

PASSIVE ACTIVITY: MILLENNIALS AND FINANCIAL ADVISORY

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ABSTRACT

The purpose of this research is to study usage and knowledge of passive financial advisory. Using a unique survey on passive investing that gathered information on how people use and understand passive financial advisory, the study analyzes the relationship between passive financial advisory usage and generation. Results indicate that Millennials use passive financial advisory at a higher rate than Generation X, but there is no significant difference between Millennials and Baby Boomers. Millennials show a significantly higher likelihood of having heard of passive fund management compared to other generations. Further, there is no significant difference in openness to passive financial advisory by generation among those who do not use it.

BIOGRAPHICAL SKETCH

Sonia Amladi is a Master of Professional Studies candidate at Cornell University, concentrating in Behavioral Finance. She completed her undergraduate degree at Cornell University in three years, graduating with Summa Cum Laude distinction. During her time at Cornell, she led as a teaching assistant for Managerial Economics and Financial Accounting, and formed close bonds with other women in business at Forté Campus at Cornell. She looks forward to working in Commercial Banking at Capital One, starting in July 2018.

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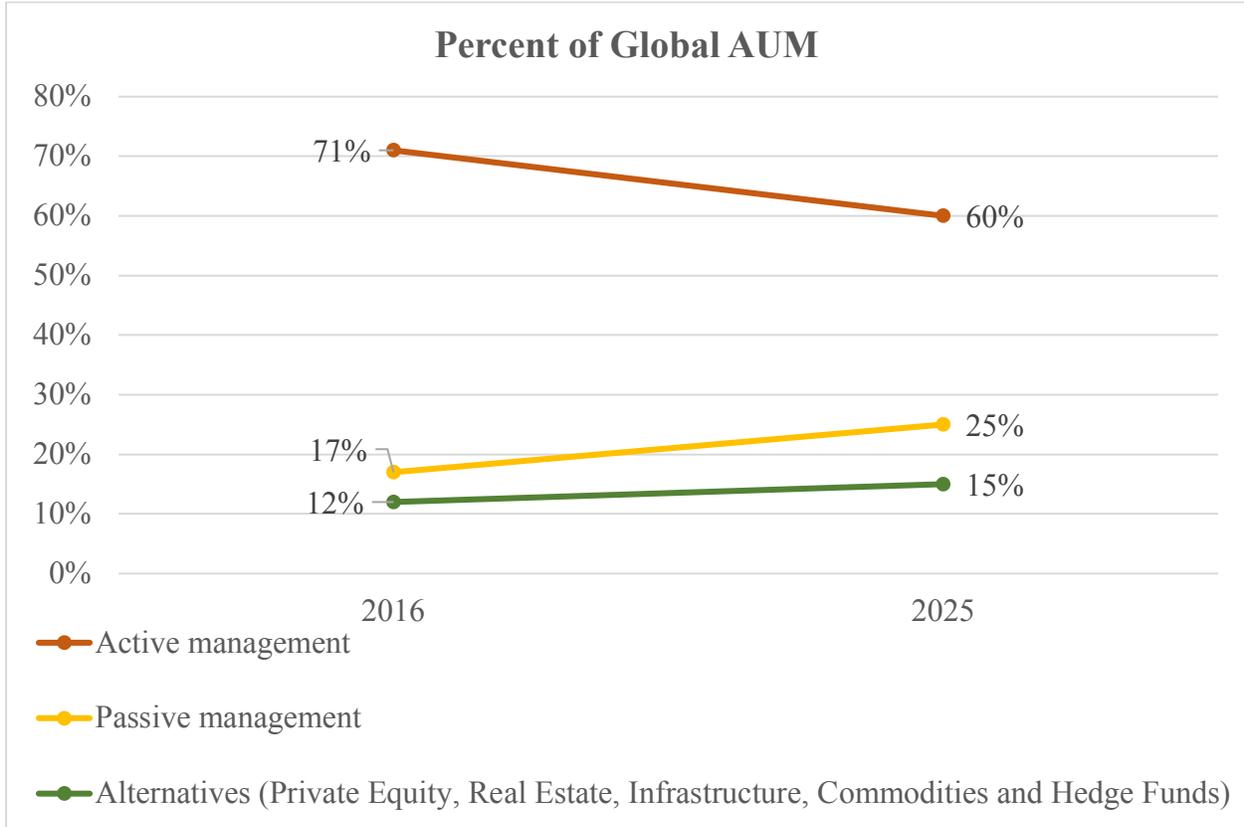
INTRODUCTION

Burton Malkiel's *A Random Walk Down Wall Street* began a tug of war between active and passive investment that has become especially relevant in recent years (Malkiel, 1975). Active management, which is driven by fund managers making investment decisions, is currently a far more common way to invest than passive management, which involves less frequent trading and often tracks indexes (Investopedia; Investopedia). As of 2016, 71% of global assets under management (AUM) were actively managed and 17% were passively managed, with Alternatives (which include Private Equity, Real Estate, Infrastructure, Commodities and Hedge Funds) accounting for the remaining 12% (PricewaterhouseCoopers, 2017).

The average equity fund fairly consistently lags behind the S&P500, with the latter having outperformed by 2.24% from 1983 to 2003 (Malkiel, 2005). More recently, a study of active managers in 2016 concluded that 90% of them had failed to meet their benchmarks during the one-, five-, and ten-year time periods leading up to the study (Soe & Poirier, 2016). The study took into account the fees charged to investors, which are lower for passive funds in part due to the use of algorithms (Soe & Poirier, 2016). Overall, an average investor would have improved his/her return by 0.67% by investing in a solely passive portfolio from 1980 to 2006, again taking the fees of active management into account (French, 2008).

In part due to these factors, PricewaterhouseCoopers projects that passive funds will account for 25% of total global AUM by 2025, up from 17% in 2016 (PricewaterhouseCoopers, 2017) (see Figure 1). Consequently, active management's share is projected to decrease from 71% to 60% by 2025 (PricewaterhouseCoopers, 2017). Alternatives are projected to increase from 12% to 15% by 2025 (PricewaterhouseCoopers, 2017).

Figure 1: Global assets under management by type



Within passive funds lies robo-advisory, which involves very little human interaction and instead makes use of initial investor preferences and automated digital activity (Jung, Dorner, & Glaser et. al, 2018). Exchange Traded Funds (ETFs) are generally classified as part of this group (Jung, Dorner, & Glaser et. al, 2018). Robo-advisors offer more advanced interfaces to keep their customers in the loop, compared to earlier online investment service providers (Jung, Dorner, & Glaser et. al, 2018). This involves an emphasis on automated, technology-based communication including smartphone push notifications and regular online updates (Jung, Dorner, & Glaser et. al, 2018).

Millennials may be a noteworthy target market with relation to passive financial advisory due to their unique financial and cultural profile, including post-recession risk aversion, high

student loans, notable tech-savviness, low social trust, and resilient future-looking optimism. Millennials are defined as those born between 1981 and 1996 (see Table 1):

Table 1: Generation groups

	Birth Year	Age in 2018
Silent Generation	1928 – 1945	73 to 90 years old
Baby Boomers	1946 – 1964	54 to 72 years old
Generation X	1965 – 1980	38 to 53 years old
Millennials	1981 – 1996	22 to 37 years old
Generation Z	1997 and later	21 and younger

Source: Pew Center

In the U.S., Millennials account for one third of the working population after recently overtaking Generation X’s first place spot (Pew Research Center, 2015a). This representation is in part because older generations are retiring, but also because more immigrants coming to the U.S. belong to the Millennial generation than to any other age cohort (Pew Research Center, 2015a). In fact, from 2010 to 2015, more than half of the immigrants to the U.S. who came to join the workforce were Millennials (Pew Research Center, 2015a). As this generation continues to grow and take on more financial responsibilities, their habits, lifestyles, and preferences are becoming increasingly relevant to the modern economy. Each new generation has made its own mark on the world, but in this flourishing technological era, Millennials have the potential to be the most disruptive group yet. It is currently an open question as to how Millennials will embrace passive investing, and that is what has inspired this study. Do Millennials show different tendencies regarding passive financial advisory and robo-advisory than other generations do?

LITERATURE REVIEW

Millennials were between the ages of 11 and 26 when the Financial Crisis hit, so the years-long event has had lasting effects on the generation's financial landscape. These effects include financial risk aversion, low home ownership, and increased difficulty in securing jobs (Malmendier & Nagel, 2007; Baker & Will, 2017; Goodman, Zhu, & George, 2015; Pew Research Center, 2017). Millennials also show a lower level of social trust than other generations, but they are still financially optimistic (Pew Research Center, 2014). These broad factors have great potential to influence Millennials' financial decisions.

People who have experienced a climate of low stock returns tend to be more risk averse and less likely to participate in the stock market (Malmendier & Nagel, 2007). All current generations experienced the Financial Crisis in some capacity, whether they suffered crashes in their personal retirement accounts, or watched their parents lose their jobs. What is unique to Millennials is that many of them were too young during the Financial Crisis to remember what the economy was like before it.

Another effect of the Financial Crisis has been that first-time home ownership metrics have lagged since then: from 2005 to 2015, home ownership among adults under 35 decreased from 43% to 31% (Baker & Will, 2017). This is in part because high levels of student debt decrease Millennials' chances of qualifying for home loans (Larrimore, Schutz, & Dodini, 2016). The average Millennial held \$25,000 in student loans as of a 2012 study, causing the magnitude of U.S. student loans to exceed that of U.S. credit card loans for the first time ever (Seppanen & Gualtieri, 2012). Because of the increasingly strong effect of higher education on income, and the especially high inflation of college tuition compared to other goods and services, young adults have little choice but to take on greater student debt than their predecessors did (Seppanen & Gualtieri, 2012).

Regardless of student debt, Millennials also face a more difficult time securing home loans than Generation X did as young adults (Goodman, Zhu, & George, 2015). Lending standards in the years following the Financial Crisis became stricter compared not only to housing bubble levels, but also to 2001 levels (Goodman, Zhu, & George, 2015). This effect, compounded with affordability issues, has in part caused Millennials to get married and have children later than previous generations did, since home ownership is linked to these milestones (Baker & Will, 2017).

In addition to having a lower tendency to own homes, Millennials also switch homes far less frequently than past generations did at their age (Pew Research Center, 2017). This is in part due to a decrease in job opportunities, which has traditionally been a prime factor in how often young adults switch homes (Pew Research Center, 2017). As of a 2012 survey, 82% of respondents from the general population believe that “finding a job is harder for young adults today than it was for their parents’ generation” (Pew Research Center, 2012).

A combination of high debt and 12.4% unemployment caused many Millennials to move back in with their parents during the Financial Crisis, with 24% of them living with their parents in 2010 (Pew Research Center, 2015b). However, even as the economy has recovered, these metrics have persisted, and 26% of Millennials reported living at home as of 2015 (Pew Research Center, 2015b). This is consistent with low home ownership rates and delay of life milestones as discussed above, and it also affects how Millennials handle their financial planning (Bentley, 2016). Millennials who live with one or both parents tend to hold a greater percentage of their total financial assets as stocks, as compared to Millennials who live independently (Bentley, 2016). This could be because in the former case, parents may be more likely to create investment accounts on behalf of their children and then pass the accounts on once the children reach adulthood

(Bentley, 2016). However, it is unclear if this relationship would necessarily be any different between independent Millennials and their parents (Bentley, 2016).

Another factor in Millennials' financial decision-making is financial literacy. Policymakers have placed an increased emphasis on financial education in recent years (Behrman, Mitchell, Soo, & Bravo, 2010). This includes resources made available by The Financial Literacy and Education Commission, which was instituted in 2003 as part of a national effort to promote financial literacy (U.S. Department of the Treasury, 2018). However, there is evidence that efforts like these have not paid off, as Millennials are actually less financially literate than previous generations (Lamdin, 2014). Financial literacy and traditional education show a positive causal link to wealth and retirement planning (Behrman, Mitchell, Soo, & Bravo, 2010). Level of income is also linked to financial literacy, in that a smaller percentage of Millennials with incomes less than \$25,000 tend to be "financially capable" than the general Millennial population (8% vs. 19%) (Friedline & West, 2016). In the study by Friedline and West (2016), being financially capable is defined as having a savings account and some level of financial education.

In addition, having grown up with the internet, Millennials are also more tech-savvy than other generations, even Generation X (Reisenwitz & Iyer, 2009). Although both generations avidly use technology to make everyday life easier, Millennials go a step further in their optimization, and are actually the first generation to use the internet more than television (Reisenwitz & Iyer, 2009).

Although less direct, trust levels may be another factor in how Millennials make financial decisions. Millennials are the least socially trusting generation as of a 2014 survey (Pew Research Center, 2014). When asked "Generally speaking, would you say that most people can be trusted or that you can't be too careful in dealing with people?", only 19% of Millennials (aged 18–33)

said they were trusting of most people, compared to 37% of those from the Silent Generation (aged 69–86) and 40% of Baby Boomers surveyed (aged 50–68) (Pew Research Center, 2014). This is not a function of age at the time of the survey, as the Silent Generation and the Baby Boomers have shown trust levels hovering around 40% since 1987 (Pew Research Center, 2014). Lower trust levels among Millennials may be attributed to the increased racial diversity in the generation, as racial minorities generally show lower levels of social trust (Pew Research Center, 2014).

Regardless of the obstacles they currently face, Millennials are actually staunch optimists when it comes to their financial futures (Pew Research Center, 2014). Over 80% of Millennials surveyed in 2014 reported that they “currently have enough money to lead the lives they want” (32%) or “expect to in the future” (53%) (Pew Research Center, 2014). None of the older generations surveyed showed such optimism at the time of the survey (Pew Research Center, 2014). However, this may be attributed to younger people generally being more optimistic, as Generation Xers responded similarly hopefully when they were the age that Millennials are now (Pew Research Center, 2014).

The prevalence of high debt levels, low financial literacy, low social trust, and tech-savviness among Millennials suggests that robo-advisory may have a special potential to take off with this generation. There is not much literature yet on the popularity of this innovation among Millennials specifically, but the issue will likely be very relevant to the financial industry moving forward.

DATA

Data Collection

The approach to addressing this question is to use a unique anonymous survey about financial decision-making with specifics on passive financial advisory and robo-advisory. In the survey, passive financial advisory and robo-advisory combine as one umbrella term to avoid confusion among survey respondents. For the purposes of this paper, these will be jointly referred to as passive financial advisory.

The survey follows Cornell University Institutional Review Board protocols.¹ The research required a sample that is fairly representative of the U.S. population, and responses were solicited from adults 18 years and older through Amazon Mechanical Turk. Respondents were compensated \$0.25 each for a survey taking under 6 minutes on average. During the period spanning March 17–19, 2018, the survey collected 663 responses on the Qualtrics website, resulting in 631 fully completed responses.

Survey questions collected data on: U.S. region of residence, age, gender, ethnicity, race, income, education level, employment status, marital status, number of children, financial education level, household financial decision-making status, home ownership, tech-savviness, savings frequency, retirement account types, investment/brokerage account types, and asset holdings. “Age” is the main independent variable of interest, and is used to categorize respondents by generation group. Passive financial advisory understanding, attitudes, and usage, are the main dependent variables of interest. Skip logic used in the survey ensured that respondents were only asked questions that applied to them based on their previous answers. The full survey can be found in the Appendix. Within the sample taken, 67% are Millennials, 19% are in Generation X, 10%

¹ IRB Protocol #1802007762

are Baby Boomers, 3% are in Generation Z, and 0.3% are in the Silent Generation (see Table 2). The two respondents from the Silent Generation have been grouped with the Baby Boomers for analysis.

Table 2: Generation distribution

Generation	n	Percentage of Total
Silent Generation	2	0.3%
Baby Boomers	66	10.5%
Generation X	119	29.6%
Millennials	425	67.4%
Generation Z	19	3.0%
Total	631	100.0%

Descriptive Statistics

Within the survey sample, 62% of Millennials are male. A significantly smaller proportion of Millennials surveyed are White compared to Generation X and Baby Boomers, and a larger percentage are Hispanic, Asian, or non-White and non-Asian (see Table 3). This is not surprising given that there are more racial minorities in the Millennial generation than in previous generations (Pew Center, 2014). Millennials are less likely to have above-average household incomes than Generation X (see Table 3). This is also not surprising, as people’s incomes generally increase over the course of their careers. While regional distribution of survey respondents is relatively even, a smaller percentage of Generation X respondents live in the Midwest compared to Millennials (see Table 3).

A significantly higher proportion of Millennials have achieved a Bachelor’s degree as their highest level of education, compared to all other generations (see Table 3). This is consistent with the significant effect of higher education on income, which makes achieving higher education more attractive (Seppanen & Gualtieri, 2012). This is also in line with the especially high levels of student loan debt among Millennials (Seppanen & Gualtieri, 2012).

A significantly lower proportion of Millennials surveyed have children and own their homes compared to Generation X and Baby Boomers (see Table 3). In addition, Millennials are less likely to be married than Generation Xers are (see Table 3). Many Millennials are still in their twenties, so these results are not surprising. This may also be related to Millennials' overall delay in achieving life milestones after the Financial Crisis (Baker & Will, 2017).

In addition, Millennials show significantly higher levels of tech-savviness than Baby Boomers do, measured by frequency of smartphone usage, software self-installation comfort, and keyboard shortcut usage (see Table 3). Millennials also show higher rates of using keyboard shortcuts compared to Generation X (see Table 3). This is consistent with findings that Millennials are savvier with technology than previous generations are, because they have developed comfort with technology from a young age (Reisenwitz & Iyer, 2009).

Adding on, Millennials show higher rates of financial education in undergraduate courses than Generation X does, while they show lower rates of financial education in high school courses than Generation Z does (see Table 3). This may be because of the increase in efforts to promote financial literacy in recent years (U.S. Department of the Treasury, 2018). In addition, of those who are the financial decision-maker of their household, Millennials are less likely to have dependents than Generation Xers are (see Table 3). This makes sense because a smaller percentage of Millennials have children compared to older generations. Millennials are also less likely than Generation Xers are to contribute to a savings account once a month or more (see Table 3).

A greater percentage of Generation X and Baby Boomers have individual retirement accounts compared to Millennials, but there is no significant difference in defined contribution or defined benefit plan holdings between Millennials and older generations (see Table 3). In addition,

Millennials are more likely than Generation X to have active financial advisors, and less likely than Baby Boomers to choose their own investments (see Table 3).

Table 3: Summary statistics by generation

	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
<i>Gender</i>				
Male	62%	46%*	49%*	58%
<i>Ethnicity</i>				
Hispanic	24%	8%*	4%*	16%
<i>Race</i>				
White	50%	76%*	87%*	58%
Asian	35%	16%*	7%*	16%
Other	15%	8%*	6%*	26%
<i>Income</i>				
Above \$59,0000 (approx. average)	32%	47%*	41%	21%
<i>U.S. Region</i>				
South	29%	35%	41%	21%
Midwest	31%	18%*	24%	47%
West	21%	25%	21%	11%
Northeast	19%	22%	15%	21%
<i>Highest level of education</i>				
Bachelor's degree	50%	38%*	37%*	21%*
Graduate degree	22%	22%	29%	0%*
<i>Employment status</i>				
Employed for wages or self-employed	88%	87%	57%*	58%*
<i>Marital status</i>				
Married	50%	68%*	62%	5%*
<i>Has children</i>				
Yes	47%	76%*	78%*	5%*
<i>Tech-savviness</i>				
Uses smartphone frequently throughout the day	76%	71%	56%*	47%*
Usually installs computer and phone software him/herself	93%	90%	79%*	79%*
Use keyboard shortcuts often	57%	32%*	31%*	63%
n	425	119	68	19

* Significant difference from Millennials at the 5.0 percent level

Table 3 (cont.): Summary statistics by generation

	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
<i>Home ownership</i>				
Home is owned (not rented)	50%	66%*	81%*	42%
Undergraduate course(s)	40%	29%*	31%	37%
Professional or doctoral certification/degree	20%	15%	6%*	0%*
<i>Financial decision-maker of household</i>				
Yes, with dependents	33%	60%*	28%	16%
Yes, without dependents	59%	36%*	71%	47%
<i>Savings account contribution</i>				
Monthly or more often	54%	68%*	60%	47%
<i>Retirement savings account types (all that apply)</i>				
Defined contribution plan (for example: 401(k), 403(b))	41%	50%	34%	5%*
Defined benefit plan (for example: a pension plan)	20%	24%	26%	26%
Individual retirement account (Traditional or Roth IRA)	18%	34%*	44%*	11%
<i>Investment/brokerage accounts</i>				
Active financial advisor	22%	10%*	16%	5%
Choose own investments	25%	29%	40%*	32%
Passive financial advisor/robo-advisor	13%	6%*	9%	11%
<i>Investment/brokerage account asset holdings</i>				
Individual stocks	32%	31%	43%	16%
Individual bonds	19%	8%*	16%	5%
Mutual/index funds	25%	24%	41%*	21%
n	425	119	68	19

* Significant difference from Millennials at the 5.0 percent level

The distribution of passive financial advisor usage by generation is shown in Table 4. There is a significantly higher rate of passive financial advisory usage among Millennials than Generation X, but there is no significant difference in passive financial advisor usage between Millennials and Baby Boomers.

Table 4: Passive investment usage by generation

	Have passive financial advisor	n
Millennials	13.4%	425
Generation X	5.9%*	119
Baby Boomers	8.8%	68
Generation Z	10.5%	19
Total	11.4%	631

* Significant difference from Millennials at the 5.0 percent level

Satisfaction among those who use passive financial advisory skews positively (see Table 5). Of the 56 Millennial users, 53% are at least somewhat satisfied, while only 16% are somewhat dissatisfied or worse. The remaining 30% are neither satisfied nor dissatisfied. In addition, 73% of Millennial passive financial advisory users started using it in the one-year period prior to the survey (see Table 5). These results may not be replicable given the relatively small number of respondents, but a moving timeline of when investors adopt passive financial advisory is worth exploring in future studies.

Table 5: Characteristics of passive financial advisory usage

<i>Start of passive financial advisor/robo-advisor usage (if applicable)</i>	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
In the last six months	34%	43%	0%	0%
In the last year	39%	29%	17%	50%
In the last two years	21%	14%	50%	50%
In the last three years or more	5%	14%	33%	0%
<i>Satisfaction with passive financial advisor/robo-advisor (if applicable)</i>	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
1: Extremely dissatisfied	5%	0%	0%	0%
2: Somewhat dissatisfied	11%	14%	0%	0%
3: Neither satisfied nor dissatisfied	30%	57%	17%	50%
4: Somewhat satisfied	39%	29%	50%	0%
5: Extremely satisfied	14%	0%	33%	50%
n	56	7	6	2

Among respondents who do not report using a passive financial advisor, how open they are to the idea is another area of interest. This information could provide a future-looking context for the industry rather than only focusing on investment behavior at a specific point of time. Of Millennials who do not report using a passive financial advisor, 41% are at least somewhat open to it, and the most common response is “Unsure” at 37% (see Table 6).

Table 6: Openness to passive financial advisory

<i>Openness to using a passive financial advisor/robo-advisor (if applicable)</i>	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
1: Not at all open	9%	6%	18%	0%
2: Not open	13%	8%	18%	30%
3: Unsure	37%	51%	29%	30%
4: Somewhat open	37%	32%	32%	30%
5: Extremely open	4%	3%	3%	10%
n	285	72	34	10

EMPIRICAL ANALYSIS

This research tests four main hypotheses:

- 1) A person's generational group affects whether he/she has a passive financial advisor,
- 2) A person's generational group affects whether he/she has heard of passive investing,
- 3) A person's generational group affects whether he/she knows what passive investing is,
- 4) A person's generational group affects how open he/she is to passive investing if he/she does not already have a passive financial advisor/robo-advisor.

Probit models are used to test each hypothesis, because these demonstrate whether individual generational groups are related to investing behaviors. Because each dependent variable is binary, the marginal effects reported indicate both the direction and magnitude of the effect of generation on investing behaviors. Null hypotheses are rejected when the p-value is less than 0.05. The main independent variables for Hypotheses 1 through 4 are generation, with dummy variables categorized according to the Pew Center generation classification (see Table 1).²

For Hypotheses 1 through 4, the following equation measures the relationship between the outcome of the passive financial advisory dependent variable (Y_i) and the independent variables. X represents each non-omitted generation variable, while Z contains the control variables.

$$Y_i = \alpha + \sum_{j=1}^3 \beta_j X_{ij} + \sum_{k=4}^{34} \gamma_k Z_{ik}$$

U.S. region of residence, race, ethnicity, education, income, employment status, marital status, and whether one has children are included as standard demographic control variables. U.S. region is categorized as Midwest, Northeast, South, and West, using the United States Census

² Baby Boomer is the omitted variable.

Bureau Regions and Divisions classification system.³ Race is categorized as Asian, White, or Other, due to the relatively small number of respondents who identified as non-Asian and non-White.⁴ Ethnicity is categorized as Hispanic or non-Hispanic. Income is categorized as above or below the average U.S. household income of about \$59,000 per year (United States Census Bureau, 2017).

The model also controls for tech-savviness, using the following variables: smartphone usage (throughout the day vs. less frequently), software installation habits (usually self-installed vs. usually with help), and keyboard shortcut usage (often vs. less frequent). Tech-savviness may affect how comfortable someone is with robo-advisory and other forms of passive financial advisory because these tools often utilize technology-driven communication in lieu of person-to-person interaction.

Financial situation is another major consideration. The model controls for these financial situation-related factors: types of formal financial education received (high school course(s), undergraduate course(s), financial certification or degree), financial decision-making status in the household, and home ownership. These are included as controls because a person's financial situation may affect his/her financial priorities and how he/she makes investment choices. Financial decision-making status is categorized based on whether a person is the financial decision-maker of the household, and if so, whether he/she has dependents.⁵ Saving and investing habits are also taken into account as control variables, because how someone handles one aspect of his/her finances may have a relationship with other aspects. These variables included saving frequency (at least monthly vs. less often), types of retirement saving accounts held (defined

³ Northeast is the omitted variable.

⁴ White is the omitted variable.

⁵ Not being the financial decision-maker is the omitted variable.

contribution, defined benefit, and individual retirement account (IRA)), types of advisory used for investment/brokerage accounts (active financial advisor and choosing one's own investments), and types of assets held within these investment/brokerage accounts (individual stocks, individual bonds, and index/mutual fund shares).⁶

⁶ No variables are omitted here as none of the options are mutually exclusive.

RESULTS

In the full probit model with control variables included, Generation Z shows a 35.5% higher likelihood of using passive financial advisors (H1) (see Table 7).⁷ Hispanics show a 6.0% higher chance of using passive financial advisory compared to non-Hispanics. Other racial/ethnic groups do not show significantly different results. Some other variables that have a positive relationship with usage of passive financial advisory include individual stock holding (13.5% higher chance), individual bond holding (20.3% higher chance), and mutual/index fund shareholding (31.3% higher chance) (see Table 7). For these assets, the survey did not distinguish between types of management and only specified that they should be held in an investment/brokerage account. On the other hand, variables that appear to have a negative relationship with usage of passive financial advisory include having an active financial advisor (8.1% lower chance) and choosing one's own investments (9.7% lower chance) (see Table 7). This confirms that active and passive management are in direct competition with each other.

⁷ Baby Boomer is the omitted variable.

Table 7: Marginal effects of generation on passive financial advisory

Independent variables	Dependent variables			
	H1 Have a passive financial advisor	H2 Know what passive fund management is	H3 Have heard of what passive fund management is	H4 Open to passive financial advisory, if not already using it
<i>Generation</i>				
Millennial	0.049 (0.024)	0.103 (0.089)	0.148* (0.068)	-0.006 (0.104)
Generation Z	0.355* (0.212)	0.251 (0.119)	0.094 (0.051)	0.058 (0.197)
Generation X	0.000 (0.036)	-0.076 (0.096)	0.036 (0.052)	-0.056 (0.110)
<i>Demographics</i>				
Male	-0.027 (0.019)	0.184*** (0.047)	0.111** (0.035)	0.057 (0.056)
Hispanic	0.06* (0.034)	0.008 (0.069)	0.135** (0.031)	0.027 (0.074)
Asian	0.045 (0.029)	0.189** (0.059)	0.137** (0.033)	0.144* (0.072)
Non-White and non-Asian	0.034 (0.035)	0.003 (0.075)	0.024 (0.045)	0.007 (0.086)
Midwest region	0.001 (0.025)	-0.009 (0.071)	-0.059 (0.051)	-0.121 (0.077)
South region	0.017 (0.027)	-0.027 (0.068)	-0.004 (0.044)	-0.110 (0.074)
West region	0.019 (0.030)	0.025 (0.073)	0.01 (0.047)	-0.061 (0.079)
Income above \$59,000	-0.007 (0.018)	0.033 (0.054)	-0.011 (0.036)	-0.004 (0.063)
Highest education: Bachelors	0.007 (0.022)	-0.050 (0.060)	-0.012 (0.038)	0.041 (0.070)
Highest education: Graduate school	-0.015 (0.022)	-0.119 (0.071)	0.016 (0.045)	-0.154* (0.073)
Employed for wages or self-employed	-0.015 (0.028)	0.167* (0.069)	0.159** (0.057)	-0.001 (0.089)
Married	0.017 (0.021)	0.010 (0.060)	0.055 (0.039)	0.114 (0.066)
Has children	0.037 (0.023)	0.026 (0.069)	0.074 (0.049)	-0.033 (0.074)
<i>Tech-savviness</i>				
Frequent smartphone usage	-0.009 (0.020)	-0.025 (0.056)	-0.002 (0.038)	0.049 (0.064)
Installs software himself/herself	0.013 (0.025)	0.053 (0.083)	-0.080 (0.036)	0.029 (0.092)
Uses keyboard shortcuts often	-0.005 (0.017)	-0.002 (0.049)	0.030 (0.033)	0.033 (0.056)

Table 7 (cont.): Marginal effects of generation on passive financial advisory

<i>Finances</i>				
Formal financial education in high school	0.002 (0.021)	0.018 (0.055)	0.052 (0.031)	-0.037 (0.067)
Formal financial education in undergraduate course(s)	0.011 (0.018)	0.113* (0.050)	0.08* (0.031)	-0.073 (0.058)
Financial certification or degree	0.026 (0.028)	0.292*** (0.057)	0.174*** (0.027)	-0.037 (0.067)
Financial decision-maker of household, with dependents	0.011 (0.047)	-0.013 (0.108)	-0.019 (0.067)	0.066 (0.127)
Financial decision-maker of household, no dependents	0.017 (0.040)	0.014 (0.098)	0.027 (0.059)	0.006 (0.118)
Owens home	-0.010 (0.018)	-0.038 (0.052)	0.016 (0.035)	0.073 (0.057)
Saves monthly or more often	-0.001 (0.018)	-0.016 (0.051)	0.043 (0.035)	0.052 (0.057)
Has defined contribution retirement account	0.032 (0.020)	0.146** (0.051)	-0.002 (0.036)	-0.070 (0.060)
Has defined benefit retirement account	0.038 (0.026)	0.052 (0.059)	0.042 (0.039)	-0.044 (0.065)
Has individual retirement account	0.008 (0.022)	0.107 (0.059)	0.039 (0.038)	0.028 (0.070)
Has active financial advisor for investment/brokerage account	-0.081*** (0.017)	0.336*** (0.066)	0.086 (0.051)	0.100 (0.098)
Chooses own investments for investment/brokerage account	-0.097*** (0.022)	0.15* (0.072)	0.131* (0.043)	0.104 (0.092)
Holds individual stocks in investment/brokerage account	0.135*** (0.042)	0.004 (0.068)	-0.005 (0.059)	-0.039 (0.073)
Holds individual bonds in investment/brokerage account	0.203*** (0.056)	0.055 (0.071)	-0.036 (0.064)	0.126 (0.085)
Holds index/mutual fund shares in investment/brokerage account	0.313*** (0.068)	0.142* (0.068)	0.107* (0.044)	-0.046 (0.077)
n	631	631	631	401
R²	0.3919	0.2651	0.3097	0.0742

*** Significant at the 0.0 percent level

** Significant at the 1.0 percent level

* Significant at the 5.0 percent level

According to the results shown in Table 7, openness to passive investing does not have a significant relationship with generation (H4). There are two variables that appear to have a positive relationship with openness: a person is 14.4% more likely to be open to using a passive financial advisor if he/she is Asian, and he/she is 15.4% less likely to be open to it if he/she has achieved a graduate degree or higher.

More broadly, how well people understand passive fund management/robo-advisory is another relevant consideration. Respondents selected the most applicable of four statements describing their understanding, ranging from “I am very familiar with it,” to “I have not heard of it and I don’t know what it is,”. Of Millennials, 59% know at least somewhat about it, and 80% have at least heard of it (see Table 8). For the Probit model shown in Table 7, two cumulative variables are created based on these answer choices: knowing what passive fund management is (H2), and having heard of it (H3).

Table 8: Understanding of passive fund management by generation

<i>Understanding of passive fund management</i>	Percentage of Millennials	Percentage of Generation X	Percentage of Baby Boomers	Percentage of Generation Z
I am very familiar with it.	25%	10%	9%	21%
I have heard of it and know somewhat about it.	34%	28%	32%	32%
I have heard of it but I don't know what it is.	22%	29%	18%	11%
I have not heard of it and I don't know what it is.	20%	34%	41%	37%
n	425	119	68	19

Men show a 18.4% higher chance of knowing what passive fund management is, and Asians show a 18.9% higher chance of knowing what passive fund management is (see Table 7).⁸

⁸ White is the omitted variable.

Other variables that show a positive relationship are being employed for wages or self-employed (16.7% higher chance), having formal financial education from an undergraduate course (11.3% higher chance), having formal financial education from a professional degree/certification (29.2% higher chance), having a defined-contribution account (14.6% higher chance), having an active financial advisor (33.6% higher chance), choosing one's own investments for an investment/brokerage account (15.0% higher chance), and holding mutual/index fund shares in an investment/brokerage account (14.2% higher chance) (see Table 7). Many of these variables are centered around having specific finance knowledge or needing to think about one's own finances, so it is logical that they relate to awareness of people's investment options.

In terms of having heard of passive fund management, Millennials show a 14.8% higher chance than Baby Boomers (see Table 7). However, given the lack of significant difference between the two groups' usages of passive financial advisors, recognition does not necessarily translate into actions. Men, Hispanics, and Asians also show increased rates of recognition between 11.1% and 13.7% (see Table 7). Similar to the knowledge variable, formal financial education has a positive relationship here as well. Having had undergraduate financial education courses relates to an 8.0% higher chance of awareness, and professional degrees and certifications show a 17.4% higher chance (see Table 7). Choosing one's own investments and holding mutual/index fund shares also show positive relationships, with 13.1% and 10.7% higher chance respectively (see Table 7). Those who are employed for wages or self-employed show a 15.9% higher chance (see Table 7).

LIMITATIONS

It is possible that some results in this study are specific to the sample taken. Because survey responses were collected through Amazon Mechanical Turk, they may not be fully representative of the general U.S. population. In particular, respondents found through Amazon Mechanical Turk tend to be younger and more educated than the general U.S. population (Berinsky, Huber, & Lenz, 2012). These samples also tend to include a greater percentage of Asian respondents and a lower percentage of Black and Hispanic respondents compared to the general U.S. population (Berinsky, Huber, & Lenz, 2012). In addition, survey respondents may be more tech-savvy than average if they seek out online surveys regularly. Adding on, the survey was sent out people who are available to take surveys during typical working hours and may have different characteristics than the general population.

CONCLUSION

The tug of war between active and passive funds is as strong as ever. Lower fees and more consistent returns make passive financial advisors attractive to investors, especially as robo-advisors harness new technology to deliver information. The purpose of this research is to study whether generation group affects attitudes on and usage of passive financial advisory. The particular focus here is on the Millennial generation since factors including financial and cultural landscape, post-recession risk aversion, tech-savviness, high student loans, low social trust, and resilient future-looking optimism all play roles in Millennials' decision-making, extending to how they manage their finances.

Results show that Millennials are more likely to use passive financial advisory than Generation X is, but there is not a significant difference between Millennials and Baby Boomers. This suggests that Millennials may be a fruitful target market for passive financial advisors. In addition, active and passive financial advisors alike can benefit if they are able to meet a broad range of investor needs, making it unnecessary for investors to go to competitors. Because of Millennials' growing importance to the economy, active financial advisors may want to explore offering passive investing as well.

In terms of knowing what passive fund management is, Millennials show a significantly higher likelihood of having heard of passive fund management compared to Baby Boomers. There is no significant difference in openness to passive financial advisory by generation among those who do not use it. Passive financial advisors may want to explore how to bridge this gap between awareness and action among Millennials. With this in mind, the future of investment choices among Millennials will be a compelling area to study.

APPENDIX

Survey: “Attitudes on Passive Investing”

Q31

Informed Consent Document

You are being asked to take part in a research survey. We are asking you to take part because you have accessed the survey through the Amazon Mechanical Turk website, and your participation is voluntary. Responses will be analyzed by Sonia Amladi, the principal investigator of this research at Cornell University.

What the study is about: This survey is intended to measure attitudes on passive investing/robo-advisory among adults.

What we will ask you to do: If you agree to be in this study, you will answer a survey that will take about 10 minutes to complete. The survey will include questions about your demographical background, level of financial education, technology use, and saving and investing attitudes and behaviors.

Risks and benefits: We anticipate that your participation in this survey presents no greater risk than everyday use of the Internet. There are no benefits to you beyond your compensation for participation.

Your answers will be confidential. The records of this study will be kept private. The principal investigator will have access to MTurk worker ID, but only for payment, and we will not be able to connect worker IDs to individuals (so participation will be anonymous) In any sort of report we make public, we will not include any information that will make it possible to identify you.

Taking part is voluntary: Taking part in this study is completely voluntary. Completion of the entire survey is required to participate for compensation. However, you may choose not to participate, or stop participation at any time.

Statement of Consent: I have read the above information. By clicking through and answering the questions, I am agreeing to participate.

If you don't want to participate, simply close your browser window now.

I agree to participate in the research.

Page Break

Q1 What is your age? Please enter a whole number.

Q2 What is your gender?

Male

Female

Q3 Please specify your ethnicity.

Hispanic

Not Hispanic

Q4 Please specify your race.

- American Indian or Alaska Native
 - Asian
 - Black or African American
 - Native Hawaiian or Other Pacific Islander
 - White
 - Other
-

Q5 What is your total household income?

- Less than \$10,000
 - \$10,000 - \$19,999
 - \$20,000 - \$29,999
 - \$30,000 - \$39,999
 - \$40,000 - \$49,999
 - \$50,000 - \$59,999
 - \$60,000 - \$69,999
 - \$70,000 - \$79,999
 - \$80,000 - \$89,999
 - \$90,000 - \$99,999
 - \$100,000 - \$149,999
 - More than \$150,000
-

Q6 What is the highest degree or level of school you have completed? If currently enrolled, mark the previous grade or highest degree received.

- No high school diploma or GED
 - High school diploma or GED
 - Some college
 - Associate degree (for example: AA, AS)
 - Bachelor's degree (for example: BA, AB, BS)
 - Master's or Professional degree (for example: MA/MS, MBA, MD)
 - Doctoral degree (for example: PhD, EdD)
-

Q7 What is your employment status?

- Employed for wages
 - Self-employed
 - Out of work and looking for work
 - Out of work but not currently looking for work
 - A homemaker
 - A student
 - Retired
 - Unable to work
-

Q8 What is your marital status?

- Currently married or domestic partnership
 - Widowed
 - Divorced
 - Separated
 - Single, never married
-

Q9 How many children do you have?
Number of children

▼ 0 ... 6+

Q10 What is your state of residence?
State

▼ Alabama ... Wyoming

Q11 What type of education, training, or information have you received in managing your personal finances?

- High school course(s)
 - Undergraduate course(s)
 - Professional or Doctorate degree in Finance or Business
 - Professional certification (ex: CFA, CFP, CPA)
 - Seminars, workshops, or presentations
 - I have not received any education in financial/personal finance.
 - Other _____
-

Q12 Are you the financial decision-maker of your household?

- Yes, I am the financial decision-maker and have no dependents.
 - Yes, I am the financial decision-maker and have dependents (children, siblings, parents etc.).
 - No, I am NOT the financial decision-maker and I am my parents' dependent.
 - No, I am NOT the financial decision-maker and I am someone else's dependent.
-

Q13 Is your home rented or owned?

- Rented
 - Owned
 - Other _____
-

Q14 Which of the following best describes your smartphone usage outside the work place?

- I use my smartphone frequently throughout the day.
 - I use my smartphone a few times a day.
 - I use my smartphone a few times a week.
 - I use my smartphone once a week or less frequently.
 - I do not use a smartphone.
-

Q15

Do you usually install new computer or phone software yourself, or do you have someone else do it for you?

- I usually install the software myself.
 - I usually have someone else install the software for me.
-

Q16 Do you use keyboard shortcuts?

- Yes, I use keyboard shortcuts often.
 - Yes, I use keyboard shortcuts occasionally.
 - No, I do not use keyboard shortcuts.
-

Q17 How often do you contribute to a savings account on average?

- Less than once a year
 - Once a year
 - A few times a year
 - Once a month
 - More often than once a month
 - I do not have/contribute to a savings account.
-

Q29 Do you have a retirement savings account?

- Yes
 - No
-

Display This Question:

If Q29 = Yes

Q18 Which types of retirement savings accounts do you have? Select all that apply.

- Defined contribution plan (for example: 401(k), 403(b))
 - Defined benefit plan (for example: a pension plan)
 - Individual retirement account (Traditional or Roth IRA)
 - Other _____
-

Display This Question:

If Q18 = Defined contribution plan (for example: 401(k), 403(b))

Q19 Did your employer automatically enroll you in the defined contribution plan (for example: 401(k), 403(b)), or did you have to opt in?

- I was automatically enrolled by my employer.
 - I had to opt in.
 - I don't know.
-

Q20 Do you have an investment/brokerage account?

- Yes
 - No
 - I don't know.
-

Display This Question:

If Q20 = Yes

Q21 For these investment/brokerage accounts, which of the following apply? Select all that apply.

- I have an active financial advisor.
 - I have a passive financial advisor/robo-advisor.
 - I choose my own investments.
 - Other help with investment choices
-

Display This Question:

If Q20 = Yes

Q22 What kinds of assets are held in your investment/brokerage accounts? Select all that apply.

- Individual stocks
 - Individual bonds
 - Mutual/index funds
 - Other
-

Q23 How would you characterize your understanding of passive fund management/robo-advisory?

- I am very familiar with it.
- I have heard of it and know somewhat about it.
- I have heard of it but I don't know what it is.
- I have not heard of it and I don't know what it is.

Skip To: End of Survey If Q23 = I have not heard of it and I don't know what it is.

Q24 If you have heard about passive fund management/robo-advisory, where did you hear about it? Select all that apply.

- Family
- Friends
- People I work with or know professionally
- A financial advisor
- Online advertisements on websites
- Social media advertisements
- Search engine results
- Other _____

Display This Question:

If Q21 = I have a passive financial advisor/robo-advisor.

Q25 When did you first start using a passive financial advisor/robo-advisor?

- In the last six months
- In the last year
- In the last two years
- In the last three years or more

Display This Question:

If Q21 = 1 have a passive financial advisor/robo-advisor.

Q26 On a scale of 1 (extremely dissatisfied) to 5 (extremely satisfied), how satisfied are you with your passive financial advisor/robo-advisor?

- 1: Extremely dissatisfied
 - 2: Somewhat dissatisfied
 - 3: Neither satisfied nor dissatisfied
 - 4: Somewhat satisfied
 - 5: Extremely satisfied
-

Display This Question:

If Q21 = 1 have a passive financial advisor/robo-advisor.

Q30 What factors have affected your response to the previous question?

Display This Question:

If Q21 != 1 have a passive financial advisor/robo-advisor.

Q27 On a scale of 1 (not at all open) to 5 (extremely open), how open would you be to robo-advisory?

- 1: Not at all open
 - 2: Not open
 - 3: Unsure
 - 4: Somewhat open
 - 5: Extremely open
-

Display This Question:

If Q21 != I have a passive financial advisor/robo-advisor.

Q28 What factors have affected your response to the previous question?

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