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Professor Has Some Questions About Your Index Funds

Lu Zhang of Ohio State University is skeptical about market-beating factors.

By Nir Kaissar

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Lu Zhang. Photographer: Ohio State University

Lu Zhang, a finance professor at Ohio State University, has something to say about your hot new index funds, and it may not be flattering.

Not long ago, the typical investment portfolio was a grab bag of stocks, bonds and actively managed mutual funds. Today, it is more likely an assortment of index funds. And not just any index funds. Indexes are no longer content to simply track the market. A growing number of them are attempting to replicate traditional styles of active management, also

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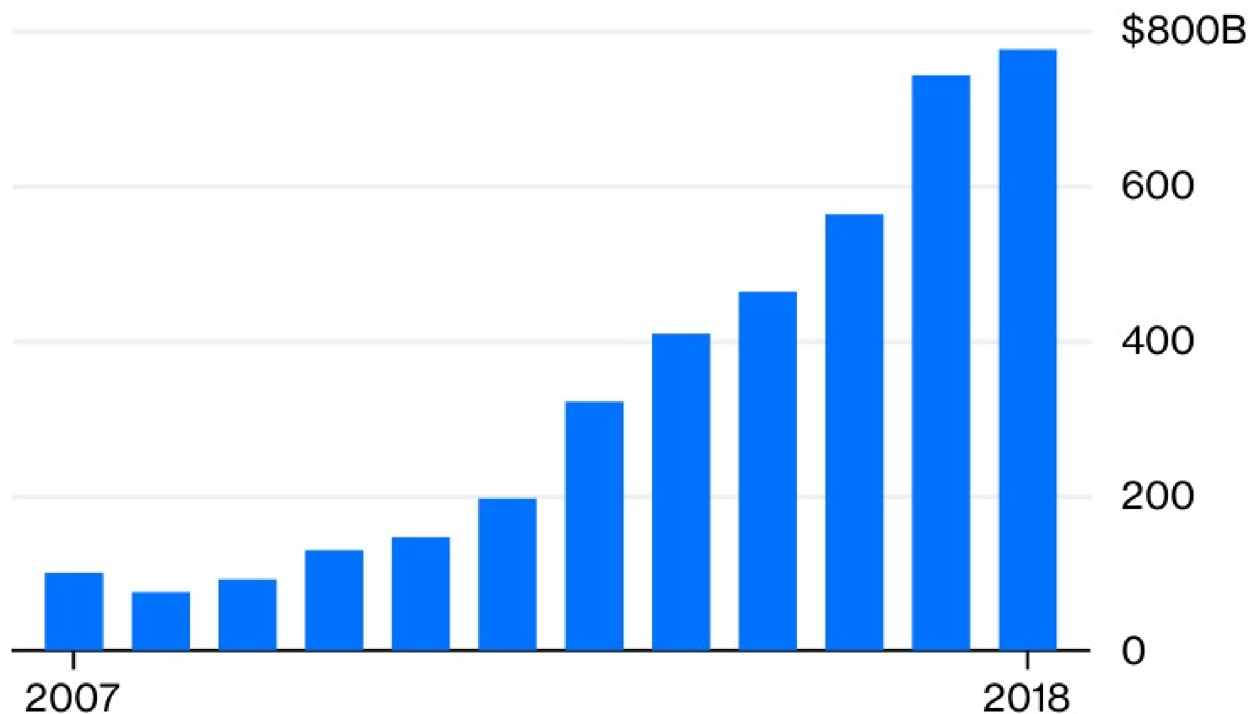
known as "factors." I counted roughly 900 mutual funds and exchange-traded funds in the U.S. that track factor indexes, and that number is likely to grow.



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The pivot to indexing may be new, but it was cultivated by decades of research in economics and finance, which gives it the imprimatur of science, or at least robust inquiry. But a new generation of academics, Zhang prominently among them, are re-examining the research and finding much of it questionable. Their work could derail the indexing revolution and, as might be expected, index providers and fund companies aren't likely to be happy about it.

Indexing's pioneers didn't set out to sell financial products; they wanted to understand how markets work. Their first attempts in the 1950s and 1960s gave birth to the Capital Asset Pricing Model, which posits that the expected return of a stock is driven by its volatility relative to the broad market. That is, a stock that is more volatile than the market has a higher expected return, and vice versa.

The model, however, would prove to be too blunt an instrument. Many stocks didn't perform the way it predicted, and researchers kept looking. A 1993 paper by economists Eugene Fama and Kenneth French added two more variables, or factors, to the model, meaningfully improving its predictability. Their research showed that stocks that are cheap relative to their fundamentals tended to produce higher returns than more expensive ones, and that smaller companies by market value tended to outperform larger ones.

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The implication for investors was clear: Those who want to improve their odds of beating the market should tilt their portfolios to value or small-cap stocks. Fund companies wasted no time giving investors those options.

What followed was a frenzy to find new market-beating factors. Armed with a trove of data and dreams of tenure at elite universities, researchers ran endless back tests looking for new discoveries. The problem, as economist Ronald Coase liked to say, is that if you torture the data long enough, it will confess. Indeed, academic finance journals are now littered with hundreds of purported factors.

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The 46-year-old Zhang, who grew up in Nanchang, a town in southeastern China that he describes as "not economically developed," may not have been the most likely person to take on the prevailing orthodoxy in finance. But no one is better qualified for the task.

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Zhang credits his interest in economics to a chance meeting while he was in high school in the late 1980s. "One day my dad took me to the store to buy rice," he recalled. "It was an inflationary period in China, and people were concerned about the price of rice going up and the effect on purchasing power. An economist friend explained how inflation worked, and I found it fascinating. China was in the midst of reform and I saw that economics could be used to guide policy."

Zhang spent the next 13 years studying economics and finance, first in China and then at Washington University in St. Louis, before receiving a Ph.D. in finance from the Wharton School at the University of Pennsylvania in 2002. He then turned to teaching and research, amassing a long list of honors and awards along the way. He began his career at the University of Rochester, followed by a stint at the University of Michigan. He now holds the John W. Galbreath Chair at Ohio State.

If Zhang ever aspired to a quiet career in the ivory tower, however, all that changed in 2017, when he published a paper with co-authors Kewei Hou and Chen Xue examining 452 factors described in various academic journals. Their findings confirmed what many feared: Most factors don't survive scrutiny.

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When they tried to replicate the factors, 294 of them failed a test of statistical significance. Zhang and his co-authors couldn't say with 95 percent confidence, a commonly used hurdle in financial research, that the factors weren't the result of random chance. And when they subjected the factors to a more stringent test of 99.5 percent confidence, an additional 77 failed to make the cut. In all, 81 factors survived, or just 18 percent of the original group.

In addition, most of the factors that survived were variations of value, quality and momentum – styles of investing that were widely used by stock pickers long before academics began snooping around the data in the 1960s. “Value and momentum are real and will persist,” Zhang said, “but momentum requires frequent trading, which has to be done smartly.”

It’s also not entirely clear how many factors truly exist. As Zhang points out, “the factors are correlated, so they’re not entirely independent.”

Notably, Zhang found little support for low volatility, a popular factor with investors because it promises higher returns in exchange for, well, less volatility. "The empirical evidence for low volatility is very fragile," he says. "Fifteen of the 16 volatility measures we looked at don't work using the broadest sample of stocks."

Reading Zhang's paper, it's reasonable to ask whether academic inquiry into factors has made any meaningful contribution other than confirming what practitioners have long understood. Not surprisingly, Zhang's findings have not been popular with some of his colleagues. "I didn't want to end up in that position," Zhang said. "It can be lonely, but I can only write what I believe."

More than anything else, perhaps, Zhang's work shows how little is known about factor investing. Much of the evidence is based on U.S. stock market data, so it's not yet clear if the same rules apply overseas. Zhang points out, for example, that "value and momentum are stronger in the U.S. than China, possibly because many Chinese companies are government owned, and the government may not be maximizing value."

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“We have a lot more to understand,” he added. “We’re in the process of re-evaluating classical theory, and we’re just at the beginning.” With the proliferation of factor index funds set to continue, investors would do well to keep those words in mind.

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To contact the author of this story:
Nir Kaissar at nkaissar1@bloomberg.net

To contact the editor responsible for this story:
Daniel Niemi at dniemi1@bloomberg.net

Nir Kaissar is a Bloomberg Opinion columnist covering the markets. He is the founder of Unison Advisors, an asset management firm. He has worked as a lawyer at Sullivan & Cromwell and a consultant at Ernst & Young.

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