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ETF Perspectives

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5th anniversary issue!

Fall 2018

FactSet's Elisabeth Kashner: Streamline your practice with strategic model portfolios

Elisabeth Kashner
FactSet

Elisabeth Kashner, the director of ETF Research at FactSet and founding cohead of the San Francisco chapter of Women in ETFs, has one of the keenest minds in ETFs. Kashner began her career 25 years ago as a bilingual fourth-grade teacher. But she gave that up to pursue a career in finance that began on the floor of the now-closed Pacific Exchange in San Francisco, where she was a derivatives trader.

She had three children and spent half a decade focusing on her family. Then she earned a master's degree in financial analysis and became a CFA® charterholder.

Later, as an investment strategist at a wealth management firm that used active mutual funds, she found herself sifting through client portfolios after the 2008 market crash, struggling to understand exactly what securities were in those opaque funds. The allure of transparent ETFs loomed large, and so it was that she joined ETF.com in 2010 to help create an ETF analytics and classification platform. That tool is now owned by FactSet; its output is licensed to ETF.com.

Kashner, a believer in broad-market passive investments for most investors, helped us analyze the growing phenomenon of model portfolios. She argued that buy, hold, and rebalance strategic model portfolios can be an efficient way for advisors to provide clients with passive strategies, but she stressed that model portfolios can go only so far, especially for clients whose financial challenges are quite complex.

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***Vanguard:** Where did model portfolios come from, and where is this phenomenon heading?*

Elisabeth Kashner: The idea of creating something standard and deploying it across scale is an old idea. You have to look at the target-date funds and their kissing cousins, the target-risk funds, which have been out in the market for a long time. Target-date funds, in particular, have the additional feature of not having a single target asset allocation but, rather, a dynamic one that shifts over time as the portfolio holder ages and aims to de-risk the portfolio as retirement approaches.

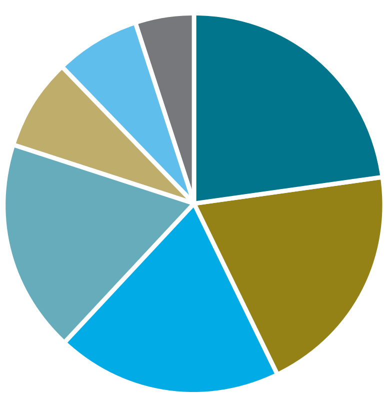
The advantage of target-date funds, and now model portfolios, is that they simplify the investment process for both advisors and clients. That's pretty great. Models also have the beneficial feature of automatically rebalancing when market activity moves the portfolio allocation outside a certain band—whether it's done on a periodic basis or on a threshold basis. That's a useful feature for ordinary people who don't want to do things like periodically rebalance their investment portfolios.

So what are other examples of model portfolios?

EK: Well, there are ETF strategists who put together ETF-based portfolios, but they're more like the next generation of the active fund manager, and I would not lump them with strategic model portfolios. The ETF strategist has given up on securities selection and has doubled down on making specific macroeconomic-type bets, whether they are on interest rates or countries or sectors. There are examples where that has worked out spiffily, but the results from the S&P Indices Versus Active (SPIVA) reports keep telling you quite consistently that active management has turned out to be a losing bet.[1]

But regarding other strategic model portfolios—robo-portfolios are generally an example, and some of the hybrid models are also an example—these are all strategic. They're trying to keep overall allocations either relatively static based on an investor's risk level or informed by an investor's age and glide path. They're not involved in picking and choosing in the capital markets but are instead trying to hew to a strategic allocation. There are now many, many models to choose from, and so the question for advisors becomes, "How do you choose?" What advisors may find over time is that, like so much of the asset management world, selling needless complexity is becoming harder to do.

Advisor portfolio construction process



- 23% Create custom portfolio for each client.
- 20% Start with models developed by practice, alter as necessary.
- 19% Use models developed by practice.
- 18% Start with models suggested by broker-dealer or custodian, alter as necessary.
- 8% Start with third-party provider models, alter as necessary.
- 7% Use third-party models.
- 5% Use models suggested by broker-dealer or custodian.

Source: Cerulli Associates, 2018. *The Cerulli Report—U.S. Intermediary Distribution 2018. A Holistic Approach to Wholesaling.* Boston, Mass.: Cerulli Associates.

1 Elisabeth Kashner, 2017. *ETF due diligence: Chasing quality, not performance.* Accessed on September 19, 2018, at https://insight.factset.com/etf-due-diligence-chasing-quality-not-performance.

> "If you're trying to streamline your practice so that you can really add value in other areas of financial services—such as planning, insurance, tax management, and hand-holding—then a simpler strategic model portfolio is appealing and in line with the message that you're trying to state."
>
> —Elisabeth Kashner

Do you view the ETF as absolutely essential to the whole model portfolio phenomenon?

EK: Yes and no. The yes answer is that ETFs in many ways have birthed the model portfolio as we know it. But that doesn't preclude this type of tactical model portfolio from also working in a mutual fund format.

The tactical model portfolio works well with ETFs because of the ease of intraday trading—the ability to put on and take off positions when you want—and the relative predictability of a passive investment. Once an ETF strategist selects a fund—whether the strategist chooses quite a plain-vanilla approach to a specific sector, industry, country, slice of the bond market, commodity, or what have you—the strategist knows what he or she is going to get. And the proliferation of ETFs has made getting very narrow, targeted exposure across geographies and asset classes far more possible than it was in the mutual fund world. So for the tactical manager, ETFs are really a godsend.

Now the tactical manager has to deal with all the trading issues. And any manager has to deal with tax consequences—if you turn the portfolio over too much, you're going to hit your clients with capital gains. That would be true in mutual fund format as well. The ETF, of course, seldom passes along capital gains to the fund holders, so that's at least one thing the strategist doesn't have to worry about.

But in the strategic world that hews to long-term asset allocations, it's more of an open question whether mutual funds or ETFs are better. Depending on the simplicity or complexity of the portfolio you want to build, there's a very good argument that mutual funds are still the better vehicle. It's become clear that Vanguard often takes that approach. Vanguard uses its mutual funds pretty extensively in the target-date and target-risk funds.

What kind of advisors are best suited to take the deep dive on model portfolios?

EK: From an advisor's point of view, you have to think about what sort of a business you have and how an ETF portfolio would fit into that. If you're trying to attract clients by being the smartest guy in the room, you're going to want a tactical portfolio that sometimes includes some pretty specific holdings and, of course, sometimes excludes a lot of pretty specific holdings as well to come up with a portfolio that's very different from a benchmark portfolio.

But if you're trying to streamline your practice so that you can really add value in other areas of financial services—such as planning, insurance, tax management, and hand-holding—then a simpler strategic model portfolio is appealing and in line with the message that you're trying to state.

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Equity ETF flows favor broad, plain-vanilla strategies

The table below shows the percentage of net 2017 flows captured to market share as of December 31, 2016, along with the asset-weighted expense ratio as of December 29, 2017.

	Net flows ($ billions)	Flows/2016 AUM	Expense ratio
Core	259.4	1.4%	0.12%
Tactical	155.2	0.8%	0.39%
Style box	52.8	0.6%	0.16%
Cash	10.1	4.1%	0.23%

Source: FactSet.

What kind of clients are best suited for the use of model portfolios?

EK: On the one hand, the answer is anybody who doesn't want to build his or her own portfolio from the bottom up and manage it on an ongoing basis. And to a certain extent, that's almost everybody. The more strategic kinds of model portfolios can be suited to many kinds of investors because, generally, a lot of thought has gone into them. Many shops provide them with varying degrees of complexity. On the other hand, an investor who likes to go for outperformance and likes to have a story behind it might prefer a tactical ETF strategist.

But I think clients are well advised to think long and hard about whether complexity serves their needs. It's good to ask if your investment portfolio is serving an emotional need. How much are you willing to pay for that in fees and in risk? I know that active management is not dead—a huge percentage of investor dollars is still tied to active managers rather than passive. But the argument for bottom-up security-level active management is one that has been losing ground tremendously in the marketplace over the decade since the financial crisis.

What are the limits to the simple strategic model portfolio approach?

EK: There are clients and situations where models don't quite fit. I will quote my good friend Allan Roth here, "I've always said investing is simple but taxes aren't."[2] I think Allan makes a good point.

Here's an example from my own family. We transitioned from a complex to a simple portfolio, but certain assets couldn't transition right away because they were privately held and also had a lockup period. Some distributed cash after a while. So we might have had a situation where something made a great cash payout that needed to be reinvested and, therefore, the portfolio needed to be rebalanced around this cash flow. I can tell you that everything is a moving part.

I solved the problem myself using spreadsheets, and it wasn't all that easy. I really had to think in several dimensions about how this affected the asset allocation overall; how it affected the balance between taxable and tax-deferred; and if reinvestment was required, which of the accounts it should go into, given multiple beneficiaries. So the freeing up of cash allowed me to increase the simplicity of the portfolio overall, but it took a lot of complex maneuvering to make happen.

2 Harry Sit, 2017. *Advice-Only in action: An interview with Allan Roth.* Accessed September 13, 2018, at https://adviceonlyfinancial.com/advice-action-interview-allan-roth. (Blog.)

There's also the issue of asset location. Most advisors recommend placing fixed income in your tax-deferred account and equity in your taxable account. However, if you have a large allocation to fixed income, then you have to fit some of it outside your tax-deferred accounts, and you're going to have to really look at the tax consequences of that. There might be instances where it's useful to go into muni funds, so then you have to start thinking about whether state-specific muni funds are worthwhile. State-specific muni bonds is one rare area that is not yet served by ETFs.

How do you go about evaluating a model portfolio series or family?

EK: In the absence of the kinds of complex circumstances that I just described, where you have holdings you can't sell for tax reasons or you need to shelter things at a state level or you really need to think about holding bonds in a taxable account, I think the end goal is simplicity. The broader and more inclusive the portfolio, the better.

In terms of equities, that means looking to include every geography possible. And it's not just large-caps and mid-caps but small-caps and even micros to the extent that they're feasible. Also, neither overweighting nor underweighting relative to the global market cap makes sense.

Where things get a lot more complicated, frankly, is on the bond side. I'm not as convinced of the necessity for diversification in the fixed income space as I am in the equities space, especially for U.S. investors, because the U.S. dollar is still the world's dominant currency. When you think about it, in fixed income, you really have two major risks: interest rate risk and credit risk. You don't necessarily need to diversify to control your interest rate risk. Understand how much interest rate risk you want and target that duration exposure. It can be managed with a portfolio of U.S. Treasuries, but it's managed by constraining your holdings.

So pick a given duration that's appropriate to your age and risk appetite and stick with it?

EK: Yes. To put it more simply, if you have a portfolio of T-bills and you diversify by adding the long bond to it, you increase your interest rate risk.

And what about credit risk?

EK: Credit risk is another matter. With credit risk, it is absolutely true that you don't want all your eggs in one basket. So I think there are some real reasons you might want to diversify in the credit realm of the fixed income space.

Are you saying that investors can target credit and duration risk as they see fit?

EK: Yes, you don't necessarily need to have a broad-based bond exposure, and you can target it more. However, I want to be clear, that there are trade-offs between owning individual bonds and owning a bond fund, and it's not a slam dunk either way. In general, for most investors, the economies of scale that are afforded by a bond fund make it worth taking on the volatility. You get the added benefit of washing your hands of all the portfolio management tasks and the trading expenses of a bond ladder.

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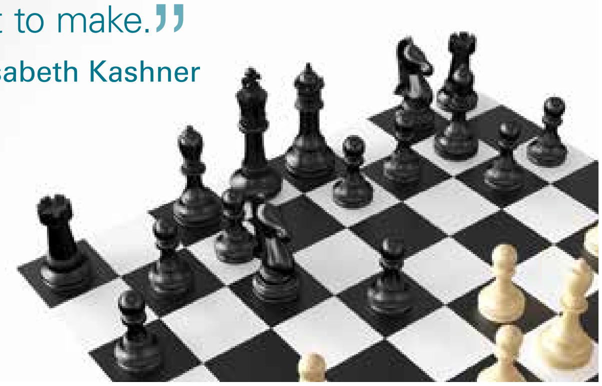
> "Between the technology of the ETF and the overwhelming evidence about the value of passive investing, selling complexity is just an increasingly difficult argument to make."
> —Elisabeth Kashner



Is there such a thing as too much complexity?

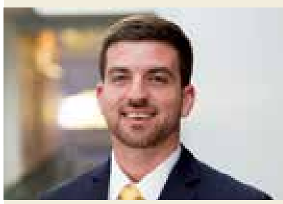
EK: Clients are starting to really question the value-add all along the financial services chain. I said earlier that sometimes the value is in a story rather than in something that's otherwise measurable economically. So if you're an advisor and you want to attract clients by saying to them you're going to do better than what they could do themselves in something very straightforward and easy to manage, you are inevitably selling complexity. But you're not necessarily selling complexity that's going to deliver risk-adjusted outperformance.

In the end, the market is really speaking. And what the market is saying pretty relentlessly is dirt cheap, broad-based, and simple are winning. When I look at where flows are going in the ETF marketplace, that's where the market is going. There are people who are trying to adapt their existing businesses to the current market conditions, and some of them will be successful for some period of time. But if things keep going the way they are, selling complexity will be increasingly difficult. Between the technology of the ETF and the overwhelming evidence about the value of passive investing, selling complexity is just an increasingly difficult argument to make.

FROM THE ETF CAPITAL MARKETS DESK

Watch the news before trading ETFs

Chuck Thomas is head of Vanguard U.S. ETF Capital Markets Team. In this column, he discusses how ETF bid-ask spreads can widen even during days when the markets are calm.



Adam DeSanctis
Capital Markets Analyst

Limiting transaction costs is essential when investing in ETFs. New data show that even routine macroeconomic news can provide an opportunity to revisit how incorporating a set of ETF trading best practices can help advisors reduce transaction costs.

We have seen how major macroeconomic events can cause stock market volatility and ETF bid-ask spreads to widen, increasing the costs to trade ETFs. But even routine news can cause spreads to widen—although briefly and not as significantly.

Using real-time tick data, we can show the spreads of our ETFs as well as derive the spreads of the underlying securities. Reviewing these data allows us to demonstrate the value of Vanguard's ETF best practices.

Best execution, of course, comes by trading when bid-ask spreads are tightest. Before trading, it's important to be mindful of when ETF bid-ask spreads could be wider than average, and we can now see that includes what many would describe as routine market events. It also can include the market open and the market close.

A routine day

To illustrate this dynamic, let's look at the intraday bid-ask spreads of Vanguard Total Stock Market ETF (VTI) on August 1, a normal trading day that featured the release of a statement by the Federal Reserve's Federal Open Market Committee (FOMC) at the end of an uneventful two-day meeting.

VTI opened with a bid-ask spread of 6 basis points. That quickly fell to 5 basis points, then 3, then 2, before settling at 1 basis point after the first minute of trading.

For almost half the day, VTI traded with a skinny 1-basis-point spread. So a $100,000 trade that occurred right at 9:30 a.m., Eastern time, cost 5 basis points more, or about an additional $50. That 5-basis-point difference was a worst-case scenario on that day and was not indicative of typical trading.

Takeaway: Following the market open, single stock and ETF spreads tend to be wider than average, reflecting uncertainty related to price discovery.

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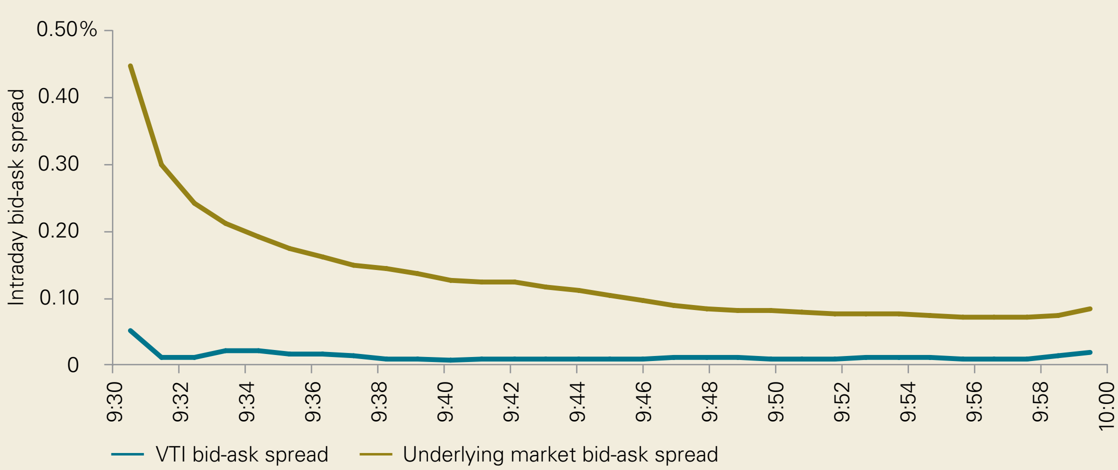
Intraday bid-ask spreads of Vanguard Total Stock Market ETF (VTI) and the underlying market
August 1, 2018

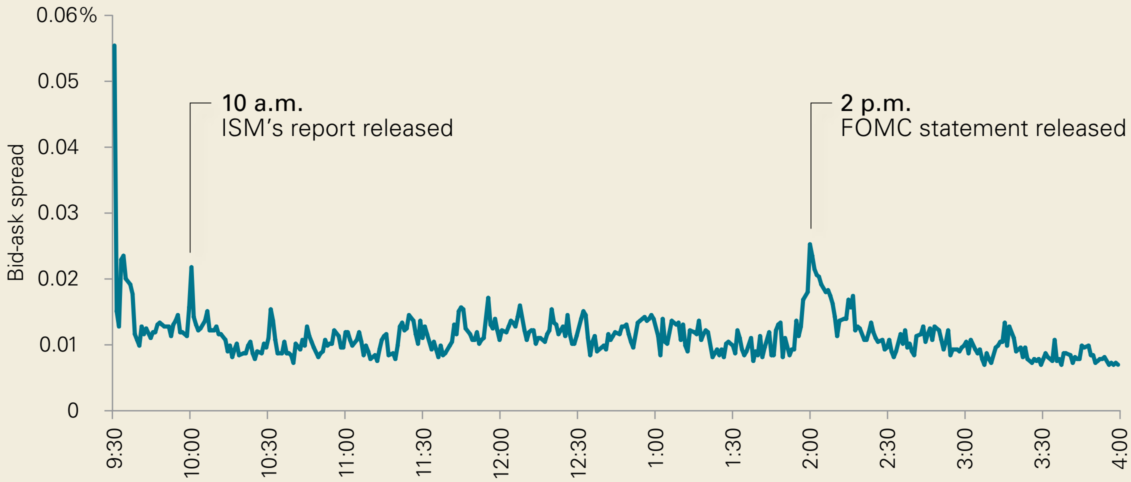


Source: Vanguard analysis, based on data from Bloomberg.

Note: The underlying market bid-ask spread is an estimate of how much it would cost to trade all the individual stocks in the VTI creation basket.

Intraday bid-ask spread of VTI

August 1, 2018



Source: Vanguard analysis, based on data from Bloomberg.

Readers of this column will know we've said this before, but it bears repeating: Avoid trading at the open. It may be tempting to get orders placed after breakfast and move on to client meetings and other important tasks, but the execution could lead to indigestion later. It takes time for market participants, via trading activity, to settle on a clear price based on the news from the evening before. Because of this, bid-ask spreads for an ETF's underlying portfolio tend to widen in the first 30 to 60 minutes of the trading session. This uncertainty is reflected in the trading behavior of the ETF.

Note in the graphic on the previous page that VTI's spread is much tighter than the weighted-average bid-ask spread of the underlying stocks tracked by VTI. Secondary-market trading volume is one of the main drivers of bid-ask spreads. VTI's relatively high secondary volume allows investors to typically trade the ETF at lower transaction costs than for the underlying stocks.

At 10 a.m. on August 1, the Institute for Supply Management (ISM) released its manufacturing report. July's *Report On Business®* came in slightly lower than expected, but not enough to move the markets significantly. Yet it was enough to widen VTI spreads on some trades briefly by as much as 1–2 basis points.

At 2 p.m., the FOMC announced, as expected, it was not raising its target for short-term interest rates. Markets largely took the news in stride. Still, spreads on VTI that had been trading close to 1 basis point suddenly widened to 2–3 basis points. Those spreads did not settle back down until eight minutes after the announcement.

To put this in perspective, for each $100,000 of VTI, a 3-basis-point spread would cost an investor about $30. Still, the first minute of trading after 2 p.m. averaged a spread of only 2 basis points, which shows that this reaction was brief.

Takeaway: Investors should avoid trading immediately after macroeconomic news since ETF spreads tend to widen then, reflecting underlying market uncertainty.

Wider spreads for smaller market slices

These are not atypical spread moves for VTI or any other ETF, for that matter. They are simply a function of the market and of market makers, who hedge their risk when they perceive any uncertainty.

VTI is a well-diversified fund, and its bid-ask spreads have historically been very tight. For ETFs that cover a smaller portion of the market, spreads can sometimes be wider.

For example, Vanguard Small-Cap ETF (VB) had spreads ranging from 13 to 20 basis points during the first minute of trading on August 1. The ISM report made little or no difference to VB's spreads. The FOMC statement briefly caused spreads to widen as much as 9 basis points before falling back to roughly 3–4 basis points.

The fact that some ETFs can trade with spreads that are a little wider is a given. The point here is simply that timing matters.

Demonstrating your value

ETFs remain liquid during volatile periods, although wide market swings on days when the news is more dramatic can cause ETF prices to move sharply. These swings can lead to wider bid-ask spreads or larger premiums and discounts to net asset value, both of which can add to the costs of trading ETFs.

This effect remains, but is less pronounced, during less dramatic market events. So it can help to be aware of the news of the day, even routine news, when trading ETFs. This is especially true when trading large amounts, since the spread differences would be magnified. You can call your block desk, or our Capital Markets Team, to help with large block trades.

When trading ETFs for your clients, your goal, of course, is to execute the trade with as little cost as possible. That saves your clients money, which allows them to keep more of their investment returns, and it is another way for you to demonstrate your value.

Best practices when trading ETFs

1. **Use limit orders.** Place a limit order to help protect the price of your order. Placing a market or stop order could result in a dislocation from the fair market value of the ETF in volatile trading environments.
2. **Avoid trading around the open.** Spreads are wider on average in the first 15 minutes of the trading day. There is potential for more volatility and less accurate price discovery at the start of the trading day and, therefore, market makers will tend to show wider bid-ask spreads until the market settles in.
3. **For large trades, avoid trading near the close.** There is a lot of liquidity at the end of the trading day, but there is the potential for ETFs to dislocate from a fair price if there is a large imbalance at the closing auction. Also, if a liquidity provider takes a trade too late in the day to create or redeem, it might charge for the extra risk it could carry overnight.
4. **Avoid volatile markets.** If the market is more volatile than normal, spreads are likely to be wider because of the extra risk a liquidity provider takes buying and selling shares. If you don't need to buy or sell during these times, you should look to avoid trading in roiled markets.
5. **Use a block desk for large orders.** If you are planning a trade that will outsize the market, you should consult with the block desk at your executing broker. Block desks are trained to find liquidity in a product at the best cost to investors and help them trade ETFs with the lowest impact on the price.

For more information on ETF trading best practices, reference our research paper *Best practices for ETF trading: Seven rules of the road.*[1]

If you are interested in speaking with someone on the U.S. ETF Capital Markets Team, please contact your Vanguard sales executive at **800-997-2798**.

1 Joel M. Dickson and James J. Rowley Jr., 2014. *Best practices for ETF trading: Seven rules of the road.* Valley Forge, Pa.: The Vanguard Group.

Why Vanguard uses transition indexes

Using custom indexes to reflect pending changes to existing benchmarks and taking time to incorporate those changes can potentially reduce a fund's costs and tracking error, as well as mitigate the market impact of the changes and prevent front running.

Rich Powers
Head of ETF
Product Management

One of the challenges of investing is making sure the funds your clients own accurately reflect the market you want them to invest in, especially when index providers reorganize indexes to better represent a given opportunity set.

Vanguard approaches this periodic challenge by using transition indexes to more smoothly manage exposure when index providers move constituents from one index to another. We believe our approach is practical and helps minimize tracking error, which can detract from returns.

These sorts of changes can occur as often as once a year, and we stand at the ready to use transition indexes to make sure you and your clients make it through these changes smoothly.

Prepare for the annual review

Each year, MSCI and S&P Dow Jones Indices review their jointly run Global Industry Classification Standard (GICS), which provides a widely followed framework for classifying companies into sectors and industries. These reviews, which take place every autumn, ensure that the GICS classification structure continues to appropriately represent global markets.

For example, in September 2016 GICS sectors were updated to include real estate, which was officially broken out as the 11th dedicated sector. Previously, real estate was part of the financials sector. This resulted in changes to benchmarks that track the financials and real estate sectors.

More recently, after last fall's annual review, the telecommunication services sector was expanded to reflect the blurring lines between media, communications, and content industries. Telecom companies are broadening their scope by offering customers bundled communications services, including cable, internet, phone, and entertainment.

For example, the recent merger of AT&T and Time Warner resulted in a company that touches all three industries. Similarly, information technology companies such as Facebook and Alphabet also provide communications and content services.

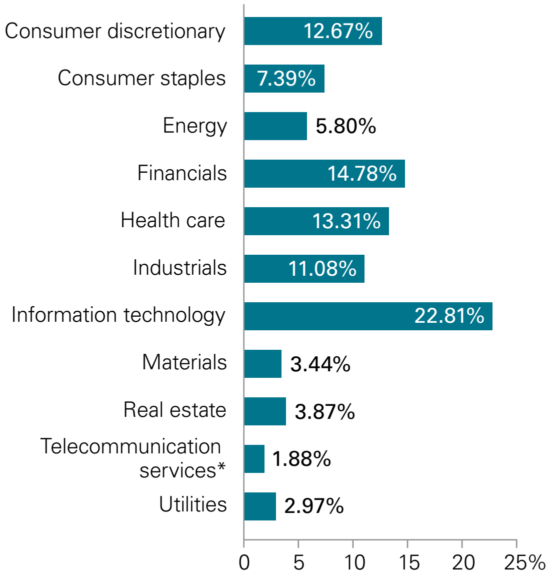
In September, these companies were reclassified into the new GICS communication services sector, which reflects the evolution of how we use and interact with technology. These changes will be implemented in MSCI equity indexes in November.

We largely completed our transition to the new and reconstituted GICS sectors at the end of August, ahead of the November implementation date, as we discuss below. See the figure on the next page for the new GICS sector weights for the broad U.S. stock market.

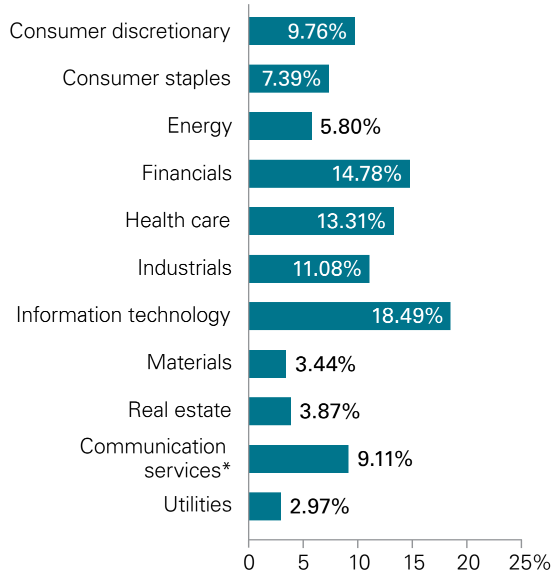
Focus on sectors

If some of your clients have sector exposures, these annual GICS reviews matter. Sector ETFs access a focused part of the overall market, such as energy or health care. They frequently serve as tools for investors to manage risk or to overweight pockets of the investable universe.

Total Stock Market ETF sector weights
(pre-GICS restructuring)



Total Stock Market ETF sector weights
(as of September 22, 2018)



Source: Vanguard.
*Renamed communication services after GICS restructuring.

For example, if the core of an investor's portfolio is a fund that covers the broad market, such as a Total Stock Market ETF, then the investor can use sector exposure to overweight areas within the market he or she believes might offer higher returns or risk-adjusted returns.

It is important that the index a sector ETF tracks accurately reflects the market dynamics and composition of a given segment of the economy.

Vanguard's take

GICS revisions are the result of industrywide consultation with members of the global investment community. At Vanguard, our Broker and Index Relations Team and our portfolio managers engage with all our index providers.

We take a deliberate and thoughtful approach to managing benchmark changes to ensure that we keep trading costs low, optimize our effort to track benchmarks tightly, and minimize the potential for any capital gains distributions.

The value of transition benchmarks

Vanguard's engagement with the index providers continues through the creation of transition benchmarks.

Historically, Vanguard has worked with index providers to create transition benchmarks. By comparison, some index fund managers make their fund changes on the day the sector updates are actually implemented.

Transition benchmarks can help ensure an orderly transition and can reduce costs and tracking error, mitigate market impact, and prevent front running. Vanguard has a long history of successfully using transition benchmarks when meaningful changes were happening to an index's underlying constituents. For example, we did this for our real estate, emerging markets, and developed markets funds.

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Inside the communication services sector transition

For the communication services sector update, we made the transition over four months.

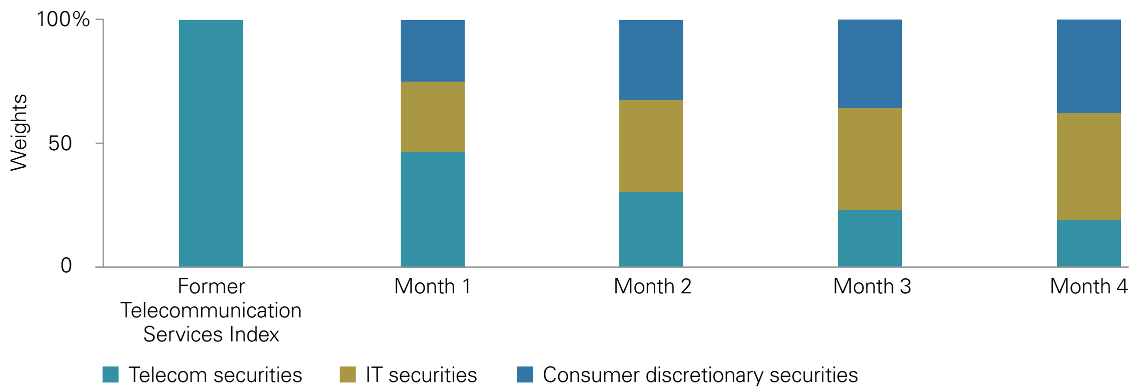
The Vanguard U.S. Sector ETFs began the communication services sector transition on May 3, 2018, and it was mostly concluded by August. Vanguard will finish implementing the transition of 32 stocks announced in November when we move from the transition benchmarks to the final MSCI benchmarks.

During the transition, we sold portions of existing holdings while buying companies that were newly added to the transition benchmarks.

Indexing, as it turns out, is not quite as simple as it seems. That said, we believe that these sector updates provide investors with more representative exposures to changing industry dynamics.

At Vanguard, we have a tenured team, a time-tested process, and an enduring mission to take a stand for all investors. And as that relates to index evolution, we believe that using transition benchmarks is the best approach to enact these changes in our funds in the most practical way.

Illustration of the transition of IT and consumer discretionary securities to Vanguard Communication Services ETF



Source: Vanguard.

A portfolio stabilizer: Global (hedged) bonds

Vanguard research[1] shows that, historically, global bonds did not reduce portfolio volatility unless they were hedged against currency swings.

One reason many clients hire an advisor is to help them weather market downturns. This is especially true for risk-averse clients.

While there are various ways advisors can attempt to position portfolios to handle rough waters, Vanguard research shows that a global bond allocation can provide additional diversification, reducing a portfolio's risk without necessarily decreasing its expected return.

We found that the benefits of diversification resulted when bonds from all markets and issuers were included, provided, however, they were hedged against currency fluctuations.

In the graphic below, we illustrate that when global bonds are hedged, they can offer lower volatility than bonds held in the currency of the investor's home country, even those of the large and diversified U.S. bond market.

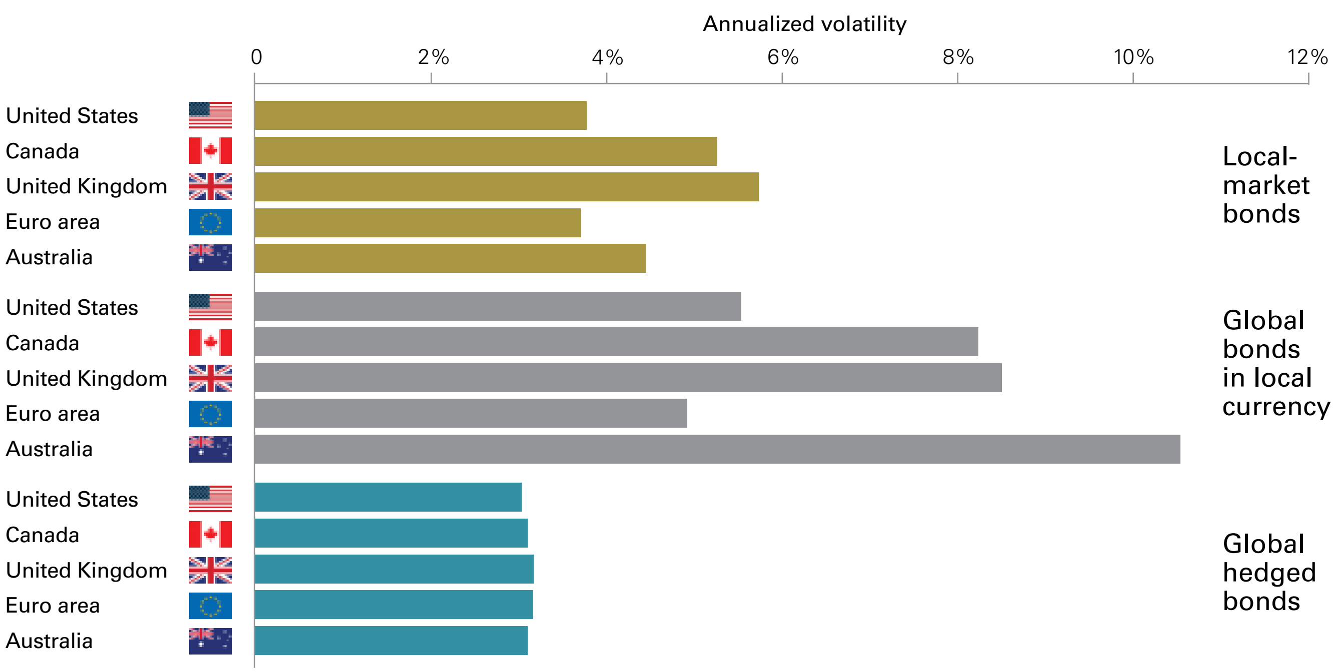
"Many of the economic differences between countries are captured by the foreign exchange market, which can cause significant volatility in the short run," said Todd Schlanger, a senior investment strategist in Vanguard Investment Strategy Group.

Currencies factor in differences in interest rates. So even when global bonds offer different yields, investors may earn roughly the same total return as bonds in their own currency, Schlanger said. Specifically, hedging the currency differential effectively provides roughly the difference in expected returns as bonds in the investor's home country.

(continued on next page)

1 Todd Schlanger, David J. Walker, and Daren R. Roberts, 2018. *Going global with bonds: The benefits of a more global fixed income allocation.* Valley Forge, Pa.: The Vanguard Group.

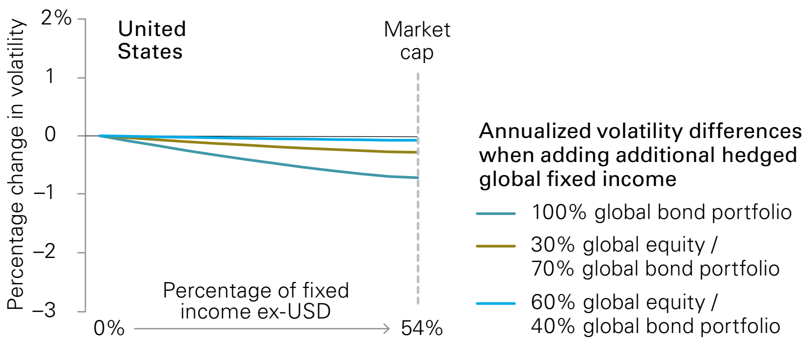
Hedged global bonds tend to have lower volatility than local-market bonds



Sources: Vanguard calculations, based on data from Bloomberg Barclays and Thomson Reuters Datastream.

Notes: Data cover the period from January 1, 1988, to June 30, 2017. For the United States, the United Kingdom, and Australia, global bonds are represented by the Citigroup WGBI from January 1, 1988, to December 31, 1989, and the Bloomberg Barclays Global Aggregate Bond Index thereafter. For Canada and the euro area, global bonds are represented by the Citigroup WGBI from January 1, 1988, to January 31, 1999, and the Bloomberg Barclays Global Aggregate Bond Index thereafter.

Volatility reduction benefits resulting from a more global hedged fixed income allocation



Sources: Vanguard calculations, based on data from Bloomberg Barclays, Citigroup, and MSCI.

Notes: For the United States: Data cover January 1, 1988, to June 30, 2017. Global stocks are represented by the MSCI World ex USA Index. Global bonds are represented by the Citigroup WGBI ex-USD (USD hedged) to December 31, 1998, and the Bloomberg Barclays Global Aggregate ex-USD Float Adjusted Index (USD hedged) thereafter. U.S. bond returns are represented by the Bloomberg Barclays U.S. Aggregate Bond Index.

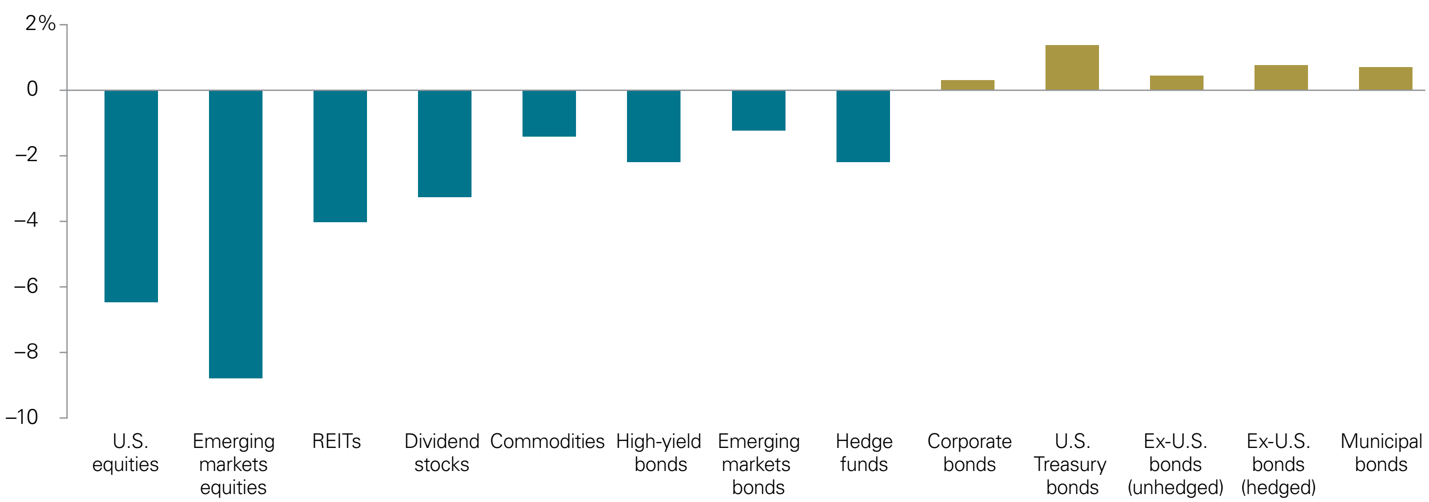
Therefore, when adding global securities to a client's bond portfolio, especially to portfolios with larger allocations to fixed income, currency-hedged global bonds can help diversify the portfolio and lower volatility, as shown in the graphic at left, without necessarily giving up return.

"Unhedged global bonds can experience significant volatility, even as the long-run expected return from currency is close to zero," Schlanger said. "Currency-hedged global bonds, however, tend to have lower volatility than the U.S. bond market, which makes them well suited for the core of a bond portfolio where an investor is looking for ballast. They can also provide much needed counterbalancing when equities are falling."

This is illustrated in the graphic below, which shows that during the worst 10% of monthly U.S. stock returns over the past 30 years, hedged global ex-U.S. bonds provided among the best counterbalancing relative to other bond segments.

High-quality bonds are the best diversifier to equity risk

Median return of various asset classes during the worst decile of monthly U.S. equity returns, 1988–2017



Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Source: Vanguard, based on data from Thomson Reuters Datastream, Bloomberg, HFRI, MSCI, FTSE, CRSP, S&P, and S&P Dow Jones Indices.

Notes: U.S. stocks are represented by the Dow Jones Wilshire Index through April 2005, the MSCI US Broad Market Index through June 2013, and the CRSP US Total Market Index thereafter. Emerging markets stocks are represented by the MSCI Emerging Markets Index, real estate investment trusts (REITs) by the FTSE NAREIT Equity REITs Index, dividend stocks by the Dow Jones U.S. Select Dividend Index, commodities by the S&P GSCI Commodity Index, high-yield bonds by the Bloomberg Barclays U.S. Corporate High Yield Bond Index, emerging markets bonds by the Bloomberg Barclays EM USD Aggregate Index, investment-grade corporate bonds by the Bloomberg Barclays U.S. Corporate Index, U.S. Treasury bonds by the Bloomberg Barclays U.S. Treasury Bond Index; municipal bonds by the Bloomberg Barclays U.S. Municipal Index; hedge funds by the HFRI Fund Weighted Total Return Index, and international bonds by the Bloomberg Barclays Global Aggregate ex USD Bond Index. The Dow Jones U.S. Select Dividend Index starts in January 1992, the Bloomberg Barclays EM USD Aggregate Index starts in January 1993, hedge fund data start in 1994, and the Bloomberg Barclays Global Aggregate ex USD Bond Index starts in January 1990. All data are through December 31, 2017.

"It is a widely accepted principle that diversification is the only free lunch in investing," Schlanger said. "Many investors understand that principle when it comes to global equities, but it also applies to diversification with global bonds, provided you hedge the currency."

Vanguard Total World Bond ETF

To help clients invest in currency-hedged global fixed income, Vanguard launched Vanguard Total World Bond ETF (BNDW) in September 2018.

The Total World Bond ETF is an ETF of ETFs. As of June 30, 2018, it was made up of 45% Vanguard Total Bond Market ETF (BND), which invests in investment-grade[2] U.S. bonds, and 55% Vanguard Total International Bond ETF (BNDX), which invests in non-U.S. investment-grade sovereign and corporate bonds. As such, Total World Bond ETF offers a portfolio of more than 13,000 bonds (as of August 31, 2018).

The new ETF has an estimated expense ratio of 0.09%. It seeks to track the Bloomberg Barclays Global Aggregate Float Adjusted Composite Index.

Rich Powers, head of ETF Product Management, said the Total World Bond ETF offers convenience for advisors and clients. It is the first ETF to offer exposure to a market-capitalization version of the global investment-grade bond market, he said.

"Total World Bond can serve as a one-stop shop for the entire fixed income portion of a client's portfolio," Powers said. "It can also serve as the core fixed income holding, which you can supplement with other funds depending on your market view or on a client's risk tolerance and time horizon."

2 A bond whose credit quality is considered to be among the highest by independent bond-rating agencies.

Comments? Topics of interest?

Write to us at ETFPerspectives@vanguard.com

For more information about Vanguard funds or Vanguard ETFs, visit advisors.vanguard.com or call 800-997-2798 to obtain a prospectus or, if available, a summary prospectus. Investment objectives, risks, charges, expenses, and other important information are contained in the prospectus; read and consider it carefully before investing.

Vanguard ETF Shares are not redeemable with the issuing Fund other than in very large aggregations worth millions of dollars. Instead, investors must buy and sell Vanguard ETF Shares in the secondary market and hold those shares in a brokerage account. In doing so, the investor may incur brokerage commissions and may pay more than net asset value when buying and receive less than net asset value when selling.

Past performance is no guarantee of future results. All investing is subject to risk, including possible loss of principal.

Diversification does not ensure a profit or protect against a loss.

There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income. There may be other material differences between products that must be considered prior to investing.

Investments in target-date funds are subject to the risks of their underlying funds. The year in the fund name refers to the approximate year (the target date) when an investor in the fund would retire and leave the workforce. The fund will gradually shift its emphasis from more aggressive investments to more conservative ones based on its target date. An investment in target-date funds is not guaranteed at any time, including on or after the target date.

Investments in stocks or bonds issued by non-U.S. companies are subject to risks, including country/regional risk and currency risk. These risks are especially high in emerging markets.

Bond funds are subject to interest rate risk, which is the chance bond prices overall will decline because of rising interest rates, and credit risk, which is the chance a bond issuer will fail to pay interest and principal in a timely manner or that negative perceptions of the issuer's ability to make such payments will cause the price of that bond to decline.

Vanguard Total World Bond ETF is subject to currency hedging risk, which is the chance that currency hedging transactions may not perfectly offset the fund's foreign currency exposures and may eliminate any chance for the Fund to benefit from favorable fluctuations in relevant currency exchange rates. The Fund will incur expenses to hedge its currency exposures.

U.S. government backing of Treasury or agency securities applies only to the underlying securities and does not prevent share-price fluctuations. Unlike stocks and bonds, U.S. Treasury bills are guaranteed as to the timely payment of principal and interest.

Prices of mid- and small-cap stocks often fluctuate more than those of large-company stocks.

Funds that concentrate on a relatively narrow market sector face the risk of higher share-price volatility.

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