Financial Awareness and Retirement Savings

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Abstract

This paper develops a novel search-based financial awareness index based on the Search Volume Index (SVIs) from Google Trends. The index measures individuals' attention to IRA savings-related topics and their efforts to acquire relevant knowledge. There is significant time-series and cross-sectional heterogeneity in financial awareness regarding IRA savings. The results confirm that increased financial awareness predicts greater savings in IRAs. Various robustness tests support the validity of the financial awareness index and underscore the role of this crucial yet overlooked factor in retirement savings. The methodology employed in this paper can be readily extended to various other household finance areas.

Keywords: financial awareness; retirement saving; individual retirement accounts; Google Trends; financial literacy.

JEL classification: D14, G51, G53

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1. Introduction

The growing individual responsibility for retirement planning has generated significant interest in the question of how effectively the general population manages this task. Retirement savings impact not only household welfare but also government budgetary stress. While extensive research has explored the role of financial knowledge in retirement planning (Angrisani et al., 2023; Lusardi and Mitchell, 2007 and 2011), the significance of financial awareness---another dimension of financial literacy indicating the extent to which individuals are aware of personal financial matters---has been largely overlooked (Atikinson and Messy, 2012).

Financial awareness, which focuses on individual attention to financial affairs, recognition of financial matters, and efforts to acquire financial knowledge, is the initiative to improve financial knowledge, capabilities, and behavior to attain one's financial well-being. It's especially crucial to retirement saving due to the long-term nature and complex schemes of retirement planning. A lack of financial awareness can hinder individuals from taking proactive steps early on or acquiring essential financial knowledge and skills to make responsible financial decisions. Indeed, many financial literacy programs and advocacy campaigns, such as National Financial Awareness Day, aim not only to convey financial knowledge to the population, but also to increase awareness regarding personal finances. However, little is known about financial awareness and its role in retirement savings.

A lack of easily measured metrics to quantify financial awareness could be one reason for the gap in the literature. It is hard, if not impossible, to directly observe individual awareness. Even when specifically asking respondents about their financial awareness level in a survey, it remains challenging to construct metrics that truthfully reflect one's subjective attitudes and perceptions.

Search-based data, based on the internet search behavior of millions of households, could offer an effective solution. Internet search data reveals attention and attitude, providing a direct and unambiguous measure of people's awareness (Da et al., 2011). For example, if someone searches for "IRA contribution limit" through a search engine, he or she is undoubtedly aware of retirement saving via IRAs, paying attention to the topic, and making efforts to acquire relevant knowledge.

This paper develops a novel measure of financial awareness regarding retirement savings by utilizing search volume data from Google Trends. To serve the purpose of the study, which is to examine how financial awareness influences financial outcomes directly resulting from individuals' own decisions, the paper specifically focuses on individual retirement account (IRA) savings, including both traditional IRAs and Roth IRAs. While IRAs and 401(k) plans are the primary self-managed retirement saving vehicles for U.S. workers, IRAs are less influenced by external factors such as employee eligibility, employer matching contributions and investment options which are beyond individual control. Thus, this paper investigates the role of IRA-related financial awareness in IRA savings.

By using the aggregate search volume of search terms from Google Trends, I construct financial awareness indexes regarding IRA savings. Then, I investigate how financial awareness evolves over time and varies across different geographic locations. The analysis reveals significant time-series and cross-sectional heterogeneity in IRA-related financial awareness in the general population. Using the index, I find that a higher level of financial awareness predicts more IRA savings. Various robustness tests support the validity of the financial awareness index and underscore its significant role.

This study contributes to the literature in several ways. First, it confirms and highlights the role of financial awareness in retirement savings. To my knowledge, it is the first paper to develop

a direct measure of financial awareness of retirement savings---a crucial yet overlooked factor that influences financial outcomes---and to investigate its role. It complements existing research on financial literacy, which predominately focuses on the "knowledge" and "skills" dimensions, by highlighting the "awareness" dimension. The findings underscore the need for a more comprehensive definition of financial literacy, emphasizing the importance of considering the population's financial awareness levels in order to enhance the retirement planning efficiency.

Furthermore, it develops a novel approach to measure individual financial attitude among the general population. Household finance research has relied heavily on survey-based data for individual financial information. However, survey-based measures are limited by low frequencies, selected samples, and potential measurement errors, especially when assessing subjective perceptions (Lusardi and Mitchell, 2014; Singer, 2002). The lack of high-frequency data to capture the population's financial situations poses a significant challenge in household finance research. Search-based measures offer several advantages: they are available at high frequencies, are more transparent than the alternatives, and truthfully reflect people's attention and attitudes (Da et al., 2015). While internet search data is widely recognized as one of the most timely and broad-reaching monitoring systems to predict home sales, automotive sales, tourism, flu outbreaks and financial market performance (Choi and Varian, 2012; Costola et al., 2021; Ginsberg et al., 2009), it has not been extensively adopted in the household finance area. Importantly, the methodology employed in this paper can be readily extended to various other household finance areas.

The rest of this paper is organized as follows. Section 2 introduces the development of search-based financial awareness measures and other main variables utilized in this study as well as their summary statistics. In Section 3, I present empirical methodologies and the main findings

regarding the relationship between financial awareness and IRA savings at the U.S. level. Section 4 reports evidence at the state level. Section 5 provides conclusions.

2. Data and Methodology

2.1. Financial awareness index.

I construct financial awareness index based on search-based data from Google Trends. Specifically, I compile a list of search terms related to IRA savings and calculate the average Search Volume Index (SVI) from Google Trends of these search terms, thereby indicating the level of financial awareness regarding IRA savings in the population. I follow the previous literature and begin by creating a primitive word list for IRA savings (Da et al., 2015). As primitive words may not be the exact words people use to search on Google Trends, I utilize the Google Trends "related queries" feature to further identify the commonly used search terms associated with the primitive words. I delete duplicates and words deemed either irrelevant or overly broad. Then I download the monthly SVIs from January 2007 to December 2022 for each search term. I delete search terms with insufficient observations, defined as those with more than 5% missing values.

Since the IRA savings behavior measure, which will be described in Section 2.2, is at the quarterly level, I aggregate the downloaded monthly SVI to the quarterly level by summing the monthly SVI of each search term j in each quarter t (month i=1, 2 and 3 in quarter t) and calculate the logarithm of the quarterly sum:

$$QSVI_{j,t} = \log\left(\sum_{i=1}^{3} SVI_{j,i}\right). \quad (1)$$

After eliminating seasonality from $QSVI_{j,t}$, I identify the most influential search terms for predicting IRA savings. Following Da et al. (2015), I run expanding backward rolling regressions of IRA saving behavior measure on seasonal-adjusted $QSVI_{j,t}$ to identify 20 search terms each year with the highest t-statistics. For example, to identify the most influential search terms for retirement savings in 2009, I regress retirement planning behavior measure (i.e., the share of IRA assets of total financial assets) on seasonal-adjusted *QSVI* of each IRA savings-related search term during the period before 2009 (i.e., 2007-2008). Then, I rank the t-statistics of the search terms from the backward rolling regressions and select the top 20 to construct the IRA savings financial awareness index in 2009. Similarly, I run the regression using data during 2007-2009 and select the 20 keywords with the highest t-statistics as the components of IRA savings financial awareness index in 2010.

The average quarterly seasonally adjusted $QSVI_{j,t,}$ of the 20 search terms, denoted as FA_t, serves as the financial awareness index in each quarter *t*:

$$FA_t = \frac{\sum_{j=1}^{20} QSVI_{j,t}}{20} \tag{2}$$

I plot the calculated quarterly financial awareness index (FA_t) in Figure 1. Overall, it shows an increasing trend of financial awareness regarding IRA savings over time. It also demonstrates significant time-series variations in individual attention and efforts to collect information regarding IRA savings topics. As further confirmed in Table 1, time-series standard deviation of financial awareness is 0.15 (mean is 0.05) during 2009-2022. The awareness index reaches its peak in 2022

Q2 with a value of 0.35; the index is at the lowest level in 2009 Q2 with a value of -0.18. The difference is 0.53, 9.9 times of the mean.

[Insert Figure 1 here]

[Insert Table 1 here]

2.2. Financial behavior measures

To measure financial behavior and outcomes regarding IRA savings, I calculate the quarterly percentage of IRA assets out of total financial assets ($IRA\ share_t$) based on the U.S. Retirement Market Data published by the Investment Company Institute (Investment Company Institute, 2022). The national-level data is available quarterly. As shown in Table 1, the average IRA share is 10.32% with a standard deviation of 1% during 2009-2022.

2.3. Financial knowledge score

I obtain financial knowledge measures from the National Financial Capability Study (NFCS) State-by-State Survey provided by the Financial Industry Regulatory Authority (FINRA) Investor Education Foundation. The purpose of the State-by-State survey, conducted with a nationally representative sample of Americans aged 18 and older, is to assess the financial capability of the national population. The survey is conducted every three years from 2009 to 2021.

The evaluation of respondents' basic financial knowledge involves the following five questions: 1. "Suppose you had $100 in a savings account and the interest rate was 2% per year. After 5 years, how much do you think you would have in the account if you left the money to grow?---More than $102; Exactly $102; Less than $102; Don't know; Prefer not to say;" 2. "Imagine that the interest rate on your savings account was 1% per year and inflation was 2% per

year. After 1 year, how much would you be able to buy with the money in this account?---More than today; Exactly the same; Less than today; Don't know; Prefer not to say;" 3. "If interest rates rise, what will typically happen to bond prices?---They will rise; They will fall; They will stay the same; There is no relationship between bond prices and the interest rate; Don't know; Prefer not to say;" 4. "A 15-year mortgage typically requires higher monthly payments than a 30-year mortgage, but the total interest paid over the life of the loan will be less---True; False; Don't know; Prefer not to say;" and 5. "Buying a single company's stock usually provides a safer return than a stock mutual fund---Ture; False; Don't know; Prefer not to say." The total number of correct answers to the five questions is used as the individual financial knowledge score $FK_{j,t}$, of individual *j* in survey wave *t* (*t*=2009, 2012, 2015, 2018 and 2021). Then the average US financial knowledge scores are calculated by averaging individual scores in each wave.

As shown in Table 1, the national average financial knowledge score is 2.85 out of 5 with the highest score of 3.02 in 2009.

2.4. Media coverage.

To measure media coverage of IRA savings topics, I conduct textual analysis using the ProQuest News Database, which covers U.S. historical newspapers. Specifically, I calculate news coverage in the *Wall Street Journal* (*WSJ*), which has the highest nationwide circulation volume and is considered an important news source to obtain financial and business information among the U.S. population. I calculate the news coverage in each quarter *t* during 2009-2022 as the ratio of the number of news articles mentioning the keywords used to construct IRA savings financial awareness index in Equation (2) ($N(IRA\ News)_t$)to the total number of articles published by *WSJ* in the same quarter ($N(News)_t$):

$$News_t = \frac{N(IRA\ News_t}{N(News)_t}, \quad (3)$$

As shown in Table 1, the average quarterly news coverage is 1.83% with a standard deviation of 0.78%. Figure 2 illustrates the quarterly news coverage on IRA savings topics from 2009 to 2022. It is found that there exists substantial variation in media coverage over time. For example, the news coverage ratio fluctuates from a low of 0.64% in 2015 Q3 to a high of 4.63% in 2009 Q4.

[Insert Figure 2 here]

2.3. Other controls.

I obtain data on the personal income and employment from the Bureau of Economic Analysis. Population data is from Federal Reserve Economic Data provided by the Federal Reserve Bank of St. Louis.

3. Financial awareness and retirement savings

3.1. Baseline analysis.

In this section, I examine how financial awareness is associated with IRA savings. I run the following regressions:

$$IRA\ share_t = \alpha + \beta FA_t + \gamma FA_{t-1} + \omega FK_t + \theta X_t + \varepsilon, \quad (4)$$

where $IRA\ share_t$ indicates quarterly IRA shares out of financial assets in the U.S. FA_t is the developed financial awareness index. I also control for average financial awareness index in the previous four quarters FA_{t-1}. To examine if the developed financial awareness is simply a proxy for financial knowledge, I include financial knowledge score FK_t in the regression. X_t includes other control variables such as logarithm of national personal income, population, and employment.

As shown in Table 2 column (1), there is a significantly positive relationship between financial awareness and IRA shares. When financial awareness regarding IRA savings is higher, savings in IRA as a percentage of total financial assets increase. In column (2), I include financial knowledge score along with other control variables. It's shown that the positive relationship between financial awareness and IRA share remains significant at 1%. One unit increase in financial awareness is associated with 2.27% increase in IRA shares. It is worth pointing out that the positive coefficient of financial awareness remains significant after including financial knowledge score in the regression, while coefficient of financial knowledge score is insignificant. The results indicate that the derived financial awareness index is not a proxy for the traditional financial knowledge measure; instead, it captures additional information that influences financial behavior.

[Insert Table 2 here]

3.2. IV analysis.

The above analysis doesn't necessarily indicate the causal relationship between financial awareness and IRA savings. The positive relationship could be biased by endogeneity of financial awareness. I adopt instrumental variable (IV) analysis to address the issue.

I use news coverage of IRA savings related topics as an instrumental variable for financial awareness. Media including newspapers has always played an important role in improving financial awareness among the population. It is plausible to expect that higher news coverage will increase public awareness of financial topics, which in turn affects retirement saving behavior. I run instrumental variable 2SLS regression. The results are reported in Table 3.

[Insert Table 3 here]

In column (1) on first-stage results, it is shown that there is a significantly positive relationship between news coverage and financial awareness. One unit increase in media coverage on IRA savings topics is associated with 2.13 increase in financial awareness level in the same quarter (significant at 5% level). In column (2) on the second-stage results, it is found that the effect of financial awareness on IRA shares remains significantly positive. One unit increase in financial awareness leads to 3.76% increase in IRA shares. Therefore, after addressing the endogeneity issue, the significant effect of financial awareness on IRA shares is confirmed.

3.3. Change of financial awareness index.

Google Trends standardizes SVIs by setting the maximum search volume value during the search period to 100 and scaling the other values accordingly. To make inter-temporal comparison meaningful, previous literature uses change of SVI as a measure of attention. The baseline analysis in Section 3.1 does not involve inter-temporal comparison, therefore the developed financial awareness index is a valid measure by assigning equal weights to each of the top 20 keywords without considering their actual search volume values. As a robustness check, I follow the literature

(Heyman et al., 2019) and construct a new financial awareness measure, denoted as ΔFA_t, based on the change of SVI.

Specifically, I calculate the quarterly change of SVI of search term *j* in quarter *t* as follows:

$$\Delta QSVI_{j,t} = QSVI_{j,t} - QSVI_{j,t-1}. \quad (5)$$

where quarterly SVI: $QSVI_{j,t}$ is defined in Equation (1).

Then I run expanding backward rolling regressions of quarterly change in IRA shares ($\Delta IRA\ share_t$) on $\Delta QSVI_{j,t}$ to identify the 20 most influential search terms each year. Last, I calculate the change of financial awareness as the average $\Delta QSVI_{j,t}$ of the 20 identified most significant search terms:

$$\Delta FA_t = \frac{\sum_{j=1}^{20} \Delta QSVI_{j,t}}{20} \quad (6)$$

After obtaining the measure of change of financial awareness, I regress change of IRA shares ($\Delta IRA\ share_t$) on ΔFA_t:

$$\Delta IRA\ share_t = \alpha + \beta \Delta FA_t + \omega \Delta FK_t + \theta \Delta X_t + \varepsilon, \quad (7)$$

where ΔFK_t denotes quarterly change in financial knowledge score based on NFCS data; other control variables ΔX_t include changes in the logarithm of national personal income, population, and employment.

As shown in Table 4, change in financial awareness is positively correlated with change in IRA shares. A one-unit increase in ΔFA leads to a 1.77% increase in ΔIRA share without controls in column (1) and 2.04% increase with controls in column (2). Therefore, the positive relationship between financial awareness and IRA savings is confirmed by using the alternative financial awareness measure.

[Insert Table 4 here]

4. State-level analysis

In this section, I apply the developed methodology to a state-level analysis. This additional analysis not only explores the role of financial awareness in IRA savings at the state level, but also assesses the validity of the methodology outlined in Section 3.

Given that the state-level analysis involves inter-temporal comparisons across states, I adopt the change of financial awareness measure as in section 3.3. Specifically, I download the state level SVI of the top 20 most influential search terms identified each year in section 3.3. Since the state-level IRA savings behavior measure is available only on an annual basis, I aggregate the downloaded SVI data on an annual basis accordingly. Then I calculate the change in financial awareness for state *s* in year *t* as:

$$\Delta FA_{s,t} = \frac{\sum_{j=1}^{20} \Delta ASVI_{j,s,t}}{20}, \quad (8)$$

where $\Delta ASVI_{j,s,t}$ represents the annual change in the logarithm of SVI for search term *j* in state *s*, during year *t.*

The summary statistics on state-level financial awareness index reveal significant heterogeneity of financial awareness among states. In Figure 3, I plot the maximum, minimum, and average financial awareness index across states in each year from 2009 to 2022. It is found that there is substantial variation in the financial awareness index across states over time, especially in the earlier years. For example, in 2010, North Carolina has the highest ΔFA of 0.57; in the same quarter, Oregon has the lowest ΔFA of -0.13. The difference between the highest and lowest states is 0.71. For comparison, the average change in IRA savings financial awareness index among all states is 0.07 in that year.

[Insert Figure 3 here]

Next, I explore the relationship between financial awareness and IRA savings at the state level. For state level financial behavior measure, I utilize data on households' ownership of IRAs and Roth IRAs from the "Survey of Household Economics and Decision Making," provided by the Board of Governors of the Federal Reserve System.[2] The data is available only on an annual basis.

I regress annual change of IRA ownership ($\Delta IRA\ ownership_{s,t}$) on change of financial awareness $\Delta FA_{s,t}$ at the state level:

$$\Delta IRA\ ownership_{s,t} = \alpha + \beta \Delta FA_{s,t} + \omega \Delta FK_{s,t} + \theta \Delta X_{s,t} + \varepsilon, \quad (9)$$

[2] https://www.federalreserve.gov/consumerscommunities/shed_data.htm

All the control variables including annual change of financial knowledge $\Delta FK_{s,t}$ and annual change of logarithm of national personal income, population, and employment are at the state level.

Table 5 confirms the positive relationship between financial awareness and IRA ownership at the state level. For example, in column (4), after controlling for financial knowledge and other state-level control variables, a one-unit increase in the change of financial awareness correlates with a 9.59% increase in IRA ownership. These findings not only confirm the significant role of financial awareness index in predicting IRA savings at the state level, but also validate the method used to derive it; The methodology employed in the baseline analysis proves to be effective when applied at the state level.

[Insert Table 5 here]

5. Conclusion

This paper seeks to explore financial awareness of retirement savings in the United States over time. It introduces an innovative search-based financial awareness index utilizing Search Volume Index (SVIs) from Google Trends. Both national and state-level indexes are employed. It is found that financial awareness regarding IRA savings in the general population changes over time and exhibits significant heterogeneity across states. The observed variation in financial awareness could provide valuable insights for policymakers and educators. It enables them to better assess the financial literacy level of the population and target interventions more effectively.

Using the developed financial awareness index, I examine its role in predicting retirement savings behavior and outcomes. It is confirmed that increased awareness indicates greater savings in IRAs. These results underscore the positive relationship between financial awareness and

responsible financial behavior. It is evident that being aware of the financial issues and adopting proactive attitudes are essential for fostering responsible financial behavior and achieving favorable financial outcomes. Furthermore, the paper demonstrates that the financial awareness index captures information not contained in the traditional financial literacy measure. These findings emphasize the importance of adopting a comprehensive definition of financial literacy and integrating the often-overlooked dimension of financial awareness as a distinct component in future studies.

The lack of high-frequency data to capture changes in the population's financial situations poses a significant challenge in household finance research. It calls for more innovative data sources to study various under-explored research topics (Goldstein et al., 2021). This paper responds to this need by exploring the potential of using search-based data as a complementary data source to the traditional survey-based measures. It validates the use of big data from internet searches to derive high-frequency financial awareness measures and proposes a methodology for implementation. The methodology can be readily extended to examine the role of financial awareness in other financial behaviors and to develop additional household finance measures.

However, it is important to recognize that while search-based data could be an ideal complement to survey-based measures, it cannot be a substitute. Traditional survey-based data provides detailed individual-level information and can be tailored to address specific research needs---features that search-based method lacks. Therefore, a combination of the traditional survey-based data and the innovative search-based data can effectively address the current data issues in household finance studies.

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Table 1: Summary Statistics

	No. of obs.	Mean	Std.	Min	Max
Financial awareness index	56	0.0542	0.1490	-0.1818	0.3518
IRA share	56	10.32%	1.00%	7.65%	11.80%
Financial knowledge score	52	2.8454	0.1201	2.6317	3.0231
News coverage	56	1.83%	0.78%	0.64%	4.63%

Note: The table reports the number of observations, mean, standard deviation, minimum and maximum of main variables under analysis.

Table 2: Financial Awareness and IRA savings

	(1)		(2)	
FA	0.0534	***	0.0227	***
	(0.0055)		(0.0081)	
FA in previous four quarters			-0.0208	**
			(0.0101)	
Financial knowledge			-0.0319	
			(0.0237)	
log (income)			-0.0366	
			(0.0657)	
log (population)			0.6149	*
			(0.3198)	
log (employment)			0.0645	
			(0.0808)	
No. of obs.	56		52	
R-square	0.6350		0.9498	

Note: Estimated results from OLS regressions. Dependent variables are shares of IRA assets out of total financial assets. Explanatory variables are financial awareness index regarding IRA savings. Average financial awareness index in previous four quarters is added in regression in column (2). Regression in column (2) also includes financial knowledge score and control variables including logarithm of personal income, population, and employment.

*, **, *** denote 10%, 5%, 1% significance levels, respectively.

Table 3: 2SLS Regression

	(1). First-stage regression Dep var: FA		(2). 2SLS regressions Dep var: IRA share	
News coverage	2.1276	**		
	(0.8503)			
FA			0.0376	*
			(0.0224)	
FA in previous four quarters	0.4736	***	-0.0274	**
	(0.1632)		(0.0135)	
Financial knowledge	0.0725		-0.0312	
	(0.4109)		(0.0229)	
log (income)	1.8028		-0.0611	
	(1.1074)		(0.0722)	
log (population)	1.9994		0.6410	**
	(5.6913)		(0.3107)	
log (employment)	-2.8941	*	0.0845	
	(1.5104)		(0.0829)	
No. of obs.	52		52	
R-square	0.9901		0.9461	

Note: Estimated results from 2SLS regression. Column (1) shows results from first-stage regression: dependent variable is financial awareness index; the instrumental variable is news coverage on IRA savings-related topics. Control variables include financial awareness index in previous four quarters, financial knowledge, logarithm of personal income, population, and employment. Column (2) reports 2SLS regression results. Dependent variable is shares of IRA assets out of total financial assets. Explanatory variables are financial awareness index regarding IRA savings, average financial awareness index in previous four quarters, financial knowledge score and logarithm of personal income, population, and employment.

*, **, *** denote 10%, 5%, 1% significance levels, respectively.

Table 4. Change in Financial Awareness and IRA Savings

	(1)		(2)	
Δ FA	0.0177	**	0.0204	**
	(0.0088)		(0.0079)	
Δ financial knowledge			-0.0744	
			(0.1218)	
Δ log (income)			-0.1525	
			(0.1717)	
Δ log (population)			1.2307	
			(1.7019)	
Δ log (employment)			-0.0111	
			(0.1876)	
No. of obs.	56		48	
R-square	0.0697		0.1548	

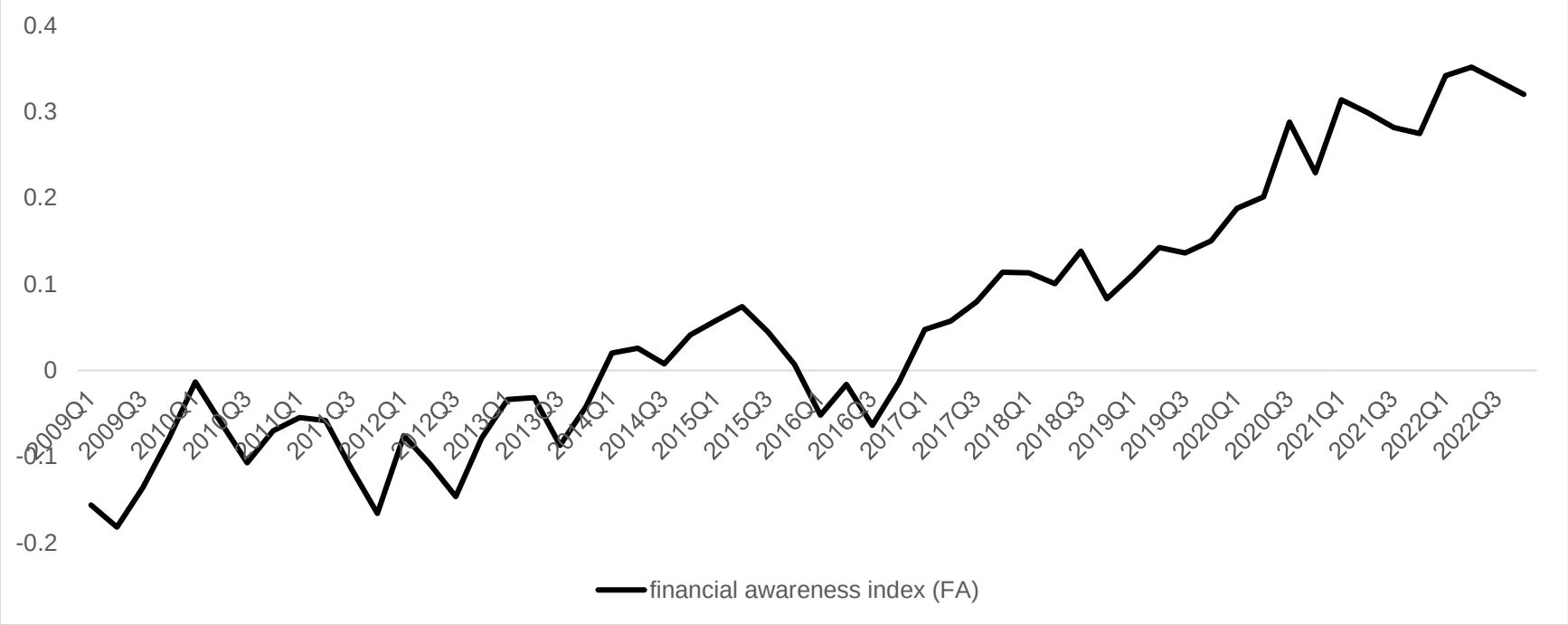
Note: Estimated results from OLS regressions. Dependent variable is quarterly change in shares of IRA assets out of total financial assets. Explanatory variables are change in financial awareness index (ΔFA); column (2) also includes control variables: change in financial knowledge and change in the logarithm of personal income, population, and employment.
*, **, *** denote 10%, 5%, 1% significance levels, respectively.

Table 5: Financial Awareness and IRA savings: State-level Analysis

	(1)		(2)		(3)		(4)	
Δ FA	0.1021	**	0.0826	*	0.1036	**	0.0959	*
	(0.0424)		(0.0476)		(0.0448)		(0.0526)	
Δ financial knowledge			0.0098				0.0241	
			(0.1004)				(0.1119)	
Δ log (income)			-0.4738				-0.6774	
			(0.5190)				(0.6503)	
Δ log (population)			-1.1562				-1.1699	
			(1.0878)				(1.3898)	
Δ log (employment)			1.1050	***			1.0887	**
			(0.4032)				(0.4315)	
No. of obs.	243		216		243		216	
State fixed effects	No		No		Yes		Yes	
R-square	0.0235		0.0502		0.0473		0.0769	

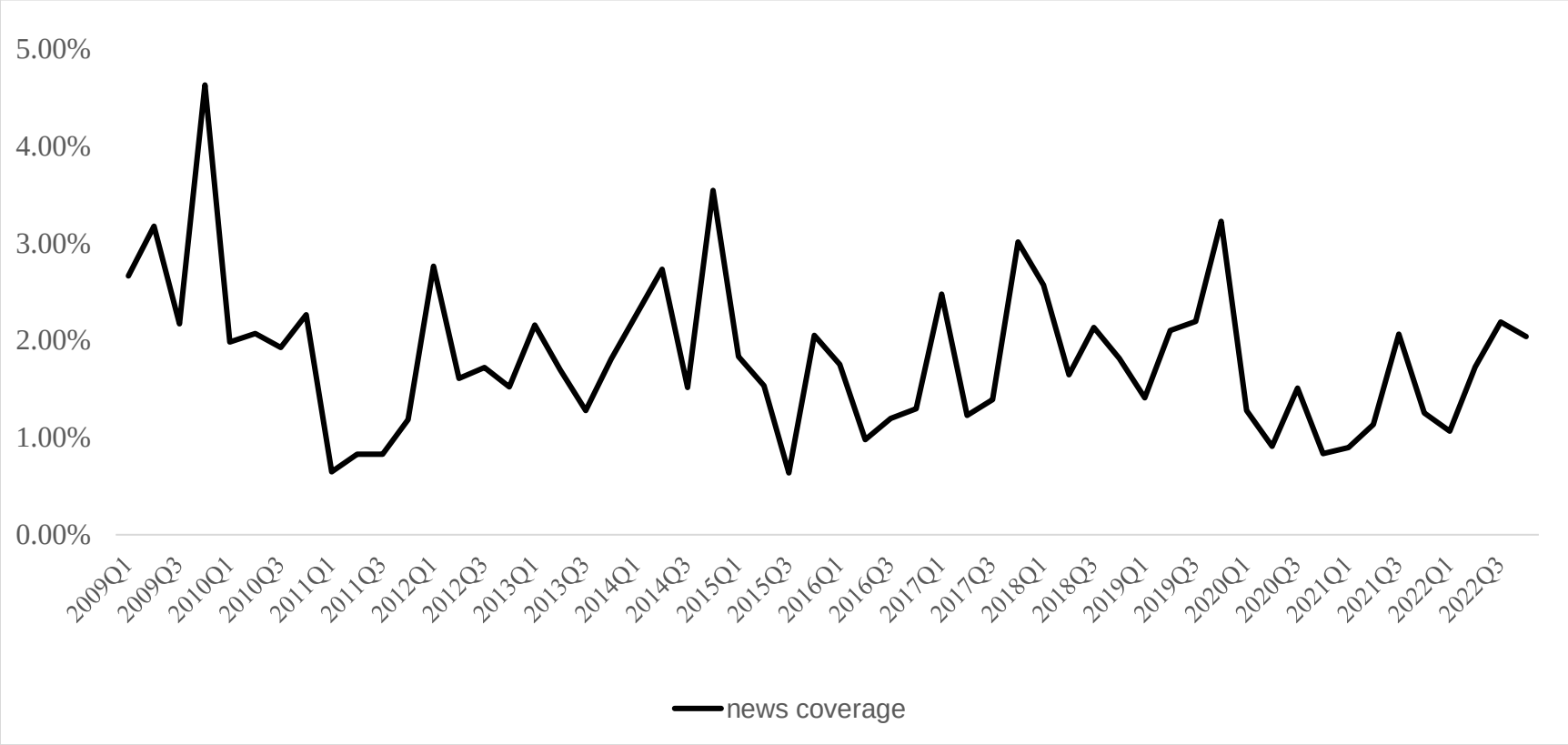
Note: Estimated results from OLS regressions. Dependent variables are annual changes in IRA ownership. Explanatory variables include annual change in financial awareness index (ΔFA) in columns (1) and (3). Columns (2) and (4) also control for annual change in financial knowledge score and change in the logarithm of personal income, population, and employment. In columns (3) and (4), state fixed effects are included in the regressions. All data is at the state level.
*, **, *** denote 10%, 5%, 1% significance levels, respectively.

Figure 1: Financial Awareness Index



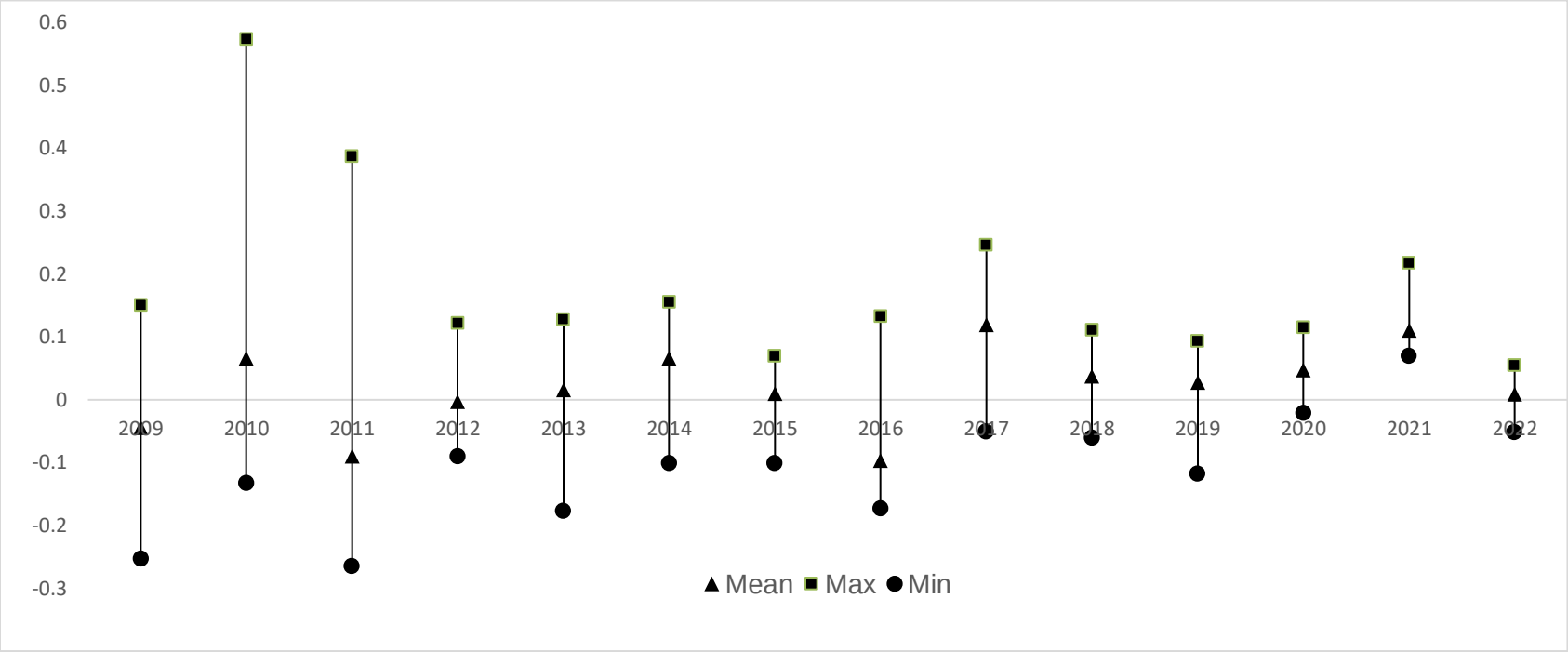
Note: The figure shows financial awareness index over time.

Figure 2. News Coverage



Note: The figure shows news coverage defined as the ratio of news articles mentioning IRA savings keywords out of the total number of news articles published in the *Wall Street Journal* in a quarter.

Figure 3. Financial Awareness Index Heterogeneity across States



Note: The figure shows the maximum, minimum and mean financial awareness index across states each year during 2009-2022.