BRINGING TRANSPARENCY TO ROBO INVESTING

EDITION 15

The Robo Report™ First Quarter 2020

We are proud to publish the 15th edition of *The Robo Report*™ covering the first quarter of 2020. This report is a continuation of an ongoing study that monitors well-known robo advisors. We strive to provide a reliable resource for both investors and professionals interested in the digital advice industry.

Highlights:

- *SigFig, Fidelity Go, and Axos Invest maintain long-term top performer spots (pg. 4)*
- *Tumultuous markets have turned the strong two-year returns from last* Robo Report™ *negative (pg. 5)*
- *SRI portfolios continue to post strong returns (pg. 11)*
- *Tax-loss harvesting results vary at different providers (pg. 12)*
- *The launch of Vanguard Digital Advisor further heats up already intense pricing pressure (pg. 14)*
- *Goldman Sachs is catching up to other firms in building out a tiered-advice structure to serve more types of clients (pg. 15)*
- *Independent robos are evolving towards comprehensive personal finance platforms (pg. 16)*

Table of Contents

The Executive Summary

This edition of *The Robo Report*™ contains an analysis of the recent market volatility. It tracks 66 taxable accounts and 20 IRA accounts across 41 providers.

Robo Advisors Continue to Adapt: A Decade In Review

In each *Robo Report*™, Backend Benchmarking reports on any relevant news in the digital advice industry. In this *Report*, we are providing a recap of the industry to-date and our insights as to where it is heading. The industry continues to see significant fee pressure and expansion beyond investment management. In the past year, checking and savings products have been a popular feature implemented by robo advisors. Schwab introduced its new Intelligent Income tool, which helps provide a smart, tax-efficient strategy to help users tackle spending during retirement.

After the initially slow adoption by large financial institutions, robo solutions have been fully embraced. Vanguard, the largest robo advisor in terms of assets under management, launched its Digital Advisor early in the quarter. This digital-only solution has rock bottom fees of 0.20% annually and a $3,000 minimum. This new, lower-minimum and -cost product represents a wider trend of large financial institutions expanding to new segments of the market and engaging with customers earlier in the client lifecycle. Goldman Sachs was a notable holdout in expanding offerings to lower-asset clients, but their recent acquisition and rebranding of United Capital shows they are moving towards a tiered-service model. A digital-advice product is expected to launch soon from Goldman.

COVID-19 Roils Markets. How Did Robos React?

For the three-year total performance above/below the Normalized Benchmark, SigFig has taken the top spot from Fidelity Go. Fidelity Go dropped to second and Axos Invest retained its third-place spot. These three portfolios have been consistently strong performers. Two common keys to their success are a higher allocation to domestic equities relative to other robo advisors and low fees.

Over the last quarter, Titan Invest had the best one-period return above/below the Normalized Benchmark we have ever witnessed. This portfolio holds all individual equities and benefited from a tactical trade, buying a short S&P 500 ETF.

SRI Portfolios Continue Strong Performance

SRI portfolios have continued to perform well. Over the one- and two-year trailing periods, our Wealthsimple SRI portfolio was the top performer. It also had the best equity performance over the one-year period, while our Morgan Stanley SRI portfolio had the second best. Many of the SRI portfolios tracked in the *Report* outperformed their non-SRI counterparts on a net-of-fees basis in the first quarter, as well as the one- and two-year trailing time periods. Those that did underperform their non-SRI portfolios at the same provider did not underperform by a wide margin. This suggests that investors are not paying a significant performance premium when opting for SRI portfolios.

Upside and Downside Analysis

This report reintroduces upside and downside capture ratios to examine which robos faired relatively best and worst. Broadly speaking, robos capture the ups and downs proportionally. TD Ameritrade was one of the few outliers, capturing significantly more upside.

Notes on the Report

To adjust for differences in equity–fixed income allocations in our various portfolios, we have created a methodology for comparing performance called Normalized Benchmarking (more details can be found here). This method adjusts for each portfolio's unique allocation and then compares its performance against a benchmark with the same allocation.

In our taxable accounts, we aim to allocate our portfolios with 60% equities. Our retirement accounts are more aggressive, containing a much higher equity percentage.

Taxable Top Performers

Quarter-to-Date Top Performers

	Best	2nd	3rd
Total Portfolio	Titan Invest	Wealthsimple	Wealthsimple SRI
Equity	Titan Invest	Morgan Stanley SRI	Wealthsimple
Fixed Income	Wealthsimple	Wealthsimple SRI	FutureAdvisor

Produced by Backend Benchmarking

1-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Wealthsimple SRI	Wealthsimple	SigFig
Equity	Morgan Stanley SRI	Wealthsimple SRI	SoFi
Fixed Income	Wealthsimple	FutureAdvisor	Wealthsimple SRI

Produced by Backend Benchmarking

2-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Wealthsimple SRI	SigFig	Axos Invest
Equity	Wealthsimple SRI	Morgan Stanley SRI	Axos Invest
Fixed Income	Wealthsimple	Ally Invest Managed Portfolios	Wealthsimple SRI

Produced by Backend Benchmarking

3-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	SigFig	Fidelity Go	Axos Invest
Equity	Axos Invest & Fidelity Go	Axos Invest & Fidelity Go	SigFig
Fixed Income	Ally Invest Managed Portfolios	FutureAdvisor	SigFig

Produced by Backend Benchmarking

4-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	SigFig	Axos Invest	Vanguard
Equity	SigFig	Axos Invest	Vanguard
Fixed Income	SigFig	Schwab	Axos Invest

Net of Fees Returns as of: 3/31/2020

Produced by Backend Benchmarking

**Total Portfolio winners are based on the portfolio's return above/below the Normalized Benchmark*

Performance Commentary

- *Tumultuous markets have turned the strong two-year returns from last* **Robo Report™** *negative*
- *Titan's move to buy an inverse S&P fund is rewarded*
- *SigFig, Fidelity Go, and Axos Invest maintain long-term top performer spots*
- *SRI portfolios continue to post strong returns*
- *Tax-loss harvesting results vary at different providers*

The first quarter of 2020 was a tumultuous time for financial markets and the world broadly. COVID-19 has shut down businesses across the globe as individuals have been asked to stay at home. Additionally, the pandemic has disrupted global supply chains, halted demand for goods, roiled oil markets, and spiked unemployment rates. In the first quarter of 2020, the S&P 500 index dropped 19.6%, and the Dow Jones Industrial Index had its worst first quarter ever. The drop was even steeper from peak to trough for both indices, but they saw a partial recovery at the end of the quarter. The VIX, commonly known as the "fear index," rose more than six times its value before dropping at the end of the quarter.

No sector of the economy has been immune to the downturn, but certain sectors—healthcare, technology, and consumer staples—fared slightly better. The energy sector was the hardest hit, as demand dropped and supply rose due to the spat between Saudi Arabia and Russia.

To combat the economic impact of the virus, both the Federal Reserve and Congress moved quickly. The Fed cut its benchmark interest rate to zero and reintroduced quantitative easing measures taken during the 2008 financial crisis. The Trump administration passed the largest economic relief package in the history of the United States, valued at $2.2 trillion. More government aid may be on the way.

Coronavirus and Financial Markets

The shutdown from the coronavirus has thrown financial markets into turmoil. Between investors flocking to fixed income and the Fed lowering interest rates, long-duration, high-credit-quality fixed income provided some protection against equity markets that were deeply in the red. Long-term treasury securities, in particular, performed strongly. Corporate and municipal securities fell dramatically during March but had paired losses by the end of the quarter.

The virus has shut down businesses across the United States and the world. This has triggered worries about corporate debt defaults. Overall, municipal bonds performed better than corporates. High-yield saw steep drops across the board, while emerging market bonds dropped precipitously.

In equity markets, few companies were left unscathed. However, there are some notable differences in performance when looking more granularly. Growth stocks significantly outperformed value, and large-cap stocks outperformed small- and mid-caps. Allocations to domestic versus international equities, which have been a significant driver of performance over the longer term, were less consequential in the first quarter of 2020; domestic large caps performed slightly better than international holdings.

How Have Robo Advisors Faired During the Coronavirus?

More so than in previous periods, many robo advisors with more unique strategies or holdings performed better in terms of performance above/below the Normalized Benchmark. Titan Invest, which fully allocates its portfolio to equities, was the top performer in terms of performance above/below the Normalized Benchmark in the first quarter of 2020; its portfolio also had the best equity performance over the same period. It purchased a short S&P 500 fund during the quarter. This is a holding we have never seen in any of our robo portfolios before, but it proved quite timely. From the date it was purchased on March 3rd until March 31st, the fund returned 8.02%, a period where the S&P 500 was down 13.79%. Titan also holds individual securities. A select few of its holdings—Amazon, Microsoft, and Netflix—were up for the quarter, while nearly all major equity indices were in the red.

Titan purchased a short S&P 500 fund during the quarter. This is a holding we have never seen in any of our robo portfolios before, but it proved quite timely for our Titan portfolio.

Wealthsimple Does Well Across the Board

Among our moderate portfolios (equity allocations close to 60%), our Wealthsimple portfolio had the best total-portfolio performance above/below the benchmark, the best fixed-income performance, and the second-best equity performance. Our Wealthsimple SRI and Halal portfolios placed third and sixth, respectively, when compared to the Normalized Benchmark. The standard Wealthsimple portfolio stood out because the entirety of its fixed income holdings is investment-grade, with nearly two-thirds being long-duration U.S. Treasury bonds. When the Federal Reserve lowers interest rates, long-duration bonds will increase in price more than short-duration bonds will. The result was a 9.43% fixed income return in the first quarter and a 12.36% return over the one-year trailing period.

The standard Wealthsimple portfolio stood out because the entirety of its fixed income holdings is investment-grade.

The next best fixed-income performer (after Wealthsimple SRI) was FutureAdvisor. FutureAdvisor also holds all investment-grade fixed income and relies heavily on a Barclays Aggregate Bond Index-tracking ETF, which has large allocation to treasuries, helping it achieve a 2.82% fixed-income return for the quarter. On the equity side, Wealthsimple benefited from its holdings of two international minimum volatility funds. In our previous *Robo Report*™, we cited these funds as hurting Wealthsimple's performance when markets were rising. In this volatile bear market, they have had the opposite effect.

Income Portfolios Provide Important Downside Protection

The portfolios we track now also include some income-oriented portfolios, including Betterment's Income strategy. Our Betterment Income portfolio fared well, only dropping 0.61% over the quarter. This portfolio is a 100% fixed income portfolio and thus, far more conservative than the other portfolios analyzed. TD Ameritrade's income portfolio, also meant to be more conservative, was less impressive, down 7.67% in the first quarter. It was the fourth-worst performer when compared to its Normalized Benchmark. TD's portfolio did hold equity over the period and included real estate in its income strategy. Real estate was down more than the broader market over the first quarter. Betterment, on the other hand, relied completely on bonds. It will be interesting to see if more robos offer income strategies in the future.

Our Betterment Income portfolio fared well, only dropping 0.61% over the quarter.

Where Did Robo Advisors Fall Short?

The worst moderately allocated (60%/40% target) performer when compared to the Normalized Benchmark was our Morgan Stanley Inflation Conscious portfolio. Its fixed-income holdings were concentrated in higher quality issues and the underlying funds hold many treasuries, resulting in overall strong fixed-income performance, but its equity holdings had the worst performance, posting a loss of 28.34%. This portfolio holds a Master Limited Partnership (MLP) energy ETF. COVID-19 has hit the energy industry particularly hard, as demand has dried up and political battles have boosted supply. This fund returned -59% in the first quarter. Its higher-than-average allocation to small- and mid-cap stocks also hurt its performance, as these groups underperformed large-caps over the same period.

Wells Fargo had the worst fixed-income returns in the first quarter with a loss of 3.70%. Although much of its fixed income allocation is in a Barclays Aggregate Bond Index-tracking ETF, it had close to one-third of its fixed income exposure in high-yield corporate and emerging market ETFs. These two areas of the bond market were very hard hit, particularly emerging markets.

Schwab Continues to Underperform

Schwab has fallen short again. Our Schwab Domestic Focus and standard portfolios placed in the bottom five of first quarter returns compared to the Normalized Benchmark. The standard portfolio's equity performance was slightly worse since it has more exposure to international equities. The Domestic Focus was only slightly better and was the third-worst equity performer. One of the primary factors driving Schwab's under-performance is their tilt towards value. Value stocks have consistently underperformed growth over the past three years, including during the recent market volatility.

Among all the robo advisors we track, Schwab holds the most cash as a percentage of the total portfolio. This may have helped since part of the portfolio was not in equities, but it also can hurt if an investor could otherwise be in investment-grade fixed income, specifically treasuries, which do well during tough times. The cash is not only a drag on performance during bull markets, but we are also seeing it as a drag in bear markets compared to other robos who have used this part of the portfolio to invest in high-quality, longer-duration fixed income.

3-Year Trailing Results: SigFig, Axos Invest, and Fidelity Remain Long-Term Winners

For most of the existence of robo advisors, the financial landscape has been dominated by bull markets and, thus, robo performance was generally strong. The bear market that started in February is the first since 2009. Over the three-year trailing period ending on March 31st, there are a few notable trends: Large-cap stocks significantly outperformed small-caps; domestic stocks outpaced international; growth performed significantly better than value. All three of these trends can be attributed, in part, to the rapid growth of big tech companies in the United States. Regarding fixed income, the safety of U.S. Treasuries propelled strong positive returns for the three-year period. Generally speaking, investment-grade U.S. corporate bonds also performed well while emerging market and high-yield issues were underperformers. Fund-specific selection in fixed income holdings can have significant impacts on total return. Index selection and fund construction varies even between passively managed funds of the same general bond category.

> *SigFig, Fidelity Go, and Axos Invest (formerly WiseBanyan) placed in first, second, and third spots, respectively, for total performance compared to the benchmark.*

SigFig, Fidelity Go, and Axos Invest (formerly WiseBanyan) placed in first, second, and third spots, respectively, for total performance compared to the benchmark. SigFig owes its success to two portfolio decisions. First, its international holdings are more skewed towards emerging markets than most other providers. Emerging markets have posted better returns over the last three years than developed markets. Second, its domestic equity allocation relies on total stock market ETFs. The total stock market ETFs held by SigFig are heavily allocated towards large-cap stocks that have propelled U.S. markets in the past few years.

Fidelity Go and Axos Invest have similar stories. Their high allocation to domestic large caps has driven their equity performance. Fidelity Go's fixed-income portfolio has a longer maturity than most. This has contributed to its performance over a period during which bonds with longer maturities have outperformed. This is especially true as of late as interest rates have dropped. Axos relies heavily on investment-grade corporates. While corporate bonds faced steep sell-offs during the crisis, they largely recovered by the end of the quarter.

Another common denominator between the three top performers is very low fees.

Another common denominator between the three top performers is very low fees. Axos does not charge a fee for its basic package, and SigFig does not charge a fee on an investor's first $10,000 managed. Fidelity Go does charge a 0.35% advisory fee annually, but Fidelity Flex funds do not have any fund expenses. Much has been written about the roles fees play in long-term investment performance. Generally, studies have found them to be a major driver of returns with lower fees leading to better long-term outcomes. After reporting on robo advisors for over four years at this point, our data suggests that holds true in robo advisors as well.

Schwab's Intelligent Portfolios returned -0.13% annually over the trailing three-year period, making it the only portfolio with three-year annualized returns less than 0%. It also had the worst three-year equity performance.

Ally Financial led the field in fixed-income performance, returning 4.55% annualized for the three-year trailing period ending March 31st. The highest equity performance over the three-year period was shared by Fidelity Go and Axos Invest at 1.59% annually. In our last *Robo Report*™, three-year equity returns were much higher than three-year fixed income returns. Portfolios have witnessed a turnaround. In fact, of the portfolios with a three-year track record, on average, fixed-income holdings returned 3.35% annually while equity returned a paltry 0.08% annually. This is a testament to the benefits of owning a diversified portfolio of both equity and fixed income. Investors can protect their portfolios by owning fixed income when the unexpected happens.

…of the portfolios with a three-year track record, on average, fixed-income holdings returned 3.35% annually while equity returned a paltry 0.08% annually.

Three-Year Index Returns Table

	Index	3-Year Annualized Return
Domestic	Russell 3000	3.99%
International Emerging Markets	MSCI Emerging Markets	-1.27%
International Developed Markets	MSCI EAFE	-1.29%
Value	Russell 1000 Value	-2.19%
Growth	Russell 1000 Growth	11.31%
Domestic Large-Cap	Russell 1000	4.63%
Domestic Small- to Mid-Cap	Russell 2000	-4.66%

Upside/Downside Capture Ratios

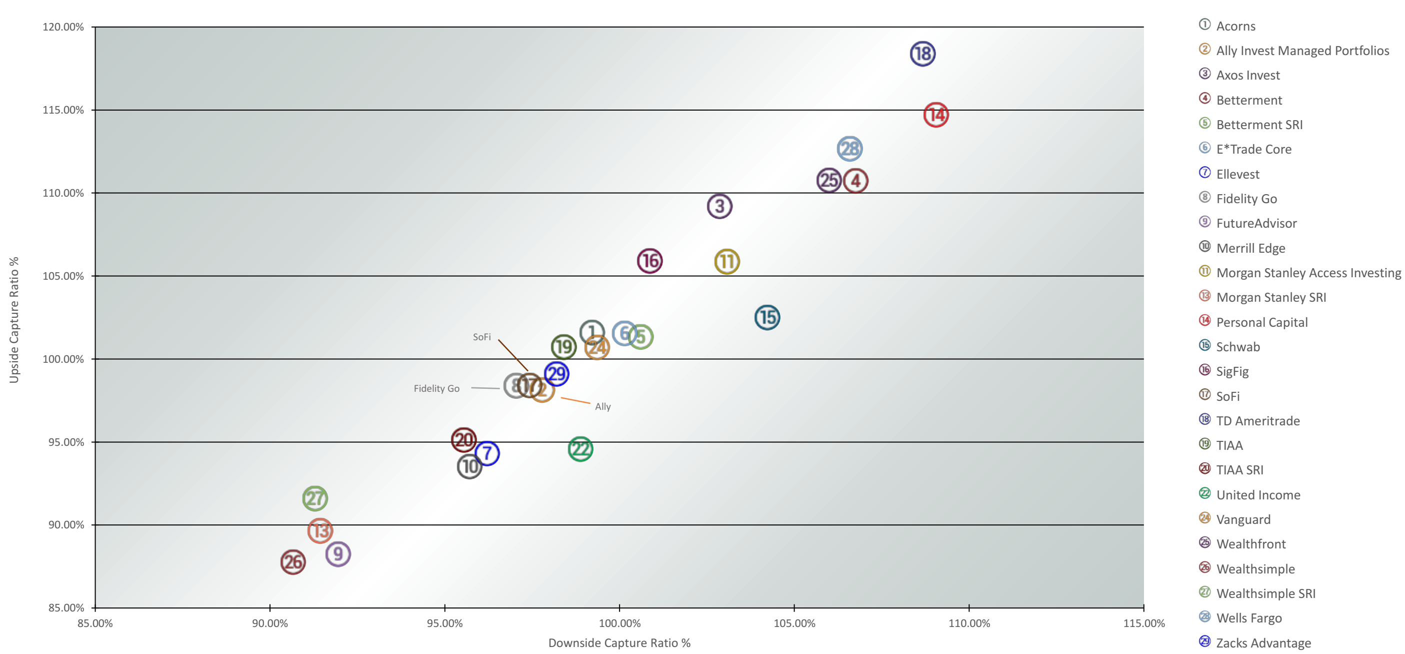
In this *Robo Report*™, we took a closer look at the upside and downside capture of our robo accounts over the trailing two year period. Upside/downside captures are compared to an average return of the robo portfolios for the period. The overall trend is clear: most of the robo portfolios capture a proportionate amount of upside and downside. The upside/downside of the portfolios also highly correlates to the percent of equities in the portfolios, with the portfolios that contain a higher percentage of equities showing both higher upside and downside capture ratios.

> *TD Ameritrade stands out as one of the few portfolios that is capturing more of the upside than the downside.*

TD Ameritrade stands out as one of the few portfolios that is capturing more of the upside than the downside. TD relies heavily on a large-cap fund for its equity allocation. Domestic large caps have been one of the best performing areas of the market over the past two years. Additionally, the portfolio invests in a Barclays Aggregate Bond Index-tracking fund, which holds all investment-grade issues and relies heavily on treasuries. Both areas of the market have provided protections during the downturn. Wells Fargo and Axos Invest also showed higher upside participation than downside participation. Wells Fargo holds a series of *smart beta* funds on the equity side that may have helped them capture more upside than downside. Axos Invest has been one of the most active traders, executing both TLH trades and regularly executing rebalancing trades during the tumultuous previous months. These rebalancing trades helped Axos sell fixed income and purchase equities as markets fell and may have contributed to the portfolio's ability to capture more of the up than down market.

The Wealthsimple and Wealthsimple SRI portfolios both graph at the bottom end of the upside and downside chart. The Wealthsimple portfolio achieved the lowest downside capture while maintaining a nearly 60% equity allocation. Two factors drove these results. First, Wealthsimple now owns significant allocations to minimum volatility funds, which should damper both the

Upside/Downside Capture



Produced by Backend Benchmarking for BackendB.com

upside and downside of the portfolio. The second factor is that Wealthsimple's fixed income is long in duration and high in quality. These holdings performed well during the recent volatility, limiting the impact of that dramatic fall in equity markets.

Generally, results underscore the difficulty of portfolios to capture more upside than downside in the markets. Most robo portfolios are designed to be well diversified and low cost, not to provide significant outperformance or asymmetric returns in up and down markets. We would not expect standard portfolios at most providers to effectively capture asymmetric upside and downside capture ratios.

SRI Portfolios Extend Strong Performance

In this quarter, we have seen further evidence that investors are not paying a significant performance premium when opting for socially responsible investing (SRI) portfolios offered by robos. Many of the SRI portfolios that we track actually outperformed their non-SRI counterparts on a net-of-fees basis in the first quarter, as well as the one- and two-year trailing time periods. Those that did underperform their non-SRI portfolios at the same provider did not underperform by a wide margin. This quarter, five of the eight SRI portfolios outperformed the non-SRI portfolio when compared to the Normalized Benchmark. When looking at the two-year trailing return above or below the Normalized Benchmark, three of four outperformed. Impressively, not only are SRI portfolios showing that they can outperform the non-SRI portfolio at the same provider, but two SRI portfolios were also top 10 performers for the quarter out of 66 taxable portfolios tracked in of the report.

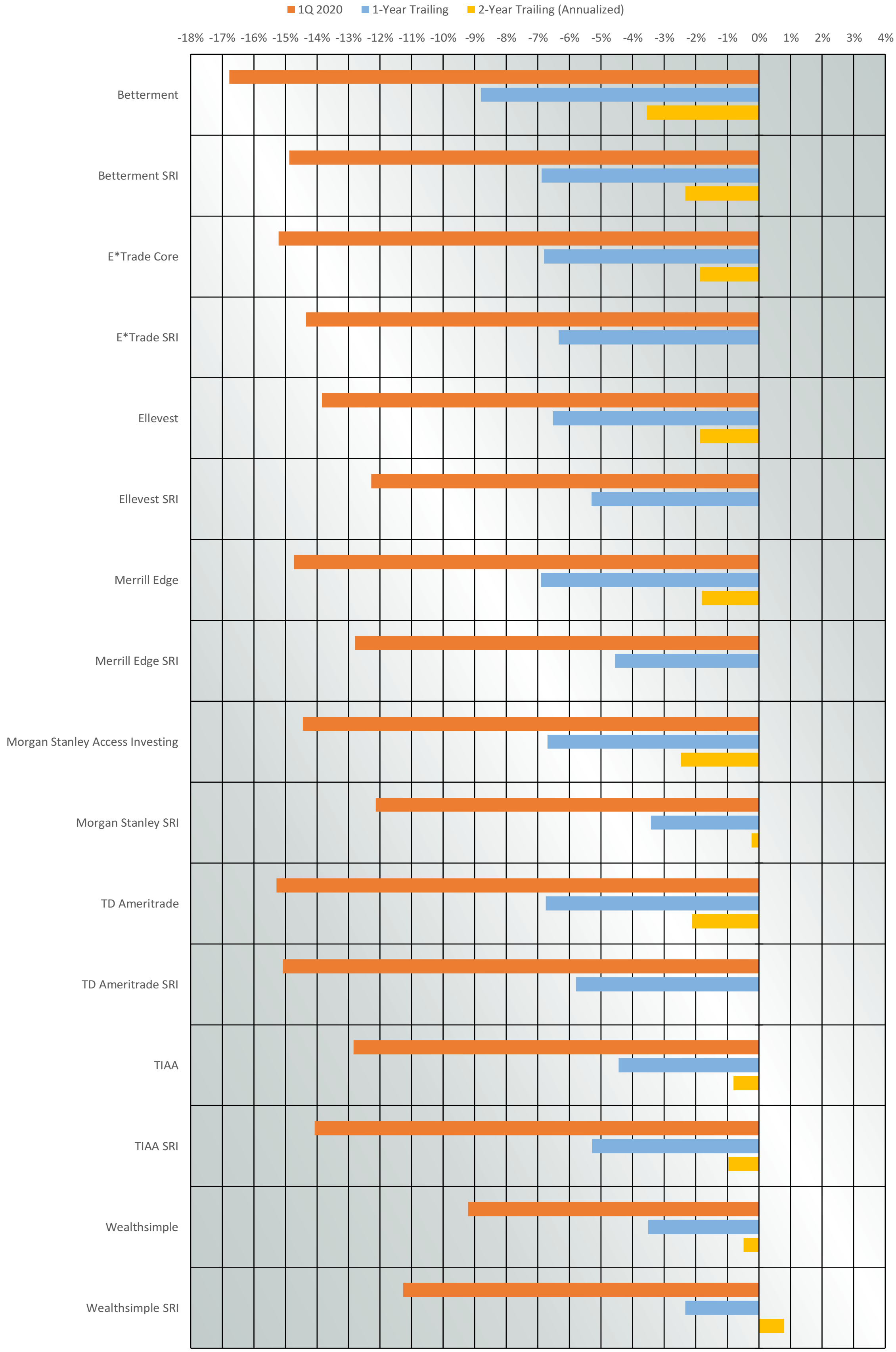
Taking a deeper look at why some SRI portfolios outperformed, we found that the Merrill Lynch, Morgan Stanley, and Betterment non-SRI portfolios all tilt towards value. The SRI portfolios do not have the significant value tilt seen in their non-SRI counterparts. Value has underperformed growth going back two years as well as underperformed during this recent downturn. For example, the equity portion of Morgan Stanley's SRI portfolio outperformed its counterpart's equities by 3.20%, due in part to less value exposure. Additionally, the equity portion of Betterment's SRI portfolio outperformed its non-SRI version because of a more muted overweight to value equities.

Over the first quarter of 2020, while both the Wealthsimple SRI and non-SRI portfolios were top performers, the Wealthsimple SRI version lagged behind its counterpart non-SRI portfolio. Outperformance in both portfolios was driven by high-quality and longer-duration bonds. On the equity side, the non-SRI portfolio now contains minimum volatility funds for foreign allocations.

On the equity side, [Wealthsimple's] non-SRI portfolio now contains minimum volatility funds for foreign allocations.

This helped Wealthsimple's non-SRI portfolio but did not give the SRI portfolio the same boost during the recent bear market.

SRI Performance Chart



Produced by Backend Benchmarking for BackendB.com

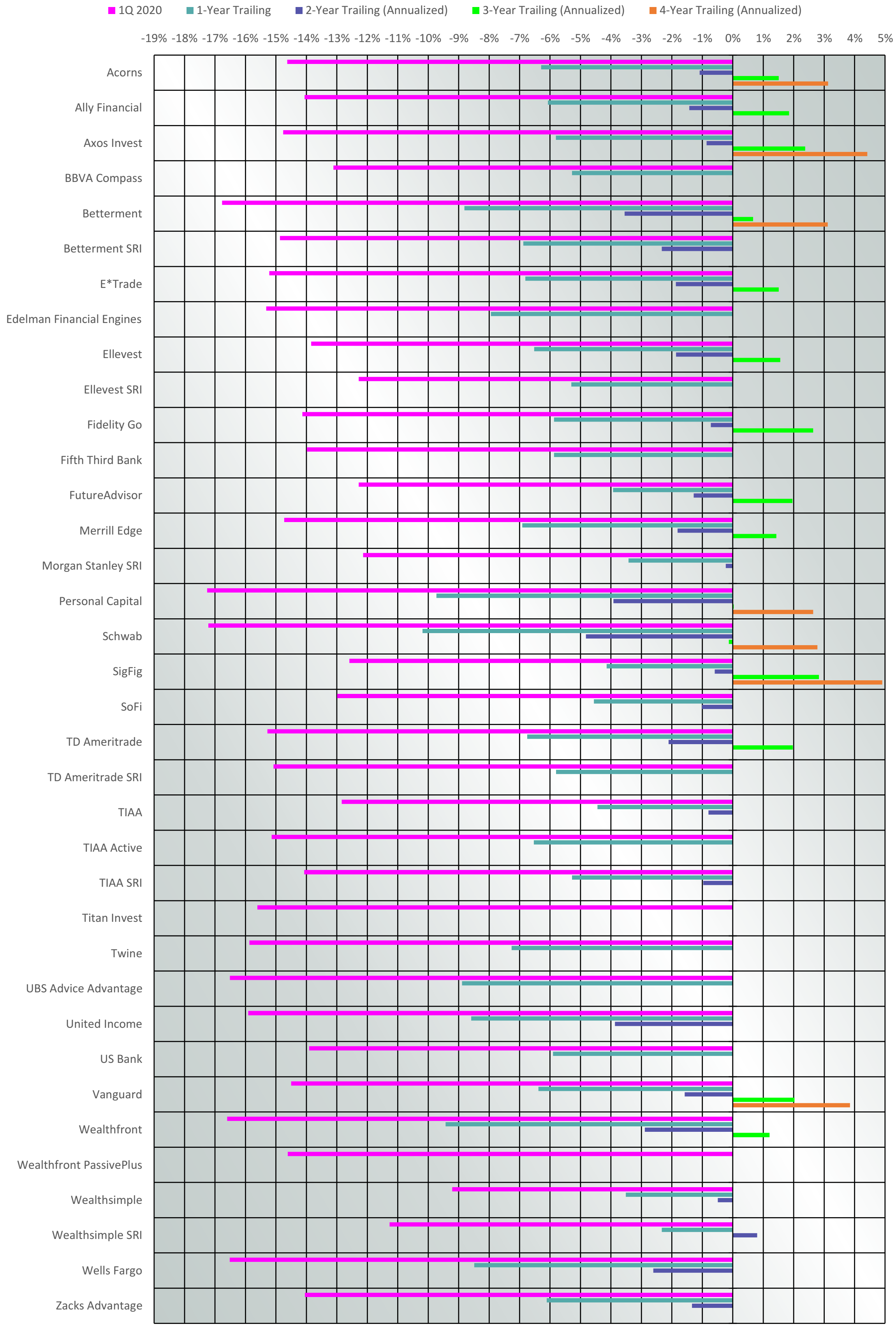
A Closer Look at Tax-Loss Harvesting

This quarter has given us the opportunity to assess the effectiveness of different robo advisors tax-loss harvesting features. To measure tax-loss harvesting, we track a set of specific accounts that were all opened and funded at the same time and receive monthly deposits. These are different from the main accounts that we use to measure performance of the robos. As of the end of the quarter, UBS and Wells Fargo were two noticeable providers that offer tax-loss harvesting but had yet to execute significant tax-loss-generating trades. While UBS and Wells still may execute tax-loss trades, others like TD Ameritrade, Schwab, Betterment, Axos Invest, and Wealthsimple have already turned over significant portions of their account in tax-loss-generating activity.

As of the end of the quarter, UBS and Wells Fargo were two noticeable providers that offer tax-loss harvesting but had yet to execute significant tax loss-generating trades.

The aggressiveness of the trades has also varied. TD Ameritrade, Schwab, Wealthfront, Axos Invest, Wealthsimple, and Betterment stood out for the amount traded and the losses realized relative to the size of their accounts. Schwab had a turnover ratio of higher than 66% during March. TD Ameritrade turned over more than 100% of their portfolio. Betterment turned over nearly 21% of their account, Axos turned over 30% of their account, and Wealthsimple turned over 37%. Most accounts have executed rebalancing trades at this point. Vanguard noticeably had not rebalanced their accounts as of the end of the quarter.

Taxable Account Performance Chart



Produced by Backend Benchmarking for BackendB.com

Industry Trends and Outlook

- *The launch of Vanguard Digital Advisor further heats up already intense pricing pressure*
- *Goldman Sachs is catching up to other firms in building out a tiered-advice structure to serve more types of clients*
- *Independent robos are evolving towards comprehensive personal finance platforms*
- *Retirement income-focused features are beginning to emerge*

Robo advice, as we know it today, first emerged into the mainstream in 2008 when Betterment and Wealthfront were founded and later launched digitally managed portfolios with low fees and minimums. In 2015, Schwab launched its Intelligent Portfolios and Vanguard launched its Personal Advisor Services. Since then, robo advice products have become ubiquitous among financial institutions. Nearly every one of the United States' largest banks and wirehouses offer some type of robo advice today. Here, we intend to take a look back at the industry, how it has changed the broader financial advice industry over the past decade, and what we expect to see next.

When robo advisors entered the main-stream, they grabbed headlines as disruptors to the traditional financial advice industry. Many questioned whether or not these platforms would replace traditional advice relationships. While the advent of robo advice is having and will continue to have profound effects on the advice industry, it is not disrupting the traditional advice industry in the way that many expected.

Turning up Pricing Pressure

Price compression in financial services is not a new trend, but instead has been happening over recent decades. Robo advice is another onslaught against investment management and advice businesses' margins. This pressure creates two needs for traditional advisors: firm efficiency and the creation and defense of the firm's value proposition. In order to stay ahead of the steady march of lower prices, firms must increase efficiency. Advisors have little choice but to structure their practice so they can service more clients with the same amount of resources. Traditional advisors cannot decrease costs at the expense of the value they provide. Most importantly, live advisors can build real relationships with clients and be a steady hand and trusted resource for their clients during times of market volatility and life events. They also must provide services beyond just investment management and assistance with financial, tax, and/or estate planning. Robo platforms are evolving and offering more services by the day. Traditional advice must stay a step ahead with their value proposition and be able to do so at a reasonable cost.

Robo-advice solutions are the newest wave of pricing pressure in the industry, and there is no sign of the pricing competition abating. Vanguard Personal Advisor Services has attracted the most assets of any other direct-to-consumer product by a wide margin, with over $140 billion under management. They offer live advisors for only 0.30% annual management fee. This year, Vanguard launched Vanguard Digital Advisor, which does not offer live advisors but charges an all-in cost of just 0.20% annually. Wells Fargo recently cut its management fee to 0.35% annually

> *Razor-thin margins and pricing competition will continue among robo advisors, increasing pressure on traditional advice.*

and also offers live advisors. Razor-thin margins and pricing competition will continue among robo advisors, increasing pressure on traditional advice.

A Continuum of Services, Not a Replacement of Traditional Advice

Although robo advice platforms are becoming increasingly complex and better at servicing individual clients, they have yet to take significant market share from traditional advisors. While independents like Wealthfront, Betterment, and Personal Capital are still disrupting traditional advice, incumbent firms are positioning robo advice products to service separate client segments than traditional advice would. In fact, major incumbent firms are positioning robo advice products to serve previously underserved areas of the market. Specifically, they target clients who do not have enough assets to be attractive to traditional advisors and self-directed investors. Robo advice solutions at major firms are being introduced to create a "continuum of advice," providing professional money management for those who have begun saving but do not yet have the needs or assets to fit into traditional advice models.

Although it was later than most other large firms, Goldman Sachs has been building out its own tiered advice structure.

Although it was later than most other large firms, Goldman Sachs has been building out its own tiered-advice structure. Traditionally focusing on the ultra-high-net-worth client segment, Goldman has made a series of moves to serve different types of clients. Goldman purchased United Capital, and earlier this year rebranded the company to Goldman Sachs Personal Financial Management. Additionally, it is expected we will see a robo advice product launch from them later this year to be able to service lower asset clients. This robo advice offering may be a newly developed product or a rebranding and expansion of Honest Dollar, a robo advisor they acquired in 2015.

Expansion of Markets and Professional Management for Everyone

Robo advice has dropped the minimum investment amount from the hundreds of thousands of dollars to zero at many providers. Those firms that have large existing client bases—large banks, in particular—are at an advantage with this model, as they can primarily onboard new clients by marketing their robo advice product to existing customers.

The net result is positive for individual investors. Prior to the explosion of digital advice products, consumers who did not have the wealth to be attractive to traditional advisors now have a plethora of options available to them. In fact, they likely have an option available to them at a financial institution where they already do business. The market for professional management has been greatly expanded to include the mass-affluent investors and those new to investing. Two independent firms stand out with their success in introducing investing to individuals who have not invested before. Acorns and Stash, both considered "micro-investing" companies, have millions of users. While total AUM at these firms is smaller than many of their rivals, their client numbers dwarf other independent robos. For example, according to their most recent ADVs, Betterment has more than 660,000 clients, while Acorns has more than 2.9 million.

The market for professional management has been greatly expanded to include the mass-affluent investors and those new to investing.

For the industry as a whole, the impact of this expansion of advice markets may not be felt for years to come. In 10 years, many individuals who are finally reaching asset levels required by many traditional advisors will already have an advice relationship. Firms are starting advice relationships earlier in the client lifecycle than ever before. The impact of professional management being available at very low minimums will not be fully understood for years to come, but major firms are laying the groundwork now by starting relationships with much younger and less wealthy clients.

Meeting in the Middle

While robo advice has been adopted by traditional financial services firms, robo advisors and fintech firms more broadly are pushing back by expanding the services they offer to compete in more areas. Independent firms are first targeting savings and spending accounts to expand. Wealthfront, Betterment, Personal Capital, and SoFi, among others, have launched high-interest savings accounts through partner banks. Betterment, SoFi, and Acorns have now all launched checking accounts with a debit card. Wealthfront is expected to launch one soon. The savings accounts have compelling interest rates, and checking accounts are also attractive due to little to no fees. Not only are these robos now competing with banks, but they are also pressuring traditional firms to lower fees and increase interest rates on their products.

> *The savings accounts have compelling interest rates, and checking accounts are also attractive due to little to no fees. Not only are these firms now competing with banks, but they are also pressuring traditional firms to lower fees and increase interest rates on their products.*

Fintech firms are working towards becoming comprehensive personal finance platforms that can provide services to consumers from their day-to-day spending and saving through to long-term planning and investing. We expect to see a steady increase in the types of services offered. For example, Wealthfront is working on the ability to connect their clients with mortgage providers.

Next on the Innovation Front

The independents have had to stay a step ahead of major firms by continuing to innovate and improve how their users interact with their money. Acorns popularized "round-ups" where purchases are "rounded up" to the nearest dollar by Acorns, who then moves that money into an investment account, thus creating an automatic savings plan. Other "smart savings" features are starting to emerge. We believe that the future rounds of innovations and feature releases will go beyond automated investing to tackle budgeting, introducing tools to help users save automatically and integrate long-term planning with day-to-day spending and saving. Wealthfront's acquisition of Grove was part of developing their "Self-Driving Money" product that has yet to be launched. We are excited to see what innovations around day-to-day spending behavior will follow the introduction of checking and savings accounts.

Fractional Shares and Direct Indexing

Behind the lower minimums is the advent of fractional-share trading. Fractional shares allow firms like Acorns to invest just $5 into a diversified portfolio, something that was not possible before. Fractional shares have also opened the door to a strategy called direct indexing. Direct indexing involves buying the underlying shares of an index instead of an ETF or fund that tracks that index. Prior to fractional shares, this technique required a large account balance, but this is no longer the case.

Direct indexing offers three advantages. The first is it increases the opportunities for tax-loss harvesting. The second is it creates the ability to customize a portfolio to include or exclude certain assets from an index. For example, an investor may want to own the S&P 500 but exclude tobacco companies. The third benefit is that it can reduce costs, by eliminating the need to purchase a mutual fund or ETF.

While direct indexing is being implemented at some firms, like Interactive Advisors and Wealthfront, it has yet to become widely adopted.

> *We do not expect direct indexing to have significant impacts on the investment management market in the near- or mid-term, but it may have profound impacts on the fund industry in the long-term.*

We do not expect direct indexing to have significant impacts on the investment management market in the near- or mid-term, but it may have profound impacts on the fund industry in the long-term.

Retirement Income Strategies

Retirement income strategies is another area we are seeing innovation. Product developments are tackling the behavioral components of saving and investing alongside tax optimization. The industry is starting to launch products to address the transition of saving and investing to withdrawing and spending during retirement. Schwab announced "Intelligent Income" earlier this year. This feature of Intelligent Portfolios Premium helps retirees not only determine how much to spend, but also identifies how to draw down assets in a tax-efficient way. Personal Capital and United Income both have features that help clients determine how much and from where to draw assets. Products like these can help clients understand how to transition from earning money to drawing down assets, addressing the behavioral component of spending during retirement, while also helping optimize for taxes. Retirement spending is an area that we expect to see other firms leverage technology to address.

Consolidation and Closures

While individual investors have more choices in providers than ever before, there is still a steady march of consolidation and closures in the market. While the E*Trade and TD Ameritrade acquisitions were driven by factors much larger than the digital advice products, it is unclear how this will impact those invested in E*Trade Core portfolios and TD Essential and Selective portfolios. As Morgan Stanley and Schwab integrate these products (E*Trade and TD, respectively), existing customers may end up facing taxable gains if old portfolio models are converted. Robo investors have faced this issue before after the closures of qPlum, Hedgeable, and others. The most recent investing fintech to shutter their doors was Motif, who despite having a unique business model, failed to reach the scale necessary to continue operations.

Many independent firms have been acquired with varying degrees of success. Not all firms who have either acquired or launched a robo product have found a good fit within their existing business line. UBS' Advice Advantage recently increased its top-line fee to 1.25%. It is unclear how their advisor force is using or adopting the product, and there seems to be a lack of a direct-to-consumer client acquisition strategy. Learnvest was acquired by Northwestern Mutual, who eventually discontinued the product. Capital One originally had a robo advice product, sold it as part of a larger transaction, and then recently purchased United Income and increased its top-line fee to 0.99%. Firms that have stayed independent need to achieve significant scale for profitability. Betterment announced they were approaching profitability last summer when their AUM was between $15 and $20 billion. Many firms that have not achieved scale have closed, and the list of independent direct-to-consumer products has shrunk.

Many firms that have not achieved scale have closed, and the list of independent direct-to-consumer products has shrunk.

Innovation, Transformation and the Future

Robo advice is successfully transforming the industry, although not always in the way the industry expected. Robo-advice products have fit in next to traditional-advice offerings more than replaced them. These products opened professional management to large swaths of the population that have historically been underserved. These solutions represent the newest onslaught of pricing pressure and are pushing the battle for new clients much earlier in the client lifecycle. While independent robo advisors are well along their path to becoming comprehensive personal finance platforms and are already competing with banks on savings and checking accounts, we expect to continue to see an expansion of services and products. The financial services landscape has been forever changed by robo advice in the last five years. Innovation and competition will continue to force firms to adapt, rethink products, and improve how they serve all types of clients.

Charts and Tables

Funding and AUM Statistics

Robo	Raised to Date (Millions)	Last Funding Amount (Millions)	Last Funding Date	Post-Money Valuation at Last Funding Round (Millions)	AUM (in millions)	Clients	Source of AUM and Clients Figures
Acorns	$207	$105	Dec, 2019	$860	$1,822	2,954,678	Recent ADV
Ally Invest Advisors	N/A	N/A	N/A	Acquired TradeKing for $294 Million June, 2016	$277	32,933	Recent ADV
Axos Invest	N/A	N/A	N/A	Acquired WiseBanyan for undisclosed amount in Oct. 2018	$206	32,202	Recent ADV
Betterment	$275	$70	Aug, 2017	$800	$18,100	660,195	Recent ADV
Ellevest	$78	$33	Mar, 2019	Unknown	$581	47,697	Recent ADV
FutureAdvisor	N/A	N/A	N/A	Acquired by BlackRock for $152 Million August, 2015	$1,135	18,862	Recent ADV
Personal Capital	$265	$50	Feb, 2019	Unknown	$12,300	22,000	Company Website
Qapital	$47	$30	Apr, 2018	Unknown	$12	21,894	Recent ADV
Schwab Intelligent Portfolio Products	N/A	N/A	N/A	N/A	$40,700	355,000 accounts	Company Website
SigFig	$120	$50	June, 2018	$471	$835	18,090 accounts	Recent ADV
SoFi Invest	N/A	N/A	N/A	N/A	$138	34,075	Recent ADV
TD Ameritrade Selective and Essential Portfolios	N/A	N/A	N/A	N/A	$18,200	Unknown	Company Representative
T Rowe Price ActivePlus Portfolios	N/A	N/A	N/A	N/A	$355	Unknown	Company Representative
United Income	N/A	N/A	N/A	Acquired by Capital One for undisclosed amount in Aug. 2019	$1,199	1,606	Recent ADV
Vanguard Personal Advisor Services	N/A	N/A	N/A	N/A	$148,000	Unknown	Press Release
Wealthfront	$205	$75	Jan, 2018	$500	$20,000***	247,041	Recent ADV & Website
Wealthsimple	$267 (CAD)	$100 (CAD)	May, 2019	Unknown	$6,000 CAD***	Unknown	Company Website

*All funding and valuation amounts are estimates
**Sources: Crunchbase, Pitchbook, News Media
***AUM figure includes cash assets held in savings account products
△This valuation number has been disputed
^Other Than Annual Amendment

Produced by Backend Benchmarking for BackendB.com

Taxable Returns: Total Performance

	Total									
	1Q 2020	1Q 2020 Return Above/Below Benchmark	1-Year Trailing	1-Year Trailing Return Above/Below Benchmark	2-Year Trailing (Annualized)	2-Year Trailing Return Above/Below Benchmark (Annualized)	3-Year Trailing (Annualized)	3-Year Trailing Return Above/Below Benchmark (Annualized)	4-Year Trailing (Annualized)	4-Year Trailing Return Above/Below Benchmark (Annualized)
Acorns[1]	-14.63%	-1.43%	-6.29%	-1.49%	-1.09%	-0.35%	1.51%	-1.25%	3.13%	-1.43%
Ally Financial[9]	-14.06%	-1.09%	-6.07%	-1.44%	-1.43%	-0.79%	1.85%	-0.78%	-	-
Axos Invest[8]	-14.76%	-0.66%	-5.81%	-0.29%	-0.86%	0.26%	2.38%	-0.12%	4.42%	-0.06%
BBVA Compass[7]	-13.11%	-0.36%	-5.28%	-0.83%	-	-	-	-	-	-
Betterment[27]	-16.77%	-2.45%	-8.81%	-3.11%	-3.55%	-2.33%	0.67%	-1.80%	3.12%	-1.37%
Betterment Goldman Sachs Smart Beta[32]	-13.82%	-0.62%	-	-	-	-	-	-	-	-
Betterment SRI[27]	-14.87%	-1.67%	-6.88%	-2.08%	-2.33%	-1.59%	-	-	-	-
Citizens Bank[7]	-14.66%	-0.56%	-6.62%	-1.10%	-	-	-	-	-	-
E*Trade[21]	-15.22%	-2.02%	-6.81%	-2.01%	-1.87%	-1.13%	1.51%	-1.09%	-	-
E*Trade Active[23]	-14.54%	-1.12%	-6.56%	-1.58%	-	-	-	-	-	-
E*Trade SRI[23]	-14.35%	-0.93%	-6.34%	-1.36%	-	-	-	-	-	-
Edelman Financial Engines[4]	-15.32%	-0.55%	-7.94%	-1.97%	-	-	-	-	-	-
Ellevest[15]	-13.84%	-1.54%	-6.52%	-2.43%	-1.86%	-1.50%	1.56%	-1.32%	-	-
Ellevest SRI[15]	-12.28%	-1.11%	-5.30%	-2.12%	-	-	-	-	-	-
Fidelity Go[33]	-14.13%	-0.71%	-5.87%	-0.89%	-0.72%	0.11%	2.64%	0.06%	-	-
Fifth Third Bank[7]	-13.99%	-0.79%	-5.87%	-1.07%	-	-	-	-	-	-
FutureAdvisor[3]	-12.28%	0.24%	-3.93%	0.34%	-1.28%	-0.84%	1.96%	-0.73%	-	-
Interactive Advisors[24]	-13.70%	-1.63%	-6.53%	-2.61%	-	-	-	-	-	-
Interactive Advisors Legg Mason Global Growth and Income[24]	-16.50%	-1.80%	-	-	-	-	-	-	-	-
Interactive Advisors State Street SSGA Moderate[24]	-15.58%	-3.13%	-	-	-	-	-	-	-	-
Interactive Advisors Wisdom Tree Moderate Aggressive[24]	-13.94%	-1.94%	-	-	-	-	-	-	-	-
JP Morgan Chase You Invest[7]	-10.14%	0.81%	-	-	-	-	-	-	-	-
Liftoff (Ritholtz Wealth Management)[3]	-15.78%	-2.58%	-	-	-	-	-	-	-	-
M1 Finance[34]	-16.88%	-2.33%	-	-	-	-	-	-	-	-
Merrill Edge[31]	-14.73%	-1.25%	-6.91%	-1.36%	-1.81%	-0.73%	1.43%	-0.97%	-	-
Merrill Edge SRI[31]	-12.80%	0.17%	-4.55%	0.08%	-	-	-	-	-	-
Morgan Stanley[12]	-14.44%	-0.57%	-6.70%	-1.42%	-2.46%	-1.46%	-	-	-	-
Morgan Stanley Active[3]	-13.81%	0.29%	-5.69%	-0.17%	-	-	-	-	-	-
Morgan Stanley Defense and Cyber Security[7]	-16.74%	-2.64%	-	-	-	-	-	-	-	-
Morgan Stanley Emerging Consumer[7]	-14.59%	-0.49%	-	-	-	-	-	-	-	-
Morgan Stanley Gender Diversity[7]	-12.75%	0.45%	-	-	-	-	-	-	-	-
Morgan Stanley Genomics[7]	-11.39%	-0.67%	-	-	-	-	-	-	-	-
Morgan Stanley Global Frontier[7]	-16.73%	-2.18%	-	-	-	-	-	-	-	-
Morgan Stanley Inflation Conscious[7]	-17.17%	-4.03%	-	-	-	-	-	-	-	-
Morgan Stanley Robotics[7]	-14.51%	0.04%	-	-	-	-	-	-	-	-
Morgan Stanley SRI[7]	-12.14%	0.38%	-3.42%	0.74%	-0.23%	0.19%	-	-	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns.*

****SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing".*

*****Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.*

Taxable Returns: Total Performance *(continued from previous page)*

	Total									
	1Q 2020	1Q 2020 Return Above/Below Benchmark	1-Year Trailing	1-Year Trailing Return Above/Below Benchmark	2-Year Trailing (Annualized)	2-Year Trailing Return Above/Below Benchmark (Annualized)	3-Year Trailing (Annualized)	3-Year Trailing Return Above/Below Benchmark (Annualized)	4-Year Trailing (Annualized)	4-Year Trailing Return Above/Below Benchmark (Annualized)
Motif[3]	-14.00%	-1.03%	-	-	-	-	-	-	-	-
Personal Capital[4]	-17.26%	-1.14%	-9.73%	-2.58%	-3.92%	-1.92%	0.03%	-2.21%	2.64%	-1.98%
Prudential[26]	-14.70%	-1.50%	-6.31%	-1.51%	-	-	-	-	-	-
Qapital[30]	-17.93%	-3.16%	-10.07%	-4.01%	-	-	-	-	-	-
Schwab[5]	-17.22%	-3.51%	-10.19%	-4.98%	-4.82%	-3.88%	-0.13%	-2.79%	2.78%	-1.86%
Schwab Domestic Focus[5]	-17.88%	-3.56%	-	-	-	-	-	-	-	-
SigFig[6]	-12.59%	1.06%	-4.14%	1.02%	-0.59%	0.34%	2.83%	0.28%	4.91%	0.47%
SoFi[17]	-12.99%	0.21%	-4.56%	0.24%	-1.01%	-0.35%	-	-	-	-
TD Ameritrade[10]	-15.28%	-0.28%	-6.75%	-0.51%	-2.11%	-0.60%	1.97%	-0.40%	-	-
TD Ameritrade SRI[10,C]	-15.08%	-0.31%	-5.80%	0.26%	-	-	-	-	-	-
TIAA[7]	-12.84%	0.58%	-4.44%	0.54%	-0.80%	0.03%	-	-	-	-
TIAA Active[7]	-15.14%	-1.72%	-6.53%	-1.92%	-	-	-	-	-	-
TIAA SRI[7]	-14.07%	-0.87%	-5.28%	-0.48%	-0.97%	-0.23%	-	-	-	-
Twine (John Hancock)[3]	-15.87%	-0.65%	-7.26%	-0.84%	-	-	-	-	-	-
UBS Advice Advantage[7]	-16.51%	-1.51%	-8.89%	-2.65%	-	-	-	-	-	-
United Income[16]	-15.91%	-2.94%	-8.59%	-3.96%	-3.87%	-3.23%	-	-	-	-
US Bank[28]	-13.91%	-1.39%	-5.90%	-1.67%	-	-	-	-	-	-
Vanguard[4,A]	-14.50%	-1.30%	-6.38%	-1.58%	-1.58%	-0.84%	2.03%	-0.57%	3.85%	-0.55%
Wealthfront[22,B]	-16.60%	-2.28%	-9.43%	-3.73%	-2.89%	-1.67%	1.21%	-1.26%	-	-
Wealthfront PassivePlus[22]	-14.61%	-2.31%	-	-	-	-	-	-	-	-
Wealthsimple[11]	-9.21%	3.99%	-3.51%	1.29%	-0.49%	0.25%	-	-	-	-
Wealthsimple SRI[11]	-11.27%	1.93%	-2.33%	2.47%	0.80%	1.54%	-	-	-	-
Wells Fargo[14]	-16.52%	-2.65%	-8.49%	-3.15%	-2.61%	-1.59%	-	-	-	-
Zacks Advantage[29]	-14.05%	-0.85%	-6.11%	-1.31%	-1.34%	-0.53%	-	-	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns.*

****SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing".*

*****Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.*

Taxable Returns: Equity and Fixed Income Performance

	Equity					Fixed Income				
	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)
Acorns[1]	-22.85%	-13.37%	-4.47%	0.35%	3.53%	-0.42%	5.25%	4.04%	2.83%	2.00%
Ally Financial[9]	-23.96%	-14.77%	-7.02%	-0.40%	-	2.25%	7.59%	6.40%	4.55%	-
Axos Invest[8]	-21.66%	-11.50%	-4.05%	1.59%	4.93%	-1.68%	4.27%	4.37%	3.27%	3.03%
BBVA Compass[7]	-24.04%	-15.01%	-	-	-	2.45%	7.62%	-	-	-
Betterment[27]	-24.48%	-15.40%	-7.73%	-1.16%	2.91%	-2.13%	2.80%	3.60%	3.20%	2.67%
Betterment Goldman Sachs Smart Beta[32]	-20.93%	-	-	-	-	-3.23%	-	-	-	-
Betterment SRI[27]	-23.02%	-13.62%	-6.58%	-	-	-2.27%	2.77%	3.59%	-	-
Citizens Bank[7]	-22.43%	-13.21%	-	-	-	1.45%	6.16%	-	-	-
E*Trade[21]	-24.01%	-15.07%	-6.76%	-0.39%	-	-0.67%	5.88%	5.45%	3.96%	-
E*Trade Active[23]	-24.06%	-14.58%	-	-	-	-0.43%	3.98%	-	-	-
E*Trade SRI[23]	-23.78%	-14.26%	-	-	-	-0.43%	3.97%	-	-	-
Edelman Financial Engines[4]	-24.31%	-15.90%	-	-	-	1.90%	6.38%	-	-	-
Ellevest[15]	-22.57%	-13.01%	-5.54%	0.42%	-	-2.52%	0.98%	2.16%	2.08%	-
Ellevest SRI[15]	-22.01%	-12.57%	-	-	-	-1.96%	1.47%	-	-	-
Fidelity Go[33]	-22.41%	-12.16%	-4.33%	1.59%	-	-2.34%	2.02%	3.40%	3.18%	-
Fifth Third Bank[7]	-22.05%	-11.88%	-	-	-	-1.46%	2.70%	-	-	-
FutureAdvisor[3]	-23.31%	-13.31%	-6.42%	-0.27%	-	2.82%	8.10%	5.14%	4.27%	-
Interactive Advisors[24]	-25.34%	-17.30%	-	-	-	0.15%	5.44%	-	-	-
Interactive Advisors Legg Mason Global Growth and Income[24]	-20.98%	-	-	-	-	-6.25%	-	-	-	-
Interactive Advisors State Street SSGA Moderate[24]	-22.52%	-	-	-	-	-1.74%	-	-	-	-
Interactive Advisors Wisdom Tree Moderate Aggressive[24]	-26.46%	-	-	-	-	-1.78%	-	-	-	-
JP Morgan Chase You Invest[7]	-22.59%	-	-	-	-	2.71%	-	-	-	-
Liftoff (Ritholtz Wealth Management)[3]	-24.38%	-	-	-	-	-3.54%	-	-	-	-
M1 Finance[34]	-23.72%	-	-	-	-	-3.41%	-	-	-	-
Merrill Edge[31]	-22.74%	-12.30%	-4.98%	0.72%	-	-2.22%	2.08%	3.20%	2.63%	-
Merrill Edge SRI[31]	-21.10%	-10.94%	-	-	-	-1.85%	3.48%	-	-	-
Morgan Stanley[12]	-23.37%	-14.36%	-7.16%	-	-	2.20%	6.89%	5.71%	-	-
Morgan Stanley Active[3]	-22.05%	-12.63%	-	-	-	0.72%	5.93%	-	-	-
Morgan Stanley Defense and Cyber Security[7]	-24.29%	-	-	-	-	0.76%	-	-	-	-
Morgan Stanley Emerging Consumer[7]	-21.59%	-	-	-	-	0.60%	-	-	-	-
Morgan Stanley Gender Diversity[7]	-20.78%	-	-	-	-	-0.03%	-	-	-	-
Morgan Stanley Genomics[7]	-21.38%	-	-	-	-	0.47%	-	-	-	-
Morgan Stanley Global Frontier[7]	-24.52%	-	-	-	-	0.76%	-	-	-	-
Morgan Stanley Inflation Conscious[7]	-28.34%	-	-	-	-	0.83%	-	-	-	-
Morgan Stanley Robotics[7]	-21.06%	-	-	-	-	0.77%	-	-	-	-
Morgan Stanley SRI[7]	-20.17%	-9.25%	-3.51%	-	-	-0.01%	4.56%	4.02%	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns.*

****SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing".*

*****Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.*

Taxable Returns: Equity and Fixed Income Performance *(continued from previous page)*

	Equity					Fixed Income				
	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)
Motif[3]	-23.19%	-	-	-	-	0.85%	-	-	-	-
Personal Capital[4]	-23.88%	-15.49%	-6.93%	-1.30%	2.31%	-0.94%	3.18%	2.42%	2.08%	2.18%
Prudential[26]	-22.63%	-12.44%	-	-	-	-2.49%	2.57%	-	-	-
Qapital[30]	-25.54%	-17.01%	-	-	-	-1.33%	4.96%	-	-	-
Schwab[5]	-26.99%	-18.64%	-9.75%	-2.62%	1.88%	-2.04%	2.94%	2.58%	3.25%	3.83%
Schwab Domestic Focus[5]	-26.67%	-	-	-	-	-0.64%	-	-	-	-
SigFig[6]	-22.20%	-12.41%	-5.17%	1.36%	5.06%	2.17%	7.57%	5.73%	4.13%	3.87%
SoFi[17]	-20.79%	-10.24%	-4.67%	-	-	-0.48%	3.61%	3.96%	-	-
TD Ameritrade[10]	-22.65%	-12.92%	-5.74%	0.72%	-	1.51%	6.63%	4.91%	3.80%	-
TD Ameritrade SRI[10,C]	-22.78%	-12.44%	-	-	-	1.69%	7.04%	-	-	-
TIAA[7]	-22.34%	-12.40%	-5.39%	-	-	1.74%	6.90%	5.56%	-	-
TIAA Active[7]	-24.38%	-14.97%	-	-	-	-1.39%	4.43%	-	-	-
TIAA SRI[7]	-21.75%	-11.00%	-4.29%	-	-	-2.82%	2.28%	3.17%	-	-
Twine (John Hancock)[3]	-21.98%	-12.09%	-	-	-	-2.11%	2.89%	-	-	-
UBS Advice Advantage[7]	-23.65%	-14.77%	-	-	-	-2.38%	2.03%	-	-	-
United Income[16]	-24.68%	-15.94%	-8.70%	-	-	-0.88%	3.49%	3.24%	-	-
US Bank[28]	-22.24%	-12.73%	-	-	-	-1.41%	3.44%	-	-	-
Vanguard[4,A]	-22.16%	-12.13%	-4.93%	1.23%	4.76%	-0.58%	3.24%	3.85%	3.17%	2.35%
Wealthfront[22,B]	-24.79%	-16.72%	-7.20%	-0.67%	-	-0.43%	4.03%	4.84%	3.85%	-
Wealthfront PassivePlus [22]	-22.41%	-	-	-	-	-0.92%	-	-	-	-
Wealthsimple[11]	-20.36%	-13.42%	-6.23%	-	-	9.43%	12.36%	8.19%	-	-
Wealthsimple SRI[11]	-20.52%	-9.65%	-3.15%	-	-	2.95%	7.70%	5.99%	-	-
Wells Fargo[14]	-23.82%	-14.46%	-5.74%	-	-	-3.70%	1.85%	2.79%	-	-
Zacks Advantage[29]	-22.21%	-12.10%	-4.16%	-	-	-0.39%	3.53%	3.45%	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year trailing returns.*

****SRI indicates the account is invested in a Socially Responsible Investing portfolio, also known as "Impact Investing".*

*****Active indicates the account is invested in an active strategy with either actively managed funds or its own active manager. For these providers, the active strategy is distinct from their passive and/or SRI strategies. Other accounts may use actively managed products within their portfolios.*

Non 60/40 Target Allocation Taxable Returns

		Total Portfolio		Equity	Fixed Income
	Percentage Equity	1Q 2020	1Q 2020 Return Above/Below Benchmark	1Q 2020	1Q 2020
Betterment Income[27]	0%	-0.61%	-0.92%	-	-0.61%
TD Ameritrade Income[35]	22%	-7.67%	-3.26%	-22.01%	-2.70%
TD Ameritrade Managed Risk[35]	13%	-8.07%	-5.02%	*^	*^
TD Ameritrade Opportunistic[10]	51%	-13.78%	-4.41%	*^	*^
Titan Invest[3]	100%	-15.61%	6.53%	-15.50%	-
Wealthsimple Halal[11]	100%	-21.37%	0.77%	-21.44%	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year returns, others have no fixed income holdings thus no fixed income returns.*

**^These portfolios hold balanced funds. The nature of these funds and limits of our portfolio management system do not enable us to accurately breakdown equity and fixed income performance individually.*

Retirement Returns: Total Performance

	Total Portfolio							
	1Q 2020	1Q 2020 Return Above/Below Benchmark	1-Year Trailing	1-Year Trailing Return Above/Below Benchmark	2-Year Trailing (Annualized)	2-Year Trailing Return Above/Below Benchmark (Annualized)	3-Year Trailing (Annualized)	3-Year Trailing Return Above/Below Benchmark (Annualized)
Ally Financial IRA[9]	-22.30%	-1.62%	-13.37%	-2.31%	-6.08%	-1.83%	-0.04%	-1.48%
Axos Invest IRA[25]	-20.61%	-0.15%	-10.81%	0.07%	-4.21%	-0.06%	1.46%	-0.01%
Betterment IRA[27]	-21.31%	-1.97%	-12.51%	-2.51%	-5.69%	-2.02%	-0.01%	-1.62%
E*Trade IRA[21]	-23.81%	-2.01%	-14.99%	-3.03%	-6.78%	-2.04%	-0.48%	-1.77%
Fidelity Go IRA[33]	-18.53%	0.36%	-8.85%	0.79%	-2.50%	0.98%	2.16%	0.50%
Honest Dollar (Goldman Sachs) IRA[3]	-22.33%	-0.31%	-12.62%	-0.48%	-	-	-	-
Merrill Edge IRA[31]	-21.11%	-0.84%	-11.64%	-0.60%	-4.89%	-0.66%	-	-
Morgan Stanley IRA[7]	-17.92%	-0.38%	-9.54%	-0.95%	-4.18%	-1.27%	-	-
Personal Capital IRA[4]	-22.55%	-1.21%	-14.36%	-2.77%	-6.20%	-1.66%	-0.77%	-2.13%
Principal SimpleInvest IRA[7]	-23.35%	-1.55%	-	-	-	-	-	
Schwab IRA[20]	-25.83%	-4.92%	-18.14%	-6.90%	-9.40%	-5.05%	-2.59%	-4.00%
SigFig IRA[6]	-21.67%	-1.44%	-12.87%	-2.16%	-5.84%	-1.79%	0.41%	-1.09%
SoFi IRA[18]	-20.78%	1.47%	-10.22%	2.11%	-4.64%	0.30%	-	-
T Rowe Price IRA[13]	-22.56%	-0.31%	-13.23%	-0.90%	-5.47%	-0.53%	-	-
TD Ameritrade IRA[10]	-19.38%	-0.72%	-9.93%	-0.46%	-4.00%	-0.62%	1.32%	-0.36%
TIAA IRA[7]	-19.14%	0.42%	-9.62%	0.55%	-3.70%	0.06%	-	-
United Income IRA[16]	-24.75%	-2.73%	-16.36%	-4.22%	-9.52%	-4.68%	-	-
Wealthsimple IRA[2]	-14.27%	3.49%	-7.79%	0.97%	-2.86%	0.15%	-	-
Wells Fargo IRA[14]	-22.80%	-2.57%	-14.52%	-3.81%	-6.87%	-2.82%	-	-
Zacks Advantage IRA[4]	-21.53%	-0.85%	-12.47%	-1.41%	-5.41%	-1.16%	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year returns, others have no fixed income holdings thus no fixed income returns.*

Retirement Returns: Equity and Fixed Income Performance

	Equity				Fixed Income			
	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Financial IRA[9]	-24.01%	-14.85%	-7.02%	-0.41%	1.15%	6.36%	5.82%	4.28%
Axos Invest IRA[25]	-22.25%	-12.22%	-5.05%	1.21%	-0.78%	5.34%	4.67%	3.62%
Betterment IRA[27]	-24.39%	-15.25%	-7.36%	-0.74%	-1.60%	3.61%	3.77%	3.37%
E*Trade IRA[21]	-24.13%	-15.21%	-6.86%	-0.44%	-	-	-	-
Fidelity Go IRA[33]	-22.12%	-11.88%	-4.14%	1.64%	3.56%	8.81%	6.52%	4.55%
Honest Dollar (Goldman Sachs) IRA[3]	-22.61%	-12.86%	-	-	-	-	-	-
Merrill Edge IRA[31]	-22.83%	-12.58%	-5.46%	-	-11.01%	-6.08%	-1.46%	-
Morgan Stanley IRA[7]	-23.05%	-13.93%	-6.85%	-	2.09%	6.68%	5.59%	-
Personal Capital IRA[4]	-23.75%	-15.42%	-6.75%	-1.07%	-1.35%	3.08%	0.98%	1.53%
Principal SimpleInvest IRA[7]	-23.60%		-	-	-	-	-	
Schwab IRA[20]	-27.40%	-19.34%	-10.06%	-2.81%	-	-	-	-
SigFig IRA[6]	-22.80%	-13.80%	-6.47%	0.42%	-11.33%	-4.11%	-0.03%	0.37%
SoFi IRA[18]	-20.77%	-10.20%	-4.62%	-	-	-	-	-
T Rowe Price IRA[13]	-22.54%	-13.21%	-5.46%	-	-	-	-	-
TD Ameritrade IRA[10]	-22.26%	-12.35%	-5.22%	1.09%	-0.01%	5.43%	3.76%	3.19%
TIAA IRA[7]	-22.23%	-12.28%	-5.31%	-	1.45%	6.76%	5.45%	-
United Income IRA[16]	-25.48%	-17.01%	-9.84%	-	-	-	-	-
Wealthsimple IRA[2]	-20.85%	-13.70%	-6.25%	-	15.92%	18.02%	10.93%	-
Wells Fargo IRA[14]	-24.50%	-15.94%	-7.74%	-	-7.63%	-1.85%	1.28%	-
Zacks Advantage IRA[4]	-22.42%	-12.96%	-5.53%	-	-	-	-	-

**Net of Fees Returns as of: 3/31/2020*

Produced by Backend Benchmarking for BackendB.com

***Some accounts have not been open long enough for 1 year, 2 year, or 3 year returns, others have no fixed income holdings thus no fixed income returns.*

Taxable Account Facts

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Acorns	No minimum	$1/month for Acorns Invest ; $2/month for Invest + Acorns Later, $3/month for Acorns Invest + Acorns Later + Acorns Spend. For balances above $1 million contact Acorns directly.	0.09%	61%/39%/0%/0%	57%/43%/0%/0%	84%/16%	79%/21%	0%
Ally Financial	$100	0.30% annually; Also offers cash-enhanced portfolio with 30% invested in cash and no management fee	0.07%	59%/39%/0%/2%	55%/43%/0%/3%	59%/41%	60%/40%	0%
Axos Invest	No minimum	No fee for basic package; add-on packages, such as tax-loss harvesting, come at additional cost	0.07%	64%/36%/0%/0%	64%/36%/0%/0%	62%/38%	62%/38%	0%
BBVA Compass	$10,000	0.75% annually	0.12%	57%/39%/3%/1%	55%/40%/3%/3%	63%/37%	61%/39%	0%
Betterment	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.08%	65%/35%/0%/0%	65%/35%/0%/0%	49%/51%	57%/43%	43%
Betterment Goldman Sachs Smart Beta	Digital: No minimum; Premium: $100,000	Digital: 0.25%, 0.15% above $2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above $2M	0.12%	60%/40%/0%/0%	58%/41%/0%/0%	57%/43%	68%/32%	29%
Betterment Income	Digital: No minimum; Premium: $100,000	Digital: 0.25%, 0.15% above $2M; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above $2M	0.17%	0%/100%/0%/0%	0%/100%/0%/0%	100%/0%	68%/32%	0%
Betterment SRI	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.14%	60%/40%/0%/0%	60%/40%/0%/0%	50%/50%	49%/51%	59%
Citizens Bank	$2,000	0.50% annually	0.08%	64%/36%/0%/1%	62%/38%/0%/1%	54%/46%	56%/44%	0%
E*Trade	$500	0.30% annually	0.09%	60%/39%/0%/1%	58%/40%/0%/1%	75%/25%	65%/35%	0%
E*Trade Active	$500	0.30% annually	0.08%	61%/35%/0%/3%	60%/39%/0%/1%	65%/35%	65%/35%	100%
E*Trade SRI	$500	0.30% annually	0.14%	61%/35%/0%/4%	60%/39%/0%/1%	65%/35%	65%/35%	100%
Edelman Financial Engines	$5,000	1.75% annually on accounts under $400,000. Lower at different tiers over $400,000	0.11%	67%/30%/0%/3%	64%/30%/0%/5%	80%/20%	74%/26%	1%
Ellevest	Digital: No minimum; Premium: $50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches)	0.07%	62%/36%/0%/2%	58%/41%/0%/1%	71%/29%	60%/40%	95%
Ellevest SRI	Digital: No minimum; Premium: $50,000	Digital: 0.25%; Premium: 0.50% (access to live advisors and executive coaches)	0.17%	56%/43%/0%/1%	53%/46%/0%/1%	63%/37%	63%/37%	83%
Fidelity Go	Digital Only: No minimum; Personalized Planning & Advice: $25,000	Digital Only: 0.35%; Personalized Planning & Advice: 0.50%	0.00%	61%/39%/0%/0%	62%/37%/0%/1%	71%/29%	70%/30%	100%
Fifth Third Bank	$5,000	0.50% annually	0.20%	60%/40%/0%/1%	58%/41%/0%/1%	70%/30%	72%/28%	100%
FutureAdvisor	$5,000	0.50% annually	0.08%	58%/41%/0%/1%	57%/42%/0%/1%	49%/51%	68%/32%	0%
Interactive Advisors	$1,000 minimum. Some portfolio selections require a higher minimum.	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.13%	54%/46%/0%/0%	47%/52%/0%/2%	55%/45%	53%/47%	31%
Interactive Advisors Legg Mason Global Growth and Income	Interactive Advisor Portfolios: $1000 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.49%	69%/29%/0%/2%	67%/31%/0%/1%	79%/21%	71%/29%	0%

**Current Allocations as of: 3/31/2020*
***Due to rounding, may not add to 100%*
****Average weighted expense ratio calculations exclude cash holdings from the portfolio*

Produced by Backend Benchmarking for BackendB.com

Taxable Account Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Interactive Advisors State Street SSGA Moderate	Interactive Advisor Portfolios: $1000 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.27%	64%/31%/2%/3%	64%/31%/2%/3%	66%/34%	66%/34%	0%
Interactive Advisors Wisdom Tree Moderate Aggressive[24]	Interactive Advisor Portfolios: $1000 and up depending on portfolios	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.33%	54%/30%/14%/2%	52%/37%/10%/1%	62%/38%	56%/44%	1%
JP Morgan Chase You Invest	$500	0.35% annually	0.11%	50%/48%/0%/2%	50%/48%/0%/2%	55%/45%	58%/42%	0%
Liftoff (Ritholtz Wealth Management)	$5,000	0.40% annually	0.07%	60%/40%/0%/0%	62%/38%/0%/0%	57%/43%	57%/43%	34%
M1 Finance	$100 minimum for taxable accounts, $500 minimum for retirement accounts.	No advisory fee	0.05%	66%/34%/0%/0%	61%/39%/0%/1%	61%/39%	61%/39%	0%
Merrill Edge	Guided Investing: $5,000; Guided Investing with an Advisor: $20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.07%	60%/39%/0%/1%	59%/35%/0%/6%	66%/34%	75%/25%	67%
Merrill Edge SRI	Guided Investing: $5,000; Guided Investing with an Advisor: $20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.24%	59%/37%/0%/4%	62%/32%/0%/6%	65%/35%	74%/26%	7%
Morgan Stanley	$5,000	0.35% annually	0.07%	65%/30%/0%/5%	59%/40%/0%/1%	45%/55%	46%/54%	0%
Morgan Stanley Active	$5,000	0.35% annually	0.37%	64%/35%/0%/1%	58%/41%/0%/1%	44%/56%	44%/56%	0%
Morgan Stanley Defense and Cyber Security	$5,000	0.35% annually	0.41%	64%/29%/0%/8%	63%/35%/0%/1%	58%/42%	61%/39%	0%
Morgan Stanley Emerging Consumer	$5,000	0.35% annually	0.45%	64%/29%/0%/8%	63%/36%/0%/1%	57%/43%	48%/52%	0%
Morgan Stanley Gender Diversity	$5,000	0.35% annually	0.46%	60%/37%/0%/3%	56%/44%/0%/1%	68%/32%	68%/32%	10%
Morgan Stanley Genomics	$5,000	0.35% annually	0.38%	49%/45%/0%/6%	49%/50%/0%/1%	56%/44%	59%/41%	0%
Morgan Stanley Global Frontier	$5,000	0.35% annually	0.51%	66%/29%/0%/5%	62%/36%/0%/1%	40%/60%	41%/59%	0%
Morgan Stanley Inflation Conscious	$5,000	0.35% annually	0.38%	58%/30%/3%/9%	53%/42%/4%/1%	63%/37%	57%/43%	0%
Morgan Stanley Robotics	$5,000	0.35% annually	0.44%	66%/28%/0%/5%	65%/34%/0%/1%	52%/48%	53%/47%	0%
Morgan Stanley SRI	$5,000	0.35% annually	0.49%	64%/35%/0%/1%	55%/45%/0%/1%	56%/44%	62%/38%	10%
Motif	$300	0.00% - 0.50% annually based on portfolio theme	0.06%	59%/41%/0%/0%	55%/42%/0%/3%	33%/67%	34%/66%	0%
Personal Capital	$100,000	0.89% annually for the first $1 million; lower at different tiers over $1 million	0.11%	69%/25%/5%/1%	64%/30%/5%/1%	70%/30%	70%/30%	0%
Prudential	$1,000	0.79% annually for first $100K; lower at different tiers above $100K	0.08%	60%/38%/0%/2%	56%/42%/0%/2%	80%/20%	80%/20%	0%
Qapital	$10	Complete: $6 per month; Master: $12 per month for additional non-investing features	0.14%	67%/29%/0%/4%	67%/29%/0%/4%	70%/30%	69%/31%	0%

**Current Allocations as of: 3/31/2020*
***Due to rounding, may not add to 100%*
****Average weighted expense ratio calculations exclude cash holdings from the portfolio*

Produced by Backend Benchmarking for BackendB.com

Taxable Account Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Schwab	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.21%	61%/23%/5%/10%	62%/26%/0%/10%	51%/49%	54%/46%	57%
Schwab Domestic Focus	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.14%	65%/25%/0%/11%	63%/26%/0%/11%	78%/22%	75%/25%	70%
SigFig	$2,000	No fee for the first $10k; 0.25% annually for balance over $10k	0.08%	62%/37%/0%/1%	61%/38%/0%/0%	58%/42%	58%/42%	0%
SoFi	No minimum	No management fee	0.05%	52%/48%/0%/0%	56%/44%/0%/0%	67%/33%	70%/30%	64%
TD Ameritrade	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.05%	65%/33%/0%/1%	69%/30%/0%/1%	65%/35%	63%/37%	0%
TD Ameritrade Income	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.60%	21%/78%/0%/1%	22%/77%/0%/1%	72%/38%	49%/51%	0%
TD Ameritrade Managed Risk	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	1.26%	9%/49%/41%/1%	13%/58%/29%/1%	29%/71%	88%/12%	0%
TD Ameritrade Opportunistic	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.14%	43%/53%/0%/4%	51%/48%/0%/1%	53%/47%	64%/36%	0%
TD Ameritrade SRI	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.25%	67%/29%/0%/3%	70%/29%/0%/1%	59%/41%	60%/40%	0%
TIAA	$5,000	0.30% annually	0.07%	61%/37%/0%/2%	60%/37%/0%/3%	71%/29%	63%/37%	0%
TIAA Active	$5,000	0.30% annually	0.64%	73%/26%/0%/1%	61%/38%/0%/1%	66%/34%	61%/39%	0%
TIAA SRI	$5,000	0.30% annually	0.34%	60%/39%/0%/1%	62%/37%/0%/1%	71%/29%	63%/37%	3%
Titan Invest	$0	1% annually	0.06%	100%/0%/0%/0%	100%/0%/0%/0%	100%/0%	100%/0%	3%
Twine (John Hancock)	$100	0.60% annually	0.08%	69%/29%/0%/2%	70%/28%/0%/2%	64%/36%	63%/37%	0%
UBS Advice Advantage	$10,000	0.75% - 1.25% annually	0.07%	68%/27%/0%/5%	70%/26%/0%/5%	59%/41%	58%/42%	78%
United Income	$300,000	0.99% annually, lower at different tiers above $1 million	0.17%	59%/40%/0%/1%	59%/40%/0%/1%	51%/49%	55%/45%	0%
US Bank	$5,000	0.24% annually	0.15%	60%/39%/0%/1%	55%/43%/0%/2%	59%/41%	68%/32%	93%
Vanguard[A]	Vanguard Personal Advisor Services: $50,000; Vanguard Digital Advisor: $3,000	Vanguard Personal Advisor Services 0.30% annually for the first $5 million; lower at different tiers over $5 million. Vanguard Digital Advisor Services 0.20% annually.	0.08%	60%/40%/0%/0%	59%/41%/0%/0%	60%/40%	65%/35%	100%

**Current Allocations as of: 3/31/2020*
***Due to rounding, may not add to 100%*
****Average weighted expense ratio calculations exclude cash holdings from the portfolio*

Produced by Backend Benchmarking for BackendB.com

Taxable Account Facts *(continued from previous page)*

Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split	Tax Efficiency Ratio (% Muni Bonds of Overall Fixed Income)
Wealthfront[B]	$500	0.25% annually	0.12%	65%/35%/0%/0%	64%/35%/0%/1%	67%/33%	66%/34%	100%
Wealthfront PassivePlus	$500	0.25% annually	0.09%	45%/35%/19%/0%	46%/35%/19%/0%	60%/40%	60%/40%	100%
Wealthsimple	Basic: No minimum; Black: $100,000	Basic: 0.50% fee on accounts less than $100k; Black: 0.40% on accounts greater than $100k	0.11%	60%/40%/0%/0%	59%/41%/0%/0%	66%/34%	40%/60%	33%
Wealthsimple Halal	Basic: No minimum; Black: $100,000	Basic: 0.50% fee on accounts less than $100k; Black: 0.40% on accounts greater than $100k	0.00%	100%/0%/0%/0%	100%/0%/0%/0%	58%/42%	56%/44%	33%
Wealthsimple SRI	Basic: No minimum; Black: $100,000	Basic: 0.50% fee on accounts less than $100k; Black: 0.40% on accounts greater than $100k	0.14%	60%/40%/0%/0%	57%/42%/0%/0%	69%/31%	46%/54%	19%
Wells Fargo	$5,000	0.35% annually; discounted to 0.30% if subscribed to other specific Wells Fargo products	0.13%	63%/34%/0%/3%	60%/37%/0%/3%	77%/23%	77%/23%	0%
Zacks Advantage	$25,000	0.70% on accounts less than $100K; 0.50% on accounts between $100K and $250K; 0.35% on accounts $250K and above	0.10%	57%/34%/0%/9%	59%/37%/0%/5%	72%/28%	79%/21%	94%

**Current Allocations as of: 3/31/2020*
***Due to rounding, may not add to 100%*
****Average weighted expense ratio calculations exclude cash holdings from the portfolio*

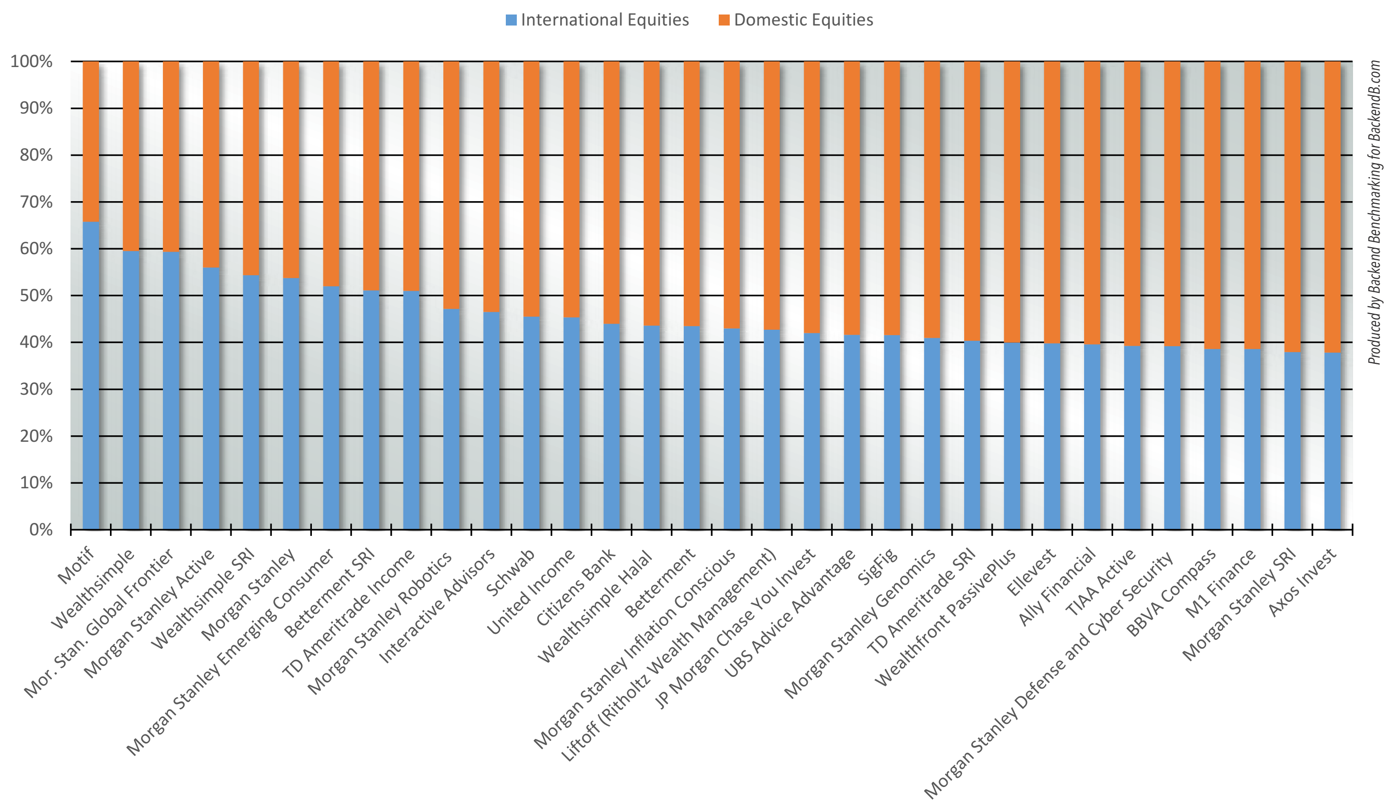
Produced by Backend Benchmarking for BackendB.com

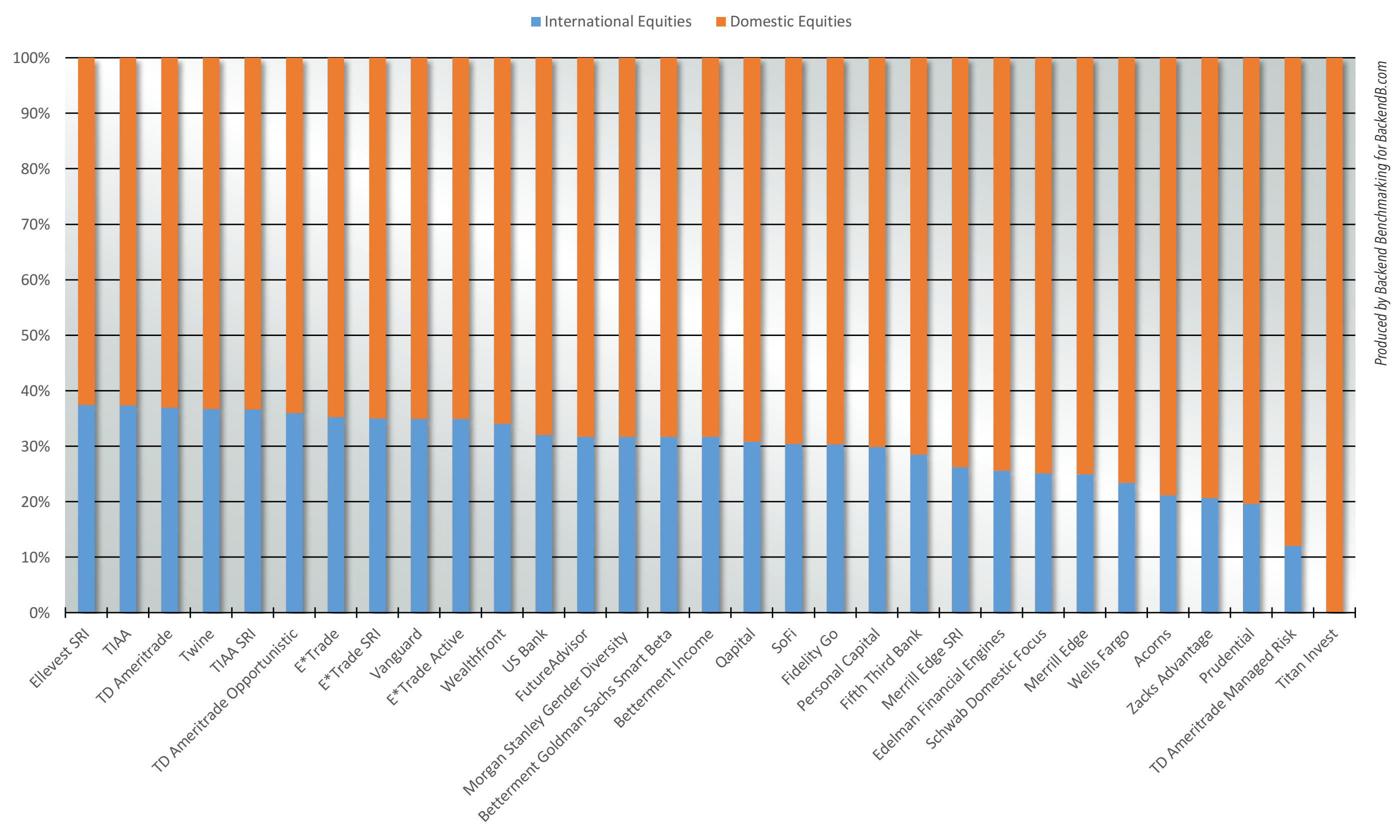
Portfolio	Account Minimum	Advisory Fee	Weighted Average Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Miscellaneous/ Cash)	Initial Domestic/ International Equity Split	Current Domestic/ International Equity Split
Ally Financial IRA	$100	0.30% annually; Also offer Cash-enhanced portfolio with 30% invested in cash and no management fee	0.05%	93%/5%/0%/2%	93%/5%/0%/2%	60%/40%	60%/40%
Axos Invest IRA	No minimum	0.24% annually for required tax efficiency package; additional add-on packages come at an additional cost.	0.05%	92%/8%/0%/0%	91%/8%/0%/0%	60%/40%	60%/40%
Betterment IRA	Digital: No minimum; Premium: $100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.30% above $2M	0.06%	87%/13%/0%/0%	87%/13%/0%/0%	47%/53%	57%/43%
E*Trade IRA	$500	0.30% annually	0.13%	98%/0%/0%/2%	99%/0%/0%/1%	75%/25%	64%/36%
Fidelity Go IRA	Digital Only: No minimum; Personalized Planning & Advice: $25,000	Digital Only: 0.35%; Personalized Planning & Advice: 0.50%	0.00%	85%/14%/0%/1%	85%/14%/0%/0%	71%/29%	71%/29%
Honest Dollar (Goldman Sachs) IRA	$1,000	0.25% annually	0.06%	99%/0%/0%/1%	99%/0%/0%/1%	68%/32%	71%/29%
Merrill Edge IRA	Guided Investing: $5,000; Guided Investing with an Advisor: $20,000	Guided Investing: 0.45% annually (digital only); Guided Investing with an Advisor: 0.85% annually	0.05%	89%/9%/0%/2%	92%/4%/0%/4%	64%/36%	71%/29%
Morgan Stanley IRA	$5,000	0.35% annually	0.07%	79%/15%/0%/6%	74%/25%/0%/1%	47%/53%	47%/53%
Personal Capital IRA	$100,000	0.89% annually for the first $1 million; lower at different tiers over $1 million	0.09%	91%/3%/2%/4%	92%/4%/0%/1%	69%/31%	70%/30%
Principal SimpleInvest IRA	$1,000	0.85% annually	0.00%	98%/0%/0%/2%	98%/0%/0%/2%	64%/36%	64%/36%
Schwab IRA	Intelligent Portfolios: $5,000; Intelligent Portfolios Premium: $25,000	Intelligent Portfolios: No fee (digital only); Intelligent Portfolios Premium: $300 initial planning fee, $30/month subscription	0.18%	94%/0%/0%/6%	94%/0%/0%/6%	54%/46%	54%/46%
SigFig IRA	$2,000	No fee for the first $10k; 0.25% annually for balance over $10k	0.09%	91%/9%/0%/0%	89%/11%/0%/1%	45%/55%	47%/53%
SoFi IRA	No minimum	No management fee	0.02%	100%/0%/0%/0%	100%/0%/0%/0%	66%/34%	70%/30%
T Rowe Price IRA[13]	$50,000	No advisory fee	0.80%	100%/0%/0%/0%	100%/0%/0%/0%	63%/37%	63%/37%
TD Ameritrade IRA	Essential Portfolios: $5,000, or $500 if automatic recurring deposits are set up; Selective Portfolios: $25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.05%	83%/15%/0%/1%	84%/15%/0%/2%	65%/35%	61%/39%
TIAA IRA	$5,000	0.30% annually	0.07%	88%/11%/0%/1%	87%/11%/0%/1%	72%/28%	61%/39%
United Income IRA	$300,000	0.99% annually	0.25%	99%/0%/0%/1%	99%/0%/0%/1%	51%/49%	56%/44%
Wealthsimple IRA	Basic: No minimum; Black: $100,000	Basic: 0.50% fee on accounts less than $100k; Black: 0.40% on accounts greater than $100k	0.11%	80%/20%/0%/0%	78%/21%/0%/0%	66%/34%	41%/59%
Wells Fargo IRA	$5,000	0.35% annually; discounted to 0.30% if subscribed to other specific Wells Fargo products	0.13%	91%/7%/0%/2%	91%/7%/0%/2%	67%/33%	66%/34%
Zacks Advantage IRA	$25,000	0.70% on accounts less than $100K; 0.50% on accounts between $100K and $250K; 0.35% on accounts $250K and above	0.09%	93%/0%/0%/7%	95%/0%/0%/5%	62%/38%	78%/22%

*Current Allocations as of: 3/31/2020
**Due to rounding, may not add to 100%
***Average weighted expense ratio calculations exclude cash holdings from the portfolio

Produced by Backend Benchmarking for BackendB.com

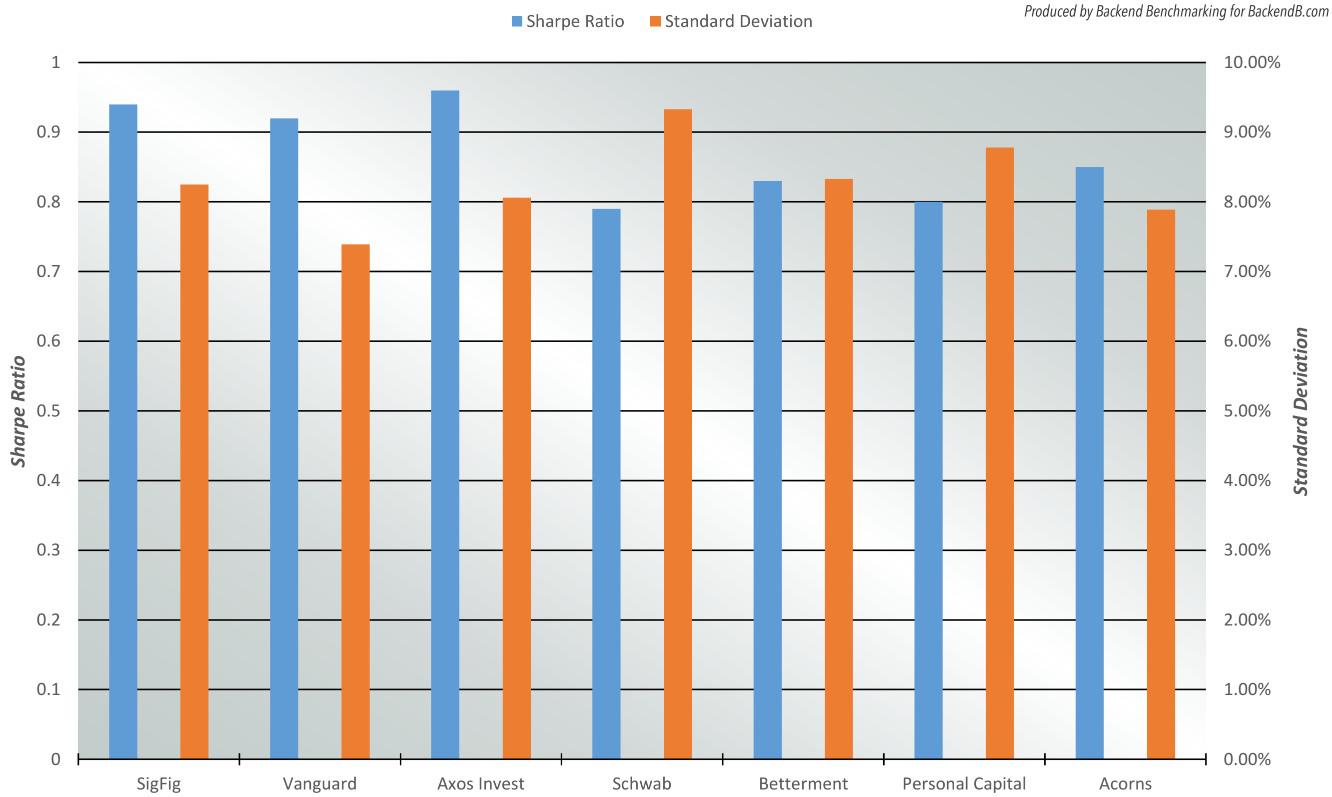
International Allocation of Total Equity for Taxable Robos





Taxable Risk/Return Charts and Tables

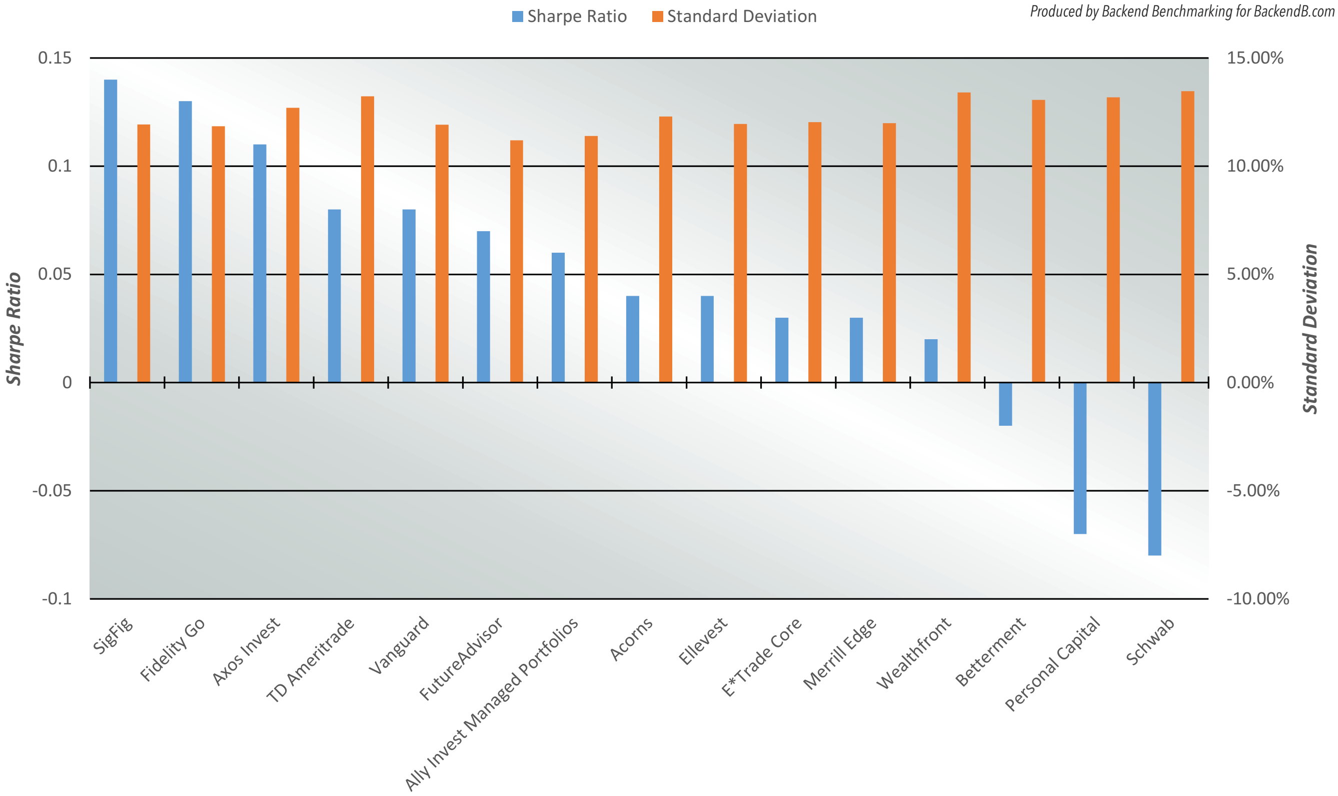
Trailing 4-Year Risk/Return Statistics of Taxable Robos



	Acorns	Ally Invest Managed Portfolios	Axos Invest	Betterment	E*Trade Core	Ellevest	Fidelity Go
Annualized Standard Deviation	7.89%	8.33%	8.78%	9.33%	8.25%	7.39%	8.06%
Sharpe Ratio	0.85	0.83	0.80	0.79	0.94	0.92	0.96

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Trailing 3-Year Risk/Return Statistics of Taxable Robos



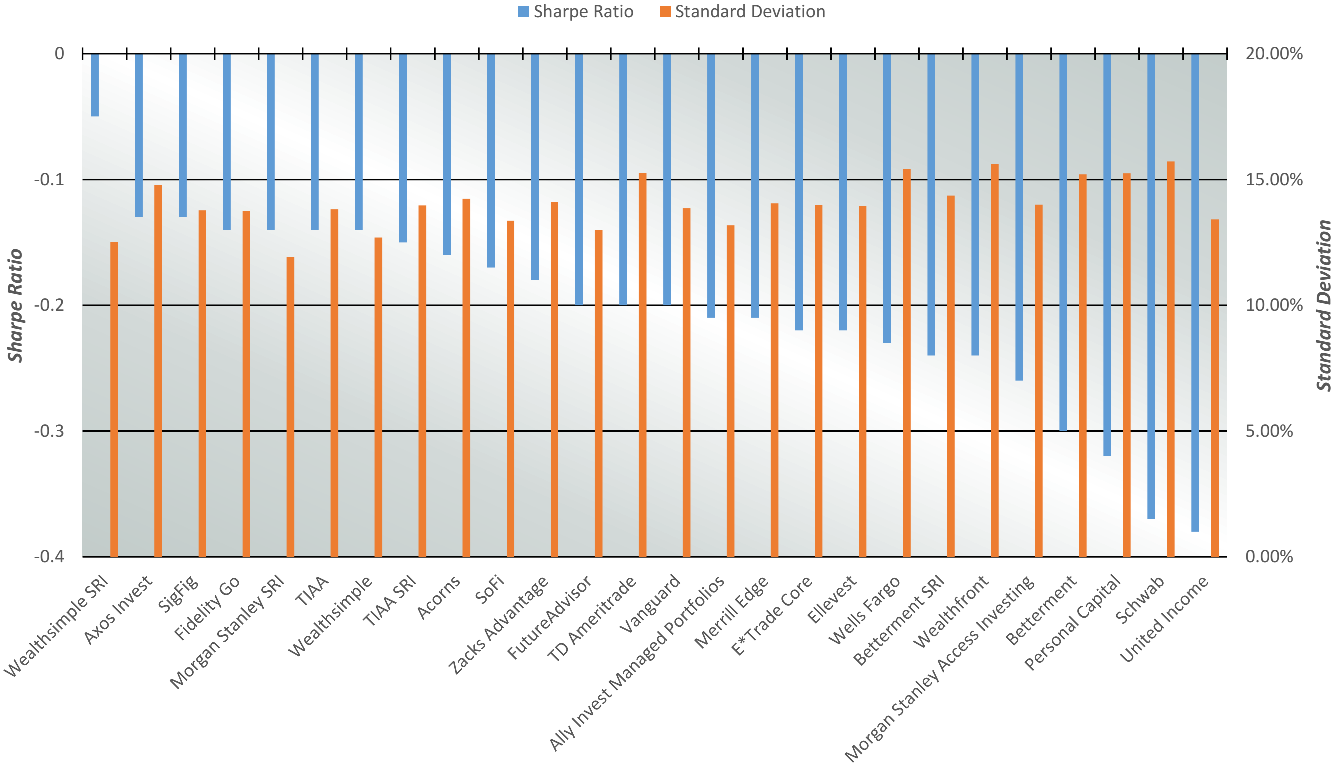
	Acorns	Ally Invest Managed Portfolios	Axos Invest	Betterment	E*Trade Core	Ellevest	Fidelity Go	FutureAdvisor
Annualized Standard Deviation	12.29%	11.40%	12.70%	13.07%	12.04%	11.95%	11.84%	11.20%
Sharpe Ratio	0.04	0.06	0.11	-0.02	0.03	0.04	0.13	0.07

	Merrill Edge	Personal Capital	Schwab	SigFig	TD Ameritrade	Vanguard	Wealthfront
Annualized Standard Deviation	11.99%	13.18%	13.47%	11.93%	13.23%	11.92%	13.41%
Sharpe Ratio	0.03	-0.07	-0.08	0.14	0.08	0.08	0.02

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Trailing 2-Year Risk/Return Statistics of Taxable Robos

Produced by Backend Benchmarking for BackendB.com



	Acorns	Ally Invest Managed Portfolios	Axos Invest	Betterment	Betterment SRI	E*Trade Core	Ellevest	Fidelity Go
Annualized Standard Deviation	14.23%	13.17%	14.78%	15.20%	14.36%	13.98%	13.94%	13.75%
Sharpe Ratio	-0.16	-0.21	-0.13	-0.30	-0.24	-0.22	-0.22	-0.14

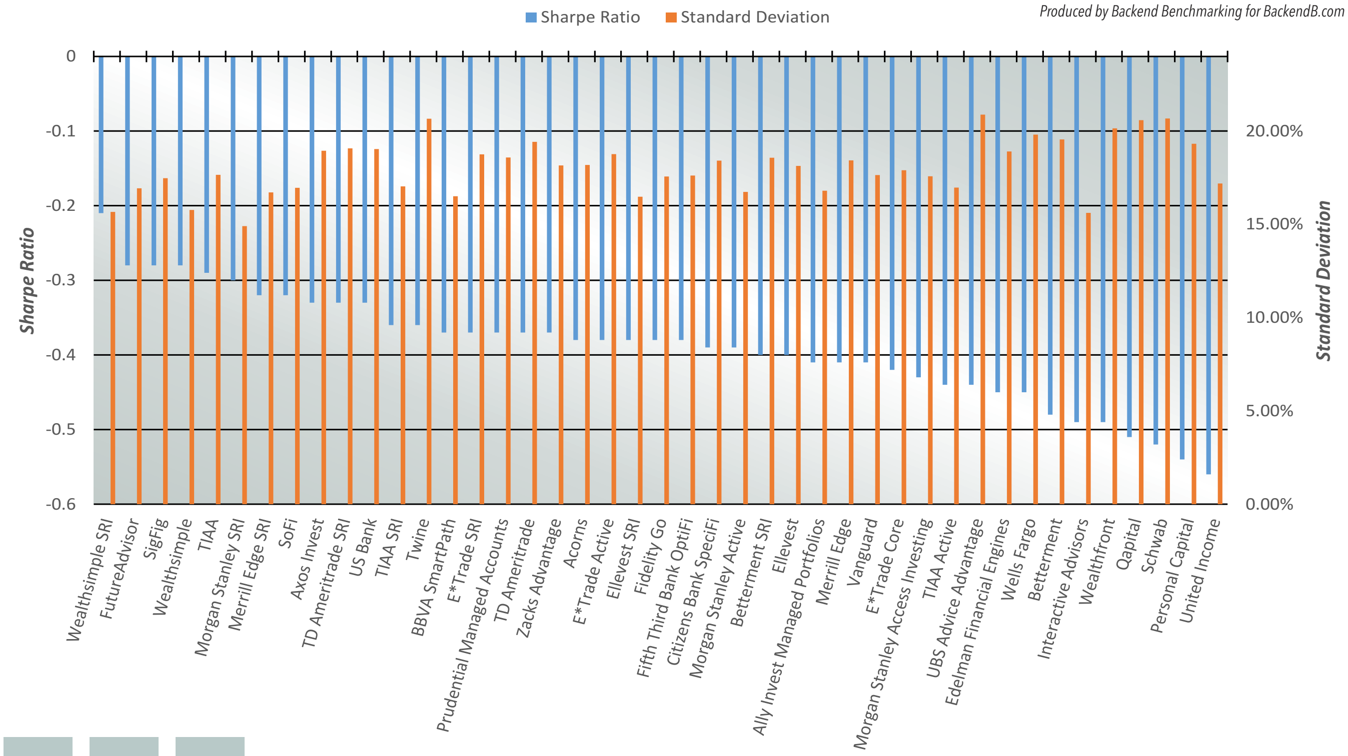
	FutureAdvisor	Merrill Edge	Morgan Stanley Access Investing	Morgan Stanley SRI	Personal Capital	Schwab	SigFig	SoFi
Annualized Standard Deviation	12.99%	14.05%	14.00%	11.92%	15.24%	15.71%	13.77%	13.36%
Sharpe Ratio	-0.20	-0.21	-0.26	-0.14	-0.32	-0.37	-0.13	-0.17

	TD Ameritrade	TIAA	TIAA SRI	United Income	Vanguard	Wealthfront	Wealthsimple	Wealthsimple SRI
Annualized Standard Deviation	15.25%	13.81%	13.97%	13.41%	13.85%	15.62%	12.69%	12.51%
Sharpe Ratio	-0.20	-0.14	-0.15	-0.38	-0.20	-0.24	-0.14	-0.05

	Wells Fargo	Zacks Advantage
Annualized Standard Deviation	15.41%	14.10%
Sharpe Ratio	-0.23	-0.18

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Trailing 1-Year Risk/Return Statistics of Taxable Robos



	Acorns	Ally Invest Managed Portfolios	Axos Invest	BBVA SmartPath	Betterment	Betterment SRI	Citizens Bank SpeciFi	E*Trade Core
Annualized Standard Deviation	18.19%	16.80%	18.94%	16.51%	19.55%	18.57%	18.42%	17.90%
Sharpe Ratio	-0.38	-0.41	-0.33	-0.37	-0.48	-0.40	-0.39	-0.42

	E*Trade Active	E*Trade SRI	Edelman Financial Engines	Ellevest	Ellevest SRI	Fidelity Go	Fifth Third Bank OptiFi	FutureAdvisor
Annualized Standard Deviation	18.77%	18.75%	18.91%	18.13%	16.48%	17.57%	17.62%	16.93%
Sharpe Ratio	-0.38	-0.37	-0.45	-0.40	-0.38	-0.38	-0.38	-0.28

	Interactive Advisors	Merrill Edge	Merrill Edge SRI	Morgan Stanley Access Investing	Morgan Stanley Active	Morgan Stanley SRI	Personal Capital	Prudential Managed Accounts
Annualized Standard Deviation	15.61%	18.43%	16.71%	17.58%	16.74%	14.90%	19.32%	18.58%
Sharpe Ratio	-0.49	-0.41	-0.32	-0.43	-0.39	-0.30	-0.54	-0.37

	Qapital	Schwab	SigFig	SoFi	TD Ameritrade	TD Ameritrade SRI	TIAA	TIAA Active
Annualized Standard Deviation	20.58%	20.67%	17.47%	16.96%	19.42%	19.08%	17.65%	16.97%
Sharpe Ratio	-0.51	-0.52	-0.28	-0.32	-0.37	-0.33	-0.29	-0.44

	TIAA SRI	Twine	UBS Advice Advantage	United Income	US Bank	Vanguard	Wealthfront	Wealthsimple
Annualized Standard Deviation	17.04%	20.66%	20.88%	17.19%	19.03%	17.64%	20.14%	15.77%
Sharpe Ratio	-0.36	-0.36	-0.44	-0.56	-0.33	-0.41	-0.49	-0.28

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

	Wealthsimple SRI	Wells Fargo	Zacks Advantage
Annualized Standard Deviation	15.67%	19.81%	18.16%
Sharpe Ratio	-0.21	-0.45	-0.37

Retirement Risk/Return Charts and Tables

Trailing 3-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Personal Capital IRA	Schwab IRA	SigFig IRA
Annualized Standard Deviation	18.31%	17.75%	16.88%	19.31%	16.09%	17.80%	17.99%	17.72%
Sharpe Ratio	-0.01	0.07	-0.02	-0.02	0.10	-0.05	-0.15	0.01

	TD Ameritrade IRA
Annualized Standard Deviation	16.58%
Sharpe Ratio	0.05

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Trailing 2-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Merrill Edge IRA	Morgan Stanley IRA	Personal Capital IRA
Annualized Standard Deviation	21.22%	20.57%	19.54%	22.39%	18.67%	20.25%	17.21%	20.65%
Sharpe Ratio	-0.29	-0.21	-0.31	-0.29	-0.16	-0.25	-0.28	-0.31

	Schwab IRA	SigFig IRA	SoFi IRA	T Rowe Price ActivePlus Portfolios IRA	TD Ameritrade IRA	TIAA Personal Portfolios IRA	United Income IRA	Wealthsimple IRA
Annualized Standard Deviation	20.88%	20.52%	20.85%	23.13%	19.19%	19.48%	21.84%	16.11%
Sharpe Ratio	-0.47	-0.29	-0.22	-0.22	-0.23	-0.2	-0.44	-0.23

	Wells Fargo IRA	Zacks Advantage IRA
Annualized Standard Deviation	21.06%	21.30%
Sharpe Ratio	-0.33	-0.25

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Trailing 1-Year Risk/Return Statistics of Retirement Robos

	Ally Invest IRA	Axos Invest IRA	Betterment IRA	E*Trade Core IRA	Fidelity Go IRA	Honest Dollar IRA	Merrill Edge IRA	Morgan Stanley IRA
Annualized Standard Deviation	27.04%	26.04%	24.86%	28.25%	23.59%	28.47%	25.86%	21.62%
Sharpe Ratio	-0.47	-0.39	-0.49	-0.50	-0.36	-0.40	-0.43	-0.45

	Personal Capital IRA	Schwab IRA	SigFig IRA	SoFi IRA	T Rowe Price ActivePlus Portfolios IRA	TD Ameritrade IRA	TIAA Personal Portfolios IRA	United Income IRA
Annualized Standard Deviation	26.32%	26.83%	26.02%	25.85%	28.49%	24.21%	24.70%	27.59%
Sharpe Ratio	-0.53	-0.68	-0.48	-0.37	-0.42	-0.39	-0.37	-0.58

	Wealthsimple IRA	Wells Fargo IRA	Zacks Advantage IRA
Annualized Standard Deviation	19.77%	26.85%	27.07%
Sharpe Ratio	-0.42	-0.52	-0.43

This analysis produced by Backend Analytics with the help of Markov Process International, Inc.

Normalized Benchmark

Equity Portfolio

Category	Asset Type	Ticker	Name	Current Taxable Benchmark Weight	Current Retirement Benchmark Weight
Equity	Domestic	VTI	Vanguard Total Stock Market ETF	65%	62%
Equity	International	VXUS	Vanguard Total International Stock ETF	35%	38%

**Benchmark weights updated at the end of each calendar year. Benchmark updates do not affect performance prior to update.*

Produced by Backend Benchmarking for BackendB.com

Bond Portfolio

Category	Asset Type	Ticker	Name	Current Taxable Benchmark Weight	Current Retirement Benchmark Weight
Flixed Income	Multi-Sector US	AGG	iShares Core US Aggregate Bond ETF	29%	24%
Fixed Income	Investment-Grade Corporates	LQD	iShares iBoxx $ Investment Grade Corporate Bond ETF	10%	3%
Fixed Income	High-Yield Corporates	JNK	SPDR Bloomberg Barclays High Yield Bond ETF	2%	5%
Fixed Income	International Developed	IGOV	iShares International Treasury Bond ETF	6%	4%
Fixed Income	International Emerging Markets	EMB	iShares J.P. Morgan USD Emerging Markets Bond ETF	4%	7%
Fixed Income	Municipals	MUB	iShares National Muni Bond ETF	26%	0%
Fixed Income	TIPS	TIP	iShares TIPS Bond ETF	5%	6%
Fixed Income	Short-Term Treasuries (0-3 Year Maturity)	VGSH	Vanguard Short-Term Treasury ETF	4%	0%
Fixed Income	Intermediate-Term Treasuries (3-10 Year Maturity)	VGIT	Vanguard Intermediate-Term Treasury ETF	4%	4%
Fixed Income	Long-Term Treasuries (10+ Year Maturity)	VGLT	Vanguard Long-Term Treasury ETF	1%	4%
Fixed Income	Securitized	VMBS	Vanguard Mortgage-Backed Securities ETF	1%	1%
Fixed Income	Cash	FDRXX	Fidelity® Government Cash Reserves	8%	42%

**Benchmark weights updated at the end of each calendar year. Benchmark updates do not affect performance prior to update.*

Produced by Backend Benchmarking for BackendB.com

Taxable Normalized Benchmark Returns

	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)
Acorns Normalized Benchmark	-13.20%	-4.80%	-0.74%	2.76%	4.56%
Ally Invest Managed Portfolios Normalized Benchmark	-12.97%	-4.63%	-0.64%	2.63%	-
Axos Invest Normalized Benchmark	-14.10%	-5.52%	-1.12%	2.50%	4.48%
BBVA SmartPath Normalized Benchmark	-12.75%	-4.45%	-	-	-
Betterment Normalized Benchmark	-14.32%	-5.70%	-1.22%	2.47%	4.49%
Betterment Goldman Sachs Smart Beta Normalized Benchmark	-13.20%	-	-	-	-
Betterment Income Normalized Benchmark	0.31%	-	-	-	-
Betterment SRI Normalized Benchmark	-13.20%	-4.80%	-0.74%	-	-
Citizens Bank SpeciFi Normalized Benchmark	-14.10%	-5.52%	-	-	-
E*Trade Core Normalized Benchmark	-13.20%	-4.80%	-0.74%	2.60%	-
E*Trade Active Normalized Benchmark	-13.42%	-4.98%	-	-	-
E*Trade SRI Normalized Benchmark	-13.42%	-4.98%	-	-	-
Edelman Financial Engines Normalized Benchmark	-14.77%	-5.97%	-	-	-
Ellevest Normalized Benchmark	-12.30%	-4.09%	-0.36%	2.88%	-
Ellevest SRI Normalized Benchmark	-11.17%	-3.18%	-	-	-
Fidelity Go Normalized Benchmark	-13.42%	-4.98%	-0.83%	2.58%	-
Fifth Third Bank OptiFi Normalized Benchmark	-13.20%	-4.80%	-	-	-
FutureAdvisor Normalized Benchmark	-12.52%	-4.27%	-0.44%	2.69%	-
Interactive Advisors Legg Mason Global Growth and Income	-14.70%	-	-	-	
Interactive Advisors State Street SSGA Moderate	-12.45%	-	-	-	
Interactive Advisors Wisdom Tree Moderate Aggressive	-12.00%	-	-	-	
Interactive Advisors Normalized Benchmark	-12.07%	-3.92%	-	-	-
JP Morgan Chase You Invest Portfolios Normalized Benchmark	-10.95%	-	-	-	-
Liftoff (Ritholtz Wealth Management) Normalized Benchmark	-13.20%	-	-	-	-
M1 Finance Normalized Benchmark	-14.55%	-	-	-	-
Merrill Edge Normalized Benchmark	-13.48%	-5.55%	-1.08%	2.40%	-
Merrill Edge SRI Normalized Benchmark	-12.97%	-4.63%	-	-	-
Morgan Stanley Access Investing Normalized Benchmark	-13.87%	-5.28%	-1.00%	-	-
Morgan Stanley Active Normalized Benchmark	-14.10%	-5.52%	-	-	-
Morgan Stanley Defense and Cyber Security Normalized Benchmark	-14.10%	-	-	-	-
Morgan Stanley Emerging Consumer Normalized Benchmark	-14.10%	-	-	-	-
Morgan Stanley Gender Diversity Normalized Benchmark	-13.20%	-	-	-	-
Morgan Stanley Genomics Normalized Benchmark	-10.72%	-	-	-	-
Morgan Stanley Global Frontier Normalized Benchmark	-14.55%	-	-	-	-
Morgan Stanley Inflation Conscious Normalized Benchmark	-13.14%	-	-	-	-
Morgan Stanley Robotics Normalized Benchmark	-14.55%	-	-	-	-
Morgan Stanley SRI Normalized Benchmark	-12.52%	-4.16%	-0.42%	-	-
Motif Normalized Benchmark	-12.97%	-	-	-	-
Personal Capital Normalized Benchmark	-16.12%	-7.15%	-2.00%	2.24%	4.62%
Prudential Managed Accounts Normalized Benchmark	-13.20%	-4.80%	-	-	-
Qapital Normalized Benchmark	-14.77%	-6.06%	-	-	-
Schwab Normalized Benchmark	-13.71%	-5.21%	-0.94%	2.66%	4.64%
Schwab Domestic Focus Normalized Benchmark	-14.32%	-	-	-	-

Produced by Backend Benchmarking for BackendB.com

Taxable Normalized Benchmark Returns *(continued from previous page)*

	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	4-Year Trailing (Annualized)
SigFig Normalized Benchmark	-13.65%	-5.16%	-0.93%	2.55%	4.44%
SoFi Normalized Benchmark	-13.20%	-4.80%	-0.66%	-	-
TD Ameritrade Normalized Benchmark	-15.00%	-6.24%	-1.51%	2.37%	-
TD Ameritrade Income Normalized Benchmark	-4.41%	-	-	-	-
TD Ameritrade Managed Risk Normalized Benchmark	-3.05%	-	-	-	-
TD Ameritrade Opportunistic Normalized Benchmark	-9.37%	-	-	-	-
TD Ameritrade SRI Normalized Benchmark	-14.77%	-6.06%	-	-	-
TIAA Normalized Benchmark	-13.42%	-4.98%	-0.83%	-	-
TIAA Active Normalized Benchmark	-13.42%	-4.61%	-	-	-
TIAA SRI Normalized Benchmark	-13.20%	-4.80%	-0.74%	-	-
Titan Invest Normalized Benchmark	-22.14%	-	-	-	-
Twine Normalized Benchmark	-15.22%	-6.42%	-	-	-
UBS Advice Advantage Normalized Benchmark	-15.00%	-6.24%	-	-	-
United Income Normalized Benchmark	-12.97%	-4.63%	-0.64%	-	-
US Bank Normalized Benchmark	-12.52%	-4.23%	-	-	-
Vanguard Normalized Benchmark	-13.20%	-4.80%	-0.74%	2.60%	4.40%
Wealthfront Normalized Benchmark	-14.32%	-5.70%	-1.22%	2.47%	-
Wealthfront PassivePlus Normalized Benchmark	-12.30%	-	-	-	-
Wealthsimple Normalized Benchmark	-13.20%	-4.80%	-0.74%	-	-
Wealthsimple Halal Normalized Benchmark	-22.14%	-	-	-	-
Wealthsimple SRI Normalized Benchmark	-13.20%	-4.80%	-0.74%	-	-
Wells Fargo Normalized Benchmark	-13.87%	-5.34%	-1.02%	-	-
Zacks Advantage Normalized Benchmark	-13.20%	-4.80%	-0.81%	-	-

Produced by Backend Benchmarking for BackendB.com

Retirement Normalized Benchmark Returns

	1Q 2020	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Invest IRA Normalized Benchmark	-20.68%	-11.06%	-4.25%	1.44%
Axos Invest IRA Normalized Benchmark	-20.46%	-10.88%	-4.15%	1.47%
Betterment IRA Normalized Benchmark	-19.34%	-10.00%	-3.67%	1.61%
E*Trade Core IRA Normalized Benchmark	-21.80%	-11.96%	-4.74%	1.29%
Fidelity Go IRA Normalized Benchmark	-18.89%	-9.64%	-3.48%	1.66%
Honest Dollar IRA Normalized Benchmark	-22.02%	-12.14%	-	-
Merrill Edge IRA Normalized Benchmark	-20.27%	-11.04%	-4.23%	-
Morgan Stanley IRA Normalized Benchmark	-17.54%	-8.59%	-2.91%	-
Principal SimpleInvest IRA Normalized Benchmark	-21.80%	-	-	-
Personal Capital IRA Normalized Benchmark	-21.34%	-11.59%	-4.54%	1.36%
Schwab IRA Normalized Benchmark	-20.91%	-11.24%	-4.35%	1.41%
SigFig IRA Normalized Benchmark	-20.23%	-10.71%	-4.05%	1.50%
SoFi IRA Normalized Benchmark	-22.25%	-12.33%	-4.94%	-
T Rowe Price ActivePlus Portfolios IRA Normalized Benchmark	-22.25%	-12.33%	-4.94%	-
TD Ameritrade IRA Normalized Benchmark	-18.66%	-9.47%	-3.38%	1.68%
TIAA Personal Portfolios IRA Normalized Benchmark	-19.56%	-10.17%	-3.76%	-
United Income IRA Normalized Benchmark	-22.02%	-12.14%	-4.84%	-
Wealthsimple IRA Normalized Benchmark	-17.76%	-8.76%	-3.01%	-
Wells Fargo IRA Normalized Benchmark	-20.23%	-10.71%	-4.05%	-
Zacks Advantage IRA Normalized Benchmark	-20.68%	-11.06%	-4.25%	-

Produced by Backend Benchmarking for BackendB.com

Terms of Use ("Terms")

Last updated: 12/12/2018

Please read these Terms of Use ("Terms", "Terms of Use") carefully before subscribing to *The Robo Report*™ and *The Robo Ranking*™ ("Our Research", "Research") distributed by BackEndB.com, LLC ("The Company") through the websites https://theroboreport.com/ and https://backendbenchmarking.com/ ("Websites", "Website").

Your access to and use of Our Research is conditioned on your acceptance of and compliance with the Terms. These Terms apply to all subscribers and others who access or use Our Research.

The Company reserves the right to change these terms at any time without notice. By continuing to subscribe to Our Research, you agree to abide by them.

Our Research focuses on digital services providing automated investment advice ("Robo", "Robos"). A "Covered Robo" is any Robo for which the Company publishes historical return data in Our Research.

Our Research is copyrighted and owned by the Company. Use of Our Research for commercial purposes is strictly prohibited without written consent or a license, except for Covered Robos who wish to use Our Research for marketing purposes, subject to the following requirements:

1) If materials, insights, facts, data or other information from Our Research is used, Our Research must be cited as the source and it must be stated Our Research is produced by Backend Benchmarking.

2 To avoid misrepresentation, the name or time period of Our Research cited must be stated. For example, if the information used is performance from the *First Quarter 2018 The Robo Report*™, it must be clearly stated that the performance is from the first quarter report, or performance numbers are from the time period ending 03/31/2018.

3) The Company does not permit the redistribution of Our Research. We welcome and encourage including a link to our Website in any articles or other materials. We provide the report for free to anyone who wants to subscribe. Attaching, hosting for download, or including a link that allows a user to directly access Our Research is prohibited. The appropriate link for our Website to use is: https://www.backendbenchmarking.com/the-robo-report/

4) One must use the most recent version of Our Research at the time of publishing. The most recent version of Our Research and the date it was published are on https://www.backendbenchmarking.com/the-robo-report/. The newest version can be obtained by filling out the subscription form on the Website or by contacting the Company directly.

Failure to comply with the aforementioned guidelines may result in a takedown notice, revocation of your subscription to Our Research, and/or legal action.

To request written consent or a license, contact The Company at info@backendb.com or call 732-893-8290 and ask for David Goldstone.

Disclaimer of Warranties:

Our Research is provided "as is"; with all faults. The Company disclaims all warranties of any kind regarding the Research, either express or implied, including but not limited to, any implied warranty of merchantability, fitness for a particular purpose, ownership, noninfringement, accuracy of informational content, and absence of viruses and damaging or disabling code.

The Company does not warrant the accuracy, completeness, or timeliness of the Research. The Company shall not be responsible for investment decisions, damages, or other losses resulting from use of Our Research.

Past performance does not guarantee future performance. The Company shall not be considered an "expert" under the Securities Act of 1933. The Company does not warrant that this service complies with the requirements of the FINRA or any similar organization or with the securities laws of any jurisdiction."

Some jurisdictions do not allow the exclusion or limitation of implied warranties, so the above exclusions or limitations may not apply.

Disclosures:

[1] These accounts were funded with more than the minimum amount required to establish an account. Had the accounts been funded with more assets, they would be charged a flat dollar fee up to $1,000,000. Because the fee is a flat dollar amount, a higher account balance would have the result of increasing reflected performance, while a lower account balance would have the result of decreasing reflected performance. In December of 2018 a $1 fee was not recorded. Performance has been updated to include this fee as of Q1 2019.

[2] This account has no minimum required to establish an account, but had the account been funded with more assets, it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance.

[3] These accounts were funded with more than the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level.

[4] This account was funded with the minimum or more than the minimum amount required to establish an account at the time of opening. Had the account been funded with more assets it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance.

[5] This account was funded with more than the minimum in order to take advantage of tax-loss harvesting. Tax-loss harvesting may result in better or worse performance compared to similarly positioned accounts that are not enrolled in tax-loss harvesting. This account is enrolled in their digital only "Intelligent Portfolios", thus it is not charged an advisory fee. If one were to upgrade to "Intelligent Advisory" which introduces access to live advisors, a subscription fee would be levied, which would decrease reflected performance.

[6] These accounts were funded with the minimum amount required to establish an account. At balances less than $10,000, there is no advisory fee. Had the account been funded with $10,000 or more, an asset-based advisory fee would be levied, which would decrease reflected performance.

[7] These accounts were funded with the minimum amount required to establish an account at the time of opening. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level.

[8] These accounts have no minimum required to establish an account. There is no advisory fee on these accounts. Had additional service packages, such as tax-loss harvesting, been added, the lesser of an asset-based fee or flat dollar fee would have been assessed. These fees would decrease the reflected performance.

[9] This account was funded with the minimum investment amount at the time. At the time of opening, the account had a 0.25% management fee. Due to changes in the service at the end of the 1st quarter 2017, new accounts are charged a 0.30% management fee. The fee on our account was grandfathered in and remains at 0.25%. The higher advisory fee would have the result of decreasing reflected performance.

[10] These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their digital only "Essential Portfolios" and is charged an asset-based advisory fee. If one were to upgrade to "Selective Portfolios" which introduces access to live advisors, a higher asset-based advisory fee schedule would apply, which would decrease reflected performance.

[11] This account has no minimum required to establish an account, but had the account been funded with more assets, it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance. A special request was made for an allocation of 60% equities and 40% fixed income or close to it, but this allocation was not one of the standard models at the time of account opening. At the time of account opening the closest standard models offered were in the range of 50/50 or 75/25 equity to fixed income split.

[12] These accounts were funded with more than the minimum amount required to establish an account. Due to the flat advisory fee, performance is not affected by the accounts' asset levels. In previous reports we reported the performance of two accounts that were combined to achieve a 60/40 allocation. Due to our introduction of Normalized Benchmarking we are no longer reporting the combined account, but just the account with the closest to a 60/40 allocation as we could achieve at this provider.

[13] These accounts were funded with less than the minimum investment through an agreement between BackEnd Benchmarking and the provider. There is no advisory fee levied regardless of the amount of assets invested.

[14] This account was funded with the minimum amount required to establish an account. A flat, asset-based advisory fee is levied on the account. Had we subscribed to additional, specific, Wells Fargo Products the account would be eligible for a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance.

[15] This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance.

[16] This account is enrolled in the Self Service plan. If the account was enrolled in the Full Service Plan, the fee would be higher or lower depending on the level of assets in the account. The higher/lower advisory fee would have the result of decreasing/increasing reflected performance. Recently, this provider changed its fee schedule, but our account was grandfathered in at the previous, lower fee for the size of the account. New accounts would be subject to the new fee schedule, which would decrease reflected performance at most account size levels.

[17] This account was funded with more than the minimum amount required to establish an account. This account will not be charged an advisory fee through 2019. In previous reports we reported the performance of two accounts that were combined to achieve a 60/40 allocation. Due to our introduction of Normalized Benchmarking we are no longer reporting the combined account, but only the account with the closest to a 60/40 allocation as we could achieve at this provider.

[18] This account was funded with more than the minimum amount required to establish an account. This account will not be charged an advisory fee through 2019.

[20] This account was funded with the minimum required to establish an account. This account is enrolled in their digital only "Intelligent Portfolios", thus it is not charged an advisory fee. If one were to upgrade to "Intelligent Advisory" which introduces access to live advisors, a subscription fee would be levied, which would decrease reflected performance.

[21] These accounts were funded with more than the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for the first year. Had a fee been levied, reflected performance would have been lower.

[22] These accounts were funded with more than the minimum amount required to establish an account. There is currently no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Previously, the fee was only assessed on balances in excess of $10,000.

[23] These accounts were funded with the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for an initial promotional period. Had a fee been levied, reflected performance would have been lower.

[24] Interactive Advisors is registered as an advisor under the name of Covestor Ltd. and is part of the Interactive Brokers Group. This account was funded with the minimum required to open an account and is invested in their Asset Allocation portfolio. It is charged an asset-based fee. There is no fee schedule on this account; therefore performance is not affected by the account's asset levels. Previously, the account was charged a lower asset-based fee; the increase took effect starting March 2019. Interactive Advisors offers multiple strategies with different sets of fees, including Smart Beta, index-tracking and model ETF portfolios, in addition to the Asset Allocation portfolios. Interactive Advisors also offers a marketplace for actively managed portfolios for which it charges higher fees (0.5-1.5%), part of which it remits to the portfolio managers supplying the data underlying those strategies.

[25] Originally, there was no advisory fee on these accounts. Had additional service packages, such as tax-loss harvesting, been added, the lesser of an asset-based fee or flat dollar fee would have been assessed. In June 2018, one package was activated, resulting in a fee on these accounts. This fee decreases the reflected performance.

[26] This account was enrolled in Prudential's Strategic Portfolios. It was funded with the minimum required to open an account. Had the account been funded with more assets it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance. Prudential also offers Reserve Portfolios for short-term investing, which have a lower account minimum and fee. However, the Reserve Portfolios do not allow asset-allocation customization based on individual demographic and risk tolerance.

[27] This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If more was invested, the account would be assessed a lower asset-based fee, which would increase reflected performance. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance. All balances above $2 million are charged a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance. The 2018 end-of-year statement for Betterment did not include dividends received near the end of 2018, these dividends first appeared on the March 31st, 2019 statement. These dividends are reflected as of the Q1 2019 *Robo Report*™ but were not reflected in performance reported in the Q4 2018 *Robo Report*™.

[28] These accounts were funded with the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. Fee was waived for an initial promotional period. Had a fee been levied, reflected performance would have been lower. As of March 27, 2019, the management fee has been lowered. The lower advisory fee will increase reflected performance.

[29] This account was funded with the minimum or more than the minimum amount required to establish an account at the time of opening. Had the account been funded with more assets it would, at certain asset levels, be eligible for a lower advisory fee. The lower advisory fee would have the result of increasing reflected performance. After opening, this provider changed its fee schedule, raising the fee for the asset level of the account, but our account was grandfathered in at the previous, lower fee. New accounts would be subject to the new fee schedule, which may change reflected performance.

[30] These accounts were funded with more than the minimum amount required to establish an account. The account is charged a flat dollar fee subscription at its service level. Had the accounts been enrolled in different service packages, they could be assessed a higher subscription fee. Because the fee is a flat dollar amount, a higher account balance would have the result of increasing reflected performance, while a lower account balance would have the result of decreasing reflected performance.

[31] These accounts were funded with the minimum amount required to establish an account at the time of opening.This account is enrolled in their digital only "Guided Investing" and is charged an asset-based advisory fee. If one were to upgrade to "Guided Investing with an Advisor" which introduces access to live advisors, a higher asset-based advisory fee schedule would apply, which would decrease reflected performance.

[32] This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance. All balances above $2 million are charged a lower asset-based advisory fee. A lower advisory fee would have the result of increasing reflected performance.

[33] This account has no minimum required to establish an account and is enrolled in the Digital Only plan. If the account was enrolled in the premium service with access to live advisors, there would be a higher asset-based advisory fee. The higher advisory fee would have the result of decreasing reflected performance.

[34] This account was funded with more than the minimum required to establish an account, There is no management fee levied. Therefore, performance is not affected by the account's asset level. This platform has numerous different portfolio strategies. We chose the "moderately aggressive" strategy. Different portfolio strategies have different allocations which could increase or decrease reflected performance.

[35] These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their "Selective Portfolios" and is charged an asset-based advisory fee. These specific portfolios are only offered at the "Selective Portfolios" level, which charges a higher asset-based advisory fee due to access to live advisors than the "Essential Portfolios." Additionally, these portfolios hold balanced funds. Due to the nature of these funds and limits in our portfolio management system, we cannot accurately track equity and fixed income performance individually at the portfolio level. Total portfolio performance is unaffected by holding balanced funds.

[36] These accounts were funded with more than the minimum amount required to establish an account. There is no fee schedule; all accounts are charged the same asset-based fee. Therefore, performance is not affected by the account's asset level. This platform has numerous different portfolio strategies. We chose the "60/40 classic" option. Different portfolio strategies have different allocations which could increase or decrease reflected performance.

[37] These accounts were funded with the minimum amount required to establish an account. This account is enrolled in their "Selective Portfolios" and is charged an asset-based advisory fee. These specific portfolios are only offered at the "Selective Portfolios" level, which charges a higher asset-based advisory fee due to access to live advisors than the "Essential Portfolios."

[A] On June 19th, 2017, Vanguard removed Backend Benchmarking's primary Vanguard account from the Vanguard Personal Advisor Services program. As of June 20th, 2017, the primary account was replaced by a secondary account with the same risk profile as the primary account. The returns for the secondary account have been linked to the original primary account. Asset type and allocation between the two accounts at the time of the switch were very close but not identical.

[B] In the 1st Quarter of 2018 Wealthfront liquidated the positions in the account used for the 4th Quarter 2017 and previous editions of this report. A different account was used for this report and is labeled "Wealthfront (Risk 4.0)". The performance numbers from the previous account are available in the addendum labeled as "Wealthfront (Risk 3.0)". The risk scores and thus allocations of the two accounts are different and labeled as such. Asset type and allocation between the two accounts at the time of the switch were close but not identical. The difference of equity allocation between the accounts on 12/31/2017 was approximately 5.4%.

[C] Due to the down market in December 2018, this account engaged in repeated tax loss harvesting on one of its asset types. All alternative securities were exhausted for this asset type, so to prevent a wash sale, the entire position, representing approximately 31% of the portfolio, was liquidated and held as cash for a 1 month period, during which time the market experienced a large upswing. Because this portfolio missed the market upswing, its performance versus the normalized benchmark is lower.

In previous reports the initial target asset allocation was calculated as the asset allocation at the end of the first month after the account was opened. In the Q3 2018 report we adjusted our method to calculate the initial target asset allocation as of the end of the trading day after all initial trades were placed in the accounts. This adjustment has caused some portfolio's initial target allocation to be updated from previous reports. These updates did not change any initial target allocations of equity, fixed income, cash, or other by more than 1%.

Prior to Q3 2018, due to technological limitations of our portfolio management system, some accounts which contained fractional shares had misstated the quantity of shares when transactions quantities were smaller than 1/1000th of a share in a position as a result of purchases, sales, or dividend reinvestments. This had a marginal effect on historical performance of the accounts. The rounding of position quantities caused by this limitation has been resolved, and quantities have been adjusted to reflect the full position to the 1/1,000,000th of a share as of the end of Q3 2018. Therefore, this rounding of fractional shares will not be necessary in the future.

At certain custodians a combination of the custodian providing us a limited number of digits on fractional share and fractional cent transactions rounding errors are introduced into our tracking. At quarter end starting 3/31/2020 we implemented a process to enter small transactions to eliminate any rounding errors that have built up to more than a full cent. These transactions are small and do not have an appreciable effect on performance

This report represents Backend Benchmarking's research, analysis and opinion only; the period tested was short in duration and may not provide a meaningful analysis; and, there can be no assurance that the performance trend demonstrated by Robos vs indices during the short period will continue. Backend Benchmarking is under common ownership and control with Condor Capital Management, an SEC registered investment adviser. A copy of Condor's disclosure Brochure is available at www.condorcapital.com. Condor Capital initiated a position in Schwab and JP Morgan Chase in one of the strategies used in many of their discretionary accounts on 5/30/2017 and 1/2/2001, respectively. As of 03/31/2020 the total size of the position was 44,854 shares of Schwab common stock and 15,923 shares of JP Morgan Chase common stock.

For more information, please contact BackendBenchmarking at Info@BackendB.com

Connect with us:

www.facebook.com/TheRoboReport/

www.linkedin.com/company/TheRoboReport

twitter.com/TheRoboReport

This report was brought to you by:

BackendBenchmarking