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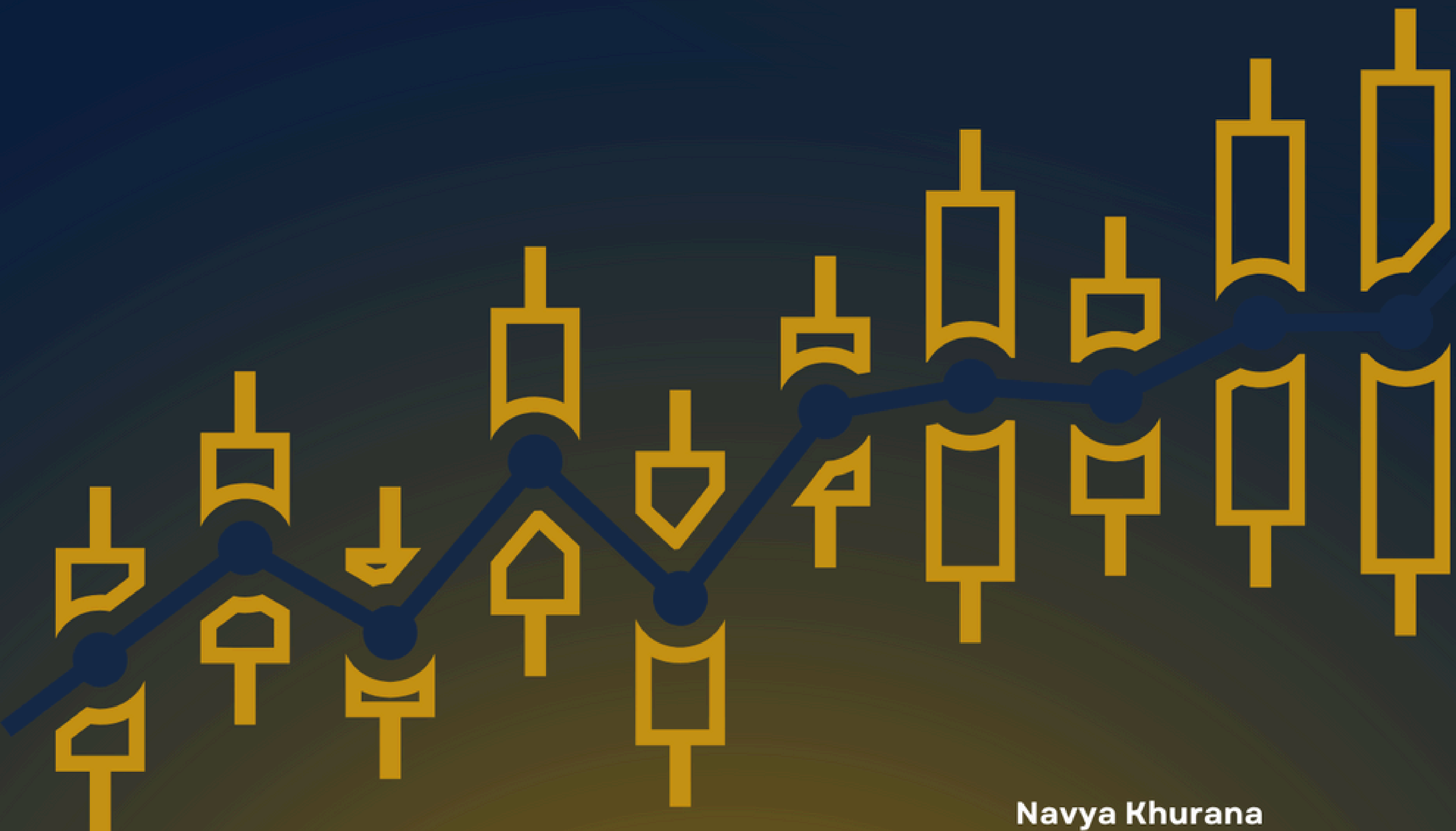
The Brandes Center

CHALLENGING LIFECYCLE INVESTING

THE CASE FOR AN ALL-EQUITY STRATEGY



Navya Khurana

Executive Summary

- Traditionally, lifecycle investing calls for diversifying across stocks and bonds, with younger investors holding more stocks and gradually shifting towards bonds as they age. This approach is embedded in popular financial advice and offerings like Target-Date Funds (TDFs).
- Researchers challenge these assumptions and propose an all-equity strategy—50% domestic and 50% international stocks—as a more effective way to build retirement wealth.
- Their findings show that the all-equity approach delivers better outcomes, including greater wealth accumulation, higher income replacement rates, and lower risk of running out of money in retirement.
- They recommend revising financial advice and pension regulations to consider all-equity strategies and emphasize financial education to help investors maintain a long-term focus through stock market volatility.

Professors Make Compelling Case for 100% Equity Allocation:

- Dr. Aizhan Anarkulova, Goizueta Business School, Emory University
- Dr. Scott Cederburg, Eller College of Management, University of Arizona
- Dr. Michael S. O'Doherty, Trulaske College of Business, University of Missouri

"In investing, what is comfortable is rarely profitable."
-Rob Arnott, acclaimed researcher, investor and founder and chairman of Research Affiliates

This is exactly the strategy adopted by Dr. Aizhan Anarkulova, Dr. Scott Cederburg, and Dr. Michael O'Doherty in their groundbreaking research challenging two central tenets underlying the traditional "life cycle" investing model:

1. People should diversify across stocks and bonds
2. The young should invest more heavily in stocks than the old

This age-based, stock-bond strategy is ubiquitous across financial advisors, CFA study materials and popular books by Dave Ramsey, Suze Orman, or Tony Robbins. It has found its way into regulation with Qualified Default Investment Alternatives (QDIAs) like Target-Date Funds (TDFs) adhering to the principle of gradually shifting from stocks to bonds as investors age.

Every year, about $600 billion in new money flows into US retirement plans and TDF's are an option in more than 80% of 401(k) plans, according to Kiplinger. In a discussion with The Brandes Center's Advisory Board, Cederburg said, "People basically do whatever the default is. So 83% of retirement savers have at least some investments in a target date fund—and about 60% are fully invested in a single target date fund that matches their horizon."

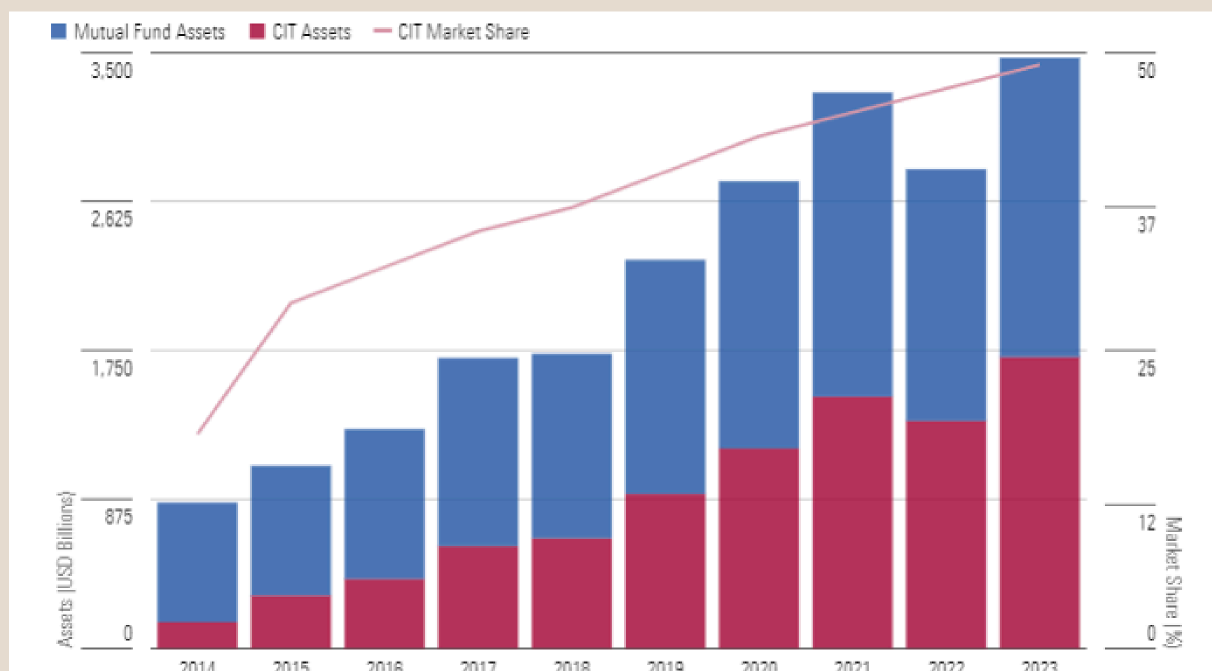
According to a Morningstar report, “2024 Target-Date Strategy Landscape,” TDF assets grew from about $875 billion in 2014 to a record high of nearly $3.5 trillion by year-end 2023. See Exhibit 1.

With most target date funds, an investor’s allocation to equities decreases with age. See Exhibit 2. This is considered a “safe” way to invest as it’s designed to reduce the likelihood of loss from stock market volatility as an investor builds wealth.

But as the title of the professors’ report (“Beyond the Status Quo”) suggests, their work challenges this conventional approach. Cederburg said, “Our study shows that if we look at investing just 50% in domestic stocks and 50% in international stocks—and investors hold that for their entire lifespan—it outperformed all of these different QDIAs If we look at all the major outcomes, you're going to have more wealth at retirement, better retirement income, a lower chance of actually running out of money during retirement and greater likelihood of leaving a larger inheritance. So it's actually a safer strategy to remain 100% in equities during retirement.”

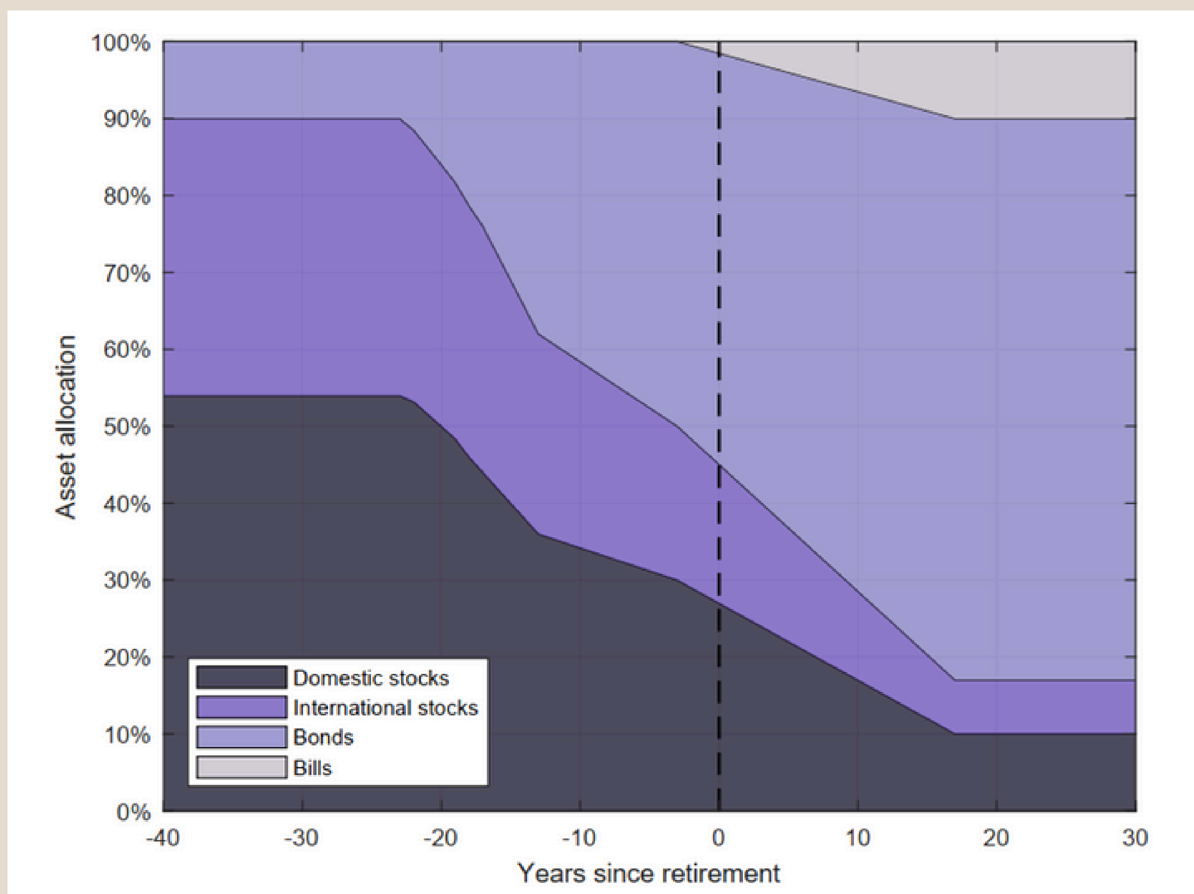
Interestingly, the researchers found that international stocks provide a much better diversification tool for domestic stocks compared with bonds as unhedged, international stocks get “safer” over time while domestic bonds actually get riskier for longer-term investors. Bonds tended to have lower real returns and became more correlated with domestic stocks.

Exhibit 1 | Total Target-Date Assets Have Grown to Nearly $3.5 Trillion as of Year-End 2023



Source: Morningstar Direct and surveyed data. Totals do not include custom target-date strategies. As of 12/31/23

Exhibit 2 | Typical Glidepath for TDFs Reflects Higher Exposure to Bonds/Bills as Investors Age



Source: Anarkulova, Aizhan and Cederburg, Scott and O'Doherty, Michael S., Beyond the Status Quo: A Critical Assessment of Lifecycle Investment Advice (October 2, 2023).

Holding assets in non-US currencies, like the Euro, can allow investors to capitalize on favorable exchange rates when bringing money back to the U.S. during inflationary periods.

One of the key advantages of international stocks, as highlighted by Cederburg, is their potential to hedge against domestic inflation. He explained that holding assets in non-US currencies, like the Euro, can allow investors to capitalize on favorable exchange rates when bringing money back to the U.S. during inflationary periods.

He also added that there's almost no correlation between the real returns on international stocks and inflation over long horizons.

“If domestic stocks lose over a 30-year period, then the probability that bonds are also going to show losses relative to inflation over that period is about 65%.” --Dr. Scott Cederburg

“If domestic stocks do poorly over a long period of time, domestic bonds also tend to do poorly over that same period.” Based on their historical research, he added, “If

domestic stocks lose over a 30-year period, then the probability that bonds are also going to show losses relative to inflation over that period is about 65%."

Data and Methodology

The professors took painstaking care in building a proprietary database that included real returns for domestic stocks in 38 different developed countries, going back in time to 1890 in some cases.

Getting technical, the researchers abandoned the standard "IID" approach for long-term studies (assuming "identically, independently distributed" returns) and adopted something different—a block bootstrap approach. In short, instead of using 1-month returns as the basis for analysis, the team used random stretches of real returns (drawing from 30,000 months of data) to better replicate an investor's long-term horizon. Cederburg further explained that an IID approach would break apart such time series dependencies that are otherwise critical for thinking about and modeling long-term investing scenarios.

"When stock prices fall sharply, there is some potential for them to bounce back relatively quickly."
--Dr. Scott Cederburg

Among the benefits of the methodology focused on 10-year blocks of time? It's more realistic.

"For example," Cederburg said. "If we're in a very high volatility period, then we know that next month likely is also going to be highly volatile as volatility is very persistent over time. We also know that, on average, it doesn't always happen, but when stock prices fall sharply, there is some potential for them to bounce back relatively quickly."

In retirement, the researchers used the "4% rule," where each couple withdrew 4% of their assets (inflation adjusted) each year.

Cederburg added, "The underlying assumption we have is that developed country returns are informative for developed country investors. If you're in the US, it's not just US returns that are relevant." He explained that the team would draw a 10-year block of returns from Germany, for example, and make currency and inflation adjustments relative to other countries. Next, the simulation might link those returns to a block of 10-year returns from Japan. Cederburg added that US returns during the period of study generally were higher than other countries, but they were not a serious outlier.

With the dataset in place, they estimated a million couples' experiences using Monte Carlo simulations. Each couple started working at 25 and retired at 65. The couples' earnings over that 40-year span included various types: consistently high or low wages and peaks and valleys during that span. Each couple saved 10% of their salaries.

While the returns for various asset classes included global markets, the couples mortality rates and social security payments were based on the current US data. In retirement, the researchers used the "4% rule," where each couple withdrew 4% of their assets (inflation adjusted) each year; this introduced the potential for "ruin," or running out of money during their lifetimes.

Next, the researchers applied eight different asset allocation strategies for the couples that ranged from low- to high-risk in terms of volatility and return potential. Those strategies were:

1. TDF: a "traditional" target date fund, as modeled in Exhibit 2
2. Bal: a consistent mix of 60% domestic stocks and 40% bonds
3. Bal/I: a consistent mix of 30% domestic stocks, 30% international stocks and 40% bonds
4. Age: a mix of domestic stocks and bonds, adjusted each year using this formula: domestic stocks = (120-Age)% and bonds = (Age-20)%
5. Age/I: Similar to the "Age" strategy, except international stocks were added: domestic stocks = (60-Age/2)% and international stocks = (60-Age/2)% and bonds = (Age-20)%
6. Bills: 100% allocation to bills
7. Stk: 100% allocation to domestic stocks
8. Stk/I: 50% allocation to domestic stocks and 50% to international stocks

Then, they simulated 1 million households for each of these eight strategies. See Exhibit 3.

The "box and whisker" chart in Exhibit 3 shows extreme outcomes at the top and bottom, the 75th and 25th percentile outcomes (the top and bottom of the boxes) and the median outcome (the horizontal line in the middle of the boxes).

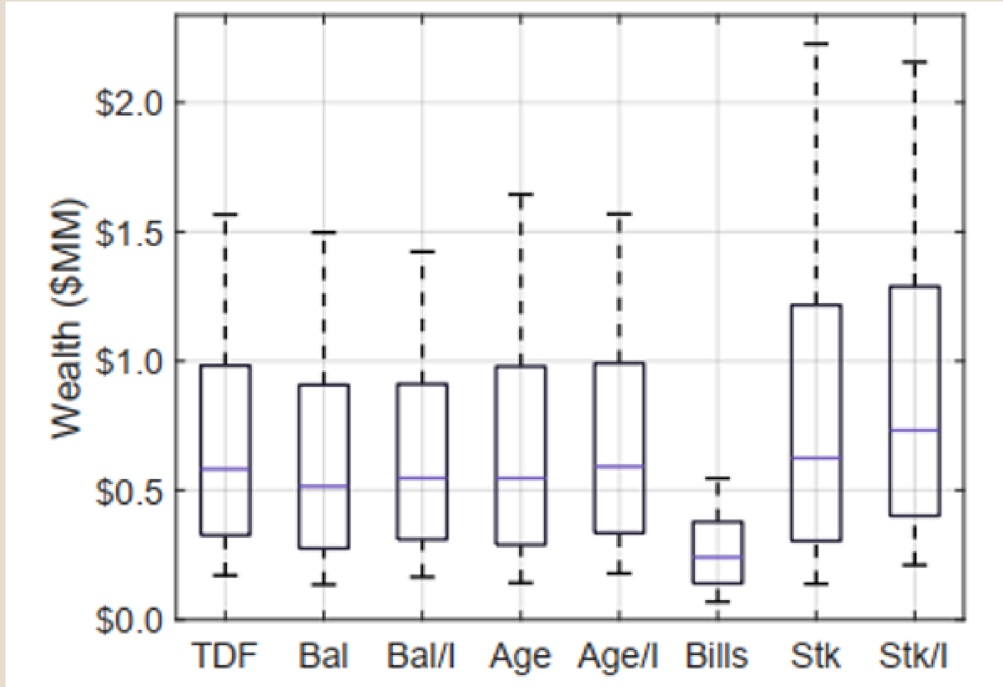
100% domestic stock strategy (Stk) and the 50-50 blend of domestic and international stocks (Stk/I) delivered the best results vs. the other six approaches.

Focusing on the median results, we see the 100% domestic stock strategy (Stk) and the 50-50 blend of domestic and international stocks (Stk/I) delivered the best results vs. the other six approaches.

For the 50-50 blend, "The best outcomes are better because you have better upside with stocks," Cederburg said. "And the worst outcomes are also better."

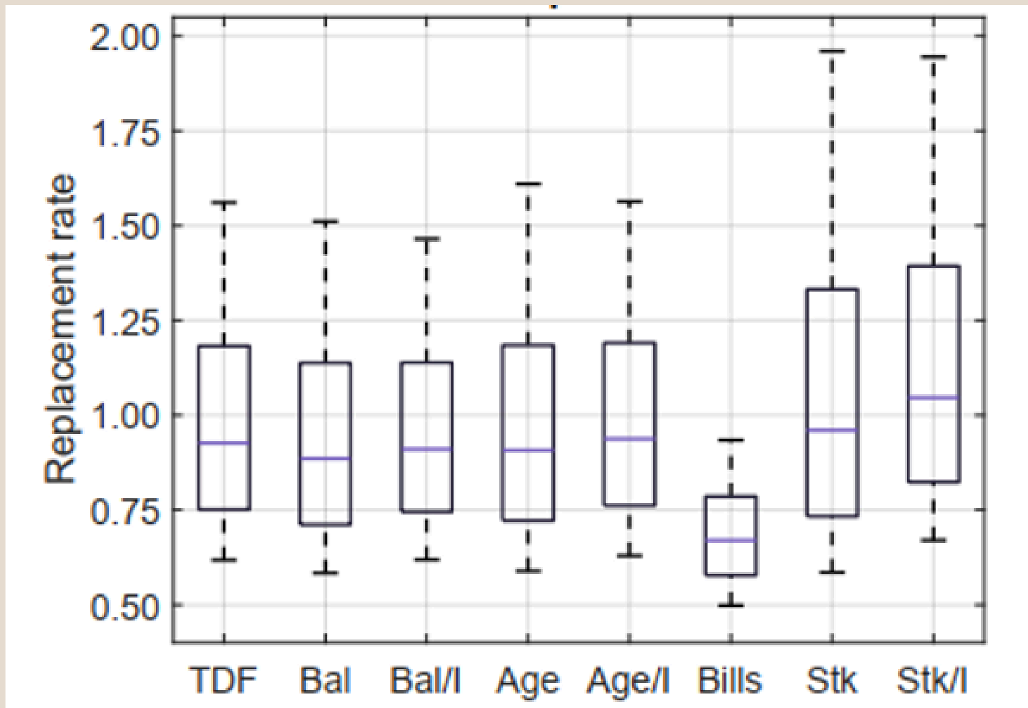
The team also looked at the "replacement rate" or how much of your average working years' income would you be able to sustain during retirement based on the wealth accumulated during your working years. As shown in Exhibit 4, again, the Stk and Stk/I strategies had the best outcomes.

Exhibit 3| 100% Equity Allocation Generated Greater Wealth at Retirement vs. Other Approaches



SSource: Anarkulova, Aizhan and Cederburg, Scott and O'Doherty, Michael S., Beyond the Status Quo: A Critical Assessment of Lifecycle Investment Advice (October 2, 2023).

Exhibit 4| 100% Equity Allocation Delivered Higher Income Replacement Rates in Retirement



Source: Anarkulova, Aizhan and Cederburg, Scott and O'Doherty, Michael S., Beyond the Status Quo: A Critical Assessment of Lifecycle Investment Advice (October 2, 2023).

Among the other considerations the team analyzed was the "ruin probability," or the likelihood a couple would run out of money during their lifetime.

As shown in Exhibit 5, none of the approaches eliminated this risk. But the likelihood of ruin was lowest for the Stk/I strategy and highest for what many investors might consider the "safest" strategy, bills.

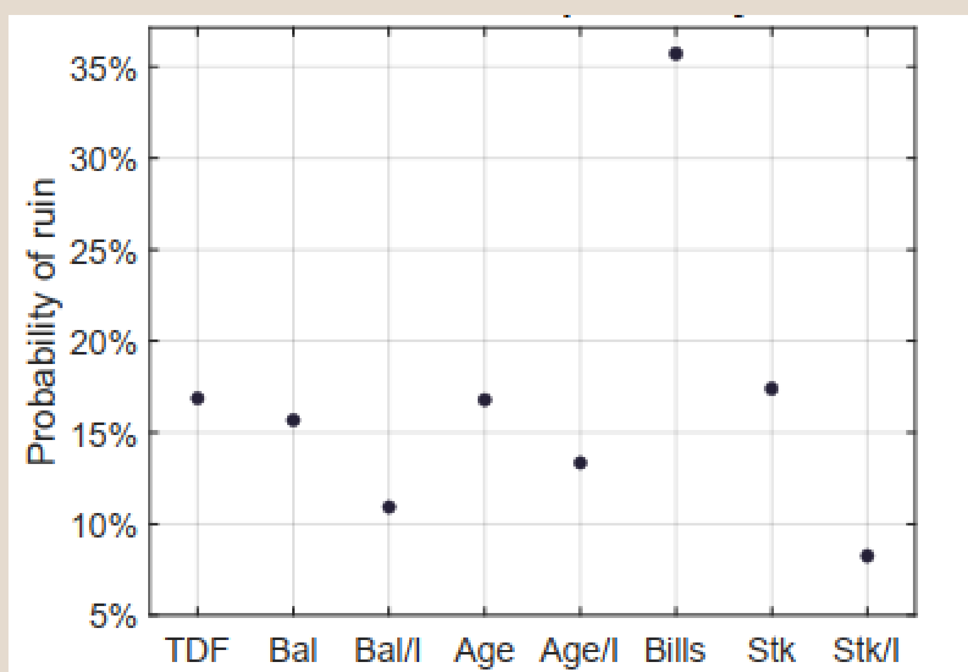
"The surprising thing for us," Cederburg said, "was the diversified stock portfolio. Not only does it have high upside, but it's also getting you good downside protection. It's around an 8% probability of ruin for the diversified stock portfolio. So it's roughly half of the chance of running out of money compared with investing in the TDF."

He added, the TDFs "are trying to be safe by getting your money out of stocks and into bonds. But if you live for a very long time, you still have to be generating additional wealth during retirement. And if you have an inflationary period during retirement, you lose a lot of that money in domestic bonds."

"The all-equity strategies do have larger drawdowns compared with the TDFs, especially during retirement", said Dr. Scott Cederburg. "But generally, investors would end up in a better spot by riding out these storms."

Among the drawbacks of the 100% equity allocation the researchers promote is the potential for large drawdowns—or a sharp percentage drop from a peak in wealth accumulation. Cederburg acknowledged, "The all-equity strategies do have larger drawdowns compared with the TDFs, especially during retirement."

Exhibit 5 | Exhibit 5: 100% Equity Allocation Showed the Lowest Probability of "Ruin"



Source: Anarkulova, Aizhan and Cederburg, Scott and O'Doherty, Michael S., Beyond the Status Quo: A Critical Assessment of Lifecycle Investment Advice (October 2, 2023).

Cederburg added that, "generally, investors would end up in a better spot by riding out these storms." At the same time, "If investors are selling when stocks crash and putting the proceeds in other assets, then all of this falls apart."

When asked how holding value stocks would have affected the results, Cederberg said, "We don't have the data because we're going across so many countries and such a long period. I suspect a tilt toward value would have performed well during the 20th century, but maybe less so during this century." He added, "But who knows whether the recent underperformance is a blip or a trend."

In summarizing their work, Cederburg noted, "You have to invest somewhere. And we're finding that a 100% equity allocation is actually the safest alternative. Things that are traditionally viewed as safe like a target date fund, actually, aren't that safe once you think in real terms and you consider the long-term properties of returns."

Board Discussion

Advisory Board member Barry Gillman, CFA started the open discussion with a suggestion about how investors could best apply the researchers' findings. Given the large drawdowns for the 100% equity strategies, investors may panic when that occurs, sell and lose the long-term benefits of the strategy.

"People bailing out at the bottom really wrecks this model," Gillman noted. "So, my suggestion would be to find TDFs that have much higher equity components [than typically recommended for an investor's age] and leave your money there."

Gillman added that many studies focus on investors between ages 55 and 75 because that's when they typically have the most assets and the potential for big gains or losses—in absolute terms—is magnified. "Their retirement plan should be somewhat different before and after this period," he said.

Anarkulova said their research is designed to shift investors' approach "more toward stocks as you said." She added, "None of our evidence ever says that stocks are completely safe. And if investors are going to pull out of the market at the worst times, then, yes, you should take a more comfortable level like 80% stocks and 20% bonds. But—if you can go with 90%-10%, that would be better. We just want to raise awareness on the potential outcomes."

"None of our evidence ever says that stocks are completely safe. And if investors are going to pull out of the market at the worst times, then, yes, you should take a more comfortable level like 80% stocks and 20% bonds. But—if you can go with 90%-10%, that would be better."

Dr. Aizhan Anarkulova

"We've seen a lot of retirement research about all sorts of different aspects of the problem," Cederburg said. "But we feel pretty strongly that the most important aspect of the retirement savings problem is the returns that you're going to earn on the asset classes that you're invested in. We are trying to push forward a conversation on what's the best way to model those returns."

Board member Zev Frishman asked for more details on the asset allocation for a non-US investor. "If you simulate your work from Canada, for example, are you suggesting I put 50% of my equity allocation in Canadian stocks and invest the other half on a market value basis in the rest of the developed world—adjusted for currency movements?"

"Actually," Cederburg said, "We find if we fully optimize, it was about 33% domestic and 67% international. We chose 50-50 because it's a simple rule of thumb. So, for a Canadian investor, I'd be perfectly happy if you were anywhere in the 25% to 30% neighborhood in Canadian equities. What you want to avoid is 3% Canadian and 97% elsewhere."

The potential for adverse decision-making among investors with self-directed retirement plans like a 401(k) triggers the question of whether such investors would benefit from professional guidance.

Cederburg said, "A lot of financial advisors view that as a big part of their job—to be the person who talks people off the ledge in these types of circumstances."

Anarkulova raised a broader issue, "I think what's more important is financial literacy. Can a financial advisor—or even an online platform like Robinhood, provide that? Too often, people don't have questions about asset allocation. Their number one question is: what is stock?"

Alex Babio said, "If I may add my experience as a private banker and advisor, we usually separate two things: money for the next generation and money for an investor's life cycle. That's the key. And being private bankers, we often are in a privileged position as these households typically are overfunded.

"For investors at 70 years old, they may have an objective of building money for the next generation," Babio said. "Your brilliant paper adds a new set of variables because the investment horizon now is so long that equities are allowed."

Conclusion

The research by Anarkulova, Cederburg, and O'Doherty fundamentally challenges mainstream investment advice and DC plan regulations by advocating for an all-equity asset allocation. Using a block bootstrap simulation and analyzing long-term returns, they found that a constant allocation of 50% to domestic stocks and 50% to international stocks throughout one's lifecycle provides better retirement wealth accumulation, higher income replacement rates, and a lower probability of running out of money in retirement. While the researchers warn of a potential of larger immediate drawdowns, the study suggests that the enormous economic gains outweigh the short-term losses and encourages a revision of financial advice and regulations to help investors maintain a long-term focus.

Navya Khurana is a Research Intern with The Brandes Center.

[Anarkulova, Aizhan and Cederburg, Scott and O'Doherty, Michael S., Beyond the Status Quo: A Critical Assessment of Lifecycle Investment Advice (October 2, 2023). Available at SSRN: https://ssrn.com/abstract=4590406 or http://dx.doi.org/10.2139/ssrn.4590406

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