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Consumer fraud victimization and financial well-being

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ABSTRACT

Using US household panel data, we provide evidence of a strong negative association between consumer fraud victimization and individuals' perception of their financial well-being. We show that this effect is homogenous among the population and mainly stems from victimization through misrepresentation of information as well as misusage of money by third parties. We disentangle two potential channels through which victimization might reduce perceived financial well-being: psychological consequences (loss of confidence in financial matters) and economic consequences (decrease in net wealth). Our results show that fraud is more negatively associated with a loss in individuals' confidence in financial matters than with declines in their net worth. Our findings suggest that people tend to doubt their abilities to handle financial matters after having fallen prey to fraud, which in turn carries major implications for subsequent financial decision making.

1. Introduction

Recent research documents that financial well-being is a key determinant of overall happiness (Netemeyer, Warmath, Fernandes, & Lynch, 2017) and, consistently, the OECD declares sustained financial well-being as the ultimate goal of their financial education initiatives (INFE, 2011). Low levels of financial well-being can have severe negative consequences both at the household level and for general welfare. Individually, a decline in financial well-being is associated with an increased probability of experiencing material hardship and struggling to make ends meet (CFPB, 2017b). Collectively, low financial well-being relates to declines in overall consumption and more reliance on social support (Brüggen, Hogreve, Holmlund, Kabadayi, & Löfgren, 2017). At the same time, there is a strong link between peoples' financial well-being and an economy's vulnerability to poverty (e.g., Griggs, 2013) as well as its growth prospects (Sacks, Stevenson, & Wolfers, 2012).

In light of the far-reaching consequences of impairments to financial well-being, the question of what drives it in the first place has received increased attention among researchers and policymakers alike. Recent research shows that financial well-being is associated with contextual factors (e.g., technological development), interventions (e.g., nudging and framing) as well as personal factors (Brüggen et al., 2017). Such personal factors include socio-demographic characteristics, personality traits, and sweeping life events such as a job loss or a divorce, which tend to have a substantial impact on individuals' financial well-being (Brüggen et al., 2017;

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Luhmann, Hofmann, Eid, & Lucas, 2012).[1] Yet, somewhat surprisingly, the literature on the relationship between (negative) life events and individual financial well-being is scarce so far.

Our study attempts to fill this gap by investigating a previously unconsidered negative life event – becoming a victim of consumer fraud – and its effect on individuals' perception of financial well-being. In contrast to individuals' actual financial well-being, perceived financial well-being does not only reflect individuals' level of comfort in meeting financial obligations, but also individuals' perception about having a feeling of financial security (e.g., CFPB, 2015, 2017a; Netemeyer et al., 2017). We relate consumer fraud to any fraudulent financial transactions, in which individuals feel that they have been financially taken advantage of, including being sold *unsuitable products*, being a victim of *misrepresentation of information* (e.g., hidden fees or unclear transaction terms), but also experiencing *misusage of money by third parties* (e.g., embezzlement of investments). Thus, consumer fraud is not limited to financial misconduct committed by investment advisors (c.f., e.g., Dimmock, Gerken, & Graham, 2018), but also comprises any intentional deceptions by means of fraudulent offerings of goods and services (Titus, 2001). Consumer fraud, broadly defined, is a global and wide-spread phenomenon with international fraud prevalence rates of approximately 11% (van Dijk, van Kesteren, & Smit, 2007). More than 10% of US households are victimized by consumer fraud every year (Anderson, 2013) and the number of consumer complaints with respect to fraudulent activities reported to the Consumer Financial Protection Bureau increased by 82% between 2015 and 2017 (CFPB, 2018).

We hypothesize that being victimized by consumer fraud has a significant negative impact on how individuals evaluate their financial situation, both in monetary terms and with regard to their feeling of financial security. Existing studies in the field provide evidence of consumer fraud victims often suffering from a multitude of negative consequences. Despite the direct monetary costs incurred by victimization which are estimated to amount to $40 to $50 billion p.a. (Deevy, Lucich, & Beals, 2012), there is ample evidence that victimization is also associated with indirect costs. For instance, prior research shows that victims of fraud often suffer from psychological problems, including sleep deprivation, depression and even suicidal ideation (e.g., Ganzini, Mcfarland, & Bloom, 1990; Sechrest, Shichor, Doocey, & Geis, 1998). More importantly, such indirect costs often outweigh the direct costs of victimization (Kieffer & Mottola, 2016).

Theory suggests that individuals who have never been victimized by negative life events such as fraud tend to consider themselves as personally invulnerable (Perloff, 1983).[2] However, once an individual falls prey to victimization, this perception of personal invulnerability is profoundly shaken (e.g., Aihio, Frings, Wilcock, & Burrell, 2017; Denkers & Winkel, 1998; Perloff, 1983; Spalek, 1999). Hence, we argue that consumer fraud victimization shatters peoples' feeling of financial security – a key component of their perceived financial well-being. We expect that, unlike non-victims who still tend to think of themselves as personally invulnerable, fraud victims subsequently exhibit lower levels of financial well-being.

To investigate into the relationship between fraud victimization and financial well-being, we merge data from seven nationally representative surveys of the US population carried out by the Understanding America Study (UAS). Our detailed data allows us to analyze if, and to what extent, the effect of consumer fraud victimization on financial well-being varies for different types of fraud and among different subgroups of individuals.

To preview our main results, we first show that consumer fraud victimization is negatively associated with individuals' perception of financial well-being. Second, we show that victimization carries detrimental effects on financial well-being for virtually all cohorts of the US population, e.g., regardless of their income and educational levels. Thus, our findings support the notion that the negative impact of consumer fraud victimization on financial well-being is a pervasive impairment. As a third contribution, we show that the negative effect of consumer fraud victimization mainly stems from two types of consumer fraud victimization: Fraud in terms of *misrepresentation of information* as well as *misusage of money by third parties*. Fourth and finally, we disentangle potential channels through which consumer fraud victimization might alter individuals' perceived financial well-being: one's own confidence in financial matters and one's net wealth. Our results show that, while there is no evidence of a significant negative effect on their net worth, fraud victimization is strongly negatively associated with individuals' confidence in their financial competencies. Given that confidence in one's own financial literacy has been shown to be an important factor of sound financial decision making with regard to retirement planning (Anderson, Baker, & Robinson, 2017; Parker, de Bruin, Yoong, & Willis, 2012), investments in risky financial assets or savings products (Bannier & Neubert, 2016; Tang & Baker, 2016), and the handling of mortgages or loans (Allgood & Walstad, 2016; Farrell, Fry, & Risse, 2016), this loss of confidence in financial matters likely impairs the financial decision making of affected individuals on a larger scale.

Our key results prove robust to controlling for a potential selection bias caused by factors such as differing age or wealth levels, which can possibly impact the likelihood of becoming a fraud victim (e.g., Lee & Soberon-Ferrer, 1997). Moreover, we thoroughly address concerns regarding potential endogeneity of consumer fraud victimization by means of an instrumental variable regression.

This study contributes to research in criminology, psychology and economics. Extant fraud literature mainly focuses on offenders and related studies identify reasons why financial fraud is committed (e.g., Andersen, Hanspal, & Nielsen, 2018a; Dimmock et al., 2018) as well as its geographic prevalence (Egan, Matvos, & Seru, in press; Parsons, Sulaeman, & Titman, 2018). We turn our attention to the victims of fraud and its implications. The literature provides ample evidence that negative experiences strongly

[1] Related research addresses other important events shown to have an impact on individuals' financial decisions, such as, e.g., the influence of economic shocks on people's spending and savings behavior (Christelis, Georgarakos, & Jappelli, 2015) and their degree of worrying (Ehlert, Seidel, & Weisenfeld, 2019). Owen and Wu (2007) document that households which have experienced a negative financial shock tend to be more worried about their future financial well-being. Moreover, positive financial shocks such as large stock market gains have been found to increase mental health and life satisfaction (Frijters, Johnston, Shields, & Sinha, 2015), while the first-hand experience of a stock market crash, vice versa, is associated with a decrease in perceived mental health (e.g., Cotti, Dunn, & Tefft, 2015; McInerney, Mellor, & Nicholas, 2013).

[2] Individuals' pronounced feeling of personal invulnerability is also well documented in Taylor and Brown (1988) and Weinstein (1980).

impact individuals' financial decision making. Seminal work by Titus, Heinzelmann, and Boyle (1995) reports that 20% of consumer fraud victims personally suffer from financial or credit problems. More recently, fraud has been shown to influence peoples' risk taking behavior as well as their likelihood of participating in the stock market (e.g., Andersen, Hanspal, & Nielsen, 2018b; Malmendier & Nagel, 2011). Similarly, prior research documents that being exposed to consumer fraud victimization at the state and community level is associated with a considerable loss in individuals' trust in financial institutions (e.g., Giannetti & Wang, 2016; Gurun, Stoffman, & Yonker, 2018). In a related study, Gurun et al. (2018) argue that this loss in trust affects individuals' financial well-being, since less trusting individuals redeploy their capital away from risky assets and towards deposits and thus forego the opportunity of positive inflation-adjusted returns.

Moreover, several studies provide evidence that consumer fraud victimization is associated with psychological consequences that range from anger and disappointment (Shichor, Sechrest, & Doocy, 2000) all the way to relational and marital problems (Button, Lewis, & Tapley, 2014). Finally, becoming a victim of fraud leads to stress, depressions and health issues (Finra, 2015), and often causes a lasting decrease in life-satisfaction (Kaakinen, Keipi, Räsänen, & Oksanen, 2018; Staubli, Killias, & Frey, 2014). We extend the literature in the field by showing that consumer fraud victimization is associated with a considerable decline in one's own confidence in financial matters, which in turn entails serious consequences for individuals' financial well-being.[3]

2. Data and variable measurement

2.1. Sample selection

To assess the relationship between consumer fraud victimization and financial well-being, we draw on data obtained in the Understanding America Study (UAS). The UAS is a household panel administered by the University of Southern California and features a sample of roughly 6,000 respondents representative of the US population. The UAS comprises a set of nearly 150 different surveys which cover numerous aspects of household life, including financial literacy, psychological attitudes, financial well-being and financial behavior. Importantly, the UAS allows us to uniquely identify individuals across different surveys. The data we use were elicited between April 2015 and August 2018. To mitigate reverse causality concerns, we omit respondents from the sample who completed the survey on financial well-being (UAS 38) before participating in the survey on consumer fraud victimization (UAS 18). This leaves us with a final sample of 4857 individuals.

2.2. Measuring financial well-being

For our dependent variable, we use the Financial Well-Being Scale recently introduced by the Consumer Financial Protection Bureau (CFPB, 2017a). The CFPB defines financial well-being as "*a state of being wherein a person can fully meet current and ongoing financial obligations, can feel secure in their financial future, and is able to make choices that allow them to enjoy life*" (CFPB, 2017a, p. 6). To capture individuals' financial well-being, respondents are asked to assess how well and how often 10 different statements and situations with regard to financial matters apply to them. For instance, respondents were asked how well the statement "*I am securing my financial future*" describes their financial situation, with possible answers ranging from "*4 = Describes me completely"* to *"0 = Does not describe me at all*". Similarly, another item elicits how often the statement "*I have money left over at the end of the month*" applies to respondents, with possible answers coded from "*4 = Always"* to *"0 = Never*".[4] Answers to the 10-item questionnaire are then aggregated to a financial well-being score which takes on values ranging from 0 to 40, with higher values indicating higher levels of financial well-being. We ultimately use a measure developed by the CFPB which is based on the 0–40 financial well-being score but additionally controls for item polarity, age group of respondent, and administration mode (self-administered vs. interviewer administered), hence resulting in a more precise metric. This enhanced score is denoted by *FWB* and assumes values between 0 and 100, with higher values again indicating higher levels of financial well-being.[5] We apply this enhanced score throughout our main analyses and provide detailed descriptions as well as summary statistics of each item in Appendix B.

2.3. Measuring consumer fraud victimization

To construct a measure of consumer fraud victimization, we draw on a module incorporated in survey UAS 18 which includes the following item:

"Do you feel like you have been taken advantage of on a major financial transaction in the last three years? Major means at least $1000."

[3] Specifically, we document a strong negative association between victims' financial well-being and instances of consumer fraud over the three years prior to our period under review and our data does not allow us to draw inferences about potential long-term effects of consumer fraud. It is conceivable, however, that fraud victimization—while detrimental in the short term—might carry certain lessons learned in the long run (cf., e.g., Wilson, Meyers, & Gilbert, 2001). We thank an anonymous referee for pointing out this interesting avenue for future research.

[4] Note that several survey questions are reverse coded. For the reverse coded items, the categories "*does not describe me at all"* as well as *"never"* receive the highest value of four. All reverse coded items are highlighted in Appendix B.

[5] The variable FWB is centered at a value of 50. For a description of the CFPB Financial Well-Being Scale and the underlying item response theory model, please refer to the technical report of the CFPB (CFPB, 2017a).

We define an indicator variable, *Fraud*, which equals one for respondents who affirm (i.e., consumer fraud victims) and zero for non-victims. A key feature of our data is that, additionally, victims of consumer fraud were asked in what ways they were financially taken advantage of, thus allowing us to differentiate between various types of fraud. Specifically, we differentiate between fraud regarding *unsuitable products* (e.g., products sold that were not requested), *misrepresentation of information* (e.g., hidden fees), *misusage of money by third parties* (e.g., embezzlement of investments), and *other types of fraud*. Appendix A provides detailed descriptions of the fraud items. For each of the four fraud types, we build an indicator variable which equals one if the respondent reports the respective fraud type, and zero otherwise.[6] Finally, in order to mitigate issues of measurement error in *Fraud*, we perform several data cleansing steps described in Appendix C.

2.4. Summary statistics

Table 1 reports descriptive statistics of the dependent variable *FWB* as well as the set of explanatory variables. The mean (median) financial well-being score equals 54.2 (54), indicating that financial well-being of respondents in our sample is slightly higher than for the average respondent in the US population. Throughout our analyses, we include several control variables previously identified to affect financial well-being (see e.g., Brüggen et al., 2017). For instance, we control for respondents' financial literacy and confidence in financial matters (CFPB, 2017b), and include a variable indicating whether or not the respondent consulted a professional investment advisor (Gerrans, Speelman, & Campitelli, 2014). Moreover, we consider a comprehensive set of socio-demographic characteristics, including individuals' general trust, gender, age, marital status, having children, ethnicity, education, labor market status, household income and net wealth. We also control for individuals' risk tolerance, emotional stability and cognitive ability, all of which have been shown to be strongly related to their financial situation (e.g., Calvet & Sodini, 2014; Côté, Gyurak, & Levenson, 2010; Dohmen et al., 2011; Gustman, Steinmeier, & Tabatabai, 2012; McArdle, Smith, & Willis, 2009).

Next, we provide summary statistics of our main explanatory variable *Fraud* and its underlying dimensions. Table 2 documents that 10.7% of the population reports to be victimized by consumer fraud in the past three years, which is in line with findings in the 2011 Consumer Fraud in the United States Survey conducted by the Federal Trade Commission (Anderson, 2013). With 8.5% of sampled individuals reporting respective victimization, *misrepresentation of information* proves the most prominent type of consumer fraud by a long way.[7]

3. Empirical results

3.1. Consumer fraud victimization and financial well-being

3.1.1. Main results

To examine the impact of consumer fraud victimization on individuals' financial well-being, we estimate the following linear regression model

$$FWB_i = \beta_0 + \beta_1 Fraud_i + \gamma' \mathbf{c}_i + \varepsilon_i \quad (1)$$

where FWB_i denotes respondent i's financial well-being, $Fraud_i$ is a variable indicating whether or not respondent i has been victimized by consumer fraud, and the vector $\mathbf{c}_i$ captures all control variables displayed in Table 1.

Columns (1) and (2) of Table 3 report coefficient estimates obtained from two specifications of Eq. (1). In column (1), we report the unconditional effect of consumer fraud victimization on financial well-being excluding all other control variables from our model. The coefficient of *Fraud* reveals a statistically significant negative effect of consumer fraud victimization on individuals' financial well-being which amounts to −6.5. Hence, given a sample mean of financial well-being of 54.2, being victimized by consumer fraud reduces individuals' financial well-being by as much as 12% .[8] In specification (2), we add the vector of control variables, $\mathbf{c}_i$, to the regression model. While the effect of consumer fraud victimization now decreases in magnitude, we still find strong evidence in support of a statistically and economically significant impact of consumer fraud victimization on financial well-being. Specifically, even after controlling for a large set of factors previously shown to explain variation in financial well-being, being victimized by consumer fraud is associated with a decrease in individuals' FWB score by 8.7% . To put this result into perspective: consumer fraud victimization appears to harm financial well-being to an even larger extent than being unemployed. Put differently, one would have to move up approximately two quartiles in the wealth distribution to compensate for being victimized by consumer fraud. Taken together, these results suggest that the effect of consumer fraud victimization on financial well-being is not only statistically significant, but also economically relevant.

The coefficient estimates pertaining to the remainder of regressors corroborate prior evidence showing that financially savvy persons and persons who feel more confident about financial matters display higher levels of financial well-being (CFPB, 2017b). Similarly, we document that the FWB score rises with higher levels of emotional stability which confirms the results of Côté et al.

[6] Note that respondents can be victimized by multiple types of consumer fraud at the same time.

[7] In unreported analyses, we also assess who is being victimized by fraud. Our findings are consistent with DeLiema et al. (2018) and Titus et al. (1995) in that neither individual characteristics nor stereotypical personalities reliably predict fraud victimization in our sample.

[8] In unreported analysis, we replicate our regression analysis for the basic 0–40 financial well-being score. Results are robust to using this alternative measure of financial well-being and are available upon request.

Table 1
Summary statistics.

	Mean	SD	Min.	Median	Max.	N
Financial well-being	54.228	12.622	14	54	95	4823
Financial literacy	9.147	3.133	0	9	14	4836
Cognitive ability	3.431	1.942	0	3	8	4857
Confidence	7.561	2.123	0	8	10	4836
Trust	4.153	1.037	1	4	5	4829
Emotional stability	3.746	1.151	1	4	5	4832
Risk tolerance	5.768	2.319	0	6	10	4798
Investment advice	0.214	0.410	0	0	1	4857
Female	0.527	0.499	0	1	1	4857
Age	47.827	16.257	18	47	107	4853
Married	0.560	0.496	0	1	1	4857
Children	0.725	0.447	0	1	1	4857
Ethnicity						
White	0.759	0.427	0	1	1	4847
Black	0.131	0.338	0	0	1	4847
Asian	0.027	0.162	0	0	1	4847
Other	0.082	0.275	0	0	1	4847
Education	1.230	0.623	0	1	3	4770
Unemployed	0.056	0.230	0	0	1	4857
Self-employed	0.067	0.249	0	0	1	4857
Household income	105,367	142,318	0	71,284	2,604,000	4672
Household net wealth	309,345	1,413,769	−6,875,099	54,048	81,450,000	4833

This table reports summary statistics of the variables used in our analysis. We provide detailed variable descriptions in Appendix A. The data is weighted and representative of the US population.

Table 2
Consumer fraud victimization among US households.

	US population (N = 4,837)
	Mean
Fraud	0.107
Unsuitable products	0.021
Misrepresentation of information	0.085
Misusage of money by third parties	0.019
Other types of fraud	0.004

This table reports summary statistics on our main explanatory variable *Fraud* and its different categories and shows the fraction of US individuals reporting each type of consumer fraud victimization. We provide detailed variable descriptions in Appendix A. The data is weighted and representative of the US population.

(2010) who find a close link between controlled emotions and well-being and financial success. Moreover, we find that financial well-being positively relates to risk tolerance and is higher for individuals who have received investment advice. Younger individuals report higher levels of financial well-being than the elderly and, not surprisingly, we find that unemployment (higher income and net wealth) has a negative (positive) influence on financial well-being.[9]

Finally, in specification (3), we address potential endogeneity issues which might distort the observed effects between consumer fraud victimization and financial well-being. In our cross-sectional survey setting, endogeneity of consumer fraud victimization could occur either due to reverse causality or the omission of relevant (confounding) variables that are both correlated with consumer fraud victimization and financial well-being. While we control for a large set of determinants, one possible omitted variable that might skew our evidence is a potential *lack of self-control* among some of the respondents, which would manifest in impulsive behavior and short-sightedness. Indeed, a lack of self-control can be associated with a higher propensity of being victimized by fraud (e.g., Holtfreter, Reisig, Leeper Piquero, & Piquero, 2010; Reisig & Holtfreter, 2013). At the same time, a lack of self-control has also been shown to affect individuals' financial well-being, for instance by means of unfavorable debt decisions (e.g., Gathergood, 2012). Since we cannot directly observe individuals' self-control, the omission of this trait in our baseline regression model could lead to either under- or overestimation of the effect of consumer fraud victimization on financial well-being. In order to control for related endogeneity issues, we apply an instrumental variable (IV) regression approach using generated instruments as proposed in Lewbel (2012). We choose this approach because we lack appropriate external instrumental variables which satisfy the exclusion restriction. Specifically, the method of generating instruments in the vein of Lewbel (2012) does not rely on the validity of external instruments,

[9] In supplementary analyses, we apply alternative specifications of income and wealth. For instance, we include squared income and squared net wealth. Results are virtually unchanged and are available upon request.

Table 3
Consumer fraud victimization and financial well-being.

	Dependent variable: Financial well-being (FWB)		
	OLS		Instrumental variables
	(1)	(2)	(3)
Fraud	−6.5292***	−4.6650***	−4.1445***
	(0.8034)	(0.7223)	(1.5273)
Financial literacy		0.4358***	0.3937***
		(0.1003)	(0.0981)
Cognitive ability		0.1025	0.1019
		(0.1423)	(0.1444)
Confidence		1.2435***	1.2755***
		(0.1371)	(0.1338)
Trust		−0.1141	−0.1777
		(0.2337)	(0.2285)
Emotional stability		0.8898***	0.9313***
		(0.2165)	(0.2106)
Risk tolerance		0.3251***	0.3407***
		(0.1103)	(0.1068)
Investment advice		1.3514**	1.3401**
		(0.5495)	(0.5339)
Female		0.2623	0.3318
		(0.4622)	(0.4506)
Age 30 to 40		−2.4651***	−2.3879***
		(0.7364)	(0.7257)
Age 40 to 50		−4.0391***	−4.2000***
		(0.7716)	(0.7550)
Age 50 to 60		−3.5154***	−3.4742***
		(0.7509)	(0.7316)
Age above 60		0.0909	0.3595
		(0.7839)	(0.7697)
Married		0.6536	0.4808
		(0.5061)	(0.4876)
Children		−0.9164	−1.0688*
		(0.5728)	(0.5635)
White		−0.1189	0.0049
		(0.9246)	(0.9006)
Black		1.3428	1.0923
		(1.1094)	(1.0830)
Asian		0.1840	0.0763
		(1.3314)	(1.2973)
Education		0.7143*	0.6781*
		(0.4215)	(0.4030)
Unemployed		−3.3692***	−3.6776***
		(0.9652)	(0.9237)
Self-employed		−0.6897	−0.7567
		(0.7705)	(0.7088)
Income Q2		0.5967	0.7501
		(0.6726)	(0.6597)
Income Q3		2.0993***	2.3012***
		(0.6945)	(0.6801)
Income Q4		3.0523***	3.3762***
		(0.7810)	(0.7633)
Household net wealth Q2		0.8122	0.9371
		(0.6778)	(0.6690)
Household net wealth Q3		4.2239***	4.1430***
		(0.6833)	(0.6824)
Household net wealth Q4		9.0727***	9.0036***
		(0.8460)	(0.8283)
N	4,804	4,447	4,447
R^2	0.026	0.374	0.373
F-statistic first-stage regression			9.505
Exogeneity test (*p*-value)			0.863

Specification (1) and (2) of this table report coefficient estimates obtained from a linear regression model of the generic form $FWB_i = \beta_0 + \beta_1 Fraud_i + \gamma' \mathbf{c}_i + \varepsilon_i$.
Specification (1) shows the unconditional effect of *Fraud* on individuals *i*'s financial well-being (*FWB*), excluding all control variables $\mathbf{c}_i$. Specification (2) shows the conditional effect of *Fraud* on *FWB* including control variables $\mathbf{c}_i$. In specification (3), we provide the second stage IV estimates from an instrumental variable regression of financial well-being on *Fraud* and all control variables from our baseline specification in column (2) of Table 3 using generated instruments after Lewbel (2012). We provide detailed variable descriptions in Appendix A. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of $p < .01$, $p < .05$, and $p < .10$ respectively.

such as in standard IV regressions, but instead exploits variations in higher moment conditions of the error distribution from a first-stage regression of consumer fraud victimization on covariates to achieve identification.[10] We generate instruments by multiplying the residuals from the first-stage regression with each of the covariates, centered at their sample means. In column (3) of Table 3, we report the corresponding second-stage estimates using the same controls as in our baseline model. Indeed, consumer fraud victimization is still significantly negatively related to individuals' financial well-being. Also, we fail to reject the null hypothesis of consumer fraud victimization being exogenous ($p = 0.86$). In combination with the significant explanatory power of *Fraud*, this result can be interpreted as supporting a causal relationship between consumer fraud victimization and financial well-being. However, while the IV results suggest causality, they should be interpreted with caution since the survey data does not allow us to rule out any of the remaining endogeneity concerns.

3.1.2. Heterogeneous effects of consumer fraud victimization

Since people might cope with consumer fraud victimization in various ways, we investigate if and to what extent its effect on financial well-being varies for different subgroups of individuals. To test for heterogeneous effects of being victimized, we separately interact our key explanatory variable *Fraud* with all variables included in regression specification (2) of Table 3. All metric variables are dichotomized via median splits and the suffix *_high* denotes above-median values of observations for these variables. We estimate the following linear regression model

$$FWB_i = \beta_0 + \beta_1 Fraud_i + \beta_2 [Indicator\ \ variable_i] + \beta_3 Fraud_i \times [Indicator\ \ variable_i] + \gamma' \boldsymbol{c}_i + \varepsilon_i \quad (2)$$

Table 4 presents the results row-wise by indicator variable. For instance, β_1 in the first row reports the effect of *Fraud* on financial well-being for the subgroup of the 50% less financially literate individuals (i.e., *Financial literacy_high* $= 0$), $\beta_1 + \beta_3$ denotes the effect of *Fraud* for the subsample of the 50% more financially literate individuals, and β_3 shows the difference in the effects of *Fraud* between financially illiterate and literate respondents, respectively. Analogously, the seventh row reports betas for unadvised individuals (β_1), advised individuals ($\beta_1 + \beta_3$) and the difference between the two groups (β_3).

Our analysis yields two major results. First, we document that β_1 and $\beta_1 + \beta_3$ remain statistically significant in virtually every specification, indicating a homogenous negative effect of fraud on financial well-being among almost all subgroups. Unemployed respondents constitute the sole exception: while we still find a negative association between consumer fraud victimization and financial well-being, we cannot reject the null hypothesis of no effect. The non-significance in statistical terms, however, might be due to the small number of unemployed in our sample (only 5.6% of individuals). Second, while the coefficient estimates capturing the effect of consumer fraud victimization do vary for the respective subgroups, we do not document any significant differences except that *Fraud* appears to have a stronger effect on financial well-being of individuals with higher net wealth. The latter finding can be explained by the fact that, all else equal, wealthier individuals feature a higher likelihood of falling prey to a fraud victimization which involves big money.

3.1.3. Consumer fraud victimization types

Next, we examine whether the negative effect of fraud on financial well-being varies between different types of fraud. To reveal potential variation in the effect of the distinct types of fraud—i.e. (i) fraud regarding unsuitable products, (ii) misrepresentation of information, (iii) misusage of money by third parties, and (iv) other types of fraud—we estimate the following linear regression model

$$FWB_i = \beta_0 + \omega' \boldsymbol{f}_i + \gamma' \boldsymbol{c}_i + \varepsilon_i \quad (3)$$

where, other than in the baseline model which features an aggregate measure of consumer fraud victimization, the four different fraud types now enter the model through the vector $\boldsymbol{f}_i$. Again, $\boldsymbol{c}_i$ shows the vector of control variables.

Table 5 reports coefficient estimates obtained from two different specifications of Eq. (3). In specification (1), we show the unconditional effects of the four major fraud types, excluding all control variables, while, analogous to our main analysis in Table 3, specification (2) includes the set of control variables. The coefficient estimate pertaining to a given fraud type reported in Table 5 can be interpreted as the effect of being a victim of the respective fraud type when compared to the (omitted) reference group of non-victims, holding all other types of fraud constant at zero.[11]

We document that fraud regarding misrepresentation of information and misusage of money by third parties show a statistically significant and economically meaningful negative correlation with financial well-being. At this, the negative effect of misusage of money by third parties on FWB appears to be particularly strong: although it represents only one in five fraud cases, the magnitude of the corresponding coefficient estimate is relatively largest. Moreover, albeit decreasing in magnitude, the significance of both fraud types persists once we add the set of controls. Finally, for unsuitable products and other types of fraud, we cannot reject the null hypothesis of no effect for at the 5%-level. Most likely, this owes to their low prevalence and the lack of power in the statistical tests as a result thereof.

[10] Note that the Lewbel (2012) approach only generates valid instruments useful for identification if the error term of the first-stage regression is heteroscedastic. This assumption is comfortably supported by the corresponding White test $\chi^2 = 420.73 (p < .01)$ and Breusch-Pagan test $\chi^2 = 245.42 (p < .01)$.

[11] 105 respondents report being victimized by multiple fraud types. To isolate the individual effects of the specific fraud types, we omit the respective observations in our analyses in Section 3.1.3.

Table 4
Heterogeneous effects of consumer fraud victimization on financial well-being.

	Dependent variable: Financial well-being (FWB)				
	β_1	$\beta_1 + \beta_3$	β_3	N	R^2
Financial literacy_high	−3.9880***	−5.2706***	−1.2827	4,447	0.3696
	(1.0875)	(0.8751)	(1.3924)		
Cognitive ability_high	−3.9060***	−6.0180***	−2.1120	4,447	0.3746
	(1.0150)	(0.8757)	(1.3337)		
Confidence_high	−4.5542***	−5.4674***	−0.9133	4,447	0.3640
	(0.8164)	(1.4611)	(1.6682)		
Trust_high	−4.6040***	−4.7149***	−0.1109	4,447	0.3740
	(1.0150)	(1.0227)	(1.4354)		
Emotional stability_high	−4.4729***	−5.4666***	−0.9937	4,447	0.3734
	(0.8076)	(1.4807)	(1.6862)		
Risk tolerance_high	−4.0035***	−5.5690***	−1.5654	4,447	0.3733
	(1.0487)	(0.9478)	(1.4170)		
Investment advice	−4.8616***	−3.7781***	1.0835	4,447	0.3742
	(0.8428)	(1.1831)	(1.4557)		
Female	−3.9594***	−5.2452***	−1.2859	4,447	0.3743
	(1.1457)	(0.9158)	(1.4663)		
Age_high	−3.9620***	−5.6890***	−1.7270	4,447	0.3577
	(1.0279)	(1.0248)	(1.4444)		
Married	−4.2117***	−5.0440***	−0.8323	4,447	0.3742
	(1.1101)	(0.9345)	(1.4459)		
Children	−5.0498***	−4.5376***	0.5122	4,447	0.3741
	(1.5074)	(0.8212)	(1.7153)		
White	−5.1233***	−4.4463***	0.6562	4,447	0.3735
	(1.5555)	(0.7797)	(1.7333)		
Education_high	−4.2360***	−5.8862***	−1.6503	4,447	0.3762
	(0.8542)	(1.2639)	(1.5237)		
Work unemployed	−4.6749***	−4.5290	0.1459	4,447	0.3741
	(0.7279)	(3.6322)	(3.7030)		
Self-employed	−4.6304***	−4.9888*	−0.3584	4,447	0.3741
	(0.7465)	(2.7155)	(2.8210)		
Household income_high	−3.8460***	−5.5348***	−1.6889	4,447	0.3733
	(1.0385)	(0.9928)	(1.4368)		
Household net wealth_high	−3.3641***	−6.4200***	−3.0559**	4,447	0.3583
	(1.0106)	(1.0369)	(1.4508)		

This table reports coefficient estimates obtained from a linear regression model of the generic form: $FWB_i = \beta_0 + \beta_1 Fraud_i + \beta_2 [Indicatorvariable_i] + \beta_3 Fraud_i \times [Indicatorvariable_i] + \gamma' \mathbf{c}_i + \varepsilon_i$.
Thus, for the first indicator variable *Financial literacy_high*, for example, β_1 reports the effect of being victimized by fraud on financial well-being for the group of financially illiterate individuals (i.e., *Financial literacy_high* = 0). $\beta_1 + \beta_3$ reports the effect of being victimized by fraud on financial well-being for the subsample of financially literate individuals, and β_3 shows the difference in the reported effects between financially illiterate and literate individuals, respectively. All metric variables are dichotomized via median splits. The variable suffix *_high* denotes above-median values of observations for a given variable. To gauge statistical significance of the estimated coefficients pertaining to ($\beta_1 + \beta_3$), each regression is rerun with rescaled values. The data is weighted and representative of the US population. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of $p < .01$, $p < .05$, and $p < .10$, respectively.

This evidence can be explained by the notion that becoming a victim of fraud involving strongly misrepresented information might lead affected people to question their own abilities to handle financial matters. For instance, victims might start blaming themselves for being incapable of understanding important documents or for misjudging the fraudulent counterparty. Eventually, such doubts may result in a loss of trust in their personal financial decision making skills (Deem, 2000).

Likewise, becoming a victim of an embezzlement of investments (or other cases of misusage of money by third parties) might shake peoples' confidence in the financial system. Only recently, Gurun et al. (2018) observe that fraud cases involving embezzlement of investments lead to a widespread loss of trust in financial advisors, resulting in substantial withdrawals of assets. Distrusting financial advice, and thus parts of the financial system, can have a detrimental impact on individuals' financial decision making regarding, e.g., stock market participation (c.f., Giannetti & Wang, 2016) and ultimately lead to a decrease in financial well-being.

3.2. Channels of the impact of consumer fraud on financial well-being

In this section, we discuss two potential channels through which consumer fraud victimization impairs individuals' financial well-being. Specifically, we aim to disentangle whether the effect of consumer fraud victimization on financial well-being operates via changes in (a) individuals' subjective perception of their financial situation or (b) actual changes to their financials. In light of prior evidence documenting a strong association between an individual's belief in her own financial abilities and her financial well-being (e.g., Anderson et al., 2017; Bannier & Schwarz, 2018; Farrell et al., 2016), we choose confidence in financial matters as a possible

Table 5
Consumer fraud victimization types and financial well-being.

	Dependent variable: Financial well-being (FWB)	
	(1)	(2)
Fraud types		
Unsuitable products	−3.9887*	−2.0893
	(2.2075)	(1.3391)
Misrepresentation of information	−5.9006***	−4.5063***
	(1.0054)	(0.9629)
Misusage of money by third parties	−8.5344***	−5.7781***
	(2.4684)	(2.1542)
Other types of fraud	−2.1752	−4.7080
	(5.7646)	(3.4902)
Controls	No	Yes
N	4699	4351
R^2	0.019	0.370

This table reports coefficient estimates obtained from a linear regression model of the generic form: $FWB_i = \beta_0 + \omega \boldsymbol{f}_i + \gamma \boldsymbol{c}_i + \varepsilon_i$. To analyze the effect of various fraud types, we exclude 105 respondents with multiple fraud types in specification (1) to (3). Specification (1) shows the unconditional effects of the vector of various fraud types $\boldsymbol{f}_i$ on respondents' financial well-being (*FWB*), and in specifications (2) we report the conditional effects of fraud types including the vector of control variables $\boldsymbol{c}_i$. Reference category are respondents not being victimized by any fraud. The data is weighted and representative of the US population. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of $p < .01$, $p < .05$, and $p < .10$, respectively.

subjective channel. Analogously, we follow Brüggen et al. (2017) and Gerrans et al. (2014) and measure individuals' actual financial well-being in terms of their total net wealth.[12] Results obtained in our baseline analysis in Table 3 confirm that both factors are strongly associated with our measure of individuals' financial well-being and hence offer preliminary support that perceived financial well-being is affected by both subjective and objective channels.

Table 6 reports results of the corresponding estimations, in which we regress confidence in financial matters (specifications (1) and (2)), as well as total net wealth (specifications (3) and (4)) on consumer fraud victimization and our set of control variables displayed in Panel A of Table 1. Similar to our baseline regression in Table 3, we report both the results from linear regression models in specifications (1) and (3), as well as the second-stage estimates from instrumental variable regressions using Lewbel-type instruments in specifications (2) and (4), respectively.

We document that, while consumer fraud victimization is significantly negatively associated with one's own confidence in financial matters, we fail to reject the null hypothesis of no effect of consumer fraud victimization on individuals' net wealth. Hence, becoming a victim of consumer fraud severely impairs peoples' confidence in their personal financial skills which results in considerable decreases of their financial well-being. Taken together, our results suggest that the indirect (psychological) costs of consumer fraud victimization, as captured by a significant loss of confidence in one's own financial abilities, appear to outweigh the direct (monetary) costs.

4. Further analyses

4.1. Consumers' likelihood of being victimized by consumer fraud

As a first robustness check, we address potential concerns arising from unequal selection probabilities of being victimized by consumer fraud. For instance, studies show that fraud often targets the elderly (e.g., DeLiema, Deevy, Lusardi, & Mitchell, 2018; Egan et al., in press; Reisig & Holtfreter, 2013). Thus, to mitigate a potential selection bias, we perform a propensity score matching analysis, i.e. match each consumer fraud victim with non-victims based on their propensity to become a victim of consumer fraud. We use a 1:1 nearest-neighbor matching approach including the full set of control variables.

Table 7 reports the coefficient estimate of our key explanatory variable, *Fraud*, both in our baseline model (specification (1)) and in an alternative model using the matched sample (specification (2)). We find that consumer fraud victimization continues to be highly significant in statistical and economic terms once we control for individuals' likelihood of being victimized. This suggests that our results are robust to a potential selection bias resulting from distributional differences in the characteristics of victims versus non-victims.

4.2. Alternative measurement of consumer fraud victimization

A potential caveat of our measure of consumer fraud victimization is that it does not allow us to disentangle actual delinquencies from instances in which individuals feel that they were cheated. To sidestep this issue, however, we draw on an additional

[12] Note that the short history of the UAS data does not allow us to analyze changes in total net wealth over time.

Table 6
Assessing the channels of the effect of consumer fraud victimization on financial well-being.

	Dependent variable: Confidence		Dependent variable: Household total net wealth	
	OLS (1)	Instrumental variables (2)	OLS (3)	Instrumental variables (4)
Fraud	−0.3427**	−0.6408**	−35.0400	−21.1037
	(0.1629)	(0.3150)	(70.1644)	(65.5065)
Controls	Yes	Yes	Yes	Yes
N	4,458	4,458	4,458	4,458
R^2	0.156	0.154	0.061	0.056
F-statistic first-stage regression		9.918		8.987
Exogeneity test (*p*-value)		0.236		0.411

In this table, we investigate two channels through which consumer fraud victimization might affect individuals' financial perception of financial well-being. In specification (1) and (2), the dependent variable is individuals' confidence with regard to financial matters, and in column (3) and (4), the dependent variable is household total net wealth (in $ thousands). Specification (1) and (3) report the coefficients from linear regression models and column (2) and (4) provide the second stage IV estimates from instrumental variable regressions of confidence and household total net wealth on *Fraud* and all control variables from our baseline specification in column (2) of Table 3 using generated instruments after Lewbel (2012). The data is weighted and representative of the US population. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of p < .01, p < .05, and p < .10, respectively.

Table 7
Consumer fraud victimization and financial well-being: propensity score matched samples.

	Dependent variable: Financial well-being (FWB)	
	Unmatched (main results) (1)	Matched sample (2)
Fraud	−4.6650***	−5.5006***
	(0.7223)	(0.9262)
Controls	Yes	Yes
N	4447	948
R^2	0.374	0.367

In this table, we present the results of a propensity score matching analysis, in which we match each consumer fraud victim (treated individual) with a non-victim (control group) based on her propensity score to be victimized by consumer fraud. For each treated individual, we use a 1:1 nearest-neighbor matching approach and match on all variables used in our baseline specification in column (2) of Table 3. In specification (1), we replicate the results from our baseline model in column (2) of Table 3 (i.e., unmatched sample), and in specification (2), we use the matched sample, respectively. The data is weighted and representative of the US population. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of p < .01, p < .05, and p < .10, respectively.

information item in our dataset, i.e. whether victimized individuals have reported the consumer fraud or submitted a complaint to a local, state or federal authority. This is a worthwhile exercise, since recent data of 2014 shows that out of an estimated 37.8 million fraud cases per year in the US (K. Anderson, 2013), only roughly 1.5 million instances were reported to the Federal Trade Commission (FTC, 2015), thus indicating that the vast majority of fraud cases remain unreported. We argue that an officially reported instance of fraud likely represents a delinquency and use this survey item to proxy for fraudulent violations of law versus the remainder of fraud instances.[13]

Table 8 reports the corresponding results. Specification (1) replicates the results from our baseline model and specification (2) uses the restricted measure of consumer fraud victimization. While the coefficient of consumer fraud victimization in specification (2) turns out smaller, it corroborates our main results. One explanation for this decrease in magnitude could be that consumers who officially report fraud victimization are eligible for support by the authorities in charge. In this vein, receiving support might prevent individuals from feeling forsaken, which in turn could mitigate the negative effect of victimization on financial well-being.

4.3. The role of consumer personality

Prior literature suggests that subjective well-being measures, for example happiness, general life satisfaction, or satisfaction with health, can be affected by an individual's personality (e.g., Chamorro-Premuzic, Bennett, & Furnham, 2007; DeNeve & Copper, 1998; Hayes & Joseph, 2003). Pessimistic characters, for instance, are more likely to report lower levels of general life satisfaction,

[13] While respondents' indications regarding the respective survey item lack external validation and hence might also be subject to measurement error, we argue that the notion of consumers submitting official complaints to authorities for no reason is rather unlikely.

Table 8
Alternative measurement of consumer fraud victimization.

	Dependent variable: Financial well-being (FWB)	
	(1)	(2)
Fraud	−4.6650***	
	(0.7223)	
Fraud reported to local, state or federal agency		−3.1626**
		(1.2998)
Controls	Yes	Yes
N	4,447	4,069
R^2	0.3741	0.3705

In this table, we reestimate our main model from column (2) of Table 3 using an alternative measure for consumer fraud victimization. Specification (1) replicates the main results from column (2) of Table 3. In Specification (2), consumer fraud victimization refers to individuals who are victimized by consumer fraud and reported and/or submitted a complaint about the fraud to a local, state or federal agency. The data is weighted and representative of the US population. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of $p < .01$, $p < .05$, and $p < .10$, respectively.

Table 9
Consumer fraud victimization and financial well-being: controlling for individuals' personality traits.

	Dependent variable: Financial well-being (FWB)		
	Ordinary least squares		Instrumental variables
	Main result (1)	Big Five (2)	Big Five (3)
Fraud	−4.6650***	−4.5632***	−5.3420***
	(0.7223)	(0.7224)	(1.4907)
Openness to experience		−0.1193***	−0.1245***
		(0.0388)	(0.0383)
Conscientiousness		0.1222**	0.1187**
		(0.0516)	(0.0504)
Extroversion		0.0262	0.0264
		(0.0385)	(0.0377)
Agreeableness		−0.0293	−0.0245
		(0.0478)	(0.0468)
Neuroticism		−0.2095***	−0.2110***
		(0.0442)	(0.0435)
Controls	Yes	Yes	Yes
N	4,447	4,386	4,386
R^2	0.3741	0.3854	0.3846
F-statistic first-stage regression			10.870
Exogeneity test (*p*-value)			0.631

In this table, we reestimate our main model from column (2) of Table 3, controlling for individuals' BIG FIVE personality traits. Specification (1) replicates our main results. In Specification (2), the BIG FIVE personality traits, i.e., openness to experience, conscientiousness, extroversion, agreeableness, and neuroticism enter our regression model. To avoid multicollinearity, this specification does not include individuals' emotional stability as well as the measure of trust because both belong to the respective questions of the BIG FIVE inventory scale. Finally, in specification (3), we provide the second stage IV estimates from an instrumental variable regression of financial well-being on *Fraud* and including the BIG FIVE personality traits and other control variables from column (2) of Table 9 using generated instruments after Lewbel (2012). We provide detailed variable descriptions in Appendix A. Tailor linearized standard errors are reported below the coefficients in parentheses. ***, **, * indicate *p*-values of $p < .01$, $p < .05$, and $p < .10$, respectively.

compared to optimistic persons. This might extend to their individual perception of financial well-being, too. Similarly, victims of consumer fraud might also show more pessimistic attitudes than non-victims.

To check if our main results are confounded by differences in individuals' personality, such as general pessimism, we replicate our main analysis controlling for a comprehensive set of personality traits commonly referred to as the *Big Five Factors* of personality (Goldberg, 1993).

Table 9 reports the results of this supplementary analysis. Specification (1) again replicates our baseline model, while specification (2) now includes the Big Five personality traits.[14] In specification (3), we report the second-stage estimates from an IV

[14] Note that both subjects' emotional stability and perceived trust are elicited as part of the Big Five inventory scale. Hence, to mitigate issues of multicollinearity, specification (2) no longer includes these two items.

regression which uses Lewbel-type instruments and also includes the Big Five personality traits. Our estimation results document that the effect of consumer fraud victimization is robust and quantitatively similar to the evidence obtained in the baseline model. In sum, this suggests that variation in individuals' personality traits does not materially alter the effect of consumer fraud victimization on their financial well-being.

5. Concluding remarks

We study the effect of consumer fraud victimization on individuals' perception of financial well-being. Perceived financial well-being measures individuals' level of comfort in financial obligations, as well as their feeling of financial security. We show that consumer fraud victimization has a sizeable negative impact on individuals' perception of financial well-being. Our results suggest that the detrimental effect of consumer fraud victimization mainly stems from two types of fraud: misrepresentation of information and misusage of money by third parties.

Since government resources to support anti-fraud programs are scarce, disentangling the effects of different fraud types on individuals' financial well-being is a worthwhile exercise. At this, the results obtained in this study might contribute to informing funding decisions regarding the CFPB budget such as to leverage the limited funds in the most efficient way.

We examine two potential channels through which consumer fraud victimization might reduce individuals' financial well-being: a loss of confidence in one's financial abilities and a decrease in total net wealth, respectively. Our results suggest that, in particular, fraud victimization results in a substantial impairment of individuals' confidence to handle financial matters, which likely translates into lower levels of perceived financial well-being. Given that—most prominently in the domain of retirement saving—consumers all over the world have assumed increasing responsibility for their financial well-being in recent years (e.g., Anderson et al., 2017; Bucher-Koenen & Ziegelmeyer, 2014; van Rooij, Lusardi, & Alessie, 2012), a loss of confidence to handle one's own financial matters carries substantial negative implications for peoples' financial decision making.

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Appendix A. Variable descriptions

Name	Description	UAS survey
Panel A: Control variables		
Age	Ordinal variable measuring respondent's age.	General
Children	Dummy = 1 if respondent reports to have children living in household, and zero otherwise.	General
Confidence	Ordinal variable measuring respondent's confidence in the ability to make financial decisions on a scale from 0 to 10 (highest confidence).	UAS 38
Cognitive ability	Ordinal variable measuring the number of correct answers to eight cognitive ability (numeracy) questions. For the specific wording, please see Weller et al. (2013).	UAS 1
Education	Ordinal variable that describes the respondent's highest degree of education: [1] - Higher education entrance; [2] - Non-academic post-secondary education; [3] - University degree or higher. Zero otherwise.	General
Emotional stability	Ordinal variable measuring respondent's level of emotional stability. Corresponding item "I am someone who is emotionally stable, not easily upset" with a corresponding scale ranging from [1] - Disagree strongly to [5] - Agree strongly.	UAS 1
Female	Dummy = 1 if respondent is female, and zero otherwise.	General
Financial literacy	Ordinal variable measuring the number of correct answers to 14 financial literacy questions. For the specific wording of the financial literacy questions, we refer to the survey codebook of UAS 1 at https://uasdata.usc.edu/index.php.	UAS 1
Householdincome	Continuous variable measuring households' yearly net income ($US).	UAS 24
Householdnet wealth	Continuous variable measuring households' total net wealth ($US).	UAS 24
Investment advice	Dummy = 1 if respondent received investment advice of a professional financial advisor or attorney, and zero otherwise.	UAS 18
Married	Dummy = 1 if respondent is married, and zero otherwise.	General
Race	Dummy = 1 if respondent's race is either Asian, Black, White or other, and zero otherwise.	General
Risk tolerance	Ordinal variable measuring individuals' tolerance towards risk. Corresponding item "Are you generally a person who tries to avoid taking risks or one who is fully prepared to take risks?" with a corresponding scale ranging from [0] - Not at all willing to take risks [10] - Very willing to take risks.	UAS 20
Self-employed	Dummy = 1 if respondent is self-employed, and zero otherwise.	UAS 38

Trust	Ordinal variable measuring respondent's general trust level. Corresponding item "I am someone who is generally trusting" with a corresponding scale ranging from [1] - Disagree strongly to [5] - Agree strongly.	UAS 1
Unemployed	Dummy = 1 if respondent is unemployed, and zero otherwise.	UAS 38
Panel B: Consumer fraud victimization measures and consumer fraud types		
Fraud	Dummy = 1 if respondent answered "yes" to the following item: "Do you feel like you have been taken advantage of on a major financial transaction in the last three years? Major means at least $1,000″, and zero otherwise.	UAS 18
Fraud reported to local, state or federal agency	Dummy = 1 if respondent answered "yes" to the following item: "Do you feel like you have been taken advantage of on a major financial transaction in the last three years? Major means at least $1,000″, and reported and/or submitted a complaint about the fraud to any local, state or federal agency, and zero otherwise.	UAS 18
Unsuitable products	Dummy = if respondent reports being a victim of fraud regarding unsuitable products (e.g., (additional) products sold there were needed), and zero otherwise.	UAS 18
Misrepresentation of information	Dummy = if respondent reports being a victim of fraud regarding misrepresentation of information (i.e., undisclosed fees, higher price than named, less product or service received than expected and unclear terms of transaction), and zero otherwise.	UAS 18
Misusage of money by third parties	Dummy = if respondent reports being a victim of fraud regarding misusage of money by third parties (e.g., embezzlement of investments by third parties, such as investment advisors), and zero otherwise.	UAS 18
Other types of fraud	Dummy = if respondent reports being a victim of other types of fraud, and zero otherwise.	UAS 18

Appendix B. Financial well-being scale: item summary statistics

	% of US population					Item information
Panel A: This statement describes me	Completely	Very well	Somewhat	Very little	Not at all	Reverse coded
I could handle a major financial transaction.	10.01%	19.70%	35.02%	18.62%	16.66%	No
I am securing my financial future.	9.31%	23.08%	38.24%	19.57%	9.80%	No
Because of my money situation, I feel like I will never have the things in want in life.	7.66%	10.93%	34.38%	30.45%	16.57%	Yes
I can enjoy life because of the way I'm management my money.	8.36%	24.73%	40.28%	19.38%	7.25%	No
I am just getting by financially.	11.71%	14.29%	35.22%	21.69%	17.09%	Yes
I am concerned that the money I have or will won't last.	15.88%	15.74%	37.97%	20.48%	9.93%	Yes
Panel B: This statement applies to me	Always	Often	Sometimes	Rarely	Never	
Giving a gift for a wedding, birthday or other occasion would put a strain on my finances for the month.	6.56%	9.96%	29.67%	34.02%	19.78%	Yes
I have money left over at the end of the month.	18.07%	22.89%	30.99%	18.38%	9.68%	No
I am behind with my finances.	5.58%	8.32%	21.44%	30.63%	34.03%	Yes
My finances control my life.	8.83%	13.92%	31.63%	27.79%	17.83%	Yes

This table reports summary statistics on the items sued to build the financial well-being scale. Please note that for the reverse code items in Panel A and B, the categories "*Not at all*" and "*Never*" receive the highest value of four. The data is weighted and representative for the whole US population.

Appendix C. Data cleansing of survey item *fraud*

We perform several data cleansing steps to reduce potential measurement error of the variable *Fraud*. Specifically, we exploit the information provided in the free-text response to other types of fraud in two ways. First, we assess whether the answer given in the free-text response matches a common definition of consumer fraud victimization. We follow the most common definition and define consumer fraud victimization as "*intentional deception or attempted deception of a victim with the promise of goods, services, or other benefits that are nonexistent, unnecessary, were never intended to be provided, or were grossly misrepresented*" (Titus, 2001, p. 57). We identify 112 observations that may not be classified as being victimized by consumer fraud and omit them in our analysis.

In a second step, we assess whether the fraud type mentioned in the free-text variable for the remaining observations can be attributed to any of the other three fraud categories (e.g., *misrepresentation of information*). In doing so, we reclassify one respondent

from other to unsuitable products, 29 respondents from other to misrepresented information and nine respondents from other to misusage of money by third parties, respectively. Detailed descriptions on the free-text variable capturing other fraud reasons and their mapping to other categories are available upon request. The results are qualitatively unchanged and available upon request.

Appendix D. Supplementary material

Supplementary data to this article can be found online at https://doi.org/10.1016/j.joep.2019.102243.

References

Aihio, N., Frings, D., Wilcock, R., & Burrell, P. (2017). Crime victims' demographics inconsistently relate to self-reported vulnerability. *Psychiatry, Psychology and Law, 24*(3), 379–391. https://doi.org/10.1080/13218719.2016.1247418.

Allgood, S., & Walstad, W. B. (2016). The effects of perceived and actual financial literacy on financial behaviors. *Economic Inquiry, 54*(1), 675–697. https://doi.org/10.1111/ecin.12255.

Andersen, S., Hanspal, T., & Nielsen, K. M. (2018a). Do Financial Misconduct Experiences Spur White-Collar Crime? Retrieved from www.econ.jku.at/t3/veranstaltungen/research_seminar/papers/hanspal.pdf.

Andersen, S., Hanspal, T., & Nielsen, K. M. (2018b). Once bitten, twice shy: The power of personal experiences in risk taking. *Journal of Financial Economics*. https://doi.org/10.1016/j.jfineco.2018.10.018.

Anderson, A., Baker, F., & Robinson, D. (2017). Precautionary savings, retirement planning and misperceptions of financial literacy. *Journal of Financial Economics, 126*(2), 383–398. https://doi.org/10.1016/j.jfineco.2017.07.008.

Anderson, K. (2013). Consumer Fraud in the United States, 2011: The Third FTC Survey.

Bannier, C. E., & Neubert, M. (2016). Gender differences in financial risk taking: The role of financial literacy and risk tolerance. *Economics Letters, 145*, 130–135. https://doi.org/10.1016/j.econlet.2016.05.033.

Bannier, C. E., & Schwarz, M. (2018). Gender- and education-related effects of financial literacy and confidence on financial wealth. *Journal of Economic Psychology, 67*, 66–86. https://doi.org/10.1016/j.joep.2018.05.005.

Brüggen, E. C., Hogreve, J., Holmlund, M., Kabadayi, S., & Löfgren, M. (2017). Financial well-being: A conceptualization and research agenda. *Journal of Business Research, 79*, 228–237. https://doi.org/10.1016/j.jbusres.2017.03.013.

Bucher-Koenen, T., & Ziegelmeyer, M. (2014). Once burned, twice shy? Financial literacy and wealth losses during the financial crisis. *Review of Finance, 18*(6), 2215–2246. https://doi.org/10.1093/rof/rft052.

Button, M., Lewis, C., & Tapley, J. (2014). Not a victimless crime: The impact of fraud on individual victims and their families. *Security Journal, 27*(1), 36–54. https://doi.org/10.1057/sj.2012.11.

Calvet, L. E., & Sodini, P. (2014). Twin picks: Disentangling the determinants of risk-taking in household portfolios. *Journal of Finance, 69*(2), 867–906. https://doi.org/10.1111/jofi.12125.

CFPB (2015). Financial well being: The goal of financial education. Retrieved from http://files.consumerfinance.gov/f/201501_cfpb_report_financial-well-being.pdf.

CFPB (2017a). CFPB financial well-being scale – Scale development technical report. Retrieved from https://s3.amazonaws.com/files.consumerfinance.gov/f/documents/201705_cfpb_financial-well-being-scale-technical-report.pdf.

CFPB (2017b). Financial well-being in America. Retrieved from https://s3.amazonaws.com/files.consumerfinance.gov/f/documents/201709_cfpb_financial-well-being-in-America.pdf.

CFPB (2018). Consumer Response Annual Report.

Chamorro-Premuzic, T., Bennett, E., & Furnham, A. (2007). The happy personality: Mediational role of trait emotional intelligence. *Personality and Individual Differences, 42*(8), 1633–1639. https://doi.org/10.1016/j.paid.2006.10.029.

Christelis, D., Georgarakos, D., & Jappelli, T. (2015). Wealth shocks, unemployment shocks and consumption in the wake of the Great Recession. *Journal of Monetary Economics, 72*(320333), 21–41. https://doi.org/10.1016/j.jmoneco.2015.01.003.

Côté, S., Gyurak, A., & Levenson, R. W. (2010). The ability to regulate emotion is associated with greater well-being, income, and socioeconomic status. *Emotion, 10*(6), 923–933. https://doi.org/10.1037/a0021156.

Cotti, C., Dunn, R. A., & Tefft, N. (2015). The Dow is killing me: Risky health behaviors and the stock market. *Health Economics, 24*(7), 803–821. https://doi.org/10.1002/hec.

Deem, D. L. (2000). Notes from the field: Observations in working with the forgotten victims of personal financial crimes. *Journal of Elder Abuse & Neglect, 12*(2), 33–48. https://doi.org/10.1300/J084v12n02_05.

Deevy, M., Lucich, S., & Beals, M. (2012). Scams, schemes and swindles: A review of consumer financial fraud research.

DeLiema, M., Deevy, M., Lusardi, A., & Mitchell, O. S. (2018). Financial fraud among older Americans: Evidence and Implications. *The Journals of Gerontology: Series B*. https://doi.org/10.1093/geronb/gby151.

DeNeve, K. M., & Copper, H. (1998). The happy personality: A meta-analysis of 137 personality traits and subjective well-being. *Psychological Bulletin, 124*(2), 197–229. https://doi.org/10.1037/0033-2909.124.2.197.

Denkers, A. J. M., & Winkel, F. W. (1998). Crime victims' well-being and fear in a prospective and longitudinal study. *International Review of Victimology, 5*(2), 141–162. https://doi.org/10.1177/026975809800500202.

Dimmock, S. G., Gerken, W. C., & Graham, N. P. (2018). Is fraud contagious? Coworker influence on misconduct by financial advisors. *Journal of Finance, 73*(3), 1417–1450. https://doi.org/10.1111/jofi.12613.

Dohmen, T., Falk, A., Huffman, D., Sunde, U., Schupp, J., & Wagner, G. G. (2011). Individual risk attitudes: Measurement, determinants, and behavioral consequences. *Journal of the European Economic Association, 9*(3), 522–550. https://doi.org/10.1111/j.1542-4774.2011.01015.x.

Egan, M., Matvos, G., & Seru, A. (2018). The market for financial adviser misconduct. *Journal of Political Economy*. https://doi.org/10.3386/w22050 (in press).

Ehlert, A., Seidel, J., & Weisenfeld, U. (2019). Trouble on my mind: The effect of catastrophic events on people's worries. *Empirical Economics*. https://doi.org/10.1007/s00181-019-01682-9.

Farrell, L., Fry, T. R. L., & Risse, L. (2016). The significance of financial self-efficacy in explaining women ' s personal finance behaviour. *Journal of Economic Psychology, 54*, 85–99. https://doi.org/10.1016/j.joep.2015.07.001.

FINRA, I. E. F. (2015). Non-Traditional Costs of Financial Fraud: Report of Survey Findings. New York, NY. Retrieved from https://www.saveandinvest.org/sites/default/files/Non-Traditional-Costs-Of-Financial-Fraud-Survey-Findings.pdf.

Frijters, P., Johnston, D. W., Shields, M. A., & Sinha, K. (2015). A lifecycle perspective of stock market performance and wellbeing. *Journal of Economic Behavior and Organization, 112*, 237–250. https://doi.org/10.1016/j.jebo.2015.02.004.

FTC (2015). Consumer Sentinel Network Data Book for January - December 2014. Retrieved from https://www.ftc.gov/system/files/documents/reports/%0Aconsumer-sentinel-network-data-book-januarydecember-%0A2014/sentinel-cy2014-1.pdf.

Ganzini, L., Mcfarland, B., & Bloom, J. (1990). Victims of fraud: Comparing victims of white collar and violent crime. *Bulletin of the American Academy of Psychiatry and Law, 18*(1), 55–63.

Gathergood, J. (2012). Self-control, financial literacy and consumer over-indebtedness. *Journal of Economic Psychology, 33*(3), 590–602. https://doi.org/10.1016/j.

joep.2011.11.006.
Gerrans, P., Speelman, C., & Campitelli, G. (2014). The relationship between personal financial wellness and financial wellbeing: A structural equation modelling approach. *Journal of Family and Economic Issues, 35*(2), 145–160. https://doi.org/10.1007/s10834-013-9358-z.
Giannetti, M., & Wang, T. Y. (2016). Corporate scandals and household stock market participation. *Journal of Finance, 71*(6), 2591–2636. https://doi.org/10.1111/jofi.12399.
Goldberg, L. R. (1993). The structure of phenotypic personality traits. *American Psychologist, 48*(1), 26–34. https://doi.org/10.1037/0003-066X.48.1.26.
Griggs, D. (2013). Sustainable development goals for people and planet. *Nature, 495*(7441), 305–307. https://doi.org/10.1038/495305a.
Gurun, U. G., Stoffman, N., & Yonker, S. E. (2018). Trust busting: The effect of fraud on investor behavior. *The Review of Financial Studies, 31*(4), 1341–1376. https://doi.org/10.1093/rfs/hhx058.
Gustman, B. A. L., Steinmeier, T. L., & Tabatabai, N. (2012). Financial knowledge and financial literacy at the household level. *American Economic Review: Papers & Proceedings, 102*(3), 309–313. https://doi.org/10.1257/aer.102.3.309.
Hayes, N., & Joseph, S. (2003). Big 5 correlates of three measures of subjective well-being. *Personality and Individual Differences, 34*(4), 723–727. https://doi.org/10.1016/S0191-8869(02)00057-0.
Holtfreter, K., Reisig, M. D., Leeper Piquero, N., & Piquero, A. R. (2010). Low self-control and fraud. *Criminal Justice and Behavior, 37*(2), 188–203. https://doi.org/10.1177/0093854809354977.
INFE (2011). Measuring Financial Literacy: Questionnaire and Guidance Notes for Conducting an Internationally Comparable Survey of Financial Literacy. OECD – International Network on Financial Education. Paris. Retrieved from http://www.oecd.org/finance/financial-education/49319977.pdf.
Kaakinen, M., Keipi, T., Räsänen, P., & Oksanen, A. (2018). Cybercrime victimization and subjective well-being: An examination of the buffering effect hypothesis among adolescents and young adults. *Cyberpsychology, Behavior, and Social Networking, 21*(2), 129–137. https://doi.org/10.1089/cyber.2016.0728.
Kieffer, C. N., & Mottola, G. R. (2016). Understanding and Combating Investment Fraud. Pension Research Council Symposium, May 5–6, 2016.
Lee, J., & Soberon-Ferrer, H. (1997). Consumer vulnerability to fraud: Influencing factors. *Journal of Consumer Affairs, 31*(1), 70–89.
Lewbel, A. (2012). Using heteroscedasticity to identify and estimate mismeasured and endogenous regressor models. *Journal of Business & Economic Statistics, 30*(1), 67–80. https://doi.org/10.1080/07350015.2012.643126.
Luhmann, M., Hofmann, W., Eid, M., & Lucas, R. E. (2012). Subjective well-being and adaptation to life events: A meta-analysis. *Journal of Personality and Social Psychology, 102*(3), 592–615. https://doi.org/10.1037/a0025948.
Malmendier, U., & Nagel, S. (2011). Depression babies: Do macroeconomic experiences affect risk-taking? *Quarterly Journal of Economics, 126*(1), 373–416. https://doi.org/10.1093/qje/qjq004.
McArdle, J. J., Smith, J. P., & Willis, R. (2009). Cognition and economic outcomes in the health and retiremen survey (NBER WORKING PAPER SERIES No. 15266). Retrieved from http://www.nber.org/papers/w15266.
McInerney, M., Mellor, J. M., & Nicholas, L. H. (2013). Recession depression: Mental health effects of the 2008 stock market crash. *Journal of Health Economics, 32*(6), 1090–1104. https://doi.org/10.1016/j.jhealeco.2013.09.002.
Netemeyer, R. G., Warmath, D., Fernandes, D., & Lynch, J., Jr (2017). How Am I Doing? Perceived financial well-being, its potential antecedents, and its relation to overall well-being. *Journal of Consumer Research, 45*(1), 68–89. https://doi.org/10.1093/jcr/ucx109.
Owen, A. L., & Wu, S. (2007). Financial shocks and worry about the future. *Empirical Economics, 33*(3), 515–530. https://doi.org/10.1007/s00181-006-0115-0.
Parker, A. M., de Bruin, W. B., Yoong, J., & Willis, R. (2012). Inappropriate confidence and retirement planning: Four studies with a national sample. *Journal of Behavioral Decision Making, 389*(June 2011), 382–389. https://doi.org/10.1002/bdm.
Parsons, C. A., Sulaeman, J., & Titman, S. (2018). The geography of financial misconduct. *Journal of Finance, 73*(5), 2087–2137. https://doi.org/10.1111/jofi.12704.
Perloff, L. S. (1983). Perceptions of vulnerability to victimization. *Journal of Social Issues, 39*(2), 41–61. https://doi.org/10.1111/j.1540-4560.1983.tb00140.x.
Reisig, M. D., & Holtfreter, K. (2013). Shopping fraud victimization among the elderly. *Journal of Financial Crime, 20*(3), 324–337. https://doi.org/10.1108/JFC-03-2013-0014.
Sacks, D. W., Stevenson, B., & Wolfers, J. (2012). The new stylized facts about income and subjective well-being. *Emotion, 12*(6), 1181–1187. https://doi.org/10.1037/a0029873.
Sechrest, D. K., Shichor, D., Doocey, J. H., & Geis, G. (1998). A research note: Women's response to a telemarketing scam. *Women & Criminal Justice, 10*(1), 75–89. https://doi.org/10.1300/J012v10n01_04.
Shichor, D., Sechrest, D., & Doocy, J. (2000). Victims of investment fraud. Contemporary Issues in Crime and Criminal Justice: Essays in Honor of Gilbert Geis (pp. 87–96).
Spalek, B. (1999). Exploring the impact of financial crime: A study looking into the effects of the maxwell scandal upon the maxwell pensioners. *International Review of Victimology, 6*(3), 213–230. https://doi.org/10.1177/026975809900600304.
Staubli, S., Killias, M., & Frey, B. S. (2014). Happiness and victimization: An empirical study for Switzerland. *European Journal of Criminology, 11*(1), 57–72. https://doi.org/10.1177/1477370813486866.
Tang, N., & Baker, A. (2016). Self-esteem, financial knowledge and financial behavior. *Journal of Economic Psychology, 54*, 164–176. https://doi.org/10.1016/j.joep.2016.04.005.
Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103*(2), 193–210. https://doi.org/10.1037/0033-2909.103.2.193.
Titus, R. M. (2001). Personal fraud and its victims. In N. Shover, & J. P. Wright (Eds.). *Crimes of privilege: Readings in white-collar crime* (pp. 57–66). New York, NY: Oxford University Press.
Titus, R. M., Heinzelmann, F., & Boyle, J. M. (1995). Victimization of persons by fraud. *Crime and Delinquency, 41*, 54–77.
van Dijk, J., van Kesteren, J., & Smit, P. (2007). Criminal victimisation in international perspective: Key findings form the 2004-2005 ICVS and EU ICS. United Nations Office on Drugs and Crime (p. 293). https://doi.org/10.15496/publikation-6621.
van Rooij, M. C. J., Lusardi, A., & Alessie, R. J. M. (2012). Financial literacy, retirement planning and household wealth. *The Economic Journal, 122*(560), 449–478. https://doi.org/10.1111/j.1468-0297.2012.02501.x.
Weinstein, N. D. (1980). Unrealistic optimism about future life events. *Journal of Personality and Social Psychology, 39*(5), 806–820. https://doi.org/10.1037/0022-3514.39.5.806.
Weller, J. A., Dieckmann, N. F., Tusler, M., Mertz, C. K., Burns, W. J., & Peters, E. (2013). Development and testing of an abbreviated numeracy scale: A Rasch analysis approach. *Journal of Behavioral Decision Making, 26*(2), 198–212. https://doi.org/10.1002/bdm.1751.
Wilson, T. D., Meyers, J., & Gilbert, D. T. (2001). Lessons from the past: Do people emotional reactions are short-lived? *Personality and Social Psychology Bulletin, 27*(12), 1648–1661. https://doi.org/10.1177/01461672012712008.