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Number 3, January 2018

McKinsey on Investing is written by experts and practitioners in McKinsey's global investor-focused practices, including our Private Equity & Principal Investors, Wealth & Asset Management, and Capital Projects & Infrastructure Practices.

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Introduction

Welcome to the third volume of *McKinsey on Investing*, developed to share the best of our recent research and thinking relevant to investors. Colleagues from around the world and across many disciplines—including asset management, institutional investing, private equity, and infrastructure—collaborated to develop these insights. We were also privileged to speak on the record with four industry leaders: Don Gogel of Clayton, Dubilier & Rice; Britt Harris of UTIMCO; Adrian Orr of New Zealand Superannuation Fund; and Veronica Wu of Hone Capital. We hope this combination of perspectives will provoke reflection, dialogue, and change.

This volume starts with a look at some recent research from the McKinsey Global Institute that suggests that the past 30 years of strong investment returns may soon give way to an era of lower returns. We follow with the highlights of our recent research on how the world's leading institutional investors are rethinking portfolio construction. We also feature perspectives on the coming of age of real estate as an asset class; the irrepressible rise of sustainable investing; and a snapshot of our recent research on the burgeoning market for education in the United States.

We hope you enjoy these articles and find in them ideas worthy of your consideration. Please let us know what you think: you can reach us at Investing@McKinsey.com. You can also view these articles and many others relevant to investing at McKinsey.com and on our McKinsey Insights app, available for Android and iOS.

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Personal genius and peer pressure: Britt Harris on institutional investing

A “two way” investor/manager reflects on the “Texas Way,” forging relationships with asset managers, and finding your genius.

Grant Birdwell and Bryce Klempner

Britt Harris joined the University of Texas Investment Management Company (UTIMCO) as president, CEO, and CIO in August 2017, after leading the Teacher Retirement System of Texas (TRS) for more than a decade.

In that earlier stint, Harris was instrumental in developing what has become known in the industry as the Texas Way of institutional investing. Shortly after joining UTIMCO, Harris spoke with McKinsey’s Grant Birdwell and Bryce Klempner.

McKinsey: *You’ve developed the so-called Texas Way of investing. How would you describe it?*

Britt Harris: When I came back to Texas, I came from a big private fund. There, success was to beat your benchmarks, stay within your risk parameters, meet with the board once a year for half an hour, tell a couple of interesting stories about the markets, give your evaluation of the future, talk about a couple things you’re working on, and get out of there in 29 minutes. Many public funds, on the other hand, have six or eight board meetings a year that run for two days each. It was a big adjustment, and it points to a key component of the Texas Way. At its core, the Texas model is to go from robber baron to professional management. In the robber-baron era, say the 1940s, the board and the management of most enterprises were 90 percent the same people. In the robber-baron model, you hear people talk about “the staff.” It suggests, “We make the decisions. These people are our staff; they’ll do the research for us, but we have the ball.” I had never heard the term “staff” applied to a professional investment team until I came to a public fund.

After the 1940s, most organizations moved to a professional-management model, where the board says, “None of us have ever done this, so let’s hire somebody who knows how to do it.” For investment funds, the role of the board becomes to hire the CEO; give the CEO return objectives, risk parameters, and resources; and install an independent audit process. It’s an agency structure that is much more productive and stable and can produce better returns. Because the professional-management structure is so unusual in the US, you create a massive strategic advantage just by doing that.

With that professionalization come a lot of other desirable characteristics: respect for people, a culture that emphasizes the mission, stronger processes, deeper capabilities, and carefully cultivated relationships (see sidebar, “The Texas Way”).

The Texas Way

The Teacher Retirement System of Texas gained wide notice for its distinctive style of investing and results under Britt Harris’s leadership. In the interview, Britt characterized the Texas Way as follows:

People. The Texas Way features an effective agency structure that attracts, employs, trains, and retains highly skilled people. It seeks people of high character and intelligence, and places them in their areas of “personal genius.” Its compensation is competitive and well aligned with its long-term objectives.

Culture. The approach includes an “extreme culture” that emphasizes the greater mission of serving members. Leadership provides the example and sets the tone.

Processes. The Texas Way uses standardized, reputable processes that can be communicated easily within the organization, to external partners, and to the board, and that promote continuous improvement. They emphasize collaboration and teamwork: everyone is rowing in the same direction. There are no silos, and everyone is accountable. The goal is to be streamlined and nimble in order to take advantage of unique opportunities.

Core capabilities. The approach places significant focus on highly professional risk management, significantly differentiated research, and a clear focus on competitive advantages.

Relationships. The Texas Way emphasizes significant engagement with strategic partners, collaboration with premier networks of investors and managers, and making it easy to do business. It frowns on one-time deal-making relationships. Its premise is that the kinds of relationships it seeks create a preferred destination for managers seeking large, long-term, and attractive investments. In its relationships, it seeks what is fair and just for its “customers.”

McKinsey: *The Texas Way has worked very well for you. But it's not the only way. Many in the industry are attracted to the so-called Canadian model. How do you see the differences between the two?*

Britt Harris: As I understand it, the Canadian model basically focuses on a few things. First, they are trying to bring investments in-house, getting rid of as many GP [general partner] relationships as they can. They're basically creating an in-house investment bank, competing directly against other investors from within. So they're attracting many, many people. The compensation is not that far off a bulge-bracket bank, but it's a better job than at the big banks, in my view, because they have more control over what they're doing, and they have a higher purpose. So I think about the Canadian model as focused on being competitive with global GPs, while the Texas model is more focused on being collaborative.

Second, some of them have such massively positive cash flow coming in over the next 20-plus years that they're able to make commitments based on a fund size that's much larger than their current size. You look at some of the commitments made to coinvestment in particular and think, "Who has this much money?" Every single transaction, it seems, they're in there with $500 million. They're able to do that because the probability that they're going to be, say, two times their current size is very high, because of their funding source.

Finally, the Canadians have a completely different agency structure from the US, one that is not controlled by government in the same way. It's really more of a professional-agency structure.

McKinsey: *Your approach favors collaboration over competition, including in your relationships with external asset managers. You're well known for having pioneered innovative strategic partnerships with fund managers. How do these work?*

Britt Harris: Let me explain this in a roundabout way, using an anthropological theory I heard from the CEO of a large US bank. Imagine early pilgrims showing up at Plymouth Rock. Over time, some stayed in Boston, some went to Texas, and some went West. He said the problem Northerners have, and he counted himself in that number, is that they never had to worry too much about who people were, at least in terms of safety. So New Yorkers tend to lead with what they know. They come down South and start with, "I'm going to tell you how smart I am," and they can't figure out why they don't get traction. Whereas the ones who went to Texas lived on the prairie in a little wooden hut with nobody for 100 miles in any direction. You can imagine in that context that when suddenly your little girl runs into the hut and says, "Daddy, there's somebody on the butte," you cared first and foremost about who that person was, not what they knew. For people down South, trust matters a lot more. We want to know who you are before we care about what you know. Once we're convinced that you have high integrity and you have high character, then we're all ears.

So again, the Texas model is collaborative rather than competitive. We select firms that we put on a "premier list" after we've fully vetted their character and their capabilities. Then we try to be one of their five most important customers—not just the largest, but the most committed, the most professional, and the easiest to do business with.

We don't believe in one-night stands. We believe in long-term relationships—making commitments and sticking to them. That's absolutely essential in terms of trust. I want to know that you're going to be sitting in that exact same chair next year and two or three years from now. I don't expect you to be perfect, but I don't want to have to worry about you trying to sell me something just to get it off your books.

McKinsey: *Many limited partners want to be their GPs' favorite client. What do you have to do to get there?*

Britt Harris: First, you have to pay your way. I always tell people that we don't want something for nothing. We just want to get the value we're requesting from what we're paying, and I want our payment to be aligned. When I first started strategic partnerships back in 1994, I asked, "What does it take to be an important client?" Nobody knew. They literally couldn't answer it, or they wouldn't answer it. Eventually, I said, "If we're in the top 10 percent of your customers, we warrant this or that. If you're willing to commit more and pay more in absolute terms, your basis points actually come down, and you ought to get a differentiated service."

When I moved down here to take the TRS job, I'd always had a lot of collaboration in prior roles with one of the big global investment banks. After being here in Austin for a month, I received a phone call from that bank's CEO, asking how things were going. I said that in my first month I hadn't received a single phone call or email from his firm. He said, "What? I'm coming down there personally." A month later, he came for a visit, we had lunch, and he was very receptive to feedback, saying, "Tell me what we can do to improve." I told him, we drove back from lunch, and I left him in his car. TRS was in a four-story building at that time. By the time I took the elevator up four stories and got out—no more than two minutes—I had five urgent messages from people at this firm all over the world. When you're working in a collaborative and engaged way with people who care about each other and trying to improve themselves through collaboration, then you can get an amazing result. So I believe in positive peer pressure.

McKinsey: *But even while collaborating, you're negotiating with your partners at times. How do you think about pricing, particularly in alternatives?*

Britt Harris: Anytime you go into a negotiation, you're seeking alignment, and you're seeking what is fair and just. I stay on that point until the other side can show me something that is in fact fair and just. That's market based: "We looked at the market, we looked at you, we looked at us, we looked at what we're doing together. This is our best shot at what's fair and just." It doesn't always happen in investing. The hedge-fund community has produced net results that are not fair and just, over the past ten years. We can give them the benefit of the doubt: they actually thought it would be fair and just, because they thought their returns were going to be a lot higher, so it wouldn't be an issue. Hedge funds produced, say, 5 percent gross in recent years. But if our returns from them were 3 percent or 2 percent or 1 percent, then I say, "Wait a minute—this is not fair and just. We don't give you money so that when you make a little return, you keep most of it." They fooled the whole industry by saying that when you're in a low-return environment, alpha is more important, so therefore it's OK if we keep more of it. I disagree. When returns are lower on a gross basis, the customer needs more of that, not less of it. So we said to our hedge funds, "Under no circumstances should we receive less than 70 percent of the gross alpha." You have to think through the flaws in the current model. The big flaw in the current model, where we can help them out, is that we can actually pay for outperformance in a down market.

McKinsey: *You have also innovated in netting performance across mandates.*

Britt Harris: That's right. We believe in paying at the bottom line. This may be the part of the Texas model that is the most differentiated and perhaps the least achievable for others, because we did it first, at a time when the GPs were receptive. We weren't nine years into an economic expansion. There are certain expectations for research and coinvestment and collaboration and all those things, but our partners are paid at the bottom line, and they're paid against what's called a "happy rate."

McKinsey: *A happy rate?*

Britt Harris: It's the return that will make our beneficiaries happy. I went to the whiteboard, wrote a number on it, and said, "This number over a reasonable period of time is what will make us happy, and if we don't get this number, then we're going to pay less. When you hit that number, we're perfectly happy to pay what everybody else is paying, and in fact, we hope you do hit that number and higher." The GPs don't lose anything on the upside.

Now that many of the GPs have gone public, it's easier to negotiate with them, because their numbers are in their prospectuses: "This is what we made in the past, so buy our stock." When I compare these numbers in the prospectus with

Britt Harris

Vital statistics
Born in 1958, in Bryan, Texas
Married, with 3 sons and 1 daughter

Education
Holds a bachelor of business administration in finance from Texas A&M, 1980

Career highlights
University of Texas Investment Management Company
(2017–present)
President, CEO, and CIO

Teacher Retirement System of Texas
(2006–17)
CIO

Bridgewater Associates
(2005–06)
CEO

Fast facts
Member of President's Working Group on Financial Markets

Member of Investor Advisory Committee on Financial Markets, Federal Reserve Bank of New York

Executive professor of finance at Texas A&M University

Ranked as second "most powerful asset owner" in *Chief Investment Officer* magazine's "2016 Power 100" what I need to be happy, there's a huge spread. So either tell me that you're not going to be able to make these historical numbers in your prospectus, or tell me why we're arguing.

McKinsey: *What are the operational implications of netting?*

Britt Harris: It gives GPs a greater ability to add value. The big four asset classes are private equity, real estate, energy, and credit. GPs can have a neutral position in each one, but also a range. If credit suddenly becomes unattractive and energy becomes really attractive, you don't have to come back to us for approval. The Texas model also requires that GPs assign people to our strategic relationship. When those people wake up in the morning and they have to think about all their customers, the face that should come to mind is the face of the Texas person because we are their favorite customer—not because we're pushovers, but because we're collaborators, because we have a commitment to them, we know how they operate, we've been transparent, and we have a personal relationship.

McKinsey: *In illiquids, TRS ended up developing a strategic partnership with two GPs. How would the dynamic have been different in your view if you had decided to partner with one GP rather than two?*

Britt Harris: I don't know. I would never do it that way, because I believe in positive peer pressure and some diversification. What made us different was our ability and our willingness to give what was then a $3 billion account. If I decide to write six $500 million checks instead, I've just given up much of my unique competitive advantage.

McKinsey: *In building these special partnerships with multi-asset global managers, how much depends simply on being large enough to get their attention?*

Britt Harris: There are big funds and smaller funds, but you have to remember, even $30 billion or $40 billion is still a monster fund. When you talk about these managers with multi-asset-class platforms, the Texas model is not either-or. The strategic partnerships at TRS were 10 percent of the fund. The other 90 percent was not entirely different in its external relationships than many other funds.

McKinsey: *It seemed like you used the 10 percent to keep the other 90 percent honest.*

Britt Harris: That positive peer pressure is always a good thing.

McKinsey: *Investment organizations depend on attracting great people. What do you look for?*

Britt Harris: If you want to win the game, it's the plan plus the people. You have to attract A players. In my view, they have a few consistent features:

"If credit suddenly becomes unattractive and energy becomes really attractive, you don't have to come back to us for approval."

one, high character; two, high intelligence; three, they're fully engaged in everything they do; four, team player; and five, willing to take individual responsibility. You put those kinds of people in the right kind of structure and give them support, and they're going to do amazing things. But if they're not those kinds of people, it doesn't matter what structure you put them into. The most dangerous person you can hire is a really smart person with really low character. You have to pass through character and integrity first; you have to be for the fund before you're for yourself. And that takes a certain type of person and a certain type of culture.

McKinsey: *You didn't mention a person's experience. You have a strong reputation as a talent developer. Does that suggest prior experience is secondary for you?*

Britt Harris: Experience is important. But most people have one year of experience 20 times, not 20 years of experience. After a person graduates from school, there's a lot of low-hanging fruit for growth and development. But then you get to 35 or 40, and you've run a discount model 1,000 times, or you've done 2,000 due-diligence models. Does that represent growth? I'm not against experience. If you can find people who actually have 20 years of experience and those characteristics I mentioned, they are valuable. If the person has experience but doesn't have those characteristics, it's not going to work.

McKinsey: *Many public funds struggle with employee churn. When you talk to any of the big asset managers who form strategic relationships with public funds, this is among their top worries in building a structure like this—how much continuity will we have? How do you create that over time?*

Britt Harris: People say that you can't attract A players to a public fund, but you absolutely can. You do have to take care of compensation first. You don't need Wall Street–level compensation, but you at least have to make compensation a nonissue. You need the right culture that attracts the right people for the right purpose. And you need the right agency system. Our turnover at TRS was around 5 percent. People should want desperately to come to a fund like UTIMCO, and they should want to stay here, because we manage a lot of money for a really important purpose. When you come, then you're working with people that you respect and admire, in a culture that is high integrity and well respected around the world. And you can work with a $40 billion or a $140 billion fund, and get well paid. That's heaven on earth. We think that we are in the most competitive position possible.

McKinsey: *What sort of culture attracts the right people?*

Britt Harris: In New York City, people describe their hours as terrible, 24/7. They complain about it, but they are also proud, as if only they could do this work. I was in New York City for a long time, and I bought into this for too much of my life. Then I came to TRS, and I asked people, "What kind of culture would you like to have?" And the answer was, "We want a lot of work–life balance." That was the number-one thing. My reaction to that was: "Me too!" I'm married, I have kids, I have lots of interests. That said, I'm not willing to retire and say at my farewell address, "Thank you for the great work–life balance I had. Sorry I underperformed and cost you billions of dollars, but it was good for me." A high-character person is not willing to make that trade. But I'm also not willing to give up my work–life balance.

That presents a problem. Our competitors say they're working 24/7 and have given up all work–life balance to compete against us. If you're going to work 8 to 5, competing against somebody who's working 24/7, and you think you're going to outperform them, then you're either very naive or very arrogant. So I started thinking about the 24/7 model. Why is it

24/7? Is it that the work is so hard, so different, and there's so much of it that it takes all day and night to accomplish? And there are only five people in the whole world who can do it? That's absurd. It's a brute-force model. The reason they work so long is that they do things by brute force. The Texas model is to do things with your personal genius—that part of your personality and intelligence that is especially advanced. When our people sit down and apply themselves in their area of personal genius, combined with a greater purpose, we create a culture in which people can succeed.

McKinsey: *How do you identify a person's area of personal genius?*

Britt Harris: There are all kinds of work that each person can do well. First, you have to realize you actually have a personal genius. The thing that people know the least about is themselves. So we do a lot of work on who you are and where you really thrive. For me, my personal genius is in administration and in teaching and giving.

McKinsey: *What then are the highest priorities for other sorts of personal genius to surround yourself with?*

Britt Harris: I have to surround myself with people who are strong in areas where I am not, whom I trust. The Texas model is in part about diversity of thinking, and diversity of thinking comes from knowing what your personal genius is, what your perspective is. That helps you work on your strengths.

It's also about working on your constraints, which is just as important. You alleviate your constraints by understanding what they are, and you have to learn how to overcome them. People who maximize their strengths and alleviate their constraints get to their personal genius much faster, much more effectively. It usually takes a long time for people to accept that this is important. Those who do accept it are the fastest to learn and the first to succeed.

McKinsey: *Many institutional investors are thinking about collaboration not only with external partners but also within their organization, among teams. What works well in that regard?*

Britt Harris: Internally, you break down silos with compensation and with culture. Everybody should have a significant component of their compensation based on the total fund results. The higher up you go in the fund, the larger that component should be. It should be crystal clear; 80 percent should be quantitative. But getting compensation right is only part of it; you also need to get the culture right, so that people realize they have to collaborate. Left to themselves, many people unfortunately tend not to collaborate, so it has to be led from the top. At many large funds, I regret to say that there is a gaping hole in the rank and file's ability to articulate their culture. Culture, compensation, leadership, and agency structure have to all coalesce to break down these barriers. It takes time. ■

Bryce Klempner is a partner in McKinsey's New York office. **Grant Birdwell** is a senior adviser to McKinsey.

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Look out below: Why returns are headed lower, and what to do about it

Investment professionals may have been spoiled by a long run of exceptional returns. We will find out soon.

Duncan Kauffman, Tim Koller, Mekala Krishnan, and Susan Lund

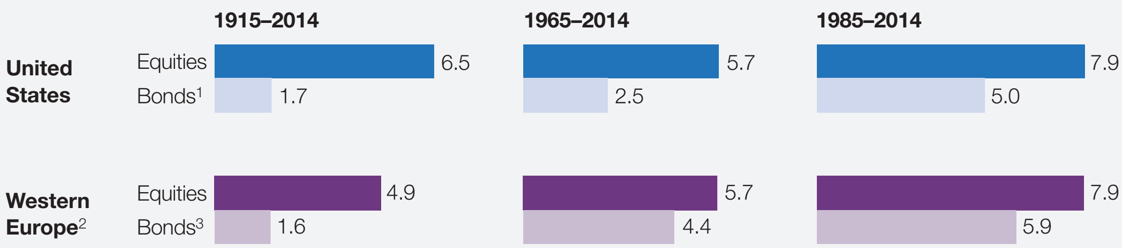
The past 30 years of investing were marked by extraordinary highs and lows. But one thing was consistent: exceptionally strong returns. Since the mid-1980s, US and Western European equity and fixed-income returns have easily outperformed the long-term average of the past 50 and 100 years. Despite repeated market turbulence, real total returns for equities investors for the 30 years between 1985 and 2014 averaged 7.9 percent in both the United States and Western Europe. These were 1.4 and 3.0 percentage points, respectively, above these regions' 100-year averages. Real bond returns in the same period averaged 5.0 percent in the United States, 3.3 percentage points above the average, and 5.9 percent in Europe, more than three times the 100-year average (Exhibit 1).

In recent years, the exceptional economic and business conditions that propelled these returns have weakened or changed course. Our new research finds that the next two decades could see lower US and European equity and bond returns. As part of our investigation, we noted that some professional investors, including large US pension funds, may not have significantly altered their underlying assumptions about returns, and continue to expect them to perform in line with the recent past. This article explains our analytical framework, and then focuses on three insights

Exhibit 1

Returns on equities and bonds have been high over the past 30 years relative to the long-term average.

Total real returns, based on 3-year average index at start and end years, annualized, %



[1] Time frame between 1914 and 1927 calculated using Dimson-Marsh-Staunton data. Bond duration for 1928 and later is 10 years.
[2] European returns are weighted average real returns based on each year's Geary-Khamis purchasing-power parity GDP for 14 countries in Western Europe: Austria, Belgium, Denmark, Finland, France, Germany, Ireland, Italy, Netherlands, Portugal, Spain, Sweden, Switzerland, and United Kingdom. Austria, Germany, and Italy are excluded from 100-year calculations. Each country's consumer price index is used to calculate its real returns.
[3] For Europe, bond duration varies by country, but Dimson-Marsh-Staunton database targets bonds having a 20-year duration.

Source: McKinsey Global Institute analysis

from our research that could guide investors in this transition.

Investment returns and the link to the real economy: An analytical framework

Our recent research at the McKinsey Global Institute (MGI) into historic and future drivers of corporate profitability[1] has prompted us to take a closer look at investment returns. While we do not seek to predict short- or medium-term market trends, we have developed an analytical framework that links equity and bond returns to underlying business and economic fundamentals. Institutional investors have long sought to identify factors that drive returns in equities and fixed income. Some calculate a long-run average equity return and use this to estimate a historical equity-risk premium. Others use a discounted cash-flow model, with equity returns calculated based on assumptions for GDP growth, inflation, dividend yields, and price-to-earnings (P/E) ratios. This approach typically requires assumptions for variables such as dividend yields or P/E ratios that are not directly economic and business variables.

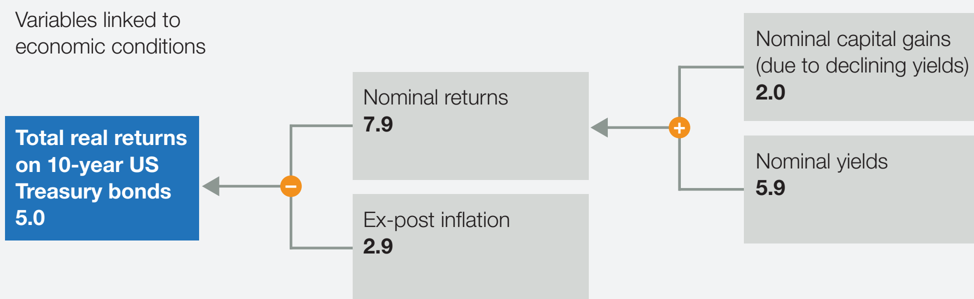
Our approach builds on these, but we seek to link equity and fixed-income returns directly to the real economy and to business fundamentals. We base our analysis on four principal factors: inflation, interest rates, real GDP growth, and corporate profit margins.

For bonds, the essential elements of total returns are yield to maturity and capital gains or losses driven by changes in the yield to maturity (Exhibit 2). Interest rates are the critical determinant of a bond's price after issuance: it rises as prevailing interest rates fall and vice versa, resulting in capital gains or losses for

Exhibit 2

There have been two main drivers of fixed-income returns in the past 30 years.

Contribution to fixed-income returns, United States, 1985–2014, annualized,[1]
%



[1] Based on 3-year average index at start and end years. Figures may not sum, because of rounding.

Source: McKinsey Global Institute analysis

the bondholder. Higher inflation has an impact on fixed-income returns by raising nominal interest rates, but it also has an impact on the real yields on bonds. This is because investors demand a risk premium to compensate for expectations of inflation in the future, but realized inflation may be lower or higher than expected. As investors replace maturing bonds in their portfolio, the nominal yield of the new bond may be higher or lower than that of the bond it replaces.

For total equity returns, two direct components are similar to those of bonds: price appreciation and cash returned to investors in the form of dividends and share repurchases.[2] A third element is ex-post inflation.[3] Exhibit 3 lays out the “tree” of factors, of which the first two are by far the most important.

Consider price appreciation first. This element is determined by a company’s earnings growth (which is in turn driven by growth in revenue and change in margins) and changes in the P/E ratio.[4] Revenue growth, in its turn, is driven by GDP growth and the firm’s sales growth in excess of GDP growth. Changes in the P/E ratio reflect investors’ expectations of future earnings growth, return on equity, inflation, and the cost of equity.

The second element, cash returned to shareholders, is determined by earnings after reinvestment into the business to drive future growth. The payout ratio measures the share of total earnings available to return to shareholders and is a function of nominal income growth and the marginal return on equity.[5]

The past 30 years were a golden age for returns

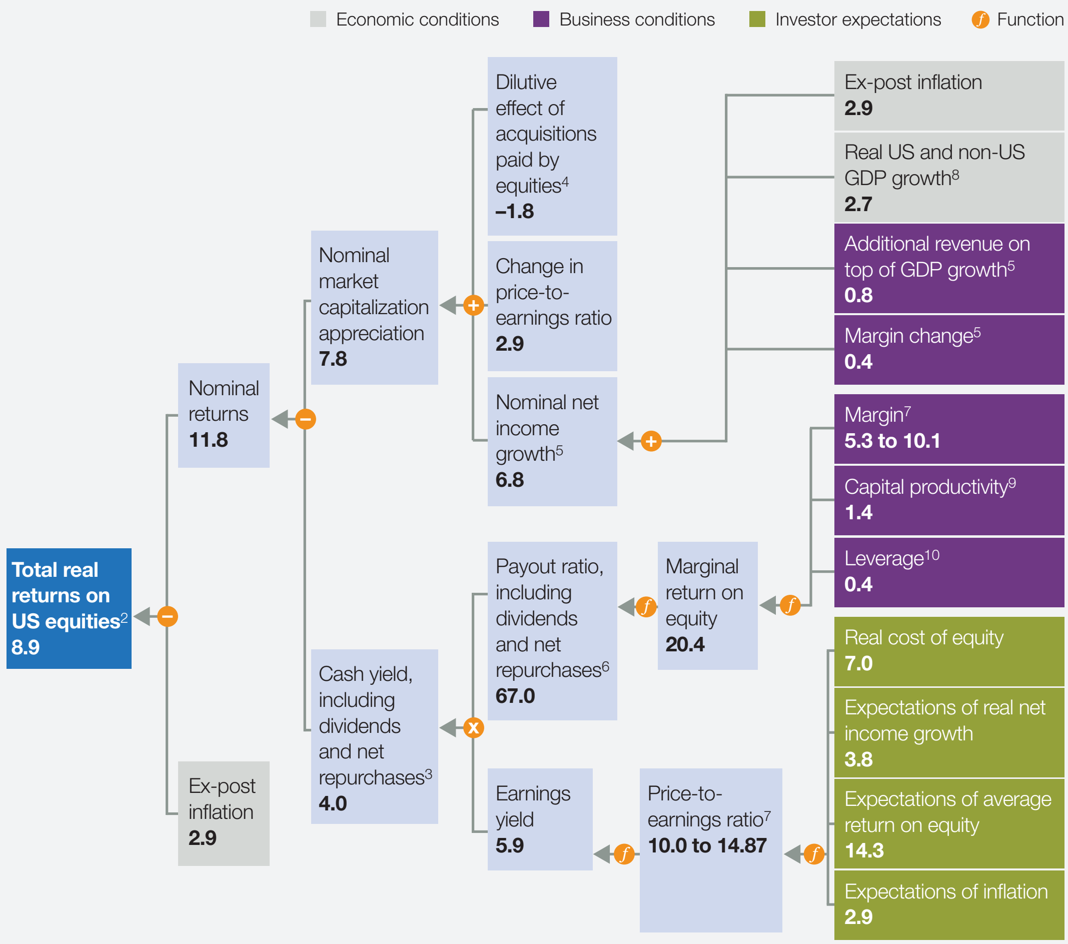
Three of the four economic and business fundamentals we use for our analytical framework produced exceptional results during these three decades, relative to the past 50 years. And the fourth was also strong during this time frame.

- *Inflation declined sharply.* The three-decade decline in US and European inflation, led by the drop that followed the oil shocks and erratic monetary policy of the 1970s, has significantly

Exhibit 3

A 'tree' of factors illustrates the drivers of equity returns for the past 30 years.

Contribution to equity returns, United States, 1985–2014, annualized,[1] %



[1] Figures may not sum, because of rounding.
[2] Real returns in this exhibit are based on nonfinancial institutions in the S&P 500 and were used for the sole purpose of understanding the drivers behind 30- and 50-year returns. Given the different coverage of companies here, values for returns may vary slightly from those of US equities shared elsewhere in this report. GDP growth was based on a weighted average of US and non-US GDP growth, based on share of domestic vs overseas corporate profits.
[3] Calculated as product of payout ratio and earnings yield.
[4] Acquisitions paid for with shares rather than cash.
[5] Includes cross terms.
[6] Calculated as 1 – (nominal net income growth ÷ marginal return on equity).
[7] Refers to 3-year average at start of period and 3-year average at end of period.
[8] Based on weighted average US + non-US GDP growth.
[9] Average capital productivity over past 30 years.
[10] 30-year average of total debt divided by sum of total debt and book value of equity.

Source: McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis benefited investment returns. In the United States, consumer price inflation averaged 2.9 percent over the 30-year period, considerably less than the 50-year average of 4.3 percent. The high inflation of the 1970s led to unusually low P/E ratios (between roughly seven and nine). Typically P/E ratios fall because investors reduce their cash-flow expectations, since companies have to invest more of their profits to achieve the same real profit growth. Investors also demand higher nominal returns to offset their concerns about declining purchasing power of future dividends, increasing nominal discount rates. The low P/E ratios of the 1970s and 1980s were a direct consequence of the high inflation investors had come to expect, and the subsequent rise in P/E ratios as inflationary fears subsided was the biggest contributing factor to the high equity returns of the past 30 years, as we discuss below.

Inflation also affects real equity returns through the payout ratio, which was 67 percent over the past 30 years, compared with 57 percent in the past 50 years, when inflation was higher.

For fixed-income returns, capital gains from declining nominal interest rates were a key contributor to higher returns in the past 30 years. Falling inflation explains part of this decline in nominal rates, but it also contributed to a decline in real interest rates, after central banks brought inflation under control in the 1980s and helped reduce investors' inflation risk premium.

- *Real interest rates fell.* The propensity to save rose while the global investment rate fell. Some researchers have estimated that, in real terms, global interest rates declined by 4.5 percentage points between 1980 and 2015.[6] For mature economies, the drop was even larger: prior MGI research has shown that real interest rates on ten-year government bonds declined from 8.6 percent in 1981 to 1.7 percent in 2009.[7] A critical factor driving the propensity to save is favorable demographics, which increased the share of the working-age population and reduced the dependency ratio, especially in China.[8] This resulted in a massive inflow of savings from emerging markets into the US and other advanced-economy financial markets—the so-called global savings glut.

  Interest rates directly affect fixed-income returns, as discussed above. Changes in real interest rates can have an impact on share prices and equity returns as well, through portfolio rebalancing, where low yields on fixed-income securities result in an increased demand for equities, thus driving up prices. Other ways that rates can affect equity returns include changes in the cost of equity and in companies' interest payments. Our research found that interest expense has had a small effect, as corporate margins rose with lower interest expenses. But the other two avenues have not had an effect.

- *Favorable demographics and productivity gains fueled global GDP.* Between 1985 and 2014, global GDP growth averaged 3.3 percent per year globally, compared with 3.6 percent between 1965 and 2014.[9] The past 30 years have not been exceptional, compared with the past 50 years. However, GDP growth in both time frames has been strong. Two components of historical GDP growth are notable, particularly with a view to prospects for future growth. The first was brisk growth in the working-age population. MGI research has found that in the G-19 and Nigeria (our proxy for global growth), the share of the population of working age climbed from 58 percent in 1964 to 68 percent in 2014. As a result, employment in this group of 20 economies grew at an annual rate of 1.7 percent during this period, contributing about 48 percent of their GDP growth.

Rising productivity, the second factor, generated the other 1.8 percent of global GDP growth, contributing 52 percent to growth between 1964 and 2014.[10] A number of factors propelled productivity growth, including a shift of employment from low-productivity agriculture to more productive manufacturing and service sectors, growing automation and efficiency in operations, and increasing integration of the world economy that led to more productive modern businesses gaining share from less productive ones. China is the leading exemplar of these trends; it alone contributed about 30 percent of the GDP growth of the past 50 years within the G-19 and Nigeria.

- *Corporate profit margins were exceptionally healthy.* The past three decades have been exceptional times for North American and Western European multinational companies, whose profits grew much faster than global GDP. In the United States, an increase in net income margins directly contributed one-third, or 1.1 percentage points, of the higher real equity returns of the past 30 years compared with the past 50 years. Overall, global corporate after-tax operating profits rose to 9.8 percent of global GDP in 2013 from 7.6 percent in 1980, an increase of about 30 percent.[11]

  Companies were able to grow revenue by accessing the growing global consumer class in emerging markets. Corporate revenue more than doubled from $56 trillion in 1980 to more than $130 trillion in 2013, driven by the growth in consumption and investment. Today, nearly one-third of all US firms' profit comes from overseas, compared with about 15 percent in 1980. As companies increased their revenue, they also benefited from declines in their cost base. More than one billion people joined the global labor pool during this period, allowing firms in labor-intensive industries to benefit from lower labor costs.[12]

The effect on returns

These four fundamentals had a profound impact on bond and equity returns. Start with the simpler story. The most important factor for bonds was the large capital gains driven by declining interest rates, which accounted for 1.8 percentage points of the 2.5-percentage-point difference between 30-year and 50-year returns (Exhibit 4). Lower-than-expected inflation contributed an additional 1.3 percentage points. These factors were partially offset by the change in nominal yields over the two periods. The same factors affected Western European fixed-income returns.

For equities, changes in P/E ratios played a decisive role in lifting returns; together with other factors, they lifted returns by 3.3 percentage points over the past 30 years (Exhibit 5). A higher P/E ratio accounted for 2.5 points of that difference. As discussed, P/E ratios moved higher because of declining inflation and increasing margins. Growth in profit margins in the past three decades accounted for 1.1 points. On the other hand, slightly higher real GDP growth in the 50-year period trimmed 30-year returns by 0.3 percentage points.

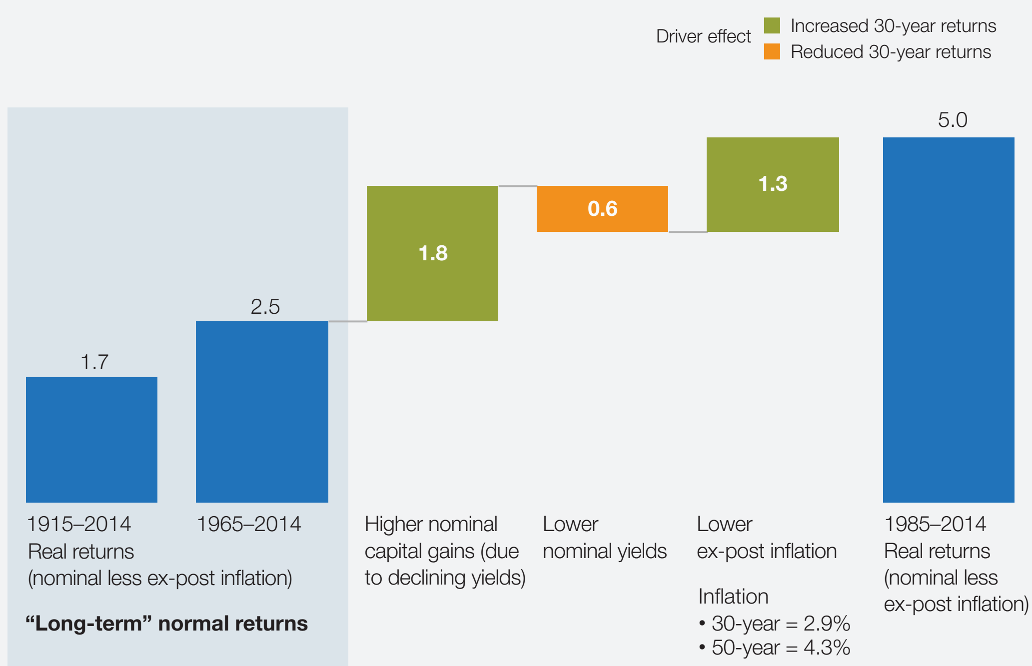
The next 20 years will likely be more challenging

The fundamental economic and business conditions that contributed to the above-average returns of the past 30 years are weakening and in some cases are in the process of reversing. As a result, investment returns over the next 20 years are likely to fall short of the returns of the 1985–2014 period.

Exhibit 4

Declining yields and lower inflation drove higher bond returns in the United States in the past 30 years.

Fixed-income returns, 10-year US Treasury bonds, annualized,[1]
%



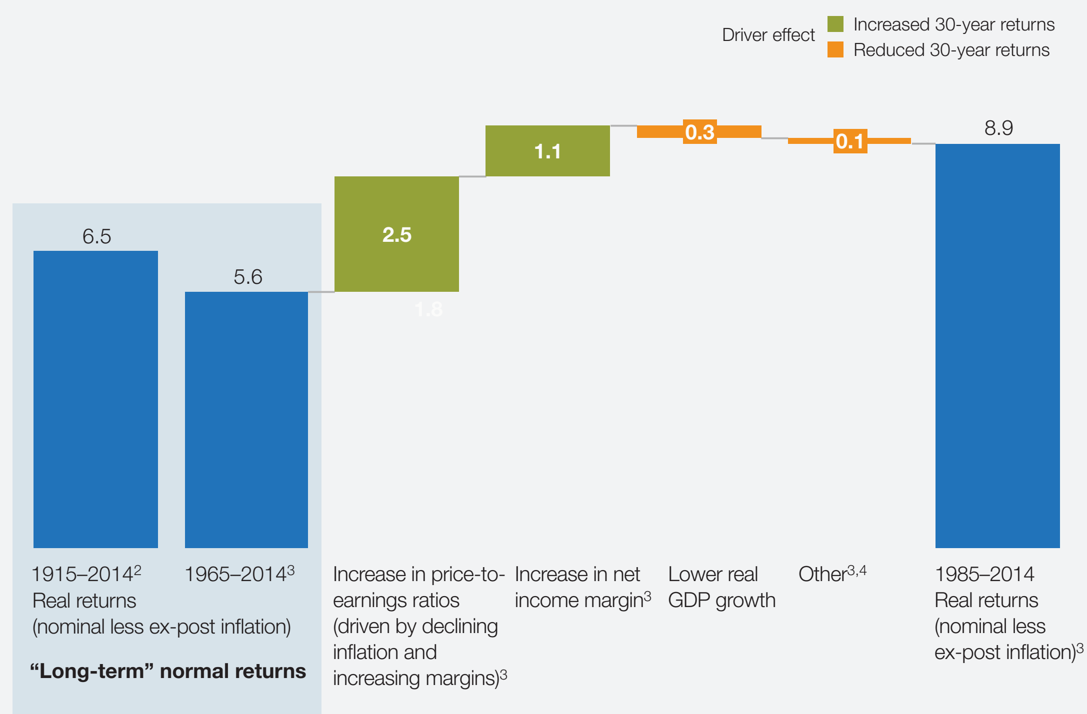
[1] Based on 3-year average index at start and end years. Figures may not sum, because of rounding.

Source: Damodaran database, Stern School of Business, New York University; Dimson-Marsh-Staunton Global Returns database; McKinsey Global Institute analysis

- *The steep drop in inflation and interest rates is unlikely to continue.* Inflation is at about 1 percent in the United States and at zero or just below in the eurozone, far below historic average rates. Interest rates, too, are unlikely to fall much further. As we have seen, steep declines in both inflation and interest rates in the past three decades were primary drivers of the exceptional returns but are unlikely to provide a similar boost in the future.

- *Stalled employment growth could weigh on GDP growth.* An aging world population means that one of the twin engines that powered growth over the past half century—a growing pool of working-age adults—has stalled. Employment growth of 1.7 percent a year between 1964 and 2014 is set to drop to just 0.3 percent a year over the next 50 years in the G-19 countries and Nigeria. This leaves the onus on productivity growth to power long-term GDP growth. But

Exhibit 5 **Declining inflation and increasing margins drove higher equity returns in the United States in the past 30 years.**



[1] Figures may not sum, because of rounding.
[2] Based on Dimson-Marsh-Staunton Global Returns database and includes both financial and nonfinancial institutions.
[3] Based on data from McKinsey's Corporate Performance Analytics and only includes nonfinancial S&P 500 companies. Real returns in this exhibit were used for the sole purpose of understanding the drivers behind 30- and 50-year returns. Given the different coverage of companies here, values for returns may vary slightly from those of US equities shared elsewhere in this report. GDP growth was based on a weighted average of US and non-US GDP growth, based on share of domestic vs overseas corporate profits.
[4] Includes impact of revenue growth incremental to GDP growth.

Source: Dimson-Marsh-Staunton Global Returns database; McKinsey Corporate Performance Analytics; McKinsey Global Institute analysis

even if productivity were to grow in real terms at the rapid 1.8 percent annual rate of the past 50 years, the rate of global GDP growth would still decline by 40 percent over the next 50 years, so great is the decline in employment growth.

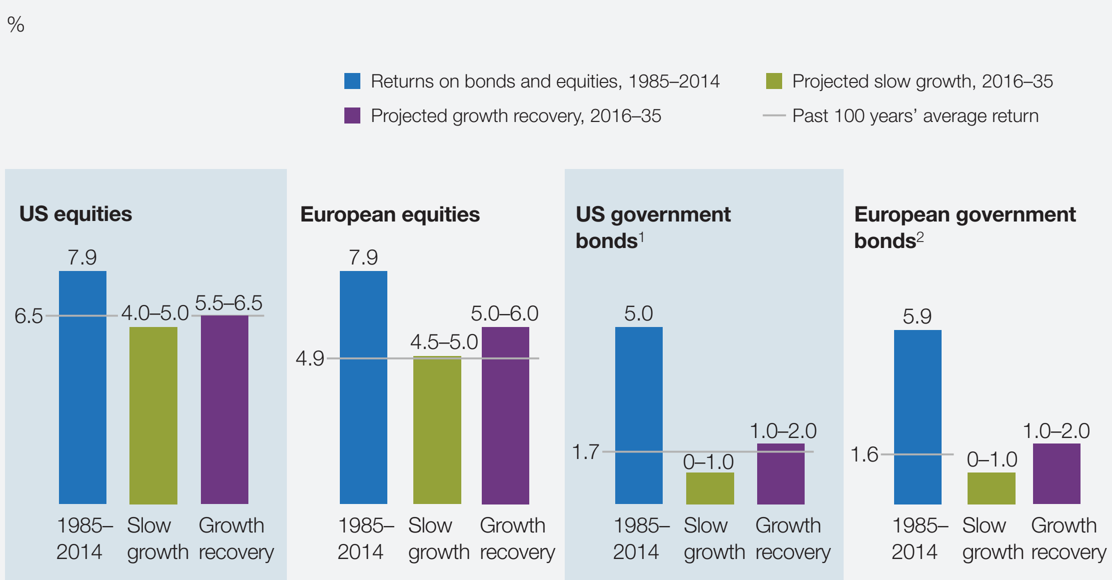
- *Businesses face a more competitive environment that could reduce margins.* The North American and Western European companies that benefited the most from growth of the global profit pool between 1980 and 2013 are facing tougher competition that could reduce their margins and profits. This heightened competition is coming from newcomers in emerging markets, many of which are more agile and play by different rules. But it is also coming from tech-enabled giants that are disrupting long-standing business models by converting huge amounts of industry value to consumer surplus at the expense of incumbents' profits. And it is coming from small and medium-size enterprises, which are gaining scale that enables them to compete with large enterprises, through online platforms such as Alibaba, Amazon, and eBay. This changing competitive landscape is likely to have an impact on profit margins. MGI research suggests that after-tax profits could fall from 9.8 percent of global GDP to 7.9 percent, reversing in a single decade the corporate gains of the past 30 years.[13]

We used our analytical framework to develop two scenarios for future returns. In the first, the slow-growth environment of today continues, while in the second, a growth recovery kicks in. In both scenarios, US and European equity and fixed-income returns over the next 20 years would be substantially lower than in the 1985–2014 period (Exhibit 6).

Under the slow-growth scenario, we assume average real GDP growth would be 1.9 percent over the next 20 years in the United States.[14] Employment would grow at 0.5 percent per year, and productivity at 1.5 percent per year in the United States. In this scenario, our model suggests that nominal interest rates on ten-year US government bonds would rise, but only slowly, reaching 2 to 3.5 percent. Inflation would remain benign, averaging 1.6 percent over the next 20 years,

Exhibit 6

In two growth scenarios, returns over the next 20 years would be substantially lower than in the 1985–2014 period.



[1] Time frame between 1914 and 1927 calculated using Dimson-Marsh-Staunton database, which targets a bond duration of 20 years. Bond duration for 1928 and later is 10 years.
[2] Historical returns for Western European fixed-income are based on Treasury bonds using data from Dimson-Marsh-Staunton Global Returns database, which targets a bond duration of 20 years. Future returns show ranges across a set of countries and are based on 10-year bonds.

Source: McKinsey Global Institute analysis reflecting weak demand. Under this scenario, real equity returns for investors could fall to between 4 and 5 percent over the 20-year period. This would be around three to four percentage points below US real equity returns of 7.9 percent from 1985 to 2014. P/E ratios would fall from an average of 17 today to 14.5 to 15.0 over the 20-year period, as investors adjust their expectations downward. Total returns on fixed-income investments could be between 0 and 1 percent over the next 20 years. This is 400 to 500 basis points below total returns in the past 30 years, and 150 basis points lower than the 50-year average of 2.5 percent, also below the 100-year average of 1.7 percent.

Under the growth-recovery scenario, productivity growth accelerates, thanks to technical advances, and leads to real US GDP growth of 2.9 percent per year. At the same time, if US companies could match the performance of their best-performing industry or global peers, companies could maintain their post-tax margins at roughly today's levels, ranging from 9.6 to 10.1 percent. Even under this scenario, however, we find that investment returns would not live up to past expectations. Total real returns on US equities could be about 5.5 to 6.5 percent—about 140 to 240 basis points below the 1985–2014 average. Real fixed-income returns over the next two decades could be about 1 to 2 percent, or 300 to 400 basis points below the returns of the past 30 years.

The main drags on returns in this scenario are flat profit margins and P/E ratios. P/E ratios today are at 17 and are consistent with investors expecting about 2 percent inflation and 3 percent real earnings growth in future. Average P/E ratios in this scenario would remain at about 2015 values, ranging from about 16 to 17.5.

Investors in Western Europe should expect trends similar to those in the United States, though the magnitude of the potential fall in future returns is larger. In a slow-growth scenario, we estimate real equity returns could be about 4.5 to 5.0 percent over the next 20 years, more than 250 basis points below the average returns of the past 30 years, while in a growth-recovery scenario, they would be about 5.0 to 6.0 percent, close to their 50- and 100-year average but still well below the 1985–2014 level. Fixed-income returns would also decline, especially under a slow-growth scenario, when they would be more than 300 basis points below the returns of the past 30 years.

Lower your sights, tighten your belts

Lower returns could have a severe impact on asset owners and managers. Here, we highlight some of the potential consequences for four groups: defined-benefit public-employee pension funds, private-pension funds, traditional-asset managers, and alternative-asset managers.

Public-pension funds will face larger funding gaps

US public-employee pension plans are increasingly invested in equities. Over the past 30 years, their allocation to fixed income has fallen from 75 percent to 27 percent.[15] And yet many defined-benefit plans face funding shortfalls. In an era of lower returns, these funding gaps would be even larger. In the United States, 90 percent of state and local employee defined-benefit retirement funds are underfunded, by an estimated total of $1.2 trillion.[16] Ten large public-pension funds, including the California Public Employees Retirement System, the California State Teachers' Retirement System, and the Illinois Teachers' Retirement System, account for nearly 40 percent of this total funding gap.

Worryingly, most pension funds are still assuming high future returns. An analysis of more than 130 state retirement funds showed that the median expected future nominal return (based on the discount rate used) was 7.65 percent in 2014. While this marked a decline from 8 percent in 2012, it is still above the returns in our growth-recovery scenario.

To deliver this 7.65 percent nominal return would require a real equity return of 6.5 percent, if real fixed-income returns are 2 percent and inflation is 2.4 percent. If fixed-income returns were lower at 1 percent in real terms, real equity returns would need to be as high as 7 percent.[17]

If returns match our slow-growth scenario, the funding gap for state and local funds could grow by $1 trillion to $2 trillion, assuming a portfolio mix of 30 percent bonds and 70 percent equities. In our growth-recovery scenario, the gap would still grow by as much as $0.5 trillion.

Many European public-employee defined-benefit pensions are "pay as you go," funded mainly by tax revenue rather than investment returns, and thus the pension funds themselves are not as directly exposed to equity and fixed-income markets as defined-benefit US public-pension funds. These unfunded pensions do face problems from changing dependency ratios. More pensioners and fewer workers will likely affect tax revenues.

Private-pension funds also will face funding gaps

Defined-benefit corporate-pension funds in the past few years have already experienced the impact of ultra-low interest rates through the increase in the present value of liabilities, as the liabilities of these plans are discounted based on corporate-bond yields. An analysis of the top 100 corporate plans found that liabilities increased by about 44 percent between 2007 and 2014.[18] This compares with an increase in assets of 12 percent over the same period.[19] While funding ratios have improved since the financial crisis, these companies still have a funding gap of about $300 billion.

A Willis Towers Watson survey of private defined-benefit pension funds found that expected rates of return for US private-pension funds averaged about 7 percent in nominal terms or 4.5 percent in real terms, lower than the rates assumed by public-pension funds.[20] For the United Kingdom, the average expected return was 5.7 percent in nominal terms or about 2.5 percent in real terms. These expected rates of return are roughly on par with our growth-recovery scenario, and hence higher than in our slow-growth scenario.

Traditional-asset managers may have to review investment strategies

Investment flows are increasingly moving away from active investment in equities and toward either passive low-cost products or alternatives and multi-asset classes. Between 2009 and 2014, €2.36 trillion ($2.66 trillion) flowed out of active equities, compared with a net inflow of €1.43 trillion ($1.61 trillion) and €1.06 trillion ($1.19 trillion) into multi-asset and alternatives, respectively.[21] This trend could be accelerated by low returns. Investors may seek to bolster returns or invest in products with much lower charges.

To confront this, asset managers may have to rethink their asset-gathering and investment strategies. One option would be for them to include more alternative assets such as infrastructure and hedge funds in the portfolios they manage. Another approach, paradoxically, could be to enhance capabilities for active management. As is well known, only a few active managers are able to produce consistently superior returns to passively managed funds. But such managers will be in even greater demand in the next 20 years. It's old news, but it's now even more important: active managers that can demonstrate a track record of success will likely take advantage of the new investing dynamics. For example, while average returns in the next 20 years could be lower, our prior research reveals that corporate profits are increasingly shifting from asset-heavy sectors to idea-intensive ones such as pharmaceuticals, media, and information technology, which have among the highest margins. Within these sectors, a winner-takes-all dynamic is taking shape, with a wide gap between the most profitable firms and others.[22] In such a world, active managers who can successfully identify the winners could realize outsize returns.

Alternative-asset managers face uncertainty

The questions for private equity firms and other alternatives managers are substantial. If equities and fixed income are entering a period of substantially lower returns, will alternatives be able to maintain their outperformance? Which firms will do best in the new environment? Will new models of alternative-asset management emerge? If performance drops below hurdle rates (8 percent, in many cases), what will the implications be for firms' ability to attract talent?

At this juncture, there are fewer answers than questions. For more, see "How private equity adapts: A discussion with Don Gogel" on page 53.

■ ■ ■

The experience of the past 30 years suggests that stock and bond returns are directly linked to underlying business and economic fundamentals. A sustained period of lower returns would have implications not just for professional investors but also for households, governments, endowments, nonprofits, and foundations. The National Center for Education Statistics estimates the total endowment for US colleges at about $425 billion at the end of 2012.[23] A three-percentage-point lower return could mean about $13 billion less for US colleges, putting pressure on these institutions, and on government for greater subsidies. Resetting expectations for less bountiful times, with less stellar returns than in the past three decades, is an essential starting point for all investors. ■

1 *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015, McKinsey.com.

2 Price appreciation is shown on Exhibit 3 as "Nominal market capitalization appreciation." Cash returned to investors is shown as "Cash yield, including dividends and net repurchases."

3 Inflation has an important but underappreciated effect on equity returns, affecting both payout ratios and price-to-earnings ratios. Higher inflation increases nominal net income growth, which in turn reduces the payout ratio and the cash returned to shareholders, unless companies are able to increase their return on equity sufficiently to offset the effect of higher nominal growth on required investment. For more, see Marc Goedhart, Timothy M. Koller, and David Wessels, "How inflation can destroy shareholder value," *McKinsey on Finance*, February 2010, McKinsey.com.

4 We have calculated price-to-earnings ratios by modeling the four factors shown in the exhibit. For more, please see the technical appendix in "Why investors may need to lower their sights," McKinsey Global Institute, May 2016, McKinsey.com.

5 Real returns in this exhibit are based on nonfinancial institutions in the S&P 500 and were used for the sole purpose of understanding the drivers behind 30- and 50-year returns. Given the different coverage of companies here, values for returns may vary from those of US equities shared elsewhere in this report. GDP growth was based on a weighted average of US and non-US GDP growth, based on share of domestic versus overseas corporate profits.

6 Mervyn King and David Low, *Measuring the "world" real interest rate*, National Bureau of Economic Research working paper, number 19887, February 2014, nber.org; Lukasz Rachel and Thomas D. Smith, *Secular drivers of the global real interest rate*, Bank of England staff working paper, number 571, December 2015, bankofengland.co.uk.

7 *Farewell to cheap capital? The implications of long-term shifts in global investment and saving*, McKinsey Global Institute, December 2010, McKinsey.com.

8 Lukasz Rachel and Thomas D. Smith, *Secular drivers of the global real interest rate*, Bank of England staff working paper, number 571, December 2015, bankofengland.co.uk.

9 Based on an analysis of G-19 countries (G-20 minus the European Union) and Nigeria. These countries generate about 80 percent of global GDP. For more details, see *Global growth: Can productivity save the day in an aging world?*, McKinsey Global Institute, January 2015, McKinsey.com.

10 *Global growth: Can productivity save the day in an aging world?*, McKinsey Global Institute, January 2015, McKinsey.com.

11 *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015, McKinsey.com.

[12] Rapid technological innovation has helped companies improve productivity and further reduce costs; in the past 30 years, the cost of automation (relative to labor) has fallen by more than half in advanced economies.

[13] *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015, McKinsey.com.

[14] Many US companies have overseas operations. We also therefore consider GDP growth in the rest of the world. In this scenario, this would be 2.1 percent. In the growth-recovery scenario, we assumed 3.4 percent.

[15] Sacha Ghai, Bryce Klempner, and Josh Zoffer, "Bending the third rail: Better investment performance for US pensions," *McKinsey on Investing*, Number 2, July 2015, McKinsey.com.

[16] Estimated by triangulating across multiple sources, including Alicia Munnell and Jean-Pierre Aubry, "The Funding of State and Local Pensions: 2013–2017," Center for Retirement Research at Boston College, June 2014, crr.bc.edu; US Board of Governors of the Federal Reserve System, "Financial accounts of the United States," December 2015, federalreserve.gov; *2015 report on state retirement systems: Funding levels and asset allocation*, Wilshire Consulting, February 2015, wilshire.com; and *2015 report on city and county retirement systems: Funding levels and asset allocation*, Wilshire Consulting, September 2015, wilshire.com. Wilshire data show that state pension funds had an average funding ratio of 77 percent, compared with 95 percent in 2007, a decline that reflected the impact of the recession.

[17] For more details, see *2015 report on state retirement systems: Funding levels and asset allocation*, Wilshire Consulting, February 2015, wilshire.com; and *2015 report on city and county retirement systems: Funding levels and asset allocation*, Wilshire Consulting, September 2015, wilshire.com. Our analysis of 70 public-pension plans from data in the Pension and Investments database for 2014 also revealed median and average assumed rates of return of 7.7 percent.

[18] John Ehrhardt, Alan Perry, and Zorast Wadia, *Milliman 2015 pension funding study*, Milliman, April 2015.

[19] This could in part be due to companies continuing the shift to defined-contribution plans as well as removing workers from defined-benefit plans through one-time lump-sum buyouts.

[20] *2015 Global survey of accounting assumptions for defined benefit plans*, Willis Towers Watson, August 2015, willistowerswatson.com.

[21] McKinsey Global Performance Lens Growth Cube analysis. See also *New heights demand increasing agility: Global asset management overview*, June 2015, McKinsey.com.

[22] *Playing to win: The new global competition for corporate profits*, McKinsey Global Institute, September 2015, McKinsey.com.

[23] US Department of Education, National Center for Education Statistics, *Digest of Education Statistics, 2013* (NCES 2015-011), May 2015.

This article is adapted from *Diminishing returns: Why investors may need to lower their expectations*, McKinsey Global Institute, May 2016, McKinsey.com.

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The authors wish to thank Richard Dobbs, Jon Harris, and Sree Ramaswamy for their contributions to this article.

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How leading institutions are changing the rules on portfolio construction

The world's largest investors are determined to make the leap from big to great. Getting there will depend on a new understanding of strategic asset allocation.

Sacha Ghai and Marcos Tarnowski

Institutional investors are now recognized as essential players in the global financial system. The largest pensions and sovereign-wealth funds manage more than $1 trillion, and they get the respect that such sums command. However, many analysts, partners, suppliers, and leaders within the industry are unclear about where these institutions are headed. It's obvious that they are not simply pools of capital and collections of talent. But it's not so obvious how they will deploy their capital and change their investing practices.

To find out, we surveyed more than 50 senior executives at more than half of the top 50 pensions and sovereign-wealth funds worldwide, which collectively manage $7.4 trillion in assets. We also interviewed leaders of these institutions in depth and solicited the views of our colleagues around the world who work with leading investors. The research revealed two themes that turned up again and again. First, the world's leading investors are intent on evolving into true institutions that are more than the sum of their parts. Second, a reexamination of the portfolio-construction process has become the top priority for many of the CEOs and chief investment officers (CIOs) we interviewed.

The importance of portfolio construction is not a new idea—far from it. Various academic studies over the past two decades have found that approximately

90 percent of variation in a fund's returns over time and about 35 to 40 percent of the differences in performance between one fund and another are attributable to asset-allocation decisions. What our research revealed as new, however, is that traditional approaches to asset allocation are now seen to be inadequate, and CIOs and CEOs are increasingly willing to rethink these approaches and their process.

Until recently, strategic asset allocation (SAA) has been rather nonstrategic. Most institutions used historical estimates of returns, correlation, and volatility, plugged in relevant constraints, and generated a frontier of portfolio options that theoretically matched their risk and return objectives. Because the estimates and constraints changed very little, last year's allocation became a powerful anchor for this year's. Significant adjustments to strategic asset allocation have been rare, with the exception of a long-term trend among many institutions to shift more of their portfolios to illiquid assets.

Indeed, for most pension and sovereign-wealth-fund boards, the review of asset-allocation decisions has been more or less a rubber-stamping exercise.

Instead of working on SAA, many institutions have focused the bulk of their time on searching for alpha through a number of means, including active management (both internal and external) and direct investing in illiquid asset classes. The work on beta has been mainly to reduce costs, often through internalizing management, with some exploration of enhanced-beta portfolios. Our survey and interviews confirmed that institutions generally spent 20 percent of their time on beta, including strategic asset allocation, and 80 percent on the search for alpha.

In the biggest change to affect investing recently, leading institutions are realizing the implications of this mismatch. Low interest rates have added considerable capital to the global financial system, pushing up prices on all kinds of assets and effectively lowering risk premiums. Hitting "repeat" on strategic asset allocation from year to year has had the unforeseen consequence that institutions are not being paid for the risks they are taking. That's costly: the payoff from getting SAA right is worth a decade of good deal making to create alpha at the margin.

To bring rewards in line with risks, institutions are trying various ideas. With risk premiums so low, some investors have considered going to the extreme of allocating more of their portfolio to cash. Australia's Future Fund is one; it raised cash levels to more than 20 percent of the portfolio at the end of 2015. However, most institutions have limitations that prevent them from doing this. Many are exploring other approaches, such as factor-based investing. This investment style is accelerating rapidly. By one estimate, the assets

About 35 to 40 percent of the differences in performance between one fund and another are attributable to asset-allocation decisions.

under management dedicated to this approach have quadrupled over the past three years.

By far the most important change, however, is coming to the 80/20 alpha/beta management approach. Institutions plan to change those proportions by focusing on building portfolio-construction capabilities, given that these drive the vast majority of long-term returns. The most striking finding from our research is that almost 80 percent of institutions plan to reinforce their central portfolio-construction team, with most expecting to add three to five people (Exhibit 1). In interviews, leaders also said they expect a more dynamic decision-making process structured around top-down economic scenarios, which they hope will provoke more debate and move them away from a rote approval of strategic asset allocation by the executive committee and board.

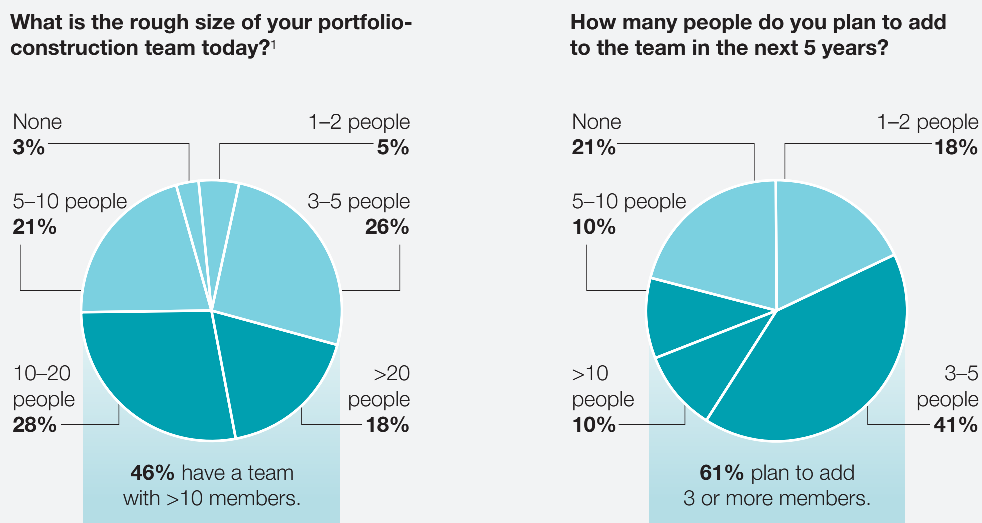
What will this central team focus on? We found broad evidence that SAA will be increasingly driven by deeper insights from the institution's liability profile. Seventy-five percent of respondents think that they already understand well (or in a distinctive manner) their liability profile. And yet 92 percent plan to invest further. More than 60 percent say that liabilities drive their major investment decisions, a figure that is certain to rise as institutions invest more in understanding just what they owe to their stakeholders (Exhibit 2).

What they do with that better understanding depends on what kind of institution they are. Big defined-benefit pension plans may be furthest evolved; they have an actuarial understanding of their depositors. But even these funds can learn more about the composition of their depositor

Exhibit 1

Most institutional investors are planning to expand their teams over the next five years.

Respondents, %



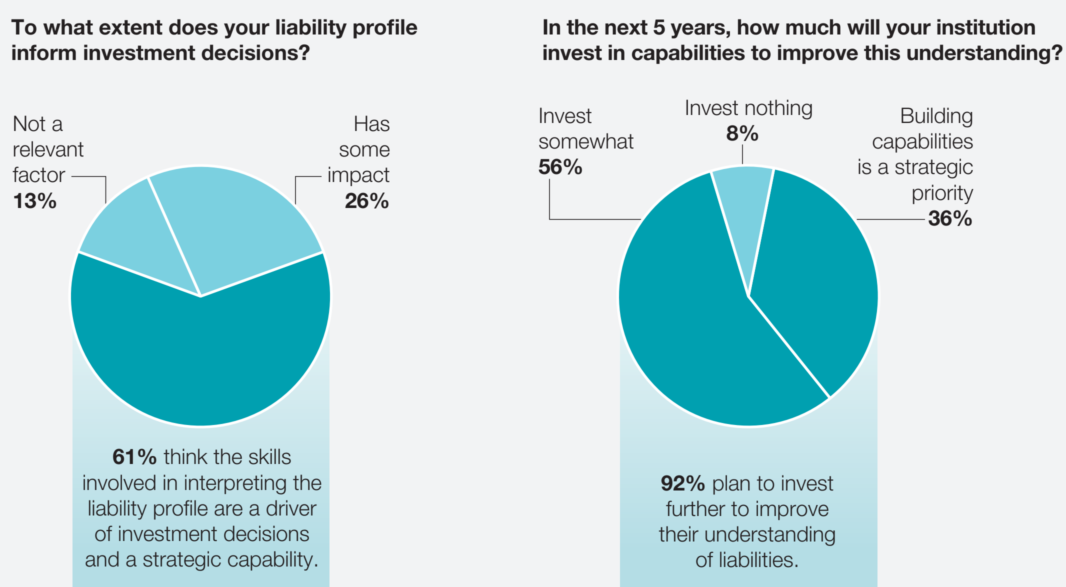
[1] Figures may not sum, because of rounding.

Source: McKinsey survey of limited partners, 2015

Exhibit 2

Institutional investors plan to shift toward liability-aware and liabilty-driven investing.

Respondents, %



Source: McKinsey survey of limited partners, 2015

base, to get beyond raw demographics and into depositors' preferences and their exposures from their other assets. Indonesian public servants, for example, already have exposure to the domestic economy from their homes, work, families, and other investments; should their pension fund be overweight on Indonesian equities? Also, only a handful of leading institutions do a good job of proactively managing the duration risks that arise between their beneficiaries' needs and their investment activities.

Defined-contribution pension plans can use a better knowledge of their depositors to serve them with products that suit them better, including target-date funds. Sovereign-wealth funds already use a long-term investment horizon, suiting their constituents' needs. But some may now need to think about how funds are used across all national budgets. For example, many resource funds have to grapple with the volatility and collapsing prices of commodities, especially oil. National budgets designed to allocate revenues from oil at $100 a barrel now have to be redrawn, with serious implications for reserve funds. Namely, sovereign-wealth funds will need to adjust their allocations based on the funding needs of their states, which in large part will be driven by oil prices.

Our research turned up other ways that leading institutions will evolve, including new ways to define asset classes and changes in illiquid investment management. In the next issue of *McKinsey on Investing*, we will look at these developments. Taken together, the changes are expected to help leading institutions make the leap from big to great and herald the next era in institutional investing. ■

Download the full report on which this article is based, *From big to great: The world's leading institutional investors forge ahead*, on McKinsey.com.

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The authors wish to thank Sara Bernow, Gabrielle Caron, Alexandre Châteauneuf, Eser Keskiner, Tyler Mills, and Jonathan Tétrault for their contributions to this article.

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Sovereign-wealth funds and pensions: The future is collaborative

New Zealand Superannuation Fund CEO Adrian Orr discusses thematic investing, innovation, and why it pays to be true to foundational principles.

Bryce Klempner and Marcos Tarnowski

The New Zealand Superannuation Fund invests to fund the future pensions (or "superannuation," as it is called there) of the country's 65-and-over population. The fund has about $24 billion under management and has returned 15 percent annually for the past five years. Adrian Orr became CEO in 2007. McKinsey's Bryce Klempner and Marcos Tarnowski spoke with him recently about how the fund is navigating today's investment climate while keeping a resolute focus on the long term.

McKinsey: *Let's begin with the macro environment. Clearly, some big changes are taking place in many parts of the world. How would you characterize today's investing climate?*

Adrian Orr: Equity markets, particularly in the United States, are placing their trust in a never-before-seen home-run policy that the US president has described by tweet, including tax relief for corporations and increased government spending on infrastructure. These policy changes are fully priced in. The way we're trying to express that view in our portfolio is that we have gone underweight US equities relative to our benchmark. Elsewhere, European markets seem underpriced relative to the long-term fair-value measures that we use, and so we are overweighted.

McKinsey: *How is New Zealand Super playing to its strengths in the current environment?*

Adrian Orr: It's going to be a really good test of our governance and our fortitude. We've had a great run because we were suitably overweight equities post the global financial crisis, in line with our investing horizon and the liquidity of our positions. This time, when we actually start going underweight, the market may still be trending north. That might turn out to be a real test of our convictions, as people will be asking, "Why aren't you taking advantage of this surge in equity markets?" So this situation is the reverse of 2008, and it's a difficult test. If you underperform rising markets because of a long-term view that they are overvalued, there will be no shortage of questions about the wisdom of your decision.

McKinsey: *Let's talk more about some of the distinctive characteristics of the fund, which you call your "endowments": your long time horizon, your liquidity profile, and your independence.*

Adrian Orr: These are critical for us. When the fund was established, in 2001, global best practice in sovereign-wealth-fund investing did not really exist. When I joined, I found out very quickly there's not even common practice, let alone best practice. That's why we went into an eager-outreach mode, visiting many, many funds globally to learn how they worked. We found that the most effective thing we could do was to look very hard at who we are and what "events" we should participate in if we wanted to win the gold medal in investing. It was fascinating, and it took a long time. We spent years debating who we are and how we can properly reflect that identity in the way we behave.

McKinsey: *Your mandate allows you a relatively long time horizon.*

Adrian Orr: Yes. Our mandate is intergenerational: our stated purpose is to prefund the cost of

Adrian Orr

Vital statistics
Born December 19, 1962, in Rotorua, New Zealand

Married, with 3 children

Education
Earned a bachelor's of social sciences from University of Waikato and a master's of development economics from University of Leicester

Career highlights
Guardians of New Zealand Superannuation
(2007–present)
CEO

Reserve Bank of New Zealand
(2003–07)
Deputy governor

Westpac Banking
(2000–03)
Chief economist

Fast facts
Pacific Business Trust's Pacific Business Person of the Year, 2003

Trustee, Stevensons Group, 2009–14

Trustee, Victoria Theatre Trust, Devonport, Auckland, 2010–13

Member, Capital Markets Working Group of the Māori Economic Taskforce, 2010–11 superannuation in order to reduce the burden on future taxpayers. The fund is not used for current pension expenses, and we won't start making payments until mid-2030s. Even then, the fund will continue to grow. So that gives us a long horizon for investing, which for us means much more than just buying long-dated assets. We think of it more as being able to repeat investment activity for as long as the institution exists. So we can make both high-frequency investments and long-dated investments; we can choose the horizon on which we want to pursue particular investment activities.

McKinsey: *What about your liquidity profile?*

Adrian Orr: Liquidity is a significant strength if it is managed right. Almost everything we think about daily is related to preserving functionality and ensuring our ability to buy and sell at our preference, rather than being forced into situations. Here again, there was no obvious global best practice. We ended up building significant systems to manage marginal pricing liquidity. Every asset that comes into the portfolio is categorized with regard to its liquidity features, so that if and when something has to be sold, we know exactly how and why. That has been an excellent discipline in the fund.

McKinsey: *You also enjoy a measure of independence in operating the fund.*

Adrian Orr: Our operational independence derives from our legislation. The board is well removed from the fund's owner—the New Zealand government—so it has operational independence very similar to that of a central bank. But we have to continually remind ourselves, our board, and especially our stakeholders that operational independence is absolutely critical to maintaining our long-term horizon and investment discipline. It's not easy. Our purpose and our goals have been defined by a democratic process, but we are operationally independent. That forces us to be very transparent and direct with the public about our work. And it forces us and the board to continually check ourselves, to make sure that we are investing for the fund, rather than managing for careers or for reputational risk around the short-term hiccups. I honestly believe that this independence is a defining difference between the New Zealand Super Fund and many other sovereign-wealth funds, and also US state pension funds.

In certain situations, our ownership structure could be seen as a hindrance, but in other situations, it is an advantage, as we are able at times to access investments that wouldn't otherwise be available. We recently bought, for example, a large stake in a government-owned bank here in New Zealand, and we were better able to negotiate and close the deal because the public could see that the government remains the owner.

McKinsey: *We see some of your peers moving aggressively to a direct-investing model—building internal teams, sometimes focused on sectors; opening international offices; sometimes creating operating platforms in areas like real estate. You haven't yet taken that direction. How do you think about that decision?*

Adrian Orr: This is a tough question for us, positioned as we are on the far side of the world. About every two years, we sit down and question if we should have international offices and build larger teams. The decision has always been no, because we've found it hard to justify—not on a cost basis, but on the basis of expected returns. Currently, we're all in one place and effectively almost all on one floor. Everyone knows everything, which is incredibly powerful. It allows us to move very fast, and there are no industry or sector or regional disputes. We're all focused on the single return of the fund. Individuals don't have benchmarks for a sector or a country. So we have a single-fund, whole-fund culture. When you take a step into new regions, you need to have critical mass in those offices, and they end up having their own culture. It gets incredibly complex very quickly, and I just don't believe that with our asset size we need to do it.

What we do, though, is think hard about it. We do a five-year plan, and every five years, we think about what has happened to the size of the fund and how scalable our activities are. That's an important discussion, because certain investment activities may be comfortable and quite scalable, with similar resource needs, but others may not. You might have to say, "We're not going to play that particular game anymore." In other words, preserve the culture, preserve scalability, and don't go out and grab tigers by the tail that cause you to build a large team.

So that's how we've considered direct investing to date. I don't believe we've been ruled out of any particular investment activity. We've been able to co-invest with external managers and peers, and invest directly. Every now and again, however, I do get wobbly. There are moments when we're in trouble with some investment. You see management spending 90 percent of their time on 15 percent of the portfolio. And I think, "Imagine if we had three of these events happening at one time." It forces me to ask, "Is this really scalable? Is it manageable?"

McKinsey: *Some time ago, you started using a thematic investment approach. How do you develop these themes, and how do they evolve over time?*

Adrian Orr: It was quite controversial inside our shop to go down the thematic path. In the end, the reason we chose to was that it aggregates effort around certain places, rather than just thinking the whole world is available. When the whole world is available, it's very difficult to organize and create suitable investment processes. To find the themes, we know that we don't have a monopoly on knowledge, so we linked with experts in many areas to think about what is really happening over the long term. That helped us find themes related to climate change and demography. Those two concepts helped us aggregate, or at least concentrate, our effort in looking for investment opportunities.

Have we since gone on to create a portfolio directly related to those themes? No. We are still highly diversified. Where we have taken on some active investment risk, we have aggregated around themes. One example is our alternative-energy work, which I have to say is incredibly difficult; there are not a lot of opportunities, and they're all quite young. And every now and again, we get sufficiently comfortable that we can invest directly, for example, in retirement care. Being able to reflect the investment back onto some of those themes gives us more confidence in our expectations.

McKinsey: *Beyond thematic investing, you're generally recognized for an innovative model overall. Are there any new innovations on the horizon for New Zealand Super?*

Adrian Orr: The first ten years of the fund were really about developing the framework of the investment strategy. If we did that right, then we should not have to change a lot in terms of the way we operate. Our endowments, investment beliefs, and the values-based culture we made—those shouldn't change, because they should be the structural pillars of the institution. What will change is the set of investment opportunities. These will come and go as each has its day in the sun. We've already had to turn the switch off for some of them, saying, "That was great, but it's no longer working." In other areas, we've had to really gear ourselves up to take advantage. So it's about being flexible, an agile institution, such that we don't just start a strategy and continue it even if the opportunity no longer bears fruit.

That gets hard. Some of our direct investments, for example, are very long-dated assets. We have a very large stake in some timber assets. That's been successful for us, but the reason for that success has changed about three times. First, it was just a low entry price; then it was falling discount rates; more recently it's been a rising commodity price. Eventually we will be overweight in timber, and we'll have to think about exit strategies for those investments. Every asset will have a liquidity event at some point that we have to prepare for.

I believe the next ten years of our fund will be about our use of technology and knowledge management. That will be a defining feature. I'm not sure yet how we're going to achieve this, but we're working our way through it. We will still be very much internally focused, but on knowledge-management processes more than investment processes. We are embarking down the path of some hard thinking about our technology and our operations. In particular, if we are still located in New Zealand and globally invested, we are going to have to be very smart knowledge managers.

McKinsey: *What will that take?*

Adrian Orr: At its base, knowledge management will be about information technology and the platforms that we use to share knowledge. Those are necessary but not sufficient. The real challenge will be the culture of the institution. How will we access data and turn it into information? How do we make sure that we share that information successfully among us? How do we develop what I would call a "customer-relationship model" with other peer funds and external managers? How do we truly share our knowledge among institutions? I am active with some industry groups, such as the International Forum of Sovereign Wealth Funds, where I'd like to see more knowledge sharing. I'd also like to see more sharing directly with certain peer funds that I would say are world class in certain activities. The Dutch funds are fantastic in responsible investment, Canadian funds in direct investing, Singaporean funds in treasury management. We need to be open to secondments and other ways of sharing all of our knowledge. Hopefully, we will give something and get something back.

McKinsey: *How do you see collaboration among institutional investors evolving? Right now, many are becoming more active in direct investing. With that, relationships with asset managers are shifting. Given that dynamic, what do you see as the future of collaboration among sovereign-wealth funds, pensions, and other institutional investors?*

Adrian Orr: I believe it is absolutely critical that they work together. I've only been in this industry for ten years, and I've been really pleased with how rapidly the concept of collaboration has taken hold. I hope I'm not being naive, but it certainly feels like it's a new chapter in global financial markets. If the long-term holders of capital and wealth can work together, then hopefully we'll get more investment decisions that are sensible for the long term.

The evolutionary path is what I call the three Cs. The first one is "compare," which is what has been happening. Institutions compare notes on how to do certain things, and compare models and structures, and so on. That's important, because we are able to measure ourselves against each other and talk to our stakeholders in an informed way about how we're operating.

"Collaborate" is the second C. It's early days, but we've had some good success. For example, a few of us are working with the Organisation for Economic Co-operation and Development on long-term tax considerations, with the UNPRI [UN Principles for Responsible Investment] on responsible investment, and with the Canadians on infrastructure. However, I have to say I don't see enough of it. You have to keep pushing it all the time. So often we just fall back into our own little tent.

The third C is "coinvest," and that's the hardest of all, because coinvestment means you have to be very open and transparent with each other about how you define opportunities and make investments. You have to build real confidence with each other so that co-investment doesn't slow things down but actually allows things to happen quicker. That is going to take personal-relationship building—and not just at the CEO level, but through the whole institution. There will be limits, because you can't know everything about everyone. So we work hard, both on the collective front and bilaterally with various funds, to help our institutions get to know each other well. I think it's really important. ■

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Understanding real estate as an investment class

When it comes to real estate, institutional investors are changing the terms of engagement.

Samvit Kanoria and Hasan Muzaffar

The portfolios of pension and mutual funds often include real-estate assets. Target allocations ranged from 9 to 10 percent for institutional investors between 2011 and 2015. Over that period, actual allocations rose steadily, from 6.7 percent to 8.5 percent.

Real estate can yield high returns, and it's useful for diversification and as a hedge against inflation, but many see it as a high-risk play, particularly in developing countries. Barriers to investing include a lack of transparency, low liquidity, and undeveloped capital markets. That's in sharp contrast with the rationale behind investors' equity-investment strategies. For pension investors, 83 percent of real-estate allocations are in domestic markets; the figure for equities is 43 percent (Exhibit 1).

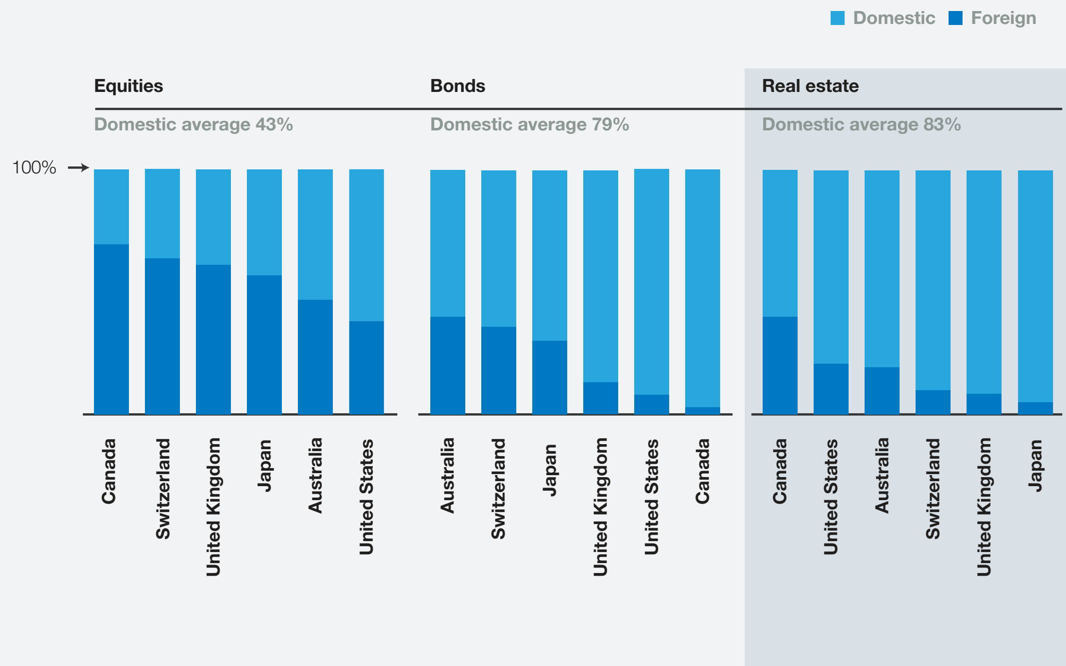
In this article, we consider two risk-mitigated trends in real-estate investment: nontraditional real-estate asset classes and building a direct-investment capability.

Real estate: Happy returns?

The performance of the real-estate market can be hard to gauge in markets where information is scarce and many transactions are private. To get a better understanding, McKinsey looked at the returns from more than 10,000 real-estate investments across asset classes in 14 major cities

Exhibit 1

For pension investors, the greatest share of real-estate allocations is in domestic markets, in contrast with equities.



Source: BlackRock, February 2015; IPD asset-owner survey, Dec 31, 2014; Willis Towers Watson global asset survey

over a 19-year period through 2012. The study found that real-estate returns tended to be only loosely correlated with those of conventional assets and thereby serve as a good diversification play for the portfolios of most institutional investors (Exhibit 2).

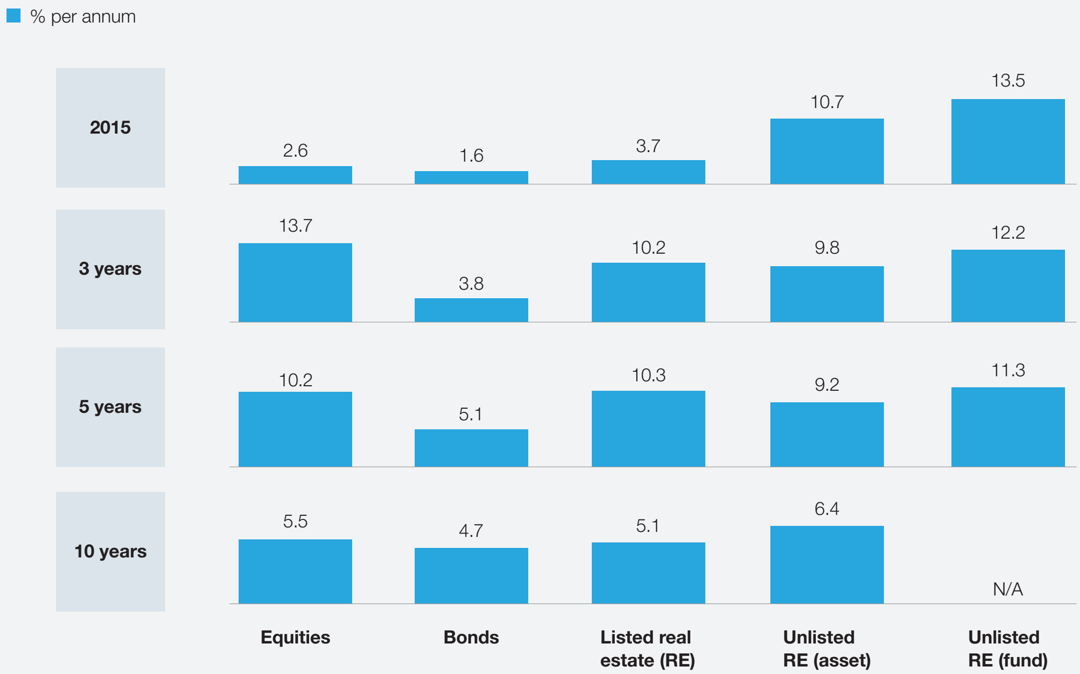
Emerging economies will account for a large proportion of the growth in the global real-estate market because of the scale of new building in rapidly urbanizing countries with high GDP growth. As the scale of real-estate development in emerging markets rises, so too does the proportion of it available for private investment. In the past two decades, in developed markets, the share of investable real estate as a percentage of GDP has been stable, at 40 to 50 percent. In emerging ones, however, the percentage is growing (Exhibit 3), so investors may need to invest in emerging economies just to retain current allocations.

Emerging trends

Two interesting trends characterize institutional investment in real estate. First, there is momentum toward nontraditional asset classes, such as student housing, data centers, healthcare offices, medical facilities, and assisted-living communities. Many of these are reaching investment grade, both by the size of deals and by the number of transactions.

Exhibit 2

Real-estate performance is loosely correlated with performance of conventional asset classes.



Using conversion rate of €1 = $1.113 as of June 30, 2015.

Source: Institutional Real Estate; IPE Real Estate; Property Funds Research

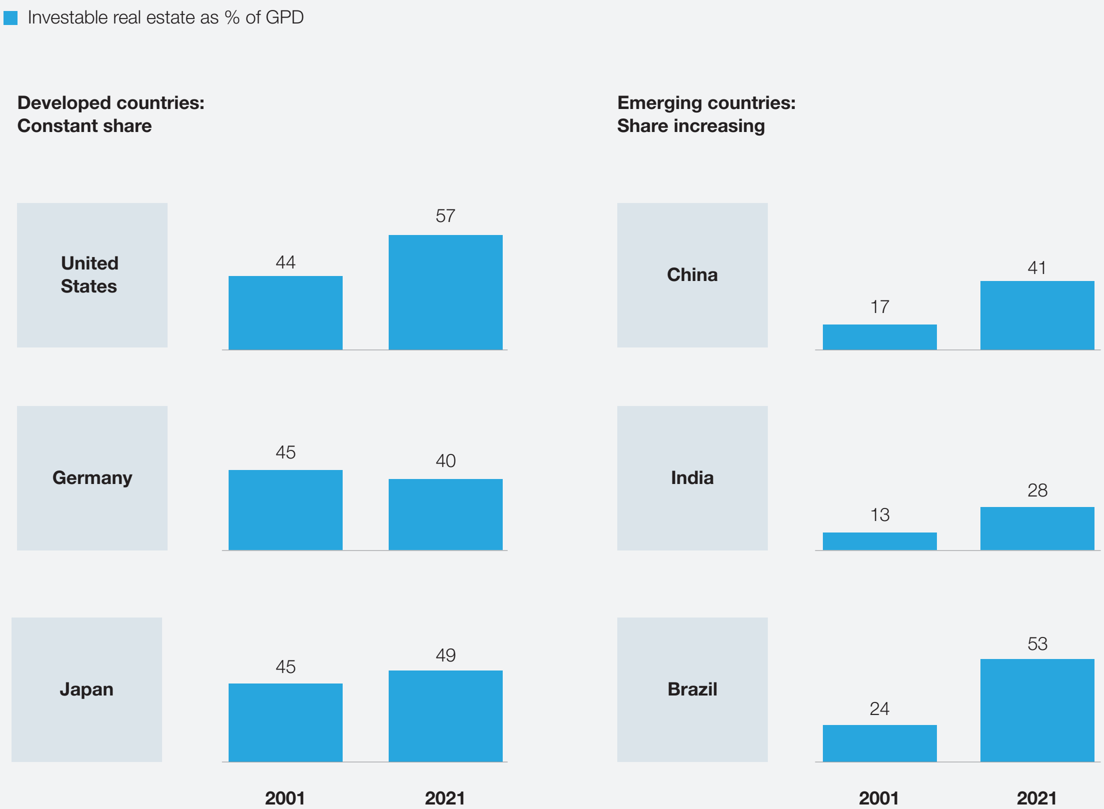
Global investment in student housing has more than doubled, for example—from $3 billion in 2007 to about $7 billion in 2015. In the United Kingdom alone, investor spending on student accommodations increased from £460 million in 2014 to £1.92 billion in 2015. In the United States, Wayne State University (in Michigan) recently closed a 40-year deal valued at $1.4 billion. In 2014, the University System of Georgia completed a $520 million deal to develop and manage student accommodations on nine campuses for 65 years.

Data centers, aided by advances in cloud computing, are another asset class gaining interest from institutional investors. In 2015, for example, Equinix, which provides carrier-neutral data centers and Internet exchanges to enable interconnection with data centers, was converted into a real-estate investment trust. As the volume and size of such deals increase, they become more attractive to institutional investors looking for scale.

Second, some investors, citing high costs and a perceived lack of control, are beginning to develop a direct-investment capability by building small teams of specialized investment practitioners. In a 2016 McKinsey survey of global institutional investors, 74 percent indicated that they were “likely”

Exhibit 3

In emerging markets, the share of investable real estate as a percentage of GDP is growing.



Source: Prudential Real Estate Investors report, February 2012

or "very likely" to build direct-investing capabilities. Moreover, direct investing could expand the sources of value creation to include operational improvements of assets. In the same survey, 51 percent of investors indicated that they were "likely" or "very likely" to acquire an operating platform to source deals and operate assets for the whole portfolio.

The traditional approach to real-estate investment is still very much alive. But with growth shifting to emerging markets, and with new business models in a range of nontraditional real-estate asset classes beginning to prove themselves, investors are more willing to consider new ways to find the returns they need. As always, though, the buyer must beware. ■

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From 'why' to 'why not': Sustainable investing as the new normal

More institutional investors recognize environmental, social, and governance factors as drivers of value. The key to investing effectively is to integrate these factors across the investment process.

Sara Bernow, Bryce Klempner, and Clarisse Magnin

Sustainable investing has come a long way. More than one-quarter of assets under management globally are now being invested according to the premise that environmental, social, and governance (ESG) factors can materially affect a company's performance and market value. The institutional investors that practice sustainable investing now include some of the world's largest, such as the Government Pension Investment Fund (GPIF) of Japan, Norway's Government Pension Fund Global (GPFG), and the Dutch pension fund ABP.

The techniques used in sustainable investing have advanced as well. While early ethics-based approaches such as negative screening remain relevant today, other strategies have since developed. These newer strategies typically put less emphasis on ethical concerns and are designed instead to achieve a conventional investment aim: maximizing risk-adjusted returns. Many institutional investors, particularly in Europe and North America, have now adopted approaches that consider ESG factors in portfolio selection and management. Others have held back, however. One common reason is that they believe sustainable investing ordinarily produces lower returns than conventional strategies, despite research findings to the contrary.

Among institutional investors that have embraced sustainable investing, some have room to improve their practices. Certain investors—even large, sophisticated ones—integrate ESG factors into their investment processes using techniques that are less rigorous and systematic than those they use for other investment factors. When investors bring ESG factors into investment decisions without relying on time-tested standard practices, their results can be compromised.

To help investors capitalize on opportunities in sustainable investing, this article offers insights on how to integrate ESG factors with the investment process—from defining the objectives and approach for an investment strategy, through developing the tools and organizational resources required to manage investments, to managing performance and reporting outcomes to stakeholders. It is based on more than 100 interviews we conducted with CEOs, chief investment officers, ESG leaders, investment managers, and others at a range of investment funds about their experiences with sustainable investing: how they got started, what practices they follow, what challenges they encountered, how they resolved them, and how they have enhanced their sustainable investing approaches over time.

Sustainable investing takes off and pays off

Once a niche practice, sustainable investing has become a large and fast-growing major market segment. According to the Global Sustainable Investment Alliance, at the start of 2016, sustainable investments constituted 26 percent of assets that are professionally managed in Asia, Australia and New Zealand, Canada, Europe, and the United States—$22.89 trillion in total. Four years earlier, they were 21.5 percent of assets.

The most widely applied sustainable investment strategy globally, used for two-thirds of sustainable investments, is negative screening, which involves excluding sectors, companies, or practices from investment portfolios based on ESG criteria. But ESG integration, which is the systematic and explicit inclusion of ESG factors in financial analysis, has been growing at 17 percent per year. This technique is now used with nearly half of sustainable investments.

The scale of the sustainable investing market differs greatly from region to region. European asset managers have the highest proportion of sustainable investments (52.6 percent at the beginning of 2016), followed by Australia and New Zealand (50.6 percent) and Canada (37.8 percent). Sustainable investing is less prevalent in the United States (21.6 percent), Japan (3.4 percent), and Asian countries other than Japan (0.8 percent), but the gap is narrowing. From 2014 to 2016, the volume of sustainably managed assets grew significantly faster outside Europe than it did in Europe.[1]

Recent years have also seen some of the world's largest institutional investors expand their sustainability efforts. Japan's GPIF, the largest pension fund in the world, with $1.1 trillion in assets, announced in July 2017 that it had selected three ESG indexes for its passive investments in Japanese equities. In December 2015, the Dutch pension fund ABP, which is the second largest in Europe, declared two ESG-related goals: to reduce the carbon-emissions footprint of its equity portfolio by 25 percent from 2015 to 2020, and to invest €5 billion in renewable energy by 2020.

Our interviews with institutional investors reveal a wide range of reasons they pursue sustainable investing. The three most common motivations are as follows:

Enhancing returns

Sustainable investing appears to have a positive effect, if any, on returns. Researchers continue to explore the relationships between ESG performance and corporate financial performance, and between ESG investment strategies and investment returns. Several studies have shown that sustainable investing and superior investment returns are positively correlated. Other studies have shown no correlation. Recent comprehensive research (based on more than 2,000 studies over the past four decades) demonstrates sustainable investing is uncorrelated with poor returns.[2]
For many investors, the likelihood that sustainable investing produces market-rate returns as effectively as other investment approaches has

provided convincing grounds to pursue sustainable investment strategies—particularly in light of the other motivations described next.

Strengthening risk management

Institutional investors increasingly observe that risks related to ESG issues can have a measurable effect on a company's market value, as well as its reputation. Companies have seen their revenues and profits decline, for instance, after worker-safety incidents, waste or pollution spills, weather-related supply-chain disruptions, and other ESG-related incidents have come to light. ESG issues have harmed some brands, which can account for much of a company's market value. Investors have also raised questions about whether companies are positioned to succeed in the face of risks stemming from long-term trends such as climate change and water scarcity.

Aligning strategies with the priorities of beneficiaries and stakeholders.

Demand from fund beneficiaries and other stakeholders has driven some institutional investors to develop sustainable investing strategies. This demand has followed greater public attention to the global sustainability agenda. Sustainable investing strategies seem to have particular appeal among younger generations: some two-thirds of high-net-worth millennials surveyed in the United States agreed with the statement "My investment decisions are a way to express my social, political, or environmental values." More than one-third of high-net-worth baby boomers expressed the same belief—a noteworthy proportion, given that baby boomers are a major constituency for institutional investors.[3] Some investors wish to "do good" for society by providing capital to companies with favorable ESG features (without compromising risk-adjusted returns).

As more investors consider ESG factors, they are likely to encounter certain common challenges. There are some lessons they should keep in mind on how to define their approaches and maximize the benefits of sustainable investing.

How leading investors integrate sustainability

In reviewing the experiences of leading institutions, one theme stands out: sustainable investing is more effective when its core activities are integrated into existing processes, rather than carried out in parallel. Deep integration is readily achievable because the disciplines of sustainable investing are variations on typical investment approaches. Following, we explore how elements of sustainable investing can be integrated with investors' existing capabilities across six important dimensions (Exhibit 1).

Linking sustainable investing to the mandate

To succeed, sustainable investment strategies must derive from an institution's overall mandate. Yet investment mandates do not always call for sustainable strategies. The following questions can help investors interpret their mandates with respect to ESG issues and define targets for their sustainable investment strategies:

Does the investment mandate demand sustainability? If so, what factors are emphasized? Some investment mandates include ESG considerations or even specific ESG objectives. For example, the management objectives of Norges Bank, which manages Norway's GPFG, call for the bank to "integrate its responsible management efforts into the management of the GPFG" and note that "a good long-term return is considered dependent on sustainable development in economic, environmental, and social terms, as well as well-functioning, legitimate, and efficient markets."

How can the directives of a more general mandate help shape a sustainable strategy? Many funds have a mandate similar to that of a large Canadian pension fund: to "maximize returns without undue risk of loss." A focus on value creation provides the basis for

Exhibit 1 **Leading institutions apply sustainable investing practices across six dimensions of their investment process and operations.**

Dimension of investing	Elements of sustainable investing
Investment mandate	• Consideration of environmental, social, and governance (ESG) factors, including prioritization • Targets
Investment beliefs and strategy	• Rationale for ESG integration • Material ESG factors
Investment operations enablers	
Tools and processes	• Negative screening • Positive screening • Proactive engagement
Resources and organization	• ESG expertise and capabilities • Integration with investment teams • Collaborations and partnerships
Performance management	• Review of external managers (screening and follow-up) • Follow-up on internal managers (including incentives)
Public reporting	• Accountability • Transparency

a strategy that accounts for long-term ESG trends by, for example, avoiding investments in companies or sectors exposed to material sustainability risks.

How will the success of the sustainable investment strategy be judged? Leading institutional investors define and track progress against clear metrics and targets for their sustainable strategies. Some targets have to do with their own activities: for example, the proportion of their portfolio managed with respect to ESG factors. (In some asset classes such as government bonds, sustainable practices are less developed and may thus take more time to apply than in asset classes such as public equities.) Others might consist of goals for the ESG performance of portfolio companies, such as reductions in carbon emissions or the ratios between executive pay and worker pay.

Defining the sustainable investment strategy

A sustainable investment strategy consists of building blocks familiar to institutional investors:

a balance between risk and return and a thesis about which factors strongly influence corporate financial performance. The following questions can help investors define these elements:

Are ESG factors more important for risk management or value creation? The balance between managing risks and producing superior returns will help determine the sustainable investing strategy. If the mandate focuses on risk management, then the strategy might be designed to exclude companies, sectors, or geographies that investors see as particularly risky with respect to ESG factors, or to engage in dialogue with corporate managers about how to mitigate ESG risks. If value creation is the focus, on the other hand, investors might overweight their portfolios with companies or sectors that exhibit strong performance on ESG-related factors they believe are linked to value creation.

What ESG factors are material? At first glance, this question might seem basic. Investors ordinarily look closely at factors they consider material and devote less attention to other ones. (Not surprisingly, research has shown that companies that focus on material ESG issues produce better financial performance than those that look at all ESG issues.) Determining which ESG factors matter, though, isn't always easy. Some efforts to identify material factors are under way. In the United States, for instance, the Sustainability Accounting Standards Board has developed the leading approach for identifying the unique ESG factors that are material in each sector. Investors may wish to conduct additional analysis to assess materiality for their own portfolios. The selection of material factors is often influenced to some extent by exposure to asset classes, geographies, and specific companies. For example, governance factors tend to be especially important for private equity investments, since these investments are typically characterized by large ownership shares and limited regulatory oversight.

Selecting tools for sustainable portfolio construction and management

Most institutional investors that integrate ESG factors in their strategies use at least one of three main techniques for portfolio construction and management: negative screening, positive screening, and proactive engagement (Exhibit 2). Once an investor has set priorities, it can select these techniques accordingly, using the following questions as a guide:

Is risk management a focus? Negative screening is essential for investors that wish to constrain risk. It entails excluding companies (or entire sectors or geographies) from a portfolio based on their performance with respect to ESG factors. Negative screening was the basis for many of the earliest sustainable investing strategies. The availability of ESG performance data (for example, carbon emissions) now allows investors to apply more nuanced and sophisticated screens, filtering out companies that do not meet their standards or are below industry averages for particular ESG factors.

Is value creation a focus? Performance-focused investors can use negative screening to eliminate companies that may be less likely to outperform in the long run. They can also practice positive screening by integrating the financial implications of ESG performance in their fundamental analysis. With this approach, many of the same research and analysis activities that investors perform to choose high-performing assets are extended to cover material ESG factors. In this way, investors can seek out assets with outstanding ESG performance or sustainability-related business priorities (such as high energy efficiency). For example, the Third Swedish National Pension Fund (AP3) more than doubled its investments in green bonds during 2016 to lower the fund's carbon footprint, on the grounds that a more sustainable portfolio can improve both the return and the risk profile of the fund.

Exhibit 2

Institutional investors use at least one of three techniques to integrate ESG factors in portfolio construction and management.

	Negative screening	Positive screening	Proactive engagement
Description	• Avoid material environmental, social, and governance (ESG) risks or comply with values-based investment thesis • Exclude particular companies or sectors from investment universe based on ESG concerns	• Acknowledge potential positive correlation between ESG quality and returns • Integrate financial implications of ESG factors in research and analysis • Weight fund toward holdings with higher ESG quality	• Identify ESG as a lever for value creation • Pursue improvements in a company's ESG performance by engaging with board or management
Examples of application	Exclusion of companies for such reasons as: • Noncompliance with values chosen by the government or fund • Recommendations by ESG team • Additional qualitative analysis of ESG risks	• Investment managers include ESG factors in fundamental analysis • Investments concentrate on specific sustainability themes (eg, green bonds, clean tech, low carbon)	• Dialogue and involvement with enterprises in which investors hold significant stakes and see potential to create value by improving ESG performance (eg, by increasing energy efficiency)

Does the investor engage with management teams?
Some institutional investors try to improve the performance of portfolio companies by taking board seats or engaging in dialogue with management. This approach can also be helpful in sustainable investing strategies: an institutional investor might choose to acquire a stake in a company with subpar ESG performance and then engage with its management about potential improvements. If an institutional investor ordinarily takes board seats or engages management teams, then it might consider adding sustainability issues to its agenda. Some investors also take part in external collaborations, such as Eumedion in the Netherlands, that collectively engage companies in dialogues on sustainability issues and pool shareholder voting rights to influence management decisions.

Developing sustainable investment teams

A few leading investors embed ESG specialists within their investment teams, though some opt for other arrangements. The following three questions can help institutional investors fit their ESG-focused staff and resources into their existing operations:

What expertise is needed to carry out the sustainable investing strategy? The factors and techniques an investor chooses will determine what expertise is required. Investors that emphasize environmental performance, for instance, will need specialists in relevant environmental topics and management practices. Those that actively engage with management teams may need specialists with executive experience. Companies that rely on screening techniques will likely benefit from expertise in quantitative analysis.

How should an investor obtain ESG expertise? In-house ESG teams range from one or two full-time staff members to 15 or more, depending on portfolio size and the approach to sustainable investing. Some investors may not need full-time ESG staff at all. Commercial databases offer good-quality information about companies' ESG performance, and external advisers can provide targeted support. In addition, many institutional investors take part in external networks such as the United Nations Principles for Responsible Investment (PRI) and the Portfolio Decarbonization Coalition, which support investors in incorporating ESG factors in their investment decisions. Leading investors also continuously build the ESG capabilities of their portfolio managers.

Where should ESG specialists fit into the organization? Some investors put their ESG specialists outside the investment team (for example, within a communications group). Leading investors typically embed ESG experts within their investment teams, with a head of ESG who reports to the chief investment officer. ESG specialists then provide ongoing support to portfolio managers. Some funds have made it a priority to hire ESG specialists with strong investment backgrounds. For example, the Canada Pension Plan Investment Board hired a senior investment professional as its head of ESG. Other funds have chosen not to have dedicated ESG specialists but to assign responsibility for related issues to ESG-trained portfolio managers. At one Scandinavian investor, portfolio managers must fully account for all drivers of risk and return, including those related to ESG factors.

Monitoring the performance of investment managers

Whether institutional investors use internal or external managers to oversee their portfolios, they must regularly review managers' performance. Before hiring external managers, they also conduct thorough due diligence. Our interviews suggest that institutions with sophisticated approaches to sustainable investing have made ESG considerations an integral part of their performance-management processes. The following two questions can help investors devise effective means of monitoring performance:

How can investors ensure that external managers conform to their sustainable investing strategy? Leading funds have integrated ESG elements into their due-diligence processes for external managers. The United Nations PRI has developed an ESG-focused questionnaire for this purpose, and some investors have created their own ESG scorecards. Side letters, which augment the terms of a contract, can be used to specify ESG performance standards for an external manager. Once an external manager has been hired, leading investors evaluate the manager's ESG performance as part of the semiannual or annual performance reviews. The Second Swedish National Pension Fund (AP2), for example, developed an ESG assessment tool for reviewing external private equity managers. Some leading investors have a continuous dialogue with their external managers, through which potential ESG issues can be flagged and discussed.

How can investors ensure that their in-house investment team adheres to the sustainable strategy? Leading funds also make ESG considerations part of their processes for managing the performance of in-house portfolio managers. Some funds have tools for checking whether portfolio managers have complied with ESG requirements and, in some cases, whether the ESG performance of their portfolios meets certain standards or contributes to the investor's overall ESG targets. A few investors have also begun experimenting with linking managers' ESG performance to their compensation.

Reporting on sustainable investing practices and performance

Leading institutional investors reinforce their commitment to sustainable investment by disclosing performance and describing their management practices. The most advanced provide detailed descriptions of how they are enacting their sustainable investment strategies, along with quantitative measures of their performance relative to targets. The following questions can help when it comes to shaping effective approaches to external reporting:

What is the goal of reporting on ESG performance? Investors should define what they hope to accomplish via external reporting and disclosure. Government pensions, for example, may have to fulfill public-policy requirements. Other institutions may wish to demonstrate how they meet beneficiaries' expectations or use reporting as a means of holding portfolio companies accountable to drive change. This technique is particularly relevant to proactive engagement: investors can exert influence on portfolio companies by describing the performance gaps they have identified and the improvements that companies are making.

What information should be disclosed? Investors generally have wide discretion on what to disclose about their sustainable investment approach: strategies, companies excluded, ESG performance measures, and accounts of management dialogues, to name a few. Over the past few years, disclosures have become more detailed in areas such as policies, targets and outcomes, focus areas, and specific initiatives. For example, the Fourth Swedish National Pension Fund (AP4) issues disclosures on all of these topics, along with a list of excluded companies and an assessment of the direct environmental impact of the fund's operations.

Disclosing different kinds of ESG information serves different purposes. To fulfill public-policy requirements and show that practices meet beneficiaries' expectations, some investors disclose how policies and strategies are integrated in the investment process, measurable ESG targets and outcomes, and data on shareholder votes or company dialogues. Methods to encourage portfolio companies to strengthen ESG performance include disclosing information about high-priority ESG factors, company dialogues, and exclusion lists.

What's next?

Embedding sustainable investment practices into investment processes is a long-term endeavor by which most investors gradually adopt more sophisticated techniques. The practices described previously, already in wide use, can help investors develop or refine sustainable investing strategies. It is also worth considering the following approaches, which are still evolving among investors at the front of the field:

Assessing the entire portfolio's ESG risk exposure

A few funds have begun to systematically assess how their entire portfolios are exposed to material ESG risks (notably, climate change and energy consumption). Such a broad review requires significant staff time, resources, and capabilities. It also means developing a view on the long-term development of ESG-related factors and related market forces (for example, sales of electric vehicles and movements in energy prices) and their impact on the financial performance and valuations of holdings. In addition, advanced investors are developing dashboards of key indicators to watch, with trigger points that call for mitigating actions to manage risks effectively. Recent efforts to establish industry-wide standards for measuring a carbon footprint have resulted in progress, but an established set of metrics across most other sustainability topics has yet to be developed.

Using ESG triggers to find new investment opportunities.

If assessing a whole portfolio with regard to ESG risks is one side of a coin, then seeking investment opportunities based on ESG factors is the other side. As with assessing risk exposure, institutional investors will need a point of view about ESG-related trends and their long-term effects on asset prices. One way to develop a thesis is to identify the most significant trends and the sectors they influence (for example, asking what opportunities will be created by the widespread shift toward renewable energy).

Integrating the UN Sustainable Development Goals (SDGs).

The 17 SDGs were developed to "end poverty, protect the planet, and ensure prosperity for all." Several European funds are exploring ways to link their sustainable investing strategies to the SDGs. Early approaches involve prioritizing certain SDGs and planning investment strategies to improve corporate performance in those areas. For example, in July 2017, the Dutch pension funds APG and PGGM jointly published *Sustainable development investments: Taxonomies*, which includes an assessment of the investment possibilities associated with each of the SDGs. AP2 also publishes examples of how its investments contribute to the SDGs. This creates transparency on how the institutional-investor community can be a catalyst for change for a more sustainable society, addressing some of the prioritized challenges of humankind.

■ ■ ■

The sustainable investing market has grown significantly as demand for sustainable investment strategies has surged and as evidence has accumulated about the benefits of investing with ESG factors in mind. Some of the world's leading institutional investors are at the forefront of adopting sustainable investing strategies. Most large funds are seeking to develop their sustainable strategies and practices, regardless of starting point. While some are struggling to define their approach and to make good use of ESG-related information and insights, our interviews with institutional investors make clear that this doesn't have to be the case. The methods that institutions already use to select and manage portfolios are highly compatible with sustainable strategies, and close integration can have significant benefits for institutional investors and beneficiaries alike. ■

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[1] *Global sustainable investment review 2016*, Global Sustainable Investment Alliance, March 2017, gsi-alliance.org. The review's definition of "sustainable investment" includes the following activities and strategies: negative/exclusionary screening; positive/best-in-class screening; norms-based screening; integration of environmental, social, and governance factors; sustainability-themed investing; impact/community investing; and corporate engagement and shareholder action.

[2] Alexander Bassen, Timo Busch, and Gunnar Friede, "ESG and financial performance: Aggregated evidence from more than 2000 empirical studies," *Journal of Sustainable Finance & Investment*, December 2015, Volume 5, Number 4, pp. 210–33.

[3] *2014 U.S. Trust insights on wealth and worth*, U.S. Trust, Bank of America, June 2014, ustrust.com.

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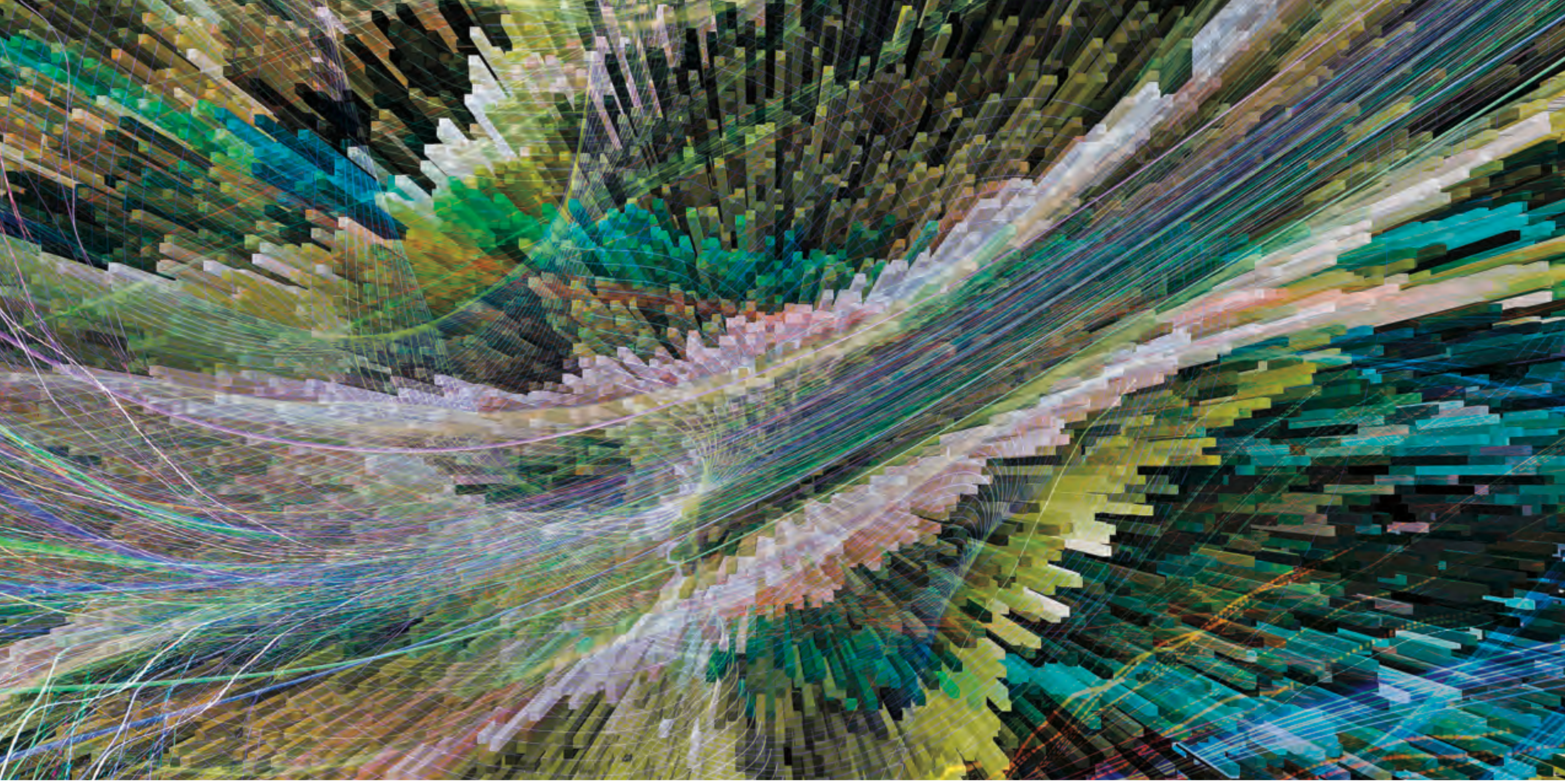

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A machine-learning approach to venture capital

In this interview, Hone Capital managing partner Veronica Wu describes how her team uses a data-analytics model to make better investment decisions in early-stage start-ups.

Chandra Gnanasambandam

Veronica Wu has been in on the ground floor for many of the dramatic technology shifts that have defined the past 20 years. Beijing-born and US-educated, Wu has worked in top strategy roles at a string of major US tech companies—Apple, Motorola, and Tesla—in their Chinese operations. In 2015, she was brought on as a managing partner to lead Hone Capital (formerly CSC Venture Capital), the Silicon Valley–based arm of one of the largest venture-capital and private equity firms in China, CSC Group. She has quickly established Hone Capital as an active player in the Valley, most notably with a $400 million commitment to invest in start-ups that raise funding on AngelList, a technology platform for seed-stage investing. In this interview, conducted by McKinsey's Chandra Gnanasambandam, Wu explains the differences between the tech-investment landscapes in China and the United States and describes how Hone Capital has developed a data-driven approach to analyzing potential seed deals, with promising early results.

McKinsey: *Tell us a little bit about the challenges you faced in the early days of Hone Capital and how you came upon AngelList.*

Veronica Wu: When CSC Group's CEO, Xiangshuang Shan, told me he wanted to build an international operation, I had never done venture capital before. I just knew what they did and how hard it is to get into the VC space in Silicon Valley. There have been very few examples of outside capital that successfully entered the Valley. It's partly an issue of credibility. If you're an entrepreneur who's trying to build your business, how do you know a foreign firm will be there in the next round, whereas people here in the Valley have already built a track record of trust.

The question for us became, “How do we access the top deals so that we can build that network of trust?” I was very fortunate that an ex-McKinsey colleague of mine told me about a platform called AngelList that might be an interesting hack into the VC scene. I soon learned more about how they were building an online ecosystem of top angel investors and a steady flow of vetted seed deals. The platform provided access to a unique network of superconnected people. We would not have known how to reach many of them, and some would not even have considered working with us for a very long time, until we were more established. So we saw AngelList as an opportunity to immediately access the VC community.

We also saw the huge potential of the data that AngelList had. There’s not a lot of visibility into early seed deals, and it’s difficult to get information about them. I saw it as a gold mine of data that we could dig into. So we decided to make a bet—to partner with AngelList and see if it really could accelerate our access to top-quality deals. And so far, so good; we’re very pleased. We’ve seen tremendous growth in the number of deals. So when we started, we’d see about ten deals a week, and now it’s close to 20. On average, though, I’d say we just look at 80 percent of those deals and say no. But the diversity of deals that AngelList’s team has built is pretty incredible.

McKinsey: *How did you construct your machine-learning model? What are some interesting insights that the data have provided?*

Veronica Wu: We created a machine-learning model from a database of more than 30,000 deals from the last decade that draws from many sources, including Crunchbase, Mattermark, and PitchBook Data.

For each deal in our historical database, we looked at whether a team made it to a series-A round, and explored 400 characteristics for each deal. From this analysis, we’ve identified 20 characteristics for seed deals as most predictive of future success.

Rapid reflections from Veronica Wu

What is a tech service or product—not yet invented—that you’d love to see hit the market? I’m most fascinated with the potential for a future technology that could magnify our brain waves to interpret our mind. We still have not figured out exactly how these powerful computing systems of ours work, and I would love to find out.

In your experience, what piece of common career advice is wrong or misleading? A lot of people think it’s about deciding what to do. But I have made serious moves in my life because I realized what I did not want to do. And the best balance is when people find something they can be passionate about and cannot stop doing it.

What book has significantly influenced you?
I don’t read a lot of books these days. I use meditation to give myself time to process the overwhelming information that I am exposed to. But I think the best book of all time is the *Tao Te Ching*. In Tao, it is said, the truest “way of life” is simple. I believe that, so I am more of a minimalist. Rather than focus on the outside world, I prefer to listen to my inside voice and observe the patterns of change in my life. In this way, one can know how to move with the world at the right time and do the right things—then everything seems like flowing water, smooth and natural.

Based on the data, our model generates an investment recommendation for each deal we review, considering factors such as investors' historical conversion rates, total money raised, the founding team's background, and the syndicate lead's area of expertise.

One of the insights we uncovered is that start-ups that failed to advance to series A had an average seed investment of $0.5 million, and the average investment for start-ups that advanced to series A was $1.5 million. So if a team has received a low investment below that $1.5 million threshold, it suggests that their idea didn't garner enough interest from investors, and it's probably not worth our time, or that it's a good idea but one that needs more funding to succeed. Another example insight came from analyzing the background of founders, which suggests that a deal with two founders from different universities is twice as likely to succeed as those with founders from the same university. This backs up the idea that diverse perspectives are a strength.

McKinsey: *Have you ever had a deal that your team was inclined to pass on, but the data signaled potential that made you reexamine your initial conclusions?*

Veronica Wu: We actually just recently had a case where our analytics was saying that there was a 70 or 80 percent probability of success. But when we had originally looked at it, the business model just didn't make sense. On paper, it didn't look like it could be profitable, and there were many regulatory constraints. Nevertheless, the metrics looked amazing. So I said to the lead investor, "Tell me more about this deal and how it works."

He explained that these guys had figured out a clever way to overcome the regulatory constraints and build a unique model with almost zero customer-acquisition cost. So we combined machine learning, which produces insights we would otherwise miss, with our human intuition and judgment. We have to learn to trust the data model more but not rely on it completely. It's really about a combination of people and tools.

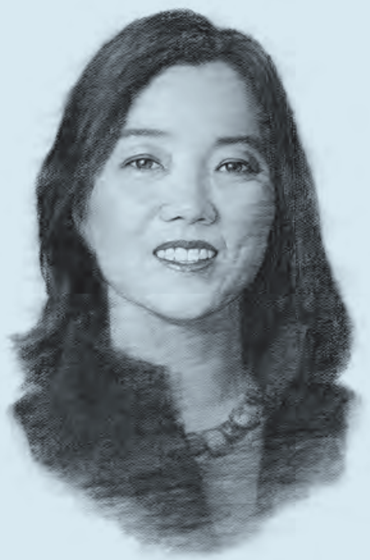
McKinsey: *What has your early performance looked like, using your machine-learning model?*

Veronica Wu: Since we've only been operating for just over a year, the performance metric we look at is whether a portfolio company goes on to raise a follow-on round of funding, from seed stage to series A. We believe this is a key early indicator of a company's future success, as the vast majority of start-up companies die out and do not raise follow-on funding. We did a postmortem analysis on the 2015 cohort of seed-stage companies. We found that about 16 percent of all seed-stage companies backed by VCs went on to raise series-A funding within 15 months. By comparison, 40 percent of the companies that our machine-learning model recommended for investment raised a follow-on round of funding—2.5 times the industry average—remarkably similar to the follow-on rate of companies selected by our investment team without using the model. However, we found that the best performance, nearly 3.5 times the industry average, would result from integrating the recommendations of the humans on our investment team and the machine-learning model. This shows what I strongly believe—that decision making augmented by machine learning represents a major advancement for venture-capital investing.

McKinsey: *What advice would you give to other Chinese firms trying to build a presence in Silicon Valley?*

Veronica Wu: I would say success very much depends on delegating authority to your local management team. I see Chinese funds all the time that are slow in their decision making because they have to wait for headquarters. It makes them bad

Veronica Wu



Vital statistics
Born in 1970, in Beijing, China

Education
Received an MS and a PhD in industrial engineering and operations research from the University of California, Berkeley; earned a BS in applied mathematics from Yale University

Career highlights

Hone Capital (part of CSC Group)
(2015–present)
Copresident and managing partner

Tesla
(2013–15)
Vice president, China

Apple
(2010–13)
Managing director, education and enterprise, Greater China

(2009–10)
General manager, education and enterprise, Asia

(2006–09)
Director, education marketing and channel strategy

Motorola
(2005–06)
Director of ecosystem development

McKinsey & Company
(1997–2002)
Associate partner

partners for a start-up, because, as you know, in the Valley the good start-ups get picked up very quickly. You can't wait two months for decisions from overseas. They'll just close the round without you because they don't need your money. Some people coming to the Valley fall prey to the fallacy of thinking, "Oh, I have lots of money. I'm going to come in and snap up deals." But the Valley already has lots of money. Good entrepreneurs are very discerning about where their money comes from and whether or not a potential investor is a good partner. If you can't work with them in the manner they expect you to, then you're going to be left out.

McKinsey: *What advice would you give to US-based founders trying to work with Chinese VC firms?*

Veronica Wu: Founders should be careful not to accept Chinese money before they understand the trade-offs. Chinese investors tend to want to own a big part of the company, to be on the board, and to have a say in the company. And it might not be good for a company to give up that kind of power, because it could dramatically affect the direction of the company, for good or bad. It's smart to insist on keeping your freedom.

That said, Chinese investors do know China well. Founders should be open to the advice of their Chinese investors, because it is a different market. Consumer behavior in China is very different, and that is why big foreign consumer companies often fail when they try to enter the country. One example is Match.com here in the United States. They have a model that's done pretty well here, but it didn't work so well in China. A Chinese start-up did the same thing, but they changed the business model. They made it so that you can find information about the people you're interested in, but you have to pay, maybe 3 or 5 renminbi, if you want to know more. Now, Chinese consumers don't like not knowing what they're paying for, but they're actually much more spontaneous spenders when they see what they're going to get immediately. It's a very small amount of money, so they become incredibly insensitive to cost, and they don't realize how often they're logging in and how much money they're spending. When you look at the average revenue per user for the Chinese company, it was actually higher than Match.com's. So it's about understanding that you're going to need to translate your model to fit the consumer preferences and behavior in China, and working with a firm that has firsthand knowledge of that market can be very helpful.

McKinsey: *How would you say the tech-investment scene in China differs from Silicon Valley?*

Veronica Wu: Venture capital is a very new thing for China, while the US has a much more mature model. So that means the talent pool isn't yet well developed in China. Early on, what you saw was a lot of these Chinese private equity firms looking at the metrics, seeing that a company was going to do well, and using their relationship and access to secure the deal and take the company public, getting three to five times their investment. In that decade from 2000 to 2010, there was a proliferation of deals based on that model. But most of the Chinese firms didn't fully understand venture capital, and many of the great deals from 2005 to 2010 got gobbled up by US venture firms. Alibaba and Tencent, for instance, are US funded. Almost every early good deal went to a conglomerate of foreign venture capitalists.

I think people in China are still learning. Two years ago, everyone wanted to go into venture capital, but they really didn't have the skills to do it. So start-ups were valued at ridiculous prices. The bubble was punctured a little bit last year, because people realized you can't just bet on everything—not every Internet story is a good opportunity.

McKinsey: *Venture capital has unleashed great forces of disruption, so why has its own operating model remained largely unchanged?*

Veronica Wu: It's the typical innovator's dilemma—the idea that what makes you successful is what makes you fail. When I was at Motorola, the most important thing about our phone was voice quality, avoiding dropped calls. At the time, antenna engineers were the most important engineers at any phone company. In 2005, one of our best antenna engineers was poached by Apple. But he came back to Motorola after only three months. He said, "Those guys don't know how to do a phone." At Motorola, if an antenna engineer said that you needed to do this or that to optimize the antenna, the designer would change the product to fit the antenna. Of course, at Apple, it was exactly the opposite. The designer would say, "Build an antenna to fit this design." The iPhone did have antenna issues, but nobody cared about that anymore. The definition of a good phone had changed. In the venture-capital world, success has historically been driven by a relatively small group of individuals who have access to the best deals. However, we're betting on a paradigm shift in venture capital, where new platforms provide greater access to deal flow and investment decision making is driven by integrating human insight with machine-learning-based models. ■

Chandra Gnanasambandam is a senior partner in McKinsey's Silicon Valley office.

This article originally appeared in the *McKinsey Quarterly* in June 2017.

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How private equity adapts: A discussion with Don Gogel

A longtime private equity CEO reflects on the advantages of pure-play firms, how to deploy virtual expertise, and why general partners are like wineries.

Bryce Klempner and Mark Staples

Don Gogel is the chairman and CEO of Clayton, Dubilier & Rice, a private equity (PE) firm that in its nearly 40-year history has acquired more than 70 companies, for a total transaction value of more than $100 billion. Gogel has served as CEO since 1998. McKinsey's Bryce Klempner and Mark Staples spoke with him in August 2016, in New York.

McKinsey: *You have been in private equity for a while, as it has expanded and changed. How do you see it progressing? Is private equity a scalable asset class?*

Don Gogel: If we're talking about PE funds under management as a percentage of all assets, I think there's enormous opportunity, simply because private equity is just another form of ownership. There's no ceiling, no regulatory-capital issue. It's just about relative performance. PE has some structural advantages, which increase the power of the best firms to outperform. PE has better alignment of incentives between GPs [general partners] and LPs [limited partners] than public companies have between shareholders and management. Alignment in management and the resulting reduction in agency costs is a great structural advantage. Another is the relatively small size of PE firms, which allows them to make more coherent decisions and to act on those decisions more efficiently.

A third advantage for PE stems from a disadvantage of public companies, where the distractions of public markets drive weaker performance in a number of ways. All the public-company CEOs I know say they spend 20 or 30 percent of their time on public-related issues, which they know are important but diminish the time they can spend improving their business performance. That's a lot of lost productivity. And there are other problems with public markets, such as short-term and quarterly earnings and activists.

McKinsey: *What benefit does PE derive from all these advantages?*

Don Gogel: Adaptability. The asset class's adaptability is extraordinary. First, we are not forced to be fully invested. When people ask me the best years we've had, I often cite the three years we made no investments. What a wonderful asset class. You don't like what you see, and for whatever reason you can't make the numbers work, so you don't invest. That flexibility is terrific and a luxury that other asset classes simply do not have.

Another way PE is adaptable is in its ability not only to follow areas where value is likely to emerge but also to go deeper and deeper into them. Take healthcare. We started largely as investors in industrial companies. Until several years ago, we did very little healthcare investing, mostly because either the industry dynamics didn't lend themselves to our model or there were such heavy regulations that it wasn't very attractive to us. But the disruptive effects of the Affordable Care Act have created some interesting investment opportunities. We have continued to expand in healthcare. Unlike acquisitive public companies that venture into businesses beyond their core activities, often with mixed results, we've been able to organically build staff with highly relevant skills and experience and then find opportunities that match up well with our capabilities. And as we demonstrate proof of concept, we build more staff and go deeper, all at our own pace. We don't have to put the capital to work until we're comfortable that we have the right talent in place and the timing is right.

Those kinds of things lead me to think there's plenty more for PE to do. And the external environment is only pushing us further ahead. All the problems with public markets remain in place, as does the persistent low-interest-rate environment.

McKinsey: *Most LPs come to this asset class looking for relative outperformance. McKinsey and some other market observers are projecting a prolonged period of low returns across both public equities and fixed income. How might that affect PE?*

Don Gogel: I'm confident that PE will outperform the public markets because of its structural advantages. The more interesting question is how to choose among GPs. When I started in this business, if there were 100 legitimate institutional-style GPs, that would have been a lot. Since then, of course, it's gotten more competitive, and competition drives down returns. But over time, you have still seen some persistence of the top-quartile firms, and the gap between the top quartile and the bottom quartile is something like 3,000 basis points. So the question is less whether private equity is a good asset class and more whether good managers can continue to perform and how they can scale.

Although I think the industry will continue to scale, I also think there are limits on creating alpha within an individual firm, because each firm's investment process is highly idiosyncratic. Yes, there are some common standards and criteria among firms—everyone looks at the same data for markets and competitors—but it's the magic of the particular firm that allows it to find uncommon or obscured opportunities. As PE grows, a risk is that what happened to hedge funds will happen to this asset class. At one time, there were hedge funds that saw things that others didn't see, and then so many people started hedge funds that the industry wound up with crowded trades everywhere. In PE, we already see crowded trades when there's a big auction for a good property. These are the common opportunities that everybody sees the same way.

McKinsey: *Given those dynamics, you might expect industry consolidation over time. But to date we haven't seen that. Any given LP will say it is cutting its number of external managers, but the share of the 10, or 20, or 50 largest managers has not gone up.*

Don Gogel: That shift might be under way. Many LPs have concluded that they have too many managers and should concentrate more capital with fewer managers. We're certainly seeing that among our investors. You may not see consolidation just because the asset class is growing. So the market share of the big firms is not growing.

The GP has some meaningful constraints on its particular combination of organization, people, talent, culture, and style. As firms get larger, that combination just doesn't scale the same way it did when the firm was young. A GP is a little bit like a winery. Sure, you can bottle hundreds of thousands

Donald J. Gogel

Vital statistics

Born February 19, 1949, in Brooklyn, New York

Married, with 4 children

Education

Received a BA with highest honors in international relations from Harvard College and studied politics on a Rhodes Scholarship at Oxford University's Balliol College, where he received an MPhil; also received a JD from Harvard Law School

Career highlights

Clayton, Dubilier & Rice
(1989–present)
Chairman, president, and CEO

Kidder Peabody
(1985–89)
Managing director, cohead, Merchant Banking Group

McKinsey & Company
(1976–85)
Partner

Fast facts

Serves as chairman of the SeriousFun Children's Network, senior vice chair of the Mount Sinai Health System, trustee of the Rhodes Trust, and trustee of the Cancer Research Institute of cases, but then it doesn't taste like Screaming Eagle or Château Haut-Brion or a top-notch Barolo.

McKinsey: *You sell artisanal returns.*

Don Gogel: In a way. I really think there is some limitation on scale. Not all firms have hit it, but I do think firms that grow too fast and get ahead of their staffing earn lower returns. To deal with that, we have artificially constrained the growth of our funds based on my sense of what we can sensibly do to grow. Most of the time when we have had excess demand, when other firms would say to take the money and put it to work, we've said we'd rather create alpha, which we can't do unless we remain an appropriately scaled firm. My rule has always been that I want all the partners in the firm to know about every investment. The full partnership is the real investment committee for the firm. And when we have partner meetings, I want everyone to sit around one table. In recent years, I've had to make the table a little bigger, but I can still fit the entire partnership around the table.

McKinsey: *The pressures to grow are pretty strong. Beyond all the capital that's out there looking for great returns, you can also face pressures from your people. How do you balance those things?*

Don Gogel: From time to time, there are periods when it's a challenge to either find new investments or monetize existing ones. At these times especially, there's a groundswell of voices: "Look what they're doing. Maybe we should start a hedge fund. Why don't we do a special-ops fund?" And so on. I've been accused of just waiting people out as we study these things, because inevitably, within six or eight months, we say, "Aren't we glad we didn't do that; that would have been a dumb idea." There are lots of ways to expand. I just think we have a better business than any of the options we have looked at. Clearly, some PE firms have been spectacularly successful in other fields, such as real estate. But some have not. My view is that PE is a talent-based business and that we have finely honed our understanding of that talent. We know what it is, we can value it, and we can develop it. I'm not sure what our success would be in attracting, understanding, and managing talent in hedge funds or real estate.

We have also thought about expanding within PE. Could we set up a lower-middle-market buyout fund and deploy many of the same skills we use currently? Yes. But we are mindful that smaller investments of tens of million dollars take just as much effort and skill as a $500 million or $600 million investment. When we consider smaller transactions, we're selective and have a strong conviction that we will produce an outsized multiple of investment to make it worthwhile. Coming back to talent, it's a lot harder to bring in five or six world-class people to a company with $300 million in revenue than to a company with $3 billion. As long as there are a lot of opportunities in our sweet spot, we just channel the pressure to go elsewhere into an urge to go back to work and make our deals more successful.

McKinsey: *LPs sure love it when you stick to your knitting, especially when you give them nice scarves. So let's talk about LPs a bit more. How have GPs' relationships with LPs evolved in recent years, and where do you see them heading?*

Don Gogel: They have not changed dramatically for our most sophisticated investors, mostly university endowments and private foundations. The sovereign-wealth funds are a class by themselves and have a particular issue with their need to deploy massive amounts of capital. With pressure on commodity prices, many are at risk of big gaps in their funding, similar to US pension funds. Most have committed 5 or 6 percent to PE; my sense is that they will roughly double that. And I think managed account relationships will increase. We have not done these, because of the potential for misalignment among investors. “Keep it simple, stupid” has been a pretty good mantra for me for a long time.

Coinvestment has become big. We have been providing coinvestment opportunities to our LPs for about 15 years and have had a good experience. To be fair, everybody says they want it, but very few LPs have the staff and the quick decision making needed. Coinvestment actually enhances some strategic options for us, because we can routinely commit more capital than we want to invest, knowing that we have a half dozen big investors that want to participate with us.

McKinsey: *Do you see more LPs building the skills to extend from coinvesting into true direct investing?*

Don Gogel: I do, but it’s the exception rather than the rule. Five years from now, I’d guess that we’ll see more of this trend.

McKinsey: *If it grows from there, do you think LPs’ lower internal deal hurdles will affect deal pricing?*

Don Gogel: Inevitably, yes, but only on the margin. Because if you conclude, as I do, that outperformance requires a special team with a special level of expertise, then you also have to recognize that it’s hard to build that, even in pure-play private equity firms like ours. In any event, I think the greater pressure on pricing is from the low-return environment. If returns stay low, a number of PE firms think that investors would be quite happy with a 12 to 15 percent return.

McKinsey: *Especially if you promised them 10 percent?*

Don Gogel: Exactly. I’m more worried about that pressure than I am about direct-investing LP competitors. If you believe that equity returns for the next decade will fall from, say, 7 percent annually to 2 or 3 percent, and PE as an asset class maintains its outperformance at 3 to 5 percent, then the average industry returns come in below the preferred return. That’s trouble. I’m not going to say it’s a train wreck, but it could be less than optimal for both GPs and LPs. That said, I have seen very little change in the preferred return.

McKinsey: *The industry’s 2-and-20 pricing structure is a venerable institution. Do you see any change coming?*

Don Gogel: I don’t see a change, but to be fair, it’s not really a 2-and-20 pricing structure; it’s a 1.5-and-20 structure. In this environment, the LPs have lost a little clout, as they’re trying to deploy more and more capital with a concentrated number of managers. They’re not pushing terms as hard, except for special accounts. There’s another dynamic at work, with respect to those GPs that seem to want to accumulate assets and not necessarily to invest them. The various forces are pretty much in balance and are unlikely to move dramatically in the next five or ten years.

McKinsey: *Do you see any divergence between the firms that are asset gatherers and the firms that are more focused on achieving top returns? Are they starting to exhibit different characteristics?*

Don Gogel: I think so. For many of the largest firms, private equity is now a much-diminished portion of their activity. We believe that our focus on PE gives us a competitive advantage, particularly with our staffing model, which includes both investment professionals and seasoned business leaders, or what we refer to as operating partners. Even if our larger distinguished competitors wanted to, they could not argue that their culture is all about creating operational improvements in portfolio companies. We can. We can hire very senior executives from the world's largest companies, because they love getting their hands around a business and coaching senior people. That gives us an enormous edge in competing for talent, at every level, from our associates to the portfolio-company supply-chain manager, the head of marketing, and the head of our digital platform. I think you're going to see some dispersion of returns between firms that focus on generating alpha and the others that don't.

McKinsey: *How does that edge affect your recruiting?*

Don Gogel: We think about two kinds of recruiting, financial and operational. Most of the major private equity firms now recruit financial talent in the same way, by hiring young people with two or three years of work experience in finance with a major investment bank. We typically have them for two years, occasionally three, and most of them then leave to go to business school. What's less typical is how we recruit operating partners. At most PE firms, operational recruiting is opportunistic; when they need to do something, they hire an operational expert to do that one thing. We've always had a different model, distinguished mainly by how much time our operating partners are willing to spend with us. We have seven full-time operating partners, four in the United States and three in Europe. They are full partners of the firm, they sit on our investment committees, and they participate in the life of the firm in the same way a financial partner does. Their key role, though, is to be deeply engaged with our portfolio businesses, serving as chairman. Before that point, they're part of the due-diligence team, and they help sort through investments. We also leverage their networks to source new investments. Very few firms have effectively implemented this model. The reason we developed this approach is our founders. Marty Dubilier was an operating guy, and Joe Rice was a financial guy, and so we grew the firm on both sides. We've also broadened the role a bit. In addition to our full-time operating partners, we've found out there are a lot of talented people in their mid- to late 50s who no longer want to work as hard as is required to run a public company. They don't want to be in the office all the time, and they don't want to routinely participate in all the administrative activities of the firm. They just want to work on our portfolio businesses.

One thing that our operating partners and I spend a lot of time on is identifying the next generation of talent. We don't just hire successful CEOs, because a successful CEO who replicates here what he or she did as CEO won't work. First, we're nonhierarchical; it's a partnership. Second, although the role that our operating partners take is typically executive chairman, the job is to build the management team at the portfolio company so that it can be successful when it goes public or is sold. Not every successful CEO has a coaching ability. Not every successful CEO understands that the management-team members are the stars, or is comfortable working with high-performance people. CEOs also have to get along with 26-year-old whippersnappers who happen to know a lot. In the 27 years that I've been recruiting people, the mistakes I've made were mostly people who thought they were good coaches but were actually great CEOs. If they don't give the portfolio-company CEO enough air, it doesn't work.

McKinsey: *Your firm is one of the few that have managed to integrate seasoned, high-wattage executives into your model—people used to running companies with thousands of employees and tens of billions of dollars in revenues. How do you help them adjust to helping run much smaller companies?*

Don Gogel: A lot of it is in our selection process. I see 30 or 40 CEOs a year who are interested in making a move to private equity. Many of them are just trying to figure this stuff out and are unlikely to be suited to it. At many companies, the higher you go, the less feel you have for what's really going on in the company. We look for people who have kept that feel. They have energy and enthusiasm; they don't mind traveling commercial; they still want to work hard.

Say, for example, they've had great success in thinking about structuring, recruiting, compensating, and organizing sales forces. I want someone who loves that work. Here, the sales force might be only 300 salespeople, not 3,000, but they love the game; they love the challenge of solving the puzzle.

Another reason that few firms have adopted our model is that it's expensive. Our operating partners get carried interest in every deal, regardless of how close they are to the portfolio company. The model many other firms use is a pay-by-the-drink approach. They hire someone for a specific deal and offer carried interest in that deal and none of the others. It's less expensive for sure, but it's not our style.

McKinsey: *Can you say more about how, in addition to serving as executive chairman of a portfolio company, an operating partner is expected to help bring particular expertise elsewhere in your portfolio?*

Don Gogel: That's the expectation. But we have a portfolio of about 20 companies, and not all our operating partners are full time. It's up to us to identify where each person's help is most needed. Even better, we try to get portfolio-company CEOs with a particular skill to help other portfolio companies. It's what GE used to call boundaryless behavior. The issues where this kind of help is particularly valuable are functional, like sales-force management. Pricing is enormously important and always a big opportunity, so we try to share our best practices there as well. Our operating partners and advisers meet once a month to identify issues in their companies, ask one another for help, and so on. It would be inaccurate to say we're mimicking a decentralized holding company with a big central staff, because we have no staff, but we have expertise. It's virtual experience and insight. The core of that model is being able to identify high-impact areas where that expertise can make a difference.

McKinsey: *Does it fall to you to know what everyone's abilities are in this regard, to spot the problems, and to identify the person who can solve that problem?*

Don Gogel: Ultimately, I'm the chief talent officer and recruiter. But I couldn't possibly do that across all our portfolio companies, so we have a number of processes to make this visible. We have our monthly operating meetings. When we identify bigger issues, we have a series of operating reviews, two or three times a year. Each portfolio company comes in with a full management team. We used to have just the CEO and CFO, and we enhanced the process by opening it up to more members of the leadership team. The portfolio-company management group makes a thematic presentation to our operating partners. It's not the typical review of last quarter's sales and gross margin. Instead, it's on a theme such as new-product innovation, pricing, or sales-force management. Out of that emerges a to-do list, either for the management team or for us to worry about.

These kinds of robust processes designed to identify issues ensure that we are able to quickly mobilize and deploy the best resources against them. For most private equity firms, this is difficult, because their style is highly proprietary to the financial partner involved. The partner usually has the right to say, "That's my deal, and I don't want your help; I don't want you looking over my shoulder." I had a conversation recently with a very senior executive who joined a leading PE firm and built a staff of strong functional experts. He said that he would go to portfolio companies, thinking he was the good guy, and suddenly he would see there was a moat around the castle, the drawbridge would go up, and then they're shooting arrows at him and pouring hot oil on his head. He left rather quickly.

I wouldn't say that's the whole industry, but I do think there is a structural difference between our kind of firm and others. Our partners recognize that inclusiveness is key, and the portfolio CEOs get what we're doing. We're not always welcomed with open arms, but if we're ever in a situation where people say, "Uh-oh, here comes headquarters," we're in deep trouble.

McKinsey: *Establishing that level of trust and understanding is difficult. We have touched a few times on the topic of institutionalization—building the firm. One thing that distinguishes your firm is that your last name doesn't start with a C, a D, or an R, yet you run the show; your firm has already passed the mantle of leadership. What made your succession work well, and how are you planning for future succession?*

Don Gogel: Fortunately, Joe Rice thought a lot about it. It was important to him and to a lot of our long-term investors, who said, "It's not going to help us if you guys are here for only ten years, so what are you going to do to make that work?" Joe thought a lot about it, and fortunately he was willing to give the reins to a young kid, me, earlier than he might have in other circumstances. Every firm has to go through this, and if you pay a lot of attention to it, really work at it, you're more likely to get it right. If you don't, then you won't; we see some founders are getting thrown out now. And we're going to face the issue of succession again. I, of course, feel immortal, but that's probably not an accurate self-assessment. I don't have a window for retirement. I'm telling investors in our next fund that I will certainly be here through the entire life of the fund. And we have established a management committee of five very talented leaders, and I have started sharing management responsibilities with them. So we now have senior people thinking about these issues in a different way.

Further, they feel as acutely as I do about the right size of our funds. I'm not the only keeper of the flame—they are, too. We have different points of view, but there's much more collective management.

PE firms are not like public companies. They are more fragile institutions, which makes succession probably more important—and more complicated—because it's not just about managing the business. My own sense is that PE firms should be led by someone who is fundamentally an investor, not a manager.

"PE firms are not like public companies. They are more fragile institutions, which makes succession probably more important—and more complicated—because it's not just about managing the business."

McKinsey: *One final topic. Among the general public, there's a good deal of doubt, confusion, and even hostility toward private equity, yes?*

Don Gogel: The biggest problem is that it's a complicated asset class. Take the studies of employment in PE.[1] Josh Lerner and his coauthors looked at census-level data, literally by office and warehouse, and found that PE outperforms public companies, but there's a nuance that makes it hard to explain. In the first two years of PE ownership, there's a reduction in employment, and in the following five years, there's an increase that more than makes up for the reduction. PE firms spend the first two years getting rid of things that aren't working and are inefficient, and then they build on a stronger base.

That's a complicated story. PE is still waiting for someone with the ability of a Michael Porter or a Thomas Friedman to explain the industry to the outside world. We have contributed to some research efforts. One we did with the World Economic Forum found that on three outcomes that are important to companies and to society innovation, employment, and governance—private equity firms did better than the control group of public companies on things that everybody assumes are the opposite.[2] No one paid attention, but at least I felt good that we produced some unbiased data. And we've helped to establish the Private Capital Research Institute, which we hope will yield some objective and credible insights into PE. To date, however, the general and business press have usually published a popularized view of the industry, using high-profile examples that are not always representative of the industry as a whole. ■

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[1] See, for example, Josh Lerner et al., "Private equity, jobs, and productivity," *American Economic Review*, December 2014, hbs.edu.

[2] *The global economic impact of private equity report 2008*, World Economic Forum working paper, Globalization of Alternative Investments Series, number 1, January 2008, weforum.org.

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Three more reasons why US education is ready for investment

Shifts in the education landscape are opening doors for investment.

Jake Bryant and Jimmy Sarakatsannis

The US market for educational products and services, across K–12, higher education, and corporate learning, is more than $1.75 trillion and growing. While that figure alone warrants attention from investors, much of this market has historically been difficult for investors to access. K–12 and higher education are largely seen as public goods for the government to provide. Corporate learning has been the responsibility of employers, which often have little appetite for innovation. For-profit companies and investors have mainly played supporting roles and have found a few opportunistic ways to provide resources where providers of learning required support.

Today, because of stagnation in learning outcomes and other shifts in the education landscape, schools and corporations are rethinking how they teach and train—opening the door for private investors and for-profit education providers. In 2015, deal activity involving education companies hit an all-time high of $7 billion (up about 25 percent from 2014), with the annual private equity deal count remaining steady from 2014 at around 100.

We have identified nine exciting themes for investors in education. Previously, we have explored three of these themes: digital content in K–12, completion services for postsecondary students, and digitization of corporate learning.[1] Here, we focus on three new themes: technology for K–12 teacher professional development, pathway programs for international students in higher education, and simulation and serious-game training in corporate learning.

K–12: Technology for teachers' professional development

US schools spend $18 billion on professional development for teachers every year, twice what they spend on digital and print instructional materials. Despite the investment, research suggests that on average, most teachers plateau and do not improve beyond their first three to five years in the classroom.[2] Worse, most teachers have no evidence of their performance, good or bad. Surprisingly, this lag in the quality of professional development exists even as calls for teachers and schools to meet performance standards grow louder, a trend punctuated by the recent adoption of more rigorous college and career-ready academic standards in schools across the United States.

This need to demonstrate improvement has moved schools away from traditional workshop-style training to continual, on-the-job experiences that provide teachers with real-time expertise and feedback, from both external experts and other teachers, to help them improve their practice. This shift has opened the door for technology platforms that enable improvement by making performance transparent, connecting teachers to each other and to instructional coaches, and providing access to engaging, innovative, personalized training experiences from external providers.

Private companies are answering the call, in the form of digital-content providers, digital coaching platforms, and online professional-development networks for resource sharing. Digital data-management systems, similar to corporate HR and learning platforms, help teachers and managers track performance. Deals with large school districts often exceed $30 million annually for these platforms. Investors should look for winning solutions with scalable platforms, which can benefit from—or catalyze—industry consolidation and the creation of integrated suites of the above offerings.

Higher education: Pathway agencies for international students

As domestic enrollment slows, US institutions of higher education are looking even harder at international students as an avenue of growth. Currently about 1.0 million international students are enrolled in the United States (nearly 25 percent of the 4.3 million or so students who study abroad each year). Admission of foreign students to US schools has accelerated recently; in 2007, 3.5 percent of university students came from overseas, while in 2015 nearly 5.0 percent did. The growth is coming mainly through some large public universities and the so-called tier-two schools.

With this growing international student population, US universities require support to ensure they are accepting high-quality students, and students need end-to-end support throughout the process of application to enrollment to completion of their first year of school. A new kind of company is emerging to help both: the international student pathway agency. Pathway agencies serve as an interface between students and host universities. They screen students on behalf of the university and ease each step of the student's journey, including application support, securing financial aid and housing, language and instructional support, and social integration. In many cases, the pathway agency supports a student through his or her entire first year on campus.

Some universities that are particularly interested in foreign students pay these agencies an average of about $6,000 per student, but sometimes as much as $20,000, as the agencies save the schools considerable costs. Last year, agencies worked with 20 percent of all international students in the United States, and schools paid over $1 billion for that support. This figure is set to grow rapidly, creating an attractive investment opportunity to roll up smaller pathway players and to capture new university partnerships.

Corporate learning: Interactive training through simulations and serious games

Companies spend $250 billion globally on training, a figure that goes up seemingly every year. A lot of that investment is now going into digitized forms of training. Yet companies struggle to see results. Research suggests that "old school" forms of digital learning that dominate corporate training are static and often no better than traditional learning.[3] However, a new generation of interactive, simulation-based digital solutions is showing immense promise.

Two forms of high-engagement, digital training are on the rise: simulations (that is, live practice of skills) and so-called serious games (such as scenario-based learning). Both are now prevalent across industries such as healthcare, manufacturing, and aerospace and defense. To provide these solutions, established training providers in the K–12 and higher-education sectors are parlaying their technologies into corporate learning, and tech start-ups are building new solutions. Corporate contracts for these solutions can range from $100,000 to $10 million per year, and margins can range from 20 to 50 percent.

As corporate training becomes increasingly digital and executives sharpen their focus on return on investment, investors have room to define and capture this new frontier of corporate training. The current $250 billion spend may be only a fraction of what executives will pay to develop best-in-class employees, and investors should be ready to consider the opportunity. ■

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1 Jake Bryant and Jimmy Sarakatsannis, "Why US education is ready for investment," July 2015, McKinsey.com.

2 "Teacher experience: What does the research say?," TNTP, March 2012, tntp.org.

3 Marianne Bakia, Barbara Means, and Robert Murphy, *Learning Online: What Research Tells Us about Whether, When and How*, first edition, New York, NY: Routledge, March 2014.

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January 2018
Designed by Global Editorial Services

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Printed in the United States of America.