Assessing risk attitude: the benefits of pooling measures

By Lukas Menkhoff and Sahra Sakha

In Germany and many other countries, financial advisors are required by law to assess their clients' risk preferences in order to help them make informed and appropriate investment decisions. Most institutions that provide financial advice—banks, for instance—carry out this assessment using just one type of risk measure. Financial advisors might ask clients to answer a question about their attitudes towards risk, for example, or to choose one option among several more or less risky alternatives.

Our study finds, however, that employing only one type of risk measure may result in an inaccurate assessment of risk aversion—and if the underlying information is unreliable, the corresponding investment decision will also be flawed. Based on empirical data comprising an unusually broad set of seven different risk measures, we suggest a more robust risk assessment model that combines various methods. Since our results indicate that these multiple-item risk measures usually outperform single-item measures, we recommend combining two or even three items to obtain more reliable risk attitude profiles. A higher level of accuracy could in turn lead to better investment advice.

In risky situations, we make decisions based on our individual *risk preferences*: that is, our willingness to take or avoid risk. Most people make such decisions intuitively, without evaluating them—but when these individuals seek external advice, an accurate assessment of their risk preference is critical.

The assessment of risk preferences is most prevalent in the field of financial advice, where a client's investment decisions should ideally be aligned with his or her personal attitude toward risk. Advisors are required to elicit and record their clients' risk attitudes, then factor these preferences into the advisory process. Typically, clients are asked to self-assess using a scale: say, from one (very risk-averse) to five (very risk-tolerant).

Though such single-item self-assessments are useful to some extent, they are not very reliable. A better approach involves employing two or three kinds of self-assessment items to create a new and more reliable multiple-item risk measure[1].

While the study at hand focuses on financial affairs, its principal argument can be generalized to other fields where the impact of decisions made today will unfold in an uncertain future. Examples include decisions faced by entrepreneurs as well as those made by prospective students, who must invest time and money in their education without a guaranteed return. Another relevant field is health behavior, which encompasses choices like whether to consume or abstain from certain types of food (such as meat or fat), or which type of treatment to undergo (e.g. alternative vs. conservative methods). Risk preference is usually not explicitly tested in these situations, but it does play an important role.

1 The full study is published as Menkhoff, L. and Sakha, S. (2016): *Estimating Risky Behavior with Multiple-Item Risk Measures: An Empirical Examination*, DIW Discussion Paper 1608.

The relevance of risk attitude assessment

Risk attitude determines rational financial investments

All personal finance investment options—including savings accounts, stocks, debt securities, currency and commodity products, among others—have their own risk and return profiles. Because most people have difficulty choosing among these products, they often turn to financial advisors for help. To promote high-quality financial advice and optimal investments, the German Securities Trading Act (*Wertpapierhandelsgesetz*) was implemented in January 1995. It requires financial planners to assess each client's investment risk attitude or *risk profile* in addition to identifying his or her financial situation, goals, and needs. This in turn provides a "reasonable" foundation for subsequent investment advice.[2] Risk assessment is thus one of the primary determinants for successful capital investment.

Risk attitude determines portfolio composition

The higher the client's risk tolerance in terms of capital loss, the more they will be inclined to include riskier assets (e.g. stocks) in the investment portfolio.

Data from Germany's Socio-Economic Panel (SOEP) study, which uses an established measure of financial risk attitude,[3] reveal that Germans who are more risk-averse also hold a higher share of riskless assets.[4] In addition to individual risk preferences, other factors—such as personal wealth—also play a role in portfolio composition, since wealthier individuals may be more willing to bear (some) risk and can afford to diversify into less liquid assets. Though the SOEP data do provide evidence for such correlations, risk aversion remains an important and significant determinant overall and thus deserves careful attention.

How do financial institutions assess risk attitude?

Financial institutions are free to choose their own risk assessment methods. In practice, they do so in a similar fashion across European countries. A study conducted in Austria examined how 34 local financial institutions assess risk attitude.[5] Nearly all of them employ a single-item self-assessment that uses a Likert scale. Half of the institutions use a scale with five grades, while most of the others prefer four grades. "Speaking scales", in which the various risk attitude levels—from "very risk-averse" to "very risk-tolerant", for example—are described to the client, are preferred to generic (non-speaking) scales, which are purely numeric (e.g. ratings from one to five). More details are provided in Table 1.

Table 1

Overview of practical risk attitude measurement approaches

	Number of banks
Number of considered risk grades	
3 grades	4
4 grades	11
5 grades	17
6 grades	1
other	1
Description of risk grades	
"speaking"	14
"non-speaking"	19
other	1
Products used as examples:	
yes	21
no	13

Source: Klaus Schreiner (2015), survey of 34 banks conducted in Austria in 2015.

Most banks use four or five grades.

Some institutions exemplify the different risk levels with specific products or types of products. Although such examples seem helpful, they are only valuable if the client has a clear understanding of these financial products—and since studies have shown that financial literacy is universally poor among laypeople, this should never be assumed.[6]

Does the assessment method make a difference?

The method used by banks to measure risk attitudes is also common in academia.[7] A prominent example is the risk item used in the SOEP study,[8] which consists of just

2 Among other things, the new EU-regulation MiFID II (Markets in Financial Instruments Directive II) aims to strengthen consumer protection, especially as regards financial advice; however, it will not be implemented at the national level until January 2018.

3 This is the measure of risk attitude surveyed by the German Socio-Economic Panel (SOEP)

4 Barasinska, N., Schaefer, D. and Stephan, A. (2012): *Individual risk attitudes and the composition of financial portfolios: Evidence from German household portfolios.* Quarterly Review of Economics and Finance, 52, 1–14.

5 Schreiner, K. (2015): Studie Anlegerprofile, conducted on behalf of Viennese Chamber of Labor (Arbeiterkammer Wien), Vienna, August 2015.

6 Lusardi, A. and Mitchell, O. (2015): *The Economic Importance of Financial Literacy: Theory and Evidence.* Journal of Economic Literature, 52, 5–44.

7 For an overview see, e.g., Charness, G. Gneezy, U., Imas, A. (2013): *Experimental methods: Eliciting risk preferences.* Journal of Economic Behavior and Organization, 87, 43–51.

8 This risk measure has been extensively analyzed by Dohmen, T., Falk, A., Huffmann, D., Sunde, U., Schupp, J., and Wagner, G.G. (2011): *Individual Risk*

one question: "Are you generally a person who is willing to take risks or do you try to avoid taking risks?" The client answers by choosing a rating on an 11-point Likert scale, where zero means "unwilling to take risks" and ten indicates "fully prepared to take risks."

Some economists challenge the use of simple survey questions out of concerns that respondents might not answer them carefully enough. Interestingly, recent research has clearly demonstrated that individuals respond similarly to simple survey items as they do to elaborate risk experiments,[9] which gives the impression that the assessment method is irrelevant. More thorough research, however, has shown that the type of risk attitude measure used does make a difference.[10] The present study investigates an unusually broad set of seven risk measures and how they are related to each other.[11]

Combining several measures improves risk assessment

Seven ways to measure risk attitude

All seven measures of risk attitude examined here are established in the literature. They range from the self-reported risk attitude item of the SOEP study to incentivized experiments such as the Gneezy-Potters task (abbreviated here as GP), in which subjects choose how to allocate capital between one safe and one risky asset.[12] The items are briefly described in Box 1.[13]

Three of these seven risk measures—WTR (Gen), WTR (Fin), and HInvQ—are non-incentivized hypothetical questions concerning risk attitude. WTR (Gen) is a general question about willingness to take risks; WTR (Fin) specifically regards investment behavior; and HInvQ is a hypothetical investment question about capital allocation between a safe and a risky asset.

The other four measures—CEquiv, EG (Loss), EG (No loss), and GP—take the form of incentivized experiments in which subjects are required to make decisions involving actual money. CEquiv is a certainty equivalent task where the individual chooses between a safe pay-off of increasing value and a lottery, the expected value of which remains constant. The lottery offers a 50–50 chance of receiving either zero or 300 monetary units—that is, it has an expected value of 150 units—while the safe payoff initially offers zero units. In this first stage, the rational choice would be the lottery. From there, the safe pay-off increases in stages by ten-unit increments, with subjects making a new decision after each increase: that is, the second stage offers a choice between 20 units and the lottery, the third between 30 units and the lottery, the fourth between 40 units and the lottery, and so on. The point at which the subject switches from the lottery to the safe pay-off reveals their individual risk attitude.[14] EG (Loss) is an adaptation of the Eckel and Grossman (2002, 2008) tasks,[15] and EG (No Loss) is a variation thereof. GP is described above.

Relationships among the seven risk assessment measures

To find out how these measures are related to each other, we implemented them in a field study. As the size of the incentive is often considered essential for eliciting accurate responses, it was important to conduct the experiment with a population for whom the incentive would be larger than is financially possible in Germany. The study was thus carried out among 760 people in rural Thailand, where the average incentive used in the experiment was equal to roughly half the daily wage of an unskilled worker. While there are clear differences, the structure of the responses from Thailand is in line with results from other countries, such as Germany, and thus insights can be generalized to some degree[16]. We do not use the numbers from the Thai sample here; rather, we examine the relationships.

The correlation matrix in Table 2 shows how similar one person's answers are across all risk measures. All in all, 11 of these 21 coefficients are statistically significant, and all of them have positive signs, as expected. The coefficient with the highest value (0.436) is the one between EG (Loss) and EG (No Loss); most coefficients are much smaller (around 0.1). Overall, the measures are all pos-

Attitudes: Measurement, Determinants and Behavioral Consequences. Journal of the European Economic Association, 9, 522–550.

9 See, for example, for Germany: Dohmen et al. (2011); for Thailand: Hardeweg, B., Menkhoff, L., and Waibel, H. (2013): *Experimentally Validated Survey Evidence on Individual Risk Attitudes in Rural Thailand. Economic Development and Cultural Change,* 61:4, 859–888.

10 See, for example, Deck, C., Lee, J., Reyes, J.A., and Rosen, C.C. (2013): *A Failed Attempt to Explain within Subject Variation in Risk Taking Behavior Using Domain Specific Risk Attitudes.* Journal of Economic Behavior and Organization, 87, 1–24; Loomes, G. and Pogrebna, G. (2014): *Measuring Individual Risk Attitudes when Preferences are Imprecise.* Economic Journal, 124, 569–593.

11 Menkhoff, L. and Sakha, S. (2016).

12 Gneezy, U. and Potters, J. (1997): *An Experiment on Risk Taking and Evaluation Periods.* Quarterly Journal of Economics, 112, 631–645.

13 The exact procedures and definitions are provided in Menkhoff and Sakha (2016). For a more comprehensive discussion (with different conclusions): see, for example, Harrison, G.W., Rutström, E. (2008): *Risk Aversion in the Laboratory*, in James C. Cox, Glenn W. Harrison (ed.) *Risk Aversion in Experiments* (Research in Experimental Economics, Volume 12) Emerald Group Publishing Limited, 41–196.

14 These first four risk measures are used and described in detail in Dohmen et al. (2011).

15 See Eckel, C.C. and Grossman, P.J. (2008): *Forecasting Risk Attitudes: An Experimental Study Using Actual and Forecast Gamble Choices.* Journal of Economic Behavior and Organization, 68, 1–17.

16 See, e.g., Dohmen et al. (2011).

Box 1

Description of seven risk measures

In this study we use seven measures eliciting individual risk attitudes. While we provide full reference in the DIW Discussion Paper, where the full elicitation procedures are motivated and described, here we present a short description only. Please note that our measures were taken in Thailand in order to save extra costs for the survey. About 40 Baht, the local currency, equal one Euro.

Measure 1: WTR (Gen), Willingness to take risk (in general): "Are you generally a person who is fully prepared to take risks or do you try to avoid taking risk? (Please choose a number on a scale from 0 to 10)."

Measure 2: WTR (Fin), Willingness to take risk (regarding financial affairs): "When thinking about investing and borrowing are you a person who is fully prepared to take risk or do you try to avoid taking risk? (Please choose a number on a scale from 0 to 10)."

Measure 3: HInvQ, Hypothetical Investment Question: "Imagine you just won 100,000 Thai Baht in a lottery and you can invest this money in a business. There is a 50 percent chance that the business is successful. If the business is successful you double the amount invested after one year. If it is not successful you will lose half the amount you invested. What fraction of the 100,000 Baht would you invest in this business?"

Measure 4: CEquiv, Certainty Equivalent: "This game has 20 rows. In each row a decision has to be made. In each row we would like you to choose option A or option B. Option A is a certain amount of Baht. It starts with 0 and goes up by 10 Baht in every row. Option B is a lottery where a coin is thrown. If 'King' falls you win 300 Baht. If 'Palace' falls you get nothing. Please make your choice of Option A or B for each row."

Measure 5: EG (Loss), Eckel-Grossman task with loss: "There are five options. Please choose the one option that you would like

Table 2

Spearman's rank correlations across elicitation methods

	WTR (Gen)	WTR (Fin)	HInvQ	Cequiv	EG (Loss)	EG (No Loss)	GP
WTR (Gen)	1.000						
WTR (Fin)	0.359*** (0.000)	1.000					
HInvQ	0.086** (0.018)	0.122*** (0.001)	1.000				
CEquiv	0.034 (0.356)	0.000 (0.998)	0.083** (0.022)	1.000			
EG (Loss)	0.094** (0.010)	0.027 (0.451)	0.063 (0.082)	0.100*** (0.006)	1.000		
EG (No Loss)	0.031 (0.398)	−0.014 (0.695)	0.008 (0.820)	0.074** (0.042)	0.436*** (0.000)	1.000	
GP	0.030 (0.404)	0.046 (0.203)	0.201*** (0.000)	0.030 (0.405)	0.078** (0.032)	0.098*** (0.007)	1.000

N: 760

*Notes: The table reports pairwise Spearman rank correlation coefficients. Statistical significance is in parenthesis. ***, ** and * denote significance at the one percent, five percent and ten percent levels, respectively.*

Source: Calculations of the authors.

The strongest correlation is between EG (Loss) and EG (No Loss).

itively related to each other, but the value of each coefficient is far from 1.0, which indicates that different measures yield different results in our sample.[17]

Practical relevance

To show that these differences also matter in practice, let us carry out a simple calculation. We compare the responses to HInvQ and GP and translate the findings about the individual degree of risk aversion into personalized investment advice. For example, individuals who indicated that they would invest 100 percent of a lottery win in a business (HInvQ) or 100 percent of their capital in a risky game (GP) are recommended to invest all of their assets in a diversified portfolio of risky assets, such as stocks. Individuals who respond at the opposite extreme (i.e. would neither invest in a business nor play the game) are recommended to invest only in safe assets, such as call money.

Figure 1 maps out the relationship between GP and HInvQ. Ideally—that is, if all individual answers were consistent across the board—plotting the 760 subjects'

17 Earlier studies get similar findings, in economics, as cited e.g. in Menkhoff and Sakha (2016), or in psychology, e.g., Mata, R., Josef, A. K., Samanez-Larkin, G.R., and Hertwig, R. (2011): *Age Differences in Risky Choice: A Meta-Analysis*. Annals of the New York Academy of Sciences, 1235, 18-29.

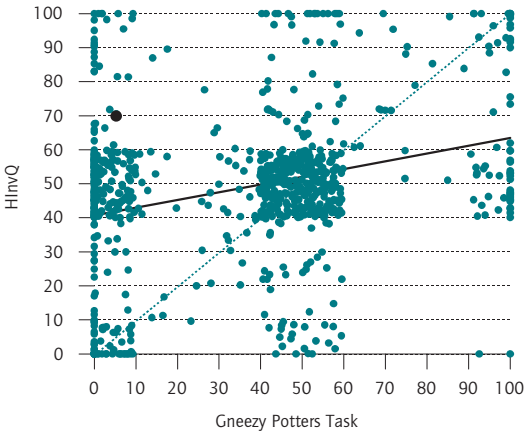
to play the most. In each of the five options we flip a coin to determine the real money payoff. In option 1 you win 50 Baht if 'King' falls and 50 Baht if 'Palace' falls, option 2: 90/30, option 3: 130/10, option 4: 170/−10, option 5: 210/−30."

Measure 6: EG (No Loss), Eckel-Grossman task without loss: The task is identical with measure 5 but the 5 options have the following payoffs: option 1: 80/80, option 2: 120/60, option 3: 160/40, option 4: 200/20, option 5: 240/0."

Measure 7: GP, Gneezy-Potters task: We offer you 100 Baht. You have two options: you can keep all the money or use some of it to play a game. At the game you either loose your stake (50 percent chance) or treble your stake (50 percent chance). We ask you to decide how much of the 100 Baht you want to allocate to these two options respectively. You can split the money in any way between these two options.

Figure 1

Relationship between Risk Items



The graphic distribution of the individual dots is based on a random-generator with a jitter factor of 20 units per axis.

Reading example: the dot highlighted in black represents a respondent who would invest 70 percent of his or her lottery gain in a business, while using five percent of his or her 100-Baht capital as a stake for a "risky" game.

Source: DIW.

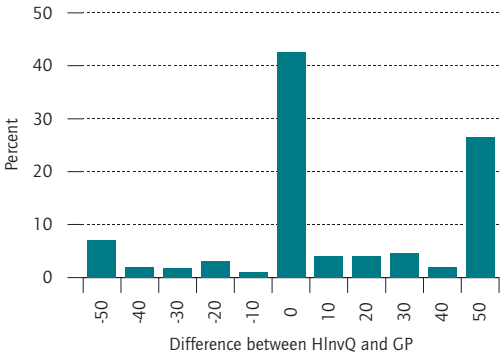
Behavior depends strongly on which measure is used.

responses to the two measures would result in a straight line (Figure 1, green dashed line). However, the findings clearly create a very different picture (the regression line is shown in black). The average percentage of respondents choosing the risky option differs between the two measures (51 percent for HInvQ vs. 36 percent for GP). The considerable number of dots located a significant distance from the dashed line also indicates a strong heterogeneity in the response to the two scenarios. For example, many participants selected a somewhat risky choice for HInvQ (such as a 50 percent investment in the business) but were rather risk-averse when it came to GP.

Assuming that financial recommendations between the extremes would encompass a mix of risky and safe assets, we can compare the individual recommendations based on the two risk measures in our hypothetical example of stocks and call money. Figure 2 shows the smoothed differences in individual responses to both risk measures. For about 40 percent of participants, the difference is zero, meaning that the investment advice would be independent of the risk measure applied. For another 5 percent, the recommended share of stocks would differ by no more than 10 percentage points. For 37 percent, however, the difference between the two risk measures is at least 50 percentage points. Clearly, whether a portfolio has a 50 percent share of stocks or no stocks at all

Figure 2

Difference between HInvQ and GP



Source: Calculations of the authors.

Investment advice differ significantly.

(or 60 instead of 10 percent) makes a big difference in terms of expected risk and return. This suggests that assessing risk attitude using a single-item measure can lead to inconsistent advice.

Which risk item is best?

One can run horseraces between these measures with regard to their ability to explain risky behavior. This is possible with the data collected in Thailand, since we have combined them with a comprehensive household survey on socio-demographic characteristics—household demographics, education, consumption, assets, credit and investment, employment, and health indicators—of the participants to the study.

Based on this survey, we developed eleven indicators of risky behavior that can be grouped into five categories: playing the lottery (two indicators), risky employment (two indicators), financial behavior (three indicators), risk avoidance (two indicators), and health behavior (two indicators). For instance, the likelihood of a subject playing the lottery can be measured by asking whether that person bought any lottery tickets over the past year. In the case of employment risks, self-employment can be used as an indicator, since research has shown that self-employed people tend to be more risk-tolerant than others.[18]

Using this full set of data, we run 77 regressions where we test which of the seven risk measures can explain which—and how much—of the eleven risky behaviors. In each regression, we also consider a set of control variables.[19] For an example of these regressions, see Box 2, where self-employment is explained by WTR (Gen).

Table 3 provides condensed information by showing a count of how often the coefficient on the respective risk measure is statistically significant within any of the five risk areas. For example, WTR (Gen)—the standard SOEP item—can significantly explain one of two risky behaviors regarding lottery playing, one of two regarding risky employment, none of the three financial behaviors, etc.

The last column in Table 3 shows how often a specific risk item can explain risky behavior. While HInvQ appears to be the best-suited for this task, we caution against overinterpretation. First, explanatory power can differ across domains of behavior, and it may also differ when risky behaviors are defined somewhat differently. Finally, results can also differ depending on the specific category of survey respondents: for example, the subgroup "household heads" responds somewhat differently from the total sample. Overall, Table 3 indicates that all risk measures contribute to explaining behavior, albeit heterogeneously.

Reducing noise by averaging

An established way to improve forecasting accuracy is to average the results of various measures. In this case, the averaging of all seven risk items leads to the creation

Box 2

Correlation between risky behavior and socio-economic characteristics

This box presents the OLS-regression on explaining the risky behavior of being self-employed. We rely on a set of seven standard variables which are potential determinants of being self-employed (Dohmen et al., 2011). The focus is on statistically significant results only and these results are in line with the literature. Higher levels of risk tolerance are significantly correlated with being self-employed. Also taller people are more likely to become self-employed while the opposite is true for those who report of being married. The intuition behind it is that self-employment is highly volatile in terms of earnings which put a financial burden on the family. Hence, married couples may be more inclined to choose another employment alternative with more regular earnings. Finally, individuals with higher consumption levels (which is a proxy in these data for higher income) are likely to be self-employed.

Table

Regression to explain "self-employment"

	Self-employment
*Risiko-Item WTR (Gen) 0–10	0.056**
	(0.027)
Female (0 = no, 1 = yes)	−0.069
	(0.177)
Age (17–79)	0.006
	(0.008)
Height (cm)	0.021**
	(0.010)
Married (0 = no, 1 = yes)	−0.673***
	(0.176)
Schooling	0.011
	(0.022)
Household size	0.093
	(0.048)
Consumption	0.342***
	(0.121)

**** and ** denote significance levels under one and under five percent, respectively.*

Source: Calculations of the authors.

18 Caliendo, M., Fossen, F., and Kritikos, A. (2014): *Personality Characteristics and the Decisions to Become and Stay Self-Employed*. Small Business Economics, 42, 787–814.

19 Such control variables are important as risk attitude tends to be systematically related to individual characteristics.

Table 3

Single and Multiple-Item Risk Measures

Area of risky behaviour	Playing Lottery	Risky employment	Financial behaviour	Risk avoidance	Behaviour towards health	Total
Number of behavior options	2	2	3	2	2	11
WTR (Gen)	1	1	0	0	0	2
WTR (Fin)	0	0	1	0	1	2
HInvQ	0	1	0	1	2	4
CEquiv	0	1	1	0	0	2
EG (Loss)	2	0	0	0	0	2
EG (No Loss)	1	0	0	1	0	2
GP	1	1	1	0	0	3
Observations	710	710	708	715	710	
Multiple-Item Risk Measures	2	0	2	1	1	6

Source: DIW.

Multiple-item measures have more explanatory power than single measures.

of a new multiple-item risk measure. Results show that this seven-item measure is more effective in explaining risky behavior than any single-item risk measure alone (Table 3). While the best single-item measures are only able to explain three to four types of risky behavior each, this multiple-item risk measure is able to explain six of the eleven indicators.

Typically, however, neither researchers nor practitioners (such as financial advisors) can afford to implement seven different risk assessment methods. This study therefore tests whether using fewer risk elicitation tasks still enables us to assess and predict risky behavior in several areas. Will the use of just two risk elicitation tasks be more reliable in predicting risky behavior than a single measure alone?

Building two- or three-item risk measures improves predictability

We ran experiments using all 21 of the possible two-item risk measure combinations that can be created from the seven original items. On average, two-item risk measures can explain 3.2 risky behaviors, while the single-item risk measures can only explain 2.4. If we repeat the exercise using all possible *three*-item risk measures, an average of almost four behaviors can be explained. Though we could continue in this fashion, we would soon face a trade-off between the improved explanatory power of multiple-item measures and the high cost of collecting their single-item components. It is therefore helpful to look for specific principles that may enable us to identify *ex ante* which combination of single-item measures results in the best multiple-item risk measure.

Combining different framings for better results

Within our sample of seven single-item risk measures, we attempt to identify the most successful combinations. The main takeaway is that combining risk items with different framings is useful, while combining very similar risk items proves less effective. Examples of less-effective two-item combinations include WTR (Gen) plus WTR (Fin) and EG (Loss) plus EG (No Loss).

Other combinations also lack effectiveness. We combined information from the repeated elicitation of WTR (Gen) with the same individuals: averaging across these repetitions does not improve predictability.

Experiments vs. surveys

Another interesting result emerges from the comparison between survey items and experimental items. While experiments are generally preferred by researchers—as they are incentivized and thus provide more information—they are also more expensive to implement than surveys. It is thus worth mentioning—especially when it comes to real-world implementation—that the respective forecasting powers of these two kinds of risk items do not differ significantly: that is, we do not find that experimental items outperform survey items or vice versa.[20]

20 This finding is in line with most other studies, such as Dohmen et al. (2011), Hardeweg et al. (2013), Loennqvist, J.E., Verkasalo, M., Walkowitz, G., and Wichardt, P.C. (2015): *Measuring Individual Risk Attitudes in the Lab: Task or Ask? An Empirical Comparison.* Journal of Economic Behavior and Organization, 119, 254–266.

Practical consequences and policy implications

The findings discussed above also apply to real-world risk elicitation methods, such as those used by financial institutions. However, as neither the forecasting performance of specific risk items nor the examples of risky behavior used in our research were tailored to the needs of financial institutions in Europe, a concrete application in that area would need to be adapted to the specific situation. Three general insights can nevertheless be gained:

(1) Diversifying risk measures elicits more detailed and accurate information about risk attitudes. Any institution providing advice needs to think about how to measure the risk attitude of its clients by using not just one single-item risk measure. Our research suggests that averaging the results of two or even three single-item risk measures may form a solid basis for the advisory process.

(2) Ideally, multiple-item risk measures should be comprised of single-item risk measures with different framings.

(3) Asking clients hypothetical questions—the most common practice at financial institutions—appears to be sufficient for assessing risk preferences. Soliciting a client's response to "Are you generally prepared to take risks or do you try to avoid risk?" is more efficient and cost-effective than running an experiment.[21]

In light of the above, policymakers may want to prescribe the use and combination of several risk measures among financial institutions; however, there are also good reasons for allowing financial institutions some leeway in deciding how to assess their clients' risk attitudes.

One major argument for this approach draws on a macroprudential perspective: authorities are concerned that financial decisions are often too similar overall, which in turn contributes to coordinated behavior and enhanced volatility. If risk attitude is always measured in exactly the same way, and if all advice is based on these results, a number of individuals will end up making similar financial decisions.

We therefore restrict ourselves to a modest recommendation: practitioners should be aware that there are practical alternatives to single-item risk measures. Combining several risk measures in a standardized way can contribute to a more reliable measure of risk attitude and thus improve the quality of the corresponding financial advice.

21 This line of argument is supported by—and forms the basis of—a study conducted by Falk, A., Becker, A., Dohmen, T., Huffmann, D., and Sunde, U. (2016): *The Preference Survey Module: A Validated Instrument for Measuring Risk, Time, and Social Preferences.* IZA Working Paper No. 9674.

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