Navigating the Economic and Market Crosscurrents to Come

Thornburg President and CEO Jason Brady talks U.S. tax reform, the economy, valuations and creditworthiness. Why is the dollar falling, U.S. sovereign yields flattening and financial conditions easing as the Fed tightens policy? Is it behind a reviving Phillips Curve? Should we expect rate and credit volatility ahead? Are exchange traded funds (ETF) liquid? Are regulators on the right track with new liquidity rules and MiFID II? What are the challenges to portfolio construction and asset allocation amid shifting market dynamics?

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Q: How much of a near-term and longer-run boost do you expect from U.S. tax reform to an economy that is already running at a roughly 2.6% annual pace, especially amid Federal Reserve interest rate hikes and "quantitative tightening" from its balance sheet reduction? Do you expect the tax reform to bolster corporate earnings and the resilience of relatively high asset valuations as key rates rise?

Jason Brady: Tax reform has already supported valuations, which I would agree are relatively high. I think the tax reform is important for U.S. competitiveness, given how much of an outlier the U.S. was around corporate taxes. It is positive for business.

That said, I don't think this is the time for an economic boost. The Fed, in my view, is already behind the curve. We're at very accommodative levels of monetary policy with generationally low jobless claims, very low unemployment, and extremely low levels in financial conditions indices. The Chicago Fed's financial conditions index is at its lowest point in a quarter century.

So I don't think we need to goose the economy right now. Its runway is shorter than it has been in the past, due to demographics and other things. The labor force participation rate is at four-decade lows, and given labor force complexities, the high GDP growth targets we hear bandied about, 4% or more, will be a challenge.

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While the tax reform was needed, the timing would have been better in the immediate aftermath of the financial crisis. At this point, it's likely to be a bit of a sugar high.

Q: If the economy doesn't need more stimulus at this point, and monetary policy, while still at accommodative levels, is tightening at a faster clip, why is the dollar falling and U.S. sovereign bond yields still more or less flattening? And why have financial conditions been easing over the last couple years?

JB: The financial conditions readings are extremely interesting. In general, they actually loosen as the Fed tightens, which you could say means one of two things. One, the Fed doesn't have much control. Or two, it needs to be more of a countercyclical force than it's being.

Former Minneapolis Fed President Narayana Kocherlakota has argued that the Fed should be on hold, and he had dissented when he was still at the Fed as it raised rates. He recently wrote an interesting, thoughtful piece arguing against tightening policy and criticized the Fed's very gradual approach. He thinks more stimulus is needed now to support employment and prices, which he says the Fed could safely provide if it weren't afraid to tighten policy faster down the road. While I disagree with him on the appropriate rate level given current conditions, I agree with his idea that the Fed is afraid to move quickly. Ever since the Fed shifted toward policy transparency, it's been afraid to do anything without telegraphing it to the market. As a result, it's become hostage to the market, which is a bad place to be.

I think the Fed is unwilling to take big moves for fear of generating criticism that it will produce a correction. The cheerleaders for higher asset prices would rap the Fed as a barrier to the further rise in asset prices. But valuations that don't reflect fundamentals ultimately aren't sustainable.

As far as the dollar falling, it's interesting, particularly as U.S. yields are rising. For more than a year, but especially over the last five months, the two-year U.S. Treasury yield has gone up virtually every day. It's a straighter line up than even that of the S&P 500. The U.S. dollar would normally tend to go higher because rate differentials usually help to explain foreign exchange trends. But the dollar has gone down over the last year.

I think it's more about the U.S. position in the world, and the attractiveness of the dollar from a reserve currency standpoint. There are some questions around China reexamining the composition of its foreign reserves. Obviously, if the People's Bank of China or other central banks were to start selling U.S. Treasuries and converting the U.S. dollars back into local currency, it would weaken the dollar. It's definitely the case that demand from that side of the equation has been less, and that demand from local investors, i.e., mutual funds as an example, has been higher. That's a piece of it.

Yield curve flattening is another interesting challenge. As the two-year U.S. Treasury yield started going up last spring, the 10-year yield started to break out last fall, and began moving noticeably higher at the start of this year. The twos-tens (yield) spread is one way to measure the yield curve, and it has flattened to about mid-50s to 60 basis points over the last couple months. As the twos are more beholden to where the Fed is, I would argue that if you were at a more appropriate level, the curve would already be flat. But again, I think the Fed is behind the curve.

So I don't think the Fed should refrain from raising rates because it's worried about the yield curve flattening, and tipping the economy into recession. If it's too dovish we might therefore get the opposite problem: policy that's too stimulative and ultimately causes a more painful correction.

The yield curve flattening reflects the long end not really believing in inflation until very recently. And, again, part of that is outside the U.S. and part inside. It will be interesting to see whether large buyers like central banks continue to either unwind in the case of the Fed or not buy global sovereigns. Such a change in regime would stop the flattening. Ultimately, I don't believe the term premia and the real yields that you're seeing today are enough compensation. I don't think the market does either.

Q: So what's the alternative to the meager compensation?

JB: Cash is starting to be a valuable asset class. When cash was paying you zero and inflation was undershooting but still at 1-odd percent, your real return was a negative 1-odd percent. Now, with the two-year Treasury over 2%, and key inflation gauges at or still under 2%, it's a very different proposition.

Q: Some economists argue that dollar weakness over the last year should be seen in the context of its substantial gains against major counterparts in 2014, when the Fed started reining in its monetary accommodation just as the European Central Bank (ECB) and Bank of Japan (BOJ) were ramping up their respective stimulus programs, and energy prices collapsed. Now that the ECB is tapering its stimulus and the BOJ is signaling movement in this direction, the dollar's just giving back some of those erstwhile gains. Others contend that the tax reform is likely to deepen the fiscal deficit, which combined with the trade deficit, is weighing on the dollar. What's your view?

JB: Those are all relevant factors behind the dollar's weakness over the last year. Back in the spring of 2014, the

euro was about €1.40 a dollar. Then, toward the end of 2016, it was falling, almost to parity, and I think it overshot. So it's been reverting back.

The BOJ recently made noises that it was going to reduce accommodation, which has bolstered the yen a bit since late December. But the BOJ has been pegging Japan's benchmark yield curve, which is pretty aggressive accommodation. Now if Japan starts to get inflation, that might be the most interesting global development this year, because it means that the Phillips Curve is not dead. If Japan gets inflation, that says something about what might happen in the rest of the world.

But this isn't about absolute foreign exchange fluctuations over the last six months. It's more about market perceptions of economic fundamentals and central bank policy. The market still doesn't totally believe in the Fed's guidance. It's been right for a long time to not believe in the Fed, but now it's perhaps wrong. The Fed might actually be tightening faster than the market, which is also inertial, is willing to price. But it was inertial on the way down. And it will probably be inertial on the way up, if the Fed does deliver, as I believe it should.

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Q: In recent times there has been much talk about a "new normal" of modest global growth, persistent low inflation, if not deflation, and suggestions, as you just noted, about the death of the Phillips Curve, which posits an inverse correlation between unemployment and wages that should feed through to inflation. You mention Japan. Many people have pointed to Japan as an illustration of what the broader developed world, at least, might expect in the future: stagnation and near-zero inflation. But lately we've seen growth picking in Japan and accelerating across the globe. And, as you just suggested, even Japan's employment, wage and inflation dynamics may finally be shifting higher. Is the Phillips Curve dead, or slowly awaking from a long, deep slumber?

JB: I think there's a demographic element, and a question about the potential growth rate, certainly of the developed world, but maybe even the whole world. And related to that potential growth rate, about productivity, not to mention a question around how productivity is measured.

I don't think the Phillips Curve is dead. If you push enough stimulus long enough, there's a point at which the employment, wage and potentially inflation reactions will materialize. It looks like they're starting to pick up in Japan. I think you're seeing that in wage rises in the U.S., too. You're seeing that in some wage rises globally. You're also seeing that in jobs-to-applicants ratios around the world.

But in the U.S., I think the Fed has built up inflation pressures already, and, again, I think they're behind the curve. Despite the Fed's standard "long and variable lags" language, you look at jobless claims in the U.S. and they're not normalized for the size of the workforce. I don't think we have seen jobless claims this low since maybe the early 1970s. Again, this is not normalized. This is an actual number. I don't think we're measuring things very well. The models and measures policy makers are using are probably a little stale. The idea that inflation is dead because we've seen flat goods prices in the context of a global economy may be misguided.

Clearly, you also have different employment dynamics, and employment ratios have changed. Union labor is different, and manufacturing is a smaller part of the economy. People are more likely to receive incentive pay, which can move around, versus contract pay, which is sort of binary. Looking at the Atlanta Fed Wage Tracker since 2010, wages are picking up.

Even a few people at the Fed have indicated that they're uncomfortable with the assertion of a broken Phillips Curve. Some are still there, some aren't. I'm thinking of Richard Fisher, Esther George, and Jeffrey Lacker. And Marvin Goodfriend, who recently got excoriated by Congress for saying that maybe inflation is going to pick up. A number of lawmakers dressed him down because his warnings on inflation several years ago didn't pan out. But I think central banks globally are now making noises that would indicate they're way less comfortable with what they have wrought than they were in the past, and certainly around how much more efficacy there is in continued stimulus.

Maybe that's partly because now we're so far below NAIRU (the non-accelerating inflation rate of unemployment, also known as the long-run Phillips Curve, represents the equilibrium point between economic growth, unemployment, wages, and inflation). Perhaps we need to reconsider how we're measuring things, because it's a pretty simplistic measure.

Q: Back to the tax reform. A common metric for judging borrowers' creditworthiness has long been the amount of debt to a company's earnings before interest, taxes, depreciation, and amortization, or EBITDA. Does the tax reform shift the debt/EBITDA ranges at which U.S. companies should be considered more or less credit worthy? Did corporate America just become a better credit?

Most of the market is set up to perceive very small differences, which have very small effects...but large differences tend to have consequently larger effects.

JB: No, because of the limits on interest deductions. If you're highly levered, you don't get that higher deduction anymore. Highly levered firms often don't have much by way of earnings anyway. So, what kind of taxes are they paying? Most companies will still be able to receive a net interest deduction, but it is now capped at 30% of EBITDA for four years, and 30% of EBIT thereafter. So I don't think it changes the equation on creditworthiness. But it might on leveraged buyouts.

Q: If finding relative value in fixed income has traditionally factored in macro considerations to a greater degree than relative value research in equities, have the monetary exertions of major central banks changed that? Has all the monetary stimulus since the Global Financial Crisis made some macro analysis necessary for bottom-up stock picking?

JB: I think a lot more equity folks are asking why everything is moving together and why S&P 500 price-to-earnings multiples have gone from 15x five or six years ago to about 23x today. Look, there's a mythos around equity investment that it's cool to go to sleep with a 10-Q and that's all you need to look at. For us, that's not enough.

One of the things we do that is very valuable is read far more than the 10-Qs. We read a bunch of different things. We build a world view, a mosaic around what's going on. In that sense, we're really developing a macro view, but from the bottom up. And as our fund managers put together portfolios, whether it's in equity or in fixed income, the portfolio construction should reflect how the holdings work together.

And that necessarily has various macro considerations. So, you just asked about a lot of macro considerations that speak to risks we're taking at a portfolio level. I think that managers who structure a portfolio without any risk relative to a benchmark on a sector level, for example, can limit themselves to, say, just picking Ford versus GM. And that's fine, but it's not usually a very large relative value leap. The amount of value you can add there is generally pretty low because it's limited to very small increments of difference on which many people spend inordinate amounts of time.

The much greater zone for value-add, and usually unexplored in most asset management firms, is how the broader, and therefore deeper mosaics, fit together. I don't mean estimating gross domestic product (GDP) in investible countries and then using the rankings as a top-down starting point. Rather, it's developing a truly nuanced view of the various options, their individual prospects vis-à-vis not just similar opportunities in the same sector but those from other sectors, which may be competing for the same customer dollars. A deeply nuanced view, some of which is high level, and most of which is informed from bottom-up fundamental analysis, can together bring a new understanding of both the company and how its securities might work in your broader portfolio. We find this is the best way for us to add value.

It's basically a question around methodology. Most of the market is set up to perceive very small differences, which have very small effects. We've structured ourselves to try to discover and exploit large differences. Sometimes it's messy or challenging, but large differences tend to have consequently larger effects.

Q: Do you expect rate and credit volatility to pick up in the U.S. in 2018 and create more opportunities for valuation-sensitive, long-term investors? How would you expect fixed income ETFs to perform in such an environment?

JB: Yes, I do. But let's start with the ETF question. Lots of different people say ETFs haven't been tested and they're scared of them. But I think they have been tested. Maybe people should be scared of them and maybe not. The challenge with an ETF is you have a liquid product that often references something illiquid. That's the challenge of any kind of aggregation of less liquid things.

But it's not that the ETF structure will break down. It's just that there will be more sellers, and so the price discovery will be very fast. Take the Bloomberg Barclays U.S. Aggregate Bond Index, which is very easy to replicate with big, super-liquid things like Treasuries. You had that trade at a discount to NAV, I think, of 7% to 9% in 2008. But fixed income ETFs based off it didn't break down. They just didn't trade at what people thought the actual value would be. But you could still trade them.

Ultimately, you don't have the creation of a redemption basket if you can't trade the underlying components. But you still have the ETF trading. A clear-cut example of this is the ETF referencing Greece. Remember when the Athens Stock Exchange shut down for a month or so in mid-2015? The main Greece ETF still traded, even though there was no ability to create or redeem shares. In other words, the "creation/redemption" mechanism for the ETF creation units, or blocks of shares, wasn't operative during that long market suspension. But by the time the Greek market—the underlying stocks—opened back up, the ETF had already reflected the change in value from the underlying securities.

In fact, lots of ETFs reflect underlying things that are closed. International

ETFs that trade in the U.S., for example. Or when a stock is halted in the S&P 500, the S&P 500 ETF still trades. You could actually impute the value of where the one thing that isn't trading is going, if you take the 499 that are trading, account for the one that isn't, and estimate where the ETF should be priced. So actually I don't think market volatility and potential illiquidity of the underlying is that much of an issue.

The bigger issue is the perception that ETFs are very stable. To be sure, you'll be able to sell it, but not at the price you think. It's the illusion of liquidity at yesterday's price, not at today's price, that's the problem. Yesterday's price may not be available for a whole host of reasons, some of which may be fundamental, some of which may involve liquidity or other factors. But the reality is ETFs are pretty liquid, but not necessarily at the prices you expect.

As for more rate and credit volatility, I think fixed income prices could go down. One of the ways they could decline is if demand drops. Fixed income investors are generally fixated on yield; they think that's going to be their return. Imagine something that's yielding 5% and you just got a negative 5% return following adverse price action, which isn't what you signed up for. So you sell. That's pretty typical. That's what happened in 2008, except the numbers were bigger than that. As they sell and the market gets volatile and investors get more scared, it can become a bit of a feedback loop until others step in and decide there's value here, even if there's more volatility.

Anyway, I would expect that in a volatile market ETF investors would be some of the weakest hands. Traditionally, mutual fund investors aren't exactly the strongest hands in the marketplace, either. We have to deal with flows here. But we have liquidity buffers. We're thoughtful, not mechanical, around meeting any redemptions, whether from cash balances or selective trimming of certain positions, if necessary.

A lot of folks who are cheerleading for ETFs as the answer to all problems will discover that they're not the answer to all problems. ETF transaction costs in matching component changes in a benchmark index can be higher than people think. So can the fees. The assets underlying ETFs also require some thought, including around their liquidity. Plenty of ETF investors are already seeing bad outcomes relative to active or non-ETF managers. It's not a vehicle that solves all problems. Nothing solves all problems.

Q: Turning to capital markets regulation, the latest iteration of the Markets in Financial Instruments Directive (MiFID II) represents significant change in the way that investment research and trading are paid for and conducted in Europe and to some extent beyond. What's your take on it, and does it in any way affect how Thornburg operates?

JB: So, we aren't subject to MiFID, which at its core involves the value of research and who should pay for it. The use of outside research here is only part of our investment process. We do a lot of research ourselves. We employ analysts who spend all their time building models, and they certainly talk to many smart people.

At the end of the day, we provide net returns to our clients, regardless of whether the associated expenses show up in the management fee or in the transaction costs. We can put them under column A or column B. But if the clients believe those net returns are valuable, then they will continue to entrust us with their money. If they don't, they won't.

As for the industry, I expect it's really going to hurt smaller, independent research shops, which is the opposite of what the regulation was intended to do. I think the methodology for MiFID is not so great. Anytime you try to delineate exactly what client received exactly what benefit from exactly what research, that starts to make it a less effective arrangement. We'll see.

But I understand that regulators are looking for ways to capture how research gets paid for more broadly. Look, I come from the fixed income side, where basically there's a bid-ask spread, and you fight for a certain price. And sometimes the broker-dealer makes money and sometimes it doesn't. And if you do business with them that they generally deem to be valuable, they may provide you with more research, or not.

The equity market, in my view, has forever had this weird division, which is you do the transactions over here, you do the research over here and then, hopefully, that kind of matches up. It doesn't make much sense to me, but then again, we are running equity trading in such a way that we are incentivizing as narrow a bid-ask spread as possible, as opposed to a bid-ask spread that incorporates maybe a bunch of other things.

I understand why that is. You don't want people paying a lot for trading, especially given that that's become a lot cheaper to provide nowadays. But I also think that it's going to hurt the industry.

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Q: New rules from the U.S. Securities and Exchange Commission (SEC) will require open-end mutual funds to introduce liquidity risk management

programs that entail classification of investments into four categories, from highly liquid to illiquid, and effectively compel funds to keep a minimum level of highly liquid securities and restrict the amount of illiquid securities to 15% of fund assets. The idea is to ensure that funds can meet redemption obligations and "mitigate dilution of the interests of fund shareholders." The rules will generally become effective at the beginning of December 2018. In the risk/reward balance equation, it appears the SEC is prioritizing risk mitigation over reward potential. What's your take? Also, how do you view the premises of the new rules with respect to liquidity risk classifications, particularly regarding fixed income? Is daily trading volume a reliable metric, or is it subject to procyclicality, with securities thought liquid potentially becoming illiquid in market selloffs, and, in buoyant markets, riskier securities appearing less risky?

JB: Basically, the idea of the new rules, which include a pre-existing restriction on illiquid securities to 15%, is to prevent another collapse like we had with the Third Avenue Focused Credit Fund, even though over the course of many, many months a $3-odd-billion portfolio went to $750 million and then there was some delay in liquidation. Ultimately, it was worked out just fine. And, by the way, that's in the documents as something that funds can do if they need to and, ultimately, it was totally to the benefit of fund shareholders. So, there's one instance in a giant industry and, ultimately, the rules as applied worked quite well.

I think the SEC is worried about liquidity of underlying markets. They should be; it's a good thing to worry about. The trouble is liquidity is not consistent and it's not even particularly measurable. This is a case of folks looking at equity markets, which also are complex in their liquidity, but for an individual investor a lot less complex. I can usually sell 10 shares, it's no big deal, of whatever stock.

But, in fixed income, the market doesn't work like that. So, outside vendors are beginning to measure the liquidity of your holdings "buckets." A kind of a consultant cross-checks your exposures. But daily trading volumes aren't a reliable metric on which to measure those exposures. U.S. Treasuries, for example, have been hard to buy in some selloffs. On the flip side, daily trading volumes certainly are subject to procyclicality: a rising tide lifts all boats, including leaky ones. In buoyant markets, you can see lots of less-than-seaworthy credits change hands.

Liquidity is not constant and the way liquidity is expressed in different markets is different. A municipal bond may not trade for eight months. But when you can get a bid for $20 million of it from six or seven dealers, if not more, all within a few basis points of each other, I would argue that's pretty liquid. But since it hasn't traded in a while, it's suddenly illiquid? That's why some formula purporting to reflect liquidity isn't really sufficient in that case.

Nor is it always sufficient in the case of U.S. Treasuries, as I mentioned. The 10-year U.S. Treasury in late 2014 suffered a flash crash in yields, which moved a lot lower in a hurry. Primary dealers wouldn't even quote the 10-year. "We're not going to trade that," they said. So, if the U.S. Treasury is not liquid—obviously this is an extreme case, for sure—but if the U.S Treasury is not liquid, and I can't transact in it right now, what is?

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U.S. Treasuries are almost always liquid. I think a lot of bonds are quite liquid. But liquidity is not constant. Regulators are trying to measure it like you measure height, but it's not measurable in that way. It's not measurable from market to market that way.

I think there are various portfolios out there, particularly in fixed income, that have a lot of stuff that may not be very liquid. In the context of a daily liquidity vehicle, you should be thinking a lot about that. But the idea that outside vendors, who may be peripheral to these markets, will come in and say, "Well, this is liquid and this is not," doesn't make much sense to me.

To be sure, the SEC should worry about liquidity. It's an important concern. But I don't know that putting things into buckets solves the problem. I think one of the great values we bring to the marketplace is that we think hard about this risk and manage it, just as we do other risks, like credit risk, or duration risk, or jump to default/event risk. We actively manage liquidity and these other risks every day. And not just in the U.S. China has had some bouts of illiquidity in certain asset classes, and we have had to manage that risk as well, which is another topic.

Q: Actually, the next question is on China, which sports the world's second-largest economy and the world's second-largest stock market by capitalization. While the investment opportunities are big, Chinese capital markets have seen quite intense volatility over the years. To some degree, it's been driven by regulatory risk, including restrictions on capital flows. As an asset management firm that has been actively investing in China for a couple decades, what do you think about the potential opportunity for foreign wealth managers in China and for partnering with Chinese interested in investing overseas?

JB: So, it's very interesting. Having spoken with Chinese investment firms that, because of capital flow restrictions, specialize in investment in China, I'd say a few things. Yes, there's volatility, less so lately than a few years ago. But capital markets in China, given its history, aren't nearly at the same level of development as they are here in the U.S. Nor is the Chinese investors' understanding of the market as deep as it is here, given our much longer market history.

Many folks in China invest quite heavily in real estate or in bank or capital markets products. Capital market assets are a relatively small portion of many asset allocations. I think that will change over time and that the Chinese asset management business, which has been growing quite robustly over the last 10 or 15 years from basically nothing, is going to figure out how to invest sensibly within China as its bailiwick.

I think what Chinese asset managers and Chinese people, both institutionally and individually, will need is guidance on how to invest in the rest of the world, or how to invest globally. Because of capital controls, local asset managers don't have a lot of expertise in foreign investment. Many of my larger competitors have the idea that they are going to go into China and manage Chinese money for Chinese people because as a global investment manager they understand the local market better than local investors. Maybe some do, but a number of such initiatives haven't worked out so well.

Global private equity players, for example, went into the Chinese market and were not as successful as they thought they would be. The more successful global asset managers will be those helping the Chinese invest globally, which again is not their bailiwick because of capital controls. Now who knows when capital controls will be lifted meaningfully. It's definitely moving that way. Whether it moves that way in a straight line, and happens in three, five, or more years, I don't know.

I think what Chinese asset managers and Chinese people, both institutionally and individually, will need is guidance on how to invest in the rest of the world, or how to invest globally.

But China is a huge engine of the global economy, and has created an extreme amount of wealth. It has pulled hundreds of millions of people out of poverty over the last few decades and it seems pretty clear that the direction of capital controls is to be less, not more. The story of the last 30 years economically has largely been the integration of China into the global economy. I think the story for financial markets will be China's growing financial integration. I would say from the perspective of Thornburg's long expertise in global investment, we have a lot to offer there. We'll see what that might look like for us in five to 10 years, whenever capital controls in China are relaxed.

Q: Since becoming Thornburg's president and chief executive at the start of 2016, what do you see now that you didn't see before? What do you think are the main challenges facing Thornburg and the broader investment management industry?

I learn something every day here, about our people, our customers, the market. In the last two-plus years, lots has changed. The markets have changed. The environment for various products has changed. Our investments have changed.

But how we provide value to clients, I don't think that has changed. The wonderful thing about this company is the way it was set up—not by me, but by my predecessors—our investment process, our products, our people…we are providing value in a way that most people don't consider.

In 2016, there was so much talk about death of active investment amid the wave of flows into passive. Everyone talked about how challenging it was for active managers to outperform in U.S. large-cap equities. But lately it seems the pendulum is swinging back, even in U.S. blue chips, which have always been the proving ground or the data set that people would use. But it's also always been the case that active managers outperformed in bonds: any time anyone ever looked at that, if they were trying to data mine, they stopped looking because it was pretty clear.

In general, with passive management the set of investments is very delineated and rules-based. It's become cheaper and cheaper to deliver, and more broadly available. And that's wonderful. Fortunately for us that was never our value add—delivering an index return from a rules-based perspective.

Our value add has always been to provide a different solution, and uncorrelated alpha, if you like. And that comes directly from how we have managed money for more than three decades. Perhaps I appreciate our corporate culture, our investment process and financial judgment more than I had before, given all the conversations with clients over the last couple years. But that's always been what Thornburg is.

We still face the same challenges that we always have. We need to deliver every day for our clients. It's a hard job, for sure. But it's fun. It's really interesting. And it's an important job, striving to meet our clients' investment needs. If we can provide good financial judgment in different ways, in different kinds of

portfolios for folks all over the world, then we'll continue to be successful.

For the investment management industry, including Thornburg, I think the availability of real returns as we've seen them over the last several decades, and the correlation between major asset classes, is going to shift. I expect that it will be less conducive to portfolio construction that has become too mechanized and inflexible. Mechanical construction is based on past results and past covariances. As market dynamics shift, that's going to throw a lot of people off balance. That more than anything is probably the source of volatility going forward.

But for active managers it's a great opportunity because, rather than taking the passive, rear-view mirror approach—a degree of which is obviously necessary for risk management—you're really engaging in the fundamental research of price discovery, which is forward looking. It facilitates an educated viewpoint that can help you navigate complex, dynamic markets.

And they are complex. Take valuations. Sure, they're high, and likely a headwind. But they are not a great guide to short- and medium-term returns. In other words, things don't have to go down anytime soon because they're "expensive." Yet they're actually a pretty good guide to long-term returns. And there are always relative value opportunities within and across asset classes that can lead to outperformance over time.

But they won't be easy to spot and assemble. I do think figuring out how those assets move in relation to one another, constructing portfolios accordingly, and asset allocation more generally will be a lot harder than they have been over the last 30 years. That is the investment lifetime of most people in the marketplace today. So I think we're going to see a lot of changes in how people look at asset allocation. I suspect a lot of models will break down, which will be a source of consternation for many investors and a source of opportunity to provide value for folks like us.

If the challenges to portfolio construction and asset allocation weren't there, though, if markets always moved in a straight line up and to the right, if investing was easy, then we wouldn't exist. We wouldn't be able to provide value to our clients. ■

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Investments carry risks, including possible loss of principal. Portfolios investing in bonds have the same interest rate, inflation, and credit risks that are associated with the underlying bonds. The value of bonds will fluctuate relative to changes in interest rates, decreasing when interest rates rise. This effect is more pronounced for longer-term bonds. Unlike bonds, bond funds have ongoing fees and expenses. Investments in mortgage-backed securities (MBS) may bear additional risk. Investments in lower rated and unrated bonds may be more sensitive to default, downgrades, and market volatility; these investments may also be less liquid than higher rated bonds. Investments in derivatives are subject to the risks associated with the securities or other assets underlying the pool of securities, including illiquidity and difficulty in valuation. Investments in equity securities are subject to additional risks, such as greater market fluctuations. Additional risks may be associated with investments outside the United States, especially in emerging markets, including currency fluctuations, illiquidity, volatility, and political and economic risks. Investments in the Funds are not FDIC insured, nor are they bank deposits or guaranteed by a bank or any other entity.

EBITDA – Earnings Before Interest, Taxes, Depreciation and Amortization. An approximate measure of a company's operating cash flow based on data from the company's income statement.

Term Premium – The excess yield that investors require to commit to holding a long-term bond instead of a series of shorter-term bonds.

Yield Curve – A line that plots the interest rates, at a set point in time, of bonds having equal credit quality, but differing maturity dates.

Alpha – A measure of the difference between a portfolio's actual returns and its expected performance, given its level of risk as measured by beta. A positive alpha figure indicates the portfolio performed better than its beta would predict. In contrast, a negative alpha indicates under-performance, given the expectations established by the beta.

Phillips Curve – The inverse relationship between unemployment rate and inflation when graphically charted is called the Phillips curve. William Phillips pioneered the concept first in his paper "The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom, 1861-1957,' in 1958. This theory is now proven for all major economies of the world.

P/E – Price/Earnings ratio (P/E ratio) is a valuation ratio of a company's current share price compared to its per-share earnings. P/E equals a company's market value per share divided by earnings per share. Forecasted P/E is not intended to be a forecast of the fund's future performance.

10-Q – The SEC form 10-Q is a comprehensive report of a company's performance that must be submitted quarterly by all public companies to the Securities and Exchange Commission. In the 10-Q, firms are required to disclose relevant information regarding their financial position

Exchange Traded Fund (ETF) – A security that tracks an index, a commodity or a basket of assets like an index fund, but trades like a stock on an exchange. ETFs experience price changes throughout the day as they are bought and sold.

The Markets in Financial Instruments Directive (MiFid) is the EU legislation that regulates firms who provide services to clients linked to 'financial instruments' (shares, bonds, units in collective investment schemes and derivatives), and the venues where those instruments are traded.

The S&P 500 Index is an unmanaged broad measure of the U.S. stock market.

The Bloomberg Barclays U.S. Aggregate Bond Index is composed of approximately 8,000 publicly traded bonds including U.S. government, mortgage-backed, corporate and Yankee bonds. The index is weighted by the market value of the bonds included in the index.