REBALANCE AND REALLOCATION BEHAVIOR PATTERNS WITHIN RETIREMENT
PLANS

by

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ABSTRACT

QUENTIN RASHAUN GRAHAM. Rebalance and Reallocation Behavior Patterns Within
Retirement Savings Plans. (Under the direction of DR. CRAIG DEPKEN, II)

I evaluate the determinants that influence the likelihood that an individual rebalances the

amounts held in their retirement plan or reallocate the investments they use for future

contributions. I do this by analyzing quarterly administrative records of a balanced panel of

182,227 retirement plan participants that actively contributed to their retirement account over the

course of 2009:Q2 – 2015:Q4. I find that defaulters are less likely to rebalance or reallocate and

that advice seekers are more likely to do both. While I see very few instances of rebalancing, I

conclude that marital status, investing solely in one plan offered by your institution, and a

measure of personal rate of return in excess of the market, are the most influential. In reference

to reallocation, I see that most of the variables have a statistically significant impact, with the

personal rate of return measure having the largest actual influence on likelihood. This remains

true even as I focus on a subset of defaulters and the investors that seek advice. Getting investors

to utilize rebalancing and reallocating as portfolio management tools requires an understanding of

the determinants of each practice, the centerpiece of this research. The evidence suggests that

there are a few factors that can inform advisers and retirement administrators on who to target for

rebalancing and reallocating and how to incentivize these strategies. Future research will be

required to understand the value of rebalancing and reallocating and whether or not the outcomes

of these activities benefit the participants.

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I. INTRODUCTION

The amount of money that an individual has in retirement depends on a combination of factors, including investments, returns, and the length of time over which they saved money. Anecdotally, there is awareness of a retirement savings crisis in the country: American workers are not saving enough to cover their post-retirement expenses. Even if people are saving, research shows that individuals are not sufficiently financially literate to utilize the portfolio management tools available to them. Two such tools are rebalancing and reallocating a retirement account. Each tool can be vitally important to retirement portfolio health. Why reallocate and rebalance? And what factors, if any, impact the decision to do either?

Reallocating an account involves changing the investments included in a portfolio. Investment menus vary by provider and by institution and are determined by the employer benefits manager. A basic portfolio is comprised of a combination of bonds and equities, with bonds being relatively lower risk in comparison to equities. Reallocation is important for portfolio management because factors that influence retirement choices will change over time. For example, as individuals approach retirement age, they tend to shift from riskier assets, like equities, to safer investments, like bonds. A reallocation in the period just prior to retirement can reduces an investor's exposure to future shocks, a necessary buffer from risk as their time-horizon for loss recover approaches zero.

Changing the investments used for future contributions is a forward-looking way to manage a portfolio. Rebalancing is a way to shuffle the balances held within investments already in a portfolio. Balances shift based on the funds that are held within the retirement account and returns. Fixed retirement investment accounts can lead investors into unexpected and unwanted portfolio compositions. For example, if an individual experiences unprecedented returns on the equity portion of their portfolio, then the balance of their overall portfolio will have shifted more towards the riskier assets held int eh account and away from the bond or less risky portion.

Rebalancing allows an individual to mange risk and exposure by shifting their already accrued contributions and returns (referred to as assets) into appropriate equity and bond baskets, based on their personal collection of savings considerations.

Both rebalancing and reallocating are key retirement portfolio management tools and they should be used by investors as their needs change throughout their investing lives. Heterogeneity in investing needs means that when and how participants decide to rebalance and reallocate varies based on many factors. To examine the reasons in greater detail, I gathered data on a balanced panel of participants at a financial services company for 27 quarters [2009:Q2 – 2015:Q4]. I relate demographics and investor characteristics to analyze portfolio management via these two tools.

Results are presented for an overall sample of 182,227 participants, but then also split by two retirement portfolio choices available to most investors: defaulting and advising. These choices presumably have disparate effects on the decision to rebalance or reallocate. Defaulting into a fund means that an individual decided against making an active choice as to which funds they contribute to in their retirement plan. Typically, defaulters are put into an age-appropriate target-date fund that divides contributions into a formula-based combination of equities and bonds. Those combinations change over time, as the investor moves closer to the retirement age.

Seeking advice through one of various advising tools implies that an individual wants professional input in regards to their retirement portfolio choices. Defaulting leads us to think that an individual is less engaged and less likely to rebalance or reallocate overall. Seeking advice would seem to have the opposite effect: an individual would likely be looking to make a change to their portfolio based on professional advice. I look at factors that influence rebalancing and reallocating for the entire sample and then consider if being a defaulter or having an advising session enhances or diminishes the impact of these factors.

Overall, I find that individuals who rebalance or reallocate tend to hold more funds in their retirement accounts, contribute more to their retirement portfolios, have more assets, are

older, and are slightly more likely to be male. I also find that a large proportion of advice seekers reallocate specifically and that defaulters are less likely to engage in either activity. The following sections include a discussion of the specific research question, a look at the existing literature on rebalancing and reallocating, a discussion of the research methods and data, summary statistics, followed by results and conclusions.

II. RESEARCH QUESTION

The investment vehicles that you choose and your asset mix are two of the most critical components to achieving your financial goals in retirement. As such, rebalancing and reallocating portfolios as a form of retirement fund management should be encouraged by firms and advisors. However, the behavior within this financial services company's population indicates that there is a higher propensity to select funds once and wait patiently, what's commonly referred to as "set it and forget it." Investors that choose to rebalance and/or reallocate may have some common factors attributable to their decision to do so. That's the question for this research: what are the determinants behind the choice to rebalance and/or reallocate a retirement account? From there, the research takes an extra step by asking if those determinants are enhanced or muted by two key retirement investor choices: defaulting and advising.

III. EXISTING LITERATURE

Not much literature exists currently that evaluates rebalancing and reallocating behavior patterns in a retirement setting. However, much has been written about the stickiness of initial selections in retirement plans and the overall financial literacy and financial capability of the average retirement saver. This research indicates that bias and a lack of financial literacy limit the ability of investors to make complex decisions in regards to asset mix, which involves both mix of assets held and mix of future contributions [rebalancing and reallocating]. Research also shows some demographic and investment menu implications in regards to how people save for retirement.

Samuelson and Zeckhauser documented in 1988 what they deemed to be "status quo bias", which is a propensity to stick with the status quo, i.e. "doing nothing or maintaining one's current or previous decision" (Samuelson & Zeckhauser, 1988). In our sample, I see specifically that there are low instances of rebalancing over the course of the 27 quarters in the panel. This bias was observed by the researchers using data on TIAA participants and is a result that I can support, based solely on the lack of rebalancing that I encounter. In line with status quo bias, Madrian and Shea look at the impact of automatic enrollment on 401(k) management. They show that "defaulting" via auto-enrollment, as they define as a negative election or non-decision, creates aversion to changes in both default contribution rates and fund allocations (Madrian & Shea, 2001). They find that retirement plan participants find the default funds and contributions as a form of investment advice, a claim supported also by (Mitchell & Utkus, 2012), which specifically analyzes defaults as a form of "simplified advice" for complicated financial decisions.

Directly associated with research on the impact of complexities of financial decisions and the necessity of simplified advice implied through defaults, (Lusardi & Mitchell, Financial Literacy and Retirement Preparedness: Evidence and Implications for Financial Education, 2007)

also document that there are serious consequences in regards to retirement savings that stem from a lack of financial literacy. This is substantiated by their ongoing research on the topic, including follow-up work on financial literacy as a form of human capital (Lusardi & Mitchell, The Economic Importance of Financial Literacy: Theory and Evidence, 2014). In this work, Lusardi and Mitchell also identify important differences within age groups, noting that older investors are more likely to assume higher financial knowledge abilities than evidenced by their responses to a financial education assessment, a result that emphasizes age as an important factor for financial literacy and investing considerations. Additional research on the importance of financial education is summarized in (Fernandes, Lynch Jr., & Netemeyer, 2014). Again, the focus is on financial illiteracy and the resulting implications on household complex financial decision-making, with the results showing just how vital financial knowledge is for the average household. This underscores the importance of advice and potentially web access in regards to wealth accumulation and retirement savings, which are both factors that I analyze as a determinant for rebalancing and reallocating.

The importance of financial knowledge is also examined by Benartzi and Thaler, with their work focusing on heuristics and biases observed in retirement planning and investing. They evaluate contribution heuristics like the one that indicates you should save to get the maximum employee match in your retirement plan, as well as, asset balance heuristics like the one mentioned by Harry Markowitz in Zweig's work. Specifically, this work highlights the "naïve diversification" approach which Markowitz identified as his personal strategy within his TIAA[-CREF] retirement plan (Zweig, 1998), which is explained as an equal spread of investment contributions over the span of the investor's entire menu options. This research brings to bear the implications of the number of investments a contributor chooses as a potential source of diversification, a point also referenced in research by (Morrin, Broniarczyk, Inman, & Broussard, 2008) . Ultimately, Benartzi and Thaler come to a conclusion very similar to that of Lusardi and others, in that financial decision-making is often quite complicated, leading to passivity, a lack of

rebalancing, no shifts in allocations, and overall what they characterized as naïve diversification (Benartzi & Thaler, 2007). They argue for additional help on the part of employers, also relating to the newer and more robust advice offerings of companies like TIAA and the increase in default options and automatic enrollment .

Robust literature also exists on the investing and savings decisions of individuals based on demographic differences. Analysis of the differences between men and women are documented throughout research conducted by (Sunden & Surette, 1998), (Bajtelsmit & VanDerhei, 1997), and (Hinz, McCarthy, & Turner, 1997), the latter two coming from a book released by the Pension Research Council in 1997 and focusing on conservatism in female portfolios, in comparison to male counterparts. Sunden and Surette specifically incorporate additional demographic information outside of gender, of most importance marital status, identifying the importance of these supplementary variables in the overall analysis of gender differences.

Most of the literature on retirement savings focuses on lack of activity, defaulting, a lack of financial literacy, and demographic implications on savings overall. The existing analysis also suffers from data restraints, with many researchers relying on aggregated data or survey responses. This research enhances previous analysis on topics in regards to portfolio management by analyzing specific demographics and portfolio characteristics and their impacts specifically on rebalancing and reallocating. This type of analysis is still in its nascent stages. I shift the focus onto individual decision-making, instead of analyzing the data on a macro level and have the data to measure specific impacts on probabilities.

IV. RESEARCH METHODS AND DATA

The initial focus of this research is centered on analysis of the data, in order to highlight any trends that are present. While the patterns found in the summary statistic analysis are illuminating, they do not tell us everything that I am interested in learning. Therefore, I then transition to multivariate analysis to evaluate the significance of the rebalance and reallocation determinants, utilizing linear regression models. In each case, I will evaluate impact and then delve into whether defaulting and seeking advice enhance or diminish those impacts.

The data sample used in this research project is a representative sample of 182,227 retirement plan participants who actively contributed to their accounts from 2009:Q2 to 2015:Q4 at the financial services company. Active contributor implies that the individual paid money to the company to invest in their retirement portfolio, comprised of a primary plan, a supplemental plan, or a combination of the two, as stated in their employer's benefits plan.

One area of focus in this research is the impact of demographic characteristics on the likelihood that the individual will rebalance or reallocate their portfolio. In the data, I observe gender, age, and marital status for each person, in each quarter. The data include plan-specific details about investors, specifically whether or not they have web access or web login capabilities and the number of funds that they contribute to in their retirement plan. In addition, the data contain contribution and asset deciles by quarter as a measure of how much an individual brings home in pay and as a proxy for wealth accumulation. At the participant level, I identify if the investor sought advice in each quarter and whether the person defaulted into the preselected investment vehicle set forth by their plan administrator. Finally, as a measure of overall market conditions and their potential impact on portfolio management decisions, I include personal rate of return (PRR) by quarter, the quarterly S&P500 returns, and the difference between the two, by quarter.

V. SUMMARY STATISTICS

To start the analysis, I look at the temporal impacts, if any, on rebalancing and reallocating. Table 1 shows the percentages for each type of portfolio change, by year and by quarter. The instances of rebalancing are significantly lower than those of reallocating, with a peak of 937 rebalances in 2010. In contrast, the maximum number of reallocations was 492,855 in 2012. In 2014 there were minimums of rebalancing and reallocating respectively, which may indicate other factors that occurred that year impacted portfolio management by the company's participants. The time-varying factors that influence rebalancing and reallocating impact them in differing ways, as evidenced further by an evaluation of the subset of individuals that utilize these management tools while also defaulting or seeking advice. For rebalances, the maximum percentage for defaulters was 14.81% in 2014 and the maximum for those that seek advice was 7.41%, which also occurred in 2014. For reallocators, the maximums were 15.07% for defaulters in 2011 and 14.39% for advice-seekers in 2014, matching the same statistic for rebalances. There may have also been some external factors that increased advice-seeking in 2014, such as a prolonged period of low returns, which is something that I consider in the analysis using the S&P500 measure.

The next set of tables evaluate comparisons between the variables of interest and the effect of defaulting and advising, expressed through percentage changes. Table 2 reflects summary statistics for our main variables across all year and quarter combinations. Overall, rebalancers and reallocators are less likely to be defaulters. Overwhelmingly, the fund selected as the default for most plans are the age-appropriate target-date fund, usually referred to as a lifecycle fund.

With respect to engagement and financial literacy, defaulters are more likely to be less engaged with their retirement provider and less interested in active management of their retirement portfolios. Auto-diversification and annual automatic allocation updates are built into

the target-date funds, which are the frequently chosen default fund. This may help explain the lower level of of activity by defaulters, as they feel less inclined to act because of these automated activities.

With respect to advice seeking, the exact opposite impact on rebalance and reallocation averages is observed. Advising is a crucial component of an individual's investing journey, as research has shown that low financial literacy limits most portfolio management activities. Individuals who seek advice in a given quarter are more likely to rebalance or reallocate in that quarter. Seeking advice indicates some interest in how the individual's portfolio is trending and gives the company and advisers a chance to educate the individual on rebalancing and reallocating their portfolio.

Looking at averages in Table 2, I see that being male increases the likelihood that an individual rebalances and/or reallocates. In Table 3, I see that defaulting reduces the likelihood of rebalancing or reallocating, for both males and females. Having sought advice reduces the likelihood of rebalancing as well. However, for both males and females, advice seeking shows an increase in the likelihood of reallocating, with females showing an even higher likelihood of reallocating after seeking advice in a that quarter [53.78% versus 51.56%]. This implies that females are more likely than males to take suggested reallocation suggestions from advising sessions.

From Table 2, older individuals are more likely to to rebalance and reallocate. As a person nears retirement, they may be more likely to rebalance or reallocate in order to reach specific retirement goals. Older individuals also have had more time to familiarize themselves with portfolio management tools. Table 4 shows that reallocation has the largest gap in percentages from the youngest group to the oldest group. The trend holds for the group of defaulters, but at lower percentages compared to the overall population. An unexpected result is that advice reverses the averages by age group, with the youngest individuals having the highest likelihood of reallocation and the oldest participants having the lowest. This result suggests that

younger individuals are much more likely to act on reallocation suggestions from advising sessions, with that effect diminishing as individuals age. This effect is interesting to consider in conjunction with the research conducted by Lusardi and Mitchell, as well as (Finke, Howe, & Huston, 2016). They find that people become more confident in their ability to make financial decisions with age, which supports apprehension on the part of older individuals seeking advice to reallocate or rebalance based on the advice given.

The same tendencies I observed for advice seeking are present when reviewing averages based on marital status. When compared to the overall sample and the subset of rebalancers, reallocators are much more likely to be married. From Table 5, for the full sample there is a slightly higher percentage who reallocate, consistent with the results in Table 2. However, single participants are slightly more likely to rebalance. Finally, being single and having had an advising session increases slightly the likelihood of reallocation relative to married individuals.

Having web access means that an investor took the time to create a login for account management with the financial services company. Web access is completely voluntary, so some individuals who lack interest in managing their accounts may not take the time to create and setup their login. From Table 2, the percentage of reallocators who have web access is higher than the full sample and subset of rebalancers. Having web access does not impact rebalancing in the full sample, but it does increase the percentage of reallocating. Looking at Table 6, only 0.03% of defaulters with web access rebalance, compared to 0.05% of defaulters without web access. In terms of reallocation, both the full sample and the sub sample of defaulters show higher percentages than the entire population with web access. The key statistic in this table, however, is that while advice with web access increases the percentage of reallocation, that percentage is actually higher in those without web access. This result is interesting because web access is required to take advantage of the company's online advising tools. Participants may be more receptive to advice given in-person or by an adviser in comparison to utilizing online tools on their own. Participants are more likely to take action on advice presented to them in-person,

based on the percentage of individuals who have no web access that reallocate in the same quarter of an advising session.

The type of plan that investors contribute to also varies when considering rebalancing and reallocation. From Table 2, an investor solely contributes to the main retirement plan for their institution, without utilizing a supplemental plan for additional retirement savings 64.6% of the time, as evidenced by the primary plan variable. Investors solely contributed to the supplemental plan, and not the main retirement plan at a lower percentage of 0.09%. Since each individual in the sample is an active contributor, the implication is that the other 34.5% of instances are contributors that invest in a combination of plans within their benefits structure. In both cases, rebalancers and reallocators are more likely to invest in multiple plans, as evidenced by the lower percentages in primary-only and supplemental-only cases versus the full sample. Table 7 shows that for individuals who invest solely in their primary plan, there is a higher likelihood of rebalancing and reallocating in every instance, compared to those that invest solely in their supplemental plan. Defaulting reduces these percentages, as I have seen in most other instances, and advice increases the likelihood. There were no supplemental-only rebalancers who defaulted or sought advice and that could be driven by the relatively low percentage of supplemental-only, active contributors that exist within the company.

Table 2 shows that the average number of funds held by each participant varies between the overall population and the individuals who rebalance or reallocate. Those who take advantage of these management tools tend to hold more funds on average, 4.3 and 4.91 funds for rebalancers and reallocators, respectively, versus 4.14 funds for the overall sample. As illustrated in Table 8, no one holding more than 40 funds rebalanced in this sample. In the full sample the most activity occurred in the 40-59 fund group. However, the defaulter and advice-seeking subsets saw the largest averages in the 20-39 fund groups: 85.91% of advice seekers holding 20-39 funds reallocate in the quarter that they receive advice, a very prominent and striking result. The percentage for the advice-seeking group with 40-59 funds is also very high at 80.95%,

showing that individuals who hold a large amount of funds are more likely to act on the advice they receive in regards to their investments.

Contributions and assets are two of the most important factors considered when evaluating retirement plan success. Assessing quarterly contributions and asset balances, I see similar results: rebalancers and reallocators contribute more and have greater holdings than those who do not conduct either activity. In the case of contributions, reallocators contribute 10.44% more [$3,434.42 versus $3,109.65] on average and rebalancers contribute 19.33% [$3,710.63 versus $3,109.65] on average. In terms of assets, reallocators hold 13.92% more money in their retirement accounts [$246,931.85 versus $216,764.10] and rebalancers 23.62% [$267,959.32 versus $216,764.10] more on average. This suggests that wealthier individuals take advantage of rebalancing and reallocating more than less wealthy investors.

Table 8 reports that defaulters show lower percentages of rebalacing and reallocating than the full sample. Those same averages are higher for advice seekers, when compared to the full sample. Table 9 shows the higher a person's contribution decile, the more likely they are to rebalance and reallocate, a linear relationship that holds for the full sample, and the subset of defaulters and advice seekers in terms of reallocation only. The same does not apply for rebalancers. For assets, Table 10 shows linear relationships between percentage frequency and decile for reallocation, but not for rebalancing. As asset decile increases, so does the likelihood of reallocating, except when considering deciles 8 – 10, which show a decrease in the trend. There is no consistent linear trend for rebalancers in the full sample, or the subset of defaulters and advice-seekers when considering asset decile.

The next set of variables in Table 2 take into consideration market conditions during the period I consider for this research. The quarterly personal rate of return tends to be higher on average for reallocators than for the overall sample, but that same measure is less for rebalancers on average than for the overall sample. Chart 1 overlays a variable that combines both rebalancing and reallocating in a quarter with a lag of personal rate of return averages. I combine

these two variables to evaluate whether investors respond to shocks in a previous quarter by rebalancing or reallocating in the subsequent quarter. The lag of personal rate of return (PRR) is at its lowest in the quarter when the percentage of rebalancing and reallocating is at its highest – 2011:Q4. This means that the personal rate of return in the third quarter of 2011 was at its lowest and that in the subsequent quarter, rebalance and reallocation activity was at its highest. There is also a steep decline in 2013:Q4 – 2014:Q2 for rebalancing and reallocation, with steady and consistent increases in PRR lag. As for the measure of the difference between PRR and the S&P500, for the overall sample I see that the average for this indicator is -1.3%. The average for reallocators is -1.7% and -0.8% for rebalancers. As a proxy for an investor's performance relative to market returns, this shows that reallocators require much worse performance before taking action than rebalancers or the overall sample. Figure 2 depicts rebalancing and reallocating along with the variable that evaluates outperformance [or underperformance] of the market. I see the same sharp decrease in the fourth quarter of 2011 in this variable as I did for the lag of personal rate of return. However, this variable of relative investment performance is not lagged in Figure 2. The implication is that investors react to intra-quarter variances in their portfolio-to-market comparisons, versus reactionary management as evidenced by the lag overlay in Figure 1.

VI. RESULTS

This portion of the research centers on the linear probability results, estimated first for the impact of defaulting and advising on rebalancing and reallocation individually, followed by models that incorporate each of the variables just discussed for the full sample and then for the subset of people who default and who seek advice. For these regressions, the unit of observation is individual i in year t and quarter j. The years and quarters span from the second quarter of 2009 to the fourth quarter of 2015. Rebalancing and reallocating are both dummy variables that equal one if the individual chose to do either in the quarter and zero otherwise.

The independent variables for analysis include dummy variables indicating whether the individual defaulted into their retirement plan, sought advice in year t and quarter j, whether the individual is male, married, has web access, and if they invest solely in the primary plan or supplemental plan at their institution. There are several continuous explanatory variables as well, including age, the number of funds held in the year and quarter, personal rate of return on investments, and the individual's personal rate of return less the return on the S&P500 as a measure of market outperformance. I include separate fixed effects for each contribution decile and each year-quarter combination.

The sample contains 182,227 participants who actively contributed in every quarter from 2009:Q2 – 2015:Q4. When modeling, I cluster the standard errors by the individual company identification number used to keep records on each investor. I expect defaulters to be less likely to rebalance or reallocate and investors that seek advice to be more likely to reallocate and less likely to rebalance. I expect males to rebalance and reallocate more than females, I expect that each activity increases with age and with the number of funds held. In terms of rebalancing, I expect that being married, having web access, investing only in the primary plan or supplemental plan, and personal rate of return to all reduce the likelihood that of rebalancing. In regards to reallocating, I expect those same variables to have the opposite effect – increasing the likelihood

that investors reallocate their contributions. As for a portfolio's performance in comparison to the market, I expect that higher returns increase the likelihood of rebalancing and reduce the chances of reallocating.

When reviewing the first set of estimated coefficients, the assumptions hold for defaulting and advising. Defaulting reduces the likelihood of either rebalancing or reallocating. Specifically, defaulters are 0.02 percentage points less likely to rebalance and 2.33 percentage points less likely to reallocate. Both results are statistically significant in the overall sample [0.046% for rebalancing and 30.062% for reallocating]. The assumption is that defaulters are less engaged in their retirement plan management overall, seeing as they initiated their retirement contributions by making no active choice on investment vehicles.

The overwhelming default option in most retirement plans is a lifecycle fund or target-date fund, implying automatic diversification and rebalancing over time. Advising has different impacts: a positive impact on reallocation and a negative impact on rebalancing. Seeking advice in a quarter reduces the likelihood of rebalancing by .009 percentage points, which is an economically small and statistically insignificant result. However, the impact on reallocation is staggering: seeking advice is associated with an increase of 23.1 percentage points. The interpretation is that seeking advice is a precursor to reallocation decisions. Investors may be seeking advice to help decide in which funds to invest their future contributions.

Table 12 reports the results of the larger models with a focus on rebalancing. In general, the results are consistent with expectations. Each regression evaluates the same set of independent variables, but the first specification is for the full sample, the second is for the subset of defaulters, and the third is for the subset that sought advice in the quarter. The number of rebalancings is very low when considering the entire sample, so I reduce the specification for the rebalance model to a few, key variables. The range of rebalancing averages for the overall sample and subsets is from .030% to .046%, expressed in the table as the mean variable beneath each specification. Each regression also includes fixed effects for asset decile, funds held [by the

groups illustrated in Table 8], and age group [by the groups illustrated in Table 4]. Focusing on the model for the full sample, there are only a few statistically significant variables that impact the likelihood of rebalancing. Specifically, being married, contributing solely to one plan [either the primary plan or supplemental plan], and portfolio performance in excess of the S&P500. While these variables are statistically significant, they have economically insignificant impacts on rebalancing. This is because of the low instances of rebalancing in the sample overall.

Being married, contributing solely to the primary account, and contributing solely to the supplemental account all reduce the likelihood that an investor rebalances. Each factor decreases the likelihood of rebalancing by 0.012 percentage points, 0.026 percentage points, and 0.0477 percentage points, respectively. The only variable with a positive impact on rebalancing is the measure of personal rate of return in excess of market return, which suggests a relationship between outperforming the market and rebalancing in the same quarter. When considering the subset of individuals who are defaulters and those who seek advice, the statistical significance on marital status is lost, but the relationships for the primary and supplemental measures, as well as the personal rate of return measure, remain. However, for investors that seek advice, the personal rate of return coefficient changes from positive to negative. Having sought advice in a quarter, outperforming the market reduces the likelihood of rebalancing an account. An advising session in a quarter in which personal returns are higher than overall market returns should result in a suggestion of holding money in the funds that are outperforming the market, which makes this an intuitive and expected result.

Table 13 includes regressions that predict reallocation, using the independent variables from Table 12 and also including additional variables considered in the summary statistics section. These reallocation regressions can be evaluated with additional regressors because there are many more cases of reallocating. Each regression includes fixed effects for contribution decile and year-quarter combinations. Contribution fixed effects are included in the reallocation regressions, instead of asset fixed effects, because allocation decisions determine future

contribution investment vehicles, as opposed to the rebalancing regression above [which affect asset balances].

The regression results show that for the full sample, being male positively impacts the likelihood of reallocating, by 0.234 percentage points. This statistically significant result is the only one that implies a positive relationship. Being a defaulter or seeking advice in a quarter and being male actually reduces the likelihood of reallocating. Based on the entire sample, a male who seeks advice is 1.2 percentage points less likely to reallocate in that quarter, revealing potential apprehension on the part of men to listen to the recommendations given during an advising session. Being one year older leads to a 0.139 percentage point increase in the likelihood of reallocating. The age variable is also positively correlated with reallocating for both the subset of defaulters and the advised, but it is not significant when considering advice seekers. This insignificant result can be related to the shift in reallocation patterns reported in Table 4. There was a linear relationship between age and the likelihood of reallocation, increasing with each age group. However, when crossed with advice seeking, an inversion of that linear relationship resulted, with the youngest advice seekers reallocating the most and the oldest advice seekers reallocating the least.

Married individuals are less likely to shift their allocations, with the percentage-point effect being strongest for those who seek advice. Married advice seekers are 1.71 percentage points less likely to reallocate, as opposed to the 0.757 percentage point decrease for married defaulters. Web access is more than just having the ability to check your account online. Most online advising tools that are utilized solely by the investor require an online login, so that the tools can accurately take into consideration the investor's entire profile. Having web access has a positive and statistically significant impact on reallocating. For the subset of advice seekers, the result isn't statistically significant, but is negative, unlike the coefficient in the other two specifications. There is a suggestion that the introduction of online advising tools may actually

reduce the likelihood of reallocation, as web access only reduces the overall likelihood of reallocating when limiting the sample to those seeking advice.

The effect of holding only one plan, either primary or supplemental, has a negative and statistically significant impact on the likelihood of reallocating. This holds for both the full sample and the subset of defaulters. Investing only in the primary plan reduces the likelihood of reallocating by 1.21 percentage points and 1.74 percentage points for a defaulter. The numbers for supplemental-only investors are even higher at 2.02 and 2.28 percentage points respectively. The reduction for defaulters is intuitive, in that being a defaulter indicates an investor is less likely to rebalance or reallocate throughout the sample. It is also interesting to note that supplemental-only participants are less likely to reallocate than primary-only participants. The results for both variables are positive and insignificant for the subset of advice seekers. The other important factor with regard to holdings is the number of investment funds held. Across each each of the regression specifications, the number of funds held has a statistically and economically significant effect on the likelihood of reallocating. It becomes incrementally more important to the subset of defaulters and subset of advice seekers. The range is from 2.07 to 3.05 percentage point increase in likelihood of reallocating.

Finally, consider the variable that incorporates quarterly personal rate of return in excess of quarterly S&P500 as a proxy of market returns. This variable is statistically and economically significant in each specification, having a negative impact on the likelihood of reallocating. This implies that in each case, regardless of being a defaulter or an advice seeker, having returns that outperform the market reduces the likelihood that an individual makes changes to their investments. The range is a reduction of 122 percentage points for advice seekers, to a reduction in reallocation likelihood of 58.7 percentage points for defaulters. This means that for every 100 basis point outperformance of the market, an investor is 122 percentage points less likely to reallocate if they seek advice. For the full sample, the 100 basis point outperformance of the market indicates that an investor is 78.1 percentage points less likely to reallocate. This strong

result is intuitive – as investors outperform the market, they are less likely to make changes to the funds in which they invest. Considering the counter-example, underperforming the market by 100 basis points, would lead to a 78.1 increase in the likelihood of reallocating. Again, performing below market expectations intuitively would lead an investor to shift the investments that they use for their retirement plan.

VII. CONCLUSIONS

Having a successful retirement requires active account management over time. Two ways to manage assets and contributions are to rebalance already held assets and reallocate future contributions to funds that help meet an investor's goals. Numerous demographic and portfolio factors have an impact on an investor's decision to rebalance or reallocate, and having knowledge of them could help advisers and retirement plan administrators influence these forms of portfolio management. Rebalancing overall is an unpopular practice in comparison to reallocation, but they each have some significant determinants that were captured in this work. Defaulting and advice seeking were two of the main features of the research, and I saw that defaulting decreased the likelihood that an individual rebalances or reallocates, while advice seeking increased reallocating by a statistically significant factor.

When evaluating larger models, rebalancing has only a few variables of statistical importance and it is shown that rebalancing is an unpopular practice overall. Marital status, investing solely in one plan, and most notably returns in excess of the market, as measured by the S&P500, show the most significant impacts on rebalancing. There is variance between the subset of the full sample that defaulted and subset that sought advice.   Considering the determinants of reallocation, the coefficients indicate larger economic impact and greater statistical significance. In those models, nearly every variable has a causal relationship with reallocation, increasing or decreasing the likelihood by a measurable percentage point change. The biggest impact is the performance of the portfolio relative to market returns. One of the single most important factors for an individual to make changes to their retirement account is a deviation from market returns.

Future investigations will be able to build on this research and evaluate further, the impacts of a few variables in more granularity. Specifically, even though I include measures of assets and contributions, it may be important to analyze the actual composition of those funds.

There may be underlying implications when I analyze bond and equity holdings within the funds held or funds to which an investor contributes.

Another key factor is advising. I did not consider that there are different types of advice. In-person and online advice could have different impacts on both rebalancing and reallocating. And finally, future research could evaluate the importance of rebalancing and reallocating – what is the value of these practices as portfolio management tools and what are the outcomes for investors? By understanding why and how people rebalance and reallocate, and the outcomes of these activities, retirement providers and advisers can help ensure that their investors are prepared to enter into retirement with a healthy amount of retirement savings.

VIII. REFERENCES

Bajtelsmit, V. L., & VanDerhei, J. L. (1997). Risk Aversion and Pension Investment Choices. In

M. S. Gordon, O. S. Mitchell, & M. M. Twinney (Eds.), *Positioning Pensions for the*

Twenty-First Century (pp. 45 - 66). Philadelphia, PA: University of Pennsylvania Press.

Benartzi, S., & Thaler, R. H. (2007). Heuristics and Biases in Retirement Savings Behavior.

Journal of Economic Perspectives, 21(3), 81 - 104.

Fernandes, D., Lynch Jr., J. G., & Netemeyer, R. G. (2014). Financial Literacy, Financial

Education and Downstream Financial Behaviors. *Management Science, 60*(8), 1861 -

1883.

Finke, M. S., Howe, J. S., & Huston, S. J. (2016). Old Age and the Decline in Financial Literacy.

Management Science, 63(1), 213 - 230.

Hinz, R. P., McCarthy, D. D., & Turner, J. A. (1997). Are Women Conservative Investors?

Gender Differences in Participant - Directed Pension Investments. In M. S. Gordon, O. S.

Mitchell, & M. M. Twinney (Eds.), *Positioning Pensions for the Twenty-First Century*

(pp. 91 - 106). Philadelphia, Pennsylvania: University of Pennsylvania Press.

Lusardi, A., & Mitchell, O. S. (2007). Financial Literacy and Retirement Preparedness: Evidence

and Implications for Financial Education. *Business Economics*, 35 - 44.

Lusardi, A., & Mitchell, O. S. (2014). The Economic Importance of Financial Literacy: Theory

and Evidence. *Journal of Economic Literature, 52*(1), 5 - 44.

Madrian, B. C., & Shea, D. F. (2001). The Power of Suggestion: Inertia in 401(k) Participation

and Savings Behavior. *The Quarterly Journal of Economics*, 1149 - 1187.

Mitchell, O. S., & Utkus, S. (2012). Target-Date Funds in 401(k) Retirement Plans. *NBER*

#17911.

Morrin, M., Broniarczyk, S., Inman, J. J., & Broussard, J. (2008). Saving for Retirement: The

Effects of Fund Assortment Size and Investor Knowledge on Asset Allocation Strategies.

The Journal of Consumer Affairs, 42(2), 206 - 222.

Samuelson, W., & Zeckhauser, R. (1988). Status Quo Bias in Decision Making. *Journal of Risk

and Uncertainty*, 7-59.

Sunden, A. E., & Surette, B. J. (1998). Gender Differences in the Allocation of Assets in

Retirement Savings Plans. *The American Economic Review, 88*(2), 207 - 211.

Zweig, J. (1998). Five Investing Lessons from America's Top Pension Fund. *Money, 27*(1), 115 -

118.

Table 1. Rebalancing and Reallocating by Year and Quarter							
	Full Sample	**Rebalancers**			**Reallocators**		
	N	N	Defaulter?	Advice?	N	Defaulter?	Advice?
2009	546,681	202	8.91%	0.00%	66,486	11.92%	3.00%
Q2	182,227	26	3.85%	0.00%	31,895	11.03%	2.68%
Q3	182,227	23	8.70%	0.00%	16,979	14.81%	3.60%
Q4	182,227	153	9.80%	0.00%	17,612	10.73%	2.99%
2010	728,908	937	7.68%	0.85%	118,348	12.11%	2.09%
Q1	182,227	444	7.88%	0.90%	54,015	11.65%	1.26%
Q2	182,227	261	8.05%	0.38%	21,371	10.52%	2.53%
Q3	182,227	160	6.25%	1.25%	12,870	12.56%	4.44%
Q4	182,227	72	8.33%	1.39%	30,092	13.87%	2.26%
2011	728,908	173	7.51%	1.16%	184,294	15.07%	1.80%
Q1	182,227	10	10.00%	0.00%	12,610	13.10%	5.08%
Q2	182,227	3	33.33%	0.00%	19,573	24.17%	3.81%
Q3	182,227	59	5.08%	0.00%	14,224	17.10%	4.27%
Q4	182,227	101	7.92%	1.98%	137,887	13.75%	0.96%
2012	728,908	607	9.88%	2.64%	492,855	11.57%	3.13%
Q1	182,227	31	3.23%	6.45%	120,228	11.37%	2.10%
Q2	182,227	393	8.91%	1.78%	120,513	11.15%	2.29%
Q3	182,227	135	11.85%	4.44%	115,427	10.92%	3.90%
Q4	182,227	48	16.67%	2.08%	136,687	12.66%	4.12%
2013	728,908	294	7.48%	5.78%	385,400	11.07%	4.96%
Q1	182,227	13	15.38%	23.08%	122,176	10.83%	4.26%
Q2	182,227	58	12.07%	3.45%	114,026	9.79%	4.63%
Q3	182,227	3	0.00%	0.00%	122,138	11.23%	5.06%
Q4	182,227	220	5.91%	5.45%	27,060	16.80%	9.15%
2014	728,908	27	14.81%	7.41%	51,662	12.45%	14.39%
Q1	182,227	4	0.00%	0.00%	9,207	11.32%	17.10%
Q2	182,227	2	0.00%	0.00%	8,069	12.94%	19.48%
Q3	182,227	1	0.00%	0.00%	9,905	12.01%	18.10%
Q4	182,227	20	20.00%	10.00%	24,481	12.90%	10.19%
2015	728,908	28	7.14%	3.57%	180,032	11.59%	8.23%
Q1	182,227	5	0.00%	0.00%	12,567	14.27%	18.46%
Q2	182,227	6	16.67%	0.00%	127,249	10.79%	5.60%
Q3	182,227	6	0.00%	0.00%	19,571	14.15%	13.61%
Q4	182,227	11	9.09%	9.09%	20,645	12.46%	13.10%

Table 2. Summary Statistics for Independent Variables

2009 - 2015	Full Sample			Rebalancers			Reallocators		
	N	Mean	Std. Dev.	N	Mean	Std. Dev.	N	Mean	Std. Dev.
Defaulter?	4,920,129	12.80%	33.40%	2,268	8.40%	27.80%	1,479,077	12.00%	32.50%
Advice?	4,920,129	2.50%	15.60%	2,268	2.00%	14.10%	1,479,077	4.40%	20.40%
Male?	4,920,129	45.90%	49.80%	2,268	48.90%	50.00%	1,479,077	46.50%	49.90%
Age	4,920,129	50.57	10.06	2,268	51.5	9.18	1,479,077	51.27	9.9
Married?	4,920,129	52.60%	49.90%	2,268	48.90%	50.00%	1,479,077	53.40%	49.90%
Web Access?	4,920,129	85.90%	34.80%	2,268	85.70%	35.00%	1,479,077	87.20%	33.40%
Primary Plan?	4,920,129	64.60%	47.80%	2,268	47.70%	50.00%	1,479,077	60.40%	48.90%
Supplemental?	4,920,129	0.90%	9.20%	2,268	0.20%	4.70%	1,479,077	0.80%	8.70%
Number of Funds	4,920,129	4.14	3.23	2,268	4.3	3.44	1,479,077	4.91	3.75
Contributions	4,718,126	$3,109.65	$3,092.56	2,164	$3,710.63	$3,331.42	1,448,485	$3,434.42	$3,381.62
Assets	4,884,408	$216,764.10	$320,303.80	2,255	$267,959.32	$313,879.17	1,475,149	$246,931.85	$348,599.57
Returns (PRR)	4,913,029	2.50%	5.00%	2,266	1.80%	5.20%	1,477,423	2.90%	4.00%
PRR - S&P500	4,913,029	-1.30%	4.00%	2,266	-0.80%	4.00%	1,477,423	-1.70%	3.90%

Table 3. Rebalancing and Reallocating by Gender

	Male						Female					
	Full Sample		Defaulter?		Advice?		Full Sample		Defaulter?		Advice?	
Year	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
2009	0.04%	13.16%	0.02%	11.95%	0.00%	52.79%	0.03%	11.32%	0.03%	10.78%	0.00%	54.39%
2010	0.14%	17.54%	0.08%	16.16%	0.27%	55.70%	0.12%	15.13%	0.07%	14.67%	0.09%	56.33%
2011	0.03%	25.55%	0.01%	30.15%	0.04%	56.17%	0.02%	25.06%	0.01%	29.34%	0.03%	60.15%
2012	0.09%	66.47%	0.05%	60.07%	0.09%	75.85%	0.07%	68.59%	0.07%	61.63%	0.07%	80.69%
2013	0.04%	52.54%	0.02%	45.31%	0.07%	63.88%	0.04%	53.16%	0.02%	45.82%	0.05%	66.66%
2014	0.00%	7.72%	0.00%	7.32%	0.00%	27.16%	0.00%	6.55%	0.01%	6.53%	0.02%	30.16%
2015	0.00%	26.19%	0.00%	23.58%	0.00%	43.02%	0.01%	23.44%	0.00%	21.33%	0.01%	44.64%
Total	0.05%	30.50%	0.03%	28.38%	0.04%	51.56%	0.04%	29.69%	0.03%	27.77%	0.03%	53.78%

Table 4. Rebalancing and Reallocating by Age Group						
	Full Sample		Defaulter?		Advice?	
Age Group	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
20 - 29	0.03%	21.36%	0.01%	20.04%	0.00%	60.39%
30 - 39	0.04%	27.27%	0.01%	25.60%	0.01%	57.39%
40 - 49	0.04%	28.94%	0.03%	27.80%	0.02%	57.73%
50 - 59	0.05%	31.15%	0.04%	29.43%	0.05%	55.21%
60+	0.05%	32.83%	0.04%	31.07%	0.04%	46.79%
Total	0.05%	30.06%	0.03%	28.03%	0.04%	52.63%

Table 5. Rebalancing and Reallocating by Marital Status

| | Married? | | | | | | Single? | | | | | |
| | Full Sample | | Defaulter? | | Advice? | | Full Sample | | Defaulter? | | Advice? | |
Year	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
2009	0.04%	12.73%	0.02%	11.63%	0.00%	54.25%	0.04%	11.63%	0.03%	11.03%	0.00%	52.50%
2010	0.12%	16.57%	0.09%	16.03%	0.14%	55.13%	0.13%	15.93%	0.07%	14.77%	0.24%	57.53%
2011	0.02%	25.09%	0.02%	29.06%	0.05%	56.87%	0.02%	25.49%	0.01%	30.25%	0.00%	60.67%
2012	0.08%	67.28%	0.05%	61.86%	0.08%	77.75%	0.08%	67.99%	0.07%	60.12%	0.08%	78.82%
2013	0.04%	52.85%	0.02%	46.44%	0.04%	64.53%	0.04%	52.90%	0.03%	44.73%	0.09%	66.14%
2014	0.00%	7.20%	0.00%	6.90%	0.01%	27.62%	0.00%	6.95%	0.00%	6.85%	0.01%	30.11%
2015	0.00%	25.15%	0.00%	22.83%	0.00%	42.83%	0.01%	24.11%	0.00%	21.73%	0.01%	45.50%
Total	0.04%	30.49%	0.03%	28.69%	0.03%	51.95%	0.05%	29.59%	0.03%	27.42%	0.05%	53.73%

Table 6. Rebalancing and Reallocating by Web Access

	No Web Access						Web Access					
	Full Sample		Defaulter?		Advice?		Full Sample		Defaulter?		Advice?	
Year	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
2009	0.03%	8.98%	0.02%	8.53%	0.00%	48.42%	0.04%	13.14%	0.03%	12.59%	0.00%	54.68%
2010	0.10%	13.68%	0.08%	12.28%	0.17%	51.47%	0.14%	16.92%	0.08%	16.52%	0.18%	56.70%
2011	0.02%	22.69%	0.02%	26.75%	0.00%	54.43%	0.02%	25.85%	0.01%	30.62%	0.04%	58.71%
2012	0.07%	66.95%	0.11%	59.37%	0.00%	78.58%	0.08%	67.73%	0.05%	61.33%	0.09%	78.13%
2013	0.03%	52.67%	0.05%	44.58%	0.11%	72.09%	0.04%	52.90%	0.02%	45.77%	0.06%	64.93%
2014	0.00%	4.30%	0.01%	4.04%	0.00%	28.79%	0.00%	7.33%	0.00%	7.14%	0.01%	28.60%
2015	0.00%	22.79%	0.00%	17.98%	0.00%	42.29%	0.00%	24.79%	0.00%	22.48%	0.00%	43.86%
Total	0.05%	27.14%	0.05%	25.01%	0.04%	56.89%	0.05%	30.54%	0.03%	28.70%	0.04%	52.43%

Table 7. Rebalancing and Reallocating by Primary/Supplemental Only

| | Primary Plan Only | | | | | | Supplemental Plan Only | | | | | |
| | Full Sample | | Defaulter? | | Advice? | | Full Sample | | Defaulter? | | Advice? | |
Year	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
2009	0.02%	9.65%	0.01%	9.21%	0.00%	49.17%	0.00%	8.38%	0.00%	10.32%	0.00%	38.10%
2010	0.10%	14.64%	0.04%	13.71%	0.16%	53.27%	0.05%	12.75%	0.00%	10.31%	0.00%	36.00%
2011	0.02%	23.91%	0.01%	26.74%	0.04%	54.53%	0.00%	28.97%	0.00%	34.53%	0.00%	54.29%
2012	0.06%	64.48%	0.05%	56.69%	0.04%	73.79%	0.02%	66.32%	0.00%	57.28%	0.00%	78.57%
2013	0.03%	50.03%	0.01%	42.28%	0.02%	61.03%	0.02%	48.83%	0.00%	36.59%	0.00%	56.48%
2014	0.00%	5.88%	0.00%	6.05%	0.00%	26.44%	0.00%	6.34%	0.00%	5.37%	0.00%	27.72%
2015	0.00%	23.68%	0.00%	20.52%	0.01%	42.84%	0.00%	15.64%	0.00%	18.29%	0.00%	35.62%
Total	0.03%	28.14%	0.02%	25.77%	0.02%	50.06%	0.01%	26.84%	0.00%	24.67%	0.00%	48.05%

Table 8. Rebalancing and Reallocating by Number of Funds Used						
	Full Sample		**Defaulter?**		**Advice?**	
# of Funds	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
1	0.04%	19.04%	0.03%	17.44%	0.03%	25.68%
2-19	0.05%	32.74%	0.03%	33.60%	0.04%	55.69%
20-39	0.07%	62.11%	0.00%	61.99%	0.06%	85.91%
40-59	0.00%	67.72%	0.00%	60.00%	0.00%	80.95%
60+	0.00%	40.00%	0.00%	0.00%	0.00%	25.00%
Total	0.05%	30.06%	0.03%	28.03%	0.04%	52.63%

	Full Sample		Defaulter?		Advice?	
Cont. Decile	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
1	0.03%	25.08%	0.02%	22.93%	0.00%	44.47%
2	0.03%	27.34%	0.03%	25.06%	0.07%	48.84%
3	0.04%	28.22%	0.02%	26.17%	0.01%	51.37%
4	0.04%	29.11%	0.02%	26.81%	0.02%	52.34%
5	0.04%	29.85%	0.01%	27.59%	0.04%	52.56%
6	0.04%	30.64%	0.02%	28.83%	0.02%	53.69%
7	0.04%	31.57%	0.05%	29.73%	0.02%	53.55%
8	0.05%	32.99%	0.04%	31.34%	0.02%	53.96%
9	0.06%	34.37%	0.03%	32.93%	0.05%	54.46%
10	0.08%	37.66%	0.07%	36.97%	0.06%	55.37%

Table 9. Rebalancing and Reallocating by Contribution Decile

Table 10. Rebalancing and Reallocating by Asset Decile						
	Full Sample		**Defaulter?**		**Advice?**	
Asset Decile	Rebalance	Reallocate	Rebalance	Reallocate	Rebalance	Reallocate
1	0.02%	23.90%	0.01%	21.06%	0.00%	46.26%
2	0.02%	26.27%	0.01%	24.78%	0.02%	50.02%
3	0.03%	27.92%	0.00%	26.80%	0.02%	51.90%
4	0.03%	28.85%	0.04%	28.33%	0.00%	53.08%
5	0.04%	29.47%	0.05%	29.20%	0.02%	53.82%
6	0.05%	30.28%	0.03%	29.80%	0.04%	54.11%
7	0.04%	31.23%	0.03%	31.05%	0.03%	54.80%
8	0.06%	32.39%	0.04%	31.40%	0.01%	52.60%
9	0.07%	34.22%	0.05%	34.18%	0.05%	53.35%
10	0.08%	37.22%	0.09%	37.15%	0.07%	51.67%

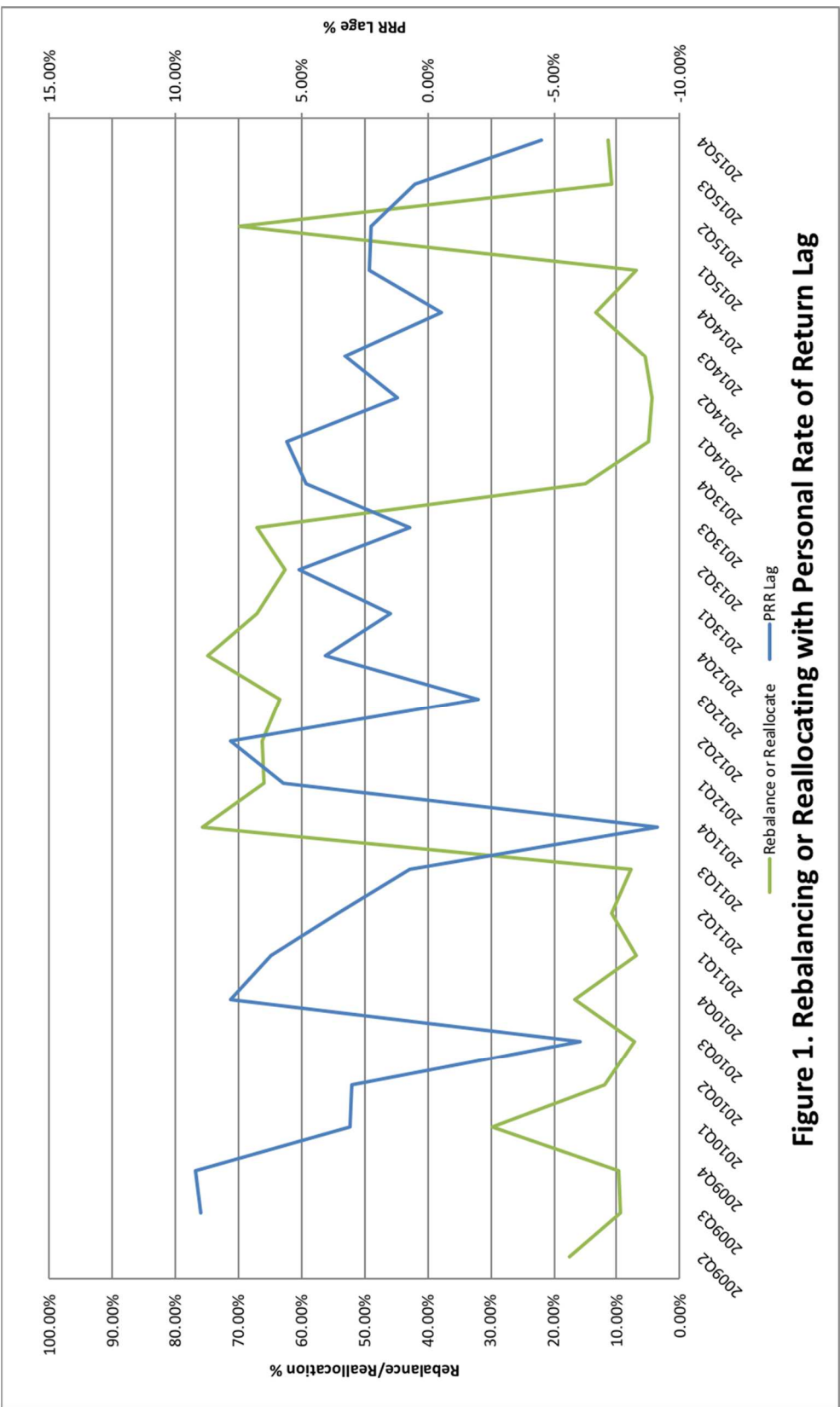Figure 1. Rebalancing or Reallocating with Personal Rate of Return Lag

Figure 2. Rebalancing or Reallocating with PRR Minus S&P500
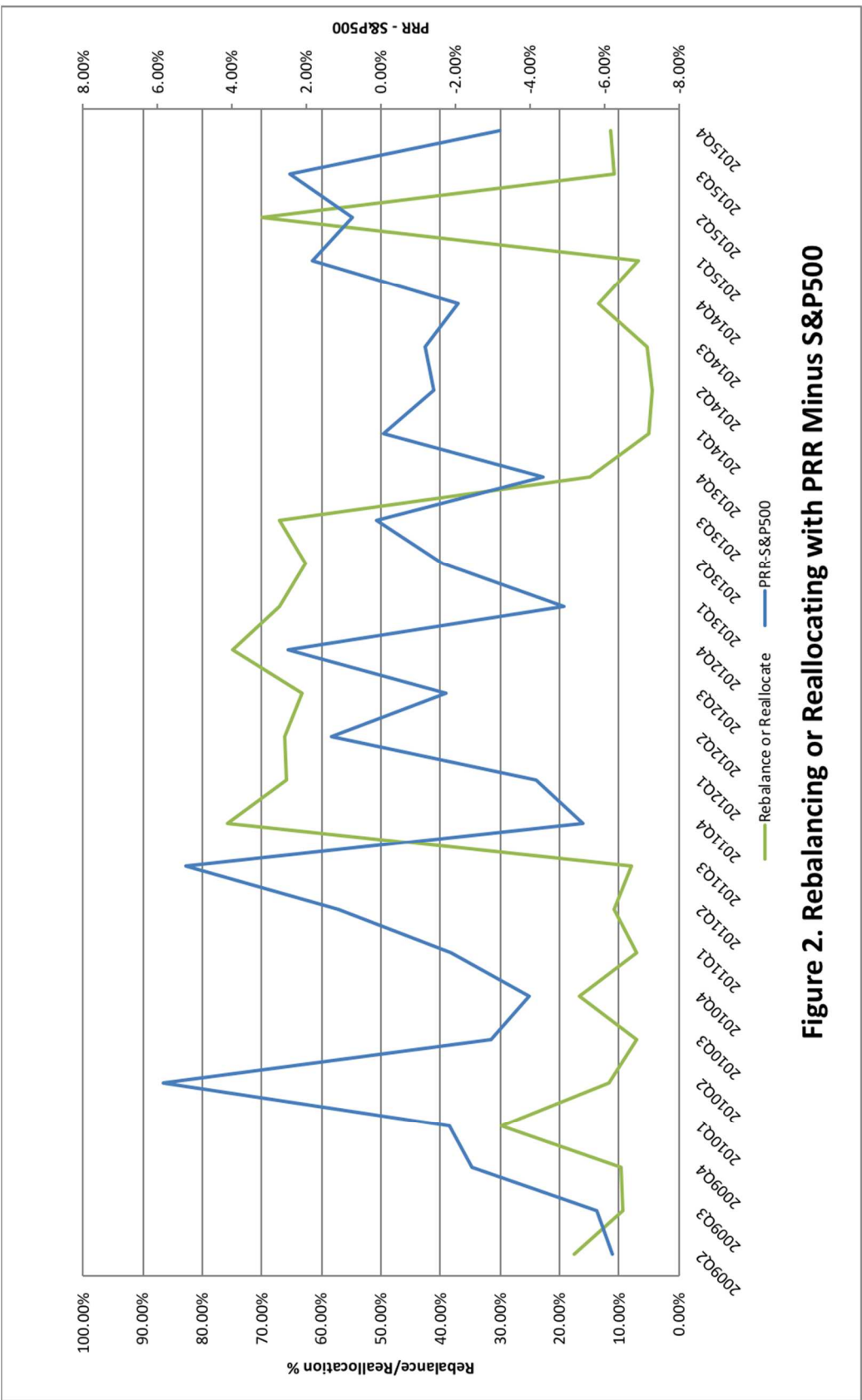
Table 11: OLS Regressions Predicting Rebalance and Reallocation by Defaulter and Advice				
Characteristics	**Rebalance**	**Reallocate**	**Rebalance**	**Reallocate**
Defaulter?	-0.000182***	-0.0233***		
	(0.0000489)	(0.00104)		
Advice?			-0.0000883	0.231***
			(0.0000573)	(0.00162)
Mean Variable	0.00046	0.30062	0.00046	0.30062
Sample Size	4,920,129	4,920,129	4,920,129	4,920,129

This table reports coefficients from linear probability models predicting the likelihood that you rebalance or reallocate, given defaulter status or advice-seeking in the quarter. Standard errors are clustered on participant. *, **, and *** indicates statistically significant from null at 10%, 5%, and 1% level.

Table 12: OLS Regressions Predicting Rebalancing			
Characteristics	**Rebalance** **(Full Sample)**	**Rebalance** **(Defaulter)**	**Rebalance** **(Advice)**
Male?	0.0000133	-0.0000610	0.0000622
	(0.0000401)	(0.0000973)	(0.000103)
Married?	-0.000120**	-0.000121	-0.000193
	(0.0000375)	(0.0000958)	(0.000126)
Web Access?	-0.0000618	-0.000308	-0.00000553
	(0.0000540)	(0.000161)	(0.000266)
Primary Only?	-0.000260***	-0.000251**	-0.000215*
	(0.0000432)	(0.0000878)	(0.000110)
Supplemental Only?	-0.000477***	0.000446***	0.000441***
	(0.0000728)	(0.0000844)	(0.0000942)
PRR - S&P500	0.00138***	0.00136**	-0.00614**
	(0.000221)	(0.000461)	(0.00202)
Mean Variable	0.00046	0.00030	0.00037
Sample Size	4,877,325	627,101	122,120

This table reports coefficients from linear probability models predicting the likelihood that you rebalance. The first specification is for the full sample, followed by the subset of defaulters, and then the subset of advice seekers. Included are fixed effects for asset balance decile, number of funds held, and age group. Standard errors are clustered on participant. *, **, and *** indicates statistically significant from null at 10%, 5%, and 1% level.

Table 13: OLS Regressions Predicting Reallocating			
Characteristics	**Reallocate** **(Full Sample)**	**Reallocate** **(Defaulter)**	**Reallocate** **(Advice)**
Male?	0.00234***	-0.000969	-0.0120***
	(0.000652)	(0.00175)	(0.00290)
Age	0.00139***	0.00102***	0.0000831
	(0.0000324)	(0.0000832)	(0.000156)
Married?	-0.0103***	-0.00757***	-0.0171***
	(0.000611)	(0.00164)	(0.00285)
Web Access?	0.00897***	0.0105***	-0.00580
	(0.000849)	(0.00206)	(0.00593)
Primary Only?	-0.0121***	-0.0174***	0.00345
	(0.000707)	(0.00180)	(0.00298)
Supplemental Only?	-0.0202***	-0.0228**	0.00542
	(0.00355)	(0.00868)	(0.0184)
Number of Funds Held	0.0207***	0.0241***	0.0305***
	(0.000108)	(0.000294)	(0.000395)
PRR - S&P500	-0.781***	-0.587***	-1.220***
	(0.0100)	(0.0232)	(0.0956)
Mean Variable	0.30711	0.28513	0.53361
Sample Size	4,711,303	605,573	119,357

This table reports coefficients from linear probability models predicting the likelihood that you reallocate. The first specification is for the full sample, followed by the subset of defaulters, and then the subset of advice seekers. Included are fixed effects for contribution decile and year-quarter combinations. Standard errors are clustered on participant. *, **, and *** indicates statistically significant from null at 10%, 5%, and 1% level.