GLOBAL PRIVATE EQUITY REPORT 2020

BAIN & COMPANY

About Bain & Company's Private Equity business

Bain & Company is the leading consulting partner to the private equity (PE) industry and its stakeholders. PE consulting at Bain has grown eightfold over the past 15 years and now represents about one-quarter of the firm's global business. We maintain a global network of more than 1,000 experienced professionals serving PE clients. Our practice is more than triple the size of the next largest consulting company serving PE firms.

Bain's work with PE firms spans fund types, including buyout, infrastructure, real estate and debt. We also work with hedge funds, as well as many of the most prominent institutional investors, including sovereign wealth funds, pension funds, endowments and family investment offices. We support our clients across a broad range of objectives:

Deal generation. We work alongside investors to develop the right investment thesis and enhance deal flow by profiling industries, screening targets and devising a plan to approach targets.

Due diligence. We help support better deal decisions by performing integrated due diligence, assessing revenue-growth and cost-reduction opportunities to determine a target's full potential, and providing a post-acquisition agenda.

Immediate post-acquisition. After an acquisition, we support the pursuit of rapid returns by developing strategic blueprints for acquired companies, leading workshops that align management with strategic priorities and directing focused initiatives.

Ongoing value addition. During the ownership phase, we help increase the value of portfolio companies by supporting revenue-enhancement and cost-reduction initiatives and refreshing companies' value-creation plans.

Exit. We help ensure that investors maximize returns by preparing for exit, identifying the optimal exit strategy, readying the selling documents and prequalifying buyers.

Firm strategy and operations. We combine our expertise with insights drawn from our exclusive access to deal-level returns and operating metrics in CEPRES, the leading digital platform for private capital investment analytics. We help PE firms develop distinctive ways to achieve continued excellence by devising differentiated strategies, maximizing investment capabilities, developing sector specialization and intelligence, enhancing fund-raising, improving organizational design and decision making, and enlisting top talent.

Institutional investor strategy. We help institutional investors develop best-in-class investment programs across asset classes, including private equity, infrastructure and real estate. Topics we address cover asset class allocation, portfolio construction and manager selection, governance and risk management, and organizational design and decision making. We also help institutional investors expand their participation in private equity, including through coinvestment and direct investing opportunities.

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The search for certainty

Dear Colleague:

The beat goes on. Despite growing macroeconomic and political uncertainty across global markets, the private equity industry continues to make and sell investments, raise capital and generate relatively strong returns.

Yet, the private markets also continue to throw up challenges. Prices set all-time highs in the US and remained near record levels in Europe, raising the bar for investors looking to create value. Holding periods declined as investors attempted to take advantage of higher prices on the sell side and exit before any impending recession. Fund-raising remained healthy, but the market skewed to larger, more experienced investment firms. And, while returns were attractive, they continued to come under pressure as the industry matured and competition intensified.

In this, Bain's 11th annual *Global Private Equity Report*, we examine the industry's strengths and challenges, and the evolutionary path that lies ahead. In addition to the critical statistics that characterized PE performance in 2019, we take a thorough look at key strategies the best firms are using to gain a competitive edge, and discuss an important milestone in the industry's relatively short history.

The past year marked the first time ever that 10-year returns in the public markets matched those for private equity. To be sure, the US has ridden a tremendous bull market for public and private assets over the past decade, but what does return convergence mean for the future of private equity? And why didn't the same phenomenon show up in Europe? In Section 3, we join with Harvard Business School professor Josh Lerner, State Street Global Markets and State Street Private Equity Index to weigh the significance of this unique moment in time and its implications for investors and limited partners.

In Section 2, please look for our assessment of PE investments in the technology space and how smart investors manage risk. We also double-click into the payments industry to discuss how investors are making money there today vs. a decade ago and examine how firms are using sophisticated pricing strategies to enhance top-line growth.

We take an in-depth look at ESG and the topics of sustainability and impact investing. Environmental, social and governance investing has been around for years, but many firms are finding they need to incorporate sustainability much more explicitly into their investment strategy to meet the needs of limited partners—and, indeed, to make more money on their investments. Can they truly do well by doing good?

Disruption has been a key theme for several years. Everyone knows it is occurring in more and more industries and at an increasing pace. But how do you use due diligence to gauge the likelihood for disruption in a specific industry? And how do you determine its potential timing and impact? Turn to Section 2 for Bain's answer.

I have no doubt that 2020 will be another busy and exciting year for the PE industry. Investors will continue to grapple with how to repeatably create alpha in changing conditions, amid more competition. We at Bain look forward to continuing the discussion with our friends across the industry's ecosystem.

Hugh MacArthur
Head of Global Private Equity

1. The private equity market in 2019: Strong deal activity despite worsening macro conditions

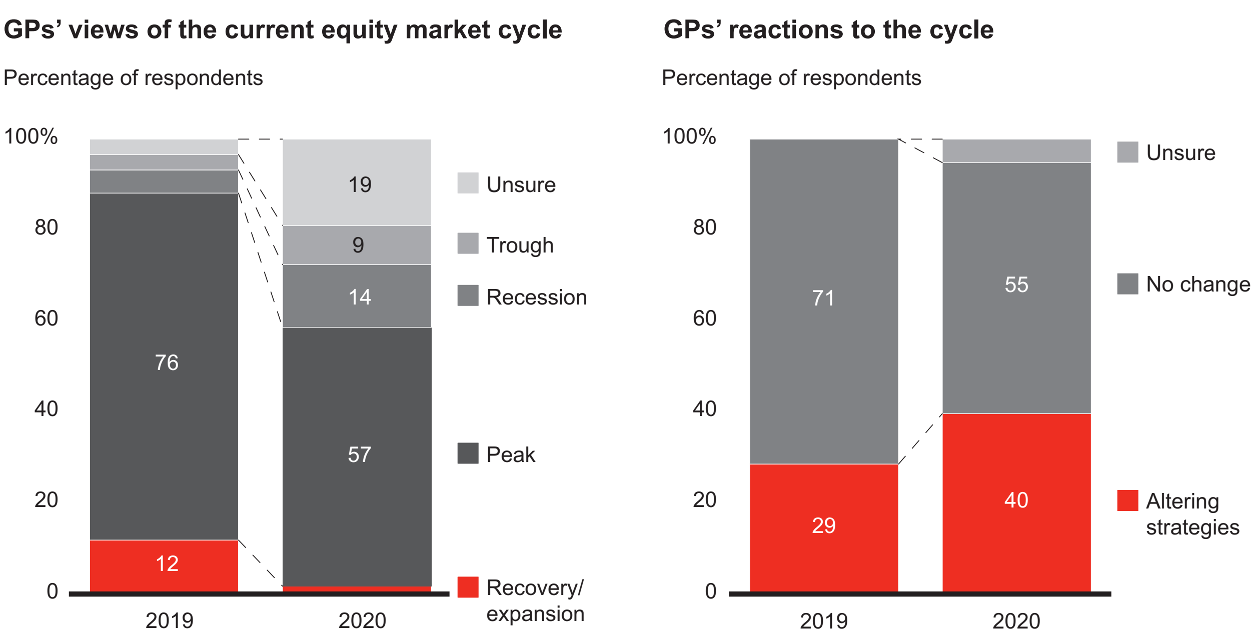
If 2018 was a year of divergence—acceleration in the US, deceleration in the eurozone and China—2019 saw economies slowing across the board. There is a growing expectation of a global recession in the near future. Beyond the trade wars and uncertainty around Brexit, a number of economic indicators are flashing red or yellow.

Some 57% of private equity fund general partners (GPs) surveyed by Preqin worldwide think the economy has reached a cyclical peak, while 14% think it has already entered a recession *(see Figure 1.1)*. They are also significantly more worried about geopolitical conditions than they were a year earlier. Overall, these concerns about market stability help explain why their No. 1 source of anxiety (70% of respondents) is overheated asset valuations.

Their caution has merit if the past recession, during which about one-quarter of buyout firms stopped raising capital, serves as any indication *(see Figure 1.2)*. For PE firms, however, the question is less about when the next downturn will come than how to respond when it arrives.

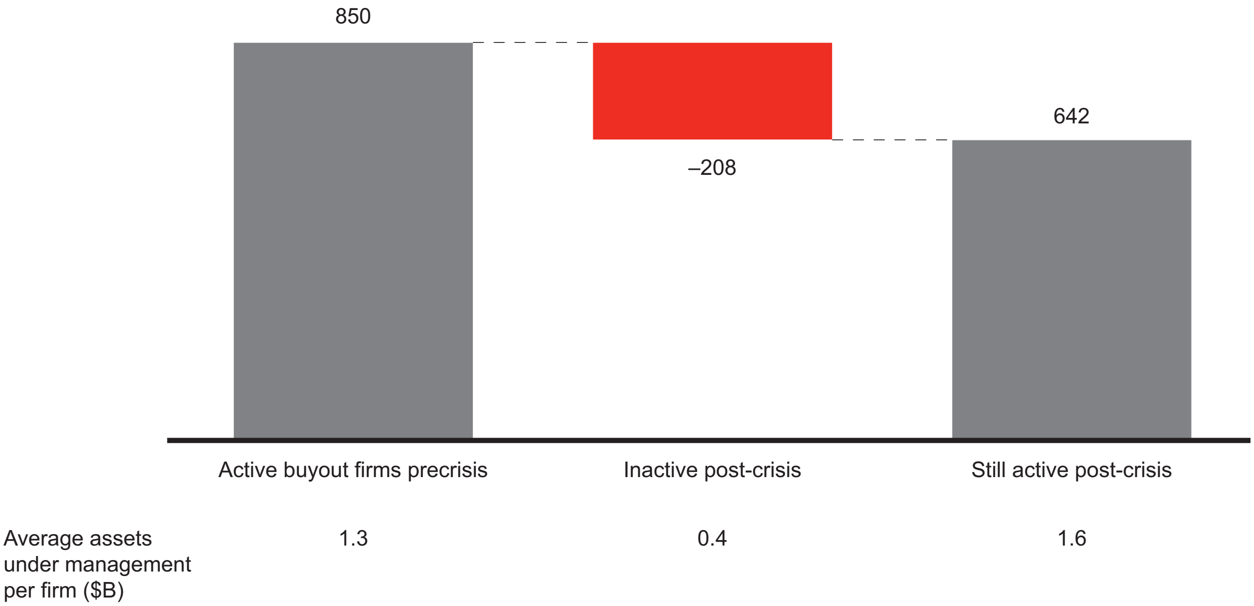
A growing number of GPs have already taken steps to prepare. Roughly 40% of PE funds have altered their investment strategies, with some assessing recession risks more carefully during due diligence.

Figure 1.1: More private equity general partners are already preparing for a downturn



Note: GP responses in the buyout space
Source: Preqin investor interviews, November 2018 and December 2019

Figure 1.2: During the last recession, about one-quarter of buyout firms stopped raising capital, with the smallest firms hit the hardest



Notes: Average AUM per firm based on cumulative capital raised from 2000 to 2007; includes all buyout firms that were active before the financial crisis (having raised a fund between 1998 and 2007)
Source: Preqin

Others are building more balanced portfolios to emphasize countercyclicality, and most are either accelerating exits or getting more wary of overpaying.

Despite the somber macroeconomic outlook, global PE activity did not slow much in 2019. GPs continued to make deals, find exits and raise even more capital than ever (though through fewer funds), fueled by enthusiasm from limited partners (LPs) *(see Figure 1.3)*.

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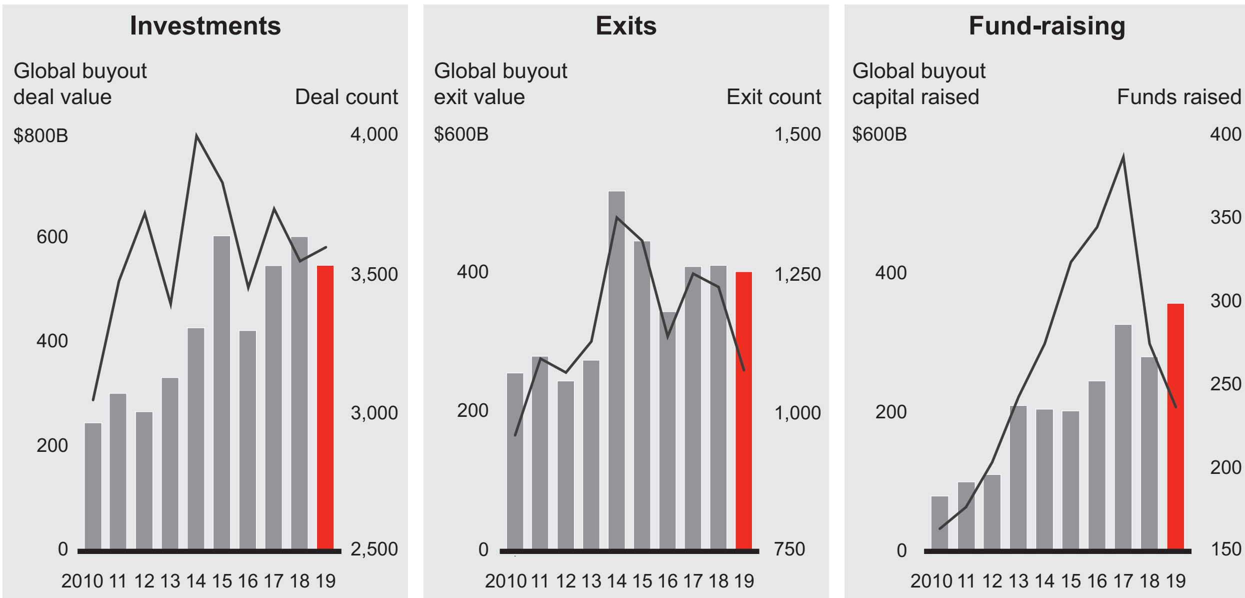
Investments: High prices, higher stakes for value creation

While buyout deal value lagged 2018, it remained on par with the past five years at $551 billion *(see Figure 1.4)*. Amid stiff competition and rising asset prices, GPs closed fewer megadeals. Despite private equity's remarkable run over the past decade, the industry failed to increase its share of the global market for mergers and acquisitions. Global buyouts represented 13% of M&A deal value in 2019, compared with 15% in the previous two years. The number of buyout deals, meanwhile, remained stubbornly flat at roughly 3,600.

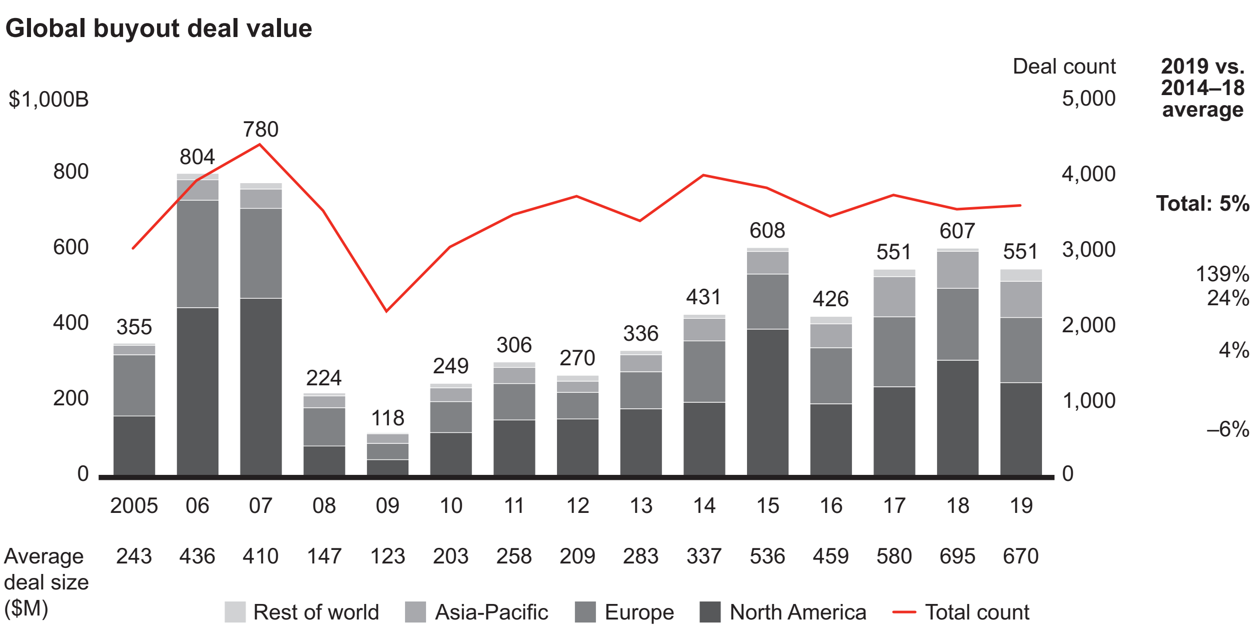
Debt markets encouraged GPs to keep doing deals through much of 2019. So-called covenant-lite loans have remained popular thanks to the more relaxed US regulatory environment, which allowed highly

Figure 1.3: Buyout deals posted another strong year, despite a worsening macroeconomic outlook



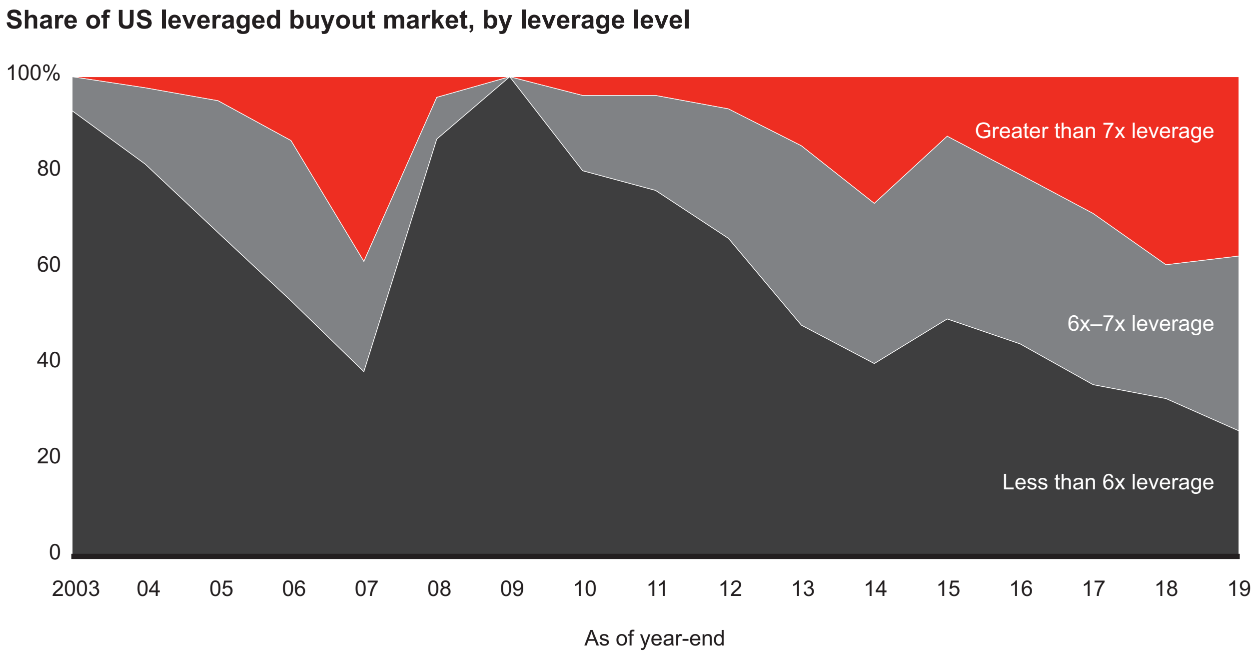
Notes: Investments—includes add-ons; excludes loan-to-own transactions and acquisitions of bankrupt assets; based on announcement date; includes announced deals that are completed or pending, with data subject to change; Exits—bankruptcies excluded; IPO value represents offer amount and not market value of company; Fund-raising—includes closed funds only and represents the year in which funds held their final close; includes buyout and balanced funds
Sources: Dealogic; Preqin

Figure 1.4: Buyout deal value has been bouncing around since 2015



Notes: Includes add-ons; excludes loan-to-own transactions and acquisitions of bankrupt assets; based on announcement date; includes announced deals that are completed or pending, with data subject to change; geography based on target's location; average deal size calculated using deals with disclosed value only
Source: Dealogic

Figure 1.5: A growing share of buyout deals have been highly leveraged with debt



Source: Thomson LPC

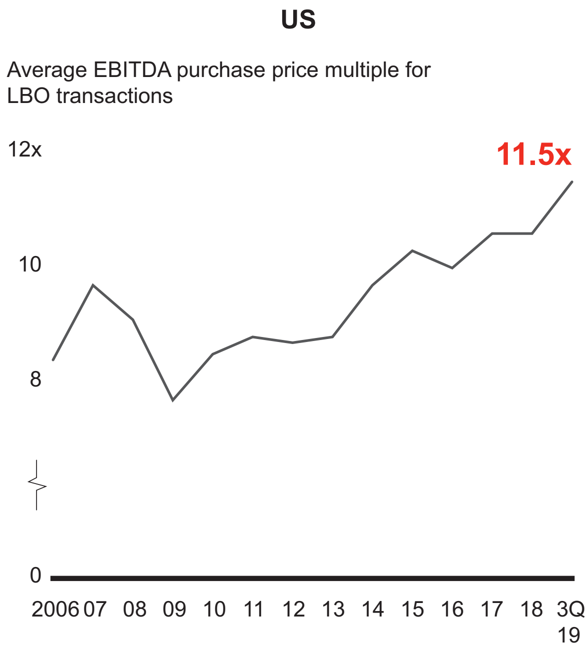
leveraged debt to grow as a share of overall debt. Deals with debt multiples higher than six times earnings before interest, taxes, depreciation and amortization (EBITDA) rose to more than 75% of the total. That comes in stark contrast to the years following the global financial crisis, when their share did not exceed 25% *(see Figure 1.5)*. The true leverage of many deals may be even greater, as banks commonly allow borrowers to calculate multiples based on projected earnings instead of actual results.

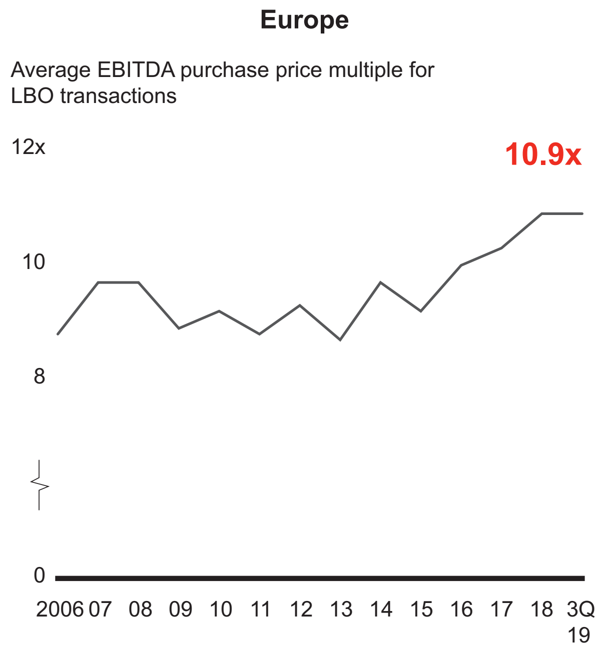
While GPs remained hungry to deploy capital, aggressive corporate buyers and a crowded marketplace pushed asset valuations to record highs during the year. The average multiple of enterprise value (EV) to EBITDA for a leveraged buyout (LBO) reached 11.5x in the US and 10.9x in Europe *(see Figure 1.6)*. Over 55% of US buyout deals in 2019 had an EV/EBITDA purchase price multiple above 11x *(see Figure 1.7)*.

Observers often single out the technology sector in discussing high multiples, and valuations do tend to be higher in tech. However, an analysis of CEPRES data on deals done between 2011 and 2017–18 indicates that sector mix had little to do with the increase. Instead, multiples rose across all sectors *(see Figure 1.8)*.

Public-to-private (P2P) transactions continued to propel dealmaking, as funds broaden their hunting grounds. In fact, the number of P2P deals hit its highest level since the previous boom, only 10 short of the 2007 peak *(see Figure 1.9)*. Eight of the year's top ten buyouts involved public companies taken private, including Zayo Group Holdings, which Digital Colony and EQT bought for $14.3 billion.

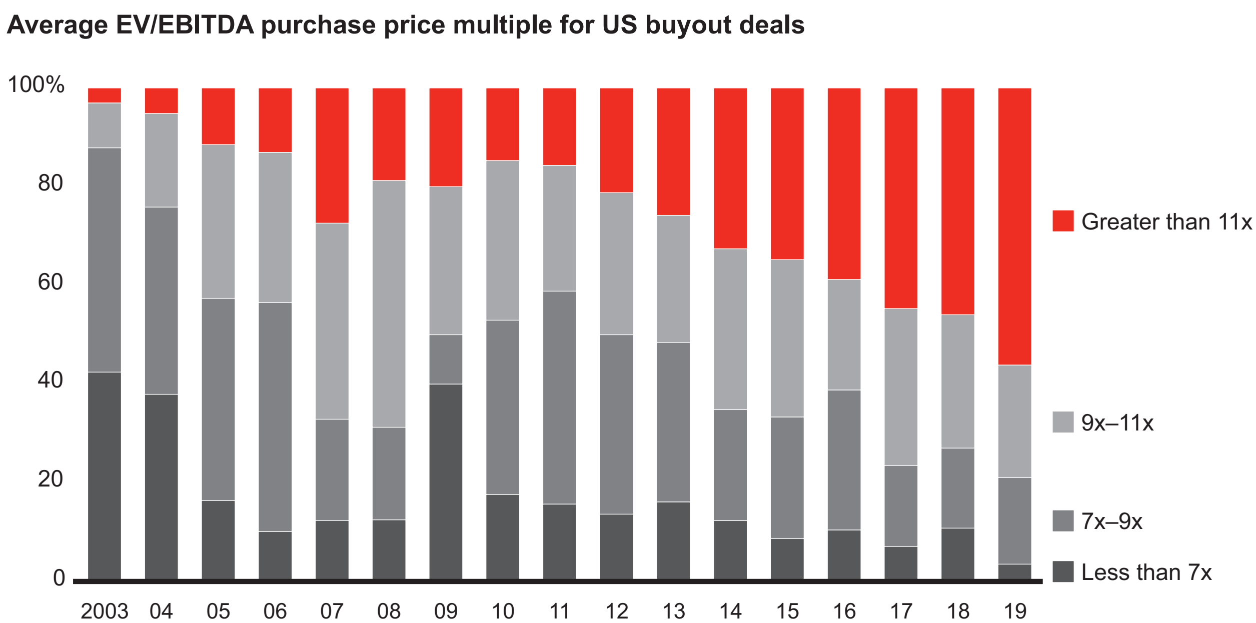
Figure 1.6: Multiples for leveraged buyouts reached another high in the US but moderated slightly in Europe





Source: S&P Capital IQ

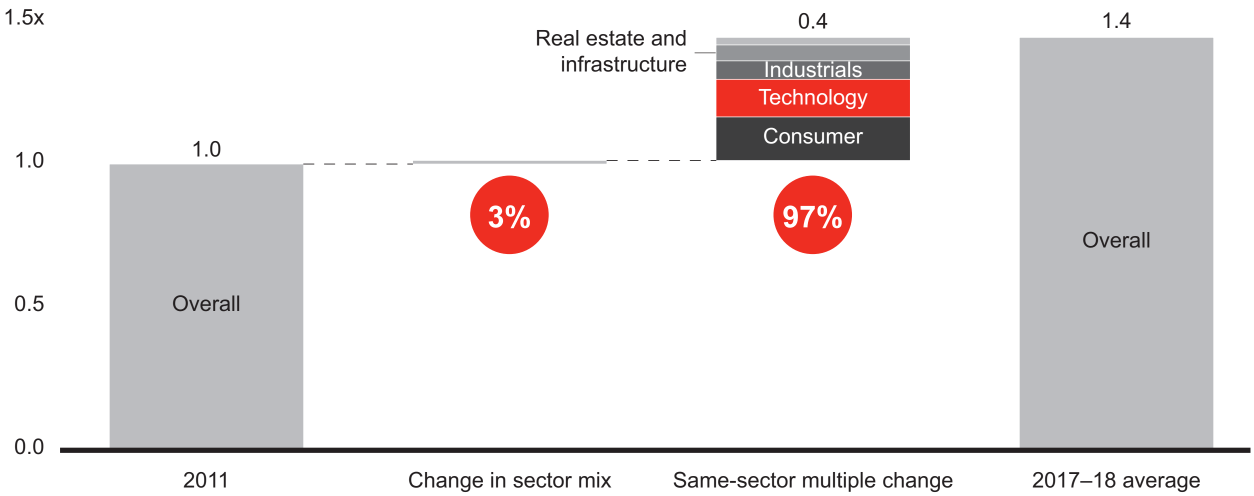
Figure 1.7: More than 55% of US buyout deals had a multiple above 11x



Note: Includes deals with disclosed purchase price and leverage levels only
Source: Thomson LPC

Figure 1.8: Buyout multiples have risen across the board, not just in the technology sector

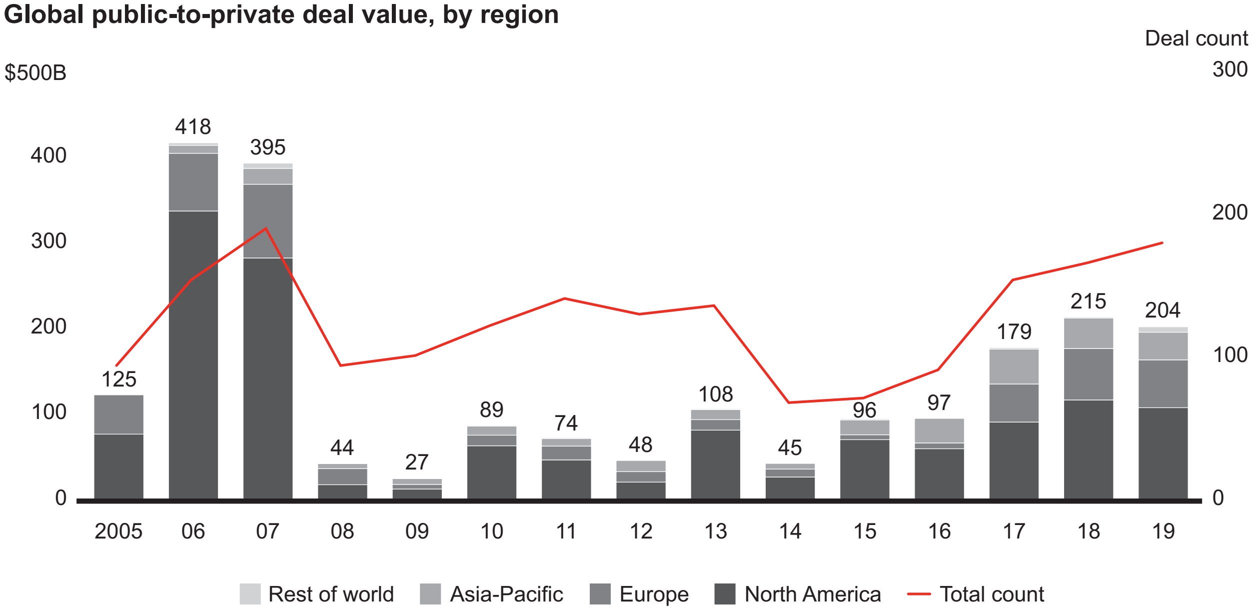
Average entry EV/EBITDA multiple for global buyout deals (indexed)



Notes: Data as of November 2019; includes global buyout deals with more than $50 million in invested capital, with original capital allocations between January 1, 2011, and December 31, 2018; financial sector not broken out as EV/EBITDA is not meaningful; telecom and other/unclassified sectors not broken out due to limited sample size; effects of covariance have been prorated across sector mix and same-sector multiple impact
Source: CEPRES Platform

Figure 1.9: The number of public-to-private deals rose, reaching the highest level since 2007

Global public-to-private deal value, by region



Notes: Includes add-ons; based on announcement date; includes announced deals that are completed or pending, with data subject to change; geography based on target's location
Source: Bain global public-to-private deal database

Mounting fees, paperwork and analyst scrutiny prove too much of a distraction for many public-company executive teams, who feel that going private will make it easier to avoid the quarterly reporting grind and keep their eye on creating long-term value.

What's clear is that PE funds are taking an increasingly sophisticated approach to screening public companies. High multiples underscore the importance of having a clear investment thesis for each P2P deal. We see several solid theses that characterize strong candidates for take-private transactions:

- **From good to great.** PE firms commonly target stable companies that may have a good outlook but also could improve their operational metrics. These companies may be undervalued in the market and can afford to take on debt.

  For example, Advanced Computer Software Group, a British cloud software company, had used acquisitions to rapidly increase revenues, but its margins had dropped to 6% in 2014. That year, Vista Equity Partners took the company private for $1.2 billion. Over the next five years, the fund helped transform Advanced operationally by realigning its structure, bringing in new talent, launching new cloud-based solutions and completing six acquisitions. In 2019, Vista sold half of its stake to BC Partners in a deal estimated to be worth $2.4 billion, which would have tripled the enterprise value.

- **High performance improvement potential.** Another common thesis targets public companies with mediocre performance. These firms could significantly improve their cost structure under the right PE ownership and might carry an attractive (though not rock-bottom) valuation.

  Atrium Innovations, a Canadian maker of vitamins and supplements, faced slipping profit margins, operational issues in Europe and new pressure to meet regulatory standards when Permira bought it for $1.1 billion in 2014. Permira proceeded to simplify the company's brands, streamline manufacturing and regulatory compliance, and expand abroad. As a result, both revenues and margins improved. That attracted Nestlé Health Science, which bought Atrium in 2017 for $2.3 billion, a 110% increase in enterprise value.

- **Turnaround of a distressed asset.** A less common thesis is to look for a firm with an urgent need for capital. These companies may have high turnaround potential but can be bought for a low price.

  That was the investment thesis of Baring Private Equity Asia when it decided in early 2019 to acquire Pioneer, a cash-strapped Japanese maker of car navigation systems, for $900 million, representing an EV/EBITDA multiple of 5x.

- **Portfolio breakup.** Conglomerates with high potential for performance improvement may also come under pressure to divest assets or entire business units. These assets make attractive targets for PE firms to turn private.

  This is what Blackstone bet on when it bought back UK-based Serco Global's business process outsourcing operations in 2015, in a $385 million deal, and formed Intelenet Global Services, headquartered in India. (Blackstone had previously acquired a stake in 2007 before selling to Serco in 2011.) In 2018, French outsourcing giant Teleperformance acquired the company in a $1 billion deal, representing a 2.6x increase in enterprise value.

Why cosponsorship has taken off

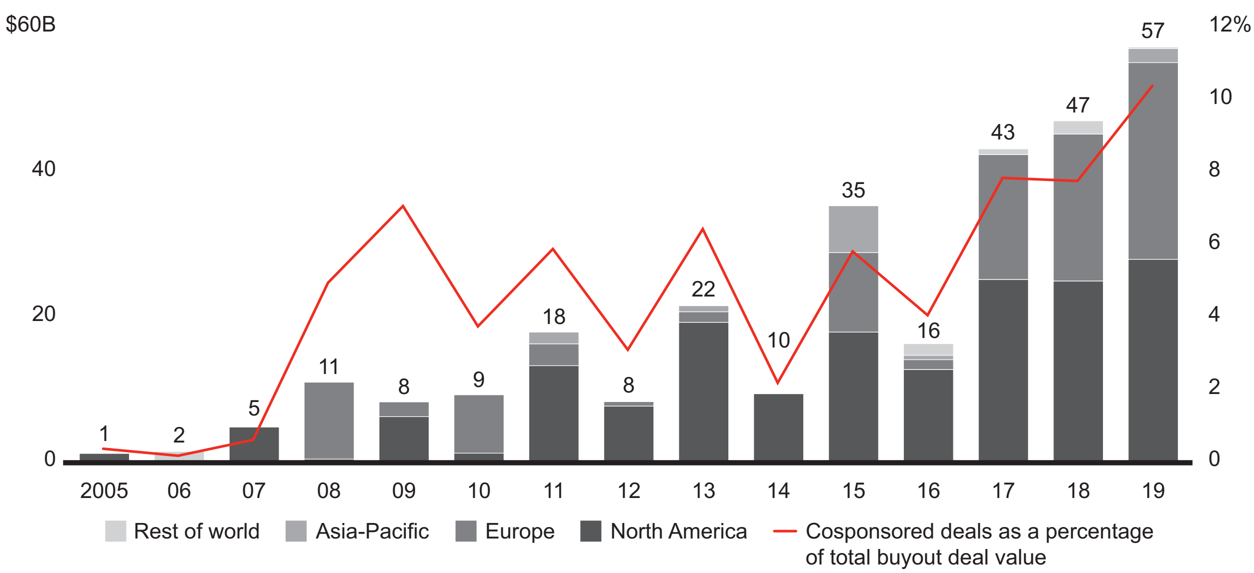
To satisfy their appetite for private equity investments and enhance their returns, LPs are increasingly willing to cosponsor deals with GPs. Based on a sample of the most active institutional investors, cosponsored deals set a new record in 2019, reaching 10% of the buyout market's total value *(see Figure 1.10)*.

Over time, LPs have targeted larger deals, and average deal value reached $5.2 billion in 2019, vs. about $4 billion for the past five years. It's now common for institutional investors to cosponsor more than 10% of a deal's value.

For the LPs most active in cosponsorship, such as CPPIB, CDPQ and GIC, the arrangement usually offers lower fees and thus better returns. They also accelerate their capital deployment in private equity, a clear benefit given that about half of institutional investors were underallocated to the asset class heading into 2020 *(see Figure 1.11)*. Because cosponsorship does not require LPs to get involved in deal sourcing or due diligence, it appeals to a larger set of investors.

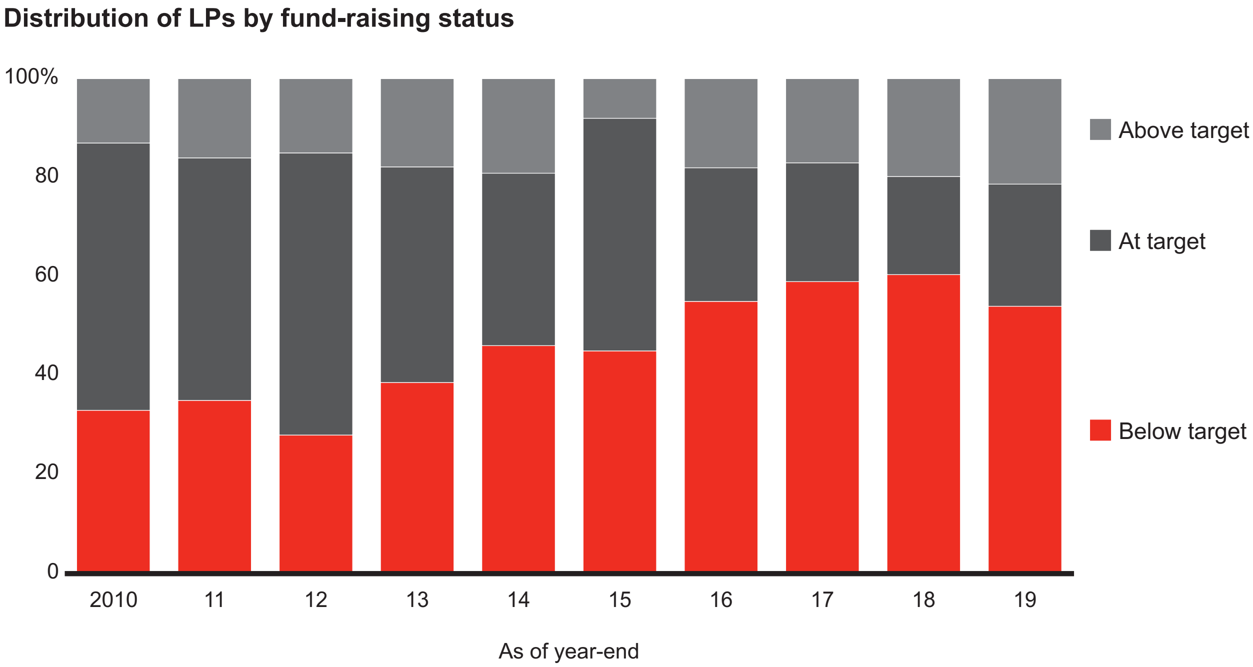
Figure 1.10: Deal cosponsorship between general partners and limited partners is on the rise

Global buyout cosponsorship deal value, 15 most active institutional investors



Notes: Includes add-ons; excludes loan-to-own transactions and acquisitions of bankrupt assets; based on announcement date; includes announced deals that are completed or pending, with data subject to change; geography based on target's location; excludes real estate and infrastructure transactions (including airports and shipping ports); 15 most active institutional investors based on number of deals from 2015 to 2019
Sources: Dealogic; Preqin

Figure 1.11: About half of limited partners are underallocated in private equity



Source: Preqin

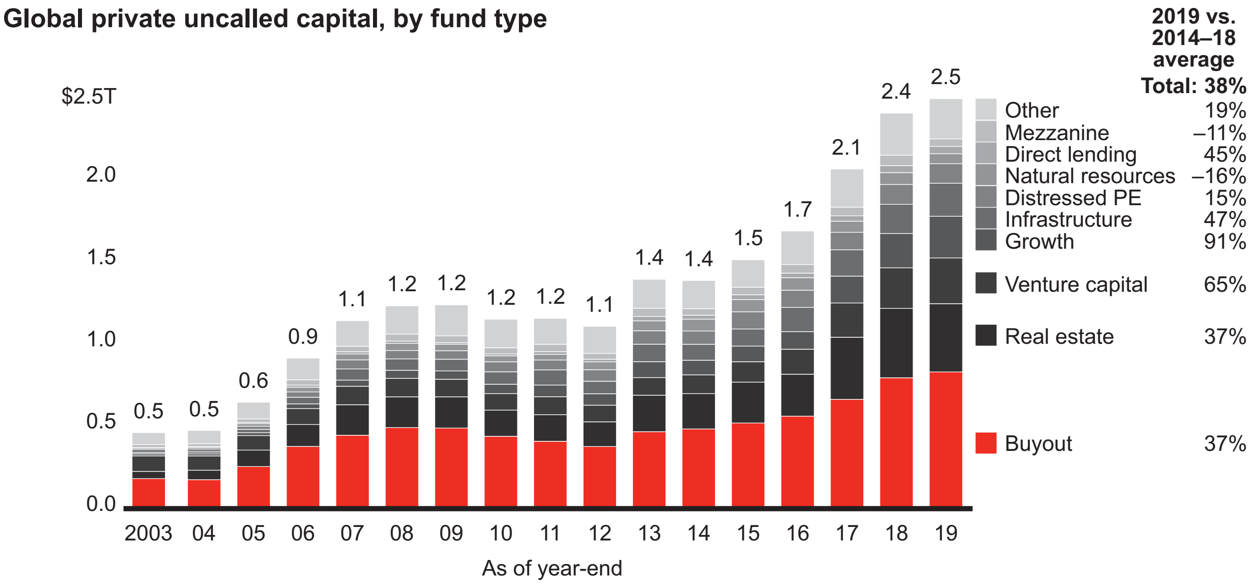
The benefits for GPs are less clear. Although it can slow down the process or create additional costs, more than 45% of GPs plan to offer more coinvestment opportunities in 2020. Their rationale for doing so is to access larger deals, or to deepen their relationships with select institutional investors. Funds such as Blackstone, EQT and BC Partners have decided to adopt consistent strategies for partnering with LPs.

As the cosponsorship trend illustrates, GPs and LPs are searching for good deals far and wide to put their vast stores of capital to work. Despite the strong pace of investment since 2014, PE dry powder, or uncalled capital, has been rising since 2012. Dry powder hit a record high of $2.5 trillion in December 2019 across all fund types and $830 billion for buyouts alone *(see Figure 1.12)*. More than half of it sits in North America.

Some observers have raised concerns about the stockpile, suggesting that if a recession hits, GPs could be left holding many years of uncalled capital and would seek extensions.

We take a more sanguine view. Based on current deal values, the dry powder held in buyout funds today represents about 2.6 years of future investment, far below the approximately 4.5 years of 2007 and 2008 *(see Figure 1.13)*. Even for smaller funds, “old” capital (2015 or earlier) constitutes less than one-fifth of what they have to put to work. It helps that PE firms are accumulating mostly “young” capital, raised by funds with recent vintages.

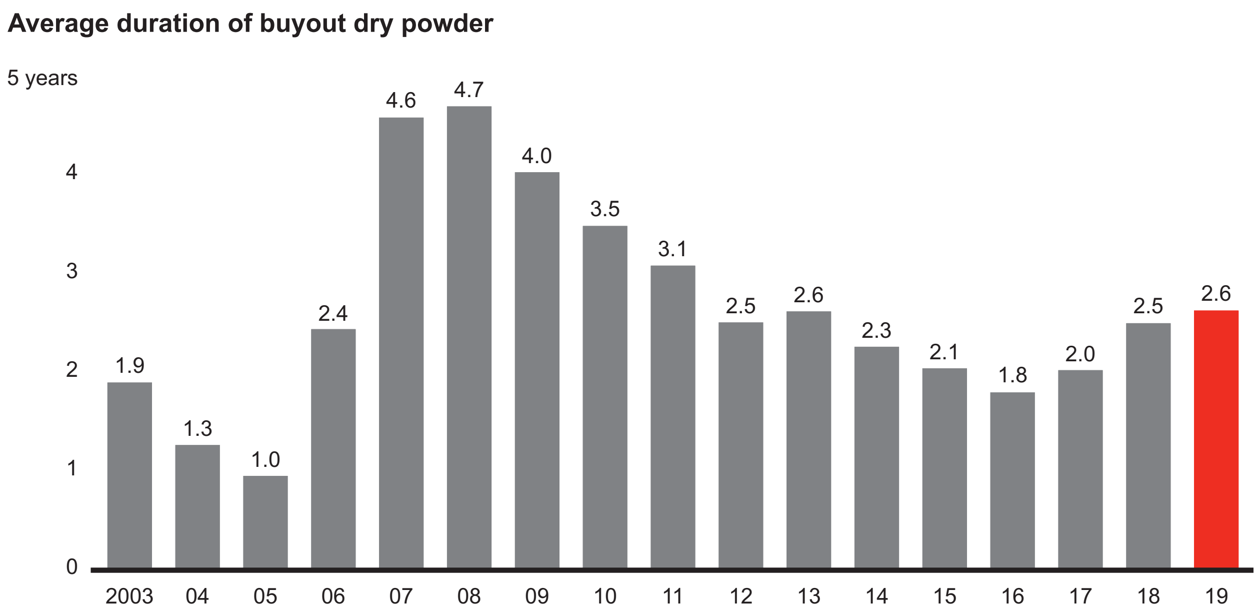
Figure 1.12: Dry powder has been piling up globally



Buyout ($B)	183	176	256	379	447	493	491	440	410	378	469	485	521	563	665	796	832

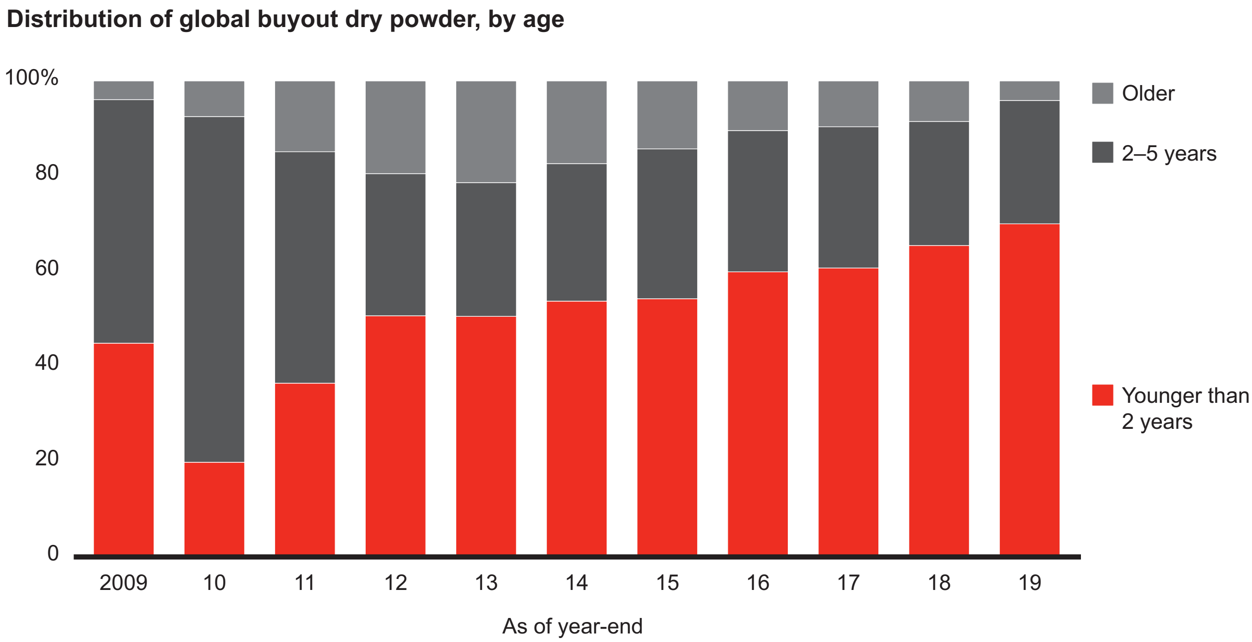
Notes: Other includes fund-of-funds, secondaries and coinvestments; buyout includes balanced and buyout funds; discrepancies in bar heights displaying the same value are due to rounding
Source: Preqin

Figure 1.13: The average time to use buyout dry powder has fallen to levels well below the stockpile just before the financial crisis



Notes: Calculations for 2003–16 based on actual equity value of transactions in future years; 2017–19 calculations incorporate forecasted projections in base-case scenario, assuming no growth in deal value vs. 2019 in future years; add-ons excluded
Sources: Preqin; Dealogic; S&P Capital IQ; Bain analysis

Figure 1.14: Buyout dry powder is not getting any older



Notes: Data as of December 2019; age calculated based on the fund's vintage year and the year of analysis; vintage years before 2000 excluded
Source: Preqin

Buyout firms hold more than two-thirds of their dry powder in funds raised in the last two years, meaning that the recent deal cycle is clearing out the older capital and replacing it with new *(see Figure 1.14)*.

The combination of abundant capital on easy terms, rising asset prices and a more negative economic outlook has prompted many GPs to take a more cautious stance. Leading firms are adjusting their approaches to avoid overpaying and to prepare for a possible downturn.

As we explore in Section 2, the most effective firms are taking pains to spot disruption early. They find creative paths to monetize innovation in sectors such as technology or payments. They turn to tactical levers such as pricing in order to create value faster. GPs also increasingly consider environmental, social and governance issues in their decisions, which means looking for deals with positive impact beyond the financial returns. Firms continue to put money to work, but now they must work harder to reap the benefits.

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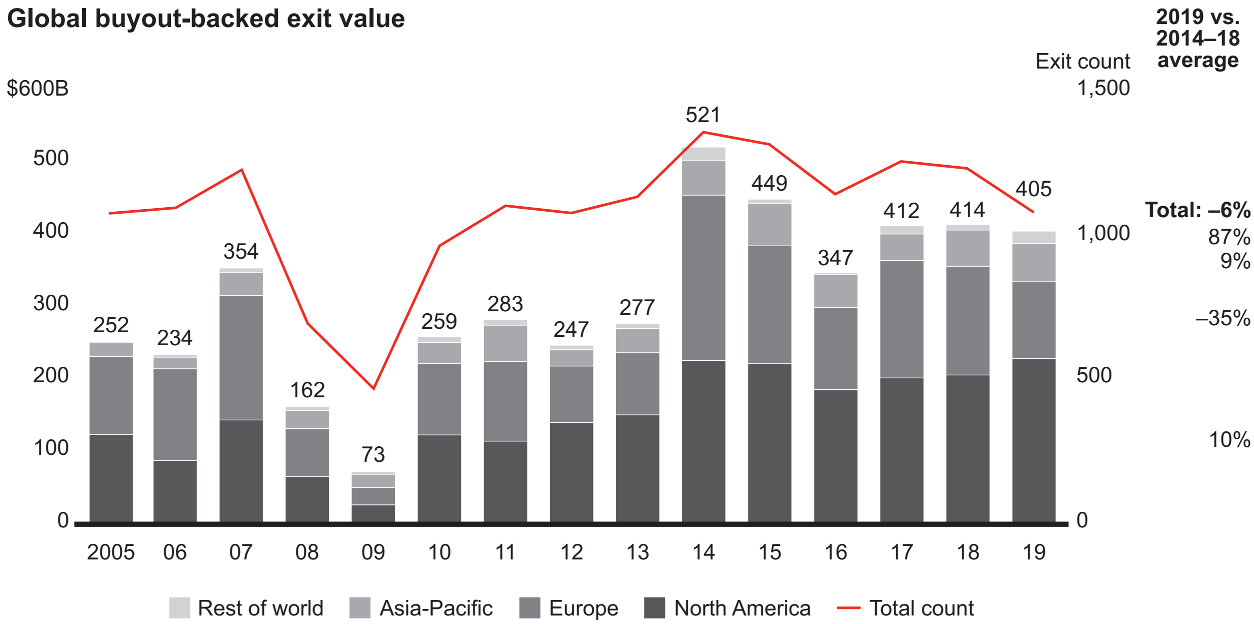
Exits: A return to shorter holding periods

Exit value ticked slightly lower in 2019, to $405 billion, continuing a six-year stretch of very strong distributions for investors *(see Figure 1.15)*.

Figure 1.15: The favorable environment for exits persisted in 2019



Notes: Bankruptcies excluded; IPO value represents offer amount and not market value of company
Source: Dealogic

It was a different story for volume, with exit count down to 1,078, its lowest level since 2012. Activity in Europe dropped along with dealmaking generally, due to economic malaise in the southern tier and Germany, plus a Brexit-induced holding pattern.

With exit value high, investors were cash flow positive for the ninth year running, meaning distributions have outstripped contributions each year. For the first half of 2019, however, strong fund-raising demands meant that capital returned was barely higher than capital called *(see Figure 1.16)*.

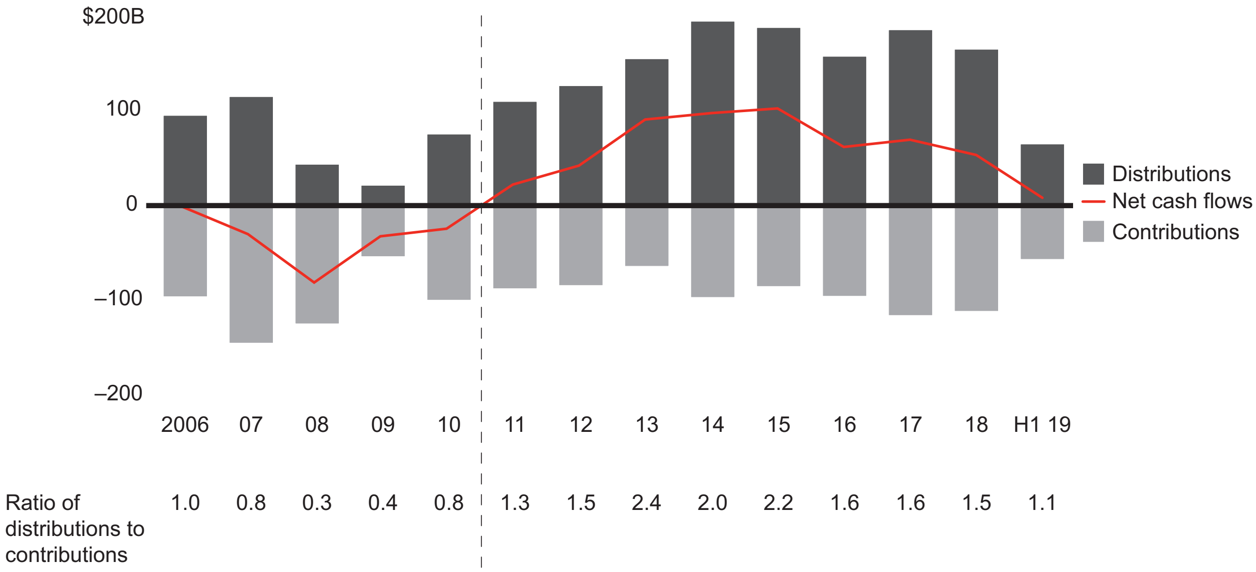
We have seen the hangover of long holding periods (how long funds hold portfolio companies before exiting) on poorly performing assets from the recession. Now portfolios have returned to healthier post-recession holding periods. The median holding period across all exits fell to 4.3 years in 2019, well below the 6.0 years in 2014 *(see Figure 1.17)*. Anyone who had a good asset has likely sold it, partly due to premium prices and partly in anticipation of a recession, when it could be harder to sell.

The channel dynamics of exits did not shift drastically in 2019 *(see Figure 1.18)*.

Strategic sales. Exits to strategic buyers remained the biggest channel, maintaining about a two-thirds share of buyout exit value. In line with the solid M&A market in 2019, and despite the challenging macroeconomic context, corporations actively sought acquisitions in order to build scale or add new

Figure 1.16: Limited partners have been cash flow positive on their PE investments for nine years running

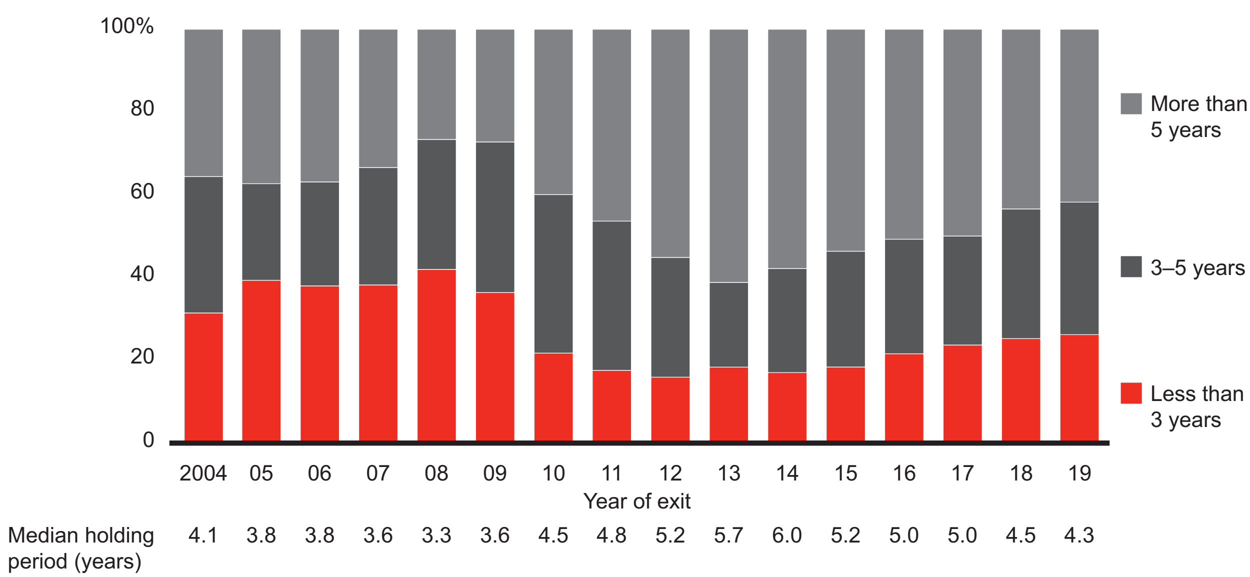
Capital contributions and distributions for global buyout funds



Source: Cambridge Associates Private Investments Database

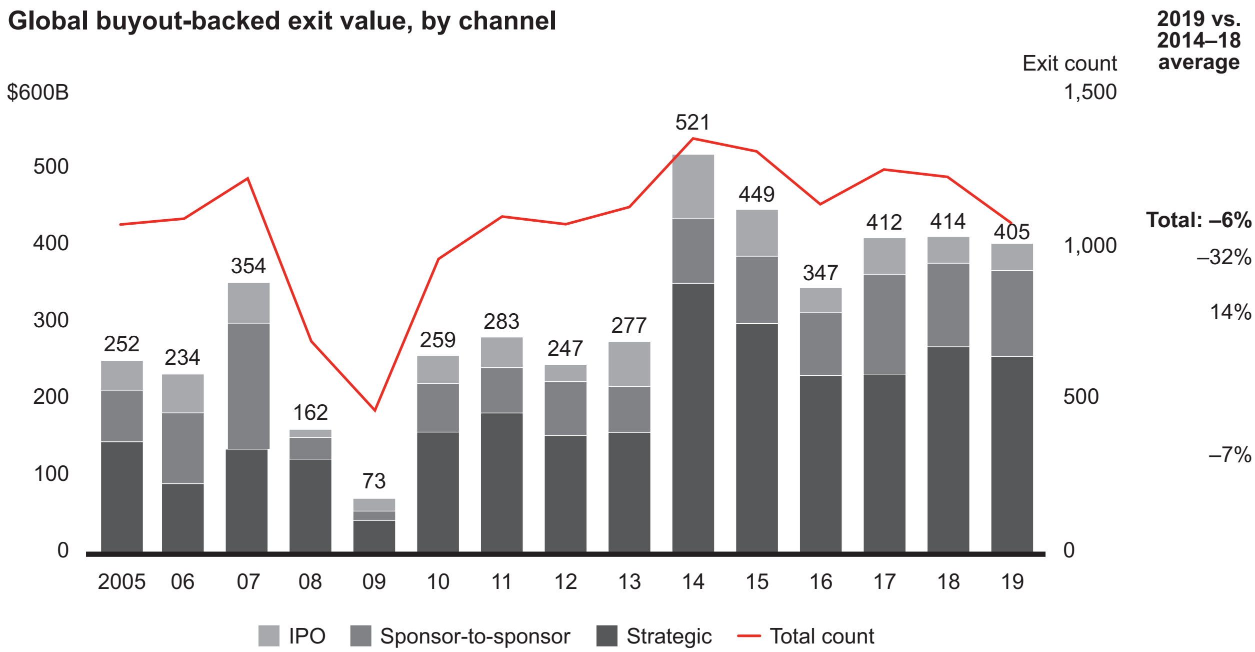
Figure 1.17: Holding periods have fallen as general partners exit more of their companies in less than five years

Distribution of global buyout-backed exits, by length of time held in fund portfolio



Notes: Includes buyout, public-to-private, special situation and turnaround investments, as well as exits through IPO, merger, sale to GP/management, trade sale and unspecified exits; excludes partial realizations, except for IPOs
Source: Preqin

Figure 1.18: IPOs were down, while sponsor-to-sponsor deals and sales to strategic buyers kept pace



Notes: Bankruptcies excluded; IPO value represents offer amount and not market value of company
Source: Dealogic

products or geographies. If anything, corporate buyers have become more sophisticated in how they approach M&A, increasingly targeting smaller companies as candidates for purchase.

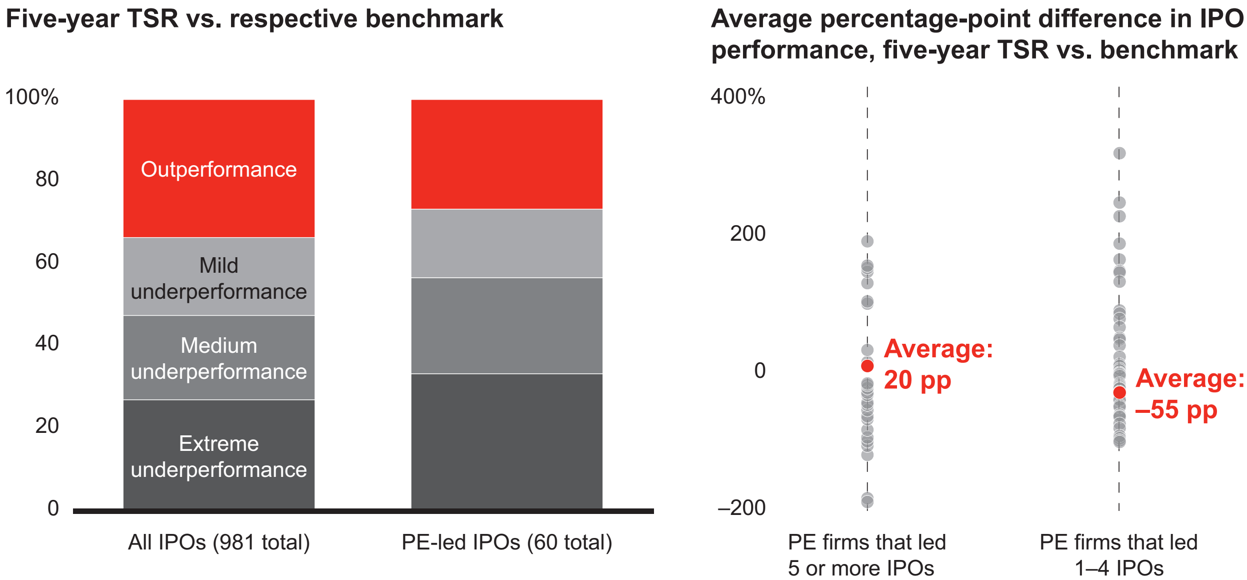
Sponsor-to-sponsor exits. Sponsor-to-sponsor deals remained strong in 2019, especially for European companies. The share of these exits was just below 30% globally.

Dividend recapitalizations. GPs take money off the table and derisk investments by recapitalizing debt. But dividend recaps slowed in the US, where leveraged buyout loan rates have continued to increase over the past two years, despite the Federal Reserve's rate reductions.

Initial public offerings (IPOs). When the economic outlook is uncertain, PE firms prefer strategic exits to IPOs, because they can cleanly sell their entire stake in the asset. It takes months to years before PE funds can fully exit an investment via an IPO, given lockups that restrict how much and how quickly they can sell. So it's not surprising that IPO exit count dwindled again in 2019, reaching a 10-year low.

That's consistent with a broader trend. Over the past 20 years, private equity capital has grown at four times the rate of public capital globally, with no slowdown in sight. In the US, the number of IPOs has fallen since the mid-1990s.

Figure 1.19: More than 70% of IPOs led by PE funds have significantly underperformed their benchmark public indexes, but there is a large spread



Notes: Includes companies that had an IPO between 2010 and 2014 and for which five-year TSR post-IPO is available; the performance split of IPOs is on an industry benchmark basis for a five-year period; mild underperformance=0–50 percentage points below benchmark; medium underperformance=50–100 percentage points below benchmark; extreme underperformance=more than 100 percentage points below benchmark; benchmark based on respective industry and geography for a given company; PE-led IPOs had a PE fund as the majority stakeholder; excludes outliers with five-year TSR 500 percentage points above or below benchmark
Sources: Dealogic; S&P Capital IQ; Bain analysis

For IPO deals involving private equity, funds typically retain a stake in the newly public company, so post-IPO performance is critical. Yet the results are mixed. New Bain & Company analysis shows that two-thirds of 981 global IPOs (including corporate-led IPOs) underperformed over the following five years against relevant public benchmarks.

IPOs led by PE funds did not perform any better than the market in aggregate. More than 70% of the 90 IPOs led by GPs underperformed, averaging an annualized total shareholder return (TSR) that was 12 percentage points lower than the relevant public benchmark. PE funds with more IPO experience tend to have better returns than those with scant experience, though that average masks a large spread *(see Figure 1.19)*.

The elite PE firms that manage to outperform after an IPO do several things differently, our analysis shows:

- They view the IPO as a beginning and a means to longer-term value creation, rather than as any kind of end in itself.
- They understand that post-IPO investors have fundamentally different objectives and incentives than earlier investors, and they double down on communication to ensure their value-creation story will resonate.

- They don't just seek technical capabilities to prepare for the launch; they also emphasize strategic support that will help create lasting value. They typically target investors oriented toward long-term growth, as opposed to short-term hedge funds. And they prepare for alternative scenarios if the IPO timing or route fails.

Consider the IPO history of NXP Semiconductors. When NXP split from Philips in 2006, it was suffering from heavy losses, lack of strategic direction, high costs and organizational complexity. Once the company stood alone, senior management began a restructuring program to streamline the organization in order to boost productivity and speed. The business also executed a major operational turnaround, resulting in a drastic reduction to the cost base. These moves set up an IPO in 2010, which helped pay down debt. The compelling story for investors included a strategy shift to focus on less-capital-intensive manufacturing, complex segments where it had an R&D advantage and high-growth markets, while shedding noncore businesses.

Post-IPO, NXP continued the restructuring. Timing helped, as 2010 was the first year of recovery for IPOs more broadly. Outsize earnings growth combined with burgeoning segments for future growth appealed to investors, and the share price grew sevenfold over the five-year period in our analysis.

Pinnacle Foods, a US maker of food staples, took a different route to IPO success. Blackstone bought Pinnacle in 2007 and took it public in 2013, a strong period for IPOs. Pinnacle's stable cash flows attracted unusual demand among investors. But the equity story included other components as well. Under Blackstone, Pinnacle set a productivity initiative that generated annual savings of 3%–4% in procurement, manufacturing and logistics. The company used its foundation brands as cash cows to fund the growth of leadership brands. Pinnacle also paid an annual dividend of 3%–4%.

The next five years saw the stock increase steadily as Pinnacle's well-known brands rode the tailwinds in the frozen food and snack categories. In 2018, when Conagra decided to buy Pinnacle to complement its existing food portfolio, the company had realized a fivefold increase in value.

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Fund-raising: Winner take all

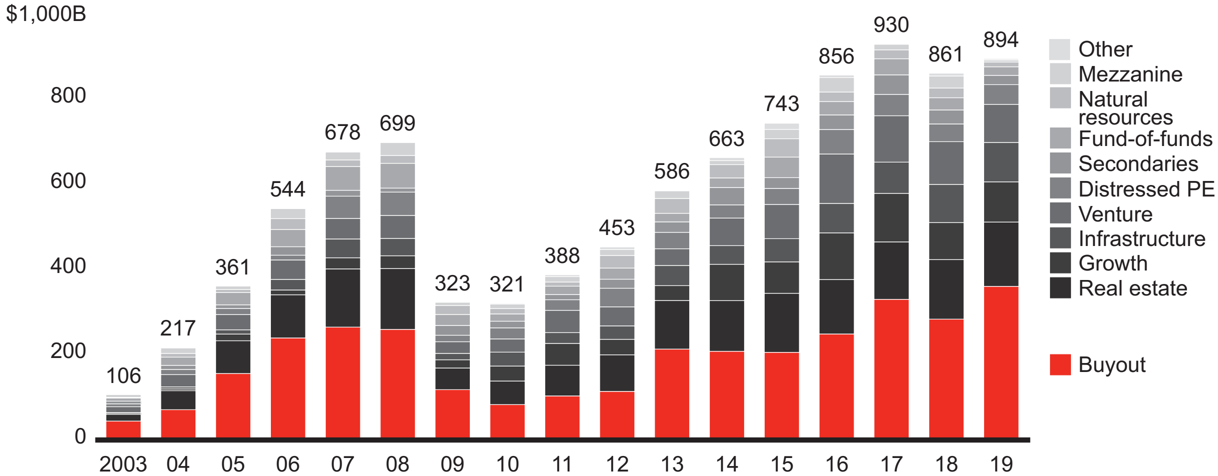
Demand for alternative assets in general, and buyouts in particular, remains very strong, with LPs eager to put more capital into the industry. The past year was one of the biggest ever for fund-raising. Investors poured $894 billion into private capital, which includes private equity, real estate, infrastructure and natural resources. The buyout asset class alone raised $361 billion—the largest amount on record—and increased its share to 40% of total private capital, the highest level since 2006 *(see Figure 1.20)*.

Fund-raising for North American and multiregional funds was particularly strong in 2019, offsetting a decline in Asia.

Almost 70% of buyout funds reached their targets in less than 12 months, and the average time for GPs to close was 10.5 months, nearly 4 months ahead of private capital funds overall *(see Figure 1.21)*.

Figure 1.20: Investors continued to pump capital into alternative asset classes, with buyouts gaining share

Global private capital raised, by fund type

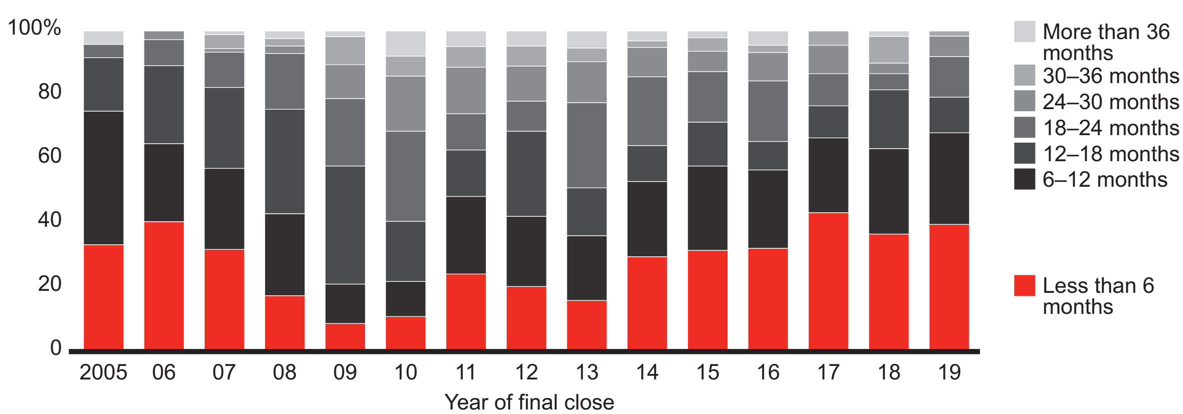


	2003	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19
Buyouts as percentage of total	42	33	43	44	39	37	37	26	27	25	36	31	28	29	35	33	40

Notes: Includes funds with final close and represents the year in which funds held their final close; buyout includes buyout and balanced funds; distressed PE includes distressed debt, special situation and turnaround funds; other includes private investment in public equity and hybrid funds; excludes SoftBank Vision Fund
Source: Preqin

Figure 1.21: Almost 70% of buyout funds reached their capital target in less than 12 months

Distribution of global buyout funds, by months on the road

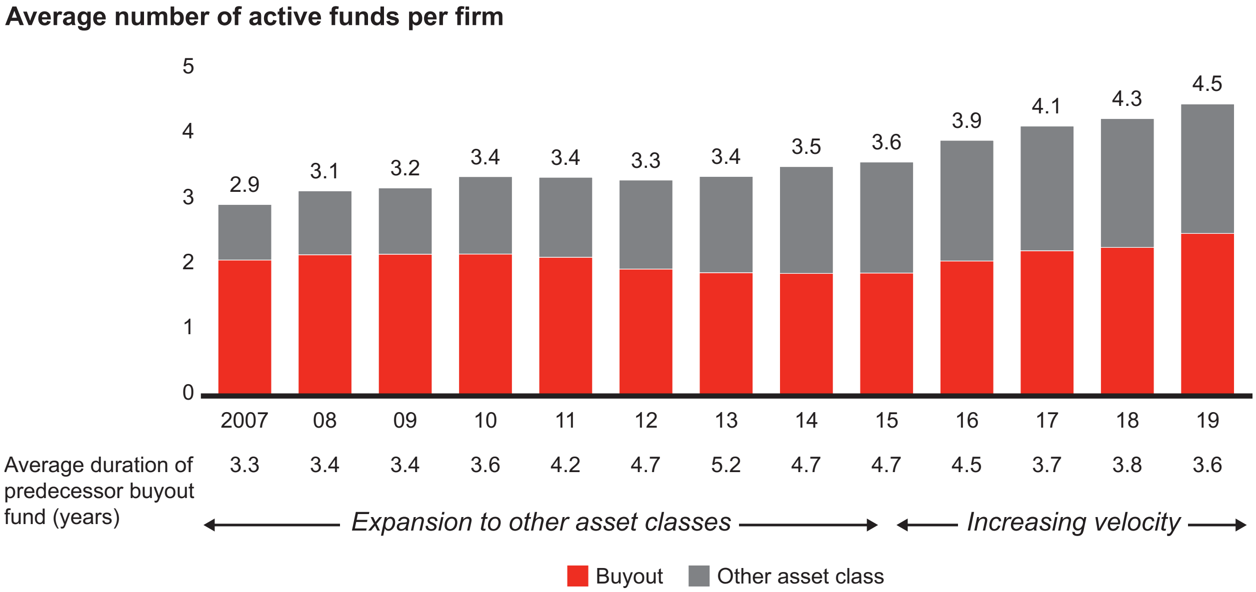


Average time on the road (months)

	2005	06	07	08	09	10	11	12	13	14	15	16	17	18	19
Buyout funds	10.1	9.9	12.3	14.3	18.4	19.9	15.6	15.5	17.1	13.7	12.5	13.4	11.0	12.3	10.5
All private capital funds	10.8	11.4	11.7	14.4	16.6	17.6	15.7	16.7	17.3	16.0	16.0	16.0	15.5	15.6	14.3

Note: Includes funds with reported launch and close dates only
Source: Preqin

Figure 1.22: Buyout firms continue to manage more funds, expanding to new asset classes and launching successor funds faster



Notes: Includes 221 buyout firms that have closed more than $2.5 billion in buyout capital funds since 2000; active funds defined as those having held a final close in the seven years preceding each year; other asset classes include growth, venture capital, real estate and infrastructure; predecessor fund analysis based on funds with a predecessor fund only
Source: Preqin

Responding to brisk demand, buyout firms continued to expand their slate of fund offerings. In part, they have moved into other asset classes, and more recently, they have raised successor buyout funds faster *(see Figure 1.22)*.

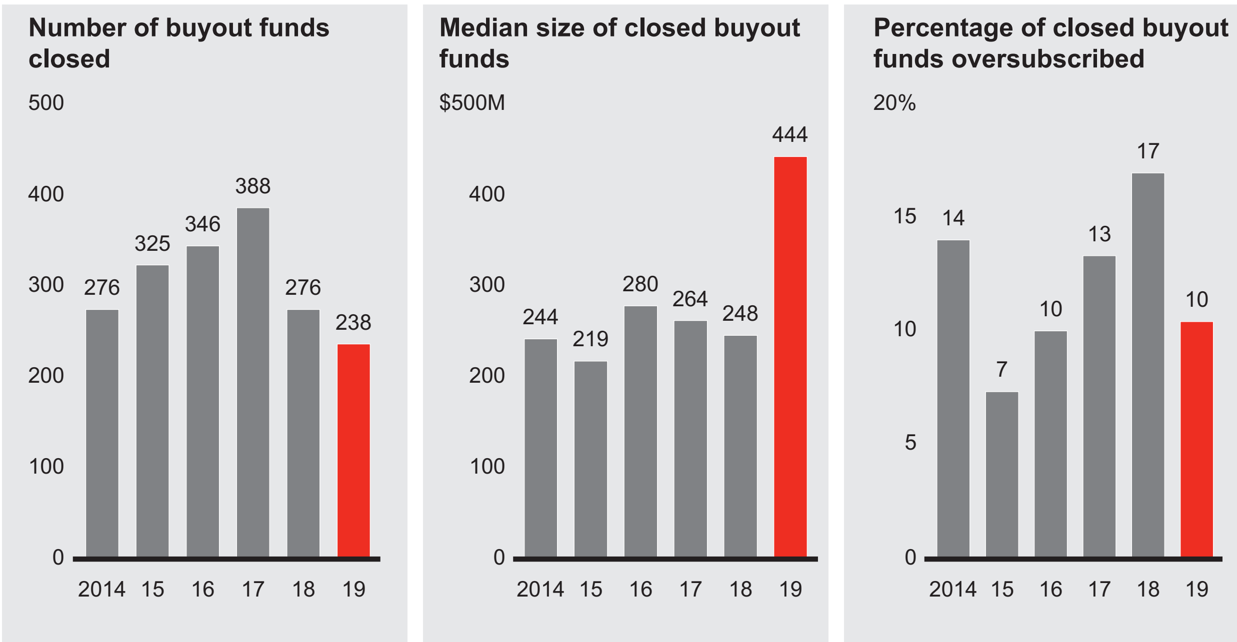
One trend became evident last year—namely, that more of the capital flowed to fewer firms *(see Figure 1.23)*.

We analyzed 220 buyout firms that each had raised more than $2.5 billion since 2000, comparing the 2013–19 cycle with 2006–12. We defined winning firms as those that outperformed the average growth rate of 50% by 40%—in other words, the value of the funds they raised in 2013–19 was at least 70% higher than what they closed in 2006–12. By contrast, losing firms underperformed the average by 40% or more *(see Figure 1.24)*.

The contrast between the best and the rest is striking: Since 2006, the winners' share of estimated buyout assets under management (AUM) grew by about 20 percentage points *(see Figure 1.25)*. These outsize capital winners included Apollo, KKR, Platinum and Warburg Pincus.

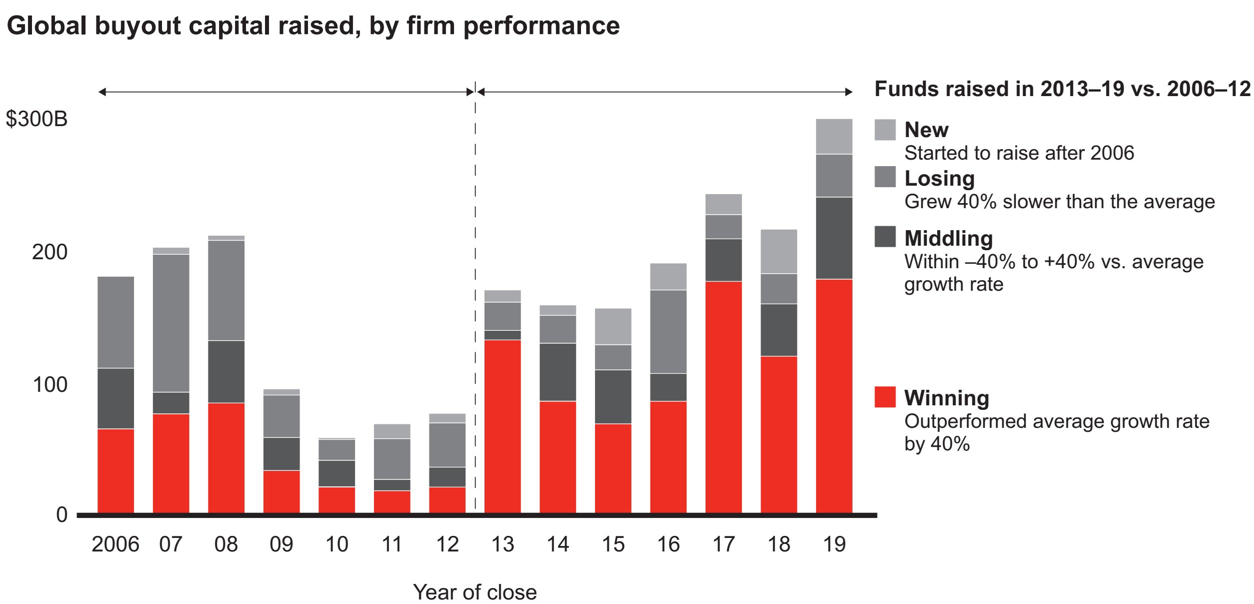
As LPs consolidated their positions, they wrote larger checks to fewer funds. In the trenches, this translated to a Darwinian fight for resources. Whereas the median time to close a fund from 2017 through 2019 was six months for winning firms, it took more than two years for underperforming firms. Winning firms could grow their successor funds by more than 50%, while laggards eked out an

Figure 1.23: In fund-raising, more capital is going to fewer firms



Note: Includes buyout and balanced funds
Source: Preqin

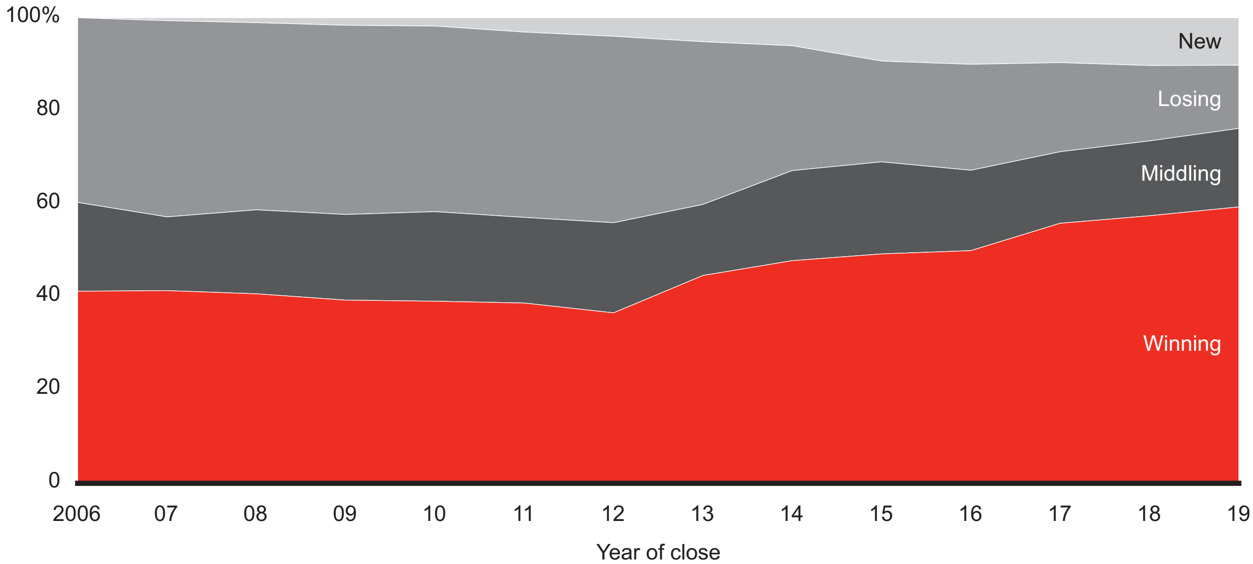
Figure 1.24: A comparison of capital raised during this cycle and the previous one reveals winning and losing patterns



Notes: Includes 221 buyout firms that have raised more than $2.5 billion since 2000; total growth rate for funds raised in 2013–19 relative to 2006–12, excluding new firms, was 50%; for winning firms, it was defined as 50% x 140%=70%; for losing firms as 50% x 60%=30%
Source: Preqin

Figure 1.25: Top-performing buyout firms' share of capital has grown almost 20 points since 2006

AUM of buyout firms, by performance tier



Notes: Includes 133 buyout firms that have raised more than $5 billion since 2000; AUM calculated as the sum of funds raised in the past seven years; new firms started to raise after 2006
Source: Preqin

increase of less than 10%. Winners were also oversubscribed by 16%, twice the level of losing firms. The difference would be more pronounced if you consider the fact that losing firms often reduce their targets so that they can exceed them.

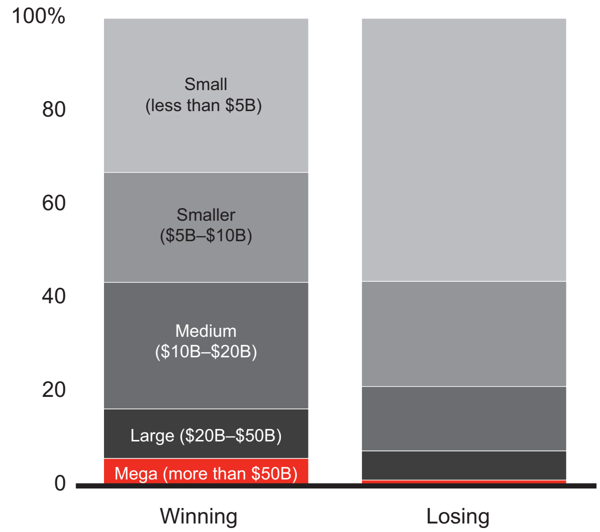
Who benefited most from this flight to quality? Although there were some notable successes among small PE firms, investors have increasingly favored larger firms *(see Figure 1.26)*. Buyout firms with solid track records, a clear sector strategy and a distinctive value-creation story were clear winners, too. About 70% of winning firms had first- or second-quartile funds across 2007–14 vintages, vs. 22% for losing firms. And about a quarter of the winning firms focused on a single sector, twice the share of losing firms. Consumer- and tech-focused funds did particularly well in fund-raising *(see Figure 1.27)*.

Still, the ranks of the winners in fund-raising are always in flux. Any PE fund could improve its standing over time. LPs have to strike a balance between limiting the volatility of capital calls (by diversifying their investments) and concentrating capital in top-performing funds.

For GPs, then, the most important task is to keep their current stable of LPs, which costs less and is easier than recruiting new LPs. Funds should also be alert for openings to expand their market share, such as a Chinese sovereign wealth fund increasing its allocation to private equity, or a US pension plan changing its CIO. In those cases, GPs need a pitch that differentiates their fund from others, and if their track record is merely average, they'll need a convincing story about how the strategy has shifted.

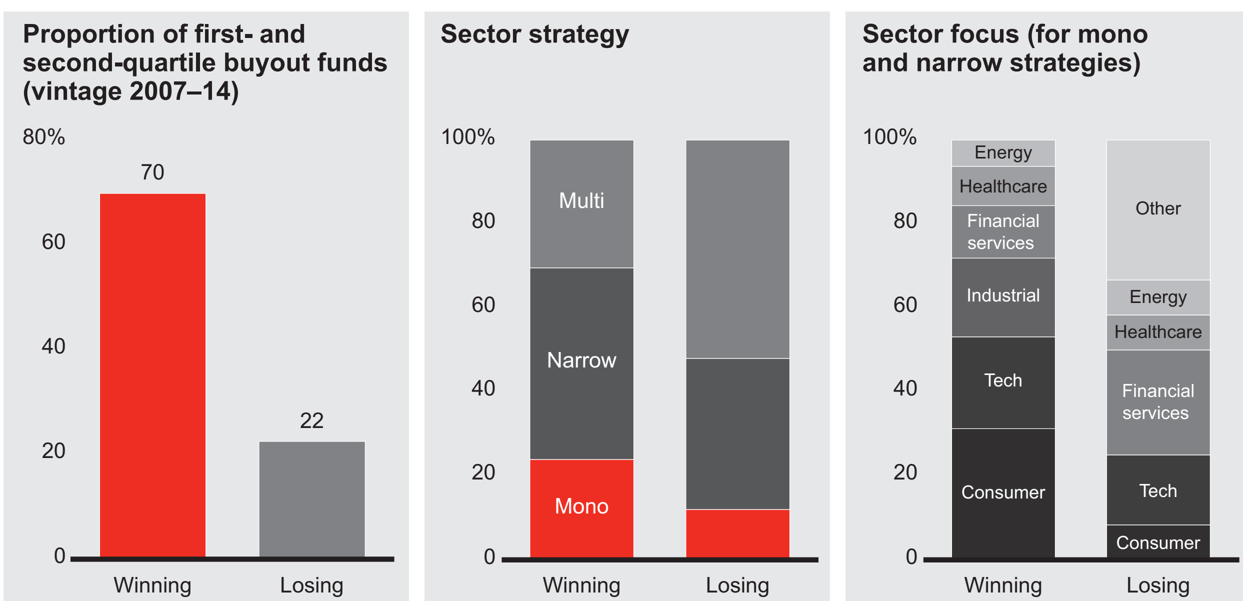
Figure 1.26: In fund-raising, larger PE firms benefited from the flight to quality

Fund-raising category	Winning firms	Losing firms
Median time to close, 2017–19 (months)	6	27
Average growth of funds closed vs. predecessors, 2017–19	51%	9%
Percentage oversubscribed vs. target, 2017–19	16%	8%



Notes: Includes 221 buyout firms that have raised more than $2.5 billion since 2000; predecessor fund analysis includes only funds that closed in 2017–19 and that have a predecessor fund
Source: Preqin

Figure 1.27: A solid track record and clear sector strategy matter in the bid to raise capital



Notes: Includes 221 buyout firms that have raised more than $2.5 billion since 2000; proportion of first- and second-quartile funds based on top-quartile buyout funds' value relative to all buyout funds with performance data; sector focus based on deals done since 2010; mono-sector focus when one sector has a share greater than 80%; narrow sector focus when one sector has a share between 40% and 80%; share based on total deal value (2010–19) factored down by number of investors
Sources: Preqin; Dealogic

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Returns: As multiple expansion fades, new muscles required

Private equity still outperforms public equities. The asset class produces steadier, more reliable returns in all major regions, over several time horizons. However, returns of private and public equities have started to converge in the US.

A simple comparison with the S&P 500 Index indicates that, over a 10-year horizon, US buyouts did not produce much of a premium over the public market. One could argue this is not an apples-to-apples comparison. But even using more sophisticated benchmarks, the spread between public and private equity has narrowed in the US *(see Figure 1.28)*.

We explore the reasons for this convergence in Section 3. In short, private equity is maturing as an industry, and public stocks in the US have had a great run over the past decade. Nonetheless, the reg-

In deal returns, individual lead managers—especially women—matter more than the PE firm

What drives persistence of returns in private equity? Two characteristics stand out in recent research by Oliver Gottschalg, a professor at HEC Paris and founder of the analytics firm PERACS.

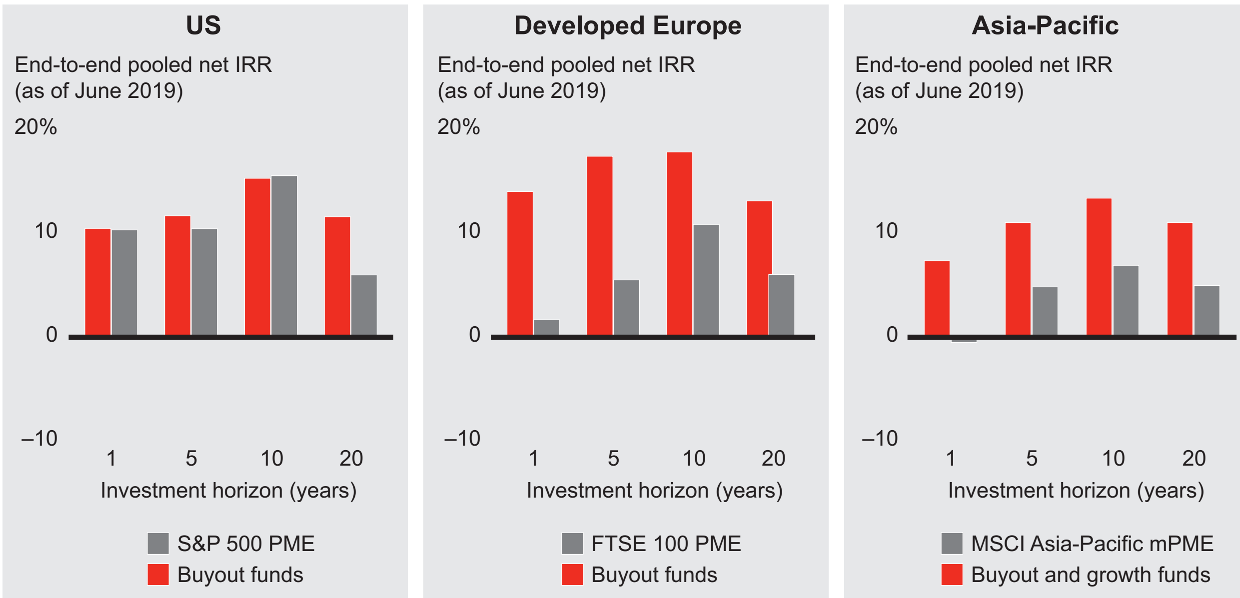
First, persistence stems mostly from the individual who runs the deal, as opposed to the PE firm. Gottschalg analyzed about 1,250 deals for which manager information was available. Statistically controlling for other performance-relevant factors, he found the individual lead manager effect to be roughly twice as strong as the PE firm effect.

Second, gender diversity makes a material difference. Investments with women as the deal leader outperformed male-only deal teams by 12 percentage points on an internal rate of return (IRR) basis and by 0.52 times in terms of gross multiple of invested capital (MOIC).

Deals led by diverse teams also have failure rates (defined as gross MOIC less than 1) that are 8 percentage points lower than deals led only by men.

Gottschalg's database included about 2,500 buyout deals completed by 50 GPs, with a 2015 cutoff date to avoid bias toward better-performing deals in more recent years. About 2% of the deals in the data set had women as leaders.

Figure 1.28: Buyout funds have outperformed public equities in Europe and Asia-Pacific, but the spread has started to converge in the US



Notes: Data for US and Asia-Pacific calculated in US dollars; data for Europe calculated in euros; Europe includes developed economies only; PME is a public market equivalent based on the Long-Nickels methodology; mPME is a proprietary private-to-public comparison from Cambridge Associates that evaluates what performance would have been had the dollars invested in private equity been invested in public markets instead
Sources: State Street Private Equity Index; Cambridge Associates Private Investments Database

ularity of returns for the PE industry as a whole and the outperformance of first-quartile PE funds remain far superior. Moreover, some GPs have been able to sustain their performance.

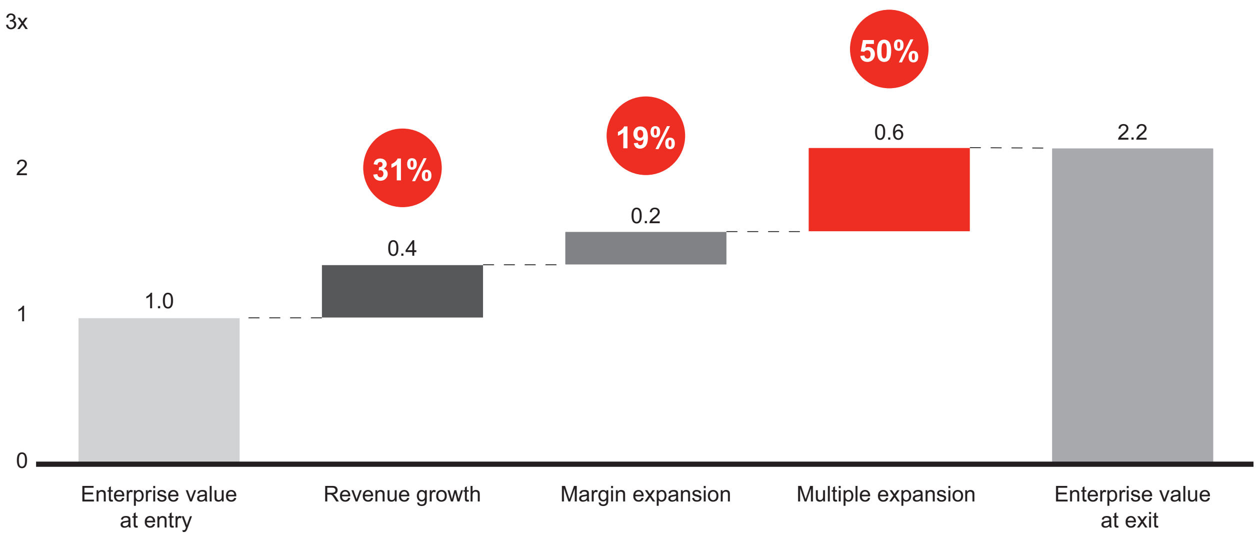
Since 2010, EV/EBITDA multiple expansion has been the main driver of returns, surpassing revenue growth or margin expansion. Our analysis of CEPRES data for about 430 fully realized buyout deals completed between 2010 and 2019 in the US and Western Europe finds that growth in multiples led to nearly half of the increase in enterprise value *(see Figure 1.29)*.

With multiples at record highs and macroeconomic conditions deteriorating, the spread between entry and exit multiples has likely plateaued and could start to diminish. Indeed, most GPs no longer include multiple expansion in their deal models *(see Figure 1.30)*.

GPs thus must find new levers for value creation, whether that consists of pursuing M&A, stripping out costs, gaining market share, or entering new product lines or geographies. But building new muscles is easier said than done. When we analyzed 65 fully realized buyout deals invested in 2009 through 2015, the average margin was well below the deal model forecast, and the majority failed to meet their projected margin expansion *(see Figure 1.31)*. Even more worrisome: For the deals where margin improvement was a critical factor in the value-creation plan, more than three-quarters did not meet the margin target.

Figure 1.29: Since 2010, multiple expansion has been the main driver of buyout deal returns in the US and Western Europe

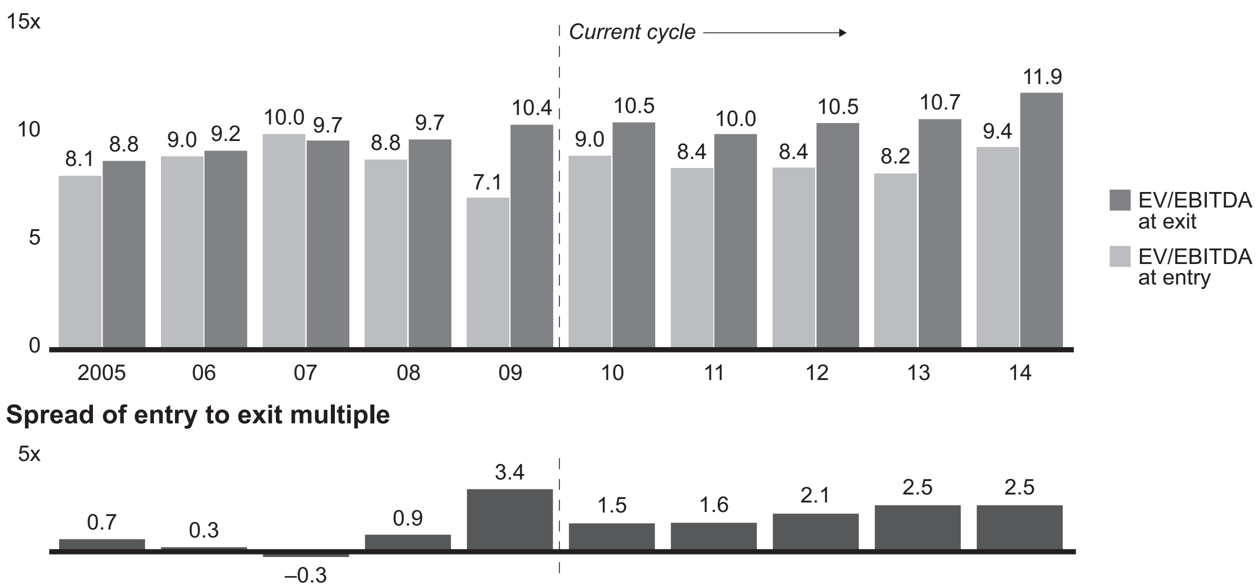
Pooled enterprise value for US and Western European buyouts invested 2010–19 (indexed)



Notes: Includes fully realized buyouts with at least $50 million in invested capital and initial investment made January 1, 2010, to October 30, 2019; analysis based on 429 deals for which operational data is available
Source: CEPRES Platform

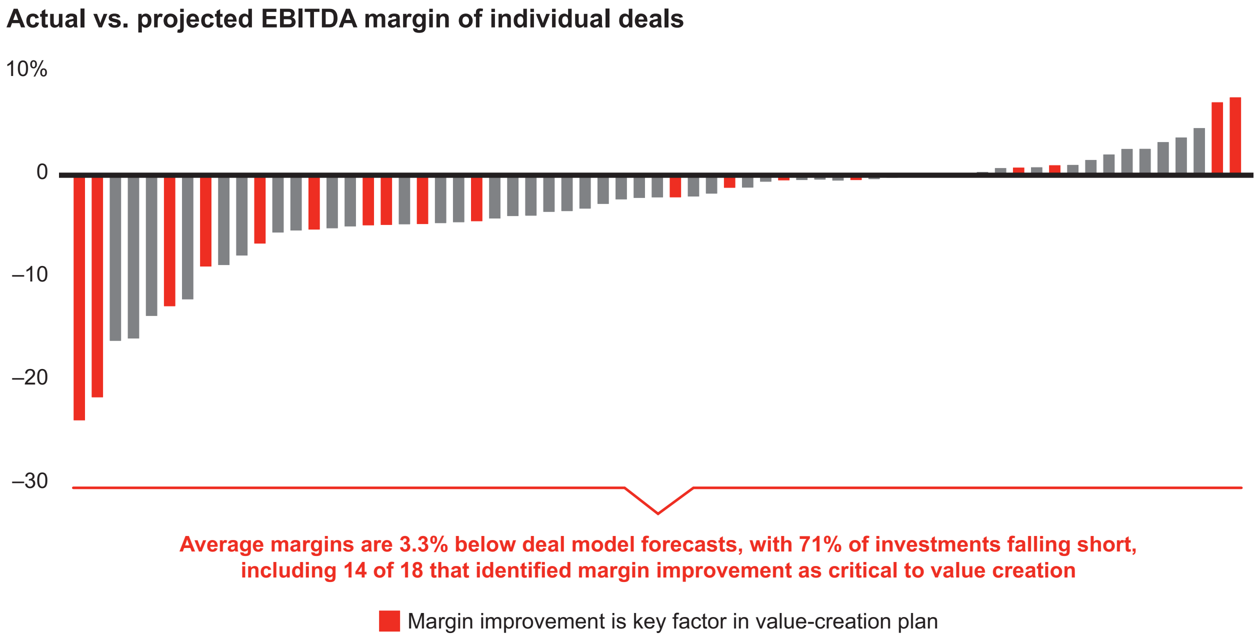
Figure 1.30: As multiple expansion slows, general partners need to build new muscles

Median EV/EBITDA multiple, at entry and exit, for global buyouts



Notes: Exit multiples and spread post-2015 not shown due to large share of unrealized deals; deal universe includes approximately 3,200 realized and unrealized buyout deals with at least $45 million in invested capital, with original capital allocations between January 1, 1998, and October 28, 2019
Sources: CEPRES Platform; Bain analysis

Figure 1.31: Most PE firms are not achieving their projected margin expansion



Note: Includes 65 fully realized buyout deals completed between 2009 and 2015
Source: Bain fund-of-funds database

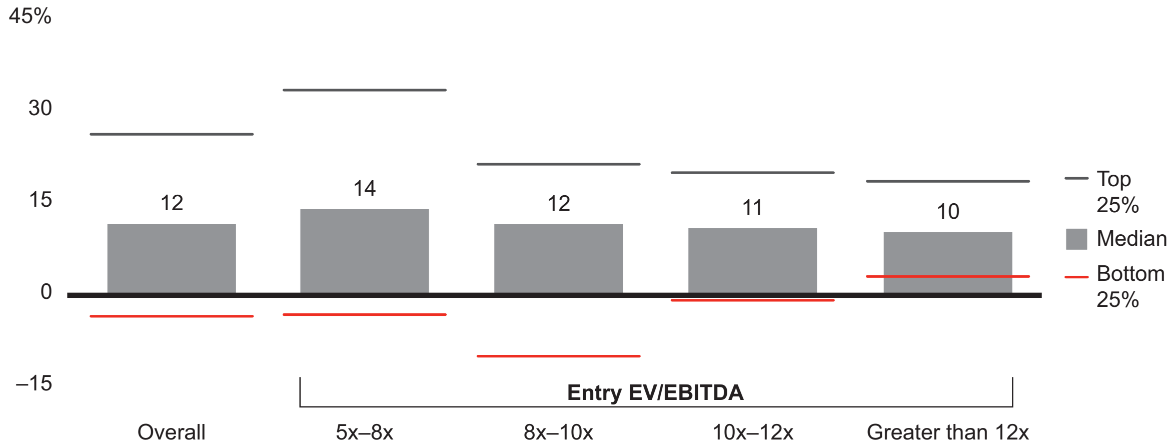
Buying on the cheap doesn't necessarily solve the problems. As in previous years, plenty of GPs cite high prices as their top challenge to generating high returns. Yet new CEPRES data shows that assets selling for higher multiples tend to carry less risk and prove more resilient than lower-multiple assets *(see Figure 1.32)*. They provide lower but less variable internal rates of return.

Consider two deal examples. On the cheap end of the spectrum, an industrial product manufacturer and distributor was acquired in 2012 for a multiple below 7x. But the company then faced intense competition from Chinese products and failed to turn around. The PE owner had to write it off in 2017.

By contrast, Permira bought the UK education technology firm Renaissance Learning in 2011 for $328 million, a multiple of 12x. Through a series of moves, including migration to a software-as-a-service (SaaS) business model, international expansion and divestment of noncore assets, Permira was able to sell Renaissance to Hellman & Friedman in 2014 for $1.1 billion, generating a return on investment of 4.1x for the firm.

Figure 1.32: Assets selling for higher multiples provide lower but less variable returns

IRR of North American and Western European buyouts, 2005–11



	Overall	5x–8x	8x–10x	10x–12x	Greater than 12x
Deal count	1,185	228	260	154	134
Pooled IRR	16%	35%	11%	12%	11%
Median MOIC	1.7x	1.8x	1.8x	1.9x	1.8x

Notes: Data as of November 2019; deal universe includes realized buyout deals with more than $50 million in invested capital, with original capital allocations between January 1, 2005, and December 31, 2007 (precrisis), and January 1, 2009, to December 31, 2011 (post-crisis); overall deal count includes deals whose EV/EBITDA multiples were not captured by CEPRES or were less than 5x
Source: CEPRES Platform

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Robust deal and exit activity, along with record-high fund-raising levels, produced another stellar year for private equity in 2019.

Risks abound, however. Valuations reached a new peak, fund-raising now has a winner-take-all dynamic and macroeconomic forecasts include a heightened risk of recession. Average returns are under pressure, so PE firms will need to step up their game if they want to land near the top of the heap.

Looking ahead, fund managers will continue to face a broad challenge: how to put record amounts of dry powder to work productively amid stiff competition for assets and worsening macro conditions. The most effective response is to get smarter about choosing targets, developing sector insights and doing due diligence. That will allow firms to identify new ways to create value.

2. What's happening now: The strategies shaping 2020 and beyond

The big takeaway from Section 1 of this report is that very little has changed over the past year to ease the fundamental challenge GPs face. If anything, the job has gotten harder. GPs still have a record amount of capital to put to work, they still face rampant competition for a limited number of high-quality assets and they still have to cope with the record-high price multiples that pressure returns.

Add to that a growing risk of a global financial crisis, and winning in this environment is all about being better and smarter. This section looks at five ways top PE firms are stepping up their game.

An increasing number of firms at this late date in the cycle are looking at the soaring technology sector and wondering if a growing bubble is about to burst. That's a real risk in some corners of technology, but enterprise software sectors like cybersecurity, human capital management and DevOps continue to offer strong growth and insulation against a downturn.

The rapidly evolving payments sector also offers private equity investors a target-rich hunting ground. But the opportunity is shifting from the large, steady transaction processors that PE has favored in the past to smaller, more innovative companies that are combining payments with a range of other business services.

Looking to create top-line growth from the inside out, leading firms are figuring out how to use pricing strategy as a powerful value-creation tool. At the same time, they are recognizing how important it is to understand where innovation is taking a given industry, using new forms of data and analytics in due diligence to assess the potential sources and impact of disruption.

Finally, private equity firms are waking up to the environmental, social and governance (ESG) movement sweeping the investment world. Prodded by investors, many firms are embracing ESG standards, and a growing number are launching pure impact funds. The surprise: Doing good may just enhance a fund's ability to do well.

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Technology: Bubble or opportunity?

Is a bubble ready to burst in the tech sector?

That question has been gnawing at some private equity investors for a while. As alluring as the sector's growth characteristics are, the red flags are hard to ignore.

Coming off a scary late-year dive in 2018, the Nasdaq powered ahead last year, driving price-earnings multiples in many tech subsectors to levels above their long-term average. The market value of just a handful of big tech players—Facebook, Apple, Amazon, Netflix and Google—ballooned to almost $4 trillion, which was more than 25% of the Nasdaq's total market capitalization as of the end of last year.

At the same time, there were unnerving signs of investor fatigue in the market for initial public offerings. After posting strong share price growth for much of 2019, a cohort of newly public tech darlings like Uber and Spotify began to sell off in the wake of WeWork's aborted IPO.

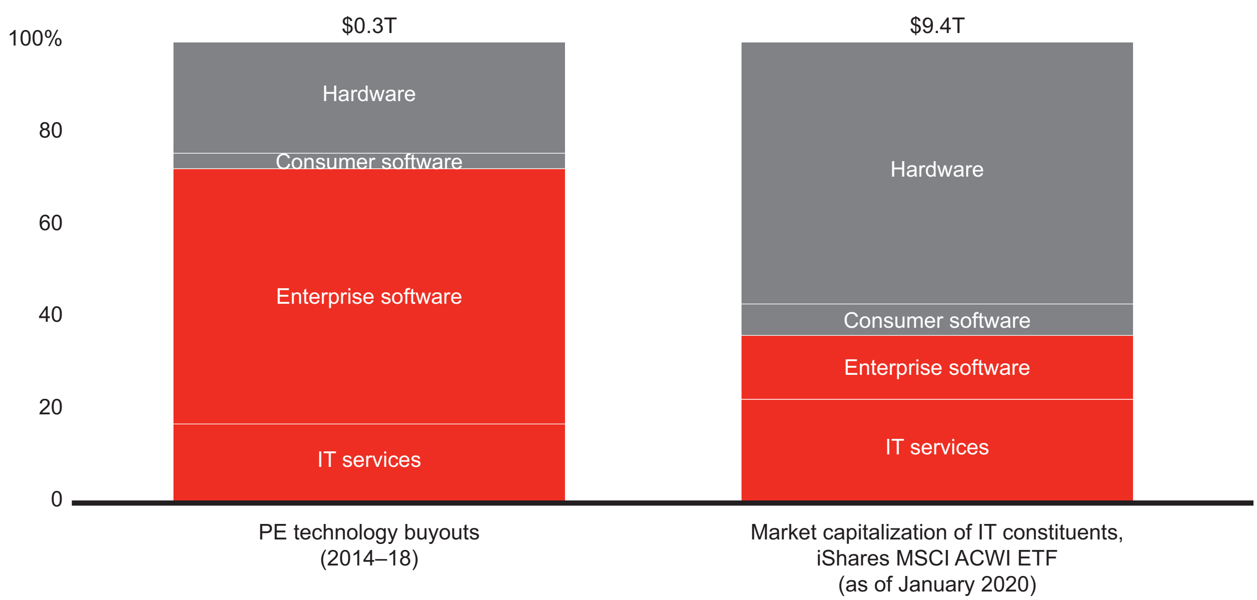
Clearly, at this late stage of the economic cycle, the risk of a market correction among the most inflated tech assets is significant. But, for several reasons, we believe it would be a mistake for private equity investors to huddle on the sidelines.

First, private equity tends to avoid the most hyped tech segments, investing instead in enterprise software companies that are more resilient in a downturn. Second, these companies have strong revenue growth and solid fundamentals because their customers are rapidly digitizing to stay competitive. Third, the sector has low levels of capital impairment because enterprise software is mission critical and the solutions are hard to dislodge once installed. Finally, the number of opportunities is growing. A wave of innovation around cloud and mobile technology has expanded the pipeline of PE-ready targets as companies mature out of the venture and growth stages of development.

The problem with the media-driven hype around tech stocks—both positive and negative—is that it treats "tech" as if it were monolithic. Capital flows tell a different story. Hardware and consumer software stocks comprise 63% of the capital invested in public markets, whereas 72% of private equity capital is concentrated in enterprise software and IT services *(see Figure 2.1)*.

Figure 2.1: Compared with public markets, private equity is far less focused on hardware and consumer software companies

Percentage of total value



Note: Includes disclosed deal values only
Sources: S&P Capital IQ; Bain leveraged buyout database

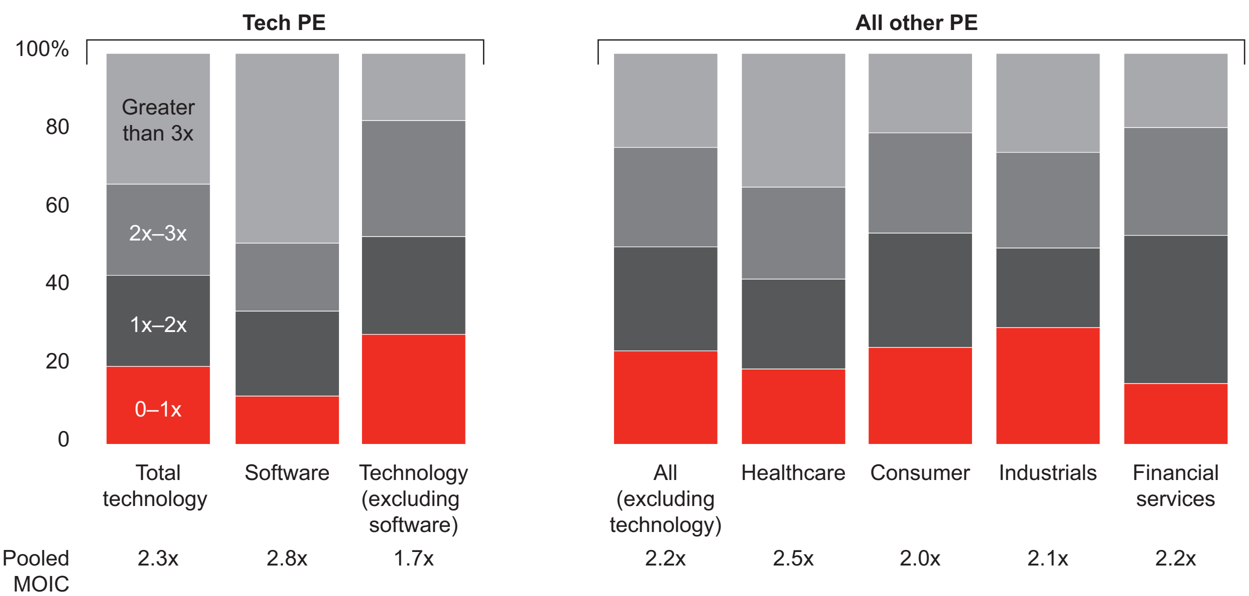
The distinction is important when it comes to risk assessment. Valuations for enterprise software companies have risen over the past five years, and their businesses are not immune to an economic slowdown. But these businesses tend to be more stable in a recession. While consumer-driven revenue can fall off sharply when the economy slows, B2B customers are less flighty. That's because most enterprise software performs necessary business functions and is embedded in workflows, meaning the cost of implementing a new system and retraining employees can be substantial.

Enterprise software companies also win on fundamentals. Because so many of these technologies are still only midway along the adoption curve, especially among small and medium-sized businesses, there's plenty of headroom for growth. Customer stickiness has always afforded the opportunity to raise prices, and SaaS-based subscription models create strong recurring revenue streams. Adding new customers is relatively inexpensive, and since these companies are asset light, they have a high rate of cash-flow conversion. That produces free cash to reinvest in more growth and to support more leverage.

These factors explain why returns from tech deals have outpaced those of nontech deals. Working with CEPRES, we broke down the returns from hundreds of private equity investments in technology-related companies from 2010 to 2018. The analysis shows that technology deals generated an average MOIC of 2.3x, while the rest of the PE market averaged only 2.2x over the same period. Software deals produced even stronger returns, with an average MOIC of 2.8x *(see Figure 2.2)*.

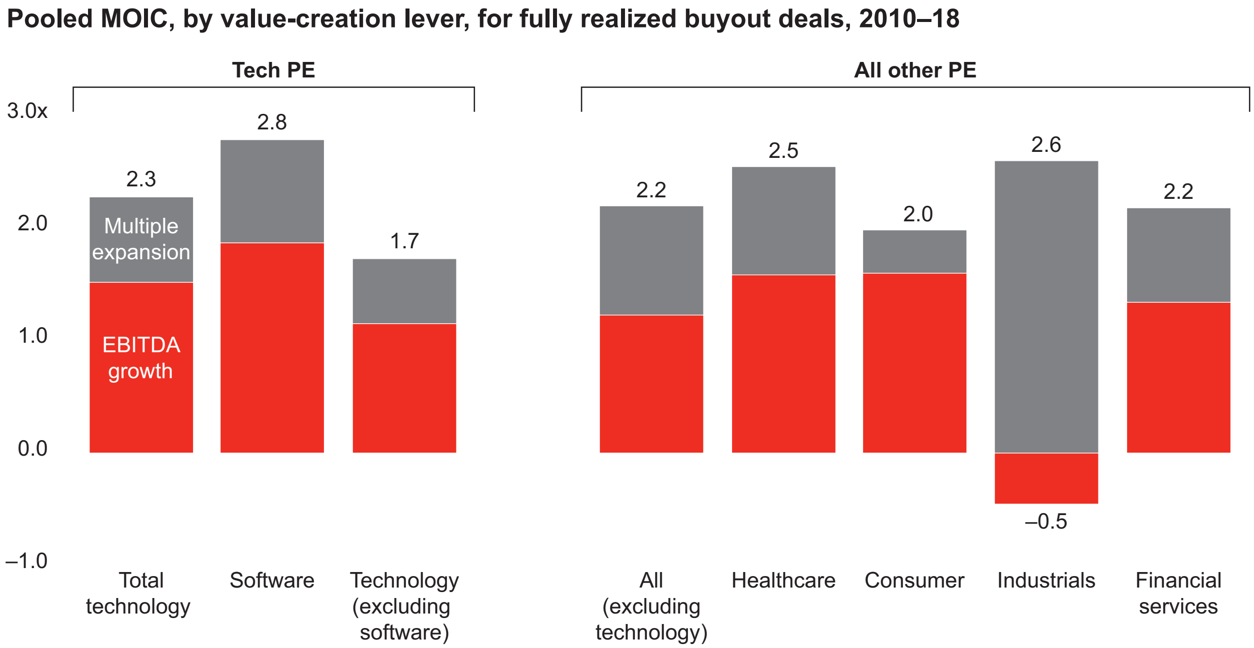
Figure 2.2: Technology deals, especially software buyouts, have produced stronger returns than the private equity market overall

Pooled MOIC for fully realized buyout deals, 2010–18



Note: Includes leveraged buyouts only
Sources: CEPRES Platform; Bain analysis

Figure 2.3: Growth in EBITDA accounts for more value creation in technology than in other sectors



Note: Includes leveraged buyouts only
Sources: CEPRES Platform; Bain analysis

Steadily rising price multiples have contributed significantly to private equity returns in general during the current economic cycle, so it's reasonable to ask how much multiple expansion has driven tech's superior performance. But there, too, the sector's fundamental strength shines through. *Figure 2.3* compares the value uplift for fully realized tech buyouts from 2010 to 2018 to that of deals in other industries. It shows that tech in general and software in particular outpace other industries when it comes to generating value through EBITDA growth.

Yet focusing solely on EBITDA misses another important factor at play. Over the last five years, some private equity funds have made a fundamental shift in their mix of tech assets to emphasize revenue growth as well as earnings. This isn't to say that the ability to produce profits is any less important. But growth and the investment to push it to full potential are critical.

For most of its history, private equity has put its money on legacy tech businesses—long-established companies with lower organic growth, like TIBCO Software and Rocket Software—that have a track record of high margins and steady earnings. In recent years, however, a new generation of born-on-the-cloud software and services companies have been attracting more and more investment. In 2018, over 50% of software LBOs targeted companies transitioning to the cloud, up from just under 10% in 2014. These companies are game changers: They are disrupting their markets and growing rapidly as businesses move away from clunky on-premise enterprise software. But it's also true that they have lower margins, or even losses, because they are investing heavily in product development, sales and marketing to sustain their growth.

Tech investors use the Rule of 40 to get at this dynamic. It states that the sum of revenue growth and profit margin for a healthy software business should exceed 40%. A legacy software business growing at 5%, for instance, would be expected to generate 35% margins. But a new SaaS business growing at 50% arguably *should* be losing money—because if it isn't, it may not be investing enough to reach its potential.

For most of its history, private equity has put its money on legacy tech businesses—long-established companies with lower organic growth—that have a track record of high margins and steady earnings. In recent years, however, a new generation of born-on-the-cloud software and services companies have been attracting more and more investment.

Revenue multiples capture this growth/investment relationship better than EBITDA. A great example is Vista Equity Partners' 2016 buyout of Marketo, a cloud-based innovator in marketing automation software. Marketo was losing money and its revenue growth had stalled in 2016, when Vista took it private for $1.78 billion, a 64% premium to its stock price and 7.9x revenue. Wall Street scoffed at the valuation, but Vista installed a CEO experienced in reinvigorating revenue growth, who focused the company's sales effort on large deals in the enterprise space. Rapid growth eventually produced positive EBITDA, and in September 2018, Vista sold the company to Adobe for $4.75 billion, generating a $3 billion return.

High price multiples certainly do turn up the heat on GPs hoping to replicate the market-beating returns tech investments have generated in the past. The supply of targets is growing as the number of high-growth, born-on-the-cloud companies increases. But competition for deals from both investors and strategic buyers will continue to ramp up as capital aimed at the sector grows. Several large tech specialists raised major new funds in late 2018 and 2019, including Vista's $16 billion Fund VII and Thoma Bravo's $12.6 billion Fund XIII. Other large firms have launched specialist tech funds, including Advent and Bain Capital.

In all, new private capital aimed at tech approached $150 billion in 2019. It's hard to predict how this supply/demand dynamic will play out, but it is likely to intensify the upward pressure on valuations in the years ahead, challenging GPs to pick assets wisely and execute during ownership.

What follows is our assessment of three high-growth enterprise software sectors: cybersecurity, human capital management and DevOps. Each benefits from broad and lasting changes in corporate behavior, and each is maturing as a hunting ground for private equity investors. But finding growth and exploiting it are two different challenges, especially in a market where growth may already be baked into multiples. Succeeding in this environment will require a clear, differentiated investment thesis and underwriting it reliably in due diligence. For many firms, that will mean cultivating a new set of capabilities to help portfolio companies manage rapid growth and invest behind it boldly.

Cybersecurity: The race to stay ahead of growing threats

Hardly a day goes by that the media isn't trumpeting the latest security breach at a major global corporation. In 2018 alone, firms reported over 2 million cybersecurity incidents resulting in more than $45 billion in losses. As IT infrastructure becomes increasingly complex and central to everything a company does, the danger to organizations and their leaders is hard to overstate. But from an investment standpoint, the business of mitigating those threats presents a major opportunity.

Hunting for deals in the burgeoning cybersecurity sector is complicated by the sheer number and diversity of targets, many of them growth-stage insurgents that are just now emerging onto PE radar screens. It helps to filter subsectors using a handful of factors: How much is the underlying technology changing? How much unaddressed white space is there? How long is the product life cycle, and how sticky are the customer relationships? How fragmented is the market, and how high are the barriers to entry *(see Figure 2.4)*?

Figure 2.4: Several cybersecurity subsectors are particularly attractive for private equity investors

Domain	Subdomain hot spot	Degree of enterprise technology change	Current white space	Rate of product innovation	Product stickiness	Vendor fragmentation	Barriers to entry/ competition	Current market size
Endpoint security	Endpoint detection and response	Neutral	Neutral	Very attractive	Neutral	Unattractive	Neutral	Neutral
	Containers/virtual machines	Very attractive	Very attractive	Attractive	Attractive	Attractive	Neutral	Neutral
	Internet of Things	Very attractive	Very attractive	Very attractive	Very attractive	Very attractive	Neutral	Very attractive
Managed security services	Managed detection and response	Attractive	Attractive	Very attractive	Very attractive	Very attractive	Very attractive	Unattractive
Content security	Data loss protection	Unattractive	Attractive	Neutral	Very attractive	Unattractive	Unattractive	Neutral
	Cloud access security brokers/cloud security	Attractive	Attractive	Attractive	Neutral	Neutral	Unattractive	Unattractive
Identity and access management	Advanced authentication	Neutral	Attractive	Neutral	Neutral	Neutral	Unattractive	Attractive
	Privileged access management	Unattractive	Attractive	Neutral	Attractive	Neutral	Unattractive	Neutral
Security operations	Security orchestration, automation and response	Attractive	Attractive	Very attractive	Very attractive	Attractive	Neutral	Neutral
	Threat intelligence	Very attractive	Attractive	Very attractive	Attractive	Attractive	Neutral	Very attractive

Very attractive | Attractive | Neutral | Unattractive | Very unattractive

Source: Bain & Company

Based on these criteria, several subdomains stand out within the broader areas of endpoint security, managed security services and security operations.

- **Internet of Things (IoT).** Because IoT devices imbue systems like factory equipment or commercial HVAC systems with intelligence, they're in heavy demand. But they also create massive security gaps at the outer ring of networks, slowing adoption. The vendors supplying cybersecurity solutions are mostly small companies, which gives PE buyers the opportunity to buy and build, creating a scale player through acquisition.

- **Containers.** A container is a standardized piece of software that allows a company to move an application from one computing environment to another without compromising speed or reliability. Like IoT, the technology presents unique security challenges, which has spawned a fragmented industry of cybersecurity firms. A number of the most promising have been gobbled up by strategic buyers like Cisco and Palo Alto Networks, but there is ample white space to fuel growth of new targets.

- **Managed detection and response.** Given the specialized nature of cybersecurity, it's not surprising that many large enterprises outsourced the job. That gave rise to a subdomain called managed security service providers (MSSPs), companies that monitor security threats. Increasingly, MSSPs are giving way to managed detection and response (MDR) companies that not only monitor threats but also automate a response. The most attractive MDR firms have developed strong customer relationships based on packaging the right solutions from the best underlying technology.

- **Security orchestration, automation and response (SOAR).** Coined by the research firm Gartner, SOAR refers to tools deployed by companies to automate security operations. The idea is to use machine learning and analytics to take people out of the equation. This is a nascent area of cybersecurity, and companies are still learning how to put these systems to work. But the growth is substantial, and rapid adoption promises to create opportunities for investors willing to accept some growth-stage risk.

Competition for assets within each of these segments is fierce given the latent demand for cybersecurity solutions. To win, PE investors need to understand how the underlying technology is changing and how a given asset is positioned to take advantage (or not). Rapid growth can easily stall if a target lacks a truly differentiated advantage. Commoditization is a real risk in cybersecurity as technologies mature and gain wide acceptance, eroding favorable pricing dynamics. How well a product works across platforms and architectures is often critical to staying a step ahead. So is targeting the right segment and developing the go-to-market capabilities needed to pursue it.

As cyber threats proliferate and the technology to mitigate them evolves, the cybersecurity sector will continue to offer up a variety of attractive opportunities for all types of investors. The challenge for PE funds is acquiring the market experience and sophistication to evaluate deals and underwrite growth more effectively than the competition.

The human capital imperative

For years, human resources executives have been looking for technology to make their jobs easier, and for years they've been largely disappointed. Software tools patched together from legacy systems are typically clunky, inefficient and rarely designed to talk to each other. Many HR departments still go their own way, turning to Excel spreadsheets as a solution for many tasks and workflows.

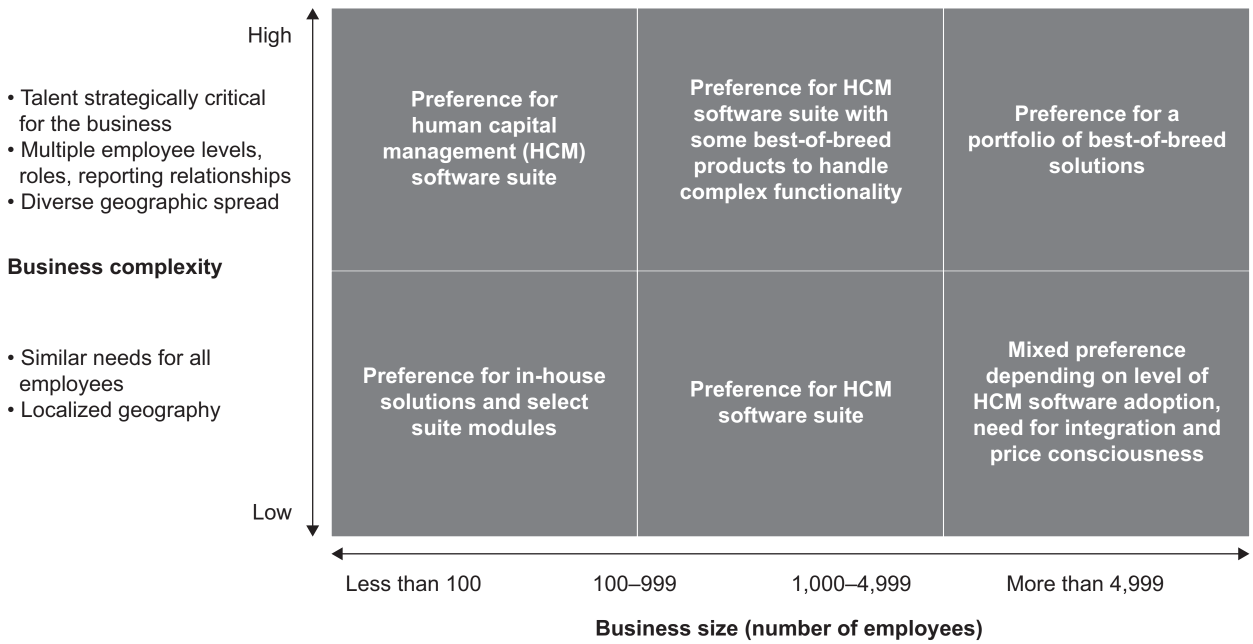
But that's changing rapidly as human resources rises from a staff function at many companies to a full C-suite participant. Leadership teams increasingly view winning the war for talent as critical to all they do, and they are investing accordingly in human capital management (HCM) software—systems to help automate everything from talent acquisition to benefits and employee development. Not only are processes becoming more complex, but employees are becoming more demanding: When they log onto the employee portal, they expect self-service options and personalized HR solutions. Companies are looking to become more competitive by improving employee engagement and using predictive analytics to find and develop talent.

Legacy technology clearly isn't cutting it. Bain research shows that three-quarters of HR departments believe their current IT systems aren't achieving optimal performance, and 25% are planning to expand technology budgets by more than 10% over the next two years. IDC projects companies will spend $90 billion on HCM software over the next four years, an updraft that has already produced rapid growth at companies like Workday, Ultimate Software and iCIMS. Private equity investors have taken notice. The number of HCM buyout deals tripled to 12 from just 4 in 2015. The clear appeal is the chance to ride the penetration curve in a dynamic sector characterized by eager customers with an increasing willingness to pay.

Automating HR workflows, however, is more difficult than it seems. While most corporate functions—finance, for instance—have standard ways of doing things, HR functions like talent management tend to differ by company and are often an embodiment of the corporate culture. Automating these processes can be both complicated and disruptive, meaning customers are less willing to change the workflow to suit the software. "Land and expand" (software-industry parlance for getting in the door with one application and introducing others across the same customer base) might work with one customer group. But it might distract from producing best-of-breed solutions for customer groups that need to solve a narrowly focused problem.

The most effective diligence processes in the HCM space zero in on whether a target company has defined its market correctly. That often boils down to the size of its customers and the complexity of their business *(see Figure 2.5)*. Small to midsize companies with fewer employees and resources are more willing than larger companies to accept "good enough" software solutions, making it easier to sell them a suite of products that makes automation affordable. Land and expand may work in such instances, but it could be equally important to invest in a sales and marketing team capable of targeting the thousands of small companies that might be looking for relatively simple solutions.

Figure 2.5: A company's size and complexity tend to determine its choice of suite software vs. best-of-breed solutions



Sources: Gartner; IDC; Bain analysis

That was the case when HgCapital bought Germany's Personal & Informatik (P&I) from Carlyle in 2013, in a deal that valued the company at €438 million. P&I had strong positions in software used to manage payroll and employee records. It had a diverse and loyal customer base of small and medium-sized German companies and a decade of consistent growth in revenues and EBITDA.

Hg saw the chance to expand on this success through cross-selling new products to P&I's sticky customer base. The company had developed a suite of talent management products for customers looking for cloud-based solutions to help with recruiting, performance management and workforce analytics. P&I expanded its suite offering with additional modules and functionality to match the market need.

The strategy worked. Over the three years Hg owned it, P&I grew rapidly, expanding EBITDA at 16% annually. Hg sold its majority stake to Permira in 2016, realizing a 36% internal rate of return from the investment.

The trap is to assume that the same approach will work for any customer base. Large, enterprise-level customers present a different challenge. The bigger the company, the more complex its HR processes, so a large enterprise is typically willing to pay for best-of-breed functionality for each of its workflows.

In talent management, for instance, the imperative is to stay ahead of the competition by identifying, onboarding and developing the best people. It means giving employees distinctive, personalized experiences when it comes to benefits management and engagement. Each of these areas represents a precise need, and a large company with extensive resources would much rather manage a patchwork of world-class solutions than trade off on functionality for a suite. HCM companies trying to be the best at all things are likely to come up short.

When Warburg Pincus invested in Businessolver in 2018, building up the core was at the center of its investment thesis. Indeed, Businessolver had thrived as a provider of benefits-administration software precisely because of its focus; its SaaS-based solutions gave customers more of what they needed than they could get with legacy offers from players like Oracle or suite providers like Workday. The Iowa-based company catered to midsize and enterprise-level businesses that needed flexible solutions for managing an ever-more-complex mix of medical plans, health savings accounts and ACA-mandated reporting requirements. They needed robust back-end functionality as well as a slick web-based interface and mobile app to help employees educate themselves on plan features and trade-offs.

Cookie-cutter strategies won't work in a sector as complex and multifaceted as HR. Understanding how to define boundaries and grow within them is the key to value creation.

Businessolver had defined its market carefully and targeted its R&D to stay within those boundaries. For Warburg, it could drive upside in helping the company invest in technologies like artificial intelligence (AI) and machine learning, which could allow customers to get answers to complex benefits questions quickly or let management use "instant dependent verification" to weed out ineligible participants. Businessolver has expanded gingerly in areas where it knows it can add value—products to manage commuter benefits, for instance. But winning is about continuing to deliver specialized solutions for its core customers.

Cookie-cutter strategies won't work in a sector as complex and multifaceted as HR. Understanding how to define boundaries and grow within them is the key to value creation.

The DevOps paradigm shift

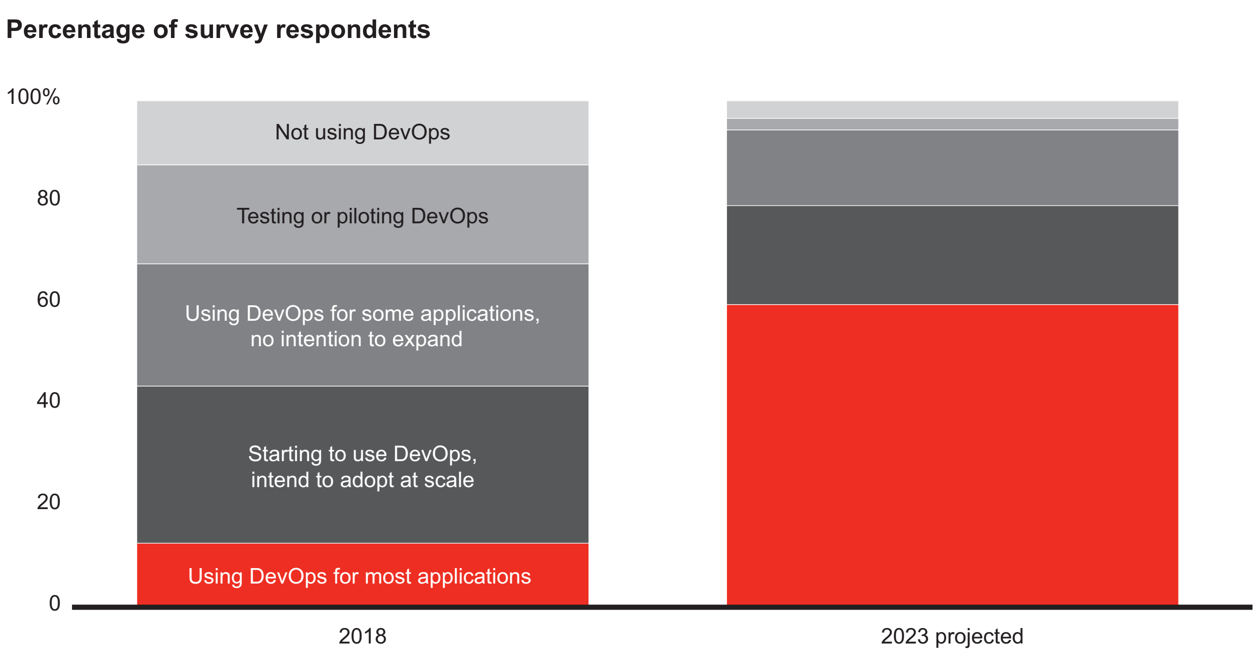
Until relatively recently, most companies viewed building software applications and managing them as two separate functions. Someone established a need and drew up a project plan. Then, over the course of weeks or months, the development process would proceed step by step until a monolithic application was ready to be put into service, at which point it would be deployed and maintained by IT operations. Not only was this waterfall process ponderous, it was inflexible. Once an application was up and running, fixing a bug or adding a competitive new feature involved launching another new process. Companies were stuck, held hostage to the next development cycle.

The explosive pace of innovation in today's markets has dictated a new paradigm. Known as DevOps, it makes companies faster, smarter and much more flexible, allowing them to work effectively within modern IT architectures like the cloud, containers and microservices. DevOps uses many small, multi-functional teams that each own a smaller app or service. They use Agile development principles to rapidly plan, build and test their app, improving it continuously as they run, service and fix it. Adopting DevOps can reduce release cycles by orders of magnitude. Amazon, for instance, has taken DevOps to scale and now deploys new code more than 5,000 times daily.

The paradigm shift has opened a rich new vein of investment potential. A recent Bain survey indicates that, while most companies are already using DevOps in some capacity, only about 10% are using it for a majority of their applications. Over the next five years, however, 50% of companies expect to be using DevOps at scale, which means big changes for the tech ecosystem *(see Figure 2.6)*.

As companies adopt DevOps, they are replacing legacy tools with a new generation of technology that supports collaborative, continuous, and automated development and operations. Teams are reorganizing, and decision making is decentralizing, moving away from the CIO. DevOps is also altering the com-

Figure 2.6: Companies expect to significantly increase their use of DevOps over the next several years



Source: Bain IT DevOps Customer Decision-Maker Survey, 2018 (n=87) petitive landscape as cloud services firms like Amazon Web Services provide their own DevOps tools to entice companies to use their infrastructure. Open-source platforms, meanwhile, are gaining traction by offering companies alternatives that are often free.

Rapid innovation creates a heavy dose of risk for any investor. Funds are underwriting deals with a variety of strategies, but the most successful recognize the critical importance of being on the right side of change or having a clear plan to get there.

The fast-growing market is attracting enthusiastic investment across the board, from late-stage growth and private equity funds to strategic buyers and cloud service providers. The number of deals in the sector has increased fourfold since 2015, with the value of the market growing 26% year over year since then.

Rapid innovation, however, creates a heavy dose of risk for any investor. Funds are underwriting deals with a variety of strategies, but the most successful recognize the critical importance of being on the right side of change or having a clear plan to get there. That means gaining real insight and confidence about several key factors:

- Are the company's offerings differentiated, and do they work with modern architectures like the cloud and microservices?
- Is the company a leader (or moving toward leadership)?
- What role does open source play in the company's segment, and is its revenue model sustainable?
- Is the target company wired in with the DevOps teams that are replacing heads of IT as the key decision makers when it comes to assessing and buying these tools?

When Thoma Bravo bought Detroit-based Compuware in 2014 for $2.4 billion, the company looked more like a legacy cash cow than a tech innovator. What sparked Thoma's interest was an acquired unit called Dynatrace that developed application performance management systems for old-line enterprise IT systems.

Dynatrace was a diamond in the rough. It had fallen behind in the monitoring business to companies like AppDynamics and New Relic, whose products performed better and were easier to deploy. But it also presented the opportunity to build a new product architecture suited to the DevOps paradigm.

To get there, Thoma Bravo spun Dynatrace out as a separate private company and began investing in it as a standalone entity.

Legacy monitoring products forced companies to use separate tools to check up on applications, IT systems and other aspects of the IT stack. But as customers gravitated to the cloud, thousands of applications might be running across many computing environments at once, presenting a much more complex and dynamic monitoring challenge. That meant monitoring companies had to make their products more intelligent and tie them together to give users a single view of what was going on.

To provide this kind of functionality, Dynatrace rebuilt its product from the ground up. It engineered new solutions to serve the next generation of architectures, integrating many of the components that other vendors either didn't have or had not yet integrated. It also developed an easy-to-use dashboard that let managers see what was happening across the company all in one place.

Strong advocacy from DevOps teams led to rapid adoption and a fivefold increase in the number of customers. Subscriptions now make up about 90% of Dynatrace's revenues as it transitions from licensing on-premise software to solutions delivered and updated dynamically through the cloud.

The growth led Thoma Bravo to take Dynatrace public in March 2019 in an IPO that raised $544 million to fuel more growth and valued the company at $4.5 billion. Thoma Bravo retained its 70% stake, for a market valuation of about $5.5 billion so far.

It's unsurprising that Thoma Bravo's biggest opportunity in the DevOps space to date has been transforming a legacy player. Given the highly fragmented nature of the market, many of the most promising targets are still in growth stages and not yet on PE radar screens. But that's changing rapidly as companies mature, creating opportunities to back disrupters emerging from the venture world. There will be chances to build scale players either by rolling up companies with similar technology or by bundling those that complement each other to create new toolchains.

Success will depend on the ability to develop proprietary insights about a rapidly evolving business and translate them into a strong value-creation plan. We see the most opportunity to do so in three key subsectors:

- **Developer workflow tools.** Companies have spent heavily over the years for legacy development tools, fueling strong PE investment in tool vendors like Perforce and BMC. The rise of DevOps means those companies are fast ceding share to next-generation tools supporting workflows like continuous integration and deployment (CI/CD). Until now, this segment has been extremely fragmented, and widespread use of free, open-source tools like Jenkins has held back revenue growth. But that's changing as companies create integrated toolsets and offer paid tiers for enhanced products and services.

  The developer workflow segment represents a $2 billion to $3 billion market and is growing at around 10% annually. Companies like GitLab and HashiCorp are reaching a size and critical mass that make them increasingly attractive to PE funds interested in growth assets.

- **Testing.** Testing has always been critical to software development and is a massive, $30 billion market that is growing at 13% annually. But from an investment standpoint, the space is complex, fragmented and evolving rapidly. There are many vendors across different testing methods (unit, integration, security and usability testing, among others) and a wide array of outsourced testing services. Because DevOps teams are rapidly and continuously developing new code and putting it to work, the new model demands faster, consistent testing that doesn't rely on humans. Companies are also moving away from traditional quality assurance teams and relying on the DevOps teams themselves to test as they go.

  While the market is broadly growing and providing a diverse range of investment opportunities, the greatest promise lies with innovative companies whose products are aligned with the trend of automating or augmenting testing. Applause and SmartBear are good examples.

- **IT operations management (ITOM).** This is where Dynatrace plays. ITOM is a set of tools used to instrument, monitor, manage and remediate application and IT infrastructure—all mission-critical tasks. A $10 billion segment that is growing at 10% annually, it has recently produced a number of large deals besides Thoma Bravo's Dynatrace IPO, including Cisco's $3.7 billion acquisition of App Dynamics, Splunk's $1 billion purchase of SignalFx and the $7.8 billion IPO of Datadog. DevOps teams will continue to demand these tools, and the trend toward "integrated observability" is creating opportunity for vendors that can bundle previously unrelated monitoring tools into suites that use artificial intelligence to increase automation.

Mitigating the risk associated with these sectors means shifting old mindsets and building new capabilities to aggressively manage for growth.

What's clear is that DevOps is here to stay, and companies across the economic spectrum will need to get on board if they want to remain competitive. That will open the door to PE firms, much as the rapid emergence of PE-ready companies in cybersecurity and HCM software is creating opportunities for investors with the right combination of risk tolerance and industry-specific experience.

Private equity has always excelled at managing for cost and scale. In many technology sectors, PE funds have generated solid returns by investing in legacy players that offer average growth but steady streams of reasonably predictable earnings. That's changing rapidly. Funds flush with capital are looking for new hunting grounds, targeting companies they might never have considered in the past.

They are identifying opportunities in maturing enterprise software sectors attractive for their positive growth, cycle resilience and strong cash-flow fundamentals.

The best of them are also deploying new tools to evaluate these assets. They are learning to use benchmarks like the Rule of 40 to identify and invest boldly in underfunded growth companies. They are consolidating fragmented subsectors and creating scale economics through buy-and-build strategies. They are helping companies define their markets correctly and build the right commercial capabilities to execute effectively.

What they aren't doing is diving in cold. Managing the risk associated with these sectors starts with tapping the right ecosystem and assembling the right expertise. It means shifting old mindsets and building new capabilities to aggressively manage for growth.

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Investing with impact: Today's ESG mandate

In September 2019, institutional investors with $2.4 trillion in assets drew a line in the sand: They made clear that they were serious about wielding their financial clout to combat climate change. With the backing of the United Nations, funds including CDPQ, CalPERS, PensionDanmark, Swiss Re and Allianz joined the Net-Zero Asset Owner Alliance, pledging to transition their investment portfolios to become carbon neutral by 2050. As Allianz CEO Oliver Bäte put it, "Mitigating climate change is the challenge of our lifetime. Politics, business and societies across the globe need to act as one to rapidly reduce climate emissions."

As social and environmental issues increasingly affect consumer behavior and business conditions, there's growing evidence that ESG programs can actually improve returns and limit risk.

Skeptics will roll their eyes and say they've seen this movie before (cue the 1990s sustainable investing craze that produced little in the way of returns or environmental impact). But a growing number of private equity firms know that conditions have changed dramatically over the past 20 years. If they haven't built environmental, social and governance standards into their investment strategies already, GPs are fielding uncomfortable calls from their limited partners and employees asking why not.

They are also starting to realize that ESG investing isn't just about doing good for good's sake. As social and environmental issues increasingly affect consumer behavior and business conditions, there's growing evidence that ESG programs can actually improve returns and limit risk.

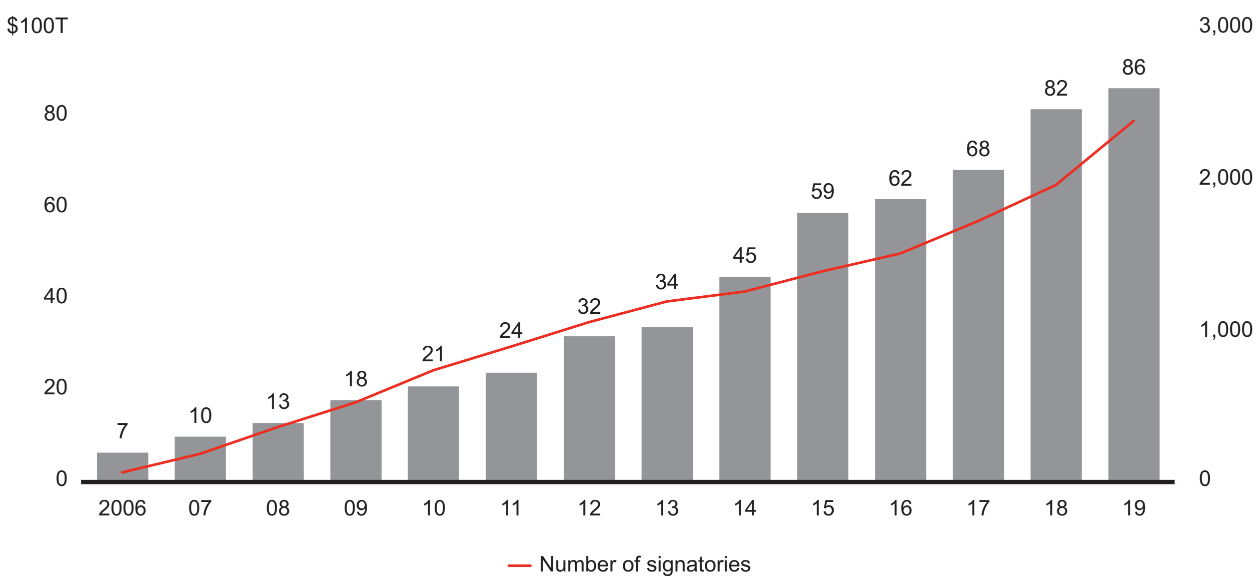
What's changed in recent years is that vague discomfort about environmental and social issues has morphed into genuine alarm among investors and consumers. More and more people in both camps view existential global challenges such as climate change, plastics pollution, loss of biodiversity, deforestation, social inequality and water shortages as tangible threats. Conventional wisdom has it that these are "millennial issues," but the evidence suggests the concern is much broader. According to the Schroders 2019 Global Investor Study, which surveyed 25,000 investors worldwide, more than 60% of those under the age of 71 believe that *all* investment funds—not just those explicitly defined as sustainable investment funds—should consider sustainability factors when making investments.

Funds are hearing the message. Since 2012, the number of signatories to the UN-supported Principles for Responsible Investment has grown from 1,050 to almost 2,400 funds, a group that controls a staggering $86 trillion in capital *(see Figure 2.7)*. Those funds, a mix of institutional investors and fund managers, have committed to six principles, including a pledge to incorporate ESG issues into how they choose and manage investments.

To date, institutions have put less pressure on private equity funds than on public funds to adopt ESG programs. A survey by RBC Global Asset Management found that LPs are less inclined to build ESG criteria into their portfolio choices for private equity than they are for their public, fixed income, real estate

Figure 2.7: More and more private equity investors are committing to ESG principles

AUM of Principles for Responsible Investment signatories



Note: Data as of November 2019
Source: Principles for Responsible Investment

or infrastructure asset classes. But as leading institutions become more and more vocal about investing responsibly, forward-thinking GPs are assuming that the pressure from their investors will only build.

Defining the commitment

Though ESG is a broad concept with no standard definition, most can agree on the range of issues it encompasses *(see Figure 2.8)*. How PE firms are addressing the challenge is also highly variable, but they are aligning themselves along a spectrum of ESG commitment *(see Figure 2.9)*.

At one end are traditional investors that have yet to get on board. Next come those taking the "cover your backside" approach by ensuring that their portfolio companies are at least compliant with existing regulations and doing nothing wrong in the social/environmental arena.

Further along the spectrum are the firms that are embracing ESG principles across the investment value chain, from identifying targets and due diligence to value creation during ownership. They view it as an opportunity to seek out companies where doing the right things adds value by attracting more customers, cutting costs or avoiding reputational harm.

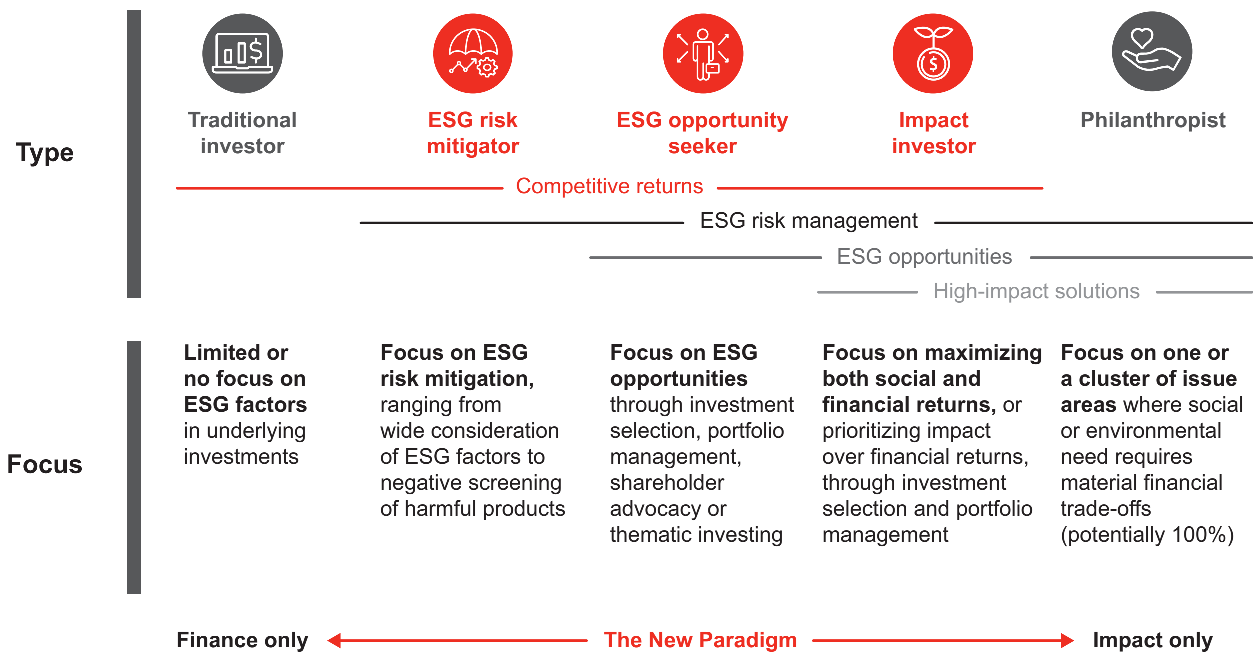
Finally there are the impact investors. These firms represent a small part of the market, but they are raising increasingly large funds with the explicit goal of investing in companies that can produce both ESG-style impact and market-rate financial returns.

Figure 2.8: ESG investing demands sensitivity to a wide range of issues

Environment	**Effluents and waste**	**Emissions**	**Water**	**Land use**	**Biodiversity**	**Energy**	**Materials**
	Safe disposal and focus on recycling, reuse or recovery as energy	Emissions reduction and carbon offsetting	Water efficiency and sustainable use in farming and production	Sustainable land management and protection of ecosystem	Protection of biodiversity and ecosystems within operational range	Energy efficiency, use of renewables and coproduction (biogas)	Responsibly sourced materials
Social	**Labor practices**	**Occupational health and safety**	**Human rights**	**Diversity and equal opportunity**	**Health and wellness**	**Product safety**	**Corruption**
	Zero tolerance for child-labor or slave-labor equivalents	Safe working environments	Respect for rights like freedom of speech and assembly	Equal rights and opportunities for all employees	Promoting and enabling healthy lifestyles	Ensuring all products and services are safe for consumers	Strong code of ethics supported by employee training
Governance	**Competitive behavior**	**Responsible employment**	**Indirect economic impacts**	**Procurement practices**	**Fair trade**	**Governance and transparency**	**Tax**
	Nonpredatory pricing	Local hiring at reasonable wages	Supplier financing; infrastructure investment	Local suppliers and sourcing	Fair pricing for local suppliers	Responsible engagement in public policy	Compliance with all legal tax obligations

Sources: Global Reporting Initiative, G4 Sustainability Reporting Guidelines, 2013; MSCI; Bain analysis

Figure 2.9: Private equity funds have aligned across a spectrum of ESG commitment



Sources: Impact Summit Europe; Bain analysis

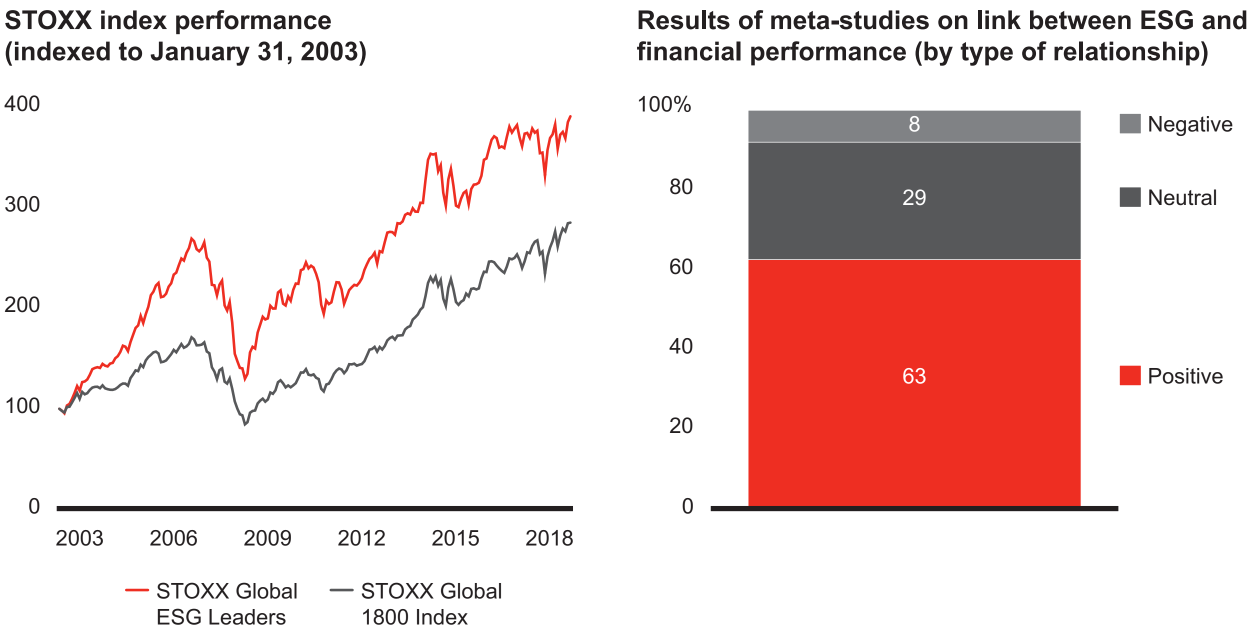
The question of returns, of course, lies at the heart of whether ESG and impact investing will continue to gain traction in private equity. If doing good means compromising performance (as many assume), the momentum behind these efforts will likely fizzle out eventually.

Yet evidence is building that ESG investing may enhance performance, not detract from it. Over the past 16 years, a STOXX index of global ESG leaders has outperformed the STOXX Global 1800 Index by 37%. And in 2015, DWS teamed with the University of Hamburg to do a meta-study of more than 2,000 independent research efforts. They found that 63% of the studies discovered a positive correlation between ESG investing and returns, while only 8% showed a negative effect *(see Figure 2.10)*.

These studies involved public equities, not private funds or assets. But the RBC study of PE investors showed that LPs are increasingly convinced that ESG investing can pay off by boosting returns, increasing alpha and mitigating risk *(see Figure 2.11)*.

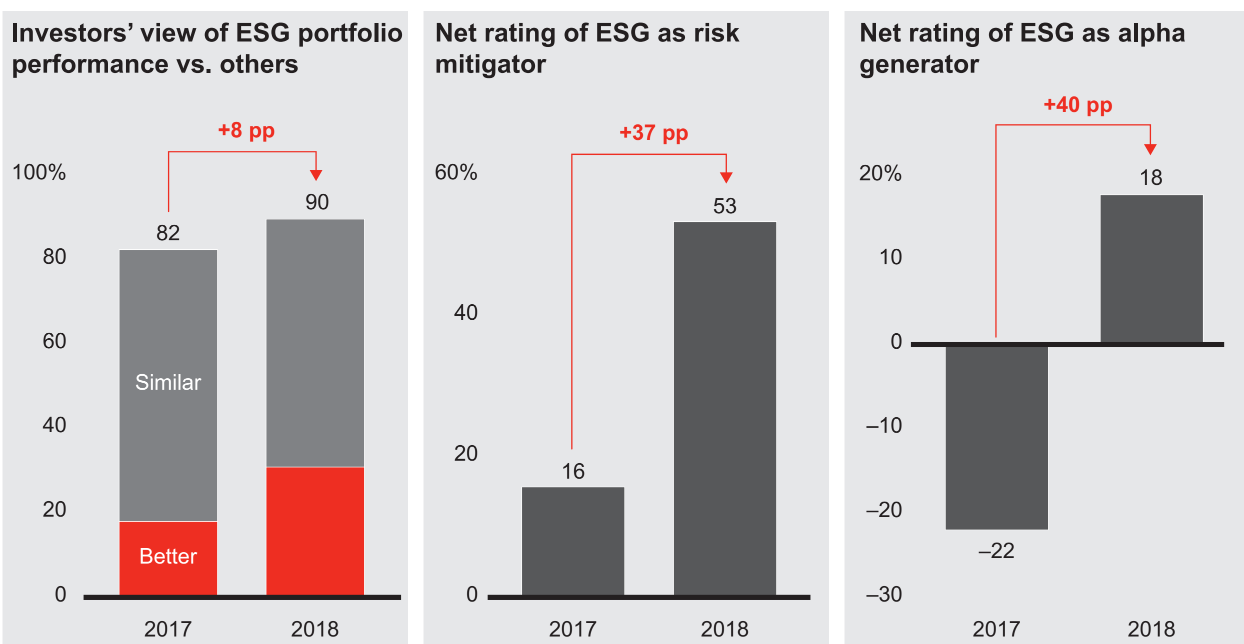
It's clear that consumers really do care about ESG issues. Concern about what's happening in the world is driving purchase decisions. A 2018 Nielsen study of chocolate, coffee and bath products in the US found that sales of products making environmental claims were growing at least four times faster than rival products.

Figure 2.10: Evidence is building that ESG investing can strengthen financial returns



Sources: DWS and University of Hamburg, "ESG and Financial Performance: Aggregated Evidence from More than 2,000 Empirical Studies," 2015; DWS and Global Research Institute, "ESG & Corporate Financial Performance: Mapping the Global Landscape," 2015; STOXX; Bain analysis

Figure 2.11: Private equity investors are warming up to the idea that ESG investing doesn't compromise performance



Note: Net ratings based on difference between proportion of positive and negative mentions
Source: RBC Global Asset Management, 2018 Responsible Investing Survey (n=542, including pension funds and other investors)

Young people, especially, are voting with their feet. A study by Morgan Stanley's Institute for Sustainable Investing indicated that millennials are twice as likely as the overall population to buy products from sustainable businesses. That's a significant consideration for any company selling goods. Given that $30 trillion in wealth will shift from baby boomers to millennials over the next 30 years, the ESG effect on consumer preferences may be just getting started.

It's clear that consumers really do care about ESG issues. Concern about what's happening in the world is driving purchase decisions.

It's also evident that operating sustainably can have cost benefits. As companies focus on reducing their environmental footprint, they are making changes to their supply chains and operations that end up consuming fewer resources. Unilever, for instance, has saved $1 billion since 2008 by proactively cutting its water, energy and materials usage. Water- and energy-saving measures implemented at 11 KKR portfolio companies were expected to generate $11 million in annual savings starting in 2019.

Investors likewise are finding they can generate upside by turning a bad actor into a good one. That was the calculus in 2009 and 2010 when Carlyle built a 29% stake in Yashili, one of China's largest infant formula companies. The company had suffered major reputational damage when it got caught up in China's nationwide melamine scandal, and turning it around involved several ESG initiatives. Carlyle helped Yashili replace local raw material with 100% imported high-quality milk powder. It established a food quality and safety advisory committee, the first of its kind in the industry. It recruited a new chief quality advisor and introduced stringent new standards.

By 2013, the firm's reputation had been repaired and Carlyle was able to sell its equity for around $388 million, a healthy 2.3x return on its initial investment.

Forming an ESG strategy

Wherever a firm establishes itself on the ESG continuum, developing a strategy to guide both investment and value creation is critical. That starts with outlining a clear ambition for how the firm intends to balance financial returns and ESG impact, how it will define its investment approach, how it will measure results and how it will communicate with stakeholders. The best ESG strategies then spell out specific operating changes within the firm and a clear timeline for implementation. The goal is to embed ESG considerations throughout the investment value chain, from deal sourcing and due diligence to monitoring and realizing ESG goals during ownership.

To identify and manage ESG risks and opportunities, GPs will need to develop new expertise or partnerships. That includes getting early warnings on ESG ratings for target companies, being able to factor in and deliver on key ESG initiatives, and helping portfolio companies take action—for instance, by driving a carbon-efficiency program or supporting them in developing sustainable procurement practices. EcoVadis, which received a $200 million investment from CVC in January 2020, enables exactly this. As a market leader in global ESG ratings, EcoVadis provides an innovative online platform that allows firms to efficiently identify and manage environmental, social and ethical risks, based on an array of proprietary and public data sources.

KKR started its ESG journey about a decade ago, launching its Green Portfolio Program in partnership with the Environmental Defense Fund and then signing on to the UN's Principles for Responsible Investment. The effort picked up steam in 2018, when the firm introduced its Global Impact strategy with the explicit goal of generating private equity risk-adjusted returns while investing in companies that help provide solutions to the UN's Sustainable Development Goals. The firm laid out a number of criteria for how it would weave ESG considerations into the investment process, from deal sourcing to exit. That started with a policy to consider ESG issues like water usage, emissions, product safety and labor practices when screening investments.

KKR also created a dedicated ESG diligence group made up of experts from legal, compliance, global macroeconomics, public affairs and the KKR Global Institute. This group, which reviewed 230 potential investments in 2018, is charged with examining deals to identify specific ESG risks and opportunities—considerations that are then built into the deal's plan for the first 100 days. These efforts are guided by 37 industry-specific lists the firm created to flag ESG-related issues that could be financially meaningful to companies.

During ownership, KKR is committed to improving both financial performance and ESG impact. It also has a formal monitoring process to ensure portfolio companies are living up to ESG-related commitments.

All of this came into play when KKR bought Unilever's spreads business (now called Upfield) for $8 billion in 2018. While margarine and other plant-based spreads were in decline, the Unilever business was highly profitable and had strong brands like Country Crock in the US and Flora in Europe. KKR's ESG diligence team, however, raised a major red flag: The company was heavily reliant on palm oil, the rapid expansion of which poses many environmental issues.

Although this clearly upped the risk calculus, KKR decided in the investment committee process that solving the problem could present an opportunity. The firm's experience working to build sustainable supply chains for other companies was a point of differentiation in the bidding process and could add value to Upfield. The company and its new owners set a goal of sourcing 100% of its palm oil from sustainable sources and achieved it by October 2019. Plant-based products from responsible sources are healthier than dairy, with a smaller CO_2 footprint. That not only makes the company more valuable by creating goodwill with consumers, but it also removes a significant source of risk from the equation.

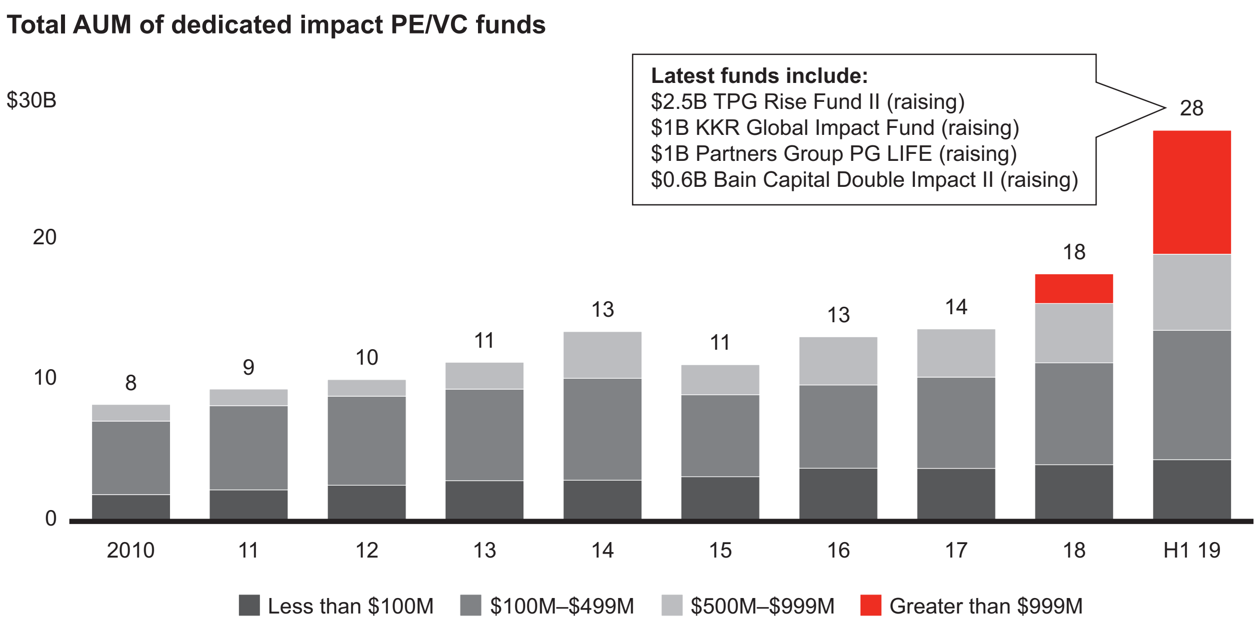
Committing to strong returns *and* impact

While the best ESG programs generate a real commitment to environmental, social and governance standards, impact funds take responsible investing to the next level. Adopting an ESG program doesn't necessarily lock a firm into generating measurable impact with its portfolio companies. But an impact fund is raised on that explicit promise: It will generate competitive returns and measurable impact. What was initially the territory of pure impact players like LeapFrog or Bamboo Capital has now attracted mainstream funds. Since 2015, impact fund assets raised or currently being raised have grown 154%, to $28 billion *(see Figure 2.12)*.

Notably, the number of megafunds—those with assets under management of $1 billion or more—has climbed sharply over the past two years. TPG leads the pack with its $2 billion Rise portfolio and is on the road raising a new $2.5 billion fund. It also has the highest profile; its star-studded board includes U2's Bono and Laurene Powell Jobs as members. Other firms like KKR and Partners Group are raising $1 billion impact funds, while funds like Bain Capital Double Impact are out raising slightly smaller portfolios.

Some of this activity is doubtless opportunistic—firms are taking full advantage of this "ESG moment" to raise more capital and to create a halo effect around their organizations. But they are also publicly committing themselves to proving that impact investing can work, that they can both make money *and* make a difference.

Figure 2.12: The amount of capital raised by dedicated impact funds is accelerating



Notes: Data as of December 2019; includes private equity and venture capital funds classified as "socially responsible" or "environmentally responsible" by Preqin; total AUM calculated as sum of AUM for all funds launched in the past seven years (i.e., lifetime of each fund assumed to be seven years)
Sources: Preqin; Bain analysis

Measuring impact isn't easy, and the industry is in the early days of devising standardized metrics investors can use to gauge results. There are some helpful guideposts like the UN's Sustainable Development Goals, which provide a framework of 17 sustainability objectives. Companies are also turning to a standardized measurement methodology, the Global Impact Investing Rating System (GIIRS). Developed by the nonprofit B Lab, GIIRS uses a tool called B Impact Assessment to provide an accounting of the portfolio's impact on workers, customers, communities and the environment. Many firms have also developed their own tracking mechanisms.

Notably, the number of megafunds—those with assets under management of $1 billion or more—has climbed sharply over the past two years.

That was the case at TPG, which makes measurement of potential impact a central part of due diligence for its Rise Fund investments. Before committing any money, the fund screens deals to ensure they have potential to produce both high impact and a good return. TPG partnered with the nonprofit Bridgespan Group to develop an evidence-based methodology for quantifying the potential impact of target companies. It estimates the financial value of the social and environmental good that is likely to result from each dollar invested in a given target and assigns it a value called impact multiple of money (IMM), explained at length in the January–February 2019 issue of *Harvard Business Review*. Rise will invest in a company only if the IMM calculation signals a strong social return on investment. Using the IMM helps TPG direct capital where research supports social impact, allowing the firm to compare investments across sectors and regions. It also helps build trust and confidence among the firm's stakeholders.

In 2017, the IMM approach led TPG Rise to EVERFI, a cloud-based educational platform that delivers digital learning content. Schools and corporations use the software to combat social issues like alcohol abuse, sexual assault, and low financial and digital literacy. EVERFI was attractive for several reasons. First, the company scored a high IMM, as it could tie its courses to measurable outcomes addressing a broad range of problem areas. It was also a great enterprise SaaS business. The company had doubled in size over the previous three years, with approximately 95% recurring revenue, 100% net retention rates and strong sales efficiency.

TPG Rise and TPG Growth Fund combined to lead a $190 million investment round. Rise then worked closely with the company's management to increase go-to-market effectiveness, build more efficient customer networks, and develop finance and M&A strategies. It also introduced EVERFI to new potential clients within the TPG portfolio.

The investment has allowed EVERFI to continue building out its platform with additional content, data analytics and impact reporting capabilities. Since TPG Rise entered the picture, over 6 million students have completed EVERFI courses, bringing the total since inception to more than 22 million. That has led to a realized IMM of approximately 5x. The company has also continued to perform well financially. Since 2017, revenue has grown at around 20% annually, with over 100% net retention.

Data on whether impact funds overall are delivering competitive financial returns is inconclusive. A 2019 survey by the Global Impact Investing Network (GIIN) indicated that impact funds seeking market-rate performance produced realized returns of greater than 16% since inception—higher than what most LPs would expect from an emerging market PE fund investment.

But GIIN also worked with Cambridge Associates (CA) on a study that produced a less positive outcome. It targeted about 80 impact funds, excluding philanthropic organizations. Pooled returns lagged CA's emerging market private equity and venture capital index by 2 to 6 percentage points across any given timeline. Smaller impact funds (less than $100 million) did better: Over a one-year period, they delivered a 15.7% pooled IRR, compared with 8.5% for CA's emerging market private equity and venture capital index.

Despite limited return data for the impact fund class, individual funds continue to raise money, presumably on the strength of past results.

Studies conflict partly because there hasn't been sufficient time to build reliable return data for the impact fund class. Individual funds, however, continue to raise money, presumably on the strength of past results. TPG's Rise Fund II is targeting $2.5 billion, with $1.7 billion in commitments already secured as of late 2019. LeapFrog closed its third fund at $700 million in the second quarter of 2019 and was oversubscribed by $100 million. It reports that revenues for its portfolio companies have grown 35% annually, on average, since investment, helping LeapFrog to achieve nine successful exits, which have delivered returns of between 2x and 3.5x. In terms of impact, those companies have provided essential products and services to more than 188 million people, most of them in emerging markets and living on less than $10 a day.

LeapFrog, an impact investing pioneer, has also developed a proprietary measurement framework that benchmarks financial, impact, innovation and risk management factors against global best practices. It targets companies that are scalable and consumer focused, with the governance to grow and endure. They are clustered within the healthcare and financial services sectors, where the LeapFrog team has differentiated expertise, and the firm looks for opportunities to utilize innovative technology or business models to enhance access for low-income consumers in Asia and Africa.

A good example is BIMA, a pioneering insurance business launched in 2010. Within 18 months of its founding, the company was delivering life and health products via mobile phones to nearly 4 million people in Ghana, Tanzania, Senegal, Mauritius, Bangladesh and Sri Lanka. LeapFrog started investing in 2013 on the premise that, while consumers in emerging markets may not have access to basic financial services, they almost always have access to mobile infrastructure. By partnering with mobile network operators, BIMA had found a low-cost distribution channel that allowed it to provide insurance products for as little as 20 cents to $6 a month. "This radical affordability puts the safety net of insurance within reach of millions of low-income customers in emerging markets for the first time," said LeapFrog partner Stewart Langdon.

BIMA supplied the underwriting capability, and LeapFrog's team supplied expertise in product development, branding and consumer insights. It also fostered strategic relationships, including a partnership with another LeapFrog portfolio company in Ghana called Express Life Insurance, which sold products through BIMA's mobile network. Under LeapFrog's ownership, BIMA expanded from 6 to 11 markets globally, and by mid-2018, the number of people it served had grown to 10 million, three-quarters of whom previously had no access to insurance. The fund sold its equity to Allianz in 2017 for $97 million, logging a significant return.

Bain Capital Double Impact launched in 2017 with $390 million in capital and is currently on the road to raise $600 million more for a second portfolio. It uses the B Impact Assessment metric to gauge ESG impact. Its portfolio companies have increased their BIA scores by an average of 42% under Double Impact ownership.

Three elements gave Bain Capital confidence that impact investing could work. First, it believed that businesses with a vision beyond just making money grow faster. Second, it had seen plenty of strong proof points, including Unilever's 2016 acquisition of Seventh Generation cleaning products, which delivered a coalition of PE owners a reported 6x to 7x return. Finally, Bain Capital knew it could rely on its array of capabilities to add value during both diligence and ownership.

A good example of Double Impact's approach is the fund's May 2019 investment in Rodeo Dental & Orthodontics, a Texas-based company with a mission to deliver high-quality dental care to underserved communities. GPs have traditionally shied away from dental companies with Medicaid exposure, given their less favorable economics and the potential for fraud and abuse. But Rodeo was already generating high growth at attractive margins, and Double Impact saw the opportunity to sharpen its model and expand its mission.

The firm has supported Rodeo's expansion into new markets and enhanced its leadership. It has also helped the company hone its business approach. Rodeo tries to make dental visits fun and uplifting by decorating office waiting rooms with entertaining themes that change frequently. In addition, educational outreach helps build strong community connections that increase demand. Making the Medicaid model work involves scheduling and staffing with the optimal ratio of dentists and assistants. Children who qualify for Medicaid often come to Rodeo with significant deferred dental maintenance. By addressing all of the child's dental needs at once, Rodeo performs multiple services per appointment, which boosts productivity per visit.

So far, so good. The investment is still in its early days, but Rodeo is tracking above target and is increasing its reach in existing and new markets.

There is no plug-and-play ESG strategy. Every firm has to develop its own approach based on a unique blend of strategy, culture and stakeholder preferences. The savviest firms are already figuring out how to play ESG to their advantage, and a growing number are going all the way by launching impact funds. What's evident is that no private equity firm can afford not to think about ESG. The pressure will only increase to mobilize large pools of investment capital to combat the world's most intractable problems.

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The new path to payoff in payments

Think about the last time you bought something in a store or online. If the payment process wasn't quick and painless, you probably got more than a little annoyed. Never mind that what's going on behind the scenes is a miracle of software, encryption and networking technology. You've gotten used to a seamless customer experience, and you chafe at anything less.

The magic behind the curtain is largely invisible to the buying public. But private equity has taken a fervent interest in the fast-evolving ecosystem of companies responsible for it. The so-called payments sector has become a prime hunting ground for buyout firms. The number of deals involving payments companies in North America and Europe has grown 7% annually in the current cycle, compared with a 0.1% annual decline in deal count for the industry overall during the same period *(see Figure 2.13)*. Payments deal value in 2019 was five times higher than it was in 2006, while the industry's total deal value remains below its 2006–07 peak.

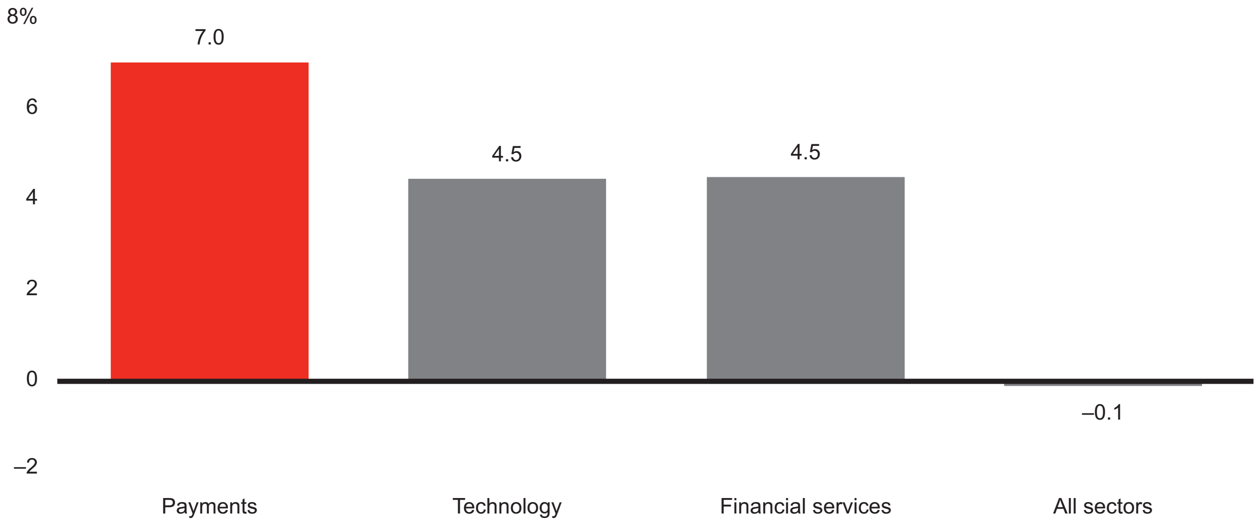
The attraction is growth and superior returns: Since the global financial crisis, buyouts involving payments companies have generated a gross pooled multiple of invested capital of 2.7x, outpacing tech, financial services and even the fintech sector generally *(see Figure 2.14)*.

Several megadeals have supercharged the growth in transaction value over the last several years, including the $6.4 billion buyout of Denmark's Nets and a pair of $4 billion deals for Paysafe and Travelport, which has a payments unit called eNett. Strategic buyers, meanwhile, have been increasingly active. In 2019, Fidelity National Information Services bought Worldpay for $43 billion, and Global Payments took over Total System Services for $21.5 billion. KKR produced a major (if partial) exit in the sector last year when Fiserv paid $39 billion for First Data, cutting KKR's stake from 39% to 16%.

As attractive as the payments ecosystem has been for private equity investors, several disruptive trends are opening up a new set of opportunities to back innovative, high-growth companies. At the most basic level, payments is the business of authorizing the movement of money from a paying customer to a recipient through a secure channel and network, like Visa or Mastercard. But in the era of connectivity and e-commerce—when food trucks would rather take credit than cash and an Uber driver can pick you up a bottle of shampoo—that traditional chain of relationships isn't robust enough.

Figure 2.13: Payments deal count has grown 7% annually in the current cycle, compared with zero growth in deal count for the industry overall

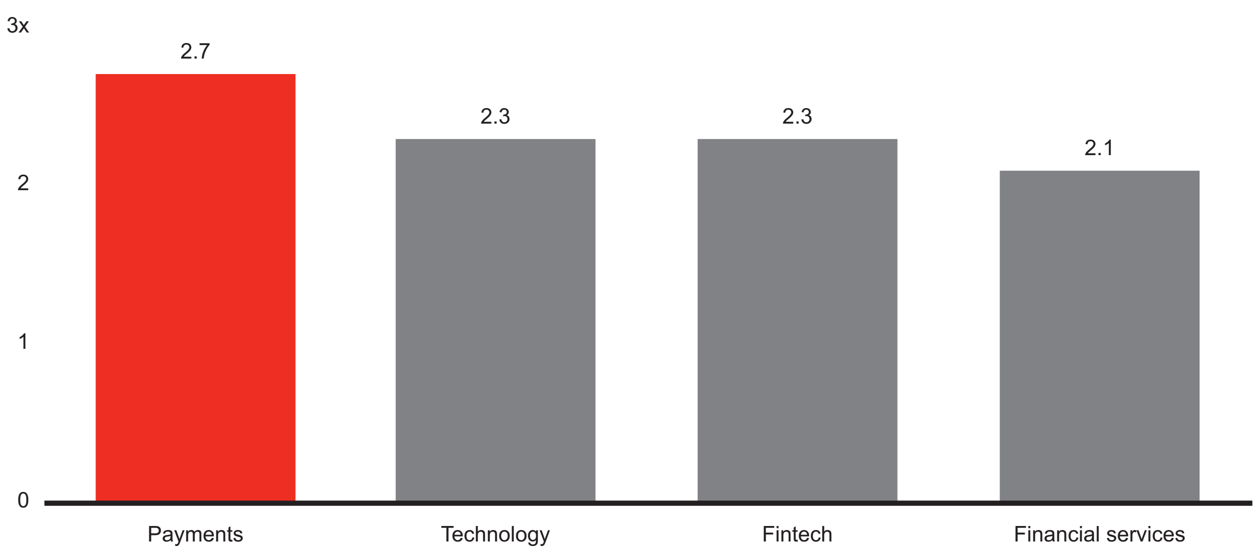
PE deal count CAGR by sector, 2006–19



Note: Includes North America and Europe only
Sources: Dealogic; Preqin; Nilson Report; Bain analysis

Figure 2.14: Returns from buyouts involving payments companies have outpaced those in tech, financial services and fintech

Gross pooled MOIC, by sector, for global buyouts invested 2009–15



Notes: Includes realized and unrealized buyout deals with initial investment between January 1, 2009, and December 31, 2015; excludes more recent deals due to limited realizations
Source: CEPRES Platform

Making payments work across an ever-shifting array of devices, platforms and use cases, all with minimal losses or security breaches, has become the focus of innovation for companies that straddle the financial and software industries. The marriage of digital technology and connectivity is breaking down barriers to entry and changing business models as companies seek to bend a massive, inflexible system to the evolving needs of consumers and businesses.

Even by tech-industry standards, payments is an arcane, complicated business. Knowing where to play and how to win requires a specialized understanding of a broad and turbulent ecosystem of companies at various stages of development. To get a handle on what's shaping opportunity for investors, it helps to break the payment process into its constituent parts: merchant services (acquiring), buyer services (issuing) and networks.

As attractive as the payments ecosystem has been for private equity investors, several disruptive trends are opening up a new set of opportunities to back innovative, high-growth companies.

Private equity investors over the past decade have focused on merchant services, helping legacy companies build scale. But innovation across the industry is shifting attention to other areas of opportunity, especially in the historically underserved B2B payments sphere.

Merchant services: Moving past commodity economics

The payment process has always started with the infrastructure that enables a business to pull electronic payments from a buyer through a secure (now encrypted) channel. Traditionally, that has involved payments companies processing transactions through the relatively dumb point-of-sale (POS) terminals that take payments when the card is physically present.

The explosion in e-commerce and mobility has forced the development of sophisticated new gateways to process "card not present" transactions. The companies that provide these merchant services—known in the industry as merchant acquirers—are the critical gatekeepers to the electronic payment networks. They underwrite a guarantee that merchants will honor their side of the transaction and behave according to network rules. That service generates steady streams of fee revenue, but the business has become commoditized over time.

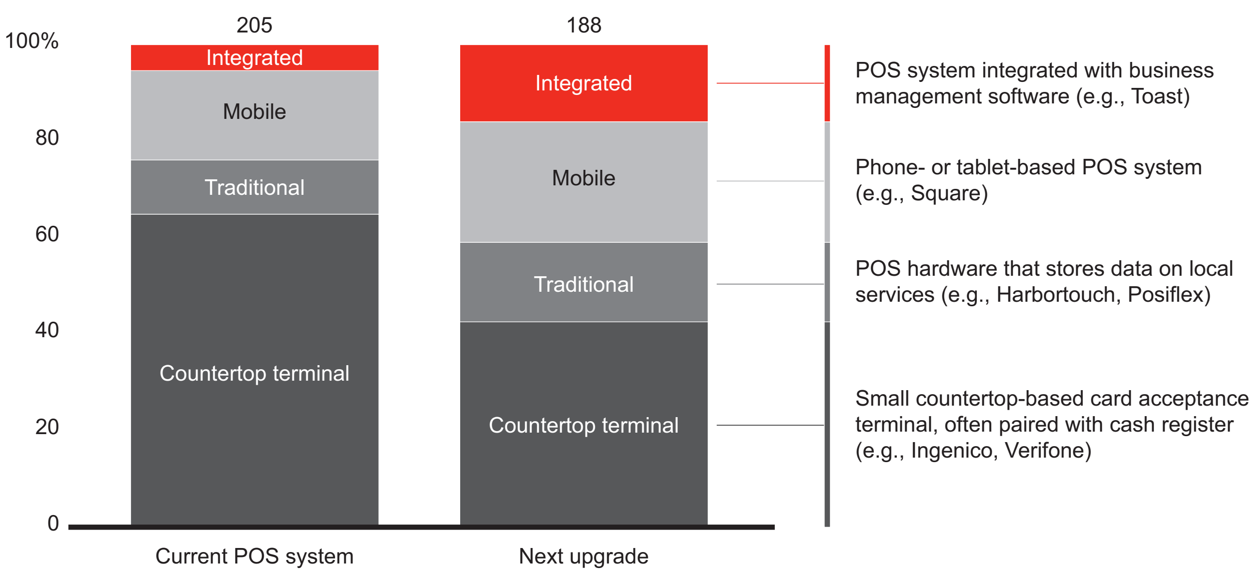
In response, private equity has played a major role in helping to build scale players, often by carving out acquiring divisions from large banks, especially in Europe. Investors like Advent and Bain Capital have repeatedly bought legacy platforms like Vantiv (from Fifth Third Bank), Worldpay (from RBS) and Nets (from a consortium of Danish and Norwegian banks). That cycle is still playing out as select opportunities to build scale in less consolidated geographies present themselves. But as the commoditization of basic payments processing continues, a new generation of innovators is spawning high-growth business models that integrate plain-vanilla payments services with software to help merchants in specific verticals run their businesses more effectively *(see Figure 2.15)*.

The power of integrated payments. An increasingly common business model, integrated payments turns the commodity conundrum on its head. From the customer's standpoint, payment processing becomes just one part of a mission-critical integrated software package, not the main attraction. The selling point is to offer small to midsize (SME) companies a full range of tools and services that work in unison, so the company doesn't have to stitch together a bunch of unrelated products from different vendors, each requiring an investment in training and maintenance.

The payments component is critical to the software vendor because it creates a separate, recurring revenue stream—a small percentage of every transaction. That helps fund development of the other software offerings in the bundle and makes the overall package more affordable for the SME market. Building payments into a well-rounded SaaS-based subscription model also allows the vendor to get paid straight from a client's revenues, transaction by transaction, rather than billing and collecting in arrears. The resulting efficiency and revenue predictability makes it much more attractive to sell and service software to small businesses. For some of these companies, payments revenue is replacing software subscriptions as the dominant revenue stream.

Figure 2.15: Merchants are switching from simple countertop point-of-sale terminals to systems integrated with business software or tied to mobile devices

Percentage of merchants by type of POS system



Notes: Merchants who answered that they do not accept credit cards are excluded from totals; some merchants did not respond to question about their next upgrade
Source: Bain merchant survey, 2017 (n=238)

Toast, for example, started as a payments application for restaurants in 2011 but has since blossomed into a full restaurant management platform that ties together solutions for the front of the house, kitchen and back office. For a typical restaurant account, some 80% of Toast's revenues are linked to payments as opposed to software or equipment leases. While the hub of the network is a POS system that processes payments for a standard fee, it also links to a variety of devices throughout the restaurant to manage everything from order taking to payroll. Orders taken on a handheld device, for instance, can be sent to the kitchen and integrated with takeout orders coming in from third-party apps like DoorDash, Grubhub and Uber Eats.

An increasingly common business model, integrated payments turns the commodity conundrum on its head. From the customer's standpoint, payment processing becomes just one part of a mission-critical integrated software package, not the main attraction.

Toast also offers apps for back-office tasks like inventory management and staffing across locations, plus a robust reporting and analytics app that captures and analyzes the steady stream of data flowing through the system. The company has developed many of the tools in-house, but it has rapidly expanded the number of solutions available to client restaurants by creating a partner ecosystem of more than 70 third-party apps that can be plugged into the POS system—products like Davo to automate sales-tax management or BevSpot to manage bar inventory. Toast recently acquired StratEx, a leading provider of human resources and payroll software for restaurants.

Toast's formula has attracted avid attention from investors. After posting revenue growth of 148% in 2018, the company raised $250 million in March 2019 in a deal led by TCV and Tiger Global Management. That transaction valued Toast at $2.7 billion, a 50% increase from the valuation of $1.4 billion set just nine months earlier.

Mindbody, another payments/management hybrid aimed at the health and wellness sector, has followed a similar trajectory. The company was taken private by Vista Equity Partners in February 2019 at $1.9 billion, a 68% premium to its public trading price.

Moving from cash to credit. While restaurants and spas have long taken both cash and credit cards, vast numbers of small businesses haven't. Historically, professionals like general contractors, HVAC specialists, plumbers, therapists and accountants have accepted cash and checks only. That's changing, however, as methods to automate payments and put them online have become more affordable and easy to implement. New tools are fundamentally changing the way these businesses operate.

Consider recurring payments. The ability to take a client's credit card and set up a recurring service plan changes a once-episodic, call-as-needed relationship into a steady revenue stream. That increases stickiness and allows the professional to schedule and plan much more effectively.

The integrated model that has worked so well for Toast and Mindbody also works in this arena. Private equity has viewed it as an opportunity to create a scale player by finding a company offering a unique value proposition and rapidly expanding its capabilities or offerings through a buy-and-build strategy.

A good example is Providence Equity's $115 million investment in a payments company called PaySimple. Based in Denver, the company started out targeting service professionals with solutions like online payments and apps to manage appointments and scheduling. Providence invested through its growth equity fund in 2016 and, over the next three years, encouraged PaySimple to embark on an acquisition and partnership strategy to broaden its suite of products. The company, rebranded as EverCommerce, bought 35 SaaS providers in areas like e-invoicing, cash-flow reporting, hyperlocal marketing, customer relationship management (CRM) and website design.

Historically, professionals like general contractors, HVAC specialists, plumbers, therapists and accountants have accepted cash and checks only. That's changing as methods to automate payments and put them online have become more affordable and easy to implement.

By aiming the expanding suite of cloud-based subscription solutions at businesses like accountants, general contractors, child-care providers and psychologists, the company grew to more than 200,000 customers by July 2019 and was expected to generate over $100 million in EBITDA on more than $500 million in revenues for the year. Looking to fund more growth, EverCommerce sold a minority stake to Silver Lake that valued the total equity at $2 billion. Providence remains the majority shareholder.

Even churches and other nonprofits can benefit from integrated payments solutions. Ministry Brands is a SaaS-based provider of solutions to digitize collections, manage financial accounting, build websites and organize sermon content. Started in 2012 in Knoxville, Tennessee, the company has grown rapidly through acquisitions or partnerships with competitors. It currently has a portfolio of 32 brands that combine payment processing with products to help manage everything from communications and leadership development to creating mobile apps. One of its brands, easyTithe, helps Christian organizations turn year-end gifts into recurring contributions.

The company was backed by Genstar Capital and Providence Equity until 2016, when Insight Venture Partners bought out Providence in a deal the *Wall Street Journal* said was valued at north of $1 billion. Genstar retained a minority stake.

Buyer services: Transforming B2B payments

On the opposite side of the payment network from the merchant sits the card issuer, historically a bank. Its job is to guarantee settlement for an authorized transaction. For credit cards, this involves providing a significant float between when the payment was settled (overnight) and when the credit card customer is billed (a month later, if not longer).

Funding this float equates to issuing a massive volume of unsecured credit, which historically gave large banks a major cost-of-capital advantage, leaving limited opportunity for nonbank card competitors. Visa and Mastercard eventually created a new profit pool by introducing debit cards and prepaid cards and then raising interchange fees to be nearly on par with credit cards. Because these cards no longer required a fat balance sheet to be competitive, their introduction led to some innovation. But the issuer side was still dominated by the legacy players who could take advantage of their existing infrastructure.

The game changed in 2010, amid a merchant outcry in the US that debit and prepaid card interchange fees were unfair given that they didn't burden issuers with the same balance-sheet risk. In response, Congress passed the Durbin amendment to the Dodd-Frank financial reforms, which directed the Federal Reserve to cap interchange fees "at cost" for banks with more than $10 billion in assets. The net effect was that the larger issuers pulled back from the debit and prepaid market, clearing the way for start-up fintech companies. These innovators, sponsored by smaller banks, could build a business without getting squashed by the legacy players.

Going virtual. The biggest beneficiaries of that innovation have been companies that never felt comfortable using credit cards for business transactions. In most industries, the B2B payment process looks much as it has for decades: A vendor sends an invoice, the customer runs it through its payables system and eventually cuts a paper check that the vendor then has to process. This paper-based system is slow, inefficient and prone to errors. Corporate credit cards ease transactional friction for relatively small transactions like a business lunch. But finance departments generally dread the idea of employees running around with approval authority for large-scale payments in their wallet. Procurement cards and fuel cards have emerged over time in response, but they are inflexible and difficult to use outside of a few limited situations.

Enter virtual card technology. A new generation of start-ups recognized that what business users really wanted was the ability to authorize payments in real time to address specific needs. Virtual cards are single-use card numbers that can be issued on the fly. They offer a business an almost endless number of ways to customize a payment system to meet its specific needs. The issuer can define when the card can be activated, when it expires, how much the user can spend and the exact set of merchants where the card can be used. Cards can be created instantly, and many can be pushed directly to digital wallets, including Apple Pay and Google Pay. Single-use issuing reduces fraud and avoids FX fees on international transactions. The transactions are easy to reconcile and enjoy wide acceptance through deals with Visa and Mastercard.

Virtual cards are creating new business models for private equity–backed payments providers like VPay and Zelis in healthcare, eNett and WEX in the transportation business, and AvidXchange, Nvoicepay and CSI in automated accounts payable solutions. Virtual cards will also be a future source of growth for Bill.com, which in December 2019 raised $216 million in an IPO that valued the company at roughly $1.6 billion.

Virtual cards required new issuing technology capabilities that the large legacy issuers did not have (and had no incentive to build once the Durbin amendment capped their fees). An early leader in developing a modern issuer system was Marqeta, an Oakland, California–based company that raised $260 million in May 2019 in a deal led by Coatue Management, which valued the company at around $2 billion. Marqeta developed an open API that companies can use to develop their own virtual card and real-time funding use cases.

A new generation of start-ups recognized what business users really wanted: the ability to authorize payments in real time to address specific needs. Virtual cards are single-use card numbers that can be issued on the fly.

Instacart, for instance, uses Marqeta's real-time funding to power its legion of personal shoppers. Once an order from a customer comes in, the company authorizes payment for a specific item at a specific store, giving the shopper the ability to fulfill the order—and nothing else. Using the same technology, Affirm, a consumer lending company, gives merchants the flexibility to offer instant financing to customers as they are checking out. It creates a virtual card that allows the merchant to complete the loan at the point of sale like any normal transaction. Square, which makes integrated POS hardware and software solutions, uses real-time capabilities to fund merchants faster than it could using the traditional ACH bank settlement system.

When news broke that Siris Capital and Evergreen Coast Capital were taking Travelport private for $4.4 billion in December 2018, virtual issuing technology was at the center of the value proposition. eNett, a unit of Travelport, had developed its own platform for issuing virtual cards and was using it to transform the travel industry. The company's technology addresses the considerable expense and friction travel companies face when transacting business overseas. Foreign exchange fees charged by the big banks can be onerous, and buying travel services in far-flung locations is inefficient. Transactions are often processed manually, and there are high levels of fraud and supplier default.

To combat these issues, eNett issues virtual card numbers to let travel agents pay for flight, hotel and cruise bookings in 58 currencies worldwide. For each individual transaction, eNett generates a unique 16-digit number that allows the agent to make purchases for a specific amount wherever Mastercard is accepted. This increases security, is system agnostic and streamlines processing. It also avoids the credit card network's FX fees by issuing the virtual card in the travel service provider's domestic market. eNett sweetens the deal by giving cash rebates on every transaction, funded by rich commercial card interchange rates.

Networks: Closing the loop

For all this innovation, Visa and Mastercard still occupy a position of power at the center of the payments system. They control the central authorization and clearing mechanism between buyers and issuers. Diners Club, Discover, multiple generations of mobile wallets, PayPal at POS—many have tried to pierce their armor, and many have failed. Building open networks at scale is hard work, and the existing players are relatively efficient, even if their fees rankle merchants.

For years, the only real alternative has been companies that build smaller, closed-loop networks—like EFS, which provides fuel cards to fleet managers. Warburg helped fund the company's growth and sold EFS to WEX in 2016 for $1.1 billion and 4 million shares of common stock.

Increasingly, however, innovators are attracting private capital by creating high-growth businesses that integrate a closed-loop network with infrastructure that makes it easier for companies to do business. In healthcare, for instance, Bain Capital and Parthenon Capital are backing Zelis and RedCard, which in August 2019 announced a merger to create a new platform. The goal was to simplify and digitize the notoriously byzantine payment process between insurers, healthcare providers and patients.

Under the current system, a doctor submits a claim to the insurance company and the patient doles out a copay. The insurance company adjusts the claim a dozen different ways before sending back payment for about a third of the doctor's rate. The patient sees only a blizzard of diagnosis codes and may or may not owe an additional balance. The doctor sees a steady stream of revenue but no easy reckoning of what payment links to which procedure.

Together with RedCard, Zelis provides technology solutions to over 700 payers and 600,000 providers that help price claims, pay claims and explain claims. It has developed a network that sits between the insurance companies and the providers and contracts with both parties. It charges providers around 150 basis points to process payments. (The all-in cost for accepting virtual cards can be 400–500 basis points for small companies.) It also adds value by, among other things, linking the payment directly to remittance information like invoice number or purchase order number, which helps providers see the connection between payments and specific services, along with the adjustments the insurance company has made. That kind of clarity makes it much easier for providers to close their books on received payments.

Finding the right deal

Private equity's investments in the payments sector over the past decade have created scale leaders in specific domains of merchant services, from country-based leaders in card-present acquiring to specialists in e-commerce acquiring like Worldpay, Stripe and Adyen. The coming decade will see a shift. Activity will likely be dominated by deals involving companies offering tailored, value-added, integrated payment solutions in all three segments of the business: acquiring, issuing and closed-loop networks.

The coming decade will see a shift. Activity will likely be dominated by deals involving companies offering tailored, value-added, integrated payment solutions in all three segments of the business: acquiring, issuing and closed-loop networks.

For investors, the key will be identifying the targets that best monetize payments by bundling those services with sticky solutions that truly enhance how a company manages its business. That starts with several important considerations:

- Does the target payments company own the relationship with the end customer? Or is it at risk of being displaced by a technology vendor that is helping customers operate more effectively while making or taking a payment?
- How is the company moving beyond commodity payment processing by providing value-added services that a customer can use to be more competitive? This may include integration with management tools like CRM or scheduling software. Or it may be a matter of providing vertical-specific information to help automate payment reconciliation or transaction aggregation and netting to reduce FX costs. Payments companies can offer supplier financing, credit enhancements, recurring billing and outsourced collections. The question is, what is the payments provider doing to retain clients and generate recurring revenue?
- How does the target's strategy for integrating payments with the customer's broader technology fundamentally improve the efficiency of that customer's day-to-day operations?
- Better yet, does it open up an opportunity for a customer to transform its business model—for instance, by shifting from an "invoice and collect" cash cycle to a "credit card on file" model, where the client is billed and pays immediately as services are provided?

- Does the company have the people, architectures and technology to make good on its strategy? Can it scale sufficiently to support the investment thesis? If that's not the case, what will it take in terms of technology investment during the next cycle to get there?

While private equity investors have made a lot of money in the payments sector to date, the challenge is increasing as multiples rise and the industry becomes more dynamic. Average returns are impressive, but they don't come without heightened risk. The firms that are tapping into the magic behind the curtain are as differentiated as their targets. They have acquired a specialized understanding of how to underwrite these complex opportunities, and they have built the capabilities to help rapidly growing companies stay ahead of the technology curve.

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Harnessing pricing power to create lasting value

It's rare that a private equity deal model doesn't devote at least a line or two to pricing. Firms are careful to protect themselves against potential changes in market conditions that might affect a target company's ability to get its price. What would the incursion of Amazon or a low-cost Chinese competitor do to cash flows? How could industry overcapacity upset projections? Will competitive dynamics allow us to raise prices, and if so, how fast?

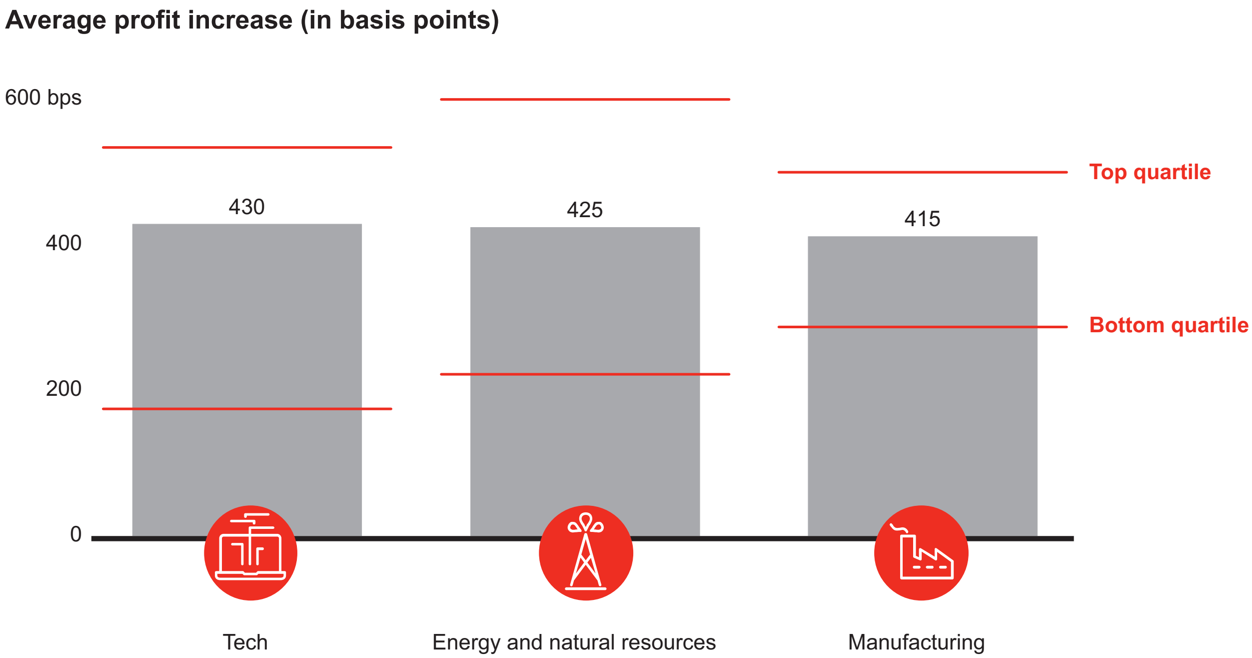
Far less common is a deal thesis that establishes pricing—and a company's ability to execute on it—as one of its pillars. This shifts the focus from external considerations to things a management team can actually do something about. What happens to cash flows if the company significantly raises its game on pricing? How many basis points of margin can we capture if we apply our battle-tested pricing model to the next acquisition? Can we use tools and data to better spot opportunities? Can we eliminate leakage by training our sales team to execute more consistently?

At a time when record amounts of capital are chasing a limited number of high-quality assets, answers to questions like these can unlock value that isn't already baked into deal multiples. They point to strategies PE investors can use to boost top-line growth, rather than focusing on tuck-in investments or leverage alone to move the valuation needle during ownership. It's not news that every new dollar captured through pricing falls straight to the bottom line. But, as with so many aspects of operating a business today, data and technology are enabling companies to price more precisely and deploy strategies more surgically.

Creating value through better pricing, in other words, has gotten more accessible in recent years.

Still, few management teams have a firm handle on pricing, suggesting there's ample room to add value. According to a Bain global survey of more than 1,700 B2B business leaders, 85% of management teams believe their pricing decisions need improvement, and only 15% have effective tools and dashboards to set and monitor prices. When it comes to encouraging pricing integrity, only 13% of companies said they have effective incentives at the front line. The upside from turning these percentages around

Figure 2.16: Building new pricing capabilities can significantly improve a company's profitability



Source: Bain Pricing Center of Expertise

is significant. Our experience shows that building new pricing capabilities and improving leadership around pricing can add 200 to 600 basis points to a company's bottom line *(see Figure 2.16)*.

The firms creating that kind of value recognize that developing new pricing muscles is a multiyear journey, requiring attention at each phase of the deal cycle. They identify the most valuable opportunities in due diligence, verify them in the first 100 days of ownership, execute against a clear set of actions and, as they prepare to exit the asset, do a refresh to confirm the model across the company. The objective is not an opportunistic, one-time adjustment. It's a shift in behaviors and pricing infrastructure that hardens the benefits into something sustainable.

Due diligence: Quantify opportunity *and* capability

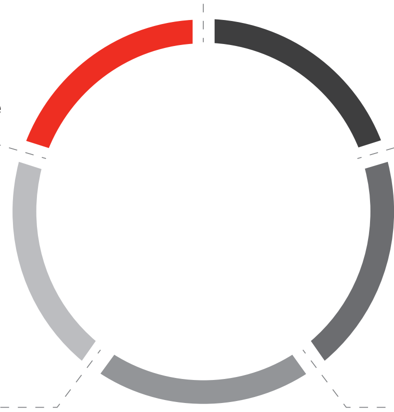
Assessing the size of the prize in pricing is a two-part challenge. Advanced analytics will inevitably reveal opportunities to price more confidently and intelligently in a given segment or with specific customers *(see Figure 2.17)*.

But data alone won't tell you whether those opportunities are within reach. That requires an integrated approach to due diligence that puts pricing opportunities in their commercial and organizational context. Buyers need a pragmatic, on-the-street understanding of customers and competition to help gauge the likelihood that specific pricing actions will stick. They also need to assess whether the orga-

Figure 2.17: Identifying pricing upside in due diligence involves analyzing a broad set of market- and customer-specific indicators

Indicators of pricing potential in a market

Indicators of pricing headroom vs. status quo



Market

- Inelastic demand
- Diffused customer base
- Limited alternatives
- Steady or growing market share over time

Price setting

- Customer willingness to pay not aligned with list price
- Similar prices across customer segments
- Customers bundle “à la carte” products

Customer value

- Differentiated value proposition
- Quantified value
- Product critical to customer
- High switching costs

Price getting

- High variance in discounts among similar transactions
- Limited impact of price increases on historical sales volume

Price perception

- Cost a low percentage of customer’s expenses
- Cost incurred by multiple parties
- Different decision maker and payer
- Cost not highly visible

Source: Bain & Company

nization has the people, tools and capabilities to execute effectively, and whether the leadership team has the experience and ambition to use pricing as a competitive weapon.

This type of integrated analysis came into play when one global private equity firm targeted a provider of professional training services. The objective was to marry the vital outside-in perspective on pricing opportunities in the market with an integrated, inside-out view of the firm’s past performance on pricing and future potential.

Standard commercial diligence showed that the company had a strong value proposition and that customers viewed its products as essential, suggesting it would get limited pushback on price increases. Extensive interviews and statistical analysis determined that these professionals and their employers valued the target company’s training software because it delivered measurable benefits: Training led to higher retention levels and a $10,700 increase in annual salaries. The company’s competitors were focused on a different segment and didn’t pose much of a threat. But those companies had gotten more aggressive on pricing without scaring away many customers.

All of this signaled an opportunity to raise prices from 5% to 20% (depending on the product), which would translate into a 7% to 12% uplift in EBITDA within the first year of ownership. Realizing that result, however, would require investment. The inside-out capability analysis showed that the company lacked pricing discipline. The sales team engaged in wide discounting for some products and focused discounting for others. None of it was correlated to customer spending, and there was limited rationale for price movements over time. This was unsurprising, given that the company lacked a central team to do structured analytics and A/B testing on price promotions.

But these problems were fixable. After interviewing management and modeling the capabilities needed to win, the deal team found that strong hires for a few key positions would end up being accretive to earnings.

Advanced analytics will inevitably reveal opportunities to price more confidently and intelligently in a given segment or with specific customers.

More often than not, robust due diligence will identify this sort of tiered opportunity based on where the company is on the pricing learning curve. The first-level consideration is whether the company can manage transaction pricing effectively and whether the sales team can get the right price consistently. Level two is determining what it will cost for the company to get better at determining product value and aligning it with the right price for the right customer. Finally, how can the company bring it all together, to use pricing as a competitive weapon by setting and refining prices dynamically, depending on market and customer circumstances? What's the upside in wielding price to optimize the company's customer mix and take the offensive against the competition?

Recent due diligence of a software company showed that the management team had already discovered the power of pricing discipline. Based on an analysis of historical transaction data, the deal team could see that the company had moved from a significant amount of price variation (salespeople charging whatever they wanted, essentially) to little variability. The transition had produced some customer churn, but not much, which signaled that the management team had succeeded in identifying the right value proposition and communicating it to customers.

From a buyer's perspective, that meant management had captured the level-one opportunity. But it also meant the existing team was well positioned to move on to levels two and three during ownership—increasing list prices on differentiated products, creating more value through improved packaging, and deploying other, more sophisticated strategies.

The key benefit of an integrated approach to due diligence is that it is practical. By viewing the target holistically, it identifies how market opportunities match up with in-house capabilities. It shows a buyer what it would have to fix, what it would take to fix it and how much the fix might be worth in terms of ongoing EBITDA uplift.

Pricing diligence tends to be either too high level or stuck in the analytical weeds. Neither approach helps a buyer understand what a company is capable of or how pricing moves will be received by the market.

The first 100 days: Validate and get moving

The first days of an investment provide a unique opportunity to make change. This is especially true when it comes to pricing. Equipped with real transaction data and unfettered access to decision makers, deal teams can validate what they thought they saw in diligence and mold those findings into a clear, actionable value-creation plan. Moving quickly is critical.

Lack of pricing discipline often results from inertia, poor leadership and affection for the status quo, especially in the B2B space, where everything is negotiated and customer relationships are hard-baked. The change in ownership creates a golden opportunity to shake things up. The process of harvesting quick wins allows the buyer to assess talent and capabilities, verifying words with deeds. Early opportunities most often show up in three areas: understanding customers' willingness to pay, testing if discounts are rational and probing for price leakage, when value is given away through unintended discounts such as relaxed payment terms or expedited shipping.

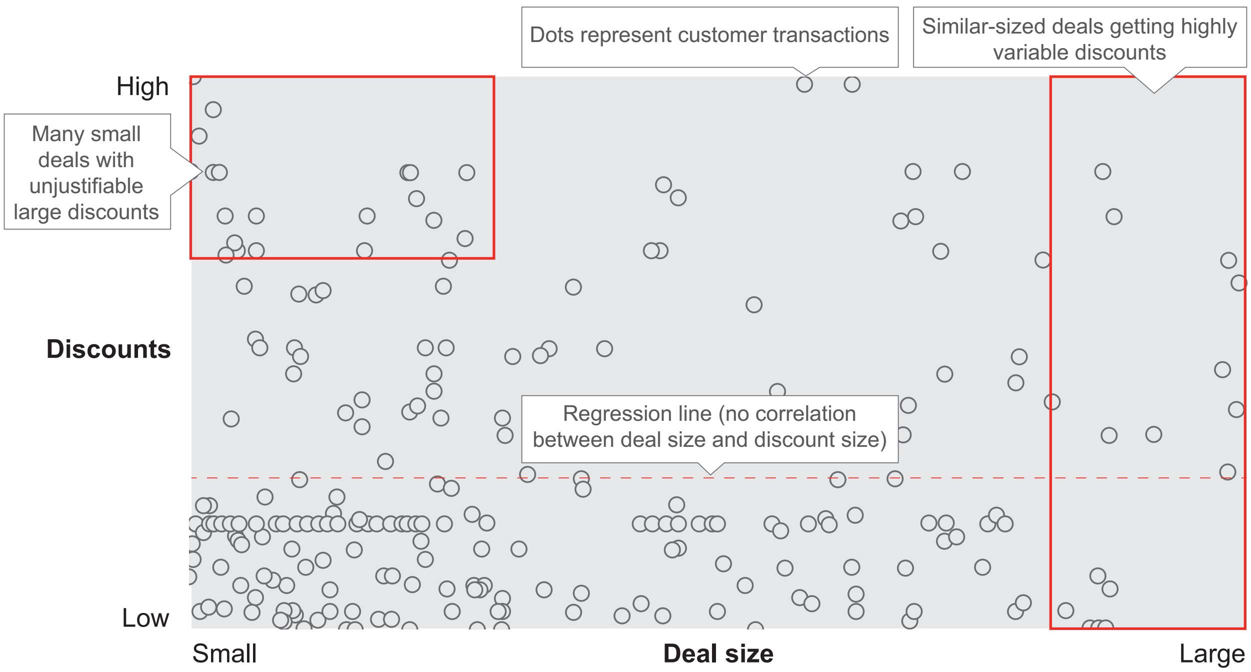
The change in ownership creates a golden opportunity to shake things up. The process of harvesting quick wins allows the buyer to assess talent and capabilities, verifying words with deeds.

Many companies leave money on the table because they don't appreciate what a given customer is willing to pay or how to optimize price across the customer and product mix. These blind spots make salespeople timid about demanding price increases over the life of a contract. To define the scope of this problem right away, firms can analyze whether existing discounts are rational by correlating deal size to discounts made *(see Figure 2.18)*. This will identify outliers where discounts have been granted due to the negotiating acumen of the customer.

It will also test the organization's chops in terms of capabilities and leadership, suggesting where investment in people, data and process will make the most difference. Real data is critical to create alignment and give sales leaders ammunition to guide their (often reluctant) teams. Working together to define the sales rep "strike zone" helps win the kind of buy-in that ensures consistency in price quoting and discounting.

Turning price leakage into leverage can produce powerful early wins. At most companies, selling decisions and contract terms stack up over time, creating hidden discounts for customers. New contracts grandfather in old rebates, special product features, free trials and other benefits, often without assessing their impact on margins. The discounts themselves aren't necessarily bad; the lack of clarity is the problem. Without knowing if the price being charged captures all the underlying costs, it's impossible to understand how profitable (or unprofitable) the relationship really is.

Figure 2.18: Correlating discounts and deal size can help determine if a company's discounting behavior is rational



Source: Bain & Company

When London-based Intermediate Capital Group acquired Loparex in 2015, getting a handle on the breadth and diversity of products was a major challenge. The company had operations in the US, Europe and Asia. It made specialty paper and film release liners for a wide variety of end markets, ranging from nonstick material for Band-Aids to peel-off films used to prevent scratching on airplane fuselage parts. The investment had stalled until 2017, when ICG brought in a new CEO, Simon Medley, who had a strong background in making pricing and commercial excellence strategies work.

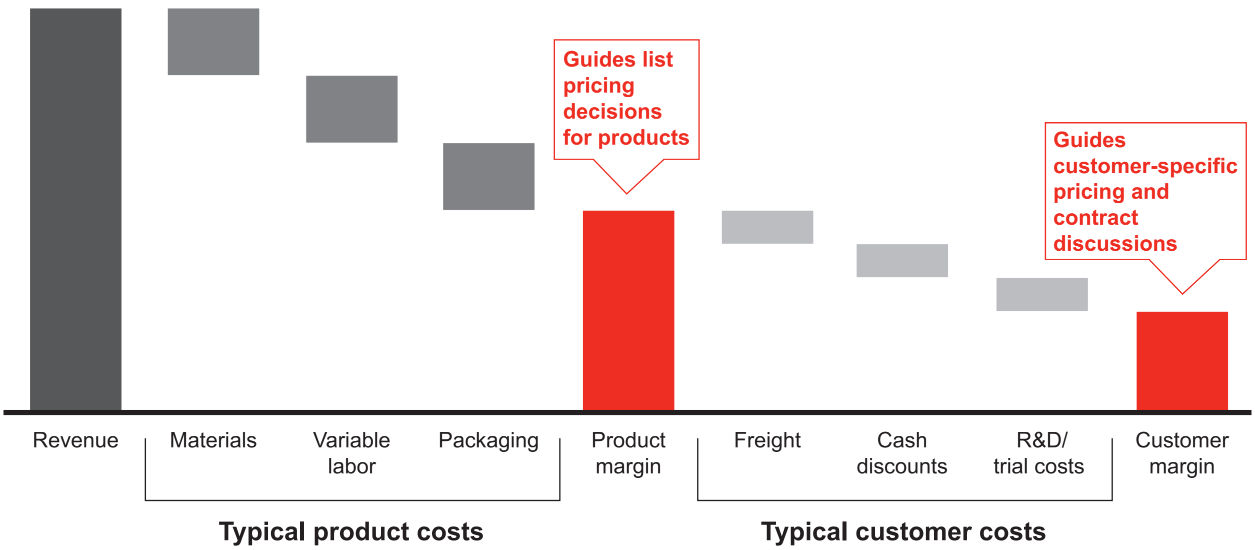
When Medley dug in, he saw that Loparex had little data on profitability by end market, customer or product type. It didn't know whether the cost to serve a given market aligned with what customers really valued. The company relied on a basic cost-plus analysis, focusing on material and manufacturing costs. But it didn't price for the underlying costs associated with producing highly bespoke products—things like two-sided printing and variations in product width that led to extra tooling changeovers or incremental R&D expenses.

Loparex was essentially in the dark strategically: It was both undercharging customers where it had the opportunity to increase prices and missing opportunities to increase volume by lowering prices.

To solve the problem quickly, Medley deployed an analytical tool called a profit cube *(see Figure 2.19)*. Combining financial data, plant data and customer data, the cube redistributed costs by product, cus-

Figure 2.19: A profit cube analysis breaks down product and customer costs, pinpointing sources of margin leakage

Hypothetical output of profit cube



Source: Bain & Company

tomer and sector, drawing a precise picture of how items like bloated accounts receivable balances and hidden freight costs affected profitability.

The profit cube became the company's source of truth on cost, allowing top leadership and sales to come together over critical pricing decisions—namely, how to either adjust pricing to reflect real cost or work on cost to make pricing more competitive. The company discovered that a majority of earnings came from a quarter of its products and less than half of its customers. That allowed the entire organization, from sales to R&D, to direct resources toward the areas where they could drive the most profit.

In the first 100 days of a new investment, the goal is to bring analytical rigor to the deal hypothesis, capture quick wins where available and create alignment on what the company needs to do to make a step change in performance over the medium and longer term. After Medley took over at Loparex, he knew that reliable analytics could produce critical buy-in. That meant involving stakeholders throughout the organization in the profit cube's construction and then cocreating a set of solutions, market by market and customer by customer.

Ownership: Build lasting value

Success in executing on the value-creation blueprint depends on strong leadership. There's nothing easy about renegotiating contracts and pushing through price increases. But it will also hang on the strength of the plan itself—all the analytical rigor on pricing has to lead in a practical direction. The

Figure 2.20: To capture lasting value from pricing, define a clear roadmap and practical steps for executing on it

Planning	Salesforce enablement	Supporting capabilities	Measurement and feedback
Establish pricing as a top management priority	Tune frontline incentives	Roll out frontline training plan	Implement dashboard showing progress against KPIs
Ensure a clear understanding of customer value proposition	Address existing account pricing with a phased approach	Deploy tools, scripts and reference materials	Regularly track progress and pricing adherence
Define sequenced rollout (including sales guidance)		Refine discount guidance and exceptions	
Actively communicate across the organization			

Source: Bain & Company

mark of a high-quality plan is that it lays out what the company needs to do in terms of building capabilities, adding talent, or tapping expertise and tools to ensure strong performance *(see Figure 2.20)*. Just as important, it provides the sales organization with the guidance, incentives and support it needs to do the hard work of making pricing initiatives stick.

For Loparex, that meant institutionalizing the profit cube intelligence. The company hired two full-time analysts to manage the profit cube and monitor performance against it. The executive team also set up a monthly meeting to look at pricing data and act on it.

Profitability became the new vocabulary of the business. Leadership held salespeople accountable for selling decisions like nonstandard printing concessions that led to price leakage. But it also gave reps an Alteryx-based tool that could pull cost data by customer and product from the web, allowing them to build more strategic account plans. With real insight into costs, salespeople could engage customers in discussions about how to deliver the right products at the right price to produce mutual value. Reps found that customers were often more willing to make trade-offs than they had once thought. Installing the profit cube and the other moves to support strategic pricing helped boost EBITDA by 25%.

This wasn't a one-time "pricing project." The strategy worked because it targeted the development of pricing capabilities, resulting in a model that could be sustained and repeated.

The most successful firms look at the pricing challenge that way from the beginning and apply a range of change management disciplines to embed it in the organization. They launch a pilot with a passionate leader, prototype and test success, publicize and reward wins, and then build a repeatable model and roll it out across the organization. The goal isn't a short-term bump in EBITDA but a change in the way the company works. This helps ensure that the pricing gains are reflected in the purchase multiple paid by the next buyer.

Private equity investors often think about pricing and growth initiatives as a trade-off: "I can either spend my time chasing price, or I can focus on growth." A sustainable and repeatable pricing model, however, will actually complement growth strategies and even accelerate them.

Pre-exit: Consolidate success

Private equity investors often think about pricing and growth initiatives as a trade-off: "I can either spend my time chasing price, or I can focus on growth." A sustainable and repeatable pricing model, however, will actually complement growth strategies and even accelerate them. This isn't to suggest that most deal teams have the bandwidth to do everything at once. But by starting early, the firms that get pricing right have a chance to apply pricing discipline in the context of everything else they do to build growth and create value.

Growth plays are inevitably disruptive. Acquiring new businesses, expanding a salesforce, launching new products or moving into adjacencies—all of these strategies have implications for pricing. So a portfolio company that develops muscles around pricing strategy and execution in the first couple of years of PE ownership can use this capability to monetize the growth play much more successfully.

An acquisition, for instance, might add 200 new salespeople who need to be integrated into the acquirer's ways of working. It may build scale or scope that changes the combined company's value proposition. Having a proven model in place to diagnose pricing opportunities and execute strategy gives leadership a means to make high-impact pricing decisions quickly. It can shorten the time to value as teams seek to integrate the new organization and develop a consolidated growth plan.

The pre-exit period is the time to revisit the due diligence and tee up the pricing opportunities that remain for the next owner. For all the right reasons, teams rushing to take advantage of growth opportunities may have to divert their attention from pricing for a while. As they ready the asset for sale, however, shoring up earlier pricing strategies and applying the model to the new, larger enterprise can surface quick wins and pricing opportunities that burnish the equity story for a new buyer.

For the current owner, the new pricing capability helps ensure there's no money left on the table. For the new owner, a demonstrated ability to use price strategically provides a credible runway for future value creation.

Most target companies are behind the curve in pricing analytics and strategy. This means private equity investors can build a strong, differentiated bidding advantage by identifying and underwriting pricing opportunities in due diligence.

Capturing pricing upside is a powerful and underappreciated path to value, especially when heavy competition is driving up deal multiples. Most target companies are behind the curve in pricing analytics and strategy, which means that private equity investors can build a strong, differentiated bidding advantage by identifying and underwriting pricing opportunities in due diligence. Creating lasting value involves building new capabilities and ways of working, stretching from the leadership team to the go-to-market organization. But the payoff is evident: a more profitable portfolio company with the tools in place to create future growth.

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How to assess disruption in due diligence

Staying ahead of the curve has always been critical in private equity. Understanding how markets and ecosystems are shifting, predicting how customer behavior is evolving, anticipating trends in technology—all of these factors are essential to buying well and creating value during the holding period.

What's different today is the sheer power of technology and innovation to upend entire industries with a speed and magnitude that can be blinding. We all know the usual suspects; shooting stars like Amazon, Apple, Uber and Netflix have fundamentally changed how we live our lives. But few industries these days are sheltered from the impact of technology-fueled innovation. Railroads are coupling IoT technology with advanced analytics to dramatically drive down costs. Sensors and GPS technology are complementing genetics as disruptive forces in agriculture. Fracking technology has shifted global fortunes in oil and gas. Affordable lithium battery technology threatens to transform just about anything that moves.

The implications for private equity are clear: No portfolio company or target is immune to disruption. Change may come sooner or it may come later, but it *will* come eventually, shifting profit pools, altering customer preferences, bending cost curves and reshaping how companies compete.

It is also likely to come faster than you think. Consider that the average time from tipping point—the moment when sales of a new technology take off—to 80% of maximum adoption has dropped from 18 years in the mid-20th century to about 8 years since 2000. Too often, capital impairment stems from ignoring the signals or underestimating how quickly a new technology can gain traction and blow things up.

It's obviously not easy to peer into the future and spot emerging technologies—or nontech innovations, for that matter. But it is possible to apply a structured approach to due diligence that can help you identify disruptive patterns in any industry and understand how they will affect your investment.

Innovation often feels like it comes out of the blue, but that's rarely the case. Most sources of disruption are evident long before they reach the tipping point that accelerates wide-scale adoption. We know that electric cars and trucks are coming. It's plain that big data and analytics are transforming the insurance business. The real question for PE funds is *if, when* and *how* these key trends may disrupt a specific industry.

Most sources of disruption are evident long before they reach the tipping point that accelerates wide-scale adoption. The question for PE funds is *if, when* and *how* these key trends may disrupt a specific industry.

Developing confidence around these issues starts with breaking the problem down into a pair of important inquiries. First, where is disruption coming from, and what sort of impact will it have? Second, when will this innovation reach its tipping point, based on both the strength of its appeal and the barriers or accelerators to broader adoption?

Together, these analyses give deal teams insight into what a target is really worth in a changing world and whether that value is already baked into its multiple. They point the way to the most future-proof value-creation plan during ownership and suggest how a company might be best positioned when it comes time to exit. Critically, they also help acquirers think through an important question: Is this company destined to be disrupted, or is there opportunity to build it into a disrupter?

A better mousetrap

Funds that stay ahead of the curve tend to view the future differently than others. They analyze potential disruption from a future-back perspective. Most analyses of future scenarios start with today's status quo and extrapolate forward, assuming incremental change in current offerings. That perspective is certainly essential, but it's also important to think well beyond the incremental.

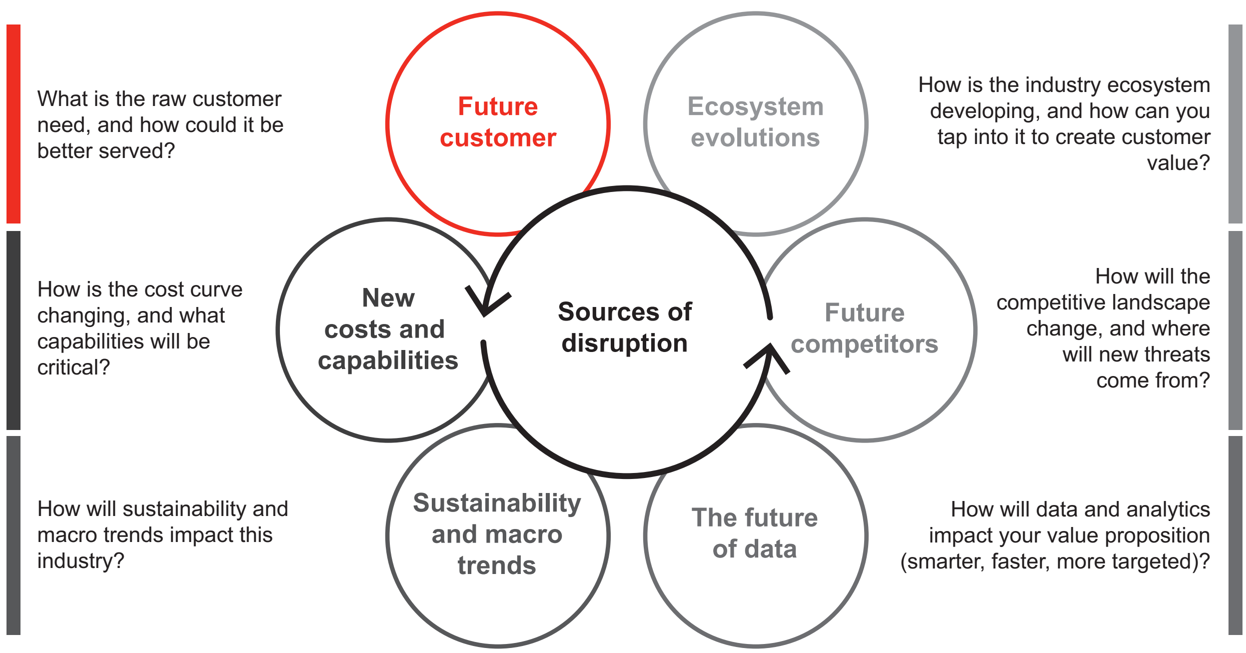
Starting with an assessment of the raw customer need, a future-back analysis looks 10 to 20 years out, asking, “Where is disruption most likely to come from, and how might it fundamentally alter how winning companies deliver solutions in this industry?” Funds can look for early signals across six key aspects of the business environment *(see Figure 2.21)*.

Raw customer needs are the basic requirements that drive human behavior and compel people to action. They are the essence of what a customer values, independent of how the need is addressed today. Raw needs don’t change; people’s expectations do. As the world evolves and technologies alter how we experience it, the best companies will continuously innovate to solve for shifting expectations.

That was Netflix’s critical insight. *Why compete on Blockbuster’s terms (stores) or even sit still with our own disruptive vision (DVD shipping) when we can use emerging technology advances (streaming) to redefine the industry again?* From its founding, Netflix plumbed the raw customer need (“I want to be entertained right now!”) and figured out how to satisfy it much more compellingly. Evolving technology loosened the constraints and Netflix evolved with it, setting new expectations and fulfilling them at every step.

The old mousetrap aphorism captures the notion of raw customer need nicely: Build a better mousetrap, and the world will beat a path to your door. Until then, mousetraps get the job done just fine,

Figure 2.21: Six key inquiries in diligence can identify where disruption is coming from and what its impact might be



Source: Bain & Company

thank you very much. When EQT bought Anticimex Group in 2012, the company saw a better-mouse-trap opportunity—literally. At the time, Anticimex was Northern Europe's leading provider of pest control services for the food industry. The most obvious value-creation opportunity was a traditional one: build scale and enhance revenue growth through a global buy-and-build strategy. Under EQT, the company proceeded to buy more than 200 traditional rivals over the next seven years.

Yet EQT's backing also enabled Anticimex to develop and accelerate a truly disruptive strategy. Like Netflix and streaming, it met the raw customer need—eliminating vermin—in a much better way. The company's traditional business involved placing traps with poison around a food manufacturing facility and monitoring them regularly for activity. That worked fine but had obvious drawbacks, most notably putting poison close to food. The advent of IoT sensors and other communications technologies opened the door to an electronic solution, where rodents enter a trap and set off a signal to a central system.

This innovation eliminates the need for monthly physical inspections. Instead, the devices monitor the environment continuously, and there's no poison involved. The data collected also allows companies to diagnose problems and act against infestations much earlier. The solution does require a larger up-front investment from customers, but automated surveillance identifies problems before they get out of control, reducing the cost to fix them. The system also cuts labor costs by up to 75%.

Fully understanding this opportunity in the context of industry dynamics was critical to EQT's risk assessment. It gave the firm confidence in the disruptive potential of the new solution and the investment it would take to get there.

Following the money

One powerful way to anticipate disruption in a given industry is to know what the competition is doing—both incumbents and start-ups. Taking a measure of investment tells you how much venture capitalists and smart CEOs are betting against the status quo, while providing valuable clues about specific innovations. Talking with customers and competitors, along with reviewing press releases and other reports, can reveal if existing competitors are doing anything disruptive. Several powerful databases can identify important patterns in venture capital spending. Often, the persistence of VC investment highlights a technology or business model that the broader market simply can't get its head around—at first anyway.

A good example is Peloton. It's easy to look at this high-flying company today and appreciate its impact on the exercise industry. But founder John Foley had a hard time finding believers when the company launched in 2012. Peloton made $2,000 exercise bikes linked via the Internet to a stream of live and recorded classes with top instructors, available via monthly subscription. The slick machine and its high-quality interface allowed riders to exercise at home and track meaningful data, while tapping into the motivational energy of professional trainers.

Although white-glove home delivery and the product's hip vibe generated strong loyalty among customers, many investors worried that Peloton was essentially a niche product. How many people, after all, could afford to lay out $2,000, plus a monthly fee?

Foley's vision was different. He argued that busy working couples craved exercise but didn't have time to go to the gym. If you could recreate a motivational experience at home, they could drop their gym memberships and actually save money over the long run. As the idea gained traction, more venture capital flowed in at ever-increasing multiples, suggesting that something disruptive was going on.

One powerful way to anticipate disruption in a given industry is to know what the competition is doing—both incumbents and start-ups. Taking a measure of investment tells you how much venture capitalists and smart CEOs are betting against the status quo, while providing valuable clues about specific innovations.

For a team of PE investors looking to provide a capital infusion, the investment thesis got flipped on its head. This wasn't a cooler (but pricey) version of what had come before. It was a powerful, technology-enabled business model with the potential to transform an industry never known for its innovation.

Determining the tipping point

For PE investors with tight three- to five-year deal cycles, determining when a trend or technology may cross the all-important tipping point is critical. Insight comes from understanding cost trends and measuring what customers really value. Will an emerging source of disruption become relevant within a deal's holding period? Will it be on the horizon at exit, raising questions about the company's staying power?

Companies and industry experts have used a variety of forecasting tools and economic models over the years to develop rough answers to these questions. But what makes the difference in due diligence is combining the insights from a set of four important tools. Together, they paint the clearest picture of how much impact an innovation may have and when it is likely to gain traction *(see Figure 2.22)*.

Each of the four tools provides a key part of the puzzle.

- **Experience curves (e-curves)** show how unit costs decline relative to increased production volume. The more experience companies get producing the innovation, the better they get at doing it cheaply.

- **An Elements of Value® analysis** defines the attributes customers value most in a product (reduced cost, time savings, sustainability and so on), which determines whether the new innovation delivers better than the status quo.

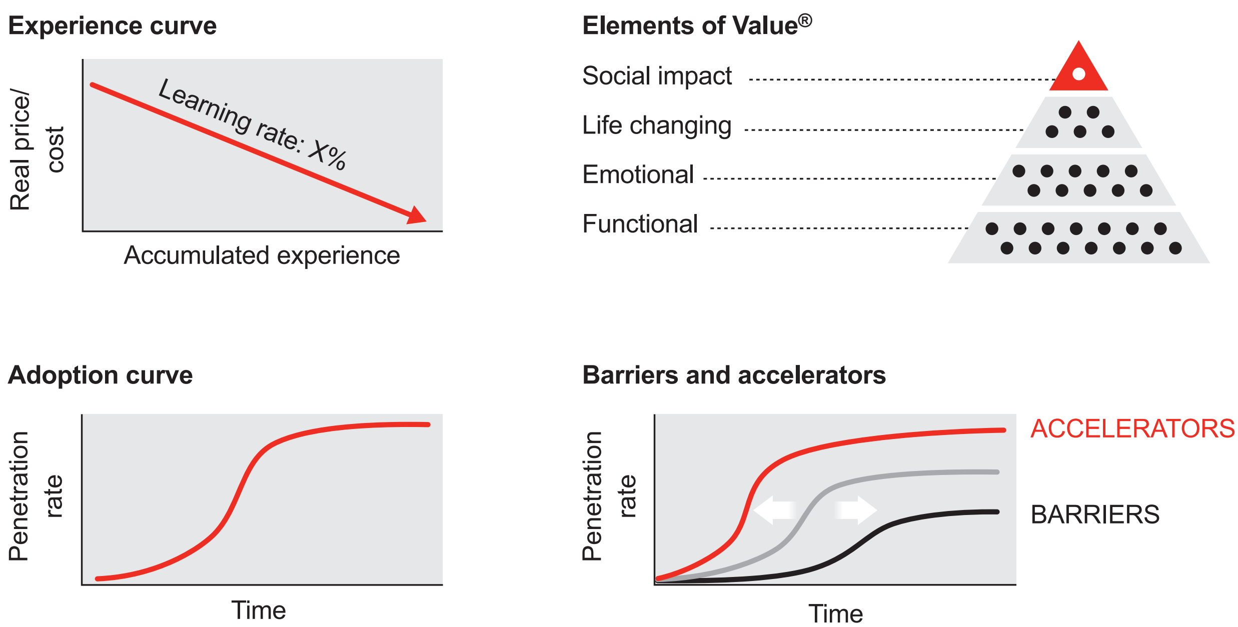
- **Adoption curves (s-curves)** use the output from these analyses to help forecast the likely pace of adoption and to estimate saturation points.

- **A barriers and accelerators analysis** asks what's getting in the way of this innovation taking over the market and when that might be eliminated so adoption can accelerate. Conversely, is anything imminent—regulation, incentives, political developments—that could become a catalyst for faster adoption?

By artfully blending these insights into an overarching conclusion about what's coming and when, investors can quantify disruption risk in their deal models and run the most-likely future scenarios.

For The Cranemere Group, a global long-term holding company, this sort of tipping-point analysis was critical in the spring of 2019 as it considered a major investment in Velocity Vehicle Group. Velocity is a commercial vehicle dealership and service organization based in Southern California. Its fundamentals were strong, but it faced a source of uncertainty that was important to thoughtful risk assessment: the rise of electric vehicles (EVs). The question wasn't if electric technology was coming, but when.

Figure 2.22: A tipping-point analysis blends insights from four key forecasting tools



Source: Bain & Company

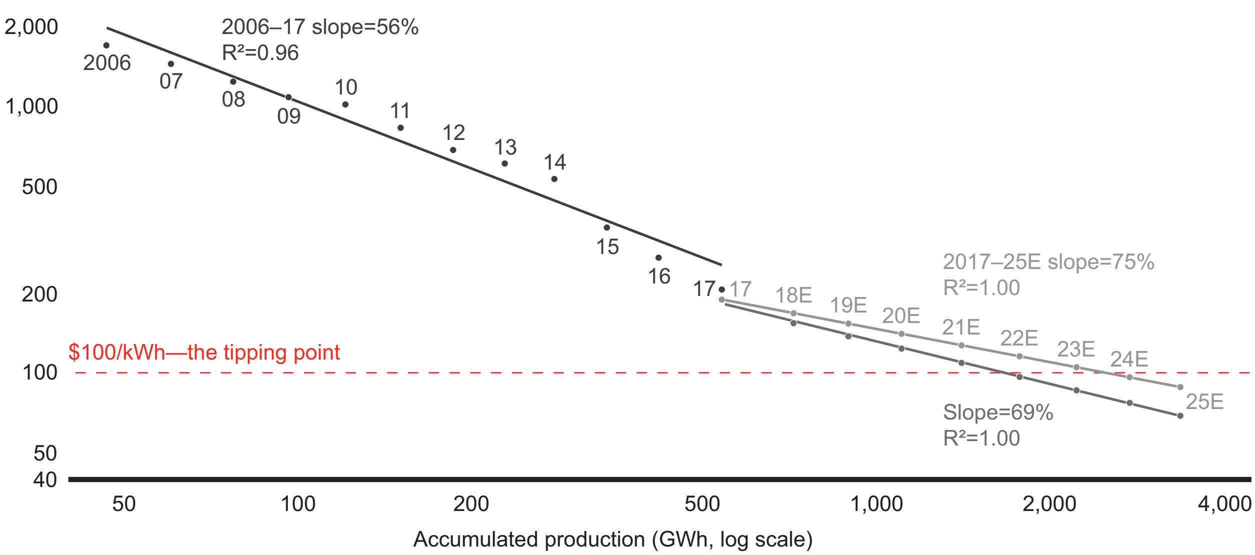
What would the implications be for Velocity's business as the tipping point arrived, and how could Velocity best exploit opportunities created by the transition?

The experience curve played a major role in Cranemere's analysis. The main reason electric motor technology is more expensive than internal combustion technology is the cost of batteries, which make up between 30% and 50% of an electric vehicle's retail price. A battery cost of $100 per kilowatt-hour would begin to make electric motor technology competitive with internal combustion engines. The e-curve, which tracks the decline in cost relative to increases in production over time, helped the team determine when the industry might cross that critical threshold. Producers like Tesla and GM had been moving down the curve faster than anyone expected, producing batteries for as little as $125 per kilowatt-hour. The diligence team assumed someone would breach the $100 level in a relevant time frame and developed various scenarios to reflect the most likely range of cost outcomes by 2025 *(see Figure 2.23)*.

Next came an Elements of Value analysis. Electric trucks have some cachet among customers concerned about sustainability. But in the hard-bitten trucking industry, relative feasibility is the critical issue. Because they have fewer moving parts, electric trucks are projected to cost significantly less to maintain than diesel trucks and are more efficient to operate overall. In the local market, where short hauls in stop-and-go traffic are the norm, electric trucks excel—especially given that drivers can take them back to the depot at night for recharging.

Figure 2.23: Battery costs are falling faster than expected, leading Cranemere to develop different diligence scenarios

Lithium-ion battery pack costs in 2017 dollars ($/kWh, log scale)



Notes: Production capacity includes all lithium-ion battery applications (not limited to EVs); announced/under construction capacity totals ~181 GWh across China, US, EU, India and Thailand; expected capacity from announced factories added in year of commissioning
Sources: Bain & Company; analyst reports; Robert Kochhan, et al., "An Overview of Costs for Vehicle Components, Fuels and Greenhouse Gas Emissions," 2014

For long-haul trips, however, viability falls off the table. Most over-the-road operators keep the truck in motion for the majority of the day, making relatively quick stops to fuel up. Electric trucks must stop every eight hours, and it takes hours to recharge their batteries. Those factors make them unworkable for highway routes, at least in the medium term.

In terms of barriers and accelerators, California's complex regulatory environment offered both risks and benefits for Velocity. On one hand, the state already has the most stringent emissions requirements in the US, which would tend to serve as an accelerator for electric truck adoption. But in the short run, tougher standards would play to Velocity's advantage, rendering many trucks on the road obsolete over the next several years and boosting Velocity's new-truck sales.

Based on these insights, Cranemere's most likely scenario showed that EVs would make up 20% of Velocity's new sales by 2030 but only around 5% of the total "truck parc" (vehicles in operation) in the company's markets. That's because diesel trucks have 12- to 15-year replacement cycles, meaning that a large number of older models will remain on the road even as sales of EVs ramp up. Given that the majority of Velocity's profits came from parts and service sales (which depend on the size of the truck parc), this slow shift would provide stability and time for Velocity to make investments to support EVs, while experiencing only modest erosion of its existing diesel and natural gas business.

Other key factors would temper the overall effect on Velocity's gross profit while creating potential opportunities. Since Velocity's major OEM partner is a truck maker with a relatively strong electric truck program, Velocity might benefit more than competitors from the EV switchover. The value of servicing those vehicles, however, required a careful analysis. The challenge is that EV servicing conservatively generates about half the revenue diesel servicing provides on a per-unit basis. But because it requires more training and is significantly more complex, there is an opportunity for dealers like Velocity to take share from the largest current providers of truck service—in-house shops run by fleet owners and independent repair shops.

As much as we would like to have a crystal ball in times as turbulent as these, investors aren't so lucky. But there are structured, practical ways to gain real confidence about what's ahead, enabling PE firms to model and rationally evaluate the risks and opportunities born of disruption.

While that would require investment, analysis during due diligence suggested that growth in gross profit margin might be 20 basis points lower as a result of EV adoption. Overall, Cranemere became comfortable that Velocity could successfully navigate the transition with minimal disruption to its historic revenues and profitability.

As much as we would like to have a crystal ball in times as turbulent as these, investors aren't so lucky. But there are structured, practical ways to gain real confidence about what's ahead, enabling PE firms to model and rationally evaluate the risks and opportunities born of disruption. For any deal, it pays to use due diligence to assess where innovation is coming from. It is equally important to use tipping-point analysis to gauge when and how disruption might affect your investment.

The relevant information is out there; marshalling it is the challenge. In a highly competitive market, the insights you gain can make all the difference.

3. Public vs. private returns: Is PE losing its advantage?

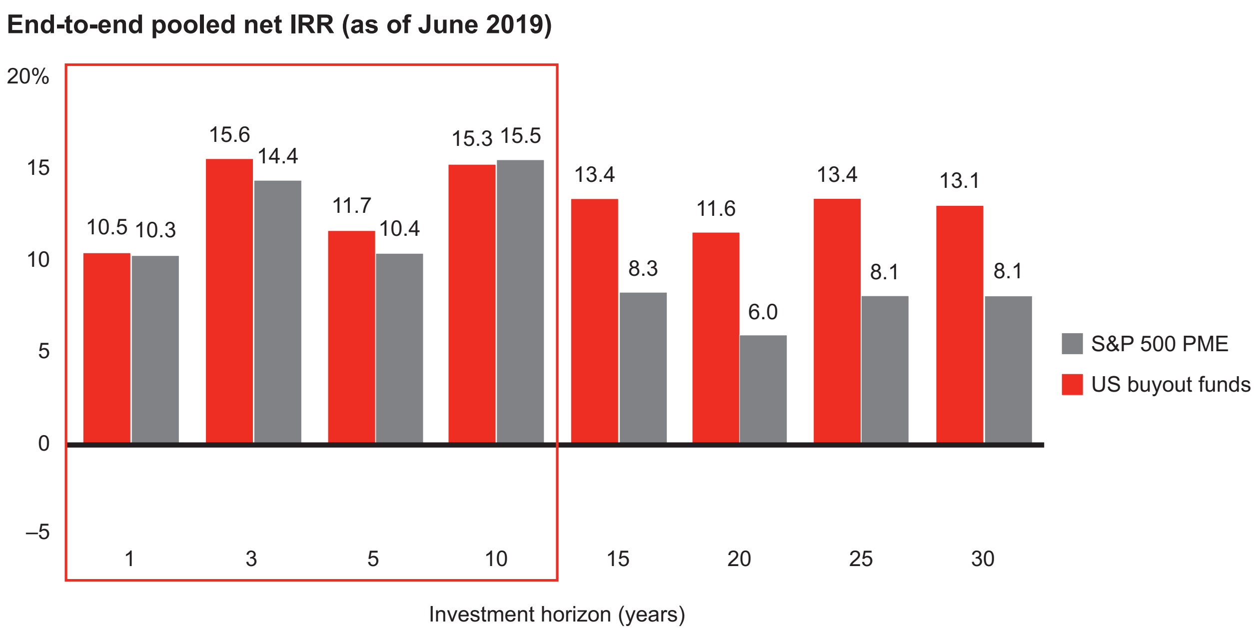
Investors have poured more than $2 trillion into buyout funds over the past decade for a simple reason: They deliver. Over the past 30 years, US buyouts have generated average net returns of 13.1%, compared with 8.1% for an alternative private-market performance benchmark, based on the Long-Nickels public market equivalent (PME) method and using the S&P 500 as the proxy.

Shorten the time frame, however, and the picture isn't what most PE investors were expecting. Since 2009, when the global economy limped out of the worst recession in generations, US public equity returns have essentially matched returns from US buyouts at around 15% *(see Figure 3.1)*.

While a 15% average annual return net of fees is impressive even by private equity's own high standard, parity with public markets is not what PE investors are paying for. The institutions that allocate increasing portions of their portfolios to buyout funds have good reason to expect a premium. They lock up their money for a period of years with the presumption that professional managers will generate alpha through innovative value-creation strategies and leverage. All things being equal, public equities offer more liquidity at less cost.

And that raises a disquieting question for buyout managers: Will the convergence in 10-year returns make it harder to raise the next $2 trillion?

Figure 3.1: US buyout returns have converged with public equity returns over the current cycle, closing a three-decade gap in performance



Notes: PME is a public market equivalent based on the Long-Nickels methodology; other PME methodologies exist to compare the opportunity cost of investing in private equity vs. other vehicles, including the Kaplan Schoar model (KS-PME) and the Direct Alpha methodology
Source: State Street Private Equity Index

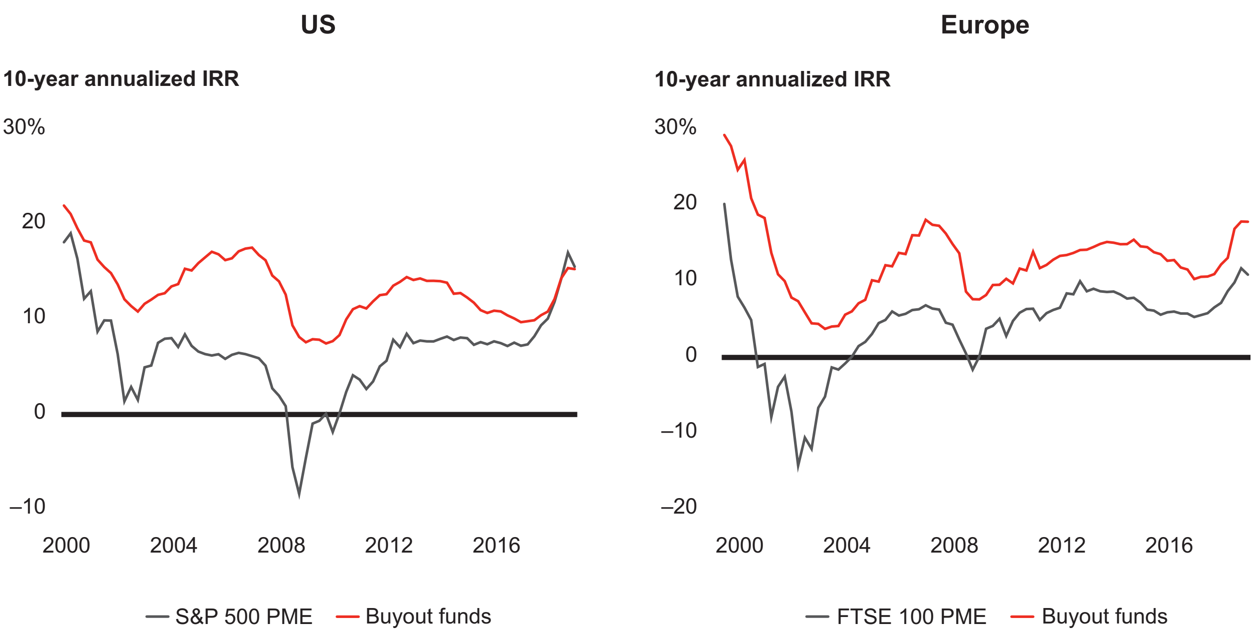
The power of cycles

Working with Professor Josh Lerner of Harvard Business School, as well as State Street Global Markets and State Street Private Equity Index, we analyzed what's been driving returns in both markets. Our study found little evidence to suggest that competition from the public markets is likely to persist. The first clue: The surge in public valuations following the global financial crisis is neither surprising nor unprecedented. Given the historic sell-off in the wake of the crisis, US stocks were teed up for an equally historic rebound.

Over the ensuing decade, several factors created strong upward momentum. First, US monetary and tax policy couldn't have been more accommodating, leading to a slow but steady expansion that produced the lowest level of unemployment in half a century. At the same time, US equities benefited from a global flight to quality as bad news in Europe—Brexit, sovereign default scares, the threat of recession in Germany and Southern Europe—drove investors to seek solace in the S&P 500. It's worth noting that public and private returns have not converged in Europe. There, PE's historic outperformance continues *(see Figure 3.2)*.

Several periods in US market history have produced similar surges, including the decade ending in March 2000, when accommodating monetary policy and the inflating dot-com bubble drove a 19.4% 10-year return for the S&P 500 PME index. Of course, what came next also followed a pattern. Inevitably, such

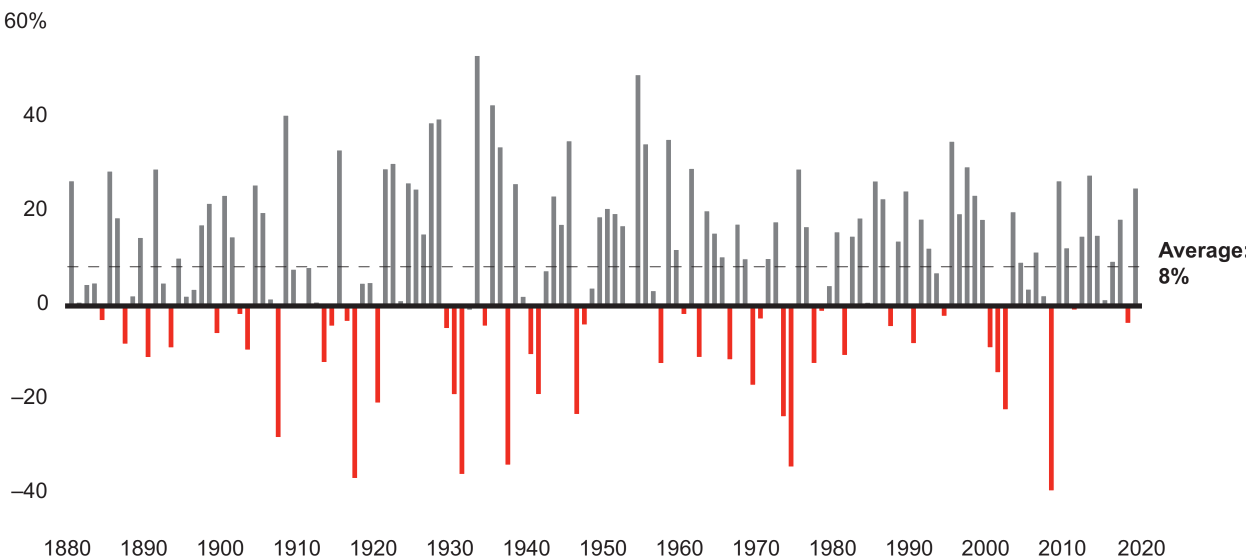
Figure 3.2: The public-private convergence in returns over the past decade has largely been a US phenomenon



Note: PME is a public market equivalent based on the Long-Nickels methodology
Source: State Street Private Equity Index

Figure 3.3: The S&P 500 has averaged 8% returns for the past 140 years and was in negative territory 31% of the time

S&P 500 inflation-adjusted returns (including dividend reinvestments)



Source: Robert Shiller, online database, www.econ.yale.edu/~shiller/data.htm

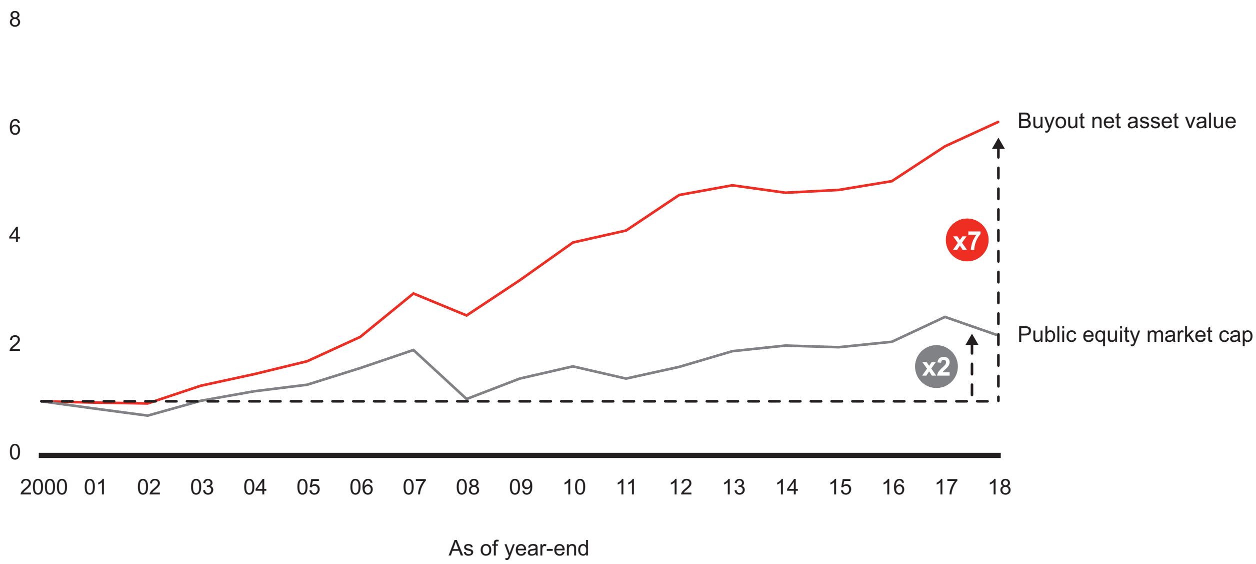
periods of exuberance in public markets are punctuated by years of lethargy as performance reverts to the mean. In the decade following the dot-com crash (through March 2010), the PME index's annual return fell to 0.08%, while private equity maintained a 7.5% average. As noted earlier, the PME index has posted an 8.1% annualized return over the past 30 years, which is consistent with the 8% average logged by the S&P 500 over the 140 years for which public market data is available. In about 30% of those years, the public markets generated negative real returns—three times private equity's down-year rate for its 30-year history *(see Figure 3.3)*.

There's little reason to believe that US equities will somehow break out of this pattern and sustain these double-digit returns over the long term. Indeed, short sellers live for the predictions of a "new normal" that always seem to come at the end of a cycle. Private equity investors recognize this and continue to believe in the consistent, long-term outperformance that buyout funds deliver. They also continue to vote with their wallets. Since 2000, net asset value for global buyouts has grown 3.5 times faster than the public markets *(see Figure 3.4)*. Most PE investors can't get enough: Around 50% of LPs are heading into 2020 underallocated to private equity.

None of this means that the private equity industry should relax, however. While competition from the public markets will surely ease off at some point, the long-term trend in PE returns is more troublesome. As strong as private equity's performance has been for the past decade, buyout returns have been trending downward over the past 30 years. If you draw a trend line between the 10-year return in 1999 and

Figure 3.4: Since 2000, buyout asset value has grown 3.5 times faster than public equity market capitalization

Global buyout net asset value vs. public equity market cap, indexed



Note: Buyout net asset value based on unrealized value
Sources: Preqin; World Bank

the 10-year return today, it would show a decline of 6 percentage points over that period *(see Figure 3.5)*. Extend the same slope out another 10 years, and PE returns start to look a lot less compelling.

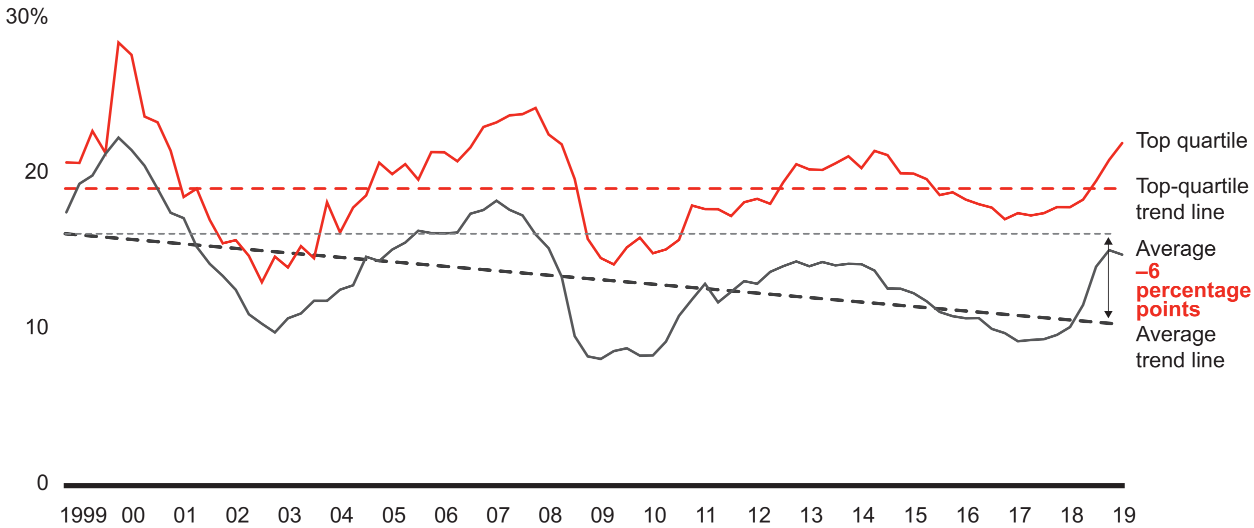
To a large degree, this is a function of maturity. As private equity's relative outperformance attracts increasing amounts of capital from investors, competition for a limited number of high-quality assets increases, driving up average purchase price multiples. Buying at premium prices makes it ever more challenging to create value during ownership and exit with an acceptable return. Add in growing pressure from well-heeled corporate buyers, and generating alpha becomes even more daunting.

It's also clear, however, that an elite group of firms has found a way to buck the trend. While average returns have declined over time, top-quartile returns have essentially held steady. This explains why a large majority of the capital flowing into private equity is targeting these top-tier firms. For those in the bottom quartiles, raising a fund is already becoming more difficult. And with deal multiples at record levels, it's not going to get any easier in the years ahead to generate the kind of performance investors are looking for.

What are these top-tier funds doing right? We recently studied a pool of 113 private equity firms that each have raised $5 billion or more since 2000. If at least 80% of a firm's funds ranked in the top two quartiles of industry performance over that period, we defined it as a consistent outperformer *(see Figure 3.6)*. There were 28 of these firms in our sample, and they clearly won on a deal-by-deal

Figure 3.5: In a maturing market, average private equity returns have been trending downward, while top-tier returns remain steady

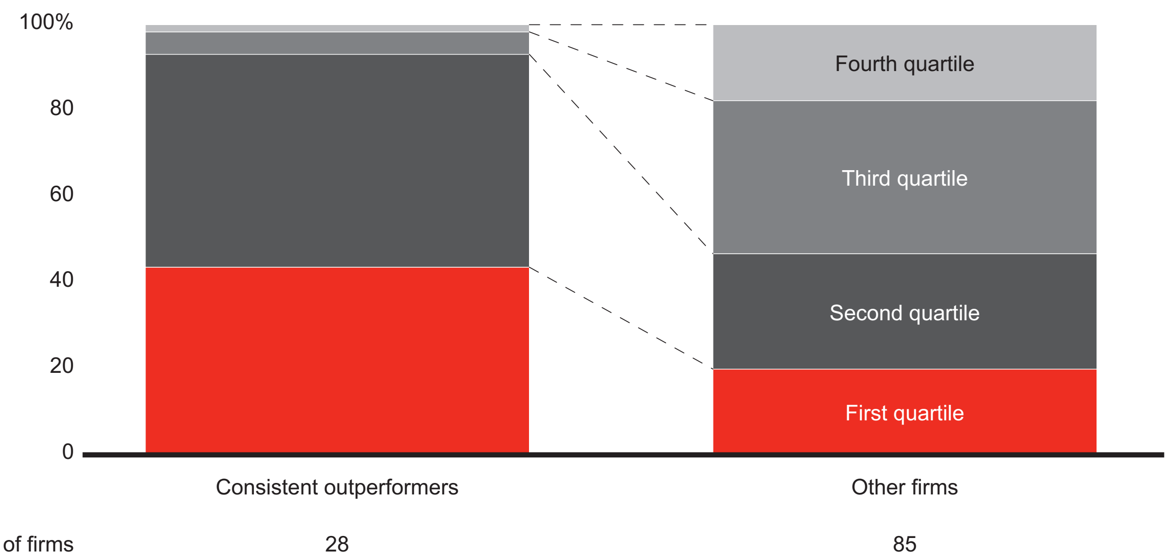
10-year annualized IRR for global buyouts



Source: State Street Private Equity Index

Figure 3.6: It is possible to consistently outperform in private equity

Performance of buyout funds (vintage 2000–16) for firms that have raised more than $5B since 2000



Note: Consistent outperformers defined as firms with at least 80% of their funds with 2000–16 vintages in the top two quartiles
Sources: Preqin; Bain analysis

Figure 3.7: Consistent outperformers generate alpha through a variety of investment approaches, but the common denominator is focus

	Sector specialist	Firm with a focused hunting ground	Differentiated playbook fund	Scale manager with broad expertise
Typical fund size	Varies	\$5B–\$10B	\$5B–\$10B	More than \$10B
Industry breadth	Specialized (no more than one or two sectors)	Focused on specific subsectors and themes	Can span multiple sectors	Involved in most sectors
Sector team depth	Highest	Medium (higher in focus areas)	Medium	Medium/high
Geographic focus	Varies	Narrow (usually one geography only)	Varies	Global
Emphasis on value creation	Varies	Medium	Highest	Medium/high
Strategy focus/type of deal	Many types of deals	Deals confined to a carefully defined sweet spot	Deals that align with playbook approach	Many types of deals
Creates focus through . . .	**Deep sector and subsector expertise**	**Repeatable investment strategy applied to defined deal genre**	**Aggressive, standardized value-creation approach**	**Scale-enabled expertise and depth across multiple sectors**

Source: Bain & Company

basis, as measured by internal rate of return. They had many more deals with an IRR above 15% (32% of their portfolios vs. 18% for the laggards) and far fewer write-offs (5% vs. 8%).

Data can't really capture how these firms consistently outperform, but a more qualitative and experience-based analysis suggests it boils down to focus: The best firms know what they are good at and wield that as a competitive weapon. In a world of high prices and intense competition, they understand that expertise matters. You have to be much more focused on the sectors you're investing in, the risks you're underwriting and your ability to actually get the value once you own the asset.

Funds do this in a variety of ways. Our consistent outperformers fell into four broad categories *(see Figure 3.7)*.

- **Sector specialists.** These firms make it their business to know more about a given sector than anyone else. They've become so smart in that area that they can assess risk and opportunities in ways the competition can't. (Think Thoma Bravo, Silver Lake and Vista Equity in tech, Charlesbank and L Catterton in consumer.) The institutional knowledge these firms have built provides differentiated insights that win auctions and drive value creation.

  Silver Lake, for instance, focuses on technology and technology-enabled businesses. It understands how to manage very large deals and is adept at building platform companies. A strong tech network and a culture of collaboration between its investment and operating teams are differentiators. From 2000 through 2016, 95% of Silver Lake's funds ranked in the top two quartiles. It has raised $41 billion since 2000, almost all of it for buyout funds.

- **Firms with a focused hunting ground.** Like sector specialists, these firms target a sweet spot with a repeatable investment approach, but they don't limit themselves to one sector. Instead, they may have a narrower geographic focus or stick to their core buyout asset class. The key is that they know exactly what kind of risks they are underwriting in any deal and are very comfortable they can manage those risks. They also know what risks they will never underwrite, and they have honed their approach to reduce loss ratios and capitalize on positive bias to volatility and risk. Examples include MBK Partners, Equistone Partners Europe, Veritas Capital and Audax Group, which focuses on buy-and-build strategies.

  Based in Seoul, MBK introduces itself as "a leading North Asia private equity firm, owned and operated by Asians." The firm invests across sectors but is extremely deliberate about the kind of deals it goes after—mostly mature companies that operate in South Korea, Greater China and Japan. MBK has a strong focus on control investments, giving it more influence when working with management to create value. From the firm's inception in 2005, all of its funds have performed in the top half of the industry, and the $16 billion it has raised (or is about to close) for buyout funds represents 95% of its capital.

- **Differentiated playbook funds.** These funds know from pattern recognition what kinds of companies they can improve and how. They have a well-defined playbook that works on companies with certain characteristics, and by running it with great precision, they create significant value during ownership. Examples include Clayton, Dubilier & Rice (CD&R) and GTCR.

  CD&R focuses on companies with sustainable market-leading positions in industries poised for long-term growth. It looks for differentiated products, services or processes, but also the potential to improve growth and enhance productivity. CD&R does exhaustive up-front diligence, characterized by strong collaboration between its deal and operating teams. The resulting investment thesis usually relies on using operational enhancements to improve margins. CD&R placed 100% of its funds in the top two quartiles from 2000 through 2016, and the $25 billion it has raised for buyouts represents 97% of its total since 2000.

- **Scale managers with broad expertise.** Scale funds capitalize on their size and breadth. Their point of differentiation is that they can bring massive resources to whatever they invest in and often do the biggest, most complex deals. Firms like Blackstone, KKR, CVC, EQT, Permira and Apax Partners raise tens of billions in capital and operate very large funds. They have teams of people with deep expertise, and they have the staying power to wait out troubled investments that otherwise would go bust.

  CVC invests in a cross section of global industrial and service businesses. In Europe and the Americas, it looks for companies with solid market positions, stable cash flows, strong management teams and attractive prospects for organic or acquisition-led growth. CVC uses its scale and incentive structure to attract top dealmaking talent. Between 2000 and 2016, 83% of its funds generated performance in the top two quartiles. The $74 billion in buyout capital it has raised since 2000 accounts for 97% of its total.

Focused firms win—and win consistently—because commitment to a formula sharpens all phases of the value-creation cycle. They source deals better than others based on a keen understanding of what they're looking for and where to find it. They assess value more precisely in diligence because they are confident in their ability to identify opportunities and manage risk. During ownership, they know what works and what doesn't, and they have a clear, active strategy for capturing value. They're more adept at developing the right management team, adding capabilities when necessary, and tapping into the right ecosystem of partners when that makes sense.

Increasing competition for deals is driving specialization, which means that anybody you're bidding against has an angle. In a carve-out deal, you don't want to be the rookie in a process dominated by firms that have done 20 similar carve-outs and know precisely how much margin they can capture and how they will do it. Similarly, if you're doing your first industrial turnaround, you might think twice if you're bidding against a firm that is an expert at reducing costs quickly and at improving margin sustainably. If you don't have an angle, you're going to be the odd firm out. And if you win at a high price, you may come to regret it.

Middling funds can step up their game by developing the kind of differentiated focus that distinguishes the top tier. That process begins with a few key questions:

- Is your sweet spot clear and distinctive?
- Is there a particular sector or geography that you know better than anybody else?
- Can you confidently and repeatedly recognize patterns for value creation and deliver against them?
- Do you have differentiated scale that allows you to overwhelm the competition with more resources and staying power?

The imperative is to develop expertise both internally and by leaning on outside partners and ecosystems if need be. Limited partners will continue to gravitate to the industry's top performers. The real lesson from this period of convergence is that if you aren't in that group, your ability to raise funds in the future will likely be compromised.

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