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van der Cruijsen, Carin; de Haan, Jakob; Roerink, Ria

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# Financial knowledge and trust in financial institutions

**Carin van der Cruijsen**[1] | **Jakob de Haan**[2,3] | **Ria Roerink**[1]

[1]De Nederlandsche Bank, Amsterdam, Netherlands

[2]University of Groningen, Groningen, Netherlands

[3]CESifo, Munich, Germany

**Correspondence**
Carin van der Cruijsen, De Nederlandsche Bank (DNB), 1000AB, Amsterdam, Netherlands.
Email: c.a.b.van.der.cruijsen@dnb.nl

**Abstract**

Based on analysis of 14 years of data on Dutch consumers' trust in financial institutions, we find that financially literate consumers are more likely to trust banks, insurance companies and pension funds. This result applies both to broad-scope trust (trust in financial institutions in general) and narrow-scope trust (trust in one's own financial institution). Our conclusion holds when we use a financial literacy proxy based on self-assessed knowledge or a proxy based on actual knowledge. For all types of financial institutions researched, we find that narrow-scope trust is significantly higher than broad-scope trust, but both forms of trust are positively related. Financially knowledgeable people are more likely to trust managers of financial institutions and have more trust in the prudential supervisory authority. Finally, our results suggest that trust in the supervisory authority positively correlates with trust in the financial sector.

**KEYWORDS**

consumer survey, financial institutions, financial literacy, trust

## 1 | INTRODUCTION

Trust in financial institutions is on the rise in the United States, increasing from 22% in 2008 to 28% in 2018 (Sapienza and Zingales 2018).[1] Trust in the financial sector may be defined as consumers' expectations that financial institutions are generally dependable and can be relied on to

deliver on their promises (Sirdeshmukh, Singh, and Sabol 2002). With a high level of trust, customers feel confident that their interests are well served by the financial institution (van Esterik-Plasmeijer and van Raaij 2017). This is important, as consumers generally do not have a clear understanding of financial products, particularly because financial products often contain promises about delivering returns far into the future (Jaffer, Morris, and Vines 2014).

Low trust in the financial sector has several potential consequences. First, it may undermine financial stability (Guiso 2010). In the worst case, it may even lead to bank runs.[2] Low trust may also damage the financial services industry. If the industry is not trusted, then clients will choose to engage less, which, in turn, will damage both the industry and the economy, by reducing the availability of capital for productive purposes (Jaffer, Morris, and Vines 2014). Using survey data for 10 Central, Eastern and Southeastern European countries, Stix (2013) reports, for instance, that distrustful people are less likely to have a savings account and have stronger liquidity preferences than trustful people. Likewise, Park (2020) reports that the willingness of Koreans to entrust money to financial institutions is positively correlated with their trust in financial institutions. Finally, low trust may also hurt individual financial institutions as it will reduce customer loyalty. A loyal customer base contributes to the continuity of financial institutions and less money needs to be spent on attracting new customers (van Esterik-Plasmeijer and van Raaij 2017). Ampudia and Palligkinis (2018) report, for instance, that Italian households that do not trust the banking sector are less likely to hold a bank account and that households are more likely to switch to a new bank if they do not trust their own bank.

In this article, we analyze trust in different types of financial institutions in the Netherlands. Whereas most previous research (discussed in more detail in Section 2), examines one type of financial institution (mostly banks), we analyze trust in multiple types of financial institutions: banks, insurance companies and pension funds. Here, we are able to distinguish between trust in the respondent's own bank (or insurance company or pension fund) and trust in banks (or insurance companies or pension funds) in general. This is important as previous literature suggests that many customers seem to believe that their own bank is an exception to the rule that banks cannot be trusted (van Esterik-Plasmeijer and van Raaij 2017).[3] Finally, we analyze trust in the financial sector supervisory authority, which has received limited attention in the literature.[4]

We focus on the role of financial literacy, asking whether (self-assessed) financially literate respondents have more trust in financial institutions in general, their own financial institutions and the supervisory authority. There is an extensive literature on financial literacy (see Lusardi and Mitchell (2014) for a survey). This literature shows that financially literate people make better financial decisions. For example, they have higher interest rates on their savings accounts (Deuflhard, Georgarakos, and Inderst 2019), are more likely to have stocks (van Rooij, Lusardi, and Alessie 2011) and have better diversified portfolios (von Gaudecker 2015).[5] However, little is known about the importance of financial knowledge for trust in financial institutions and the financial sector supervisory authority. The study that comes closest to our work is Hansen (2012), who examines the relationship between financial literacy and trust in Danish pension funds and mortgage companies. The author finds that consumer knowledge positively influences broad-scope trust (i.e., trust in financial institutions in general) and narrow-scope trust (i.e., trust in someone's own financial institution).[6] We hypothesize that respondents with good financial knowledge have more trust in their own financial institutions (banks, pension funds, and insurance companies), financial institutions in general, and their supervisory authority.

Our main findings are that, compared to financially illiterate people, financially literate people are more likely to trust financial institutions, their managers, and the supervisory authority.

This holds no matter how we measure financial literacy: people's self-assessed financial knowledge, being in charge of household finances, working in the financial sector, or actual financial knowledge. We also find that people with a higher degree of trust in the financial health of financial institutions in general (broad-scope trust) are also more likely to trust the financial institutions whose services they use (narrow-scope trust). For all types of financial institutions researched, we find that although narrow-scope trust is always higher, broad-scope and narrow-scope trust are positively related. Our results also indicate that trust in the supervisory authority is positively related to trust in the financial sector. Finally, our findings show that various relationships with sociodemographic variables depend on the type of trust. For example, senior citizens are more likely to trust their pension funds than young people, but unlikely to trust their banks and life insurance company.

The article is structured as follows: Section 2 reviews previous studies and formulates our hypotheses. Section 3 describes the context and our data on trust and financial knowledge. Section 4 explains the regression method and Section 5 presents the results. Section 6 provides conclusions and policy implications.

## 2 | PREVIOUS STUDIES AND HYPOTHESES

Most studies on trust in financial institutions are single-country studies that focus on banks.[7] For example, Carbó-Valverde, Maqui-López, and Rodriguez-Fernandez (2013) analyze the drivers of trust in Spanish banks in 2009 and find that trust is mainly affected by bank customers' perceived performance of banks, such as their sensitivity to bank customers' problems. Likewise, Jansen, Mosch, and van der Cruijsen (2015) examine which factors may trigger a decline in trust in banks among Dutch consumers by presenting survey respondents with eight hypothetical scenarios related to the financial crisis and asking to what extent these events would harm trust in their banks. A key factor is high executive compensation, but other factors such as negative media reports, falling stock prices, and opaque product information can also trigger trust loss. In addition, van der Cruijsen (2020) reports that the commercial usage of payments data can trigger a decline of consumers' trust in their bank.

A few studies employ cross-country data. For instance, Fungáčová, Hasan, and Weill (2019) use data on trust in banks from the World Values Survey (WVS) 2010–2014 for 52 countries. They find large differences in trust and show that the level of trust depends on sociodemographic indicators. Females are more trustful than males and trust is positively correlated with income, access to television, being religious, and the holding of pro-market economic views, but is negatively related to education, age and internet access.

Following previous studies (Hansen 2012; van Esterik-Plasmeijer and van Raaij 2017), we distinguish between narrow-scope trust and broad-scope trust. Sirdeshmukh, Singh and Sabol (2002) define narrow-scope trust as consumers' expectations that a specific financial institution is dependable and can be relied on to deliver on its promises. Sometimes this concept is referred to as institution trust (van Esterik-Plasmeijer and van Raaij 2017). In our research, this concept refers to trust in the health of the bank (or insurance company or pension fund) of the respondent. Broad-scope trust (sometimes also referred to as system trust) is defined as consumers' expectations that a group of financial institutions (banks or insurance companies or pension funds) is generally dependable and can be relied on to deliver on their promises (Hansen 2012). In our research it is measured as trust in the financial health of banks (or pension funds or insurance companies) in general.

Drawing on Hansen (2012, 2014), we expect that respondents with more knowledge will be more trustful towards their own financial institution than less knowledgeable consumers. Knowledgeable consumers are better able to evaluate information and are likely to make better decisions about which service provider to choose. Furthermore, knowledge facilitates the learning of new information so that knowledgeable consumers may acquire and retain more information than less knowledgeable consumers. Knowledge may also allow consumers to formulate more questions, so that knowledgeable consumers may be more aware of what is possible for a financial service provider and this may facilitate consumers' understanding of the behavior of a financial service provider. Furthermore, knowledgeable consumers may better understand the financial products and services provided by financial institutions; they are not taken unaware by the providers of these products and services, which may enhance their trust in these institutions. On the other hand, increased knowledge could backfire because knowledgeable consumers may be more able to detect the limitations of a financial service provider, thus decreasing trust.

Those few previous studies that have examined the relationship between financial literacy and narrow-scope trust in financial institutions yield mixed findings. Whereas Hansen (2012, 2014), van der Cruijsen and Jonker (2019) and Nuñez Letamendia and Poher (2020) find a significant and positive relationship between financial literacy and trust, Ampudia and Palligkinis (2018) report that financial literacy is not significantly related to narrow-scope trust.[8] This may reflect their measurement of financial literacy. These authors include a dummy variable that takes a value of 1 for households that give correct answers to three questions that measure knowledge regarding the type of mortgage contract, inflation and portfolio diversification. If a household gives at least one wrong answer, the financial literacy dummy takes a value of 0 (31.5% of the households in their sample answer all the questions correctly). In contrast, Hansen (2012, 2014) uses self-reported financial literacy.

Focusing on young adults in the United States, Shim, Serido, and Tang (2013) find that self-perceived financial knowledge has a significant positive effect on trust in banks and financial institutions, but these authors find no effect if an objective financial knowledge measure based on 15 knowledge questions is used. The relevance of the type of financial literacy measure used is also illustrated by the findings of Nuñez Letamendia and Poher (2020) who employ three different financial literacy measures (basic financial literacy based on four knowledge questions, self-assessed financial knowledge of investment products and financial awareness on the role played by financial institutions) and different types of trust (trust in financial institutions, trust in banks, perceived honesty of banks, and perceived solvency of banks). In all cases there is a positive correlation between financial literacy and trust. However, the strength depends on the type of financial knowledge and trust.

Based on this discussion, we hypothesize that:

**H1.** *Financial knowledge has a positive relationship with narrow-scope trust.*

We also expect a positive relationship between financial literacy and broad-scope trust. As pointed out by Kersting, Marley, and Mellon (2015), individuals with low financial literacy do not have a general understanding of how the financial system functions. This lack of knowledge may lead to mistrust since individuals may doubt any information they receive. On the other hand, individuals with high financial literacy may better understand how self-interested actions of financial institutions may have a negative impact on customers (Nuñez Letamendia and Poher 2020).

The scant empirical evidence on the relationship between financial literacy and broad-scope trust is mixed. Ampudia and Palligkinis (2018) report that financial literacy is negatively related

to broad-scope trust. However, the findings of Nuñez Letamendia and Poher (2020) suggest that less financially literate individuals are less likely to trust the financial system as a whole, as well as banks. Their analysis is based on a random and representative sample of 1538 Spanish individuals. Hansen (2012) also reports that consumer knowledge is positively correlated with broad-scope trust.

Based on this discussion, we hypothesize that:

**H2.** *Financial knowledge has a positive relationship with broad-scope trust.*

According to Hansen (2012), institutional theory suggests that the processes and structures that are established within a society act as authoritative guidelines for social behavior. Organizations that operate outside of accepted norms in the organizational field lack legitimacy, which may affect their survival. Hansen therefore concludes that if trust is common within a business type, it encourages the development of trust in customer–seller relationships, suggesting the existence of a positive relationship between broad-scope trust and narrow-scope trust. As pointed out by van Esterik-Plasmeijer and van Raaij (2017), positive personal experiences, satisfaction, and trust with regard to a specific bank may be broadly applied to banks in general. Although the causality runs in the opposite direction, that is, from narrow-scope trust to broad-scope trust, this reasoning also implies a positive relationship between both types of trust in financial institutions. On the other hand, van Esterik-Plasmeijer and van Raaij (2017, p.100) argue that "functionalist theory.... predicts that institution trust will only develop if and where needed. If system trust is low, institutions compensate for this by developing institution trust. This suggests a negative correlation between system trust and institution trust."

The scant empirical evidence supports a positive relationship between both types of trust in financial institutions. Hansen (2012) shows a significant positive association between broad and narrow-scope trust for pension and mortgage companies in Denmark, van Esterik-Plasmeijer and van Raaij (2017) for banks in the Netherlands, and Filipiak (2016) for Indian banks.

Based on this discussion, we hypothesize that:

**H3.** *Broad-scope trust has a positive relationship with narrow-scope trust.*

Apart from the reasoning outlined above, we have another reason to test this relationship. If the variable of main interest, that is, financial literacy, is positively related to broad-scope trust as previous studies suggest, not controlling for broad-scope trust in the model for narrow-scope trust implies that the significance of financial literacy in the model for narrow-scope trust could be due to an omitted variable problem.

The relationship between trust in the supervisory authority and trust in financial institutions has, to the best of our knowledge, only been investigated by Mosch and Prast (2008), who report that trust in the Dutch supervisory authority correlates positively with trust in financial institutions. This lack of research is rather surprising in view of the fact that strengthening trust in the financial sector is an important objective in the mission statements of many supervisory agencies. Supervisory authorities are aiming to make financial institutions safer and the financial system more stable and resilient. If the public trust supervisory authorities to deliver on these objectives, their trust in the financial sector may also be higher. We therefore hypothesize:

**H4.** *Trust in the financial sector supervisory authority is positively related to broad-scope trust.*

# 3 | CONTEXT AND DATA

## 3.1 | Context

As our research focuses on trust in financial institutions in the Netherlands, this section provides some background information on the financial system of this country.

The Dutch pension system consists of three pillars: (1) A pay-as-you-go state pension following statutory retirement; (2) Compulsory participation in a funded pension fund (mostly at the sector or firm level); and (3) Private savings (through life insurance policies or otherwise, like saving accounts). Dutch pension funds, responsible for the second pillar, are among the largest institutional investors world-wide. Insurance companies do not only offer life insurance, but also other insurance products, most importantly health insurance. Every person who lives or works in the Netherlands is legally obliged to take out standard health insurance, provided by health insurance companies. There are about 60 health insurance companies in the Netherlands. The Dutch banking sector is highly concentrated. The five largest domestic banks account for about 85% of total assets of the banking sector. Prior to the global financial crisis, the size of the Dutch banking sector increased, with its total assets reaching over 600% of GDP in 2007. Since the crisis, the total size of the banking sector shrunk and equaled close to 320% of GDP as of end-2018, which is still large compared to other OECD countries. Virtually everyone in the country has access to standard banking services.

## 3.2 | DNB Trust Survey and DNB Household Survey

Each year, De Nederlandsche Bank (DNB) collects detailed data on consumers' trust in the financial sector via the DNB Trust Survey (DTS). The DTS is held among the CentERpanel, a representative sample of the Dutch-speaking population in the Netherlands.[9] This internet-based panel consists of approximately 2000 households. All family members aged 16 and above in the panel are invited to complete the DTS.

The DTS includes a question to measure trust in DNB (DNB is responsible for supervising banks, pension funds and insurance companies), and also a question on trust in other people (generalized trust). Moreover, it includes questions that focus on trust in the financial health of various types of financial institutions, and the perceived competence and integrity of the managers of these institutions. Many of the questions have been part of the DTS since its inception and have remained unchanged (see Tables A1 and A2 in the online Appendix for details). We use data from 2006 until 2019.[10] This enables us to track the development of trust. An important advantage of our data is that it can easily be linked to data on personal characteristics and financial knowledge. This information is captured by the annual DNB Household Survey (DHS), which is also filled in by members of the CentERpanel. The DHS was launched in 1993 and has been extensively used by researchers and policymakers because it covers a wide range of topics.[11] Prior research has shown that usage of the DTS can result in valuable new insights (Mosch and Prast 2008; Jansen, Mosch, and van der Cruijsen 2015; van der Cruijsen et al. 2012; van der Cruijsen, de Haan and Jansen 2016; Diepstraten and van der Cruijsen 2019; van der Cruijsen, Doll, and van Hoenselaar 2019; van der Cruijsen 2020).

On average, the data that we use in our main regression analyses includes 1710 respondents per year from 1365 unique households. Therefore, on average 1.3 members of a household are included in this analysis. Although many respondents participate over several years in the DHS

and DTS, we have information for all years of our sample period for only 2.5% of respondents. On average, respondents in our sample are included four times in the annual survey. 36% of the respondents in our sample are included only once.

## 3.3 | Trust in Financial Institutions

The DTS includes questions to measure trust in the financial soundness of three types of financial institutions: banks, insurance companies and pension funds. People are asked whether they trust, at all times, banks to repay their deposits, insurance companies to pay out claims and pension funds to pay pension benefits. The questions asked refer to financial institutions in general (broad-scope trust measures) and to the respondents' own financial institutions (narrow-scope trust measures). Almost all people in the Netherlands have a bank account and therefore we measure *narrow-scope trust in banks* for all respondents. *Narrow-scope trust in pension funds* is only constructed for pension fund participants. Respondents indicate themselves whether they are members of a pension fund. Similarly, *narrow-scope trust in life insurer* is only measured for people with a life insurance policy. The number of observations of the sample included in our regressions therefore differs per variable and is 23,404 in case of *narrow-scope trust in banks*, 17,832 for *narrow-scope trust in pension funds*, and 9999 for *narrow-scope trust in life insurer* (see Table A.1 in the online Appendix).

*Narrow-scope trust in banks* measures the trust in the capacity of one's own bank(s) to repay one's deposits at all times. *Broad-scope trust in banks* measures trust in the repayment ability of all banks in the Netherlands. *Narrow-scope trust in life insurer* captures trust in one's own life insurance company that it pays out on claims at all times. *Broad-scope trust in insurers* measures trust in the fulfillment of payment obligations to all persons by all type of insurance companies, also at all times. In a similar way *narrow-scope trust in pension funds* and *broad-scope trust in pension funds* measure trust in pension funds' ability to pay pension benefits at all times, either one's own pension benefit (the first variable) or all pension benefits (the second variable).

Nowadays, trust in the health of financial institutions is lower than 14 years ago (Figure 1). Trust declined during the financial crisis and has not yet fully recovered. Trust in different types of financial institutions is on average between 3 (neutral) and 4 (yes, predominantly).

Average trust in the financial health of one's own bank over 2006-2019 was 4.0. This is significantly higher than average narrow-scope trust in pension funds, which was 3.7 ($t$-statistic: 46.9). Narrow-scope trust in life insurance companies was 3.9 on average, so also higher than narrow-scope trust in pension funds ($t$-statistic: 26.8). We observe higher trust in life insurance companies for each year, except for 2019 (when there was no significant difference).

Average broad-scope trust in banks was also higher than average broad-scope trust in pension funds: 3.7 versus 3.4 ($t$-statistic: 56.5). Broad-scope trust in insurance companies was also higher than that in pension funds ($t$-statistic: 47.5). Only in 2008 the difference was not significant. On average, broad-scope trust in insurance companies was 3.6. Although on average broad-scope trust in banks is somewhat higher than trust in insurance companies, the difference is only 0.1 ($t$-statistic: 10.6).

In general, trust in the financial health of the own institution is higher than trust in the health of financial institutions in general (see Figure 1). The $t$-statistics for the difference between broad-scope and narrow scope trust over the entire sample period are 70.5 for banks, 32.6 for insurance companies, and 53.5 for pension funds.

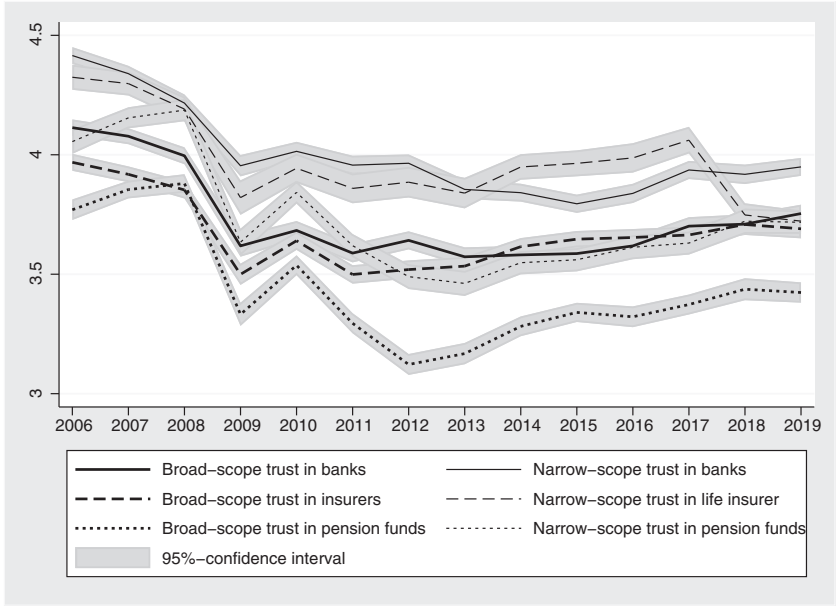


**FIGURE 1** Trust in the financial health of financial institutions.
*Note*: The figure reports average levels of trust with 95%-confidence intervals. Trust is measured on a scale from 1 (no trust at all) to 5 (complete trust). Note that in order to make the graph easier to read, the vertical axis runs from 3 to 4.5. From 2006 to 2016, all respondents answered the question about broad-scope trust in insurance companies, whereas in 2018 and 2019 the question was only answered by respondents with a life insurance.
*Source*: DTS

*Trust in the supervisory authority* is an ordered variable capturing trust in DNB. It ranges from 1 (absolutely no trust) to 4 (a lot of trust). Trust in the supervisory authority declined sharply during the financial crisis and has not yet completely recovered. In 2019, trust in the supervisory authority was 2.8 on average.

Figure 2 shows trust in the competence and integrity of managers of financial institutions, which is measured separately as of 2010. *Trust in managers' competence and integrity* measures to what extent respondents agree with the statement: "Managers of financial institutions are in general knowledgeable and sound." This ordered variable ranges from 1 (completely disagree) to 5 (completely agree). *Trust in managers ' competence* and *trust in managers' integrity* are built in a similar fashion but only focus on one of the two characteristics of managers. On average trust in their competence is 3.2 and trust in their integrity is 2.8, so 0.4 lower ($t$-statistic: 80.4). In 2019, 23% of the respondents disagreed or strongly disagreed with the statement that managers of financial institutions act with integrity, 25% (strongly) agreed, 44% took a neutral stance and 9% did not know what to answer. Regarding competence, 10% think managers are incompetent, 46% perceive them as competent, 34% have a neutral position, and 9% did not report an opinion.

## 3.4 | Financial knowledge

*Financial knowledge* captures self-assessed knowledge of financial matters and can take four different values: 1 = not knowledgeable, 2 = more or less knowledgeable, 3 = knowledgeable, or

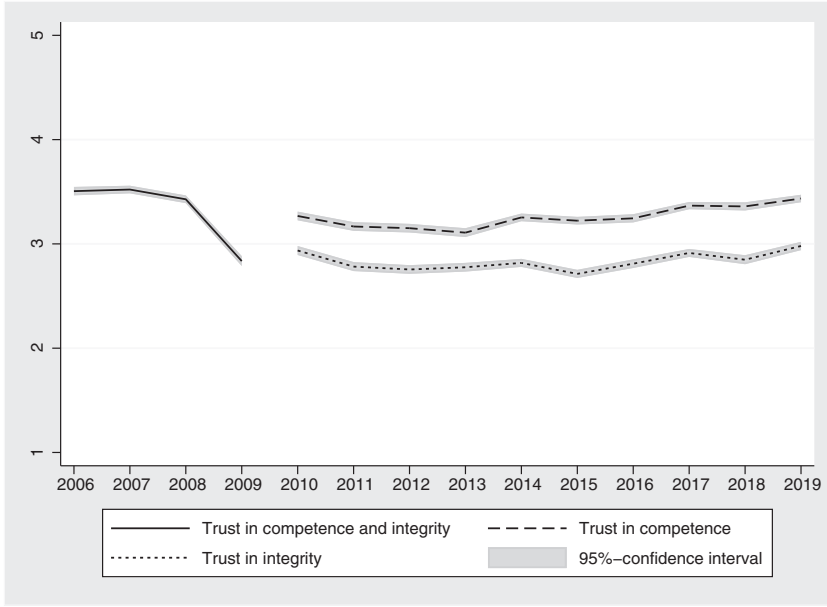


**FIGURE 2** Trust in the competence and integrity of managers of financial institutions.
*Note*: The figure reports average levels of trust with 95%-confidence intervals. Trust ranges from 1 (no trust at all) to 5 (complete trust).
*Source*: DTS

4 = very knowledgeable. Van Rooij, Lusardi, and Alessie (2011) show a very strong link between a self-reported financial knowledge measure and literacy measures based on knowledge questions.[12] Figure 3 shows the average of this self-assessed measure of financial literacy in our sample, including 95%-confidence intervals. Average financial knowledge ranges between 2.1 in 2006 and 2.3 in 2019, which means that, on average, respondents view themselves as more or less knowledgeable. We also looked at the response shares. On average over the whole period, we find that 17% of the respondents in our sample answered "not knowledgeable", 56% indicated that they are "more or less knowledgeable", and 24% answered "knowledgeable" and only 4% "very knowledgeable". We also construct three binary financial knowledge dummy variables (*more or less knowledgeable*, *knowledgeable*, *very knowledgeable*), which we use to test whether there is a nonlinear relationship between financial literacy and trust. These dummy variables are 1 for respondents with the particular knowledge level and 0 for other respondents. The reference category is *not knowledgeable*.

## 4 | REGRESSION METHOD

### 4.1 | Control variables

We include a wide range of control variables. *Male* is a binary dummy that is 1 for males and 0 for females. Four binary *age dummies* capture the age of the respondent: between 35 and 44, 45 and 54, 55 and 64, and 65 and over. Respondents of 34 years and below are in the reference category. *Education: bachelor or higher* is 1 for respondents who successfully completed

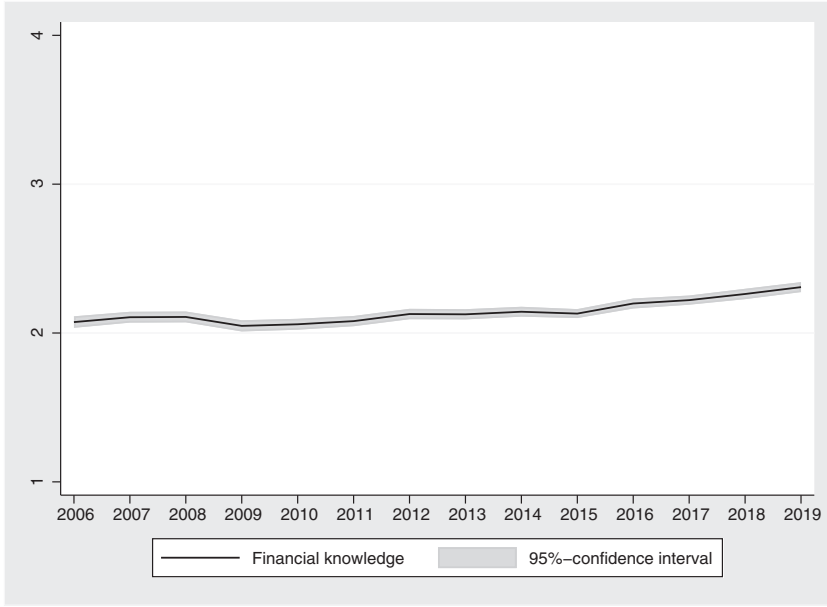


**FIGURE 3** Financial knowledge.
*Note*: The figure reports average levels of financial knowledge with 95%-confidence intervals. Financial knowledge ranges from 1 (not knowledgeable) to 4 (very knowledgeable).
*Source*: DTS

higher vocational or university education and 0 for lower-educated respondents. Three binary *income dummies* are constructed to control for differences in the household net monthly income: income: EUR 1151–1800, income: EUR 1801–2600, income: >EUR 2600. The dummies are 1 for respondents who earn an income that falls in the mentioned income category and 0 otherwise. Respondents in the reference category have an income of EUR 1150 or below. We also control for employment: the binary dummy *job* is 1 for respondents who have a paid job, work in the family business or are self-employed and 0 for other respondents. *Homeowner* is included as a proxy for wealth. This variable is 1 for homeowners and 0 else. If the head of a household lives together with a partner the variable *household head lives with partner* is 1 and otherwise it is 0. *Degree of urbanization* ranges from 1 (the address density of the respondent's residence is 500/km$^2$ or less) to 5 (address density of more than 2500/km$^2$). We also control for the *region* people live in by including the binary region dummies north, east, and south. These variables are 1 for respondents who live in the mentioned region and 0 else. Respondents who live in the west of the Netherlands are in the reference group. To control for macroeconomic conditions, we consider the *unemployment* rate in the year prior to survey. Finally, we include *risk aversion*. It is the average agreement measured on a 1 (totally disagree) to 7 (totally agree) scale with six statements on risk taking. For example, the statement: "I think it is more important to have safe investments and guaranteed returns, than to take a risk to have the chance of earning the highest possible returns."

In addition, we control for personal crisis experiences. Like van der Cruijsen, de Haan, and Jansen (2016), we use information on personal crisis experiences from the 2010 and 2013 surveys. The March 2010 survey included a couple of questions on personal crisis experiences. These questions measure whether respondents had savings at one of the banks that either

received government support or went bankrupt in 2008/2009. The March 2013 DTS included questions on respondents' crisis experiences with respect to the nationalization of SNS Reaal in 2013. The survey asked whether respondents had savings at one of the banks that were part of SNS Reaal (ASN Bank, SNS Bank, and/or RegioBank). We use this information to construct two binary dummy variables: *year after bankruptcy* and *year after bailout*. *Year after bankruptcy* is 1 in the year after a bankruptcy for customers who experienced that their bank went bankrupt in the prior year. So, it is 1 in 2009 for respondents who had savings at Icesave in 2008 and it is 1 in 2010 for respondents who had savings at DSB in 2009. *Year after bailout* is 1 in 2009 for respondents who were customers of a bank that was bailed out in 2008 and 1 in 2013 for respondents who were customers of ASN Bank, SNS Bank, and/or RegioBank. In all other cases it is 0. Table A.1 in online Appendix A provides more detailed information on the variable construction and the descriptive statistics of all variables used.

In our model for narrow-scope trust we also control for generalized trust as some previous studies suggest that it is significant in this respect (see for example, Afandi and Habibov 2017; Fungáčová, Hasan, and Weill 2019 and van Esterik-Plasmeijer and van Raaij 2017). Generalized trust refers to trust in other people with whom there is no direct relationship.[13] Most studies on generalized trust focus on cross-country comparisons and measure generalized trust as the share of a population answering yes to the following question from the WVS: "In general, do you think that most people can be trusted, or can't you be too careful in dealing with people?" (see, for instance, Aghion et al. 2010). In our survey, we use a similar question. *Generalized trust* is one if people answer that most people can be trusted and zero otherwise.

In the models with trust in managers' competence and integrity we test whether the findings are robust for the inclusion of *narrow-scope trust: average* and *broad-scope trust: average*. *Narrow-scope trust: average* is the average of the narrow-scope trust measures for the different types of institutions. For each respondent, this average is based on the available narrow-scope trust measures, so at most three. For example, if we only have narrow-scope trust in banks and narrow-scope trust in pension funds for a respondent, *narrow-scope trust: average* is simply the average of these two measures. *Broad-scope trust: average* is the average of the broad-scope trust measures and constructed in a similar way as *narrow-scope trust: average*.

## 4.2 | Models

We estimate several panel models. As all dependent variables are ordered variables, we estimate random-effects ordered logistic regressions.[14] First, we estimate a model with *broad-scope trust*$_{i,f,t}$ as dependent variable (Model 1). This model enables us to test whether there is a positive link between financial knowledge and broad-scope trust (H2). We run the model for each type of financial institution separately.

$$\text{Broad}-\text{scope trust}_{i,f,t} = f\left(\text{financial knowledge}_{i,t}, X_{i,t}\right) + u_i + e_{i,t} \quad (1)$$

In this and all subsequent equations $f$ denotes the type of financial institution (either banks, insurance companies or pension funds), $i$ indicates the individual, and $t$ refers to time. (We use a similar model to estimate trust in the financial sector supervisory authority.) Financial knowledge$_{i,t}$ is the self-assessed financial knowledge and the key explanatory variable (but, as explained in more detail in Section 5.5, we also experiment with other proxies for financial

knowledge to check whether our results depend on the use of a particular indicator of financial literacy). The vector $X_{i,t}$ captures personal characteristics. It also includes personal crisis experiences in case $f =$ banks. The error term is composed of an idiosyncratic error $e_{i,t}$ and a household fixed component $u_i$ which controls for unobserved heterogeneity.

After estimating the baseline specification, we add trust in the supervisory authority as additional explanatory variable. This enables us to test whether there is a positive relationship between trust in the supervisory authority and broad-scope trust (H4). Thereafter, we also run a regression with the lagged unemployment rate to control for the economic situation as this may affect broad-scope trust in financial institutions.

Finally, we rerun all these regressions using financial knowledge as a set of dummy variables. This way we no longer force a constant marginal effect of a one-point increase in knowledge. This enables us to test whether there is a nonlinear relationship between financial literacy and broad-scope trust.

Thereafter, we estimate a set of models with *narrow-scope trust*$_{i,f,t}$ as dependent variable. We run models (2a) and (2b) for each type of financial institution separately.

$$\text{Narrow}-\text{scope trust}_{i,f,t} = f\left(\text{financial knowledge}_{i,t}, X_{i,t}\right) + u_i + e_{i,t} \tag{2a}$$

$$\text{Narrow}-\text{scope trust}_{i,f,t} = f\left(\text{financial knowledge}_{i,t}, X_{i,t}, \text{broad}-\text{scope trust}_{i,f,t}\right) + u_i + e_{i,t} \tag{2b}$$

Equation (2a) enables us to test whether financial knowledge has a positive relationship with narrow-scope trust (H1). In case $f =$ banks the vector $X_{i,t}$ includes personal crises experiences. Equation (2b), which includes broad-scope trust, is used to test H3.

In addition, we estimate several models in which trust in managers' competence and integrity is the dependent variable using data on 2006–2009. For the period 2010–2019, we are able to estimate two sets of regressions, one with trust in *managers' competence*$_{i,t}$ as dependent variable and one with trust in *managers' integrity*$_{i,t}$ as dependent variable. We estimate three combinations of explanatory variables. We start with the same variables as in model (2a). Next, we add average narrow-scope trust; finally, we substitute average narrow-scope by average broad-scope trust.

## 5 | RESULTS

### 5.1 | Broad-scope trust

Our results suggest that self-assessed financial knowledge has a positive relationship with broad-scope trust. Table 1 reports the regression results of Model 1. The coefficient on financial knowledge is positive and significant for all three types of broad-scope trust. This also holds when we include trust in the supervisory authority (column 1b, 2b, and 3b) and the lagged unemployment rate (column 1c, 2c, and 3c). Based on the regressions with all controls, we find that people who consider themselves to be very knowledgeable of financial matters are 3%-points more likely to predominantly trust banks and also 3%-points more likely to completely trust banks than people who think they are unknowledgeable. In case of insurance companies, these effects are 3 and 2%-points, whereas they are 3 and 1%-points in the case of pension funds.

**TABLE 1** Self-assessed financial knowledge and broad-scope trust

| | Broad-scope trust in banks | | | Broad-scope trust in insurers | | | Broad-scope trust in pension funds | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (2a) | (2b) | (2c) | (3a) | (3b) | (3c) |
| Financial knowledge | 0.17*** | 0.15*** | 0.15*** | 0.12*** | 0.11*** | 0.11*** | 0.10*** | 0.09*** | 0.09*** |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Male | 0.36*** | 0.32*** | 0.32*** | 0.37*** | 0.34*** | 0.34*** | 0.39*** | 0.35*** | 0.35*** |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| Between 35 and 44 | −0.09 | −0.07 | −0.06 | −0.04 | −0.02 | −0.03 | 0.17** | 0.21** | 0.22*** |
| | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.08) | (0.08) | (0.08) |
| Between 45 and 54 | −0.00 | −0.00 | −0.02 | −0.19** | −0.19** | −0.18** | 0.35*** | 0.37*** | 0.36*** |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) |
| Between 55 and 64 | −0.09 | −0.06 | −0.07 | −0.36*** | −0.35*** | −0.35*** | 0.52*** | 0.55*** | 0.55*** |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) |
| 65 and over | −0.17* | −0.13 | −0.13 | −0.46*** | −0.43*** | −0.44*** | 0.53*** | 0.59*** | 0.60*** |
| | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.09) | (0.09) |
| Education: Bachelor or higher | −0.00 | −0.00 | −0.00 | 0.06 | 0.06 | 0.05 | 0.04 | 0.04 | 0.04 |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| Income: EUR 1151–1800 | 0.25** | 0.22* | 0.21* | 0.14 | 0.12 | 0.13 | 0.49*** | 0.45*** | 0.44*** |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| Income: EUR 1801–2600 | 0.28** | 0.26** | 0.25** | 0.07 | 0.06 | 0.07 | 0.35*** | 0.32*** | 0.31** |
| | (0.12) | (0.12) | (0.12) | (0.13) | (0.12) | (0.12) | (0.13) | (0.12) | (0.12) |
| Income: > EUR 2600 | 0.15 | 0.16 | 0.15 | 0.06 | 0.08 | 0.08 | 0.29** | 0.29** | 0.28** |
| | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) |
| Job | 0.04 | 0.04 | 0.03 | 0.10 | 0.10 | 0.10 | 0.04 | 0.04 | 0.04 |
| | (0.07) | (0.06) | (0.06) | (0.07) | (0.06) | (0.06) | (0.07) | (0.06) | (0.06) |
| Homeowner | 0.01 | 0.01 | 0.02 | 0.14* | 0.14* | 0.13* | 0.09 | 0.09 | 0.09 |
| | (0.08) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) | (0.08) | (0.07) | (0.07) |
| Household head lives with partner | 0.05 | 0.04 | 0.04 | 0.08 | 0.06 | 0.07 | 0.15** | 0.13* | 0.14* |
| | (0.08) | (0.08) | (0.07) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) | (0.07) |

**TABLE 1** (Continued)

| | Broad-scope trust in banks | | | Broad-scope trust in insurers | | | Broad-scope trust in pension funds | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (2a) | (2b) | (2c) | (3a) | (3b) | (3c) |
| Degree of urbanization | 0.01 | 0.01 | 0.01 | −0.00 | −0.00 | −0.00 | 0.02 | 0.02 | 0.02 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Region: North | 0.05 | 0.08 | 0.08 | −0.09 | −0.07 | −0.07 | 0.04 | 0.07 | 0.07 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.11) | (0.11) | (0.11) |
| Region: East | −0.15* | −0.13 | −0.13 | −0.08 | −0.06 | −0.06 | −0.09 | −0.07 | −0.07 |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| Region: South | −0.09 | −0.07 | −0.07 | −0.10 | −0.08 | −0.08 | −0.04 | −0.02 | −0.02 |
| | (0.09) | (0.08) | (0.08) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| Risk aversion | −0.00 | 0.00 | −0.00 | 0.02 | 0.02 | 0.03 | −0.02 | −0.02 | −0.02 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Year after bankruptcy | −0.12 | −0.19 | −0.31* | | | | | | |
| | (0.19) | (0.18) | (0.19) | | | | | | |
| Year after bailout | −0.36*** | −0.39*** | −0.50*** | | | | | | |
| | (0.09) | (0.09) | (0.09) | | | | | | |
| Trust in the supervisory authority | | 0.49*** | 0.47*** | | 0.41*** | 0.42*** | | 0.54*** | 0.51*** |
| | | (0.03) | (0.03) | | (0.03) | (0.03) | | (0.03) | (0.03) |
| Unemployment rate | | | −0.11*** | | | 0.05*** | | | −0.08*** |
| | | | (0.01) | | | (0.01) | | | (0.01) |
| Number of observations | 23269 | 23266 | 23266 | 22131 | 22128 | 22128 | 22998 | 22995 | 22995 |
| Number of respondents | 5889 | 5889 | 5889 | 5697 | 5697 | 5697 | 5826 | 5826 | 5826 |
| Wald $\chi^2$ | 113.87*** | 428.74*** | 476.08*** | 122.26*** | 367.53*** | 380.99*** | 159.90*** | 616.26*** | 658.60*** |

*Note:* The table reports parameter estimates of random effects ordered logit regressions. Period: 2006–2019. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (no trust at all) to 5 (complete trust). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

The results also confirm our expectation of a positive relationship between trust in the supervisory authority and broad-scope trust (H4). The effect of trust in the supervisory authority on broad-scope trust is strong. For example, in the case of banks the effect implies that people who have a lot of trust in De Nederlandsche Bank (the Dutch central bank and supervisory authority) are 9%-points more likely to predominantly trust banks and 10%-points more likely to completely trust banks than people who have absolutely no trust in DNB.

In addition, broad-scope trust is related to sociodemographic variables. We find that males trust all types of institutions more than females. For example, in case of banks the likelihood that males answer that they predominantly trust banks is 2%-points higher. The same holds for the likelihood of answering "complete trust." Negative age effects are present in case of broad-scope trust in insurance companies, whereas trust in pension funds positively depends on age. For example, people aged 65 and over are 9%-points more likely to predominantly or completely trust their pension funds than people in the reference group. Trust in pension funds is higher for people with an income above EUR 1150 than for people with a lower income. In the case of banks, there are also some positive effects of income, although they are weaker. We find no significant relationship between income and broad-scope trust in insurance companies. Homeowners have more trust in insurance companies than renters. People who are part of a household in which the head of the household has a partner are more likely to trust pension funds than people who live in another type of household. All types of trust are unrelated to the level of education, having a job, the degree of urbanization of people's place of residence, the region where people live and risk aversion. Confirming the findings of van der Cruijsen, de Haan, and Jansen (2016), our results suggest that personal crisis experience matters. Broad-scope trust is lower for people who experienced a bankruptcy or bail-out of their bank in the prior year. For example, people are 7%-points less likely to predominantly or completely trust banks in the year after they experienced a bail-out of their bank than people without such a personal crisis experience. Last, we find that a higher unemployment rate correlates with significantly less trust in banks and pension funds but more trust in insurance companies.

Regressions that include the three financial knowledge dummies instead of the financial knowledge variable confirm the positive relationship of financial knowledge with broad-scope trust (Table 2). For example, in the case of banks, people who consider themselves to be more or less knowledgeable of financial matters are 3%-points more likely to predominantly or completely trust banks than people who think they are unknowledgeable (the reference group), whereas the likelihood of predominantly or completely trusting banks is 4%-points higher for knowledgeable people and 6%-points higher for very knowledgeable people.

## 5.2 | Trust in the supervisory authority

We also find that financial knowledge is significantly positively related to trust in the supervisory authority. Table 3 shows the estimation results. Column 2 shows the results of a regression that includes controls for personal crisis experiences and the lagged unemployment rate. Trust in the supervisory authority is lower for people who experienced a bailout of their bank. A higher unemployment rate correlates with lower trust in DNB. The regressions with the financial knowledge dummies confirm the positive relationship between trust and financial knowledge (column 3). People who say they are very knowledgeable of financial matters are 3%-points more likely to have a lot of trust in the supervisory authority than people who think they are not financially knowledgeable.

**TABLE 2** Self-assessed financial knowledge and broad-scope trust: Dummy variables for level of self-assessed knowledge

| | Broad-scope trust in banks | | | Broad-scope trust in insurers | | | Broad-scope trust in pension funds | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (2a) | (2b) | (2c) | (3a) | (3b) | (3c) |
| More or less knowledgeable | 0.20*** | 0.18*** | 0.18*** | 0.11** | 0.09 | 0.09 | 0.11** | 0.09* | 0.09 |
| | (0.05) | (0.05) | (0.06) | (0.06) | (0.06) | (0.06) | (0.05) | (0.06) | (0.06) |
| Knowledgeable | 0.35*** | 0.31*** | 0.31*** | 0.24*** | 0.22*** | 0.22*** | 0.21*** | 0.18*** | 0.18*** |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) | (0.07) |
| Very knowledgeable | 0.49*** | 0.48*** | 0.46*** | 0.36*** | 0.34*** | 0.34*** | 0.29** | 0.26** | 0.25* |
| | (0.13) | (0.13) | (0.13) | (0.12) | (0.12) | (0.12) | (0.13) | (0.13) | (0.13) |
| Male | 0.36*** | 0.32*** | 0.32*** | 0.37*** | 0.34*** | 0.34*** | 0.39*** | 0.35*** | 0.35*** |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) | (0.05) | (0.05) |
| Between 35 and 44 | −0.09 | −0.07 | −0.06 | −0.04 | −0.02 | −0.03 | 0.17** | 0.21** | 0.22*** |
| | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.08) | (0.08) | (0.08) |
| Between 45 and 54 | −0.01 | −0.00 | −0.02 | −0.19** | −0.19** | −0.18** | 0.35*** | 0.37*** | 0.36*** |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) |
| Between 55 and 64 | −0.09 | −0.06 | −0.07 | −0.36*** | −0.35*** | −0.34*** | 0.52*** | 0.55*** | 0.55*** |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) |
| 65 and over | −0.18* | −0.13 | −0.13 | −0.46*** | −0.42*** | −0.44*** | 0.53*** | 0.59*** | 0.60*** |
| | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.09) | (0.09) |
| Education: Bachelor or higher | −0.00 | −0.00 | −0.00 | 0.06 | 0.06 | 0.05 | 0.04 | 0.04 | 0.04 |
| | (0.07) | (0.07) | (0.07) | (0.07) | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| Income: EUR 1151–1800 | 0.25** | 0.22* | 0.21* | 0.14 | 0.12 | 0.13 | 0.49*** | 0.45*** | 0.44*** |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) |
| Income: EUR 1801–2600 | 0.28** | 0.26** | 0.25** | 0.07 | 0.06 | 0.07 | 0.35*** | 0.32*** | 0.31** |
| | (0.12) | (0.12) | (0.12) | (0.13) | (0.12) | (0.12) | (0.13) | (0.12) | (0.12) |

(Continues)

TABLE 2 (Continued)

| | Broad-scope trust in banks | | | Broad-scope trust in insurers | | | Broad-scope trust in pension funds | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (2a) | (2b) | (2c) | (3a) | (3b) | (3c) |
| Income: > EUR 2600 | 0.15 | 0.16 | 0.15 | 0.06 | 0.08 | 0.08 | 0.29** | 0.29** | 0.28** |
| | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) | (0.13) |
| Job | 0.04 | 0.04 | 0.03 | 0.10 | 0.10 | 0.10 | 0.04 | 0.04 | 0.04 |
| | (0.07) | (0.06) | (0.06) | (0.07) | (0.06) | (0.06) | (0.07) | (0.06) | (0.06) |
| Homeowner | 0.01 | 0.01 | 0.02 | 0.14* | 0.14* | 0.13* | 0.09 | 0.09 | 0.09 |
| | (0.08) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) | (0.08) | (0.07) | (0.07) |
| Household head lives with partner | 0.05 | 0.04 | 0.04 | 0.08 | 0.06 | 0.07 | 0.15** | 0.13* | 0.14* |
| | (0.08) | (0.08) | (0.07) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) | (0.07) |
| Degree of urbanization | 0.01 | 0.01 | 0.01 | −0.00 | −0.00 | −0.00 | 0.02 | 0.02 | 0.02 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Region: North | 0.05 | 0.08 | 0.08 | −0.09 | −0.07 | −0.07 | 0.04 | 0.07 | 0.07 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.12) | (0.11) | (0.11) | (0.11) |
| Region: East | −0.15* | −0.13 | −0.13 | −0.08 | −0.06 | −0.06 | −0.09 | −0.07 | −0.07 |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) |
| Region: South | −0.09 | −0.07 | −0.07 | −0.10 | −0.08 | −0.08 | −0.04 | −0.02 | −0.02 |
| | (0.09) | (0.08) | (0.08) | (0.09) | (0.08) | (0.08) | (0.09) | (0.09) | (0.09) |
| Risk aversion | −0.00 | 0.00 | −0.00 | 0.02 | 0.02 | 0.03 | −0.02 | −0.02 | −0.02 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) | (0.02) |
| Year after bankruptcy | −0.12 | −0.19 | −0.31* | | | | | | |
| | (0.19) | (0.18) | (0.18) | | | | | | |
| Year after bailout | −0.36*** | −0.39*** | −0.51*** | | | | | | |
| | (0.09) | (0.09) | (0.09) | | | | | | |

**TABLE 2** (Continued)

| | Broad-scope trust in banks | | | Broad-scope trust in insurers | | | Broad-scope trust in pension funds | | |
|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (2a) | (2b) | (2c) | (3a) | (3b) | (3c) |
| Trust in the supervisory authority | | 0.49*** | 0.47*** | | 0.41*** | 0.42*** | | 0.54*** | 0.51*** |
| | | (0.03) | (0.03) | | (0.03) | (0.03) | | (0.03) | (0.03) |
| Unemployment rate | | | −0.11*** | | | 0.05*** | | | −0.08*** |
| | | | (0.01) | | | (0.01) | | | (0.01) |
| Number of observations | 23269 | 23266 | 23266 | 22131 | 22128 | 22128 | 22998 | 22995 | 22995 |
| Number of respondents | 5889 | 5889 | 5889 | 5697 | 5697 | 5697 | 5826 | 5826 | 5826 |
| Wald $\chi^2$ | 115.25*** | 430.78*** | 478.50*** | 122.46*** | 367.54*** | 381.00*** | 160.71*** | 616.46*** | 658.82*** |

*Note:* The table reports parameter estimates of random effects ordered logit regressions. Period: 2006–2019. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (no trust at all) to 5 (complete trust). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

**TABLE 3** Self-assessed financial knowledge and trust in the supervisory authority

| | (1) | (2) | (3) |
|---|---|---|---|
| Financial knowledge | 0.10*** | 0.10*** | |
| | (0.02) | (0.02) | |
| More or less knowledgeable | | | 0.13*** |
| | | | (0.04) |
| Knowledgeable | | | 0.22*** |
| | | | (0.05) |
| Very knowledgeable | | | 0.27*** |
| | | | (0.10) |
| Male | 0.22*** | 0.21*** | 0.21*** |
| | (0.03) | (0.03) | (0.03) |
| Between 35 and 44 | −0.08 | −0.05 | −0.05 |
| | (0.06) | (0.06) | (0.06) |
| Between 45 and 54 | 0.07 | 0.03 | 0.03 |
| | (0.06) | (0.06) | (0.06) |
| Between 55 and 64 | 0.01 | −0.01 | −0.01 |
| | (0.06) | (0.06) | (0.06) |
| 65 and over | 0.01 | 0.03 | 0.03 |
| | (0.06) | (0.06) | (0.06) |
| Education: Bachelor or higher | 0.07** | 0.07** | 0.07** |
| | (0.04) | (0.04) | (0.04) |
| Income: EUR 1151–1800 | 0.20** | 0.18** | 0.18** |
| | (0.08) | (0.08) | (0.08) |
| Income: EUR 1801–2600 | 0.15* | 0.13* | 0.13* |
| | (0.08) | (0.08) | (0.08) |
| Income: > EUR 2600 | 0.05 | 0.07 | 0.07 |
| | (0.09) | (0.08) | (0.08) |
| Job | −0.02 | −0.03 | −0.03 |
| | (0.04) | (0.04) | (0.04) |
| Homeowner | 0.08* | 0.08* | 0.08* |
| | (0.05) | (0.04) | (0.04) |
| Household head lives with partner | 0.03 | 0.03 | 0.03 |
| | (0.05) | (0.04) | (0.04) |
| Degree of urbanization | 0.00 | 0.00 | 0.00 |
| | (0.01) | (0.01) | (0.01) |
| Region: North | −0.10 | −0.09 | −0.09 |
| | (0.06) | (0.06) | (0.06) |
| Region: East | −0.13*** | −0.12*** | −0.12*** |
| | (0.05) | (0.05) | (0.05) |

TABLE 3 (Continued)

| | (1) | (2) | (3) |
|---|---|---|---|
| Region: South | −0.14*** | −0.14*** | −0.14*** |
| | (0.04) | (0.04) | (0.04) |
| Risk aversion | −0.02 | −0.03** | −0.03** |
| | (0.02) | (0.02) | (0.02) |
| Year after bankruptcy | | 0.17 | 0.17 |
| | | (0.18) | (0.18) |
| Year after bailout | | −0.15** | −0.15** |
| | | (0.08) | (0.08) |
| Unemployment rate | | −0.27*** | −0.27*** |
| | | (0.01) | (0.01) |
| Number of observations | 23936 | 23758 | 23758 |
| Number of respondents | 5984 | 5957 | 5957 |
| Wald $\chi^2$ | 137.67*** | 908.98*** | 919.92*** |

*Note:* The table reports parameter estimates of random effects ordered logit regressions. Period: 2006–2019. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (absolutely no trust) to 4 (a lot of trust). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

## 5.3 | Narrow-scope trust

Our findings for narrow-scope trust support H1: people with a higher degree of self-assessed financial knowledge are more likely to trust their own financial institutions. Table 4 focusses on trust in the financial soundness of respondents' own banks, insurance companies and pension funds and shows that a higher degree of self-assessed financial knowledge also correlates with more trust in the financial health of these institutions. Compared to self-assessed unknowledgeable people, financially knowledgeable people are more likely to trust banks to be able to repay their deposits at all times (column 1a), life insurance companies to pay out claims at all times (column 2a), and pension funds to pay pension benefits at all times (column 3a). For example, respondents who consider themselves very knowledgeable about financial matters are 3%-points more likely to completely trust their bank to be able to repay deposits at all times than someone who is financially unknowledgeable. The positive relationships between financial knowledge and narrow-scope trust is confirmed if we include the financial knowledge dummies instead of one financial knowledge variable (columns 1b, 2b, and 3b). The dummies are significant in case of banks and pension funds, but insignificant for insurers.[15]

The financial knowledge effect is robust to the inclusion of generalized trust (columns 1c, 2c, and 3c). People who in general trust most other people have more trust in their banks, life insurance company and pension funds than people with low trust. For example, they are 10%-points more likely to have complete trust in the financial health of their banks. This finding confirms the results of previous studies.

Broad-scope trust is strongly and positively related to narrow-scope trust (columns 1d, 2d, and 3d). This result implies support for H3. For example, the likelihood that someone completely trusts the financial soundness of one's own bank(s) is 72% if one also has complete trust in the financial soundness of banks in general, whereas it is 25% if one predominantly

**TABLE 4** Self-assessed financial knowledge and narrow-scope trust

| | Narrow-scope trust in banks | | | | Narrow-scope trust in life insurer | | | | Narrow-scope trust in pension funds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Financial knowledge | 0.09*** | | 0.10*** | 0.05* | 0.09** | | 0.09** | 0.05 | 0.09** | | 0.09** | 0.06* |
| | (0.03) | | (0.03) | (0.03) | (0.04) | | (0.04) | (0.04) | (0.04) | | (0.04) | (0.03) |
| More or less knowledgeable | | 0.16*** | | | | 0.01 | | | | 0.13* | | |
| | | (0.06) | | | | (0.09) | | | | (0.07) | | |
| Knowledgeable | | 0.21*** | | | | 0.14 | | | | 0.17** | | |
| | | (0.07) | | | | (0.10) | | | | (0.08) | | |
| Very knowledgeable | | 0.29** | | | | 0.29 | | | | 0.36** | | |
| | | (0.13) | | | | (0.18) | | | | (0.15) | | |
| Male | 0.47*** | 0.47*** | 0.49*** | 0.31*** | 0.50*** | 0.50*** | 0.52*** | 0.27*** | 0.56*** | 0.56*** | 0.57*** | 0.32*** |
| | (0.06) | (0.06) | (0.06) | (0.05) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) | (0.07) | (0.07) | (0.05) |
| Between 35 and 44 | −0.24*** | −0.24*** | −0.23*** | −0.23*** | −0.33*** | −0.33*** | −0.35*** | −0.31*** | 0.20* | 0.20* | 0.20* | 0.09 |
| | (0.08) | (0.08) | (0.08) | (0.07) | (0.11) | (0.11) | (0.11) | (0.10) | (0.10) | (0.10) | (0.10) | (0.08) |
| Between 45 and 54 | −0.22** | −0.22** | −0.22** | −0.26*** | −0.52*** | −0.52*** | −0.55*** | −0.41*** | 0.43*** | 0.43*** | 0.43*** | 0.19** |
| | (0.09) | (0.09) | (0.09) | (0.07) | (0.12) | (0.12) | (0.12) | (0.11) | (0.11) | (0.11) | (0.11) | (0.08) |
| Between 55 and 64 | −0.29*** | −0.30*** | −0.28*** | −0.23*** | −0.58*** | −0.58*** | −0.61*** | −0.31*** | 0.87*** | 0.87*** | 0.88*** | 0.77*** |
| | (0.09) | (0.09) | (0.09) | (0.08) | (0.12) | (0.12) | (0.12) | (0.12) | (0.11) | (0.11) | (0.11) | (0.08) |
| 65 and over | −0.36*** | −0.37*** | −0.33*** | −0.16* | −0.79*** | −0.78*** | −0.81*** | −0.43*** | 1.03*** | 1.03*** | 1.04*** | 0.94*** |
| | (0.10) | (0.10) | (0.10) | (0.08) | (0.15) | (0.15) | (0.15) | (0.14) | (0.13) | (0.13) | (0.13) | (0.10) |
| Education: Bachelor or higher | 0.08 | 0.08 | −0.03 | 0.04 | −0.01 | −0.01 | −0.12 | 0.01 | −0.04 | −0.04 | −0.11 | −0.05 |
| | (0.07) | (0.07) | (0.07) | (0.05) | (0.09) | (0.09) | (0.09) | (0.07) | (0.08) | (0.08) | (0.07) | (0.06) |
| Income: EUR 1151–1800 | 0.16 | 0.16 | 0.16 | 0.06 | 0.21 | 0.21 | 0.23 | 0.19 | 0.20 | 0.21 | 0.22 | −0.09 |
| | (0.13) | (0.12) | (0.12) | (0.11) | (0.21) | (0.21) | (0.21) | (0.21) | (0.15) | (0.15) | (0.15) | (0.13) |
| Income: EUR 1801–2600 | 0.14 | 0.14 | 0.11 | −0.02 | 0.20 | 0.20 | 0.18 | 0.19 | 0.16 | 0.17 | 0.16 | 0.02 |
| | (0.13) | (0.13) | (0.13) | (0.11) | (0.21) | (0.21) | (0.21) | (0.21) | (0.15) | (0.15) | (0.15) | (0.13) |
| Income: > EUR 2600 | −0.03 | −0.03 | −0.07 | −0.10 | 0.14 | 0.14 | 0.09 | 0.12 | 0.16 | 0.16 | 0.14 | 0.12 |
| | (0.14) | (0.14) | (0.14) | (0.12) | (0.22) | (0.22) | (0.21) | (0.21) | (0.16) | (0.16) | (0.16) | (0.13) |

**TABLE 4** (Continued)

| | Narrow-scope trust in banks | | | | Narrow-scope trust in life insurer | | | | Narrow-scope trust in pension funds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Job | 0.02 | 0.02 | 0.01 | −0.03 | −0.15* | −0.15 | −0.17* | −0.20** | −0.06 | −0.06 | −0.07 | −0.16** |
| | (0.07) | (0.07) | (0.07) | (0.06) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) | (0.08) | (0.07) |
| Homeowner | 0.01 | 0.01 | −0.04 | 0.00 | 0.23* | 0.23* | 0.17 | 0.06 | −0.00 | −0.00 | −0.03 | −0.02 |
| | (0.08) | (0.08) | (0.08) | (0.06) | (0.12) | (0.12) | (0.12) | (0.10) | (0.09) | (0.09) | (0.09) | (0.07) |
| Household head lives with partner | 0.09 | 0.08 | 0.11 | 0.05 | 0.27** | 0.27** | 0.29** | 0.22** | 0.06 | 0.06 | 0.08 | 0.01 |
| | (0.08) | (0.08) | (0.08) | (0.07) | (0.12) | (0.12) | (0.11) | (0.10) | (0.09) | (0.09) | (0.09) | (0.07) |
| Degree of urbanization | 0.01 | 0.01 | 0.01 | 0.00 | −0.03 | −0.03 | −0.03 | −0.03 | 0.02 | 0.02 | 0.02 | 0.02 |
| | (0.03) | (0.03) | (0.03) | (0.02) | (0.04) | (0.04) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) |
| Region: North | 0.01 | 0.01 | −0.01 | −0.01 | −0.04 | −0.04 | −0.07 | −0.01 | 0.01 | 0.01 | −0.00 | 0.01 |
| | (0.12) | (0.12) | (0.12) | (0.09) | (0.15) | (0.15) | (0.15) | (0.12) | (0.13) | (0.13) | (0.13) | (0.10) |
| Region: East | −0.15 | −0.15 | −0.15 | −0.06 | −0.12 | −0.12 | −0.15 | −0.10 | −0.03 | −0.03 | −0.03 | −0.02 |
| | (0.10) | (0.10) | (0.09) | (0.07) | (0.12) | (0.12) | (0.11) | (0.09) | (0.10) | (0.10) | (0.10) | (0.08) |
| Region: South | −0.15 | −0.15 | −0.15* | −0.12* | −0.02 | −0.02 | −0.04 | 0.02 | −0.06 | −0.06 | −0.06 | −0.03 |
| | (0.09) | (0.09) | (0.09) | (0.07) | (0.11) | (0.11) | (0.11) | (0.09) | (0.10) | (0.10) | (0.10) | (0.07) |
| Risk aversion | 0.07*** | 0.07*** | 0.07*** | 0.11*** | 0.05 | 0.05 | 0.05 | 0.08** | −0.01 | −0.01 | −0.01 | 0.03 |
| | (0.02) | (0.02) | (0.02) | (0.02) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.02) |
| Year after bankruptcy | −0.19 | −0.18 | −0.13 | −0.24 | | | | | | | | |
| | (0.19) | (0.19) | (0.20) | (0.21) | | | | | | | | |
| Year after bailout | −0.51*** | −0.51*** | −0.54*** | −0.49*** | | | | | | | | |
| | (0.09) | (0.09) | (0.09) | (0.10) | | | | | | | | |
| Generalized trust | | | 0.79*** | 0.54*** | | | 0.69*** | 0.30*** | | | 0.51*** | 0.37*** |
| | | | (0.05) | (0.05) | | | (0.07) | (0.07) | | | (0.06) | (0.05) |
| Broad-scope trust in banks | | | | 2.63*** | | | | | | | | |
| | | | | (0.05) | | | | | | | | |
| Broad-scope trust in insurers | | | | | | | | 3.11*** | | | | |
| | | | | | | | | (0.08) | | | | |

(Continues)

**TABLE 4** (Continued)

| | Narrow-scope trust in banks | | | | Narrow-scope trust in life insurer | | | | Narrow-scope trust in pension funds | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Broad-scope trust in pension funds | | | | | | | | | | | | 3.22*** |
| | | | | | | | | | | | | (0.06) |
| Unemployment rate | | | | −0.12*** | | | | 0.16*** | | | | −0.12*** |
| | | | | (0.01) | | | | (0.02) | | | | (0.02) |
| Number of observations | 23404 | 23404 | 23404 | 23182 | 9999 | 9999 | 9999 | 9916 | 17832 | 17832 | 17832 | 17716 |
| Number of respondents | 5908 | 5908 | 5908 | 5882 | 3642 | 3642 | 3642 | 3618 | 4761 | 4761 | 4761 | 4745 |
| Wald $\chi^2$ | 143.80*** | 145.58*** | 399.31*** | 3167.64*** | 96.00*** | 97.11*** | 183.65*** | 1783.08*** | 245.38*** | 246.35*** | 335.52*** | 3618.50*** |

*Note:* The table reports parameter estimates of random effects ordered logit regressions. Period: 2006–2019. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (no trust at all) to 5 (complete trust). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

trusts banks in general. The regressions that include broad-scope trust also reveal that part of the financial literacy effect takes place indirectly via higher broad-scope trust. The effect of financial knowledge is smaller in these regressions (columns 1d, 2d, and 3d) than in the regressions without broad-scope trust (columns 1c, 2c, and 3c). In case of insurance companies (column 2d) the direct financial knowledge effect is even insignificant. The coefficient on the lagged unemployment rate is negative and significant in case of banks and pension funds and positive and significant in case of insurance companies, so in line with our findings for broad-scope trust.

Narrow-scope trust varies between people. Males have more trust in their financial institutions than females. For example, a male is 4%-points more likely to completely trust his own bank(s) (based on column 1d). Compared to people younger than 35, older people are less likely to trust the financial health of their banks and insurance companies. In contrast, trust in one's own pension fund(s) increases with age. For example, someone who is 65 or over is 7%-points more likely to completely trust the financial soundness of one's own pension fund(s) than someone who is younger than 35 (based on column 3d). Employed people have less trust in their own life insurance and pension fund than unemployed people. Trust in one's own life insurance company is relatively high for people who are living together with a partner or are part of a household where the head of the household has a partner. However, the presence of a partner is not significantly related to narrow-scope trust in bank*s* and narrow-scope trust in pension funds. Narrow-scope trust is also unrelated to household income, the level of education, and the degree of urbanization. Location is only important for narrow-scope trust in banks: people living in the south of the Netherlands have lower trust than people who live in the West. The stronger people's degree of risk aversion is, the stronger their trust is in the financial soundness of their bank and life insurance company.

## 5.4 | Trust in the competence and integrity of managers

Finally, we show that financial knowledge is also positively related to trust in the competence and integrity of managers of financial initiations (Table 5). Compared to people who consider themselves unknowledgeable of financial matters, people who consider themselves very knowledgeable are 6%-points more likely to agree or completely agree that managers are competent (column 2a) and 4%-points more likely to agree or completely agree that managers act with integrity (column 3a). We rerun these regressions with financial knowledge dummies instead of the financial knowledge variable and again find a positive relationship between financial literacy and trust in managers' competence (column 2b). In case of trust in managers' integrity the picture is more nuanced. Whereas the effects of *more or less knowledgeable* and *knowledgeable* are significant, the effect of *very knowledgeable* is insignificant. So, the level of trust in managers' integrity does not differ significantly between unknowledgeable and very knowledgeable people.

The effect of financial knowledge is smaller when the average narrow-scope trust measure and the lagged unemployment rate are included (columns 1c, 2c, and 3c). However, its effect remains significant. We find a positive correlation between narrow-scope trust and trust in the competence and integrity of managers of financial institutions. For example, a one-point higher narrow-scope trust correlates with a 15%- points higher likelihood of agreeing that managers are competent and a 2%-points higher likelihood of completely agreeing.

**TABLE 5** Self-assessed financial knowledge and trust in financial sector managers' competence and integrity

| | Trust in managers' competence and integrity | | | | Trust in managers' competence | | | | Trust in managers' integrity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Financial knowledge | 0.33*** | | 0.23*** | 0.21*** | 0.14*** | | 0.10*** | 0.09** | 0.12*** | | 0.11*** | 0.08** |
| | (0.06) | | (0.06) | (0.06) | (0.04) | | (0.04) | (0.04) | (0.04) | | (0.04) | (0.04) |
| More or less knowledgeable | | 0.31*** | | | | 0.19*** | | | | 0.21*** | | |
| | | (0.11) | | | | (0.07) | | | | (0.06) | | |
| Knowledgeable | | 0.63*** | | | | 0.27*** | | | | 0.29*** | | |
| | | (0.14) | | | | (0.08) | | | | (0.08) | | |
| Very knowledgeable | | 1.09*** | | | | 0.47*** | | | | 0.32** | | |
| | | (0.29) | | | | (0.17) | | | | (0.16) | | |
| Male | −0.05 | −0.04 | −0.19** | −0.26*** | −0.17** | −0.17** | −0.27*** | −0.29*** | −0.23*** | −0.23*** | −0.33*** | −0.34*** |
| | (0.09) | (0.09) | (0.09) | (0.09) | (0.07) | (0.07) | (0.07) | (0.06) | (0.07) | (0.07) | (0.07) | (0.07) |
| Between 35 and 44 | 0.10 | 0.10 | 0.12 | 0.01 | −0.05 | −0.05 | −0.07 | −0.12 | 0.10 | 0.10 | 0.09 | 0.05 |
| | (0.16) | (0.16) | (0.15) | (0.15) | (0.11) | (0.11) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) |
| Between 45 and 54 | 0.16 | 0.16 | 0.14 | 0.01 | −0.36*** | −0.36*** | −0.43*** | −0.49*** | −0.07 | −0.07 | −0.16 | −0.21** |
| | (0.15) | (0.15) | (0.14) | (0.14) | (0.11) | (0.11) | (0.11) | (0.10) | (0.11) | (0.11) | (0.10) | (0.10) |
| Between 55 and 64 | −0.09 | −0.09 | −0.16 | −0.27* | −0.44*** | −0.44*** | −0.64*** | −0.69*** | 0.00 | −0.00 | −0.22** | −0.24** |
| | (0.16) | (0.16) | (0.15) | (0.15) | (0.11) | (0.11) | (0.11) | (0.10) | (0.11) | (0.11) | (0.10) | (0.10) |
| 65 and over | −0.17 | −0.16 | −0.27 | −0.23 | −0.07 | −0.07 | −0.34*** | −0.42*** | 0.36*** | 0.36*** | 0.12 | 0.07 |
| | (0.18) | (0.19) | (0.17) | (0.17) | (0.12) | (0.12) | (0.11) | (0.11) | (0.12) | (0.12) | (0.11) | (0.11) |
| Education: Bachelor or higher | 0.20* | 0.20* | 0.17* | 0.15 | 0.10 | 0.10 | 0.04 | 0.04 | −0.03 | −0.03 | −0.09 | −0.08 |
| | (0.11) | (0.11) | (0.10) | (0.10) | (0.08) | (0.08) | (0.07) | (0.07) | (0.08) | (0.08) | (0.08) | (0.08) |
| Income: EUR 1151–1800 | −0.01 | −0.01 | −0.04 | −0.24 | 0.10 | 0.11 | 0.03 | −0.09 | 0.15 | 0.15 | 0.13 | 0.00 |
| | (0.24) | (0.24) | (0.22) | (0.20) | (0.16) | (0.16) | (0.15) | (0.14) | (0.13) | (0.13) | (0.13) | (0.13) |
| Income: EUR 1801–2600 | −0.25 | −0.25 | −0.27 | −0.46** | 0.20 | 0.20 | 0.05 | −0.09 | 0.23* | 0.24* | 0.13 | −0.02 |
| | (0.24) | (0.24) | (0.22) | (0.20) | (0.16) | (0.16) | (0.15) | (0.14) | (0.14) | (0.14) | (0.13) | (0.13) |
| Income: > EUR 2600 | −0.10 | −0.10 | −0.08 | −0.29 | 0.46*** | 0.47*** | 0.32** | 0.17 | 0.37** | 0.37** | 0.26* | 0.10 |
| | (0.26) | (0.26) | (0.24) | (0.22) | (0.16) | (0.16) | (0.16) | (0.15) | (0.14) | (0.14) | (0.14) | (0.14) |

**TABLE 5** (Continued)

| | Trust in managers' competence and integrity | | | | Trust in managers' competence | | | | Trust in managers' integrity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Job | −0.15 | −0.15 | −0.08 | −0.21* | 0.11 | 0.11 | 0.16** | 0.08 | −0.03 | −0.03 | −0.01 | −0.08 |
| | (0.12) | (0.12) | (0.12) | (0.12) | (0.08) | (0.08) | (0.07) | (0.07) | (0.08) | (0.08) | (0.07) | (0.07) |
| Homeowner | 0.05 | 0.05 | 0.07 | 0.03 | 0.13 | 0.13 | 0.10 | 0.09 | 0.11 | 0.10 | 0.10 | 0.08 |
| | (0.14) | (0.14) | (0.13) | (0.13) | (0.09) | (0.09) | (0.08) | (0.08) | (0.09) | (0.09) | (0.08) | (0.08) |
| Household head lives with partner | 0.24* | 0.23* | 0.16 | 0.20 | −0.28*** | −0.28*** | −0.23*** | −0.20** | −0.13 | −0.13 | −0.09 | −0.05 |
| | (0.14) | (0.14) | (0.13) | (0.13) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.09) | (0.08) | (0.08) |
| Degree of urbanization | −0.02 | −0.02 | −0.03 | −0.06 | −0.02 | −0.02 | −0.02 | −0.02 | −0.05 | −0.05 | −0.04 | −0.04 |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Region: North | 0.03 | 0.03 | −0.09 | −0.08 | −0.05 | −0.05 | −0.06 | −0.09 | 0.04 | 0.04 | 0.03 | 0.02 |
| | (0.18) | (0.18) | (0.17) | (0.16) | (0.14) | (0.14) | (0.12) | (0.12) | (0.14) | (0.14) | (0.13) | (0.13) |
| Region: East | −0.02 | −0.02 | −0.00 | 0.02 | −0.02 | −0.02 | 0.01 | 0.01 | 0.06 | 0.05 | 0.09 | 0.08 |
| | (0.16) | (0.16) | (0.14) | (0.14) | (0.11) | (0.11) | (0.10) | (0.10) | (0.11) | (0.11) | (0.10) | (0.10) |
| Region: South | 0.24* | 0.24* | 0.20 | 0.24* | 0.16 | 0.16 | 0.20** | 0.20** | 0.03 | 0.03 | 0.06 | 0.05 |
| | (0.14) | (0.14) | (0.13) | (0.13) | (0.11) | (0.11) | (0.10) | (0.10) | (0.11) | (0.11) | (0.10) | (0.10) |
| Risk aversion | −0.09** | −0.09** | −0.09** | −0.07* | −0.05** | −0.05** | −0.07*** | −0.06** | −0.06** | −0.06** | −0.08*** | −0.06** |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Year after bankruptcy | −0.56 | −0.57 | 0.06 | −0.11 | 0.38 | 0.38 | 0.06 | −0.01 | 0.56** | 0.56** | 0.22 | 0.13 |
| | (0.55) | (0.55) | (0.48) | (0.47) | (0.27) | (0.27) | (0.27) | (0.25) | (0.27) | (0.27) | (0.26) | (0.27) |
| Year after bailout | −2.21*** | −2.21*** | −1.26*** | −1.25*** | −0.81*** | −0.81*** | −0.70*** | −0.73*** | −0.28* | −0.29** | −0.16 | −0.19 |
| | (0.12) | (0.12) | (0.14) | (0.13) | (0.16) | (0.16) | (0.16) | (0.17) | (0.14) | (0.14) | (0.15) | (0.15) |
| Narrow-scope trust: Average | | | 1.53*** | | | | 1.16*** | | | | 1.12*** | |
| | | | (0.07) | | | | (0.04) | | | | (0.04) | |
| Unemployment rate | | | 0.38*** | 0.33*** | | | −0.08*** | −0.09*** | | | −0.13*** | −0.14*** |
| | | | (0.05) | (0.05) | | | (0.02) | (0.02) | | | (0.02) | (0.02) |

(Continues)

**TABLE 5** (Continued)

| | Trust in managers' competence and integrity | | | | Trust in managers' competence | | | | Trust in managers' integrity | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (1a) | (1b) | (1c) | (1d) | (2a) | (2b) | (2c) | (2d) | (3a) | (3b) | (3c) | (3d) |
| Broad-scope trust: Average | | | | 1.99*** | | | | 1.54*** | | | | 1.40*** |
| | | | | (0.08) | | | | (0.05) | | | | (0.05) |
| Number of observations | 5289 | 5289 | 5276 | 5276 | 17410 | 17410 | 17346 | 17378 | 17379 | 17379 | 17317 | 17343 |
| Number of respondents | 2173 | 2173 | 2170 | 2170 | 5051 | 5051 | 5045 | 5048 | 5036 | 5036 | 5028 | 5030 |
| Wald $\chi^2$ | 409.63*** | 410.46*** | 896.35*** | 1026.22*** | 118.85*** | 120.03*** | 971.52*** | 1246.35*** | 78.40*** | 82.02*** | 1003.18*** | 1152.70*** |
| Period | 2006–2009 | 2006–2009 | 2006–2009 | 2006–2009 | 2010–2019 | 2010–2019 | 2010–2019 | 2010–2019 | 2010–2019 | 2010–2019 | 2010–2019 | 2010–2019 |

*Note:* The table reports parameter estimates of random effects ordered logit regressions. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (completely disagree that managers of financial institutions are in general knowledgeable and/or sound) to 5 (completely agree). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

We also find a positive relationship between broad-scope trust and trust in the competence and integrity of managers of financial institutions (columns 1d, 2d, and 3d). To illustrate the effect, a one point higher broad-scope trust reflects a 14%-points higher likelihood of agreeing or completely agreeing that managers of financial institutions act with integrity.

Trust in financial institutions' managers also relates to various sociodemographic factors. In this respect, we focus on the 2010–2019 findings, when trust in competence and integrity was measured separately and on columns 2d and 3d. Males have less trust in financial institutions' managers than females. Men are 4%-points less likely to agree or completely agree that these managers are competent and 4%-points less likely to agree or fully agree that they act with integrity than women. Recall that, in contrast, men have more trust in the financial soundness of financial institutions. Age also matters. Compared to people below 35, people of 45 and above are less likely to find managers of financial institutions competent. Compared to people below 35, people aged between 45 and 65 have less trust in the integrity of these managers. Trust in competence is relatively high for people who live in the south of the Netherlands. Trust is unrelated to education, income, having a job, owning a house and the degree of urbanization. People who are part of a household in which the head of the household has a partner are less likely to consider managers of financial institutions competent. We also find that stronger risk aversion correlates with lower trust in managers' competence and integrity. Trust in managers' competence is rather low for people who experienced a bailout of their bank in the prior year.

## 5.5 | Robustness

As a robustness test, we run our regressions with three alternative financial knowledge variables. First, we use *manager household finances* instead of the self-assessed financial knowledge variable. Manager household finances is a binary dummy that is 1 for household members who are most involved in household finances and 0 for other household members. Second, we use *financial sector job* instead of financial knowledge. Financial sector job is 1 for people working in the financial sector and 0 for people working somewhere else. Third, we use a more objective measure of financial literacy for those respondents who are in our sample as well as in the samples of previous rounds of the DHS (in 2010, 2015, and 2018) when questions on financial literacy were asked. Following Alessie, van Rooij, and Lusardi (2011), the measure *actual financial knowledge* is the number of correct answers to three questions on finance.[16]

When we use manager household finances instead of perceived financial knowledge as proxy for financial literacy, most of our previous results are confirmed. Compared to household members who are not in charge of household finances, people who are in charge of household finances have a higher degree of broad-scope trust in banks, insurers and pension funds, narrow-scope trust in banks, trust in the competence and integrity of financial sector managers and trust in the supervisory authority. The results for narrow-scope trust are shown in Table B.1 in the online Appendix. The other results are available upon request.

Our baseline results for financial literacy are also confirmed when we use the measure based on having a job in the financial sector. Compared to others, people who work in the financial sector have a higher degree of broad-scope trust and narrow-scope trust in all three types of financial institutions, more trust in the competence and integrity of managers of financial institutions and also in DNB. The narrow-scope trust findings are shown in Table B.2 in the online Appendix. The other tables are available upon request.

**TABLE 6** Actual financial knowledge and broad-scope trust

| | Broad-scope trust in banks | | Broad-scope trust in insurers | | Broad-scope trust in pension funds | |
|---|---|---|---|---|---|---|
| | (1a) | (1b) | (2a) | (2b) | (3a) | (3b) |
| Actual financial knowledge | 0.17*** | 0.10** | 0.19*** | 0.14*** | 0.11** | 0.04 |
| | (0.05) | (0.05) | (0.05) | (0.05) | (0.04) | (0.04) |
| Male | 0.14** | 0.01 | 0.24*** | 0.15* | 0.29*** | 0.21*** |
| | (0.07) | (0.07) | (0.08) | (0.08) | (0.07) | (0.07) |
| Between 35 and 44 | 0.05 | 0.04 | 0.01 | 0.03 | 0.12 | 0.13 |
| | (0.14) | (0.14) | (0.14) | (0.15) | (0.13) | (0.13) |
| Between 45 and 54 | 0.03 | 0.06 | −0.24* | −0.23 | 0.33** | 0.37*** |
| | (0.14) | (0.14) | (0.14) | (0.15) | (0.13) | (0.13) |
| Between 55 and 64 | 0.08 | 0.09 | −0.17 | −0.16 | 0.60*** | 0.64*** |
| | (0.14) | (0.14) | (0.14) | (0.14) | (0.12) | (0.13) |
| 65 and over | 0.09 | −0.00 | −0.22 | −0.30* | 0.68*** | 0.66*** |
| | (0.15) | (0.15) | (0.16) | (0.16) | (0.14) | (0.14) |
| Education: Bachelor or higher | −0.08 | −0.22*** | −0.01 | −0.12 | 0.03 | −0.06 |
| | (0.08) | (0.08) | (0.09) | (0.09) | (0.08) | (0.08) |
| Income: EUR 1151–1800 | 0.17 | 0.15 | 0.10 | 0.09 | 0.56*** | 0.58*** |
| | (0.17) | (0.17) | (0.19) | (0.18) | (0.17) | (0.16) |
| Income: EUR 1801–2600 | 0.29 | 0.25 | 0.23 | 0.20 | 0.54*** | 0.50*** |
| | (0.18) | (0.18) | (0.19) | (0.18) | (0.17) | (0.17) |
| Income: > EUR 2600 | 0.41** | 0.28 | 0.52*** | 0.45** | 0.68*** | 0.58*** |
| | (0.19) | (0.18) | (0.20) | (0.19) | (0.18) | (0.17) |
| Job | −0.02 | 0.02 | −0.09 | −0.07 | 0.02 | 0.07 |
| | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) | (0.10) |
| Homeowner | 0.10 | 0.06 | 0.08 | 0.03 | 0.24** | 0.22** |
| | (0.10) | (0.09) | (0.10) | (0.10) | (0.10) | (0.10) |
| Household head lives with partner | −0.08 | 0.02 | −0.05 | 0.03 | 0.06 | 0.13 |
| | (0.10) | (0.10) | (0.11) | (0.11) | (0.10) | (0.09) |
| Degree of urbanization | −0.02 | −0.03 | −0.03 | −0.04 | 0.00 | −0.00 |
| | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) | (0.03) |
| Region: North | 0.15 | 0.22 | 0.09 | 0.13 | 0.27** | 0.31** |
| | (0.13) | (0.13) | (0.15) | (0.15) | (0.13) | (0.13) |
| Region: East | −0.20* | −0.15 | −0.18 | −0.15 | −0.08 | −0.03 |
| | (0.10) | (0.10) | (0.11) | (0.11) | (0.10) | (0.10) |
| Region: South | −0.08 | −0.06 | 0.04 | 0.06 | −0.00 | 0.03 |
| | (0.09) | (0.09) | (0.10) | (0.10) | (0.10) | (0.10) |
| Risk aversion | 0.01 | 0.02 | 0.07* | 0.08* | 0.03 | 0.05 |
| | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) | (0.04) |

**TABLE 6** (Continued)

| | Broad-scope trust in banks | | Broad-scope trust in insurers | | Broad-scope trust in pension funds | |
|---|---|---|---|---|---|---|
| | (1a) | (1b) | (2a) | (2b) | (3a) | (3b) |
| Year after bankruptcy | −0.16 | −0.16 | | | | |
| | (0.18) | (0.19) | | | | |
| 2015 | −0.19** | 0.00 | 0.09 | 0.25*** | −0.39*** | −0.25*** |
| | (0.08) | (0.08) | (0.08) | (0.08) | (0.07) | (0.07) |
| 2018 | 0.08 | 0.11 | 0.21** | 0.23** | −0.12 | −0.13 |
| | (0.08) | (0.08) | (0.09) | (0.09) | (0.08) | (0.08) |
| Trust in the supervisory authority | | 1.26*** | | 0.99*** | | 0.94*** |
| | | (0.06) | | (0.07) | | (0.06) |
| Number of observations | 4183 | 4183 | 3744 | 3744 | 4111 | 4111 |
| Wald $\chi^2$ | 70.07*** | 451.74*** | 90.14*** | 312.76*** | 184.25*** | 422.00*** |

*Note:* The table reports parameter estimates of ordered logit regressions. Period: 2010, 2015, and 2018. Standard errors are clustered by household and shown in parentheses. The dependent variable ranges from 1 (no trust at all) to 5 (complete trust). ***, **, and * denotes statistical significance at the 0.01, 0.05, and 0.10 level, respectively.

The regressions with actual financial knowledge confirm the positive relationship between financial knowledge and trust in financial institutions and the supervisory authority. The results for broad-scope trust when we use actual financial knowledge as proxy for financial literacy are shown in Table 6. Table B.3 in the online Appendix presents the findings for narrow-scope trust. It is reassuring that our main finding that financial literacy is positively related to trust is confirmed by these estimates. Table 6, for instance, suggests that respondents with the highest level of actual financial knowledge (i.e., 3) are 6%-points more likely to predominantly trust banks and also 4%-points more likely to completely trust banks than people who have the lowest financial literacy score (i.e., 0). Our finding that financial literacy is positively related to trust in the financial sector supervisory authority also holds if we use actual financial knowledge (results available on request).

As another robustness test, we use more general broad-scope measures of trust in the financial sector in general, which do not focus on the financial health of financial institutions. These measures are only available for 2019. *Trust in the financial sector* is an ordered variable capturing trust in the health of financial institutions such as banks, insurance companies and pension funds. It ranges from 1 (absolutely no trust) to 4 (a lot of trust) and is on average 2.4 for the observations included in the regressions. The other trust measure *trust in the financial sector 2* is a binary dummy. It is 1 for respondents who think that in general most financial institutions such as banks, insurance companies and pension funds can be trusted and 0 for respondents who believe that one cannot be careful enough in dealing with financial institutions. On average it is 0.45 for the respondents included in the regressions, so 45% of the people think that in general financial institutions can be trusted.

Our findings are robust to the use of these alternative measures. Again, we find that financial knowledge and trust in the supervisory authority are significantly and positively related to broad-scope trust (see Table B.4 in the online Appendix).

Last, we ran random effects linear models as a robustness test. In our baseline analysis, we use discrete choice panel models because we have ordinal dependent variables that are not normally distributed. We find qualitatively the same results when we use random effects linear models. Again, we find a significant positive association between financial knowledge and trust in financial institutions and the supervisory authority. The results are available upon request.

## 6 | CONCLUSIONS AND POLICY IMPLICATIONS

To sum up, this research shows that financial literacy is positively related to trust in financial institutions. Consumers with a high degree of self-assessed financial knowledge are more likely to trust banks, insurance companies and pension funds, and the competence and integrity of the managers of these institutions. This holds both for trust in financial institutions in general (broad-scope trust) and trust in one's own financial institutions (narrow-scope trust). Financially knowledgeable people are also more likely to trust the prudential supervisory authority. These findings are robust to the usage of three alternative financial literacy measures, namely being in charge of household finances, working in the financial sector, or actual financial knowledge.

As our research setup is not able to identify causality, future research may use an experimental set-up to address causality. Although Dutch banks and insurance companies are fairly similar to those of other countries, suggesting that our findings may also hold for other countries, the size of Dutch pension funds make them rather unique. Future research for other countries may provide evidence about the generalizability of our findings. Another topic for future research is to examine whether trust in DNB depends on the sector that is supervised (banks [large banks vs. small banks[17]], insurance companies, and pension funds).

We also find that people with a higher degree of trust in the financial health of financial institutions in general are also more likely to trust the financial health of their own banks, life insurance company and pension funds. In other words, there is a positive link between broad-scope and narrow-scope trust.

In addition, people with high narrow-scope or broad-scope trust are more likely to trust the integrity and competence of managers of financial institutions than people with low trust in financial institutions. Furthermore, we find that trust in the banking supervisory authority is positively and significantly related to broad-scope trust.

Last, our findings provide valuable insights into the role of consumers' background characteristics. Several of these relationships depend on the type of trust that is researched. For example, compared to females, males are relatively likely to trust the financial health of financial institutions but unlikely to trust the competence and integrity of these institutions. Obviously, a supervisory authority has no influence on sociodemographic characteristics. However, it could tailor specific measures of communication to identified groups with lower trust levels. The same goes for financial literacy and trust. While supervisory authorities cannot increase financial literacy by themselves, they can contribute to it by providing schools and the broader public with educational programs and explaining monetary and financial policy. More importantly, supervisory authorities could underscore the importance of financial education in their role as policy advisors. Finally, our results suggest that supervisory authorities may act in a way that not only supports trust in financial institutions directly but also indirectly via higher trust in the supervisory authority.

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## ORCID

*Carin van der Cruijsen* https://orcid.org/0000-0002-3854-309X
*Jakob de Haan* https://orcid.org/0000-0002-5504-9448

## ENDNOTES

[1] Several studies report a decline of trust in banks after the outbreak of the financial crisis (Guiso 2010; Sapienza and Zingales 2012; Knell and Stix 2015). Stevenson and Wolfers (2011) find a significant negative link between the unemployment rate and trust in banks. Personal crisis experiences resulted in a drop of trust in banks in the Netherlands (van der Cruijsen, de Haan, and Jansen 2016).

[2] It has been observed that even though people say they do not trust the banks, their behavior suggests otherwise as they neither run nor switch banks frequently. However, the absence of runs probably reflects that protections are in place (like deposit insurance schemes) that make that bank clients feel that their money is safe. Reasons provided for limited switching are that people find it too inconvenient to change banks, consider it a difficult decision to make, and are afraid of making mistakes (van der Cruijsen and Diepstraten 2017), resulting in behavioral loyalty (Dick and Basu 1994).

[3] As pointed out by van Esterik-Plasmeijer and van Raaij (2017), customers are likely to have deliberately selected their bank based on their preferences and comparisons with other banks. After this selection, customers are arguably biased and rate their bank as more trustworthy than other banks.

[4] An exception is the study by van der Cruijsen, de Haan, and Jansen (2016), who report that personal financial crisis experiences do not have a significant direct effect on trust in the banking supervisory authority.

[5] The literature is inconclusive with respect to the effect of financial literacy on bank switching behavior. Brown, Guin, and Morkoetter (2020) and Diepstraten and van der Cruijsen (2019) find that financially literate people are more likely to switch than other consumers, whereas Brunetti, Ciciretti, and Djordjevic (2016) find the opposite.

[6] In line with these findings, van der Cruijsen and Jonker (2019) report a positive relationship between self-assessed financial knowledge and pensioners' trust in their own pension funds.

[7] A few studies focus on trust in Dutch pension funds. van der Cruijsen and Jonker (2019) find that trust in the pension fund's ability to pay pension benefits at all times depends on consumers' perceived pension funds' performance and personal characteristics. van Dalen and Henkens (2018) analyze trust in three types of pension providers: pension funds, banks and insurance companies. Pension funds are trusted most. Trust is positively correlated with someone's level of education and depends inter alia on the perceived integrity and competence of the pension providers.

[8] Hansen (2012) examines trust in financial companies, and pension and mortgage companies in Denmark, while Hansen (2014) analyzes trust in Danish banks. van der Cruijsen and Jonker (2019) focus on pension funds in the Netherlands. Ampudia and Palligkinis (2018) research trust in banks in Italy.

[9] The CentERpanel is managed by CentERdata, a research institute affiliated with Tilburg University. For more information on this panel, we refer to Teppa and Vis (2012).

[10] Two more general measures of trust in the financial sector are part of our survey data but only since 2019. These measures are used in our robustness analysis.

[11] A list with publications using data collected among the CentERpanel is available on https://www.centerdata.nl/en/publications. See http://www.centerdata.nl/en/projects-by-centerdata/dnb-household-survey-dhs for more information on the DHS. URLs have been last accessed on December 18, 2020.

[12] These authors asked respondents to report on a scale from 1 to 7 their understanding of economics and compare this self-assessed financial literacy with two objective measures based on factual knowledge. The first measure is based on questions that cover topics ranging from the workings of interest rates and interest compounding to the effect of inflation, discounting, and nominal versus real values. The second measure is based on a set of questions that aims to measure more advanced financial knowledge and covers topics such as the difference between stocks and bonds, the functioning of the stock market, the workings of risk diversification, and the relationship between bond prices and interest rates. The authors report that more than 50% of respondents who report knowing a lot about economics (score of 6 or 7) are located in the top quartile of the basic literacy index. The relationship is even stronger for the advanced literacy index. More than 50% of respondents who report low levels of economic knowledge (score of 1, 2, or 3) are located in the first two quartiles of the literacy index.

[13] Generalized trust matters for financial decision making at the individual level. For example, people who trust others are more likely to be enrolled in pension plans (Agnew et al. 2007), to become an entrepreneur (Guiso, Sapienza, and Zingales 2006), to participate in the stock market (Balloch, Nicolae, and Philip 2015), and less likely to default on household debt (Jiang and Lim 2018). However, there is also research indicating that trust in others can be too high. For instance, Butler, Giuliano, and Guiso (2016) find that when trust is very high, people get cheated often and incur large losses.

[14] Given the structure of the data, we prefer to use random effects models. Although personal characteristics and financial literacy are measured on a yearly basis, for many individuals these variables change little across time but greatly between individuals. This is specifically the case for variables like gender, education, and homeownership. Because we are also interested in the effects of those variables a fixed effects model is not appropriate. Introducing household level fixed effects introduces the same problems as on average only 1.3 members of the household participate in the survey. We cluster the standard errors at the household level to control for unobserved heterogeneity.

[15] As suggested by one of the referees, we have checked whether trust in pension funds and insurance companies is different for respondents who do not have a policy and those that do. For this purpose, we have made two new dummy variables: *life insurance* (1 = yes, 0 = no) and *pension fund participant* (1 = yes, 0 = no) and have re-estimated Tables 1 and 2 adding these dummies. The results (available on request) suggest that individuals with life insurance have more trust in the financial health of insurers in general than those without life insurance and that those who participate in a pension fund have more trust in the financial health of pension funds in general than those who do not participate in a pension fund. Importantly, inclusion of these variables does not change our finding that there is a positive relationship between financial literacy and trust.

[16] These questions are: 1. Suppose you have 100 euros in a savings account and the interest rate is 2% a year. How much do you think you will have in your savings account after 5 years, assuming you leave all the money in this account: more than 102 euros, exactly 102 euros, less than 102 euros? 2. Suppose the interest rate on your savings account is 1%/yr and inflation is equal to 2%/yr. Would you be able to buy more, exactly the same or less after 1 year than today with the money in the account? 3. In your opinion, is the following statement "true" or "not true"? A share of a company normally gives a more secure return than an investment fund that only invests in shares.

[17] The European Central Bank is now in charge of supervising the large banks, although DNB is still involved in this and is in the lead for supervising small banks. DNB is still fully responsible for supervising insurance companies and pension funds.

## REFERENCES

Afandi, E. and Habibov, N. (2017) Pre- and post-crisis trust in banks: lessons from transitional countries. *Journal of Economic Development*, 42(1), 73–94.

Aghion, P., Algan, Y., Cahuc, P. and Shleifer, A. (2010) Regulation and distrust. *Quarterly Journal of Economics*, 125(3), 1015–1049.

Agnew, J.R., Szykman, L., Utkus, S.P. and Young, J.A. (2007) Do financial literacy and mistrust affect 401 (k) participation? *Center for Retirement Research Issue Brief*, 7–17. https://crr.bc.edu/briefs/do-financial-literacy-and-mistrust-affect-401k-participation/.

Alessie, R.J.M., van Rooij, M.C.J. and Lusardi, A. (2011) Financial literacy and retirement preparation in The Netherlands. *Journal of Pension Economic and Finance*, 10(4), 527–546.

Ampudia, M. and Palligkinis, S. (2018) *Trust and the household-bank relationship*. *ECB Working Paper Series No. 2184*.

Balloch, A., Nicolae, A. and Philip, D. (2015) Stock market literacy, trust, and participation. *Review of Finance*, 19(5), 1925–1963.

Brown, M., Guin, B. and Morkoetter, S. (2020) Deposit withdrawals from distressed banks: client relationships matter. *Journal of Financial Stability*, 46, 100707.

Brunetti, M., Ciciretti, R. and Djordjevic, L. (2016) The determinants of Household's Bank switching. *Journal of Financial Stability*, 26, 175–189.

Butler, J.V., Giuliano, P. and Guiso, L. (2016) The right amount of trust. *Journal of the European Economic Association*, 14(5), 1155–1180.

Carbó-Valverde, S., Maqui-López, E., and Rodriguez-Fernandez, F. (2013) Trust in banks: evidence from the Spanish financial crisis. *26th Australasian finance and banking conference 2013*.

Deuflhard, F., Georgarakos, D. and Inderst, R. (2019) Financial literacy and savings account returns. *Journal of the European Economic Association*, 17(1), 131–164.

Dick, A.S. and Basu, K. (1994) Customer loyalty: toward an integrated conceptual framework. *Journal of the Academy of Marketing Science*, 22(2), 99–113.

Diepstraten, M. and van der Cruijsen, C. (2019) To stay or go? Consumer bank switching behaviour after government interventions. *Journal of Banking and Finance*, 106, 16–33.

Filipiak, U. (2016) Trusting financial institutions: out of reach, out of trust? *The Quarterly Review of Economics and Finance*, 59, 200–214.

Fungáčová, Z., Hasan, I. and Weill, L. (2019) Trust in Banks. *Journal of Economic Behavior & Organization*, 157, 452–476.

Guiso, L., Sapienza, P. and Zingales, L. (2006) Does culture affect economic outcomes? *Journal of Economic Perspectives*, 20(2), 23–48.

Guiso, L. (2010) *A trust-driven financial crisis. Implications for the future of financial markets. Einaudi Institute for Economic and Finance, Working Paper No. 1006*. http://ideas.repec.org/p/eie/wpaper/1006.html.

Hansen, T. (2012) Understanding trust in financial services: the influence of financial healthiness, knowledge, and satisfaction. *Journal of Service Research*, 15(3), 280–295.

Hansen, T. (2014) The role of trust in financial customer-seller relationships before and after the financial crisis. *Journal of Consumer Behaviour*, 13(6), 442–452.

Jaffer, S., Morris, N. and Vines, D. (2014) Why trustworthiness is important. In: Morris, N. and Vines, D. (Eds.) *Capital failure: rebuilding trust in financial services*. Oxford: Oxford University Press.

Jansen, D.-J., Mosch, R.H.J. and van der Cruijsen, C.A.B. (2015) When does the general public lose trust in banks? *Journal of Financial Services Research*, 48(2), 127–141.

Jiang, D. and Lim, S.S. (2018) Trust and household debt. *Review of Finance*, 22(2), 783–812.

Kersting, L.M., Marley, R.N. and Mellon, M.J. (2015) The association between financial literacy and trust in financial markets among novice nonprofessional investors. *Academy of Accounting and Financial Studies Journal*, 19(3), 201–215.

Knell, M. and Stix, H. (2015) Trust in banks during normal and crisis times: evidence from survey data. *Economica*, 82, 995–1020.

Lusardi, A. and Mitchell, O.S. (2014) The economic importance of financial literacy: theory and evidence. *Journal of Economic Literature*, 52(1), 5–44.

Mosch, R. and Prast, H. (2008) Confidence and trust: empirical investigations for The Netherlands and the financial sector. *DNB Occasional Study*, 6(2). https://www.dnb.nl/binaries/OS_Vol6_2_08_tcm46-175279.pdf.

Nuñez Letamendia, L and Poher, B. (2020) *The effect of financial literacy on trust: do financially literate individuals have more trust in the financial system? Working Paper, April*.

Park, N.Y. (2020) Trust and trusting behavior in financial institutions: evidence from South Korea. *International Review of Economics and Finance*, 67, 408–419.

Sapienza, P. and Zingales, L. (2012) A trust crisis. *International Review of Finance*, 12(2), 123–131.

Sapienza, P., and Zingales, L. (2018) *Financial trust index*. http://www.financialtrustindex.org/.

Shim, S., Serido, J. and Tang, C. (2013) After the global financial crash: individual factors differentiating young adult consumers' trust in banks and financial institutions. *Journal of Retailing and Consumer Services*, 20, 26–33.

Sirdeshmukh, D., Singh, J. and Sabol, B. (2002) Consumer trust, value, and loyalty in relational exchanges. *Journal of Marketing*, 66(1), 15–37.

Stevenson, B. and Wolfers, J. (2011) Trust in public institutions over the business cycle. *American Economic Review: Papers and Proceedings*, 101(3), 281–287.

Stix, H. (2013) Why do people save in cash? Distrust, memories of banking crises, weak institutions and dollarization. *Journal of Banking and Finance*, 37(1), 4087–4106.

Teppa, F. and Vis, C. (2012) *The CentERpanel and the DNB household survey: methodological aspects. DNB Occasional Study No. 10 (4)*. http://www.dnb.nl/binaries/DNB_OS_1004_BIN_WEB_tcm46-277691.pdf.

van der Cruijsen, C. (2020) Payments data: do consumers want banks to keep them in a safe or turn them into gold? *Applied Economics*, 52(6), 609–622.

van der Cruijsen, C.A.B., de Haan, J., Jansen, D.-J. and Mosch, R.H.J. (2012) Households' decisions on savings accounts after negative experiences with banks during the financial crisis. *Journal of Consumer Affairs*, 46 (3), 436–456.

van der Cruijsen, C., de Haan, J. and Jansen, D.-J. (2016) Trust and financial crisis experiences. *Social Indicators Research*, 127(2), 577–600.

van der Cruijsen, C. and Diepstraten, M. (2017) Banking products: you can take them with you, so why don't you? *Journal of Financial Services Research*, 52(1), 123–154.

van der Cruijsen, C., Doll, M. and van Hoenselaar, F. (2019) Trust in other people and the usage of peer platform markets. *Journal of Economic Behavior & Organization*, 166, 751–766.

van der Cruijsen, C. and Jonker, N. (2019) Pension profile preferences: the influence of trust and expected expenses. *Applied Economics*, 51(12), 1212–1231.

van Dalen, H.P. and Henkens, K. (2018) The making and breaking of trust in pension providers: an empirical study of pension participants. *Geneva Papers on Risk and Insurance*, 43(3), 473–491.

van Esterik-Plasmeijer, P.W.J. and van Raaij, W.F. (2017) Banking system trust, bank trust, and bank loyalty. *International Journal of Bank Marketing*, 35(1), 97–111.

van Rooij, M., Lusardi, A. and Alessie, R. (2011) Financial literacy and stock market participation. *Journal of Financial Economics*, 101(2), 449–472.

von Gaudecker, H.-M. (2015) How does household portfolio diversification vary with financial literacy and financial advice? *The Journal of Finance*, 70(2), 489–507.

## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of this article.

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