Made to measure:

Evaluating the impact of a retirement managed account

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Abstract
Many defined contribution plans today offer a managed account option. Yet there is no standard method for valuing these accounts that considers the full range of potential product features and their financial impact. We find historical investment performance does not serve as an optimal measure of value. Our feature-by-feature estimate finds that a robust retirement managed account provides 55 to 92 basis points (bps) of value for unengaged participants and 152 to 258 bps for engaged participants. In presenting a method for valuing managed accounts, we also delineate the menu of features that may be offered through a managed account investment option in a defined contribution plan.

The first retirement managed accounts were launched in 2004. Today about $180 billion in defined contribution (DC) assets are managed by these services.[1] Despite their popularity, managed account products have no benchmark or value estimation framework.

Managed accounts are frequently compared with target date funds or other professionally managed investment solutions. This approach has merits, but the comparisons often fail to consider the difference between the two options. Managed accounts can either be used as a qualified default investment alternative (QDIA) or be affirmatively elected by a participant. The level of participant engagement can result in differences in value to the participant. While some managed accounts products include near- and in-retirement planning features, others are more focused on accumulating assets and outperforming the applicable benchmarks. Other managed account products have been tightly integrated with recordkeeping systems, allowing for significant data sharing and automation of advice, while some are only loosely integrated.

Given the variation in products, it's easy to understand why benchmarking a managed accounts service is a difficult proposition. We will alleviate some of this confusion by formally defining a retirement managed account, then creating the framework to help consultants, advisors and plan fiduciaries evaluate the value of such a service.

A retirement managed account definition

In this paper, we will refer to a managed account offered in DC plans as a retirement managed account (RMA). This designation is intended to avoid confusion with a similar product typically offered by individual wealth or financial advisors and termed a separately managed account (SMA) or a unified managed account (UMA).

For a solution to meet our definition of an RMA it must meet all four criteria outlined below:

1. **Participant-level 3(38) protection** – A registered investment adviser (RIA) must offer the product, with the RIA acting as a fiduciary to participants. In some instances this is the RMA product provider's RIA (e.g., Financial Engines Advisors L.L.C. [Financial Engines] or Morningstar Investment Management LLC [Morningstar]) or an RIA associated with a recordkeeper or advisor (e.g., Advised Assets Group, LLC to Empower Retirement or Strategic Advisors to Fidelity).
2. **Ongoing personalized discretionary investment management** – On a periodic and continuous basis, the solution must consider attributes of the participant, such as current age, retirement age, account balance, pension and/or risk tolerance, and have the authority and automation to update the investment mix to match participant attributes. The RIA uses an algorithm to manage the accounts using the various inputs to develop a portfolio using the investments available in the retirement plan.
3. **A user experience** – An RMA must include a means for a participant to understand the data being used, a way to adjust that data and an explanation concerning the investment decisions made. This is typically done online through a proprietary user interface.
4. **Call center support** – Participants must be given the opportunity to talk to someone who can explain the investment decisions made in the RMA. This typically requires call center support personnel to be investment adviser representatives (IARs) with the RIA offering the RMA. This differs from other call center support personnel (found at nearly every recordkeeper) that helps with general issues, including website navigation and password resets.

There are some DC industry products that are similar to a managed account but fail to meet the above definition of an RMA. For example, custom models, which are models typically created by plan advisors using funds in the plan lineup, are excluded from our definition of an RMA.

In some instances, fund companies that are also recordkeepers have created their own custom model solutions and market them as though they were RMAs. However, these solutions don't come with participant-level 3(38) fiduciary protection. While these products may offer a fiduciary guarantee, they are also excluded from our definition of an RMA.

Understanding the drivers of RMA investment performance

One of the most common approaches to valuing an RMA service is to compare historical investment performance with a target date fund (or similar benchmark). While we believe all RMA providers should provide historical performance, we don't believe this is the most appropriate way to explain and account for the overall value of an RMA to an investor for this reason: The three main drivers of investment risk and, therefore, long-term performance are not directed by the RMA. Let's look at this more closely.

According to a 2010 study, there are three main drivers of investment performance:[2]

1. Equity exposure – The amount of equity exposure relative to fixed-income exposure explains about 75% of the risk of a portfolio. In an RMA, the level of market risk or equity risk is typically a byproduct of the participant population, not a recommendation by the RMA provider. For example, in some RMA products, participants may be invested more aggressively than in most target date funds if they answer a risk tolerance questionnaire aggressively or if they have a pension to provide an income floor. Over the past 10 years, a more aggressive allocation would result in better historical performance. If an RMA provides performance based on the average historical performance of RMA participants in this situation, it will compare favorably with most target date funds.

However, we don't believe RMA valuation should benefit from the fact that some participants prefer to take on more risk or have pensions that allow them to take on more risk. In such cases it's not a strategic recommendation by the RMA that results in outperformance; it's a byproduct of the participant population.

The opposite is also true. Based on participant information or preference, there are circumstances that will lead to more conservative portfolios. In those situations, average RMA performance will have underperformed over the past 10 years. Again, the performance of the RMA will reflect the participant population rather than the RMA provider's strategies.

2. **Investment selection** – The choice of an investment product to fulfill the desired asset class exposure explains about 12.5% of the risk of a portfolio. Typically, a DC plan offers a limited set of investment options to simplify investment choice for participants. With only one or two funds to choose from in an asset class, the RMA's opportunity to influence risk and return potential is far less of a driver of performance than the plan fiduciary's selection.

3. **Asset allocation** – The choice of asset classes within equity and fixed-income securities explains about 12.5% of the risk of a portfolio. This includes decisions about the weighting of domestic versus international equity or including Treasury inflation-protected securities (TIPS) or commodities within the portfolio. As with investment selection, the plan fiduciary, which is generally the plan sponsor or their designated consultant or adviser, decides which asset class categories to include in the fund lineup; the RMA provider can only take advantage of the investments selected by the plan fiduciary to manage risk and return potential. So asset class exposure is largely out of the hands of the RMA provider.

In short, because the major drivers of risk are largely out of the RMA's control, we don't believe RMA value should be measured by historical performance. There is some evidence that RMAs outperform target date funds, but we believe the long-run historical performance of an RMA will be generally aligned with target date fund performance.[3]

Then why should participants pay additional fees for RMAs if they won't make up the fee difference in performance? The true value of an RMA lies in three sources of value: personalization, financial planning features and ability to mitigate negative behavioral tendencies of the account holder.

A framework to estimate RMA value

A common question from plan fiduciaries is, "How can I justify the additional fee for an RMA?" To understand the value of an RMA, plan fiduciaries must understand its features and then estimate the value of those features. We assign value differently based on two factors:

- **Engaged vs. unengaged:** Some RMA features apply automatically (e.g., rebalancing investments allocation) while others may require participant interaction (e.g., tax-efficient drawdown).4 Automated features have the same value for all participants; those that require participant engagement have value only for those who are engaged.
- **Proximity to retirement:** For features with different values depending on the life stage of the participant (e.g., a drawdown strategy is more helpful for a participant closer to retirement) we propose differentiated values based on proximity to retirement (identified by age).

To compare features and the value of an RMA to fees, we used an alpha-equivalent measure. For example, if an RMA participant avoids negative investment behavior that would have otherwise cost them 50 bps in returns per year, we count it as 50 bps of excess returns, or alpha equivalent.

We have created a list of eight features found in RMAs — as well as a proposed way to value each one by life stage and engagement versus automation.

1. Personalized investment allocation

One key value proposition of an RMA is the ability to create a personalized investment allocation reflecting the participant's unique characteristics. Every RMA has its own approach to personalization. The most common strategies are a risk tolerance-risk preference approach, a financial situation approach or some combination of the two. For example, Financial Engines largely relies on a combination of outside assets, company stock and risk tolerance. In contrast, Morningstar Investment Management relies on the participant's financial situation, with some adjustment for risk tolerance.

Under a risk management approach, participants must complete a questionnaire to establish risk tolerance. Therefore only engaged participants benefit; unengaged participants' allocations are not personalized beyond age. Approaches that rely on the financial situation of the participant can be valuable for both the engaged and the unengaged depending on how much information is made available from the recordkeeper. Salary, pension benefits, contribution rate and company stock allocations tend to be some of the most useful data points to determine a personalized allocation, but their availability varies not only by plan sponsor and recordkeeper but by recordkeeper integration with the managed accounts provider. If such data points are provided automatically, both the unengaged and engaged may derive significant value.

Some have argued the financial situation approach doesn't add value for the unengaged because the RMA may be missing data. David Blanchett studied this argument using surveys of consumer finance data and found that while getting additional data does improve personalization, using defaulted data provided by the recordkeeper results in a better fit than an age-only approach (e.g., target date funds).[5]

We assume plan fiduciaries agree with the personalization approach of the RMA, and therefore ideal personalized allocation can be measured by the RMA allocation. As a result, the RMA allocation is the benchmark, and the greater the disparity between the target date fund and the RMA, the greater the value of the personalized allocation.[5]

ESTIMATING VALUE:

Risk tolerance-based approach to personalization

We assumed no value for the unengaged since a response to a risk tolerance questionnaire was required and would not be completed by an unengaged participant. For the engaged, we assumed a moderate risk preference would result in an RMA allocation aligned with a target date allocation.

For other risk preference levels, we used Morningstar target date index weights by age, shown in the table below, and determined the difference between either aggressive or conservative and the moderate equity allocation benchmark. Finally, to reach an average value for each age, we used ICI data (Investment Company Institute) to assume that 33% of participants would prefer more risk (aligned in our assumptions with an aggressive target date fund allocation) and 20% would prefer less risk (aligned with a conservative target date allocation). The resulting value calculations follow.[6]

Morningstar target date index weights

AGE	35	50	65
Aggressive equity allocation	95%	81%	50%
Moderate equity allocation	90%	67%	41%
Conservative equity allocation	80%	52%	31%

Values: risk tolerance approach

AGE	35	50	65
Engaged	5	8	5
Unengaged	0	0	0

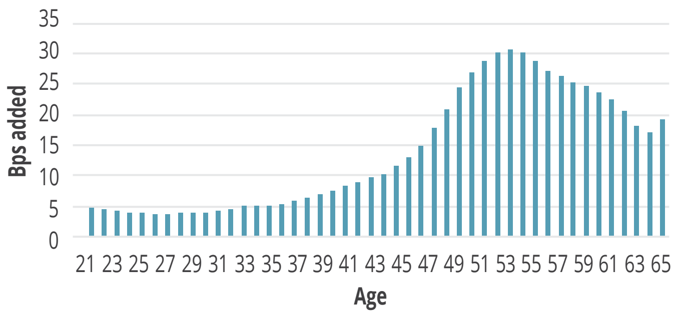
Age 35 value = (.95 - .90)(.33) + (.90 - .90)(.45) + (.95-.80)(.20) = .0465 (5 bps)
Age 50 value = (.81 - .67)(.33) + (.67 - .67)(.45) + (.67-.52)(.20) = .0762 (8 bps)
Age 65 value = (.50 - .41)(.33) + (.41 - .41)(.45) + (.41-.31) = .0497 (5 bps)

ESTIMATING VALUE:

Financial situation-based approach to personalization

To estimate the value of a financial situation approach as proposed by the Research Foundation of the CFA Institute implemented by Morningstar Investment Management, we used participant information from our recordkeeping system and compared the proposed RMA allocation to a moderate target date index.[7] We analyzed 7,764 participants and applied the utility function suggested by David Blanchet to calculate the value add of a personalized investment strategy relative to a target date fund.[5]

Value of RMA personalization (unengaged)



Engaged participants who provide more financial information will increase the level of personalization and therefore receive more personalized allocations through the RMA. Given the number of data points that can be added and the effect those data points can have on personalization, we used a simple estimate of a 10% relative increase in value to the engaged participant.

Financial situation approach

AGE	30	50	65
Engaged	6	30	22
Unengaged	5	27	20

2. Savings rate advice

Increasing contributions has great impact on enhancing retirement readiness. Several studies have looked at the positive effect an RMA has on savings rates. A study from 2007 to 2014 by Fidelity found that RMA participants are twice as likely to increase their contribution rates.[8] Financial Engines has found that participants in an RMA contribute 7.5% versus target date funds holders, who contribute only 4.4%, or do-it-yourself investors, who contribute 6.6%.[9] Interestingly, increased retirement contributions aren't limited to engaged participants. A Morningstar Investment Management study found that participants who have been enrolled into RMAs by default also have higher contribution rates compared to participants in other default investment options.[10]

We believe enhanced participant communication associated with RMA products are the driver of higher contribution rates. These enhanced communications and engagement strategies typically include recurring reports on progress toward goals and a call center that can explain to participants the benefits of increased savings rates.

ESTIMATING VALUE:

Savings rate advice

The Morningstar Investment Management study found that unengaged participants in managed accounts contribute 30 bps more; we therefore assigned a value of 30 bps for additional savings of unengaged 35- and 50-year-olds. For engaged participants, we used our findings that participants contribute 80 bps more and assign 80 bps in additional value for engaged participants. Since the 65-year-old was our retired case, we assigned no additional value as retired participants no longer contribute to retirement plans.

Savings rate increase

AGE	30	50	65
Engaged	80	80	80
Unengaged	30	30	0

3. Roth vs. pretax advice

Some RMA products include the ability to optimize the pretax-versus-Roth savings decision, which can be beneficial for participants. Pretax contributions are overwhelmingly the preferred contribution type. Today, 87% of contributions in DC plans are made in pretax dollars.[11]

Our own research indicates that while younger participants earning more than the earned income tax credit income level would benefit the most from Roth contributions, all others outside the highest income earners benefit most from pretax contributions.[12] As the default contribution type is overwhelmingly pretax, we assume only those who would benefit from Roth contributions (engaged, younger participants) would derive value from this feature.

Recently, some recordkeepers have introduced the ability to recommend the optimal contribution type (pretax or Roth) and implement it automatically. As a result, depending on the level of integration, this benefit could apply to the unengaged participant. Given the limited availability of this feature, we have assumed no additional value for the unengaged in our value determination. However, plan fiduciaries should evaluate integration on a case-by-case basis.

ESTIMATING VALUE:

Roth vs. pretax advice

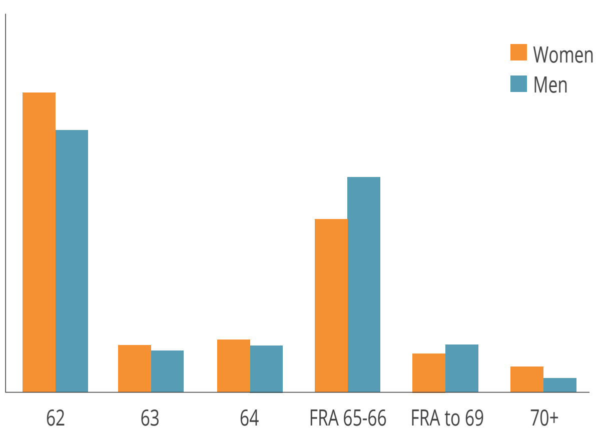
We assumed no value for the unengaged since a response to When looking at younger, engaged participants, we used average earnings based on Bureau of Labor Statistics 2016 Data.[13] We find that tax rates at younger ages are lower than retirement tax rates. We assumed all participants were contributing pretax and then calculated the taxes saved over their lifetime and converted that into alpha. (See Appendix B for full calculation details).

AGE	30	50	65
Engaged	6	0	0
Unengaged	0	0	0

4. Social Security claiming advice

Social Security is a significant source of income for many retirees. Unfortunately, many retires fail to take full advantage of Social Security because they claim it before their full retirement date. The Center for Retirement Research at Boston College found 48% of women and 42% of men claim Social Security at age 62, which results in a significant decrease in expected lifetime value.[14]

Age distribution of individuals claiming retired-worker benefits 2013*



FRA = full retirement age
*http://crr.bc.edu/wp-content/uploads/2015/05/IB_15-8.pdf page 2

Some RMA providers help individuals claim Social Security benefits, and participants who claim Social Security benefits at a more optimal age can reap significant advantages. For most, that is no earlier than full retirement age. For others, particularly in situations in which a spouse is younger and dependent on their partner's earnings, delaying claiming Social Security benefits until age 70 results in the most meaningful advantage for the household.

Social Security claiming guidance is not an automatic feature of RMAs, thus we only apply the advantage to engaged participants. Also, Social Security claiming is only applicable to those close to retirement, so we've assigned a decreasing value based on a participa nt's years to retirement.

ESTIMATING VALUE:

Social Security claiming advice

We used the distribution of claiming ages above and then calculated the average difference between the lifetime value of claiming at these ages and at full retirement age. We then converted the average lifetime benefit into an alpha equivalent (see Appendix C for details).

AGE	35	50	65
Engaged	0	33	67
Unengaged	0	0	0

5. Dynamic withdrawal advice

As participants near retirement, they must also decide how much money they can withdraw from their accounts to generate sufficient monthly income. A common withdrawal strategy is the 4% rule, which suggests taking out 4% of one's initial account balance each year in retirement. While this rule tends to generate an income stream for life, it may not be the optimal withdrawal strategy. Studies have suggested a dynamic withdrawal strategy that updates the withdrawal amount based on life expectancy and market movements can produce more income.[15, 16]

RMAs take different approaches to withdrawal strategy advice. Some are accumulation focused with no advice on withdrawals, some stick to the 4% rule and others use a dynamic withdrawal strategy. We used the 4% rule for the purposes of this analysis; therefore, we assigned no additional value to RMAs that use this rule, and we assigned value only to RMAs that offer a dynamic withdrawal strategy.

If a participant has all of their assets within the retirement plan at the recordkeeper, it is possible to automate the withdrawal strategy. However, unengaged participants generally don't provide their recordkeepers with information about other assets, so the value of this feature was only applied to engaged participants. This feature also applies only to those at retirement, so we've assigned an increasing value as retirement approaches.

ESTIMATING VALUE:

Dynamic withdrawal advice

Using the estimate from the Blanchett, Kowara and Chen study, we assigned a value estimate of 75 basis points.

AGE	35	50	65
Engaged	0	38	75
Unengaged	0	0	0

6. Personalized allocations to guaranteed retirement income products

As DC plans continue to replace defined benefit (DB) plans, participants may be looking for other guaranteed sources of lifetime income. In a survey 79% of participants indicated interest in a lifetime income option.[17] The Department of Labor (DOL) has issued a number of briefs in support of guaranteed income products.[18]

Yet plan sponsors have been slow to adopt these products, often citing concerns that participants will not use them correctly. Some RMA products alleviate this concern by incorporating personalized allocations to guaranteed retirement income products as participants approach retirement. The most common approach is to include an allocation to a guaranteed lifetime withdrawal benefit (GLWB) product if it is available as part of a plan's investment lineup.

Guaranteed retirement income products can provide both an income floor and a lifetime stream of income, which can result in significant benefits. Some RMA products automatically allocate to guaranteed retirement income products, so we assumed both engaged and unengaged participants might ultimately benefit. However, plan fiduciaries should understand the approach used by their RMA. Not all allocations are automated, and some guaranteed retirement income products, such as fixed annuities, can't be used as part of a default because of their lack of liquidity.

Guaranteed retirement income products are most valuable to those in need of retirement income, so we assigned an increasing value as participants approach retirement.

ESTIMATING VALUE:

Personalized allocations to a GLWB

With regard to personalized allocations to a GLWB, we used a Morningstar Investment Management study, "Alpha, Beta, and Now...Gamma," that found a GLWB can add 10 bps of value to a 65-year-old.[19]

AGE	35	50	65
Engaged	0	5	10
Unengaged	0	5	10

7. Tax-efficient withdrawal strategy

An RMA also offers the ability to determine the order of withdrawing money from different accounts in retirement. A withdrawal strategy that optimizes the tax benefits of such accounts by minimizing retirement tax liabilities and maximizing the length of tax deferral can extend the life of portfolios in the drawdown phase.

It may be possible to automate this feature, but we are not aware of any RMAs that automate withdrawal decisions across all household accounts. As a result, we only assigned value to this feature to engaged participants. We also assigned an increasing value to this feature as households approached retirement.

ESTIMATING VALUE:

Withdrawal strategy advice

We again used the "Alpha, Beta, and Now...Gamma" study by Morningstar Investment Management, referenced above, in our analysis of withdrawal strategy advice.

AGE	35	50	65
Engaged	0	12	23
Unengaged	0	0	0

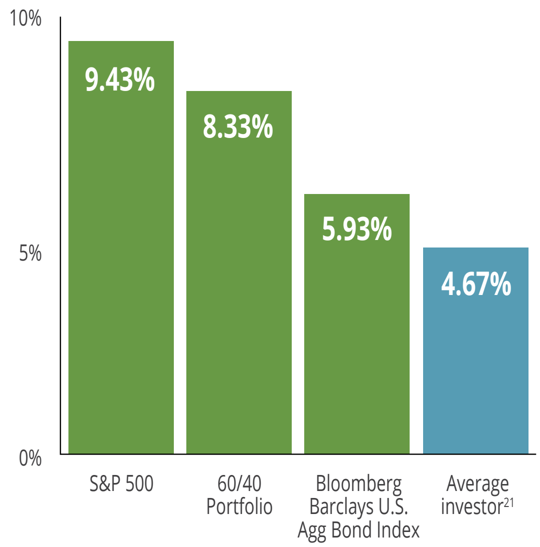
8. Mitigating negative behavioral tendencies

Studies show that investors who have a financial advisor

tend to be better prepared for retirement.[17, 20] According to one study, investors in DC plans over the past 20 years have underperformed the S&P 500, a 60% equity/40% bond portfolio and an aggregate bond index by a considerable margin (at least 1.26%).[21]

Morningstar also studied this phenomenon by comparing returns of funds with returns of investors in those funds, again finding that investors tend to underperform.[22] These studies indicate poor timing of investment decisions and asset allocation decisions by participants cost them a considerable (at least 1.26%) amount in lost investment returns.

20-year returns[23]

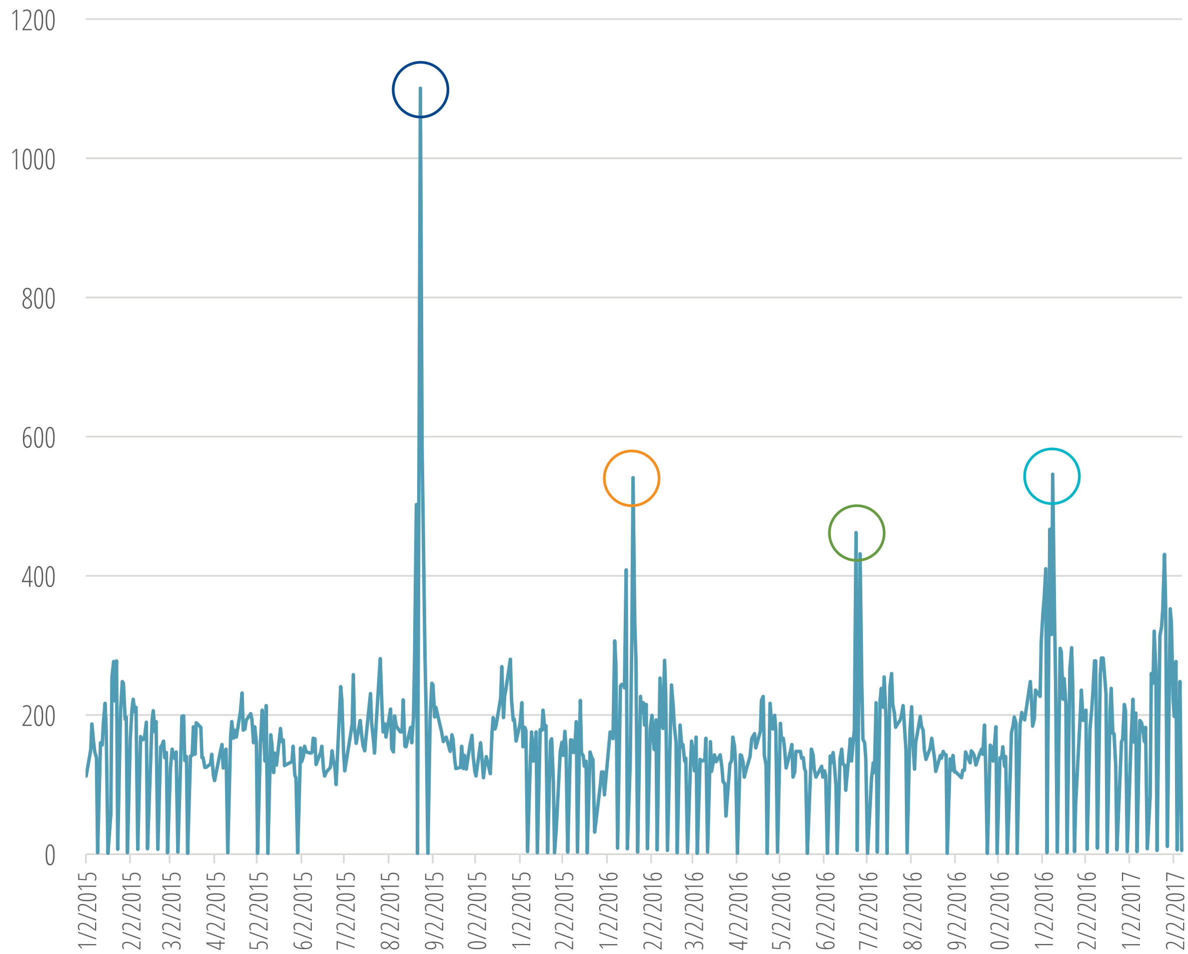


Past performace is not a guarantee or prediction of future results.

Interestingly, investors in professionally managed solutions such as balanced funds are just as prone to this effect as investors in single-asset-class funds. Two additional studies have found that participants in target date funds tend to misuse them by also investing in other funds at an increasing rate as retirement approaches, resulting in a similar level of underperformance. [24]

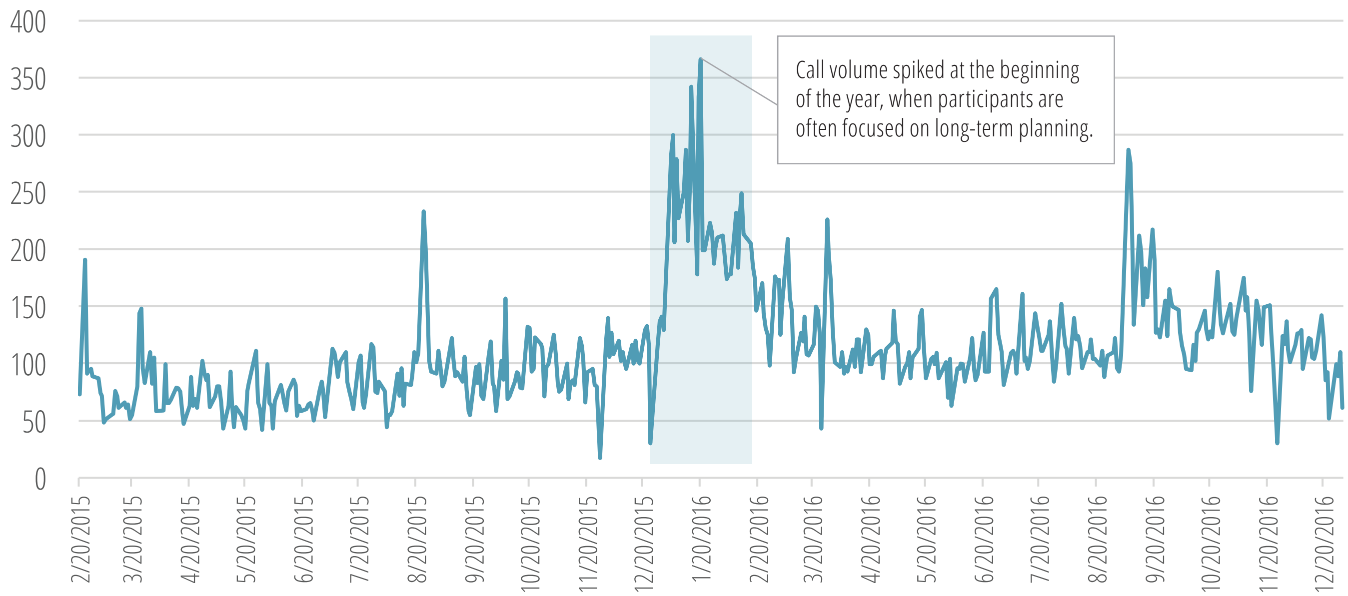
Are RMA investors less prone to these behaviors? Evidence from Empower call center data shows they are. We looked at the volume of inbound calls to our participant call center over two years from January 2015 to February 2017 for participants requesting allocation changes and compared this to the volume of inbound calls to the RMA participant call center. For non-RMA investors, call volume spiked in reaction to events — both political and financial — that were associated with a market pullback. These events, from the August 24, 2015, “flash crash” to the November 2016 U.S. election, resulted in losses to the S&P 500® of 4% to 11%. But calls to the RMA call center did not show similar patterns. In fact, call volume to the RMA center spiked at the beginning of the year, when participants are often focused on long-term planning. The two charts on the following pages demonstrate this contrast in behaviors.

Number of inbound calls — allocation changes (non-RMA participants)



DATE	EVENT	S&P 500	COLOR CODE
August 24, 2015	"Flash crash"	-11%	
January 20, 2016	China/commodities crash	-8% (1 week)	
June 6, 2016	"Brexit"	-5.3%	
November 8, 2016	U.S. election	-4% (after hours)	

Participant Advisory Services call center volume



Our call center data indicates that RMA participants are not prone to making the same timing mistakes as their non-RMA counterparts, and most RMA products have a long-term focus that helps participants avoid these timing mistakes.

ESTIMATING VALUE:

Mitigating negative behaviors (avoiding poor timing decisions)

We estimated the value of this feature using the Morningstar study on cash flow timing as we consider it one of the broadest studies of its kind and a relatively conservative estimate that isolates poor timing decisions. We assumed all engaged participants will experience the average difference in investment performance and valued it at 60 bps. We also assumed unengaged participants will experience the difference in investment performance that corresponds to the percentage of people misusing target date funds. For unengaged participants, we assumed 20, 30 and 40 bps of value for participants at ages 35, 50 and 65, respectively.

AGE	35	50	65
Engaged	60	60	60
Unengaged	20	30	40

9. In-person (one-on-one) support

The final feature we evaluated was the benefit of in-person support for RMA participants. Several RMA providers offer an IAR who works on location with participants. IARs can help participants decide if an RMA is right for them, aid in the collection of personal information to improve the accuracy of RMA inputs and help explain the advice given by the RMA.

As we had already valued many of the services related to financial planning as noted above, we did not assign any additional value to in-person support with regard to those features. We consider the additional value of this service to lie in the increased engagement by participants. We believe engaged participants derive more value from RMA services, so increasing engagement increases the number of participants receiving the full benefit of RMA services.

To estimate this lift in engagement, we compared the adoption rate of participants in opt-in RMA plans that include IAR support and other engagement strategies with plans in which this level of support is not available or offered. Plans that offer engagement strategies such as in-person support tend to see average adoption rates of about 15% compared with 6% for those that don't.[25]

Summary of engaged value add of RMA

AGE	35	50	65
1. Personalized investment allocation	6	30	22
2. Savings rate advice	80	80	0
3. Roth vs. pretax	6	0	0
4. Social Security claiming strategy	0	33	67
5. Dynamic withdrawal	0	38	75
6. Guaranteed retirement income allocation	0	5	10
7. Tax-efficient withdrawal	0	12	23
8. Mitigating negative behavioral tendencies	60	60	60
Total value	**152 bps**	**258 bps**	**257 bps**

Summary of unengaged value add of RMA

AGE	35	50	65
1. Personalized investment allocation	5	27	20
2. Savings rate advice	30	30	0
3. Roth vs. pretax	0	0	0
4. Social Security claiming strategy	0	0	0
5. Dynamic withdrawal	0	0	0
6. Guaranteed retirement income allocation	0	5	10
7. Tax-efficient withdrawal	0	0	0
8. Mitigating negative behavioral tendencies	20	30	40
Total value	**55 bps**	**92 bps**	**70 bps**

Conclusion

RMA services can be more complex than certain traditional professionally managed investment products such as balanced funds or target date funds — and, as a result, measuring their value is equally complex. While historical performance has frequently been used to value RMAs, we found that valuing each potential feature of an RMA leads to a more accurate value assessment. We derived a value estimate of 55.0 to 92.0 bps for unengaged participants and 150.5 to 265.0 bps for engaged participants.

RMAs differ significantly from other default investment options like target date funds or balanced funds in three key areas: more personalized investment management, financial planning and the ability to mitigate negative behavioral tendencies. All these features have value. Assuming the value exceeds the cost of the service, RMAs should be considered as default investment options relative to target date funds.

We recognize there may be differences of opinion regarding the value of each service on a plan-by-plan basis, but we believe our approach will serve as a guide for all plan fiduciaries, advisors and consultants as they create their own estimates of value for these services. Recordkeepers and RMA providers can facilitate value estimates by clearly articulating the features in their RMA products and providing plan-level analytics.

We also suggest RMA providers work with recordkeepers to close the gap between the value of engaged and unengaged participants by increasing the integration and automation of their services with recordkeeping services. Given the increase in value, we believe plan sponsors and recordkeepers should make every attempt to engage participants to get the full value of RMA services. RMA providers may be well served by focusing on increasing the number of financial planning services they offer. In particular, focusing on financial planning services that benefit younger workers — such as features offered within today's financial wellness products — can help close the value-add gap between younger and older workers.

Finally, it's time to revisit the term managed accounts. Given the services offered by most RMAs today, as well as the confusion with other products called managed accounts, we suggest the market consider an alternate product category name that signifies the full potential value of RMAs.

There is no guarantee provided by any party that participation in any of the Advisory Services will result in a profit or that the related account will outperform a self-managed portfolio invested without assistance.

Appendix

Appendix A - Age-based adjustments

For all the below features that have a different value by age, we evaluated three age groups: 35, 50 and 65. We used age 50 as the starting age at which in retirement features begin to add value because we see a significant increase in retirement planning at age 50 based on Empower call center data.

For all features, we estimated the value of the feature at retirement (age 65). We then applied a 50% discount to that value to calculate the value at age 50, and we applied a 100% discount (e.g., no value) at age 35.

AGE	DISCOUNT
35	100%
50	50%
65	0%

Appendix B - Roth vs. pretax value estimate

We assumed the base contribution type to be pretax as data indicates about 87% of contributions in DC plans are made on a pretax basis. Data from the Bureau of Labor Statistics indicates that salaries tend to grow at a rate different from inflation.

While younger participants experience growth rates above inflation, older participants experience no real or negative real growth in wages. Thus, maximum tax rates change over time, with younger participants experiencing the lowest maximum tax rate and participants around the age of 55 experiencing the highest tax rate. We used an 80% salary replacement rate to estimate retirement income need. We then calculated the difference in tax paid between an all-pretax contribution strategy and a strategy that makes Roth contributions.

Finally, we converted the taxes paid into a bps equivalent and averaged the results. All numbers below are adjusted for inflation.

Total taxes saved = $2,925
Basis point equivalent = 6 bps

AGE	TAXABLE EARNINGS	TAX RATE	TAX RATE AT RETIREMENT	CONTRIBUTION RATE	TAXES SAVED
20	$26,624	12%	22%	10%	$266
21	$28,090	12%	22%	10%	$281
22	$29,557	12%	22%	10%	$296
23	$31,023	12%	22%	10%	$310
24	$32,490	12%	22%	10%	$325
25	$33,956	12%	22%	10%	$340
26	$35,422	12%	22%	10%	$354
27	$36,889	12%	22%	10%	$369
28	$38,355	12%	22%	10%	$384
29	$39,822	22%	22%	10%	—
65	$54,931	22%	22%	10%	0
Retirement	$43,945	22%	22%		—
				Taxes saved	**$2,925**

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Appendix C - Social Security claiming value estimate

We used data from the Boston College study to establish a distribution of collection ages.14 We then estimated the Social Security payment for a couple, one person earning $50,000 and the other $25,000. We assumed both the primary earner and spouse are the same age and have a life expectancy of 85. We compared the difference in lifetime value-claiming data versus claiming at full Social Security retirement age. We then converted the lifetime difference into alpha.

The weighted average difference in lifetime value is $31,606. The return difference required in retirement to make up for $31,606 at retirement is 67 bps.

	ANNUAL SOCIAL SECURITY PAYMENT	LIFETIME VALUE	DIFFERENCE IN LIFETIME VALUE VS FRA	PERCENT CLAIMING AT AGE
Collect at 62	$21,432	$514,296	$27,586.44	42%
Collect at 63	$23,496	$540,316	$2,776.34	7%
Collect at 64	$25,560	$562,210	$1,243.76	7%
Collect at 65 (FRA)	$27,624	$579,978	—	—

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