

BRINGING TRANSPARENCY TO ROBO INVESTING

EDITION 13

*The Robo Report*TM Third Quarter 2019



We are proud to publish the 13th edition of *The Robo Report*TM covering the third quarter of 2019. This report is an ongoing study that monitors the most well-known robo-advisors. We strive to provide transparency by providing investors and financial professionals with reliable and unbiased data on the digital advice industry.

Highlights:

- *SRI portfolios post stronger returns than their non-SRI counterparts (page 7)*
- *Interview with Chase You Invest CEO, Jed Laskowitz (page 11)*
- *SoFi reimburses customers after questionable trade (page 9)*
- *Cash accounts help drive assets onto digital advice platforms (page 9)*
- *Fidelity Go and Axos Invest emerging as long-term outperformers (page 6)*
- *JP Morgan enters the market, Vanguard expands (page 9)*



Table of Contents

<i>The Executive Summary</i>	3
<i>Taxable Top Performers</i>	4
<i>Market Commentary</i>	5
<i>SRI Performance Chart</i>	8
<i>Robo News</i>	9
<i>Robo Interview</i>	11
<i>Charts and Tables</i>	13
<i>Funding and AUM Statistics</i>	13
<i>Taxable Returns</i>	14
<i>Retirement Returns</i>	18
<i>Taxable Account Facts</i>	20
<i>Retirement Account Facts</i>	23
<i>Risk Statistics</i>	25
<i>Normalized Benchmarks</i>	28
<i>Disclosures</i>	33



The Executive Summary

In this past quarter, we introduced a range of new portfolios to further our mission of providing investors with transparency across digital advice platforms. Our report now includes returns for digital investing platforms M1 Finance, Motif, Chase You Invest, Titan Invest, and Liftoff from Ritholtz Wealth Management. We are also reporting on a range of themed portfolios from Betterment (Active and Income), Morgan Stanley (Defense and Cyber Security, Emerging Consumer, Gender Diversity, Genomics, Global Frontier, Inflation Conscious, and Robotics), Schwab (Domestic Focus), TD Ameritrade (Income, Managed Risk, and Opportunistic), Wealthfront (Passive-Plus), and Wealthsimple (Halal).

There were a few account closures this quarter including start-ups qPlum and Swell Investing, the latter of which was backed by Pacific Life and focused on sustainable investments. Due to the closure of their robo products, we have removed these accounts from the report. After its purchase by and integration with Axos Financial, WiseBanyan has recently rebranded as 'Axos Invest'.

Vanguard Heats Up Competition

Already the outright leader in assets under management amongst direct-to-consumer digital advice providers, Vanguard recently upped the competition with its newest "Digital Advisor" product announcement. Scheduled to roll out later this year, the new offering will have a \$3,000 minimum investment and will provide access to a portfolio of Vanguard's low-cost index funds. This new product puts Vanguard in direct competition with competitors including Ally, Betterment, Ellevest, SigFig, SoFi, Wealthfront, Wealthsimple, and Axos Invest, all of which have average accounts below \$50,000. Vanguard Digital Advisor will also be an on-ramp to higher-service offerings within Vanguard's continuum of investment management solutions.

Fidelity Go and Axos Financial Lead Performance

As trends of domestic, large-cap, growth stocks outperforming extends for another period, two portfolios are beginning to stand out as long-term outperformers. Fidelity Go and Axos Invest (formerly WiseBanyan) were the top two performers in the 2- and 3-year trailing overall performance category.

Socially Responsible Investment (SRI) Portfolios Continue To Perform Well

With another quarter on record, SRI portfolios continue to show strong performance across digital advice platforms. We now have six pairs of portfolios (regular and SRI) with a year or more of performance reported. Of the six SRI portfolios, four have outperformed their standard counterparts over the trailing year. Wealthsimple SRI and Morgan Stanley SRI portfolios have both outperformed their respective standard offerings by over 2% in the trailing one-year period.

Robo Report Housekeeping

We have also made a few changes to our performance reporting methodology and how we calculate the Normalized Benchmark. Total return performance remains unchanged. Equity-only performance previously included commodities and other alternate mutual fund strategies. Now, commodities, gold, and other alternative funds are not included in the equity-only performance. Consequently, we have modified how we calculate the weight of the Normalized Benchmark. Previously, we combined commodities and other alternative strategies with the equities when determining the equity and fixed income weights within the Normalized Benchmark. Now, we proportionally split alternate funds into equity and fixed income when determining the weight for the benchmark. These changes affect very few portfolios in the universe. Additionally, we have introduced portfolios that hold funds with a mix of equity and fixed income holdings. However, we will not be publishing equity-only and fixed income-only returns at the portfolio level for these portfolios.

Taxable Top Performers

Year-to-Date Top Performers

	Best	2nd	3rd
Total Portfolio	Prudential / Axos Invest (tie)	Prudential / Axos Invest (tie)	Acorns
Equity	Prudential	Wealthsimple SRI	Morgan Stanley SRI
Fixed Income	E*Trade	Axos Invest	Wells Fargo

1-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Axos Invest	Wealthsimple SRI	FutureAdvisor
Equity	FutureAdvisor	Morgan Stanley SRI	Axos Invest
Fixed Income	E*Trade	Ally Financial	Wealthsimple SRI

2-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Fidelity Go	Axos Invest	Ally Financial
Equity	Fidelity Go	Zacks Advantage	Acorns / Axos Invest (tie)
Fixed Income	Ally Financial	E*Trade	Axos Invest

3-Year Trailing Top Performers

	Best	2nd	3rd
Total Portfolio	Fidelity Go	Axos Invest	Vanguard
Equity	Fidelity Go	Axos Invest	SigFig
Fixed Income	Schwab	E*Trade	Axos Invest

*Net of Fees Returns as of: 9/30/2019

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

Produced by Backend Benchmarking



Market Commentary

- *Axos Invest and Fidelity Go emerging as long-term performance leaders*
- *Schwab, Personal Capital, and Betterment continue to underperform in the two- and three-year time frame*
- *Titan Invest significantly underperforms in the first look at returns in our account*
- *SRI portfolios continue to show early signs of strong performance*

Strong Market Returns in Third Quarter

Markets in the third quarter of 2019 were relatively flat, as investors appeared to be deadlocked between a persistently durable domestic economic outlook and a number of swirling uncertainties. The S&P 500 Index ticked higher by 1.70% in the quarter, and the index has now gained 20.55% through the first three quarters of the year. Large caps outperformed mid- and small-cap stocks, while growth and value performed relatively evenly among large caps.

International equities tended not to fare as well as their domestic counterparts in the third quarter. Emerging markets were more negative than their developed peers, as the highly important Chinese market continues to grapple with persistent protests in Hong Kong and a U.S. tariff dispute that does not have a catalyst for a near-term solution. Meanwhile in Latin America, shock election results in Argentina cut the country's currency value in half overnight. Europe, which finished the quarter slightly positive overall, benefitted from a new round of stimulative monetary policies from the European Central Bank.

Amid the recent interest rate cuts by the Federal Reserve and some question marks emerging in the global growth story, bond yields across the board have continued to fall. In fact, 10-year Treasuries approached record lows early in September and the yield curve remains persistently flat. Given the

inverse correlation between bond yields and their prices, these lower yields resulted in another generally positive quarter for fixed income, with corporate bonds beating out municipal issues and longer-term and higher-yielding issues tending to outperform. Beyond the Federal Reserve, a number of central banks globally are undertaking rate-cut programs as well, pushing already low (and sometimes negative) yields even lower in many foreign regions.

Prudential, Axos Invest, and Acorns Lead YTD

In our taxable robo universe, Prudential, Axos Invest (formerly WiseBanyan), and Acorns took the top three spots YTD. All three portfolios are some

Axos Invest, in particular, has emerged as a long-term performance leader. Their portfolio is standing evidence that simple portfolios can achieve good long-term performance.

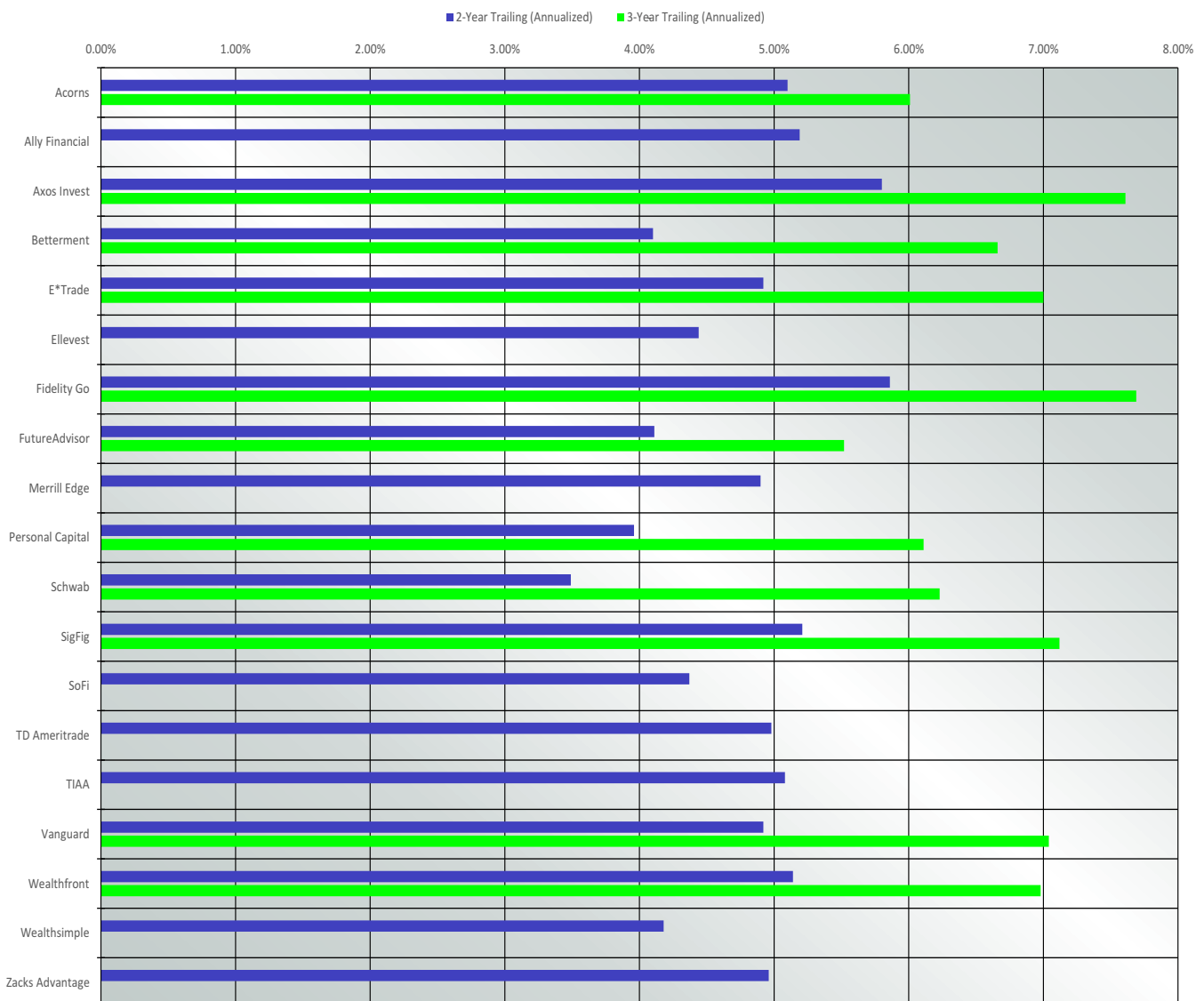
of the most heavily weighted towards domestic stocks, which have served them well over the past three years. Axos Invest, in particular, has emerged as a long-term performance leader. Their portfolio is standing evidence that simple portfolios can achieve good long-term performance. Axos' domestic equity allocation relies almost entirely on the Vanguard Total Stock Market ETF, which has served it well both in the short- and mid-term

time periods. In their fixed income portfolio, Axos holds high-yield and investment-grade corporates, which have served them well. This quarter we introduced the Schwab Intelligent Portfolios option, which is a portfolio tilted towards domestic securities. This portfolio has notably outperformed its non-domestic-tilted counterpart and placed 6th for the quarter.

Fidelity Go and Axos Invest Leading Long Term Performance

Looking at longer-term results, Fidelity Go has continued to solidify its place as a top performer, taking the top spot for overall returns in both the two- and three-year time frames, followed by Axos Invest. Fidelity holds a majority of its equities in a single S&P 500 fund and has a lower- than-average allocation to international. This has benefited them due to large-cap domestic stocks being some of the best performing groups over the past three years.

Taxable Account Performance



Schwab, Personal Capital, and Betterment have continued to underperform in the two- and three-year time frame.

Schwab, Personal Capital, and Betterment have continued to underperform in the two- and three-year time frame. Both Schwab and Betterment hold more than 40% of their equities abroad, which has held them back after years of strong growth in domestic markets. Additionally, Schwab and Betterment are some of the many portfolios that tilt towards value stocks that have underperformed growth in recent years. Our Personal Capital account has a higher fee than most of the other portfolios we track, which has contributed to underperformance. Personal Capital also holds and trades many sector-specific ETFs; this strategy has not achieved outperformance over the mid-term period. Additionally, Titan, introduced to the report this quarter, experienced significant underperformance. Their strategy is to follow the moves of hedge funds and holds individual equities. Three of their selections, Netflix, Twilio, and PTC Inc., fell 27%, 26%, and 14%, respectively, when Titan held them this quarter. This led Titan's performance into the negative for the third quarter.

Diversity Drives Fixed Income

Turning to fixed income, Schwab has held onto the top-performing three-year fixed income spot again this quarter. Schwab has a more diverse fixed-income portfolio than many of its peers, holding a mix of municipal, high-yield, TIPS, and international fixed income. Ally achieved the top two-year fixed-income performance spot with a longer-than-average maturity across their bond portfolio and holdings of corporates. E*Trade placed second for fixed income in the two- and three-year time frames,

Schwab has held onto the top-performing three-year fixed income spot again this quarter. Schwab has a more diverse fixed-income portfolio than many of its peers, holding a mix of municipal, high-yield, TIPS, and international fixed income.

holding just two fixed income funds: an intermediate-term corporates fund and an ETF that tracks the Barclays Aggregate Bond Index.

SRI Extends Trend of Outperformance

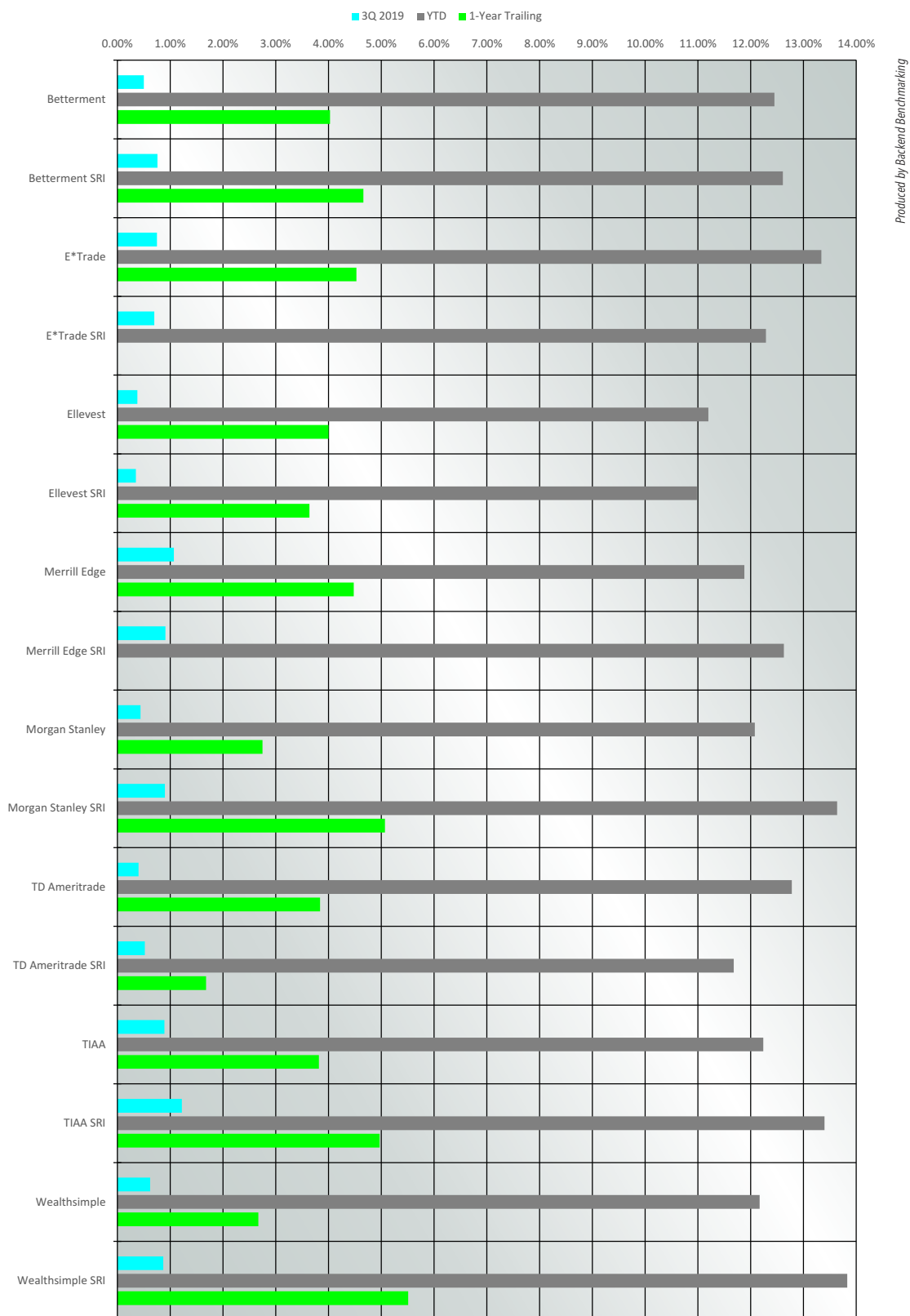
Adding another quarter to our SRI portfolios has shown again that a majority of SRI portfolios have outperformed their peers. Over the third quarter and YTD, five of eight SRI portfolios outperformed the regular portfolio at the same provider. However, it is worth noting that the TD Ameritrade SRI port-

It is of particular note that the Wealthsimple and Morgan Stanley SRI portfolios outperformed their non-themed peer by over 2% in the trailing one-year period.

folio experienced a series of poorly executed tax-loss harvesting trades that left the portfolio highly allocated to cash in January of this year, dragging on performance. These trades were unrelated to whether the portfolio was SRI themed or not. It is of particular note that the Wealthsimple and Morgan Stanley SRI portfolios outperformed their non-themed peer by over 2% in the trailing one-year period. In Morgan Stanley's case, this was driven in part by a much lower international allocation in its SRI-themed portfolio. For SRI portfolios to outperform they must overcome the increase in costs of the underlying funds. Although one year is still a relatively short period to judge long-term trends, the comparable performance of SRI portfolios is a positive sign for this investing trend if it is shown that investors do not pay a performance premium to consider environmental, social, or governance factors when constructing portfolios.



SRI Performance Chart



- *JP Morgan joins the movement and launches its You Invest digital advisor*
- *Vanguard targets the masses with its low-minimum Digital Advisor Services*
- *High-yield savings and cash management solutions are spreading*
- *Companies continue to expand product offerings and lower costs as competition increases*

JP Morgan Enters the Fray, Vanguard Expands

All hands are on deck for automated investing. Shortly after closing Finn, its millennial-focused banking app, JP Morgan launched You Invest Portfolios—its new digital advisor with a minimum account balance of \$2,500 and 0.35% advisory fee. With JP Morgan's entrance into the digital advice space, there are only a few large U.S. banks that have yet to offer or buy a stake in a digital advisor.

With JP Morgan's entrance into the digital advice space, there are only a few large U.S. banks that have yet to offer or buy a stake in a digital advisor.

Vanguard, the dominant player in the space, is piloting and is expected to soon release a new digital-only planning and investing product called Vanguard Digital Advisor. The new offering will have a \$3,000 minimum and an all-in fee—management and underlying fund fees—of 0.20%,

placing it in direct competition with providers targeting less affluent investors. In doing so, Vanguard will undercut Fidelity and JP Morgan, who both have all-in costs of 0.35%, and independents Wealthfront and Betterment, who have all-in costs of around 0.33% and 0.36%, respectively, depending on the portfolio chosen. Vanguard is increasing the pressure on a market already characterized by high levels of competition and slim margins.

The Battle Over Cash

The battle over cash is heating up, as upstart firms have been trying to lure customers in with new high-yielding checking and savings accounts. Wealthfront announced an extremely competitive

2.57% APY on cash deposits in June. Shortly after, Betterment announced a new cash product that would offer a 2.69% promotional rate for money deposited in 2019 to customers who open a brokerage and checking account. Both rates have since fallen following interest rate cuts by the Federal Reserve in July and September. Both Wealthfront and Betterment offer FDIC insurance on deposits.

While the industry has already witnessed a rapid expansion of savings accounts, digital advisors will continue to expand into day-to-day spending with checking and debit card products.

While the industry has already witnessed a rapid expansion of savings accounts, digital advisors will continue to expand into day-to-day spending with checking and debit card products. This is part of a larger push by robos to expand into cash flow management to diversify revenue streams, expand beyond investing to more comprehensive personal finance platforms, and challenge traditional banks.

Acquisitions Grow Business and Add New Services

The third quarter saw increased consolidation and acquisitions as a means of product expansion. After buying a 10% stake in August of 2018, Capital One has fully acquired United Income for an undisclosed amount. United Income CEO, Matt Fellowes, says that the acquisition will enable United Income to accelerate innovation, but users

will not be required to take any action. Capital One previously offered a hybrid advisor but it sold the product to E*Trade as part of a larger transaction in 2018.

Wealthfront acquired Grove Advisors—a financial planning startup and RIA. However, Wealthfront will not be acquiring Grove’s clients and their assets. Instead, Wealthfront will incorporate Grove’s technology, which helps users automate financial planning, into its own platform. This initiative, labeled Self-Driving Money, aims to automate cash management for Wealthfront users.

SoFi, leveraging its earlier acquisition of LEAF College Savings, has augmented its SoFi at Work program by giving companies the ability to offer 529 plans for their employees.

Investing Becomes More Affordable Than Ever

No-commission trading swept through the industry this quarter. In September, Interactive Brokers eliminated all commissions on U.S. stocks and options and ETFs. Schwab slashed its commissions on the same trades a week later, followed shortly after by TD Ameritrade and ETrade. Ally and Fidelity eventually followed suit. Decades of lowering commissions have finally reached a bottom, as trading can now be had commission-free.

Ally Financial introduced a line up of “freemium” products, experimenting with a try-before-you-buy model in an effort to attract people less comfortable with investing. One product is an expansion of its Managed Portfolio offering that will charge no management fee but will hold 30% cash, which will earn 1.90% annually in interest.

SoFi Continues Aggressive Expansion and Spending

SoFi launched free cryptocurrency trading on its SoFi Invest Platform through a partnership with Coinbase, a major crypto exchange. Users can trade Bitcoin, Ether, and Litecoin alongside stocks.

This is just the most recent news from SoFi who has been aggressive in product launches, fundraising, and marketing. Earlier this year SoFi raised \$500 million from the investment authority of Qatar and in September they announced their sponsorship of the new L.A. Rams stadium, a deal rumored to have a lifetime cost of \$400 million. SoFi also announced in September they would be reimbursing customers for taxes caused by swapping newly launched proprietary ETFs into their customers managed portfolios without considering tax implications.

Profitability Arrives at \$20 Billion in Assets

In a positive sign for upstart digital advisers, Betterment has announced that they have become profitable, and Betterment and Wealthfront both made headlines when they announced that they reached \$20 billion in assets on their platform.

Betterment and Wealthfront both made headlines when they announced that they reached \$20 billion in assets on their platform.

According to Wealthfront, this is a doubling of assets since the beginning of 2019. We estimate a majority of platform assets growth has come from rising markets and cash accounts, not brokerage accounts.

No-commission trading swept through the industry this quarter.





Robo Interview

- *JP Morgan Chase's new You Invest Portfolios targets new-to-investing clients*
- *You Invest CEO, Jed Laskowitz, sees customization as the future of robos*
- *Automated investing solutions have little penetration and have ample room to grow*

We recently spoke with Jed Laskowitz, CEO of You Invest, JP Morgan Chase's digital investment platform. You Invest, which first launched as a self-directed trading platform in 2018, expanded the platform's offerings this summer with the release of You Invest Portfolios, a managed portfolio solution on par with other robo advice products available today. Although You Invest Portfolios has been slower than many competitors to go live, it has not lagged on all trends. When You Invest Trade, the self-directed trading platform, first launched in 2018 it did so with generous no-commission trading for its users. You Invest clients receive a minimum of 100 no-commission trades in their first year and more at higher tiers, eventually to unlimited no-commission trading depending on their banking relationship. Schwab recently sparked an industry-wide movement to no-commission trading, but Chase was the first major incumbent institution to embrace the future over a year ago. You Invest does not offer unlimited no-commission trading across the board to all clients, but Jed shared with us that over 99% of all You Invest trades placed by first-year users were executed without a commission. Although we believe no-commission trading will make it less transparent to investors what the true costs of trades are, its net effect will be to lower costs for the vast majority of individual investors.

You Invest currently requires a \$2,500 minimum investment with a goal of reducing it to \$1,000 or lower.

No-commission trading is one of many significant trends in retail investing that is expanding access, bringing costs down, and increasing exposure to capital markets to a growing number of individual investors. One of the biggest effects of robo advisors is the lowering of barriers for new-to-investing individuals through their lower minimums and fees. You Invest currently requires a \$2,500 minimum investment with a goal of reducing it to \$1,000 or

lower. Self-directed investors can trade on You Invest at virtually no minimum. Jed told us that "many [investors] really wanted to get started investing but they didn't think they had enough money to start. I think this is something that's reflected in the fact that about only half of US households are participating in the capital markets." You Invest is clearly resonating with this population and serving as a successful entry-point for Chase clients who have never invested before. "The vast majority of our clients are existing Chase clients. We see that across both Trade and Portfolios, but interestingly, 90% of them have never invested with us before," says Jed.

The number of digital advice products has exploded over the past four years. Now, most major banks and discount brokers have now launched some form of a robo advice product. While the number

Not only are a majority of clients at most providers existing clients, market penetration is still relatively low.

of products has quickly expanded, competition between products may be lower than many believe. Not only are a majority of clients at most providers existing clients, market penetration is still relatively low. "Awareness for digital advice is still very low. Some consultants say it's probably around 10%-15% of US households are even aware of what a robo advisor is," says Jed. While independent direct-to-consumer companies like Wealthfront and Betterment need to attract clients with no prior relationship, You Invest may be successful with little to no adoption by new-to-firm clients. Jed mentioned that Chase has around 60 million households across all of its business lines, meaning that about half of all households in the United States

On average, You Invest clients are twenty years younger than their full-service clients.

have an existing Chase relationship. While JP Morgan has a robust full-service advice business, You Invest can fit into their business for customers who have yet to accumulate the wealth necessary to be an attractive full-service advice client. On average, You Invest clients are twenty years younger than their full-service clients. Initiating relationships with clients while they are young enables JP Morgan Chase to develop deeper connections over time, allowing younger You Invest clients to grow with them. Thus, robo advice products are not competing with full service so much as serving as an on-ramp to full-service advice products.

While most digital advice products are still relatively simple, Jed sees increasing customization and complexity on their roadmap. You Invest is currently working on bringing aggregation of outside accounts as a feature to the platform. While being able to link outside accounts and seeing more of one's financial picture in a single place is good, Jed

is excited about what else aggregation will enable. Tax location and incorporating outside assets into models are both on the radar for possible future developments. "Digital advice is still a one size fits all solution and I think there is more opportunity for customization and personalization over time," says Jed.

"Digital advice is still a one size fits all solution and I think there is more opportunity for customization and personalization over time."

While Chase may have been slower to market than other major institutions in launching a digital advice and trading platform, it is certainly not too late. Low public awareness of robo advice and Chase's massive existing customer base means You Invest has ample opportunity to grow. The growth of such products means more individuals will be participating in capital markets and growing personal wealth.



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)	Platform Assets (in millions)	Clients	Source of AUM and Clients Figures
Acorns	\$207	\$105	Jan, 2019	\$860	\$1,149	4,500,000 Accounts	Recent ADV & Company Reports
Ally Invest Advisors	N/A	N/A	N/A	Acquired TradeKing for \$294 Million June, 2016	\$218	17,716	Recent ADV
Axos Invest	N/A	N/A	N/A	Acquired by Axos Financial for undisclosed amount in Oct. 2018	\$179	23,659	Recent ADV
Betterment	\$275	\$70	Jul, 2017	\$800	\$20,000	419,543	Recent ADV & Company Representative
Ellevest	\$78	\$33	Mar, 2019	Unknown	\$357	29,441	Recent ADV
FutureAdvisor	N/A	N/A	N/A	Acquired by BlackRock for \$152 Million August, 2015	\$1,192	12,285	Recent ADV
Personal Capital	\$265	\$50	Feb, 2019	Unknown	\$11,000	20,000	Company Representative
Schwab Intelligent Portfolio Product	N/A	N/A	N/A	N/A	\$43,000	315,000 Accounts	Company Representative & Spring '19 Business Update
SigFig	\$117	\$50	June, 2018	\$471	\$485	11,168	Recent ADV
SoFi Invest	N/A	N/A	N/A	N/A	\$106	26,537	Recent ADV
TD Ameritrade Selective and Essential Portfolio	N/A	N/A	N/A	N/A	\$20,000	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	\$746	750	Recent ADV
Vanguard Personal Advisor Services	N/A	N/A	N/A	N/A	\$140,000	Unknown	Company Representative
Wealthfront	\$205	\$75	Jan, 2018	\$500 [△]	\$20,000	221,142	Recent ADV & Website
Wealthsimple	\$267 (CAD)	\$100 (CAD)	May, 2019	Unknown	\$89 (U.S.)	14,869 (U.S.)	Recent ADV

*all funding and valuation amounts are estimates

**sources: Crunchbase, Pitchbook, News Media

△This valuation number has been disputed

Produced by Backend Benchmarking

Taxable Returns

	Total									
	3Q 2019	3Q 2019 Return Above/Below Benchmark	YTD	YTD 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)
Acorns ¹	1.26%	0.51%	14.09%	1.12%	4.40%	0.21%	5.10%	-0.16%	6.01%	-1.33%
Ally Financial ⁹	0.91%	0.14%	13.07%	0.20%	4.92%	0.65%	5.19%	-0.05%	-	-
Axos Invest ⁸	1.09%	0.41%	14.63%	1.30%	5.40%	1.51%	5.80%	0.44%	7.61%	0.17%
BBVA Compass ⁷	0.98%	0.20%	12.47%	-0.31%	-	-	-	-	-	-
Betterment ²⁷	0.50%	-0.16%	12.45%	-0.98%	4.03%	0.21%	4.10%	-1.28%	6.66%	-0.86%
Betterment Active ³²	0.84%	0.09%	-	-	-	-	-	-	-	-
Betterment SRI ²⁷	0.76%	0.01%	12.61%	-0.36%	4.66%	0.47%	-	-	-	-
Citizens Bank ⁷	0.23%	-0.45%	11.98%	-1.35%	-	-	-	-	-	-
E*Trade ²¹	0.75%	0.00%	13.34%	0.37%	4.53%	0.34%	4.92%	-0.34%	7.00%	-0.14%
E*Trade Active ²³	0.81%	0.08%	12.26%	-0.80%	-	-	-	-	-	-
E*Trade SRI ²³	0.70%	-0.03%	12.29%	-0.77%	-	-	-	-	-	-
Edelman Financial Engines ⁴	0.75%	0.12%	12.28%	-1.43%	-	-	-	-	-	-
Ellevest ¹⁵	0.38%	-0.44%	11.20%	-1.40%	4.00%	-0.49%	4.44%	-0.81%	-	-
Ellevest SRI ¹⁵	0.35%	-0.55%	10.98%	-1.70%	3.64%	-0.93%	-	-	-	-
Fidelity Go ³³	0.82%	0.09%	13.00%	-0.06%	4.36%	0.24%	5.86%	0.57%	7.69%	0.47%
Fifth Third Bank ⁷	0.84%	0.09%	12.94%	-0.03%	-	-	-	-	-	-
FutureAdvisor ³	1.21%	0.41%	12.31%	-0.21%	5.57%	0.99%	4.11%	-1.10%	5.52%	-1.43%
Interactive Advisors ²⁴	0.73%	-0.10%	11.83%	-0.68%	5.21%	0.64%	-	-	-	-
JP Morgan Chase You Invest ⁷	1.05%	0.13%	-	-	-	-	-	-	-	-
M1 Finance Moderately Aggressive ³⁴	0.72%	0.07%	-	-	-	-	-	-	-	-
Merrill Edge ³¹	1.07%	0.22%	11.88%	-0.60%	4.48%	-0.22%	4.90%	-0.48%	-	-
Merrill Edge SRI ³¹	0.91%	0.14%	12.63%	-0.24%	-	-	-	-	-	-
Morgan Stanley ¹²	0.44%	-0.26%	12.08%	-1.43%	2.75%	-1.15%	-	-	-	-
Morgan Stanley Active ³	0.29%	-0.39%	12.99%	-0.34%	3.30%	-0.59%	-	-	-	-
Morgan Stanley Defense and Cyber Security ⁷	0.64%	-0.04%	-	-	-	-	-	-	-	-
Morgan Stanley Emerging Consumer ⁷	-0.13%	-0.81%	-	-	-	-	-	-	-	-
Morgan Stanley Gender Diversity ⁷	0.93%	0.18%	-	-	-	-	-	-	-	-
Morgan Stanley Genomics ⁷	-0.53%	-1.46%	-	-	-	-	-	-	-	-
Morgan Stanley Global Frontier ⁷	-0.76%	-1.41%	-	-	-	-	-	-	-	-
Morgan Stanley Inflation Conscious ⁷	0.40%	-0.35%	-	-	-	-	-	-	-	-
Morgan Stanley Robotics ⁷	-0.50%	-1.15%	-	-	-	-	-	-	-	-
Morgan Stanley SRI ⁷	0.90%	0.10%	13.64%	0.41%	5.07%	0.79%	-	-	-	-
Motif Classic 60/40 ³⁶	0.20%	-0.57%	-	-	-	-	-	-	-	-
Personal Capital ⁴	0.33%	-0.20%	13.06%	-1.10%	2.44%	-0.76%	3.96%	-1.59%	6.11%	-2.00%
Prudential ²⁶	1.06%	0.31%	14.27%	1.30%	-	-	-	-	-	-
Qapital ³⁰	1.29%	0.66%	-	-	-	-	-	-	-	-
Liftoff (Ritholtz Wealth) ⁷	0.46%	-0.29%	-	-	-	-	-	-	-	-

*Net of Fees Returns as of: 9/30/2019

Produced by Backend Benchmarking

**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 (continued from previous page)

	Total									
	3Q 2019	3Q 2019 Return Above/Below Benchmark	YTD	YTD 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)
Schwab ⁵	0.65%	-0.06%	11.15%	-2.03%	2.21%	-1.81%	3.49%	-1.92%	6.23%	-1.31%
Schwab Domestic Focus ⁵	1.17%	0.51%	-	-	-	-	-	-	-	-
SigFig ⁶	0.60%	-0.12%	12.71%	-0.44%	4.75%	0.71%	5.21%	-0.10%	7.12%	-0.17%
SoFi ¹⁷	0.62%	-0.13%	12.23%	-0.74%	4.15%	-0.04%	4.37%	-0.74%	-	-
TD Ameritrade ¹⁰	0.40%	-0.21%	12.78%	-0.92%	3.84%	0.25%	4.98%	-0.46%	-	-
TD Ameritrade SRI ^{10,C}	0.52%	-0.11%	11.68%	-1.93%	1.68%	-1.99%	-	-	-	-
TIAA ⁷	0.89%	0.16%	12.24%	-0.82%	3.82%	-0.30%	5.08%	-0.21%	-	-
TIAA Active ⁷	0.16%	-0.37%	15.01%	0.85%	3.69%	0.49%	-	-	-	-
TIAA SRI ⁷	1.22%	0.47%	13.40%	0.43%	4.97%	0.78%	-	-	-	-
Twine (John Hancock) ³	0.50%	-0.10%	13.99%	0.20%	-	-	-	-	-	-
UBS Advice Advantage ⁷	0.29%	-0.32%	12.40%	-1.30%	1.95%	-1.64%	-	-	-	-
United Income ¹⁶	0.80%	0.03%	12.03%	-0.84%	3.08%	-1.19%	-	-	-	-
US Bank ²⁸	0.80%	-0.02%	13.01%	-0.04%	4.78%	0.51%	-	-	-	-
USAA ⁷	0.88%	0.15%	12.83%	-0.23%	4.21%	0.09%	-	-	-	-
Vanguard ^{4,A}	0.50%	-0.25%	12.29%	-0.68%	3.31%	-0.88%	4.92%	-0.34%	7.04%	-0.10%
Wealthfront ^{22,B}	0.60%	-0.06%	12.27%	-1.16%	3.06%	-0.76%	5.14%	-0.24%	6.98%	-0.54%
Wealthfront PassivePlus ²²	1.23%	0.41%	-	-	-	-	-	-	-	-
Wealthsimple ¹¹	0.62%	-0.13%	12.17%	-0.80%	2.67%	-1.52%	4.18%	-1.08%	-	-
Wealthsimple SRI ¹¹	0.87%	0.12%	13.83%	0.86%	5.51%	1.32%	-	-	-	-
Wells Fargo ¹⁴	1.01%	0.31%	13.47%	0.23%	3.54%	-0.43%	-	-	-	-
Zacks Advantage ⁴	1.00%	0.25%	11.93%	-1.04%	3.33%	-0.86%	4.96%	-0.14%	-	-

*Net of Fees Returns as of: 9/30/2019

**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.

Produced by Backend Benchmarking

Taxable Returns (continued from previous page)

	Equity					Fixed Income				
	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Acorns ¹	0.95%	18.01%	2.03%	6.38%	8.57%	1.75%	8.33%	8.45%	3.11%	1.72%
Ally Financial ⁹	-0.02%	16.08%	0.28%	4.88%	-	2.47%	9.19%	11.41%	5.13%	-
Axos Invest ⁸	0.58%	17.53%	2.83%	6.38%	10.05%	1.95%	9.50%	9.66%	4.40%	3.10%
BBVA Compass ⁷	0.03%	15.42%	-	-	-	2.20%	8.20%	-	-	-
Betterment ²⁷	-0.23%	15.17%	1.12%	3.80%	8.39%	1.84%	8.02%	9.41%	4.39%	3.09%
Betterment Active ³²	0.42%	-	-	-	-	1.47%	-	-	-	-
Betterment SRI ²⁷	0.04%	15.97%	1.43%	-	-	1.82%	8.11%	9.52%	-	-
Citizens Bank ⁷	-0.56%	14.67%	-	-	-	1.74%	7.30%	-	-	-
E*Trade ²¹	-0.46%	15.80%	0.10%	4.96%	9.28%	2.32%	10.29%	11.50%	4.63%	3.25%
E*Trade Active ²³	0.32%	15.95%	-	-	-	1.39%	6.44%	-	-	-
E*Trade SRI ²³	0.14%	16.06%	-	-	-	1.39%	6.44%	-	-	-
Edelman Financial Engines ⁴	0.28%	15.46%	-	-	-	1.90%	6.88%	-	-	-
Ellevest ¹⁵	0.01%	16.35%	1.75%	5.38%	-	0.85%	5.08%	6.53%	2.83%	-
Ellevest SRI ¹⁵	-0.09%	15.96%	1.41%	-	-	0.82%	4.95%	6.35%	-	-
Fidelity Go ³³	0.35%	17.28%	1.44%	6.80%	10.77%	1.52%	6.67%	8.23%	4.06%	2.90%
Fifth Third Bank ⁷	0.45%	17.18%	-	-	-	1.41%	6.59%	-	-	-
FutureAdvisor ³	0.47%	16.40%	3.31%	4.22%	7.82%	2.22%	8.01%	8.76%	3.91%	2.37%
Interactive Advisors ²⁴	-0.11%	15.28%	1.80%	-	-	1.74%	7.89%	9.30%	-	-
JP Morgan Chase You Invest ⁷	0.07%	-	-	-	-	2.05%	-	-	-	-
M1 Finance Moderately Aggressive ³⁴	-0.21%	-	-	-	-	2.55%	-	-	-	-
Merrill Edge ³¹	0.80%	17.12%	1.85%	5.84%	-	1.60%	6.79%	8.23%	3.65%	-
Merrill Edge SRI ³¹	0.21%	16.60%	-	-	-	2.29%	8.19%	-	-	-
Morgan Stanley ¹²	-0.41%	14.99%	-0.32%	-	-	2.00%	7.27%	8.94%	-	-
Morgan Stanley Active ³	-0.64%	16.35%	0.09%	-	-	1.92%	7.93%	8.97%	-	-
Morgan Stanley Defense and Cyber Security ⁷	0.09%	-	-	-	-	1.94%	-	-	-	-
Morgan Stanley Emerging Consumer ⁷	-1.07%	-	-	-	-	1.86%	-	-	-	-
Morgan Stanley Gender Diversity ⁷	0.46%	-	-	-	-	1.71%	-	-	-	-
Morgan Stanley Genomics ⁷	-2.52%	-	-	-	-	1.80%	-	-	-	-
Morgan Stanley Global Frontier ⁷	-2.01%	-	-	-	-	1.94%	-	-	-	-
Morgan Stanley Inflation Conscious ⁷	-0.65%	-	-	-	-	1.86%	-	-	-	-
Morgan Stanley Robotics ⁷	-1.57%	-	-	-	-	1.94%	-	-	-	-
Morgan Stanley SRI ⁷	0.36%	18.14%	2.90%	-	-	1.72%	6.71%	8.26%	-	-
Motif Classic 60/40 ³⁶	-1.37%	-	-	-	-	2.56%	-	-	-	-
Personal Capital ⁴	0.17%	15.65%	1.05%	4.54%	7.63%	0.80%	6.38%	6.78%	2.30%	1.78%
Prudential ²⁶	0.74%	18.58%	-	-	-	1.62%	8.53%	-	-	-
Qapital ³⁰	0.95%	-	-	-	-	2.27%	-	-	-	-
Liftoff (Ritholtz Wealth) ⁷	-0.40%	-	-	-	-	1.74%	-	-	-	-

*Net of Fees Returns as of: 9/30/2019

**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.

Produced by Backend Benchmarking

Taxable Returns (continued from previous page)

	Equity					Fixed Income				
	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Schwab ⁵	0.34%	14.52%	-0.19%	3.61%	7.83%	1.26%	7.63%	8.33%	3.65%	3.69%
Schwab Domestic Focus ⁵	1.17%	-	-	-	-	1.60%	-	-	-	-
SigFig ⁶	-0.25%	16.12%	2.09%	5.78%	9.92%	1.98%	8.12%	9.25%	4.23%	2.66%
SoFi ¹⁷	0.16%	16.52%	1.81%	5.30%	-	1.29%	5.81%	7.09%	3.22%	-
TD Ameritrade ¹⁰	-0.23%	16.02%	1.16%	5.32%	-	1.93%	7.52%	9.40%	3.66%	-
TD Ameritrade SRI ^{10,C}	0.00%	16.51%	2.01%	-	-	1.77%	7.73%	9.65%	-	-
TIAA ⁷	0.09%	15.46%	0.35%	5.56%	-	2.15%	7.76%	9.63%	4.03%	-
TIAA Active ⁷	-0.55%	17.53%	1.75%	-	-	2.41%	8.99%	8.97%	-	-
TIAA SRI ⁷	0.72%	17.18%	2.05%	-	-	2.02%	7.83%	9.29%	-	-
Twine (John Hancock) ³	0.07%	16.66%	-	-	-	1.65%	8.58%	-	-	-
UBS Advice Advantage ⁷	-0.12%	15.66%	-0.27%	-	-	1.48%	7.14%	8.25%	-	-
United Income ¹⁶	0.35%	15.49%	-0.71%	-	-	1.60%	7.16%	8.10%	-	-
US Bank ²⁸	0.20%	15.87%	2.00%	-	-	1.45%	8.81%	8.33%	-	-
USAA ⁷	0.08%	16.41%	1.03%	-	-	2.20%	7.90%	9.77%	-	-
Vanguard ^{4,A}	0.03%	16.61%	1.01%	5.80%	9.91%	1.29%	5.78%	7.34%	3.52%	2.55%
Wealthfront ^{22,B}	0.07%	15.54%	0.04%	5.41%	8.96%	1.62%	6.82%	9.33%	4.28%	2.96%
Wealthfront PassivePlus ²²	-0.04%	-	-	-	-	1.58%	-	-	-	-
Wealthsimple ¹¹	-0.03%	15.54%	-0.78%	4.37%	-	1.64%	7.51%	8.32%	3.78%	-
Wealthsimple SRI ¹¹	0.07%	18.27%	2.64%	-	-	2.10%	7.72%	10.17%	-	-
Wells Fargo ¹⁴	0.67%	16.85%	0.91%	-	-	1.70%	9.36%	9.26%	-	-
Zacks Advantage ⁴	0.83%	17.21%	1.70%	6.70%	-	1.42%	5.88%	6.87%	3.10%	-

*Net of Fees Returns as of: 9/30/2019

**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.

Produced by Backend Benchmarking

Non 60-40 Target Allocation Taxable Returns

	Total Portfolio			Equity	Fixed Income
	% Equity	3Q 2019	3Q 2019 Return Above/Below Benchmark	3Q 2019	3Q 2019
Betterment Income ³²	0%	0.77%	-0.90%	-	0.77%
TD Ameritrade Income ³⁵	18%	0.91%	-0.46%	0.07%	1.03%
TD Ameritrade Managed Risk ³⁵	9%	0.25%	-1.21%	*^	*^
TD Ameritrade Opportunistic ³⁷	46%	0.16%	-0.87%	*^	*^
Titan Invest ³	100%	-2.87%	-2.90%	-2.83%	-
Wealthsimple Halal ²	99%	0.87%	-2.35%	-2.32%	-

*Net of Fees Returns as of: 9/30/2019

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

Produced by Backend Benchmarking

Retirement Returns

	Total Portfolio									
	3Q 2019	3Q 2019 Return Above/Below Benchmark	YTD	YTD 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	0.11%	0.00%	15.40%	-0.35%	0.81%	-0.63%	4.92%	-0.87%	-	-
Axos Invest IRA ²⁵	0.24%	0.11%	15.85%	0.21%	2.12%	0.62%	5.73%	-0.03%	9.43%	0.03%
Betterment IRA ²⁷	0.01%	-0.18%	14.20%	-0.88%	2.20%	0.41%	4.38%	-1.25%	8.05%	-0.96%
E*Trade IRA ²¹	-0.46%	-0.51%	15.58%	-0.73%	0.07%	-1.07%	4.82%	-1.09%	-	-
Fidelity Go IRA ³³	0.55%	0.33%	15.77%	0.91%	2.62%	0.72%	6.32%	0.74%	-	-
Honest Dollar (Goldman Sachs) IRA ³	0.56%	0.53%	16.26%	-0.16%	-	-	-	-	-	-
Merrill Edge IRA ³¹	0.64%	0.45%	15.38%	0.09%	2.48%	0.82%	5.07%	-0.61%	-	-
Morgan Stanley IRA ⁷	0.11%	-0.19%	13.23%	-0.95%	1.52%	-0.72%	-	-	-	-
Personal Capital IRA ⁴	0.26%	0.19%	15.38%	-0.70%	1.33%	0.06%	4.65%	-1.21%	7.79%	-1.91%
Schwab IRA ²⁰	0.37%	0.27%	13.59%	-2.27%	-1.08%	-2.46%	3.33%	-2.48%	7.65%	-1.90%
SigFig IRA ⁶	0.55%	0.41%	15.24%	-0.29%	3.33%	1.77%	4.65%	-1.09%	8.35%	-0.97%
SoFi IRA ¹⁸	0.19%	0.17%	16.53%	0.00%	1.84%	0.82%	5.80%	-0.16%	-	-
T Rowe Price IRA ¹³	0.10%	0.08%	17.37%	0.84%	2.46%	1.44%	6.29%	0.33%	-	-
TD Ameritrade IRA ¹⁰	0.12%	-0.11%	14.87%	0.13%	2.44%	0.48%	5.20%	-0.35%	-	-
TIAA IRA ⁷	0.30%	0.12%	14.25%	-0.94%	1.47%	-0.26%	5.48%	-0.18%	-	-
United Income IRA ¹⁶	-0.13%	-0.16%	14.01%	-2.41%	-2.40%	-3.48%	-	-	-	-
USAA IRA ⁷	0.02%	-0.01%	15.82%	-0.60%	0.71%	-0.37%	-	-	-	-
Wealthsimple IRA ²	0.45%	0.16%	14.07%	-0.22%	1.48%	-0.70%	4.53%	-0.91%	-	-
Wells Fargo IRA ¹⁴	0.12%	-0.02%	14.47%	-1.06%	-0.21%	-1.77%	-	-	-	-
Zacks Advantage IRA ⁴	0.42%	0.31%	15.19%	-0.56%	0.82%	-0.62%	-	-	-	-

*Net of Fees Returns as of: 9/30/2019

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

Produced by Backend Benchmarking

Retirement Returns (continued from previous page)

	Equity					Fixed Income				
	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Financial IRA ⁹	-0.01%	16.08%	0.13%	4.92%	-	2.47%	9.12%	11.29%	5.31%	-
Axos Invest IRA ²⁵	0.07%	16.42%	1.39%	5.79%	9.97%	1.97%	9.47%	9.39%	4.40%	3.22%
Betterment IRA ²⁷	-0.30%	15.14%	1.06%	4.33%	8.78%	2.05%	8.73%	9.89%	4.53%	3.12%
E*Trade IRA ²¹	-0.48%	15.78%	0.12%	4.94%	-	-	-	-	-	-
Fidelity Go IRA ³³	0.27%	17.25%	1.39%	6.71%	-	2.15%	8.27%	9.95%	4.01%	-
Honest Dollar (Goldman Sachs) IRA ³	0.54%	16.54%	-	-	-	-	-	-	-	-
Merrill Edge IRA ³¹	0.52%	16.69%	1.84%	5.38%	-	2.25%	8.93%	9.39%	3.32%	-
Morgan Stanley IRA ⁷	-0.39%	14.97%	-0.21%	-	-	1.96%	7.19%	8.89%	-	-
Personal Capital IRA ⁴	0.26%	15.80%	1.19%	4.74%	8.02%	0.39%	6.11%	6.88%	1.56%	1.27%
Schwab IRA ²⁰	0.38%	14.59%	-1.17%	3.55%	8.17%	-	-	-	-	-
SigFig IRA ⁶	0.43%	15.65%	2.38%	4.73%	8.95%	1.76%	12.43%	12.28%	4.02%	3.01%
SoFi IRA ¹⁸	0.19%	16.55%	1.86%	5.59%	-	-	-	-	-	-
T Rowe Price IRA ¹³	0.10%	17.37%	2.46%	6.29%	-	-	-	-	-	-
TD Ameritrade IRA ¹⁰	-0.11%	16.37%	1.52%	5.65%	-	1.43%	7.57%	9.48%	3.20%	-
TIAA IRA ⁷	0.08%	15.50%	0.31%	5.60%	-	2.12%	7.81%	9.68%	3.92%	-
United Income IRA ¹⁶	-0.13%	14.26%	-2.34%	-	-	-	-	-	-	-
USAA IRA ⁷	0.01%	16.30%	0.93%	-	-	-	-	-	-	-
Wealthsimple IRA ²	0.14%	16.05%	-0.18%	4.66%	-	1.71%	7.00%	8.68%	3.92%	-
Wells Fargo IRA ¹⁴	-0.01%	15.16%	-0.93%	-	-	1.72%	10.18%	9.54%	-	-
Zacks Advantage IRA ⁴	0.43%	16.18%	0.94%	-	-	-	-	-	-	-

*Net of Fees Returns as of: 9/30/2019

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

Produced by Backend Benchmarking

Taxable Account Facts

Portfolio	Account Minimum	Advisory Fee	Average Weighted 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, \$100/month per \$1 million in AUM	0.09%	61%/39%/0%/0%	62%/38%/0%/0%	84%/16%	79%/21%	0%
Ally Financial	\$100	0.30% annually; Also offer Cash-enhanced portfolio with 30% invested in cash and no management fee	0.07%	59%/39%/0%/2%	60%/37%/0%/2%	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	0.09%	64%/36%/0%/0%	64%/36%/0%/0%	62%/38%	62%/38%	0%
BBVA Compass	\$10,000	0.75% annually	0.13%	57%/39%/3%/1%	56%/39%/0%/3%	63%/37%	64%/36%	0%
Betterment	Digital: No minimum; Premium: \$100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above \$2M	0.08%	65%/35%/0%/0%	64%/36%/0%/0%	49%/51%	58%/42%	36%
Betterment Active	Digital: No minimum; Premium: \$100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above \$2M	0.19%	60%/40%/0%/0%	60%/40%/0%/0%	57%/43%	59%/41%	9%
Betterment Income	Digital: No minimum; Premium: \$100,000	Digital: 0.25%; 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%	59%/41%	0%
Betterment SRI	Digital: No minimum; Premium: \$100,000	Digital: 0.25%; Premium: 0.40% (unlimited chat and calls with advisor), 0.10% discount on balance above \$2M	0.13%	60%/40%/0%/0%	59%/40%/0%/0%	50%/50%	52%/48%	59%
Citizens Bank	\$2,000	0.50% annually	0.08%	64%/36%/0%/1%	66%/34%/0%/0%	54%/46%	56%/44%	0%
E*Trade	\$500	0.30% annually	0.10%	60%/39%/0%/1%	61%/38%/0%/1%	75%/25%	65%/35%	0%
E*Trade Active	\$500	0.30% annually	0.09%	61%/35%/0%/3%	61%/38%/0%/1%	65%/35%	65%/35%	100%
E*Trade SRI	\$500	0.30% annually	0.13%	61%/35%/0%/4%	61%/38%/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%	66%/30%/0%/4%	80%/20%	81%/19%	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%	56%/43%/0%/1%	71%/29%	61%/39%	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%	51%/48%/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%	60%/40%/0%/1%	71%/29%	70%/30%	100%
Fifth Third Bank	\$5,000	0.50% annually	0.20%	60%/40%/0%/1%	59%/40%/0%/1%	70%/30%	70%/30%	100%
FutureAdvisor	\$5,000	0.50% annually	0.08%	58%/41%/0%/1%	56%/43%/0%/1%	49%/51%	69%/31%	0%
Interactive Advisors	Interactive Advisor Portfolios: \$5,000; Manager Portfolios: \$10,000 - \$120,000	Interactive Advisor Portfolios range from 0.08% to 0.30% annually; Manager Portfolios range from 0.25% to 1.5% annually	0.13%	55%/44%/0%/0%	53%/46%/0%/2%	55%/45%	56%/44%	31%
JP Morgan Chase You Invest	\$2,500	0.35% annually	0.00%	50%/48%/0%/2%	49%/48%/0%/3%	55%/45%	56%/44%	0%

*Current Allocations as of: 9/30/2019

**Due to rounding, may not add to 100%

***Average weighted expense ratio calculations exclude cash holdings from the portfolio

Produced by Backend Benchmarking

Taxable Account Facts (continued from previous page)

Portfolio	Account Minimum	Advisory Fee	Average Weighted 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)
M1 Finance Moderately Aggressive	\$100	No management fee	0.06%	66%/34%/0%/0%	65%/34%/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%	53%/40%/0%/6%	66%/34%	80%/20%	81%
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	0.27%	59%/37%/0%/4%	59%/36%/0%/6%	65%/35%	77%/23%	9%
Morgan Stanley	\$5,000	0.35% annually	0.08%	65%/30%/0%/5%	63%/36%/0%/1%	45%/55%	47%/53%	0%
Morgan Stanley Active	\$5,000	0.35% annually	0.37%	64%/35%/0%/1%	62%/37%/0%/1%	44%/56%	48%/52%	0%
Morgan Stanley Defense and Cyber Security	\$5,000	0.35% annually	0.43%	64%/29%/0%/8%	68%/30%/0%/1%	58%/42%	63%/37%	0%
Morgan Stanley Emerging Consumer	\$5,000	0.35% annually	0.46%	64%/29%/0%/8%	67%/32%/0%/1%	57%/43%	49%/51%	0%
Morgan Stanley Gender Diversity	\$5,000	0.35% annually	0.46%	60%/37%/0%/3%	60%/39%/0%/2%	68%/32%	68%/32%	10%
Morgan Stanley Genomics	\$5,000	0.35% annually	0.40%	49%/45%/0%/6%	52%/46%/0%/1%	56%/44%	59%/41%	0%
Morgan Stanley Global Frontier	\$5,000	0.35% annually	0.54%	66%/29%/0%/5%	67%/31%/0%/1%	40%/60%	41%/59%	0%
Morgan Stanley Inflation Conscious	\$5,000	0.35% annually	0.41%	58%/30%/3%/9%	59%/36%/3%/1%	63%/37%	63%/37%	0%
Morgan Stanley Robotics	\$5,000	0.35% annually	0.44%	66%/28%/0%/5%	68%/31%/0%/1%	52%/48%	53%/47%	0%
Morgan Stanley SRI	\$5,000	0.35% annually	0.49%	64%/35%/0%/1%	58%/41%/0%/2%	56%/44%	61%/39%	11%
Motif Classic 60/40	\$300	0.25% annually for "Investing Classics" Motifs. Please visit Motif website for more detailed pricing	0.07%	59%/41%/0%/0%	60%/39%/0%/1%	33%/67%	33%/67%	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%	70%/25%/2%/1%	70%/30%	71%/29%	0%
Prudential	\$5,000	0.79% annually for first \$100K; lower at different tiers above \$100K	0.09%	60%/38%/0%/2%	60%/38%/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%	71%/29%	0%
Liftoff (Ritholtz Wealth)	\$5,000	0.40% annually	0.09%	60%/40%/0%/0%	59%/40%/0%/0%	57%/43%	57%/43%	36%
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%	60%/26%/2%/11%	51%/49%	56%/44%	56%
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%	64%/24%/0%/11%	78%/22%	78%/22%	73%
SigFig	\$2,000	No fee for the first \$10k; 0.25% annually for balance over \$10k	0.07%	62%/37%/0%/1%	60%/38%/0%/1%	58%/42%	60%/40%	0%
SoFi	No minimum	No management fee	0.05%	52%/48%/0%/0%	60%/40%/0%/0%	67%/33%	68%/32%	65%

*Current Allocations as of: 9/30/2019

**Due to rounding, may not add to 100%

***Average weighted expense ratio calculations exclude cash holdings from the portfolio

Produced by Backend Benchmarking

Taxable Account Facts (continued from previous page)

Portfolio	Account Minimum	Advisory Fee	Average Weighted 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)
TD Ameritrade	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.06%	65%/33%/0%/1%	67%/32%/0%/2%	65%/35%	59%/41%	0%
TD Ameritrade Income	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.59%	21%/78%/0%/1%	9%/52%/38%/1%	72%/38%	28%/72%	0%
TD Ameritrade Managed Risk	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	1.29%	9%/49%/41%/1%	46%/52%/0%/1%	29%/71%	48%/52%	0%
TD Ameritrade Opportunistic	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.17%	43%/53%/0%/4%	46%/52%/0%/1%	53%/47%	59%/41%	0%
TD Ameritrade SRI	Essential Portfolios: \$5,000; Selective Portfolios: \$25,000	Essential Portfolios: 0.30% annually; Selective Portfolios: tiered at a higher fee level depending on account balance and portfolio selected	0.15%	67%/29%/0%/3%	70%/28%/0%/1%	59%/41%	58%/42%	0%
TIAA	\$5,000	0.30% annually	0.07%	61%/37%/0%/2%	59%/39%/0%/1%	71%/29%	64%/36%	0%
TIAA Active	\$5,000	0.30% annually	0.70%	73%/26%/0%/1%	74%/25%/0%/1%	66%/34%	63%/37%	0%
TIAA SRI	\$5,000	0.30% annually	0.34%	60%/39%/0%/1%	59%/39%/0%/2%	71%/29%	65%/35%	1%
Titan Invest	\$500	1% annually	0.00%	100%/0%/0%/0%	100%/0%/0%/0%	100%/0%	100%/0%	1%
Twine (John Hancock)	\$100	0.60% annually	0.08%	69%/29%/0%/2%	68%/29%/0%/3%	64%/36%	65%/35%	0%
UBS Advice Advantage	\$10,000	0.75% annually	0.08%	68%/27%/0%/5%	68%/26%/0%/5%	59%/41%	61%/39%	80%
United Income	Premium: \$10,000; Private Wealth: \$300,000	Premium: 0.50% annually; Wealth (access to live advisors): 0.80% to 0.45% depending on account balances	0.18%	59%/40%/0%/1%	61%/37%/0%/2%	51%/49%	59%/41%	0%
US Bank	\$5,000	0.24% annually	0.15%	60%/39%/0%/1%	59%/39%/0%/3%	59%/41%	71%/29%	91%
USAA	\$2,000	0.50% annually	0.05%	66%/32%/0%/1%	60%/38%/0%/1%	63%/37%	58%/42%	0%
Vanguard ^A	Vanguard Personal Advisor Services \$50,000;	Vanguard Personal Advisor Services 0.30% annually for the first \$5 million; lower at different tiers over \$5 million.	0.07%	60%/40%/0%/0%	63%/37%/0%/0%	60%/40%	64%/36%	100%
Wealthfront ^B	\$500	0.25% annually	0.11%	65%/35%/0%/0%	65%/34%/0%/1%	67%/33%	67%/33%	100%
Wealthfront PassivePlus	\$500	0.25% annually	0.11%	45%/35%/19%/0%	45%/35%/0%/0%	60%/40%	61%/39%	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%	60%/40%/0%/0%	66%/34%	68%/32%	54%
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%	99%/0%/0%/1%	58%/42%	58%/42%	54%
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	0.24%	60%/40%/0%/0%	60%/39%/0%/0%	69%/31%	70%/30%	0%
Wells Fargo	\$10,000	0.50% annually; discounted to 0.40% if subscribed to other specific Wells Fargo products	0.14%	63%/34%/0%/3%	62%/34%/0%/4%	77%/23%	76%/24%	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	0.11%	57%/34%/0%/9%	60%/35%/0%/5%	72%/28%	72%/28%	38%

^ACurrent Allocations as of: 9/30/2019

^BDue to rounding, may not add to 100%

^CAverage weighted expense ratio calculations exclude cash holdings from the portfolio

Produced by Backend Benchmarking

Retirement Account Facts

Portfolio	Account Minimum	Advisory Fee	Average Weighted Expense Ratio	Initial Target Asset Allocation (Equities/ Fixed Income/ Alternatives/ Cash)	Current Asset Allocation (Equities/ Fixed Income/ Alternatives/ 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	0.06%	93%/5%/0%/2%	93%/5%/0%/2%	60%/40%	61%/39%
Axos Invest IRA	No minimum	No fee for basic package; add-on packages, such as tax-loss harvesting, come at 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), 0.10% discount on balance above 2M	0.07%	87%/13%/0%/0%	86%/13%/0%/0%	47%/53%	57%/43%
E*Trade IRA	\$500	0.30% annually	0.13%	98%/0%/0%/2%	98%/0%/0%/2%	75%/25%	65%/35%
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%/15%/0%/1%	71%/29%	71%/29%
Honest Dollar (Goldman Sachs) IRA	No minimum	0.25% annually	0.06%	99%/0%/0%/1%	98%/0%/0%/2%	68%/32%	69%/31%
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	0.06%	89%/9%/0%/2%	87%/9%/0%/5%	64%/36%	72%/28%
Morgan Stanley IRA	\$5,000	0.35% annually	0.07%	79%/15%/0%/6%	78%/21%/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%	93%/3%/1%/1%	69%/31%	71%/29%
Schwab IRA	Intelligent Portfolios: \$5,000; Intelligent Portfolios Premium: \$25,000	Intelligent Portfolios: No fee \$25,000 (digital only); Intelligent Portfolios Premium: \$300 initial planning fee, \$30/month subscription	0.19%	94%/0%/0%/6%	94%/0%/0%/6%	54%/46%	55%/45%
SigFig IRA	\$2,000	No fee for the first \$10k; 0.25% annually for balance over \$10k	0.09%	91%/9%/0%/0%	89%/10%/0%/1%	45%/55%	48%/52%
SoFi IRA	No minimum	No management fee	0.02%	100%/0%/0%/0%	100%/0%/0%/0%	66%/34%	69%/31%
T Rowe Price IRA ¹³	\$50,000	No management fee	0.79%	100%/0%/0%/0%	100%/0%/0%/0%	63%/37%	63%/37%
TD Ameritrade IRA	Essential Portfolios: \$5,000; 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%	85%/13%/0%/2%	65%/35%	61%/39%
TIAA IRA	\$5,000	0.30% annually	0.07%	88%/11%/0%/1%	87%/11%/0%/2%	72%/28%	63%/37%
United Income IRA	Premium: \$10,000; Private Wealth: \$300,000	Premium: 0.50% annually; Private Wealth (access to live advisors): 0.80% to 0.45% depending on account balances	0.25%	99%/0%/0%/1%	98%/0%/0%/2%	51%/49%	56%/44%
USAA IRA	\$2,000	0.50% annually	0.05%	99%/0%/0%/1%	98%/0%/0%/2%	59%/41%	63%/37%
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	0.08%	80%/20%/0%/0%	79%/20%/0%/0%	66%/34%	69%/31%
Wells Fargo IRA	\$10,000	0.50% annually; discounted to 0.40% if subscribed to other specific Wells Fargo products	0.13%	91%/7%/0%/2%	90%/7%/0%/3%	67%/33%	67%/33%
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%	64%/36%

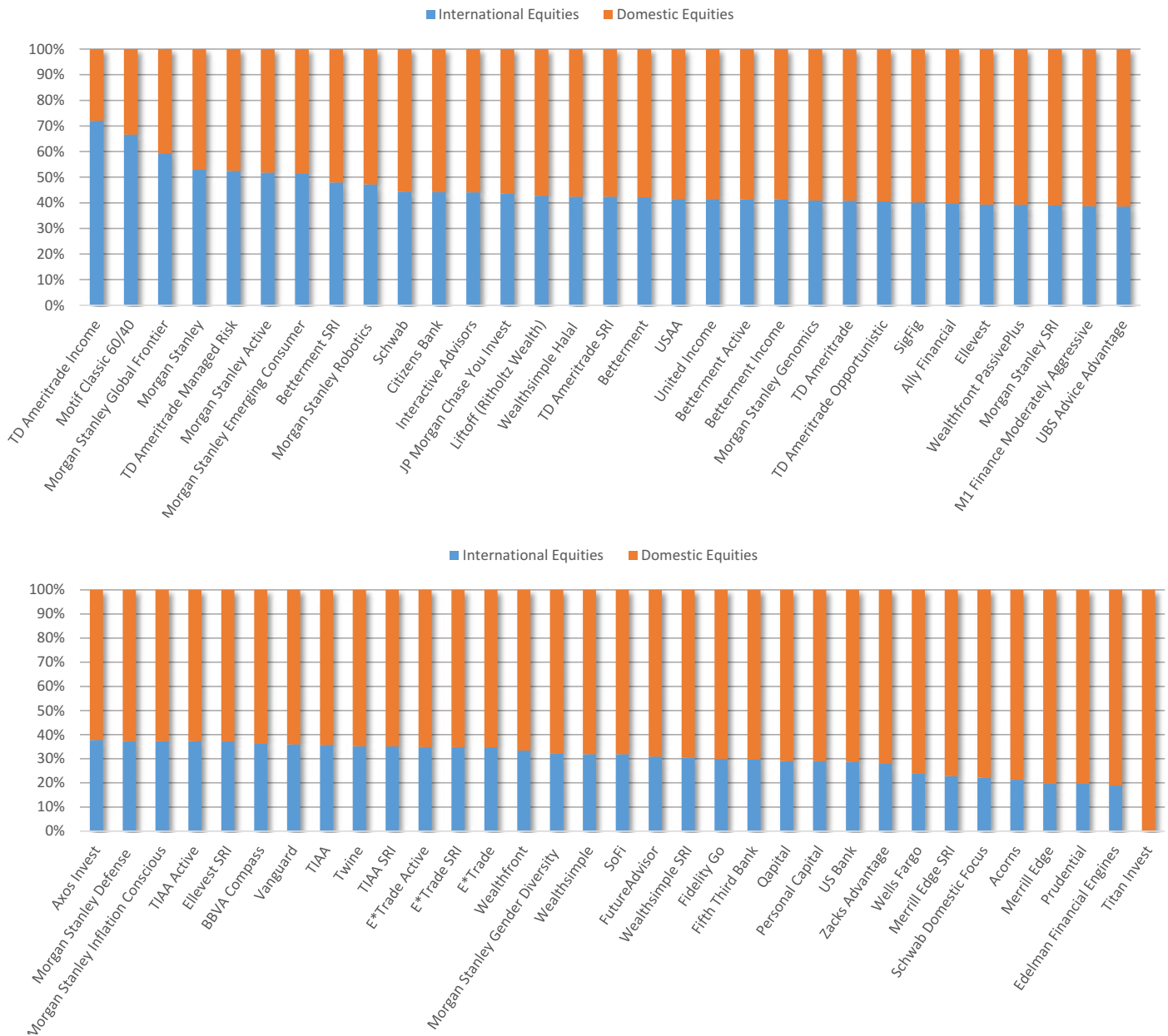
*Current Allocations as of: 9/30/2019

**Due to rounding, may not add to 100%

***Average weighted expense ratio calculations exclude cash holdings from the portfolio

Produced by Backend Benchmarking

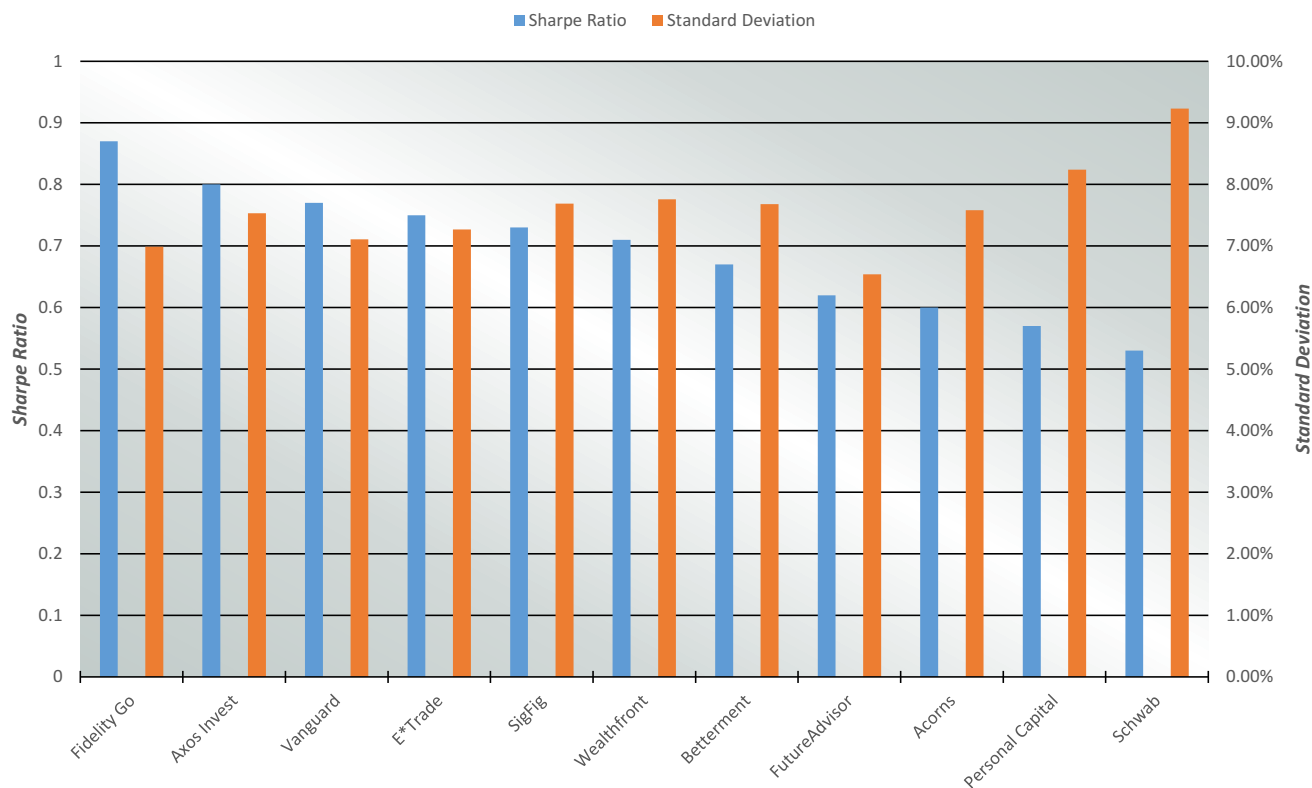
International Allocation of Total Equity for Taxable Robos



Produced by Backend Benchmarking

Taxable Risk/Return Charts and Tables

Trailing 3-Year Risk/Return Statistics of Taxable Robos



Produced by Backend Benchmarking

	Acorns	Axos Invest	Betterment	E*Trade	Fidelity Go	FutureAdvisor	Personal Capital	Schwab
Annualized StdDev, %	7.58%	7.53%	7.68%	7.27%	6.99%	6.54%	8.24%	9.23%
Sharpe Ratio	0.60	0.80	0.67	0.75	0.87	0.62	0.57	0.53

	SigFig	Vanguard	Wealthfront
Annualized StdDev, %	7.69%	7.11%	7.76%
Sharpe Ratio	0.73	0.77	0.71

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

Trailing 2-Year Risk/Return Statistics of Taxable Robos

	Acorns	Ally Financial	Axos Invest	Betterment	E*Trade	Ellevest	Fidelity Go	FutureAdvisor
Annualized StdDev, %	8.26%	7.90%	8.49%	8.60%	8.13%	7.43%	7.96%	7.17%
Sharpe Ratio	0.40	0.43	0.47	0.28	0.39	0.36	0.50	0.32

	Merrill Edge	Personal Capital	Schwab	SigFig	SoFi	TD Ameritrade	TIAA	Vanguard
Annualized StdDev, %	7.29%	9.24%	10.56%	8.63%	7.97%	9.22%	8.03%	8.09%
Sharpe Ratio	0.42	0.25	0.19	0.40	0.33	0.36	0.41	0.39

	Wealthfront	Wealthsimple	Zacks Advantage
Annualized StdDev, %	8.76%	8.29%	7.93%
Sharpe Ratio	0.39	0.30	0.40

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 Financial	Axos Invest	Betterment	Betterment SRI	E*Trade	Ellevest	Ellevest SRI
Annualized StdDev, %	9.28%	8.73%	9.52%	9.54%	8.70%	9.08%	8.18%	7.97%
Sharpe Ratio	0.26	0.32	0.35	0.21	0.29	0.27	0.23	0.19

	Fidelity Go	FutureAdvisor	Interactive Advisors	Merrill Edge	Morgan Stanley	Morgan Stanley Active	Morgan Stanley SRI	Personal Capital
Annualized StdDev, %	8.86%	7.68%	16.34%	8.11%	9.28%	9.15%	8.22%	10.26%
Sharpe Ratio	0.26	0.43	0.25	0.29	0.08	0.14	0.35	0.06

	Schwab	SigFig	SoFi	TD Ameritrade	TD Ameritrade SRI	TIAA	TIAA Active	TIAA SRI
Annualized StdDev, %	12.97%	9.77%	8.91%	9.95%	9.25%	8.91%	11.02%	10.43%
Sharpe Ratio	0.05	0.28	0.23	0.19	-0.03	0.20	0.17	0.29

	UBS Advice Advantage	United Income	US Bank	USAA	Vanguard	Wealthfront	Wealthsimple	Wealthsimple SRI
Annualized StdDev, %	10.28%	8.64%	14.55%	8.93%	9.05%	9.68%	9.14%	8.76%
Sharpe Ratio	0.01	0.12	0.23	0.24	0.14	0.11	0.07	0.38

	Wells Fargo	Zacks Advantage
Annualized StdDev, %	9.85%	8.85%
Sharpe Ratio	0.16	0.15

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

Retirement Risk/Return Charts and Tables

Trailing 3-Year Risk/Return Statistics of Retirement Robos

	Axos Invest IRA	Betterment IRA	Personal Capital IRA	Schwab IRA	SigFig IRA
Annualized StdDev, %	10.91%	10.34%	10.79%	10.82%	10.96%
Sharpe Ratio	0.74	0.65	0.60	0.59	0.64

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

Trailing 2-Year Risk/Return Statistics of Retirement Robos

	Ally Financial IRA	Axos Invest IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Personal Capital IRA	Schwab IRA
Annualized StdDev, %	12.62%	12.40%	11.66%	13.66%	11.26%	11.98%	12.17%	12.05%
Sharpe Ratio	0.29	0.35	0.26	0.27	0.42	0.31	0.27	0.17

	SigFig IRA	SoFi IRA	T Rowe Price IRA	TD Ameritrade IRA	TIAA IRA	Wealthsimple IRA
Annualized StdDev, %	12.25%	13.82%	15.87%	11.78%	11.80%	10.92%
Sharpe Ratio	0.27	0.33	0.34	0.32	0.34	0.28

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

Trailing 1-Year Risk/Return Statistics of Retirement Robos

	Ally Financial IRA	Axos Invest IRA	Betterment IRA	E*Trade IRA	Fidelity Go IRA	Merrill Edge IRA	Morgan Stanley IRA	Personal Capital IRA
Annualized StdDev, %	14.24%	13.98%	12.95%	15.53%	12.70%	13.36%	11.56%	13.58%
Sharpe Ratio	-0.04	0.05	0.05	-0.07	0.08	0.07	-0.02	-0.01

	Schwab IRA	SigFig IRA	SoFi IRA	T Rowe Price IRA	IRA	TD Ameritrade TIAA IRA	United Income IRA	USAA IRA
Annualized StdDev, %	13.44%	13.50%	15.35%	16.94%	13.21%	13.07%	14.94%	14.92%
Sharpe Ratio	-0.19	0.13	0.04	0.09	0.07	0.00	-0.24	-0.04

	Wealthsimple IRA	Wells Fargo IRA	Zacks Advantage IRA
Annualized StdDev, %	12.26%	14.14%	14.23%
Sharpe Ratio	-0.01	-0.11	-0.04

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	62%	62%
Equity	International	VXUS	Vanguard Total International Stock ETF	38%	38%

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

Bond Portfolio

Category	Asset Type	Ticker	Name	Current Taxable Benchmark Weight	Current Retirement Benchmark Weight
Fixed Income	Multi-Sector US	AGG	iShares Core US Aggregate Bond ETF	37%	26%
Fixed Income	Investment-Grade Corporates	LQD	iShares iBoxx \$ Investment Grade Corporate Bond ETF	6%	6%
Fixed Income	High-Yield Corporates	JNK	SPDR Bloomberg Barclays High Yield Bond ETF	3%	2%
Fixed Income	International Developed	IGOV	iShares International Treasury Bond ETF	4%	3%
Fixed Income	International Emerging Markets	EMB	iShares J.P. Morgan USD Emerging Markets Bond ETF	3%	6%
Fixed Income	Municipals	MUB	iShares National Muni Bond ETF	28%	3%
Fixed Income	TIPS	TIP	iShares TIPS Bond ETF	4%	3%
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	2%	3%
Fixed Income	Long-Term Treasuries (10+ Year Maturity)	VGLT	Vanguard Long-Term Treasury ETF	0%	0%
Fixed Income	Securitized	VMBS	Vanguard Mortgage-Backed Securities ETF	2%	1%
Fixed Income	Cash	FDRXX	Fidelity® Government Cash Reserves	7%	48%

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

For more detailed information about the Normalized Benchmark please visit <https://www.backendbenchmarking.com/the-robo-report/normalized-benchmarking/>.

Taxable Benchmark Returns

	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Acorns Normalized Benchmark	0.75%	12.97%	4.19%	5.26%	7.34%
Ally Financial Normalized Benchmark	0.77%	12.87%	4.27%	5.24%	-
Axos Invest Normalized Benchmark	0.68%	13.33%	3.89%	5.36%	7.44%
BBVA Compass Normalized Benchmark	0.78%	12.78%	-	-	-
Betterment Normalized Benchmark	0.66%	13.43%	3.82%	5.38%	7.52%
Betterment Active Normalized Benchmark	0.75%	-	-	-	-
Betterment Income Normalized Benchmark	1.67%	-	-	-	-
Betterment SRI Normalized Benchmark	0.75%	12.97%	4.19%	-	-
Citizens Bank Normalized Benchmark	0.68%	13.33%	-	-	-
E*Trade Normalized Benchmark	0.75%	12.97%	4.19%	5.26%	7.14%
E*Trade Active Normalized Benchmark	0.73%	13.06%	-	-	-
E*Trade SRI Normalized Benchmark	0.73%	13.06%	-	-	-
Edelman Financial Engines Normalized Benchmark	0.63%	13.71%	-	-	-
Ellevest Normalized Benchmark	0.82%	12.60%	4.49%	5.25%	-
Ellevest SRI Normalized Benchmark	0.90%	12.68%	4.57%	-	-
Fidelity Go Normalized Benchmark	0.73%	13.06%	4.12%	5.29%	7.22%
Fifth Third Bank Normalized Benchmark	0.75%	12.97%	-	-	-
FutureAdvisor Normalized Benchmark	0.80%	12.52%	4.58%	5.21%	6.95%
Interactive Advisors Normalized Benchmark	0.83%	12.51%	4.57%	-	-
JP Morgan Chase You Invest Normalized Benchmark	0.92%	-	-	-	-
M1 Finance Normalized Benchmark	0.65%	-	-	-	-
Merrill Edge Normalized Benchmark	0.85%	12.48%	4.70%	5.38%	-
Merrill Edge SRI Normalized Benchmark	0.77%	12.87%	-	-	-
Morgan Stanley Normalized Benchmark	0.70%	13.51%	3.90%	-	-
Morgan Stanley Active Normalized Benchmark	0.68%	13.33%	3.89%	-	-
Morgan Stanley Defense and Cyber Security Normalized Benchmark	0.68%	-	-	-	-
Morgan Stanley Emerging Consumer Normalized Benchmark	0.68%	-	-	-	-
Morgan Stanley Gender Diversity Normalized Benchmark	0.75%	-	-	-	-
Morgan Stanley Genomics Normalized Benchmark	0.93%	-	-	-	-
Morgan Stanley Global Frontier Normalized Benchmark	0.65%	-	-	-	-
Morgan Stanley Inflation Conscious Normalized Benchmark	0.75%	-	-	-	-
Morgan Stanley Robotics Normalized Benchmark	0.65%	-	-	-	-
Morgan Stanley SRI Normalized Benchmark	0.80%	13.23%	4.28%	-	-
Motif Normalized Benchmark	0.77%	-	-	-	-
Personal Capital Normalized Benchmark	0.53%	14.16%	3.20%	5.55%	8.11%
Prudential Normalized Benchmark	0.75%	12.97%	-	-	-
Qapital Normalized Benchmark	0.63%	-	-	-	-
Liftoff (Ritholtz Wealth) Normalized Benchmark	0.75%	-	-	-	-
Schwab Normalized Benchmark	0.71%	13.18%	4.02%	5.41%	7.54%
Schwab Domestic Focus Normalized Benchmark	0.66%	-	-	-	-
SigFig Normalized Benchmark	0.72%	13.15%	4.04%	5.31%	7.29%
SoFi Normalized Benchmark	0.75%	12.97%	4.19%	5.11%	-

For more detailed information about the Normalized Benchmark please visit
<https://www.backendbenchmarking.com/the-robo-report/normalized-benchmarking/>.

Taxable Benchmark Returns *(continued from previous page)*

	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
TD Ameritrade Normalized Benchmark	0.61%	13.70%	3.59%	5.44%	-
TD Ameritrade Income Normalized Benchmark	1.37%	-	-	-	-
TD Ameritrade Managed Risk Normalized Benchmark	1.46%	-	-	-	-
TD Ameritrade Opportunistic Normalized Benchmark	1.03%	-	-	-	-
TD Ameritrade SRI Normalized Benchmark	0.63%	13.61%	3.67%	-	-
TIAA Normalized Benchmark	0.73%	13.06%	4.12%	5.29%	-
TIAA Active Normalized Benchmark	0.53%	14.16%	3.20%	-	-
TIAA SRI Normalized Benchmark	0.75%	12.97%	4.19%	-	-
Titan Invest Normalized Benchmark	0.03%	-	-	-	-
Twine Normalized Benchmark	0.60%	13.79%	-	-	-
UBS Advice Advantage Normalized Benchmark	0.61%	13.70%	3.59%	-	-
United Income Normalized Benchmark	0.77%	12.87%	4.27%	-	-
US Bank Normalized Benchmark	0.82%	13.05%	4.27%	-	-
USAA Normalized Benchmark	0.73%	13.06%	4.12%	-	-
Vanguard Normalized Benchmark	0.75%	12.97%	4.19%	5.26%	7.14%
Wealthfront Normalized Benchmark	0.66%	13.43%	3.82%	5.38%	7.52%
Wealthfront PassivePlus Normalized Benchmark	0.82%	-	-	-	-
Wealthsimple Normalized Benchmark	0.75%	12.97%	4.19%	5.26%	-
Wealthsimple Halal Normalized Benchmark	0.03%	-	-	-	-
Wealthsimple SRI Normalized Benchmark	0.75%	12.97%	4.19%	-	-
Wells Fargo Normalized Benchmark	0.70%	13.24%	3.97%	-	-
Zacks Advantage Normalized Benchmark	0.75%	12.97%	4.19%	5.10%	-

For more detailed information about the Normalized Benchmark please visit
<https://www.backendbenchmarking.com/the-robo-report/normalized-benchmarking/>.

Retirement Benchmark Returns

	3Q 2019	YTD	1-Year Trailing	2-Year Trailing (Annualized)	3-Year Trailing (Annualized)
Ally Financial IRA Normalized Benchmark	0.11%	15.75%	1.44%	5.79%	-
Axos Invest IRA Normalized Benchmark	0.13%	15.64%	1.50%	5.76%	9.40%
Betterment IRA Normalized Benchmark	0.19%	15.08%	1.79%	5.63%	9.01%
E*Trade IRA Normalized Benchmark	0.05%	16.31%	1.14%	5.91%	-
Fidelity Go IRA Normalized Benchmark	0.22%	14.86%	1.90%	5.58%	-
Honest Dollar IRA Normalized Benchmark	0.03%	16.42%	-	-	-
Merrill Edge IRA Normalized Benchmark	0.19%	15.29%	1.66%	5.68%	-
Morgan Stanley IRA Normalized Benchmark	0.30%	14.18%	2.24%	-	-
Personal Capital IRA Normalized Benchmark	0.07%	16.08%	1.27%	5.86%	9.70%
Schwab IRA Normalized Benchmark	0.10%	15.86%	1.38%	5.81%	9.55%
SigFig IRA Normalized Benchmark	0.14%	15.53%	1.56%	5.74%	9.32%
SoFi IRA Normalized Benchmark	0.02%	16.53%	1.02%	5.96%	-
T Rowe Price IRA Normalized Benchmark	0.02%	16.53%	1.02%	5.96%	-
TD Ameritrade IRA Normalized Benchmark	0.23%	14.74%	1.96%	5.55%	-
TIAA IRA Normalized Benchmark	0.18%	15.19%	1.73%	5.66%	-
United Income IRA Normalized Benchmark	0.03%	16.42%	1.08%	-	-
USAA IRA Normalized Benchmark	0.03%	16.42%	1.08%	-	-
Wealthsimple IRA Normalized Benchmark	0.29%	14.29%	2.18%	5.44%	-
Wells Fargo IRA Normalized Benchmark	0.14%	15.53%	1.56%	-	-
Zacks Advantage IRA Normalized Benchmark	0.11%	15.75%	1.44%	-	-

For more detailed information about the Normalized Benchmark please visit
<https://www.backendbenchmarking.com/the-robo-report/normalized-benchmarking/>.

■ ■ ■ 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.
- 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.
- 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.

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 JP Morgan Chase, Schwab and TD Ameritrade in one of the strategies used in many of their discretionary accounts on 01/02/2001 and 5/31/2017. As of 9/30/2019 the total size of the position was 14,099 shares of JP Morgan Chase common stock, 38,281 shares of Schwab common stock and 34,256 shares of TD Ameritrade 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

Copyright © 2019 BackendB.com LLC, all rights reserved.

BackendBenchmarking