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Measuring financial skill

A guide to using the Bureau of Consumer Financial Protection Financial Skill Scale

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1. Introduction

Financial skill is widely understood to be a key element of financial literacy and capability. In addition to a knowledge component, financial capability has an action component—the skills to put financial knowledge to use.[1] These skills are powerful because they can be applied to all kinds of financial decisions, even those that are new and unfamiliar, by adults of any age.

In prior qualitative research into what kind of knowledge is most likely to influence financial behavior, the Bureau of Consumer Financial Protection's (Bureau's) research team found that both consumers and financial professionals were far more likely to say they rely upon knowing *how* to do things than to rely upon knowing particular facts.[2] This finding is consistent with a broad literature concluding that factual knowledge in and of itself is insufficient to drive behavior change.[3]

Based on analysis of these qualitative interviews, the research team derived the concept of financial skill, which reflects an individual's ability to find, process, and act on financial information. In order to conduct further quantitative research on this concept, and to provide researchers and practitioners with a standard, reliable, and broadly available way to measure an individual's level of financial skill, the Bureau led a rigorous research effort to develop and test a set of questions—a "scale"—to measure financial skill.[4] Please note that this financial skill scale

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[1] See, e.g., Adele Atkinson et al., *Levels of Financial Capability in the UK*, Volume 27, Issue 1, Public Money and Management, (2007) at pp. 29–36, http://www.tandfonline.com/doi/abs/10.1111/j.1467-9302.2007.00552.x?journalCode=rpmm20; OECD, *PISA 2012 Assessment and Analytical Framework: Mathematics, Reading, Science, Problem Solving and Financial Literacy*, OECD Publishing, (February 2013), dx.doi.org/10.1787/9789264190511-en.

[2] See "Financial Well-Being: The Goal of Financial Education," consumerfinance.gov/reports/financial-well-being/.

[3] This literature is discussed in section 4.2 of "Financial Well-Being: The Goal of Financial Education," consumerfinance.gov/reports/financial-well-being/.

[4] The research team responsible for conducting the research and analysis to develop the definition of financial skill as well as to develop the scale to measure financial skill, included Bureau staff as well as a team of research contractors led by the Corporation for Enterprise Development (CFED), including the University of Wisconsin-Madison Center for Financial Security, the Urban Institute, ICF International, and Vector Psychometric Group. The research was funded under a competitive award; contract number CFP-12-Z-00019.

is distinct from the Financial Well-Being Scale.[5] The Financial Well-Being Scale measures a person's sense of their ability to meet current and ongoing financial obligations, security in their financial future, and ability to make choices that allow enjoyment of life.[6]

The Bureau field-tested the financial skill scale as part of the 2016 National Financial Well-Being Survey. The results of the survey demonstrated that an individual's level of financial skill is strongly associated with their experience of financial well-being.[7] In subsequent research, the Bureau found that financial skill is likely to influence a person's financial behavior, which in turn influences a person's factual financial situation and ultimately their financial well-being.[8]

While several evidence-based practices to build financial skill have been documented in prior studies,[9] these recent findings support the value of additional innovation and research into strategies that specifically focus on the development of financial skill. One tool that we can offer in support of such research is a free, publicly available, reliable, and validated scale to measure financial skill in order to measure success of different strategies in this critical area.

This guide describes the research behind the Bureau's Financial Skill Scale[10] and provides detailed steps for using it, including how to score individuals' responses and compare their scores. Readers can find the definition of financial skill in Section 2.1, the questions that make up the scale in Section 2.3, and information on how to score responses in Section 3.

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[5] In future references this will be called the Financial Well-Being Scale.

[6] See the first FAQ in Section 3.5 to learn more about the difference between the two scales.

[7] See Section 3.8 of "Financial well-being in America," consumerfinance.gov/data-research/research-reports/financial-well-being-america/.

[8] See Section 3.3 of "Pathways to financial well-being: The role of financial capability," consumerfinance.gov/f/documents/bcfp_financial-well-being_pathways-role-financial-capability_research-brief.pdf

[9] See Section 2.3.2 of "Effective financial education: Five principles and how to use them," consumerfinance.gov/data-research/research-reports/effective-financial-education-five-principles-and-how-use-them/.

[10] In future references this will be called the Financial Skill Scale.

2. The Financial Skill Scale

2.1 What financial skill is

Based on interviews with consumers and input from experts, the action-oriented concept that this scale was designed to measure has three critical components:

- **Knowing when and how to find reliable information to make financial decisions.** This is key when consumers are purchasing an unfamiliar product or making a long-term decision such as borrowing for college, buying a house, or managing retirement assets. With so many complex considerations and information sources out there, it is necessary for consumers to be able to find accurate, reliable information to aid them in the decision-making process.

- **Knowing how to process financial information to make financial decisions**. Once consumers have reliable information, they need to be able to filter it and know what information is most relevant to them. There are often pros and cons to many financial decisions, and consumers need to be equipped to evaluate the information they have found in light of their specific situation.

- **Knowing how to execute financial decisions and adapt as necessary to stay on track.** Once consumers have found and processed information, they need to be able to figure how and what steps to take to act on it. Their financial goals may be long-term, and they need not only to have the skill to stick with the original plan but also to adapt it as necessary to any challenges or opportunities along the way.

2.2 About the scale

After developing a consumer-driven definition of financial skill and its main components, the Bureau's research team next engaged in the task of converting that definition into a concrete measurement tool that practitioners and researchers can use in their work. With the support of a number of experts, the team developed a 10-item[11] scale and conducted testing and validation of the scale to ensure its quality and reliability.[12]

The scale incorporates consumers' and experts' perceptions of financial skill to deliver a single financial skill score that captures the three elements of financial skill. The scale is constructed so that it is possible to compare different people's scores directly or to see how an individual's financial skill changes over time.

What is a scale? A scale is an instrument used to measure something, such as an attitude or ability. By definition, scales are always made up of multiple questions or "items." A good scale provides consistent results every time it is used; assuming that what is being measured does not change, and reliably measures the concept it is supposed to be measuring.

2.3 The questions that make up the scale

The standard version of the Financial Skill Scale contains 10 questions (presented in Table 1, below) and an abbreviated version of the scale contains 5 questions. The questions were selected through a multi-stage process. This process involved:[13]

[11] The standard version of the scale contains 10 questions. A 5-item version that covers the same issues in a more succinct manner is available; however, it trades off some sensitivity in measurement.

[12] Vector Psychometric Group used Item Response Theory methods to conduct the statistical analysis used to develop the scale and scoring procedures.

[13] The process used to develop the Financial Skill Scale was identical to—and conducted concurrent with—that used to develop the Financial Well-Being Scale. For a more detailed description of the process and methods used to develop these scales, see "CFPB Financial Well-Being Scale: Scale development technical report," www.consumerfinance.gov/data-research/research-reports/financial-well-being-technical-report/.

- Developing an **initial pool** of potential or "candidate" questions.
- A series of **cognitive interviews** to ensure that people understand the questions and what they are designed to ask.
- Conducting **psychometric analyses** on data gathered on the candidate items through three rounds of surveys with over fourteen thousand respondents to select the combination of questions that best measured the underlying concept of interest.[14] This also included examination of whether respondents answered the questions differently based on their age group or how the questions were administered (read to oneself or read out loud by an interviewer).
- Using **validation** questions in the surveys to check that scores produced by the new scale are associated in expected ways to related concepts, such as engaging in financial research, following through on financial decisions, and having confidence in one's ability to achieve financial goals.

The abbreviated 5-question version of the scale (denoted with a † in Table 1, below) still provides adequate coverage of all three elements of financial skill, and it is a highly reliable measurement that can be used in place of the 10-question scale when collection of the longer measure is not feasible. Scores produced by either the standard (10-question) or abbreviated (5-question) versions of the scale are directly comparable to each other.[15]

Reliability statistics for both versions of the scale are presented in Appendix A and validation statistics for the scale are presented in Appendix B.

[14] Analyses included classical test theory techniques, such as Cronbach's alpha and item-total correlations, factor analysis (both exploratory and confirmatory), and Item Response Theory (IRT) analyses.

[15] The correlation between scores from the 5-question version and the 10-question version of the scale is 0.94 ($p < 0.001$) where 1.0 means perfectly correlated.

TABLE 1: FINANCIAL SKILL SCALE

Questions	Response Options
How well does this statement describe you or your situation? 1. I know how to make complex financial decisions† 2. I am able to make good financial decisions that are new to me 3. I know how to get myself to follow through on my financial intentions† 4. I am able to recognize a good financial investment 5. I know how to keep myself from spending too much 6. I know how to make myself save† 7. I know where to find the advice I need to make decisions involving money	• Describes me completely • Describes me very well • Describes me somewhat • Describes me very little • Does not describe me at all
How often does this statement apply to you? 8. I know when I do not have enough information to make a good decision involving my money† 9. I know when I need advice about my money 10. I struggle to understand financial information* †	• Always • Often • Sometimes • Rarely • Never
* Denotes questions for which the response options are "reverse coded." See Appendix D for a discussion of what this means and how to do it. † Denotes questions that are part of the abbreviated (5-question) scale.	

3. Producing a score

3.1 Scoring overview

The score used for the Financial Skill Scale is based on an Item Response Theory (IRT) analysis. IRT is a statistical method that provides a more precise measure than a scale with a simple summary score. It does so because it allows different items in a scale, and people's responses to these items, to contribute differently to the final score.[16]

There are two recommended methods for scoring the Financial Skill Scale: table-based IRT scoring or software-based IRT scoring. The former is a simple way to produce a financial skill score when a respondent answers all the questions in the scale. The table-based method should not be used if a respondent does not answer all questions in the scale (i.e., when data are missing). Software-based scoring allows for direct estimation of individual IRT scores using the individual's full response pattern, provides the most precise individual score, and can be used to produce scores even if some questions in the scale are not answered.

3.2 Table-based IRT scoring

A table-based scoring procedure—a look-up table—allows users of the scale to find an approximate IRT-based score for any given sum score.[17] Once a respondent has answered the questions in the scale, there is two-step process for determining their Financial Skill Scale score.

1. **Determine the total response value (or raw total):** After assigning the corresponding value from 0 to 4 to a person's response to each one of the questions,

[16] In other words, if two people both achieved a total response value of 24 but did so by responding differently to various items, they might in fact have different levels of financial skill.

[17] The Financial Skill Scale score reported in the look-up table is the score for the most likely answer pattern for any given total response value or sum of answers.

add them up to find the sum total. This is the "total response value" you will use in Step 2.

2. **Convert the total response value to a Financial Skill Scale score:** Using the *total response value* from Step 1, find the corresponding Financial Skill score based on the **respondent's age group** and **mode of administration**. Mode refers to whether or not the respondent read the questionnaire to themselves ("self-administered"), or had the questions read to them by someone else ("administered by someone else").[18]

Appendix C at the end of this user guide provides the scale questions with the response values and their corresponding table-based scores. Practitioners interested in using the scale directly with consumers can download a pdf version of the scale at: consumerfinance.gov/financial-skill-scale

The scale is constructed so that the same questions and response options can be used with all respondents. The only difference is which column you will use in Step 2 of the scoring worksheet to locate the actual Financial Skill Scale score:

It is important to note that a questionnaire can only be scored using the scoring worksheet if the respondent provided an answer to all questions in the scale. Any responses such as "don't know" or skipped questions make the use of the look-up table inaccurate. Questionnaires with missing and "don't know" responses can still be scored using the software-based scoring method.

3.3 Software-based IRT scoring

The software-based IRT scoring method allows researchers to estimate the most precise financial skill scores for each respondent. This approach uses the individual's full response pattern, rather than the sum of the responses, to determine a financial skill score for each individual in the data, providing more precise scores than summed scores and even scores found

[18] Information on why the scoring is different for different age groups and modes is provided in the "Frequently Asked Questions" section of this user guide.

via the provided look-up tables. Additionally, this method can accurately estimate scores even with missing responses. Appendix D describes procedures for scoring responses according to this method using a custom Stata package.[19]

3.4 Interpreting the score

3.4.1 What the score means

A Financial Skill Scale score is a standardized number between 0 and 100 that represents the respondent's underlying level of financial skill. The number does not have meaning on its own, and most people's scores will fall somewhere in the middle—extremely low or extremely high scores will be uncommon.

3.5 Frequently asked questions

How is this scale different from the Bureau's Financial Well-Being Scale?

While the two scales were developed using the same methodology, they were created to measure two different concepts. The Financial Well-Being Scale provides a measure of a state of being: the extent to which an individual's financial circumstances and financial capability have provided them with financial security and freedom of choice both in the present and for the future. The Financial Skill Scale measures one aspect of financial capability that consumers and

[19] Abt Associates developed this Stata package on behalf of the Bureau, under a competitive award; contract number TPDCFPBPA130014.

financial professionals described when asked what they thought allowed a person to have higher levels of financial well-being: an individual's ability to find relevant information, process that information, and act on their decisions regarding financial questions they are facing.

Why is the scoring different for different age groups?

We wanted to create a financial skill scale that could be used by adults of all ages. As part of the research and testing, the Bureau found that adults aged 18–61 and adults aged 62 and older answered the Financial Skill Scale questions differently. Step 2 of the scoring process takes these age-related differences into account and converts the raw total to a "normalized" financial skill score that is then directly comparable across age groups.

Why is the scoring different for different modes?

Research has found that respondents tend to answer survey questions differently depending on how a questionnaire is administered—for instance, whether it is self-administered or administered by someone else. As part of the research and testing, the Bureau found that respondents who answered the questions via phone answered the Financial Skill Scale questions differently than respondents who answered the scale on their own using a computer. Step 2 of the scoring process takes these mode-related differences into account and converts the raw total to a "normalized" financial skill score that is then directly comparable across the modes.

Can a score be produced if the person doesn't respond to all the items?

Accurate scores can be produced with missing responses only when using the full response pattern software-based scoring method. For the table-based scoring method to produce accurate scores, it is necessary for respondents to provide an answer to every item in the questionnaire. It is not possible to accurately score individuals who do not respond to all the items with the table-based process, as skipping items reduces the overall number of items being measured. (For instance, an individual who answered all of the questions and has a total response value of 30 out of 40 likely does not have the same financial skill as an individual who skipped two of the items and therefore has a total response value of 30 out of 32.)

Can changes be made to the questionnaire?

For the scoring methods outlined in this user guide to work accurately, it is necessary for respondents to answer to every item in the questionnaire using the exact item wording as presented, including the response options.

What is a good (or bad) score?

A higher score indicates a higher level of measured financial skill, but there is not a specific cut-off for a "good" or "bad" financial skill score. The average financial skill score among U.S. adults is 50, with 25 percent of scores falling below 42 and 25 percent of scores falling above 57.[20]

It is also important to note that small changes in scores due to answering a few questions slightly differently may result in movements up or down the scale that do not necessarily indicate a meaningful change in underlying financial skill. Each estimated value on the Financial Skill Scale is measured with some error, so small changes in a person's score should be interpreted carefully.

Do I need permission to use this scale?

No. This scale and scoring procedure are free and publicly available.

[20] Bureau analysis of 2016 *National Financial Well-Being Survey* data. N = 6,386.

Appendix A:

Reliability statistics

Marginal reliability statistics describe the likelihood that the differences in scores produced by the scale are due to actual variance in the respondents' financial skill rather than to statistical error. In other words, marginal reliability in IRT is the ratio of true score variance to observed score variance.[21] Marginal reliability statistics can range from 0 to 1 similar to Cronbach's alpha in classical test theory. The minimum standard for a scale to be considered generally reliable is .70.[22] The marginal reliability of the Financial Skill Scale is at or above .80 for all combinations of respondent age, survey mode, and scale version.

TABLE 2: FINANCIAL SKILL SCALE MARGINAL RELIABILITY BY AGE GROUP AND MODE

Mode	Standard 10 Item Scale Age 18-61	Standard 10 Item Scale Age 62+	5 Item Scale Age 18-61	5 Item Scale Age 62+
Online	0.90	0.91	0.82	0.84
Phone	0.90	0.89	0.83	0.81

[21] Sireci, S.G., Thissen, D., & Wainer, H. (1991). On the reliability of testlet-based tests. *Journal of Educational Measurement*, 28, 237–47.

[22] Nunnally, J. & Bernstein, I. (1994) Psychometric Theory. New York: McGraw Hill, 3rd ed.

Appendix B:

Validation statistics

The following table provides information on the relationship between the Financial Skill score and a list of validation items. These validation items include key financial behaviors and outcomes, as well as measures of other financial capability concepts such as financial knowledge.

TABLE 3: SPEARMAN'S CORRELATIONS BETWEEN 10 ITEM IRT SCORES AND VALIDATION ITEMS

Variable	Response Options	Mean	Std. Dev.	Obs.[a]	Spearman Corr.
Has set automatic contributions to a non-Retirement Savings Account	(0) No (1) Yes	0.403	0.490	6,296	0.179***
Knoll and Houts financial knowledge scale score	[b]	-0.057	0.815	6,394	0.227***
Objective numeracy[c]	Sum of correct responses (0) to (2)	1.436	0.702	6,394	0.071***
Propensity to plan scale[d]	Sum of responses to 4 items (1) Strongly disagree (2) Disagree (3) Neither agree nor disagree (4) Agree (5) Strongly agree	14.254	3.218	6,384	0.474***
Confidence in ability to raise $2,000 in 30 days	(1) I am certain I could not come up with $2,000 (2) I could probably not come up with $2,000 (3) I could probably come up with $2,000 (4) I am certain I could come up with the full $2,000	3.299	1.076	6,027	0.381***
Follow-through on financial commitments to others	(1) Not at all (2) Very little (3) Somewhat (4) Very well (5) Completely	4.233	0.848	6,370	0.477***

Follow-through on financial goals set for self	(1) Not at all (2) Very little (3) Somewhat (4) Very well (5) Completely	3.620	0.894	6,376	0.699***
Doing own research before making decisions involving money	(1) Never (2) Seldom (3) Sometimes (4) Often (5) Always	3.716	1.021	6,367	0.467***
Confidence in own ability to achieve financial goals	(1) Not at all confident (2) Not very confident (3) Somewhat confident (4) Very confident	3.232	0.728	6,366	0.575***
Stayed within a budget or spending plan	(1) Never (2) Seldom (3) Sometimes (4) Often (5) Always	4.789	1.147	6,382	0.500***
Having non-Retirement Investments (such as stocks, bonds or mutual funds)	(0) No (1) Yes	0.315	0.464	6,394	0.251***
Applied for credit and was turned down	(0) No (1) Yes	0.102	0.302	6,322	-0.140***
Having a savings habit	(1) Strongly disagree (2) Disagree (3) Disagree slightly (4) Agree slightly (5)Agree (6) Strongly agree	4.386	1.458	6,374	0.500***
Financial Socialization- Parents discussed how to establish a good credit rating	(0) No (1) Yes	0.609	0.488	6,375	0.177***
Financial Socialization- Parents taught how to be a smart shopper	(0) No (1) Yes	0.365	0.482	6,372	0.146***
Education	(1) Less than high school (2) High school (3) Some college (4) Bachelor's degree or higher	2.989	0.948	6,394	0.221***

Source: Bureau of Consumer Financial Protection, National Financial Well-Being Survey.

Notes: *** = p < .0001.

(a) Number of observations varies due to differences in total valid responses.

(b) Item Response Score based on a table look-up.

(d) The two questions included are: (1) In the Bingo Lottery, the chance of winning a $10 prize is 1%. What is your best guess about how many people will win a $10 prize if 1,000 people each buy a single ticket for the Bingo Lottery?; (2) Which of the following represents the biggest risk of getting a disease? 1%, 10%, or 5%.

(c) The four questions in the scale are: (1) I consult my budget to see how much money I have left; (2) I actively consider the steps I need to take to stick to my budget; (3) I set financial goals for what I want to achieve with my money; (4) I prepare a clear plan of action w/ detailed steps to achieve my financial goals.

Appendix C:

The Financial Skill Scale questionnaire and scoring worksheet

This appendix contains the standard version and the abbreviated version of the Financial Skill Scale questions, response values and scoring tables. Practitioners interested in using the scale directly with consumers can download a pdf version of the scale at: consumerfinance.gov/financial-skill-scale

This appendix provides the values for the table-based scoring process described in Section 3.2 of this user guide. This process offers an alternative and convenient way to obtain the Financial Skill score without the use of the Stata package.[23]

[23] This lookup table approximates full response pattern IRT scoring by providing the IRT-based score for the most likely answer pattern for any given raw score.

Standard version questions and response values

Question	Statement	Does not describe me at all	Describes me very little	Describes me somewhat	Describes me very well	Describes me completely
How well does this statement describe you or your situation?	I know how to make complex decisions.	0	1	2	3	4
	I am able to make good financial decisions that are new to me.	0	1	2	3	4
	I know how to get myself to follow through on my financial intentions.	0	1	2	3	4
	I am able to recognize a good financial investment.	0	1	2	3	4
	I know how to keep myself from spending too much.	0	1	2	3	4
	I know how to make myself save.	0	1	2	3	4
	I know where to find the advice I need to make decisions involving money.	0	1	2	3	4
Question	**Statement**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
How often does this statement apply to you?	I know when I do not have enough information to make a good decision involving my money	0	1	2	3	4
	I know when I need advice about my money.	0	1	2	3	4
	I struggle to understand financial information.	4	3	2	1	0

Standard version scoring tables

Total Response Value	Financial Skill Score – Self-Administered Age 18-61	Financial Skill Score – Self-Administered Age 62 and older	Financial Skill Score – Administered by someone else Age 18-61	Financial Skill Score – Administered by someone else Age 62 and older
0	5	3	3	6
1	8	6	7	9
2	11	9	9	12
3	13	12	11	14
4	15	14	14	16
5	18	16	16	18
6	20	18	18	20
7	22	20	19	22
8	23	22	21	23
9	25	24	23	25
10	27	26	25	27
11	29	27	27	29
12	30	29	28	30
13	32	31	30	32
14	33	32	31	33
15	35	34	33	35
16	36	35	34	36
17	38	37	36	38
18	39	38	38	40
19	41	40	39	41
20	42	42	41	43
21	44	43	42	44
22	46	45	44	46
23	47	46	45	47
24	49	48	47	49
25	50	49	49	51
26	52	51	50	52
27	54	53	52	54
28	55	55	54	56
29	57	56	56	58
30	59	58	58	60
31	61	60	60	62
32	63	62	62	64
33	65	64	64	66
34	67	66	66	68
35	69	68	69	71
36	72	71	71	74
37	74	74	75	77
38	77	77	78	80
39	81	80	82	84
40	85	85	88	89

Abbreviated version questions and response values

Question	Statement	Does not describe me at all	Describes me very little	Describes me somewhat	Describes me very well	Describes me completely
How well does this statement describe you or your situation?	I know how to make complex decisions.	0	1	2	3	4
	I know how to get myself to follow through on my financial intentions.	0	1	2	3	4
	I know how to make myself save.	0	1	2	3	4
Question	**Statement**	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
How often does this statement apply to you?	I know when I do not have enough information to make a good decision involving my money	0	1	2	3	4
	I struggle to understand financial information.	4	3	2	1	0

Abbreviated version scoring tables

Total Response Value	Financial Skill Score – *Self-Administered Age 18-61*	Financial Skill Score – *Self-Administered Age 62 and older*	Financial Skill Score – *Administered by someone else Age 18-61*	Financial Skill Score – *Administered by someone else Age 62 and older*
0	10	9	9	12
1	14	13	13	16
2	18	16	16	19
3	21	19	19	22
4	24	23	23	25
5	28	26	26	28
6	31	29	29	32
7	34	32	32	35
8	37	35	35	38
9	40	38	38	41
10	43	41	41	44
11	46	44	44	47
12	49	47	47	50
13	52	50	51	53
14	55	54	54	56
15	59	57	58	60
16	62	61	62	64
17	66	65	66	68
18	71	69	71	73
19	75	75	76	78
20	80	80	83	85

Appendix D:

Instructions for software-based IRT scoring using Stata

This appendix provides instructions for applying the software-based IRT scoring method for the Financial Skill Scale using a custom Stata package (`pfs.ado`). Researchers who would like to use this Stata program to directly estimate Financial Skill Scale scores should take the following steps to prepare and score their data.

Users should be aware that computations are summed using many steps over 5 dimensions, so the calculations can take more than a day when using a large number of steps in each dimension (31 steps is the default). Faster computations are available using proprietary IRT software, and the two approaches produce identical output.

Preparing the data

Step 1: Naming the variables.

Variables capturing responses to the 10 financial skill items need to be named according to Table 4. Table 4 details each item, mapping variable name (Item name) to question wording (Item wording). Ensure that the names of each item are set to reflect the variables named as in the "Item name" column. The table indicates the items that are included in the 5-item short scale.

TABLE 4: ITEM DESCRIPTIONS

Item name	Item wording	Reverse coded	In 5 item scale	Response type
fs1_complexdecision	I know how to make complex decisions.	No	Yes	Describe
fs2_goodnewdecision	I am able to make good financial decisions that are new to me.	No		Describe
fs3_followthrough	I know how to get myself to follow through on my financial intentions.	No	Yes	Describe
fs4_recognizegoodinvestment	I am able to recognize a good financial investment.	No		Describe
fs5_keepfromspending	I know how to keep myself from spending too much.	No		Describe
fs6_howtosave	I know how to make myself save.	No	Yes	Describe
fs7_findadvice	I know where to find the advice I need to make decisions involving money.	No		Describe
fs8_notenoughinfo	I know when I do not have enough information to make a good decision involving my money	No	Yes	Frequency
fs9_whenadvice	I know when I need advice about my money.	No		Frequency
fs10_struggleunderstand	I struggle to understand financial information.	Yes	Yes	Frequency

Note: Responses for "Describe" items: 4=Describes me completely, 3=Describes me very well, 2=Describes me somewhat, 1=Describes me very little, 0=Does not describe me at all.

Responses for "Frequency items": 4=Always, 3=Often, 2=Sometimes, 1=Rarely, 0=Never.

Step 2: Coding non-substantive responses and missing values.

If the data includes non-substantive responses such as "skipped," "refused" or "don't know, such responses will need to be recoded as missing. In Stata, specifically, this would mean coding those responses to ".".

Step 3: Coding responses.

Each question response in the scale must be coded with values ranging from 0 to 4 where 4 is always the most positive financial skill response. For example, with "I struggle to understand financial information," a response of "Never" should be coded as 4 and a response of "Always" should be coded as 0. For the other items, a response of "Describes me completely" or "Always" should be coded as 4 and a response of "Not at all" or "Never" should be coded as 0. The column in Table 4 labeled "Reverse coded" highlights the one item that is coded the reserve of the other items.

The Stata program should exit with an error code if the items are not recoded properly. To determine whether items are coded properly, the program checks average correlations across negatively and positively worded items to ensure that the correlation is positive on average.[24]

Step 4: Creating indicators for mode of administration ("self") and age group ("age18_61").

The program relies on specific indicators to define the groups and apply the corresponding parameters. In order for the program to work correctly, the data must have an indicator for age and mode administration, labeled and coded as follows:

- Indicator 1: "**age18_61**" – this indicator should be set to 1 if the respondent age is 18 to 61 and to 0 if the respondent age is 62 or older
- Indicator 2: **"self"** –this indicator should be set to 1 if the survey was self-administered and to 0 if the survey was completed in an interview.

[24] This does not guarantee that the scoring has been done correctly, since data can exhibit some pathological correlations or one variable might be wrong while average correlations are correct, but it should prevent the most egregious scoring errors where no survey response have been corrected for reverse coding.

Correct group codes ensure that the proper parameters are applied when estimating the scores. After these indicators are created, the program creates a combined indicator of the group to which each individual response belongs. These groups are determined based on age [ages 18 to 61 or ages 62+], and mode of survey administration [self-administered or interview]. Depending on your particular sample and mode of administration, you could have between 1 and 4 groups:

- Group 1: Ages 62+, Interview
- Group 2: Ages 62+, Self-Administered
- Group 3: Ages 18-61, Interview
- Group 4: Ages 18-61, Self-Administered

Using the Stata program to generate scores

Step1: Find and install Stata scoring program.

Using Stata, type "`ssc install pfs`" to install a program that will score the items listed in Table 4. To search for alternate download locations type "`findit pfs`". The Stata help file also explains these steps. To read the help file, type "`help pfs`" after installing the program.

Step 2: Generate the Financial Skill score.

After preparing the data as described above, type "`pfs fs`" to generate a new variable `fs` which is the respondent's Financial Skill score.