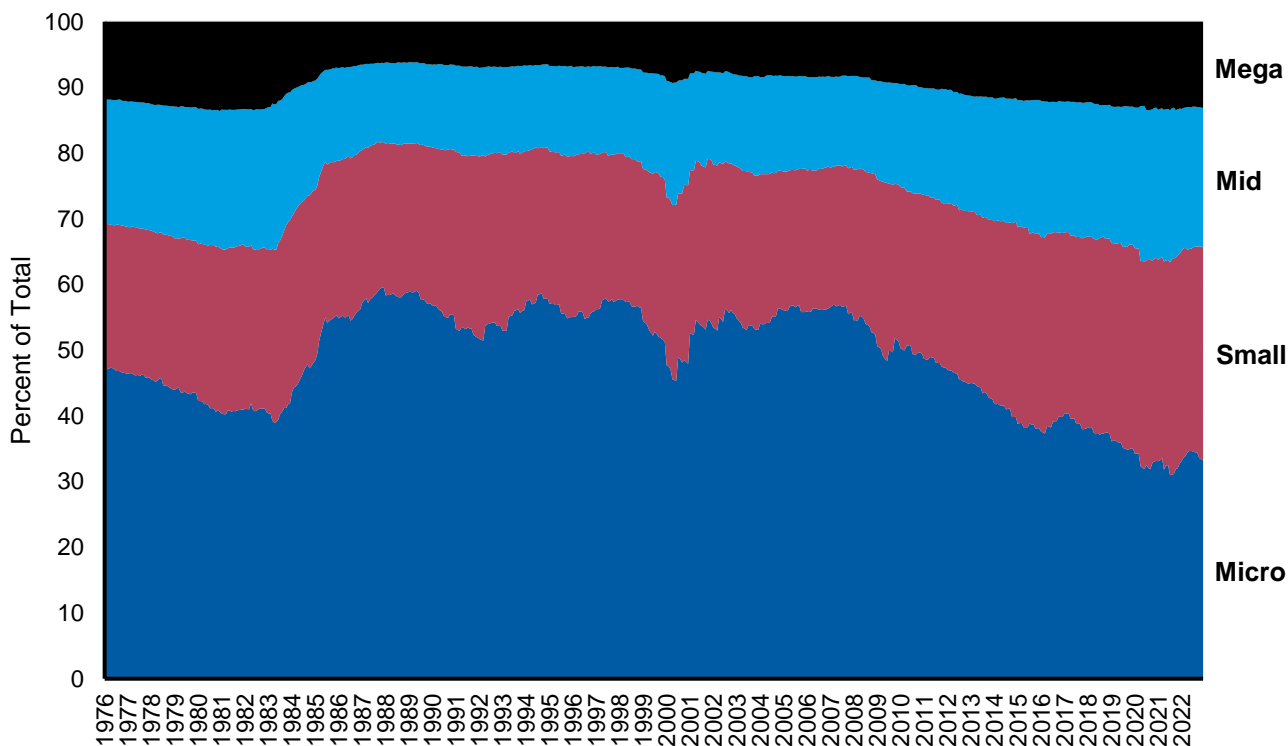
Requirements set by exchanges include being up to date with requisite filings for the Securities and Exchange Commission or maintaining a minimum stock price, number of shareholders, and market capitalization. For example, the New York Stock Exchange requires a stock to sustain a price of at least \$1.00, have 400 or more shareholders, and maintain a market capitalization of no less than \$15 million. Delisting as a result of failure to meet requirements often leads to a drop in stock price and higher transaction costs through an increase in the bid-offer spread.³⁴

A voluntary delisting is the least common explanation. This happens when a company decides that the cost of being public outstrips the benefit and is consistent with the thesis that the size threshold of listing has been on the rise. The stocks of some of these companies continue to trade but are no longer registered with an exchange.

The mix of the size of public companies has changed a great deal since the mid-1970s. The full span from 1976 to 2022 can be broken into two parts that are roughly equal. From 1976 to 2000, there were lots of IPOs that included many small companies. From 2001 to 2022, the number of annual IPOs was less than one-half of the prior period with few small companies. This change, combined with ongoing M&A and higher costs associated with regulation, suggests that we should now see fewer small companies that are public.³⁵

This is the case. Exhibit 14 shows the mix of mega-, mid-, small-, and micro-capitalization companies from 1976 to 2022.³⁶ Mega-capitalization companies were 7 percent, and micro-capitalization 56 percent, of the total number of public companies at the peak in 1996. In 2022, mega stocks were 13 percent and micro stocks just 33 percent of the total. More than 2,000 of the vanishing companies had micro capitalizations, defined as companies that make up two percent of the aggregate value of the U.S. stock market.

Exhibit 14: Mix of Mega-, Mid-, Small-, and Micro-Cap U.S. Public Companies, 1976-2022



Source: Center for Research in Security Prices and Counterpoint Global.

IPOs, the largest source of births, and M&A, the primary cause of deaths, are more related to one another than they may appear.³⁷ First, the volumes of IPOs and M&A tend to follow similar cycles and are more frequent when markets are doing well than when they are doing poorly. Second, a company that has recently completed an IPO may become a target of a buyer or an acquirer itself. Finally, entrepreneurs and early investors can compare the value in the public and M&A markets to determine which is a more attractive way to monetize ownership. These exit alternatives compete with one another assuming the seller wants to attain the highest value.

Births and deaths are related in other noteworthy ways. For instance, the delisting rate is different following an IPO in a “hot” or “cold” market.³⁸ A hot market is characterized by a high volume of deals, strong investor demand, and apparent IPO underpricing leading to sharp gains in the first day of trading. The IPO market in 1999 and 2000 is a good illustration. According to Jay Ritter, there were 476 IPOs in 1999 with an average return in the first day of 57.4 percent (weighted by proceeds) and another 380 in 2000 with a return of 45.8 percent.³⁹

A cold market is the opposite of a hot one: low volume, limited demand, and subdued gains. The years 2001 and 2002 are an example. There were 80 IPOs in 2001 with an average gain of 8.4 percent and 66 in 2002 with a return of 5.1 percent. IPO volume and gains in the first day of trading were down more than 80 percent in 2001-2002 versus 1999-2000. A large majority of IPOs occur in hot markets.

This is relevant because the delisting rate is higher for companies that come public during hot markets than it is for those during cold markets. One study found that 41 percent of companies that listed in a hot market had delisted within 5 years, whereas that rate was 30 percent for IPOs during cold markets. Further, of the companies that delisted, M&A was responsible 60 percent of the time in hot markets and 70 percent in cold markets.⁴⁰

Another relevant consideration is the risk of death, either due to failure or takeover, as a function of age and size.⁴¹ On the one hand, young companies may appear vulnerable because they have yet to fully establish their place in the market and to achieve consistent profitability. Older companies, by contrast, have been successful and are established organizations. Researchers call the risks faced by young companies the liabilities of newness and adolescence.⁴²

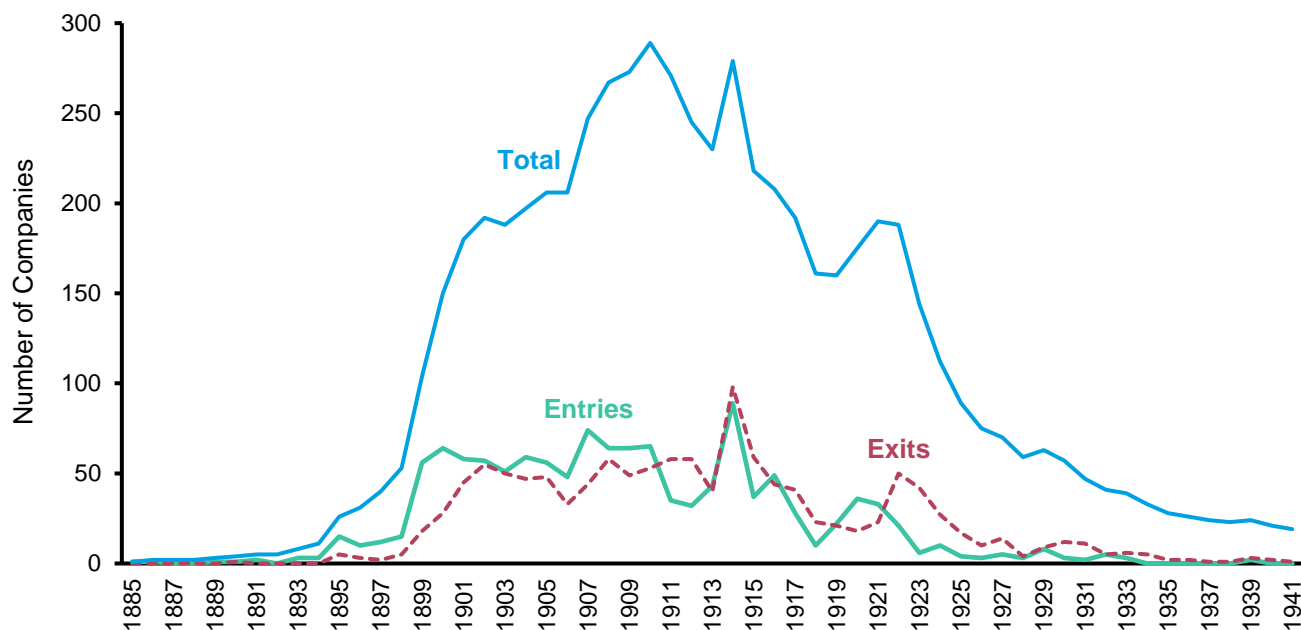
On the other hand, older companies may appear more susceptible to death because their structures have become rigid and they are less innovative.⁴³ Further, the capital raised in an IPO may provide a new company with resources to weather early competitive and organizational storms. The hazards for older companies are called the liabilities of senescence and obsolescence.

The empirical data do not reveal an easy answer. A number of studies show that the risk of death declines with age, although the pattern is not always linear.⁴⁴ Another analysis shows that “mortality rates for publicly traded companies are approximately age independent.”⁴⁵ Academics have built models that seek to integrate the hazard rates across the life of a company.⁴⁶ One noteworthy result is that companies with low stock prices, independent of market capitalization, have a higher mortality rate than companies with higher prices.⁴⁷

A final thought on birth and death, although not limited to public companies, is the pattern they follow during the industry lifecycle.⁴⁸ The simple version is that there is substantial entry as an industry emerges, with new firms trying out novel products and processes in order to capture a share of the growing economic pie. Once the market settles on certain products and processes, there is little entry and substantial exit. The final number of companies in the industry ends up being relatively small.

Market shares in the early phase of industry development are fluid but become steadier as the industry stabilizes. Researchers have documented this pattern of boom and bust for dozens of industries. Exhibit 15 shows a classic example: the entries, exits, and total number of companies for the U.S. automobile industry from 1885 to 1941.

Exhibit 15: Entries, Exits, and Total Companies in the U.S. Automobile Industry, 1885-1941



Source: Counterpoint Global and Wikipedia contributors, "List of defunct automobile manufacturers of the United States," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=List_of_defunct_automobile_manufacturers_of_the_United_States&oldid=1087965710 and Wikipedia contributors, "List of automobile manufacturers of the United States," Wikipedia, The Free Encyclopedia, https://en.wikipedia.org/w/index.php?title=List_of_automobile_manufacturers_of_the_United_States&oldid=1088463190.

The combination of technological revolutions and financial capital in public markets can lead to large booms and busts. Examples include manias and subsequent crashes in the U.K. canal stocks in the 1790s, the U.K. railway stocks in the 1840s, and the internet stocks in the late 1990s and early 2000s. Each marked an epoch of substantial birth followed by sweeping death.⁴⁹

Not only are there fewer public companies than in the past but those that exist today are on average much older and larger than they were previously. We estimate the average age of a listed company went from 12 years in 1996 to nearly 20 years in 2022.⁵⁰

Over the same period, the average market capitalization for companies in the S&P 500, an index that tracks the performance of the 500 largest U.S. listed companies, went from \$21 billion to \$78 billion (in 2022 dollars) and the median market capitalization went from \$9 billion to \$30 billion. The Russell 3000 had similar changes, from \$5 billion to \$16 billion (average) and \$1 billion to \$2 billion (median). The substantial exodus of micro-capitalization companies explains most of the increase in company size for the Russell 3000.

Investors should keep these changes in mind as they consider the key features of the stock market, including growth, return on invested capital (ROIC), balance sheets, and the proclivity to return capital to shareholders through dividends and share buybacks.⁵¹ Further, anticipating the relevance of M&A for public companies might include consideration of the average deal size and the initiative of antitrust regulators.⁵²

What Returns Do Companies Deliver for Shareholders?

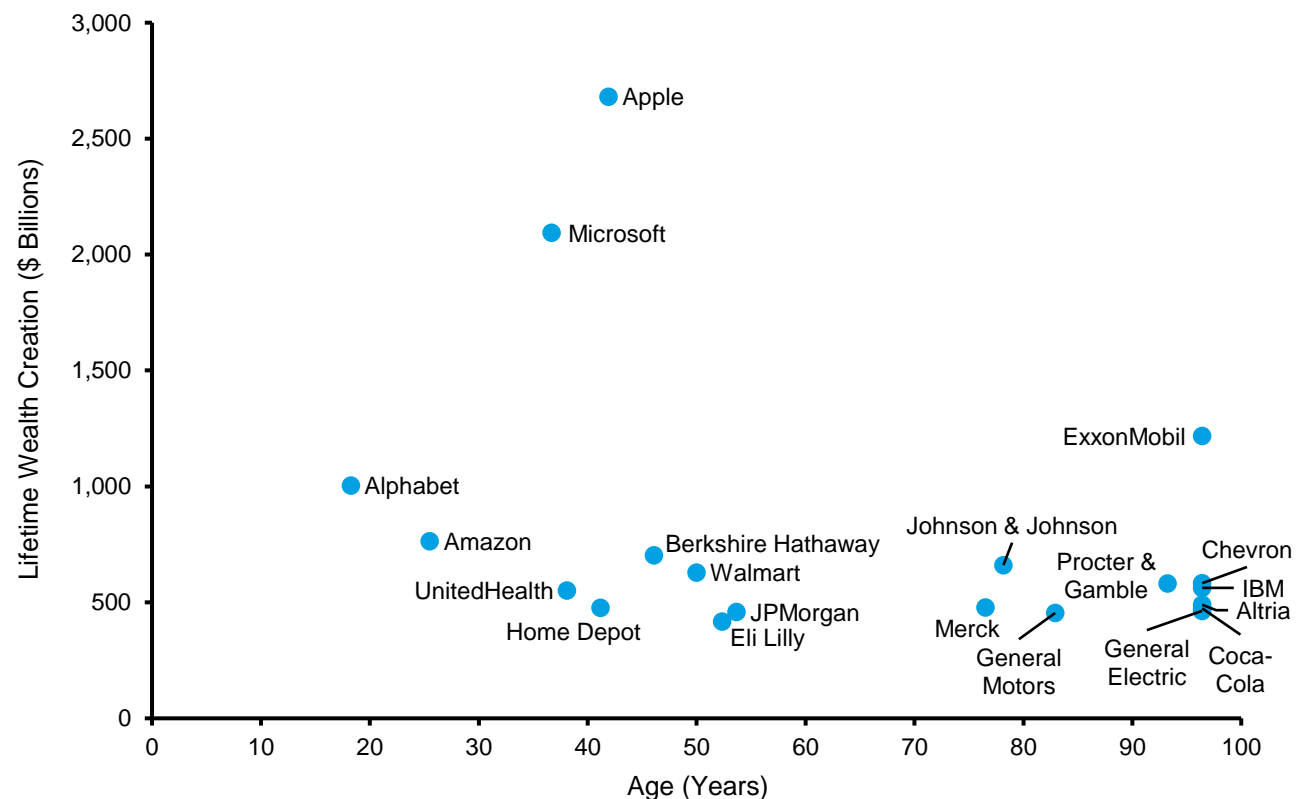
The demography of U.S. public companies is to active investment managers constructing portfolios as is the paint on the palette for artists creating a picture on canvas. At the end of the day, however, investors care about the returns that they earn. This requires returning to the work of Hendrik Bessembinder on the pattern of value creation, and considering how births and deaths relate to those results.

Over the long term, a small percentage of companies create most of the aggregate wealth in the stock market. In statistics, skewness measures the asymmetry of a distribution and kurtosis reflects the fatness of the tails, or number of extreme values. Long-term equity returns for firms are positively skewed and have high kurtosis.⁵³

Bessembinder studied roughly 28,100 public companies in the U.S. that have been listed since 1926.⁵⁴ He defined wealth creation as earning a return higher than one-month Treasury bills. He found that about 16,500, or just under 60 percent of the sample, destroyed \$9.1 trillion in value through December 2022. The other 11,600 or so, slightly more than 40 percent, created \$64.2 trillion in value. Of the net wealth creation of \$55.1 trillion, more than \$50 trillion was attributable to just 2 percent of the sample. The top 3 (½ of 1 percent of the 2 percent), Apple, Microsoft, and ExxonMobil, alone added almost \$6 trillion.

Exhibit 16 shows the age and total wealth created by the top 20 wealth creators from 1926 to December 2022. Age is the number of years the company has traded publicly since 1926. This collection of companies created wealth of \$15.7 trillion through 2022.

Exhibit 16: Age and Total Wealth Created of the 20 Top Wealth Creators, 1926-2022



Source: Hendrik Bessembinder and Counterpoint Global; Presentation based on Carson Kamp, “Do Stocks Outperform Treasury Bills?” W. P. Carey, Autumn 2018.

These headlines are striking, but investors should bear a couple of thoughts in mind. First, Bessembinder's calculation translates relative total shareholder gains and losses from percentages into dollars. This is akin to the relationship between ROIC (percentages) and economic profit (dollars) in the study of corporate results.⁵⁵

Active investors focus predominantly on the percentage changes in their portfolios measured relative to appropriate benchmarks. A portfolio manager will consider two distinct positions of the same size that outperform a benchmark by 10 percentage points over equal timespans to be equivalent, all else being constant. But if the beginning market capitalization of the first company is \$3 trillion and that of the second is \$30 billion, the wealth creation in the first case is 100 times that of the second.⁵⁶ Investors need to consider dollar changes only when the size of the deployable assets is sufficiently large relative to the asset class.

Second, the leader board of wealth creation can reflect outperformance from decades ago. Return to exhibit 16 and focus on the companies in the bottom right corner. The stocks of many of these companies have been laggards for decades, yet they still appear high on the list because of how they did long ago. For instance, ExxonMobil, IBM, General Electric, and General Motors are in the top 20 in part because of the performance of their stock in the 1950s. These were large capitalization companies that did well enough to allow them into the wealth creation hall of fame.

The pattern of wealth creation is not limited to the U.S. Bessembinder and his co-authors do a similar analysis of nearly 47,000 stocks outside the U.S., which include those in 26 developed and 16 developing economies. The period they examine, 1990 to 2020, is shorter, but the full sample of non-U.S. and U.S. stocks exceeds 64,000. They find essentially the same result outside the U.S. as they do inside it: 55-60 percent of stocks underperform Treasury bills and a small fraction of stocks produce the vast majority of the value. Indeed, these features are even more pronounced outside the U.S.⁵⁷

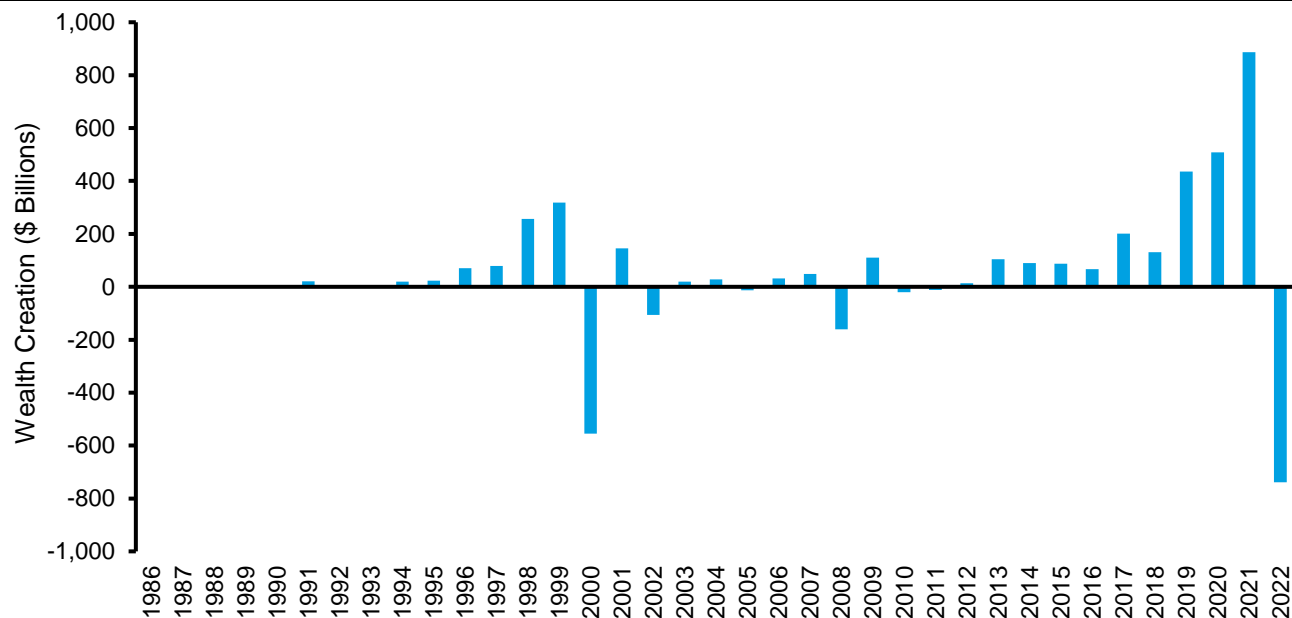
These results appear highly relevant for long-term shareholders. But investors can lose sight of these extreme outcomes because they are a consequence of compounding over lots of years. Further, while returns for individual stocks exhibit positive skewness, returns for the aggregate stock market have negative skewness.⁵⁸

Even investors with long investment horizons, including endowments and pension funds, tend to evaluate results over periods that are too short for the revelation of the full effect of compounding.⁵⁹ Bessembinder uses some simplified assumptions to show how portfolio concentration and the frequency of rebalancing affect skewness. High concentration and infrequent rebalancing lead to high skewness.⁶⁰ Long-term returns for investment funds also convey different information than short-term returns.⁶¹

This raises another issue. Most institutional money managers have a fiduciary responsibility to put the interests of clients first. This commonly includes guidelines for portfolio diversification and risk management. For example, stocks that compound at a high rate can become too large in a mutual fund portfolio and violate parameters for diversification, market capitalization, or risk that are described in the fund prospectus.⁶² Index funds, for the most part, do not have this problem.⁶³ Most of the richest people in the U.S. have the vast majority of their wealth in a single asset, usually the stock of the company they founded or of which they are large owners.⁶⁴

The counterpoint is that the list of the top wealth creators is based on what they have done rather than what they may do. Exhibit 17 shows the annual wealth creation for Microsoft from its IPO in March 1986 to December 2022. The aggregate wealth creation is nearly \$2.1 trillion, placing the company number 2 on the total wealth creation list as of 2022. However, there are extended periods when the stock underperforms Treasury bills. For example, the stock's total return was -69 percent over 111 months from January 2000 to March 2009.

Exhibit 17: Annual Wealth Creation for Microsoft 1986-2022



Source: Hendrik Bessembinder and Counterpoint Global.

Active managers seek to capture a sliver of the wealth generated by the best-performing public companies. Doing so is obviously difficult, but Bessembinder studied the set up and characteristics of the top wealth creators. Here is some of what his work revealed:

- Stock price drawdowns.**⁶⁵ The stocks of the best wealth creators over time went through substantial drawdowns, a measure of the decline in a stock price from the top to the bottom over a particular period. For example, Apple, which created nearly \$2.7 trillion in wealth from its IPO in 1981 to the end of 2022, suffered three drawdowns of 70 percent or more over that span. These included 74 percent from May 1983 to August 1985, 80 percent from February 1992 to December 1997, and 79 percent from March 2000 to March 2003. Apple was the top wealth creator through the end of 2022, but most investors would have struggled to hold the shares through these declines. The shares of Amazon offer another case, having suffered a drawdown of more than 91 percent from February 2000 to September 2001 on their way to being among the best wealth creators.
- Not just technology.**⁶⁶ While companies in the information technology sector may come to mind first when considering the top wealth creators, Bessembinder found that these companies were underrepresented among the best. Sectors that were overrepresented among the winners included healthcare and energy. Industries with high variance in return on invested capital tend to be represented among the top and bottom groups in wealth creation.
- Common characteristics of the winners.**⁶⁷ Bessembinder considered a slew of financial metrics to assess which ones, if any, were consistent with substantial wealth creation. Large increases in net income, rapid asset and sales growth that the company generated internally, a rising return on assets, above-average research and development (R&D) spending, and cash accumulation were among the characteristics of the top wealth creators. An investor can measure these characteristics objectively, and they may help anticipate good and bad prospects for wealth creation.⁶⁸

Finally, we turn to the relationship between company earnings, stock returns, and corporate demographics through a remarkable study of more than 16,300 firms that started trading after the beginning of 1975.⁶⁹ The authors, Sanjeev Bhojraj, Ashish Ochani, and Shiva Rajgopal, are professors of accounting who wanted to know if the price the stock market sets as a public company is born is an accurate reflection of future earnings.

They separated the IPOs into companies that survived as public companies, those that merged, and those that delisted for other reasons. They then examined whether the present value of its actual future earnings could justify the price at which the stock closed on the day of its IPO. They discounted the earnings by the cost of equity, calculated as the risk-free rate plus an estimate of the market risk premium. They used the yield on the 10-year Treasury note as the risk-free rate, estimates of the market risk premium from Aswath Damodaran, a professor of finance, and made no additional adjustments for risk.⁷⁰ They also ran the figures using free cash flow versus earnings and found similar, albeit lower, values.

In the case of survivors, they calculated the value of the actual earnings and added a terminal value. For those companies that merged, they assumed the acquisition price. For delisted companies, they used the earnings plus the liquidating dividend paid to the last shareholders if relevant.

Exhibit 18 summarizes the results. They found that the “average lifetime earnings at the aggregate level slightly exceeds first day price,” which is reflected in the 1.1 mean, or average, ratio in the bottom row of the exhibit. Firms that merged, which make up the largest percentage of the sample, drove most of this outcome. Further, the medians were greatly lower than the means, indicating substantial skewness. Nearly two-thirds of the companies failed to generate sufficient earnings to justify their stock prices on the first day.

Exhibit 18: Mean and Median Lifetime Earnings to First Day Stock Price, 1975-2020

Category	Number	Mean	Median
Surviving	2,757	1.5	0.4
Merged	6,963	1.9	1.1
Delisted (Non-Merged)	6,666	0.1	0.0
Total	16,386	1.1	0.3

Source: Sanjeev Bhojraj, Ashish Ochani, and Shiva Rajgopal, “Lifetime Earnings,” Working Paper, October 2022 and Counterpoint Global.

The authors explicitly link their analysis of lifetime earnings to Bessembinder’s work on wealth creation. They find that lifetime earnings are “positively associated” with future wealth creation. They also note that past wealth creation, based on returns, has a negative correlation with subsequent wealth creation. They conclude that while price and value may diverge in the short to medium term, they tend to converge in the long term.

Conclusion

Investors seeking to generate excess returns can benefit from understanding the demographics of public companies and their pattern of wealth creation.⁷¹ There were nearly 3,100 more listed companies in the U.S. at the peak in 1996 than in 2022. This means there were fewer new listings than delistings over that time. Academics that compare the U.S. to other markets suggest there is a gap between how many companies are listed and how many should be listed of 5,800 to 12,200 companies.

New listings are generally the result of IPOs, and the number of deals from 2001-2022 was not even half of what it was from 1976-2000. A strong wave of SPACs in 2020, and especially 2021, lifted the number of listed stocks.

But about one-third of the SPACs launched in 2021 have liquidated and another one-quarter are still searching for a deal.

Delistings are primarily the consequence of M&A or cause, which means the company went bankrupt or failed to meet listing requirements. About two-thirds of the delistings were companies with micro-capitalizations, defined as the smallest two percent of listed companies as measured by market capitalization. The loss of these listings has a very limited impact on the investable universe, but the mean and median market capitalization of public companies has risen in the last two decades as a consequence.

About one-half of all public companies since 1926 have delisted within 10 years of their listing. Corporate longevity, which considers a listing as a birth and delisting as death, follows an exponential function, which means that a constant change in age has the same percentage change in the probability of death. Counter to a popular narrative of shrinking corporate longevity, we find that survival rates have increased in the 2000s and 2010s relative to the 1980s and 1990s.

Hendrik Bessembinder, a professor of finance, has measured the wealth creation of more than 28,000 U.S. listed companies since 1926. A company creates wealth if it generates returns in excess of one-month Treasury bill rates. He found that from 1926 to 2022, just under 60 percent of them destroyed \$9.1 trillion and the other 40 percent or so created \$64.2 trillion. Just 2 percent of the sample created \$50 trillion of the net total of \$55.1 trillion, and the top 3 firms (Apple, Microsoft, and ExxonMobil) created almost \$6 trillion.

These results reveal skewness, which measures the asymmetry of a distribution, that is eye-popping. But it is important to recognize that this calculation translates gains and losses in relative total shareholder returns from percentages into dollars. Active managers focus mostly on generating percentage returns, adjusted for risk, that are better than those of their benchmarks. Further, some of the leading wealth creators as measured today, including IBM and General Motors, reflect total shareholder returns and market capitalizations from decades ago.

These results have relevance for investors as they consider valuation and portfolio construction. Most investors acknowledge the value of a business is the present value of its future cash flows and assess value using multiples or a DCF model. But even for a DCF model, the more sophisticated of the two approaches, most of the value is commonly reflected in the continuing value. The continuing value seeks to represent the value following the explicit forecast period and often assumes business results that are more of the same.⁷² The data on the causes of death, hazard rates, and longevity provide investors with context to consider a diverse range of possible end states.

The skewness in corporate wealth creation suggests two potential investment approaches. The first is to seek broad diversification in an index fund. If the future is similar to the past, the outperformance of the wealth creators will more than make up for the underperformance of the losers.

The second is to build a portfolio that seeks to avoid the wealth destroyers while owning the wealth creators. Bessembinder finds that the wealth creators have certain financial characteristics that are identifiable, albeit difficult to predict. He also finds that the stocks of many of the top wealth creators suffered major drawdowns, events that often cause all but the hardiest shareholders to sell. He shows that a portfolio's exposure to the skewness is a function of its concentration and rebalancing frequency. Portfolios that are concentrated and do not rebalance often are more exposed to skewness.

Please see Important Disclosures on pages 32-34

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The sponsors have some time, typically two years, to do a deal. If they fail, the sponsors dissolve the SPAC, and the holders get their money back plus the interest. When the sponsors identify a merger target, the SPAC holders get a stake in the new company. The sponsors receive a sizeable stake in the new entity as compensation for their work. If the deal size is greater than the amount in the pool, the sponsors seek to raise the additional capital through a private investment in public equity (PIPE).

Of note, SPAC holders can either take the share in the new company or opt out by redeeming their shares for the \$10, plus the interest. Redemption rates were more than 50 percent in 2021 and 2022. For more on SPACs, see Matt Levine, "Money Stuff: SPAC Magic Isn't Free," *Bloomberg*, January 8, 2021.

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⁵⁶ The market capitalizations may be relevant in cases when the benchmark is weighted by market capitalization. This is the case with the S&P 500 Index, which is the benchmark most widely used. Bessembinder’s benchmark is the return on one-month Treasury bills, so market capitalization does not play a role.

⁵⁷ Bessembinder, Chen, Choi, and Wei, “Long-Term Shareholder Returns: Evidence from 64,000 Global Stocks.”

⁵⁸ Rui Albuquerque, “Skewness in Stock Returns: Reconciling the Evidence on Firm Versus Aggregate Returns,” *Review of Financial Studies*, Vol. 25, No. 5, May 2012, 1630-1673.

⁵⁹ Interestingly, in a survey of more than 200 institutional investors that collectively manage more than \$4.1 trillion, 68 percent said they invest with a manager for 5 or more years.

⁶⁰ Hendrik Bessembinder, “Extending Portfolio Theory to Compound Returns,” *Working Paper*, July 2022.

⁶¹ Hendrik Bessembinder, Michael J. Cooper, and Feng Zhang, “Mutual Fund Performance at Long Horizons,” *Journal of Financial Economics*, Vol. 147, No. 1, January 2023, 132-158.

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⁶³ This is not strictly true. For time to time, index providers have to adjust their rules so that funds linked to the index remain compliant with rules about diversification spelled out by the U.S. Securities and Exchange Commission. For example, following strong gains by large technology companies in the first half of 2023, Nasdaq announced that there will be a “special rebalance” for the Nasdaq-100 Index®, which tracks the stocks of the largest non-financial companies listed on the Nasdaq exchange, to be effective before the market opens on July 24, 2023. The weightings of some companies had become too large and jeopardized the diversification needs

of the funds pegged to the index. The rebalance lowers the weight of these mega-capitalization stocks and increases the weight of others. Similar rebalancings occurred in 1998 and 2011. See www.nasdaq.com/press-release/the-nasdaq-100-index-special-rebalance-to-be-effective-july-24-2023-2023-07-07.

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