

When does the general public lose trust in banks?

When does the general public lose trust in banks?

David-Jan Jansen, Robert Mosch and Carin van der Cruisen *

* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

Working Paper No. 402

November 2013

De Nederlandsche Bank NV
P.O. Box 98
1000 AB AMSTERDAM
The Netherlands

When Does the General Public Lose Trust in Banks?^a

David-Jan Jansen^b Robert H.J. Mosch^c

Carin A.B. van der Cruijssen^d

Version: November 12, 2013

Abstract

When does the general public lose trust in banks? We provide empirical evidence using responses by Dutch survey participants to eight hypothetical scenarios. We find that members of the general public care strongly about executive compensation. Negative media reports, falling stock prices, and opaque product information also affect trust in banks. Experiencing a bank bailout leads to less concern about government intervention, while experience of a bank failure leads to greater concern on bonuses.

JEL classifications: D12, D14, D18, G01, G21

Keywords: trust, banks, general public, financial crisis, survey data

^aThis paper relies on survey material collected in 2010 by the second author and Kirstin Spahr van der Hoek, and on material collected by the authors and Jakob de Haan, also in 2010. We are grateful to both of them. Corrie Vis (CentERdata) helped arranging the various surveys using the CentERpanel. Jansen thanks DNB's Governance and Accounting Department for hospitality while starting work on this paper. We thank conference participants at the 'Banking, Finance, Money and Institutions: The Post Crisis Era' conference at the University of Surrey, seminar participants at DNB, Jakob de Haan, and Marco van der Leij for constructive feedback. Any errors and omissions are our own responsibility. Views expressed in this article do not necessarily coincide with those of de Nederlandsche Bank, the Eurosystem or the International Monetary Fund.

^bCorresponding author. De Nederlandsche Bank, Economics and Research Division, P.O. Box 98, 1000 AB Amsterdam, The Netherlands, tel.: +31-20-5243170, fax: +31-20-5242506, e-mail: d.jansen@dnb.nl.

^cInternational Monetary Fund. Washington (DC), United States, e-mail: rmosch@imf.org.

^dDe Nederlandsche Bank. Economics and Research Division. Amsterdam, The Netherlands, e-mail: c.a.b.van.der.cruijssen@dnb.nl.

1 Introduction

This paper studies under what conditions the general public would be particularly likely to lose trust in financial institutions. Throughout history, financial panics, bank runs, and disappearance of trust have been intertwined. When Overend, Gurney and Company, a large London-based bill discounter, suspended payment on 10 May 1866, panic quickly spread, leading to a run on other financial institutions throughout the country. Financial order was in the end restored by the Bank of England's willingness, although only after fierce internal debate, to act as lender of last resort (Bagehot 1873, Schwartz 1987, Flandreau and Ugolini 2011). There would be no further bank runs in England until September 2007, when worried depositors started queuing outside branch offices of Northern Rock (Shin 2009). In the United States, banking panics were common phenomena in the late 19th and early 20th century, until the introduction of deposit insurance in the 1930s (Diamond and Dybvig 1983, Friedman and Schwartz 1963, Shin 2009). In Latin America, East Asia and transition economies, however, waves of banking crisis continued to occur well into the early 2000s (Laeven and Valencia 2013).

Recent research shows evidence for the intuitive notion that trust disappears during a period of financial turmoil. For instance, Paola Sapienza and Luigi Zingales find that in July 2012 only 21 percent of Americans trusted the financial system, which was the lowest documented level of trust since early 2009.¹ Steven-

¹Source: <http://www.financialtrustindex.org/resultswave15.htm>. ULR last accessed 31 January 2013.

son and Wolfers (2011) also find that trust in a number of public institutions, including banks, has fallen sharply during the Great Recession. For policymakers, it is important to know the extent to which consumers have trust in banks. However, trust can be determined by many factors. By having a better understanding of these factors, their magnitude, and possible fluctuations in relative importance over time, one may be better prepared for a sudden fall of trust. Also, gaining more insight in the public's views may help in restoring trust in the financial system.

There are a few related papers that analyse trust in the financial sector. Guiso (2010) points to fraud, such as the Madoff case, as a reason for the collapse of trust. Knell and Stix (2009) identify subjective variables, such as individuals' assessment of their current and future financial positions, as important drivers of trust. Carbó-Valverde, Maqui-López and Rodríguez-Fernández (2013) find that trust is strongly affected by perceptions of several performance characteristics and attributes of banks. Van der Cruijssen, De Haan and Jansen (2013b) show that adverse experiences with banks during the financial crisis do not only directly lower trust in banks, but also have a negative effect on generalized trust.

To flesh out what could drive a sudden loss of trust, we presented members of the Dutch general public with eight hypothetical scenarios related to the financial crisis. Then, we asked to what extent these events would harm trust in their banks. We focus on scenarios where the possible outcomes are not *a priori* obvious, as learning about the public's opinions in those cases will be most useful

for policymakers. We group the eight events into four categories: i) adverse news, ii) government intervention, iii) insufficient transparency, and iv) governance. For instance, we asked whether a decline in the price of the stock of one's bank, the occurrence of government support, a lack of clear information on products, or dominant leadership of one's bank's manager would lead to a loss of trust.

We also use panel regressions to better understand the determinants of trust. Apart from a standard set of covariates, such as education, age, gender, and occupation, we include information on whether respondents were customer of a bank that ran into difficulties. There is evidence that experiencing traumatic events affects trust. For instance, Alesina and Ferrara (2002) find that low trust is related to experiences as illness or divorce, while financial misfortune is most closely associated with low trust. Our analysis is based on surveys that took place after a turbulent period for the financial sector in the Netherlands. Two banks went into bankruptcy: Landsbanksi/Icesave in 2008 and DSB Bank in 2009. In addition, in 2008 two of the country's largest financial institutions (ING and SNS REAAL) received government support, while the Dutch government nationalized parts of Fortis Bank and ABN Amro. Using information on crisis experiences, described in Van der Crujsen et al. (2012), we identify whether survey respondents were customer at banks that were either bailed out, or went bankrupt. Thus, we analyze the effects of these negative experiences on trust in financial institutions, again in the context of the eight hypothetical events listed above.

This paper has four key findings. First, the most robust reason why people would lose trust in banks relates to executive compensation. In the most recent survey, large bonuses are the top reason why people worry, while in the 2010 survey, it is the second-most important reason. Second, negative media reports, a drop in share prices, and opaque product information are also important reasons for losing trust. However, the importance of share prices and product information is only recent, while the importance of media reports decreases between 2010 and 2012. Third, government intervention, in particular through nationalizations, is not a major reason for losing trust. This is in line with the government's aim to end the withdrawal of funds and to restore financial stability. Lastly, trust is influenced by negative experiences with the financial sector during the crisis years. Having experienced a bank bailout leads to less concern about government intervention, while the experience of a bank failure results in greater concern regarding bonuses.

2 Motivating the eight scenarios

We study eight potential reasons for losing trust in banks. We focus on scenarios where the possible outcomes are not *a priori* obvious, as learning about the public's opinion in those cases will be most useful for policymakers. In some cases, this means that we sketch situations where one could take defensible positions on both sides of a debate. In other scenarios, it means there could be uncertainty

about the extent to which the public would care about certain events. Appendix A gives the precise formulation of the questionnaire. First, we present participants with the following question: ‘*How likely is it, that because of the following events, you will withdraw the funds from your bank, as you no longer trust the bank due to these events?*’. Then, the participants see, one event at a time, the eight scenarios.²

The first three scenarios concern confrontations with negative news about a financial institution. There is general evidence that people incorporate or respond to negative news (Malmendier and Nagel 2011, Malmendier, Tate and Yan 2011, Olfson, Marcus and Druss 2008). In the context of banks, informed depositors have been found to respond to regulatory actions and actions by depositors in one’s social network (Iyer and Puri 2008, Iyer, Puri, and Ryan 2012). But, so far, precise survey evidence on the role of adverse news is missing. We consider three cases of negative news: a sudden fall of the bank’s share price, friends and family giving the advice to withdraw funds, or media reports on others withdrawing funds.

The next two scenarios deal with government intervention, and concern either government support or the fact that the government nationalizes the bank. In

²In the 2010 survey, respondents were initially presented with more than eight scenarios. In 2012 we used the eight scenarios where differences of opinion are more likely to occur. Examples of not-repeated scenarios are: ‘One of the bank’s executives faces prosecution’ and ‘The bank receives a fine from the financial supervisor’. One consideration for limiting the number of scenarios was the potential negative effect on survey response.

many countries, including the Netherlands, government interventions such as nationalisations had been uncommon for some time. The fact that a bank could be nationalized, or re-capitalized, may have been surprising to the general public. For some, it may be re-assuring when the government steps in. For others, it may be worrisome, and lead to questions concerning other financial institutions (Iyer, Puri, and Ryan 2012).

The sixth scenario concerns transparency of product information. We include a question which sketches a situation in which a bank has not been fully clear on the information concerning some of its products. Financial institutions have a responsibility to act in their clients' best interests. For instance, banks should inform their clients on the risk characteristics of the various financial products. At the same time, consumers make the final decision. However, the literature on financial literacy strongly suggests that fully understanding the products may be difficult for parts of the general public (Lusardi and Mitchell 2008, 2011, Lusardi, Mitchell and Curto 2010).

The final two scenarios are related to bank governance, a topic which is receiving increasing scholarly attention (Mehran, Morrison and Shapiro 2011, De Haan and Vlahu 2013). We focus on two factors: executive compensation and dominant leadership. In the public debate, executive compensation, in particular large bonuses, has been heavily discussed. Some academics are critical of executive compensation practices (Bebchuk and Fried 2004, 2010; Bebchuk and Spamann 2010). For others in this discussion, it is less clear that compensation

structures necessarily lead to excessive risk-taking (Fahlenbrach and Stulz 2011).

Dominant leadership can be conceived as detrimental, especially if there is no effective opposition within a board of directors. CEO dominance may, for instance, restrict the information flow in a company (Haleblian and Finkelstein 1993). However, CEO dominance can also open the possibility for big wins (Tang, Crossan and Rowe 2011). Resoluteness can also be helpful for leaders in overcoming a time-inconsistency problem when developing an organization's mission (Bolton, Brunnermeier and Veldkamp 2012).

3 Data and methods

The analysis mainly draws on two surveys among Dutch households. The first survey was held in July 2010, the second in July 2012. We submitted questionnaires to the members of the CentERpanel, an internet-based survey among the Dutch population. CentERdata, a research centre affiliated to the University of Tilburg, maintains the infrastructure of the panel. The panel survey has been operating since 1993 and comprises information on a representative sample of around 2,500 households. The panel members who received our questionnaires are aged 16 or older, and are either head of their household or the partner of the head of the household. Teppa and Vis (2012) provide further background information on the CentERpanel. Previous papers using the CentERpanel include Hurd, Van Rooij and Winter (2011) and Van Rooij, Lusardi and Alessie (2011).

Taking a first glance at the data, figure 1 shows the unweighted responses to the survey questions on trust. The dark, thin bars show the responses for 2012, while the thick, grey bars have information for 2010. The responses are measured on a scale from 1 (highly unlikely to affect trust) to 7 (highly likely to affect trust). The vertical axis show the percentage of replies per category. Large bonuses for bank managers are often cited as a cause for concern (figure 1, third row, second panel). In 2012, close to 30% of the respondents assign the maximum score of 7 to this scenario. The importance of various trust drivers varies over time. Unclear information is cited as worrisome in 2012 (second row, third panel), while media reports on others withdrawing funds receive high scores in 2010 (first row, second panel). In both years, dominant leadership and nationalizations are not often cited as important reasons to lose trust. For instance, dominant leadership receives the minimum score from a quarter of the respondents in 2012 (bottom row, first panel).

(insert figure 1 about here)

To facilitate the interpretation, we demean the individual responses. By doing so, it becomes clear whether a particular motivation is relatively important. So, for each individual, we compute:

$$\tilde{T}_i^j = T_i^j - \frac{\sum_{j=1}^8 T_i^j}{8} \quad (1)$$

where i indexes the individual respondents, j indexes the eight hypothetical

events, and T_i^j denotes the responses measured on a scale from 1 to 7. The interpretation of \tilde{T}_i^j is as follows: a positive value means that a particular factor is *relatively* important to individual i , while a negative value indicates that the trust factor is *relatively* unimportant.³

For the descriptive analysis, we use a weighted version of \tilde{T}_i^j . Table 1 shows estimated means and standard errors for a standard set of covariates. Column 1 summarizes the 2010 sample, while column 2 gives an overview of the 2012 sample. The average age of the respondents is around 55 in both years. The majority of respondents are male, with around 30% having obtained an undergraduate degree, and around 15% having obtained a master degree. Most respondents are from the low or medium income group, while around three-quarters of the respondents are home-owners. In terms of professions, one tenth of the respondents works in health care, seven percent works in the industrial sector, and around 2-3% work in a financial institution. Due to unit and item non-response, our sample is not fully representative of the Dutch population, as the share of well-educated, older men are oversampled.⁴ Therefore, we construct sampling weights on the basis of age, education, and gender. Figure 2 shows the distribution of the sampling weights for 2010 and 2012.⁵ For the evidence based on graphs, we construct the

³In using demeaned responses, we automatically rely on a complete cases analysis. The results are similar, however, if we perform an available cases analysis.

⁴According to Statistics Netherlands, in the Dutch population over 16, the average age is 47, the percentage of males is around 49%, and the percentage of individuals with a bachelor or master degree is around 28%.

⁵Here and in the further analysis, we exclude five observations for 2010, where the weights

key variable as follows:

$$w\tilde{T}_i^j = \tilde{T}_i^j * w_i \quad (2)$$

where \tilde{T}_i^j follows from equation 1, and w_i denotes the individual specific sampling weights from figure 2.

(insert figure 2 about here)

We collected the experiences with banks during the crisis in a third survey in 2010 (Van der Cruysen et al. 2012, 2013a, 2013b). As described in the appendix, we first asked the respondents to report whether they were customer of a bank that went bankrupt (Q27). If so, we also asked the participants to indicate the name of the bank. Next, we asked the participants whether they were customer of a bank that survived with the help of government support (Q28).

Using the answers, we construct two binary dummy variables related to crisis experiences. The first variable measures whether the participants report having been customer of a bank that received a bailout in 2008; the second variable measures whether participants report having been a client of a bank that went bankrupt in 2008 (i.e. Landsbanki/Icesave), and/or in 2009 (i.e. DSB Bank). Of the participants in the 2010 survey, 43.3% indicate that they were customer of a bank which survived with government support, while 2.5% indicate they were banking at Landsbanki/Icesave when it went bankrupt in 2008. A small

are larger than 15.

percentage, 0.9% indicate they experienced both a bankruptcy and bailout in 2008. Finally, 7.3% of the respondents indicate they were a customer of DSB Bank when it went bankrupt in 2009.

To analyze the relationship between trust and crisis experience, we run random effects panel regressions for each of the eight trust factors. Here, we use unweighted, demeaned survey responses. The regressions are specified as follows:

$$\tilde{T}_{it}^j = \mu^j + \mathbf{x}_{it}'\boldsymbol{\beta} + D_{it}^{12}\gamma + \alpha_i + \epsilon_{it} \quad (3)$$

where i indexes the individuals in the surveys, t indexes the years, and \tilde{T}_{it}^j are the demeaned answers to the j trust questions. The vector \mathbf{x} has the two dummy variables measuring crisis experiences, the full set of covariates summarized in table 1, and also includes dummies for the province where the individual is living. The constant term (μ^j) measures the average level of relevance assigned to scenario j , in 2010, by a male, between 45 and 54 years old, from the medium income group, who is not a home-owner, who lives in the province Zuid-Holland, who works in the health care sector, and who has not experienced a bank nationalisation or bankruptcy of his bank during the financial crisis. The year dummy D^{12} picks up the average shift in replies per scenario j between 2010 and 2012. Finally, α_i and ϵ_{it} are mean-zero IID error terms. Standard errors are clustered by households.

4 When do people lose trust?

Which factors are relevant for losing trust in banks? Figures 3 and 4 present evidence using the demeaned and weighted survey responses $w\tilde{T}_i^j$ from equation 2. The thick, grey bars are for the 2010 sample; the thin, dark bars summarize the answers for the 2012 sample. The vertical axes show the percentage of respondents in each category.⁶ Each figure shows results for four of the hypothetical events. In addition, Table 2 shows the means and standard errors for the trust factors $w\tilde{T}_i^j$ in 2010 (column 1) and 2012 (column 2). Furthermore, column 3 shows the results for unpaired two-sample t-tests comparing the means of these years.

In 2010, negative media reports present the greatest worry. Large bonuses of bank managers as well as negative advice given by family and friends are also cited as relatively important reasons for withdrawing funds. In 2012, large bonuses of managers constitute the most important driver of trust, while a sharp drop of the share price of the bank, media reports on others withdrawing funds, and opaque information also represent important trust motivations. At the same time, there is some variation in the relative importance of trust determinants over time. The importance of negative media reports, advice of family and friends, and dominant leadership has declined between 2010 and 2012. In contrast, the relative importance of declining stock prices, opaque information, large bonuses, and government support has increased.

In both years, government nationalization is the least important factor af-

⁶Some outliers are not plotted to improve legibility of the graphs.

fecting trust. This is an intuitive finding, because there seems to be no need to withdraw funds after a bank’s nationalization. This is also a desirable finding, as one of the intentions of the nationalization is ending the withdrawal of funds and thereby support financial stability. Although the mean score on the government support question did not change significantly over time, its relative importance as a trigger for loss of trust increased. While government support is also intended to end the withdrawal of funds and support financial stability, a non-negligible share of the public may still react by losing trust and withdrawing funds.

(insert figures 3 and 4 about here)

(insert table 2 about here)

5 Explaining cross-sectional variation in trust

Tables 3 and 4 report results for the panel regressions. While Table 3 reports the outcomes of the regressions with the trust factors stock prices, media reports, family and friends, and government support, Table 4 shows the outcomes of the regressions with the trust factors nationalization, opaque information, dominant leadership and large bonuses as dependent variables. We show only selected coefficients and standard errors.⁷

We find that differences in crisis experiences coincide with different views on

⁷Complete results are available upon request.

government support, bonuses, and leadership. Respondents whose bank previously was bailed out by the government are less likely to be worried by government support (table 3, column 4) as well as bank nationalizations (table 4, column 1). However, the fact that the bank is being led by a dominant leader is a relatively important factor for losing trust (table 4, column 3). People that experienced a bankruptcy indicate that large bonuses would be an important reasons to distrust the bank (table 4, column 4).

Turning to the covariates, we see that the young are relatively worried by government support, in particular through nationalizations (table 4, column 1). In contrast, the young are less concerned about executive compensation (table 4, column 4). What is also interesting, is that older people find advice from friends and family relatively unimportant (table 3, column 3), and to some extent also media reports (table 3, column 2).

Dominant leadership is a relatively important reason why respondents with low incomes lose trust in banks (table 4, column 3). A sharp stock price decline is a relatively unimportant factor to high income respondents (table 3, column 1). Education is mainly important for views on government support and bonuses. People with a bachelor degree find government support a relatively unimportant trigger (table 3, column 4) and large bonuses relatively important (table 4, column 4).

Looking at occupation, the relevant differences in views occur for governance issues. Those who work in public administration or the services sector are more

worried by dominant leadership styles (table 4, column 3). Respondents with a job in the financial sector are less inclined to worried about the effects of large bonuses (table 4, column 4).

(insert tables 3 and 4 about here)

6 Conclusions

Trust in banks can be determined by many factors. Understanding, as far as possible, why trust vanishes, and to what extent, may help in managing sudden crises of trust. By analyzing the outcomes of a survey on trust drivers among the Dutch public and by relating these outcomes to experiences with the financial sector during the crisis, as well as a standard set of covariates, we improve the understanding of trust factors.

Our main findings are as follows. The most robust reason why people would lose trust in banks relates to large bonuses. To some extent, and depending on the survey year, negative media reports, a drop in share prices, and opaque product information are also important factors. Government intervention, in particular through nationalizations, is not a major reason for losing trust. Having experienced a bank bailout leads to less concern about government intervention, while the experience of a bank failure results in greater concern regarding bonuses.

Despite its importance, we are, as far as we know, the first to analyze in

detail why precisely the general public may lose trust in banks. It may be useful to organize similar surveys in other countries to learn to what extent our results can be generalized. In addition, it is important to repeat these surveys over time, because there are indications from this paper that the relative importance of trust drivers varies over time.

References

- Alesina, Alberto and Eliana La Ferrara. 2002. Who trusts others? *Journal of Public Economics* 85: 207-234.
- Bagehot, Walter. 1873. *Lombard Street. A description of the money market*. 14th edition, reprinted 1920. London: John Murray.
- Bebchuk, Lucian A. and Jesse Fried. 2004. *Pay without Performance: The Unfulfilled Promise of Executive Compensation*. Cambridge (MA): Harvard University Press.
- Bebchuk, Lucian A. and Jesse Fried. 2010. Paying for Long-Term Performance. *University of Pennsylvania Law Review* 158: 1915-1959.
- Bebchuk, Lucian A. and H. Spamann. 2010. Regulating Bankers' Pay. *Georgetown Law Journal* 98(2): 247-287.
- Bolton, Patrick, Markus K. Brunnermeier and L. Veldkamp. 2012. Leadership, Coordination, and Corporate Culture. *Review of Economic Studies* 80: 512-537.
- Carbó Valverde, Santiago, Eduardo Maqui-López and Francisco Rodríguez-Fernández. 2013. Trust in banks: Evidence from the Spanish financial crisis. Available at

<http://ssrn.com/abstract=2310273>.

De Haan, Jakob and Razvan Vlahu. 2013. Corporate Governance of Banks: A Survey. De Nederlandsche Bank Working Paper No. 386.

Diamond, Douglas W. and Philip H. Dybvig. 1983. Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy* 91(3): 401-419.

Fahlenbrach, Rüdiger and René Stulz. 2011. Bank CEO incentives and the credit crisis. *Journal of Financial Economics* 99(1): 11-26.

Flandreau, Marc and Stefano Ugolini. 2011. Where it all began: lending of last resort and the Bank of England during the Overend-Gurney panic of 1866. Norges Bank Working Paper 2011-03.

Friedman, Milton and Anna J. Schwartz. 1963. *A Monetary History of the United States, 1867 - 1960*. New Jersey: Princeton University Press.

Guiso, Luigi, 2010. A trust-driven financial crisis. Implications for the future of financial markets. Einaudi Institute for Economic and Finance, Working Paper 1006.

Haleblian, J. and S. Finkelstein. 1993. Top management team size, CEO dominance, and firm performance: the moderating roles of environmental turbulence and discretion. *Academy of Management Journal* 36(4), 844-863.

Hurd, Michael, Maarten C.J. van Rooij and Joachim Winter. 2011. Stock Market Expectations of Dutch Households. *Journal of Applied Econometrics* 26(3): 416-436.

Iyer, Rajkamal and Manju Puri. 2008. Understanding Bank Runs: The Importance of Depositor-Bank Relationships and Networks. *American Economic Review* 102(4): 1414-1445.

Iyer, Rajkamal, Manju Puri, and Nicholas Ryan. 2012. Do Depositors Monitor Banks? Mimeo.

Knell, Markus and Helmut Stix. 2009. Trust in banks? Evidence from normal times and from times of crisis. Oesterreichische Nationalbank Working Paper 158.

Laeven, Luc and Fabian Valencia. 2013. Systemic Banking Crises Database. *IMF Economic Review* 61(2): 225-270.

Lusardi, Annamaria and Olivia S. Mitchell. 2008. Planning and Financial Liter-

acy. How Do Women Fare? *American Economic Review* 98(2): 413-417.

Lusardi, Annamaria and Olivia S. Mitchell. 2011. Financial literacy around the world: an overview. *Journal of Pension Economics and Finance* 10(4): 497-508.

Lusardi, Annamaria, Olivia S. Mitchell, and V. Curto. 2010. Financial literacy among the young. *Journal of Consumer Affairs* 44(2): 358-380.

Malmendier, Ulrike and Stefan Nagel. 2011. Depression Babies: Do Macroeconomic Experiences Affect Risk-Taking? *Quarterly Journal of Economics* 126(1): 373-416.

Malmendier, Ulrike, Geoffrey Tate, and Jon Yan. 2011. Overconfidence and Early-life Experiences: The Effect of Managerial Traits on Corporate Financial Policies. *Journal of Finance* 66(5): 1687-1733.

Mehran, Hamid, Alan Morrison, and Joel Shapiro. 2011. Corporate Governance and Banks: What Have We Learned from the Financial Crisis? Federal Reserve Bank of New York Staff Reports No. 502.

Olfson, Mark, Steven C. Marcus and Benjamin Druss. 2008. Effects of Food

and Drug Administration Warnings on Antidepressant Use in a National Sample. *Archives of General Psychiatry*, 65(1): 94-101.

Schwartz, Anna J. 1987. *Money in Historical Perspective*. Chicago: University of Chicago Press.

Shin, Hyun Song. 2009. Reflections on Northern Rock: The Bank Run that Heralded the Global Financial Crisis. *Journal of Economic Perspectives* 23(1): 101-119.

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

Tang, Jianyun, Mary M. Crossan and W. Glenn Rowe. 2011. Dominant CEO, Deviant Strategy, and Extreme Performance: The Moderating Role of a Powerful Board. *Journal of Management Studies* 48(7): 1479-1503.

Teppa, Federica and Corrie Vis. 2012. The CentERpanel and the DNB Household Survey: Methodological Aspects. *De Nederlandsche Bank Occasional Studies* 10(4).

Van der Crujisen, Carin A.B., Jakob de Haan, David-Jan Jansen and Robert

H.J. Mosch. 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 Cruijssen, Carin A.B., Jakob de Haan, David-Jan Jansen and Robert H.J Mosch. 2013a. Knowledge and opinions about banking supervision: Evidence from a survey of Dutch households. *Journal of Financial Stability* 9(2): 219-229. Available at <http://dx.doi.org/10.1016/j.jfs.2011.11.002>.

Van der Cruijssen, Carin A.B., Jakob de Haan, and David-Jan Jansen. 2013b. Trust and financial crisis experiences. De Nederlandsche Bank Working Paper no. 389.

Van Rooij, Maarten C.J. van, Annamaria Lusardi and Rob J.M. Alessie. 2011. Financial Literacy and Retirement Planning in the Netherlands. *Journal of Economic Psychology* 32(4): 593-608.

Appendix A: Questions from the surveys

A.) We submitted the following questions on trust to the members of the CentERpanel in 2010 and 2012.

Introduction:

This questionnaire is on trust in your bank(s).

Q1: How likely is it, that because of the following events, you will withdraw the funds from your bank, as you no longer trust the bank due to these events?

1= highly unlikely

4= neutral

7= highly likely

?= I do not know

a) The bank is led by a dominant person.

b) Managers of this bank are receiving large bonuses.

c) The explanations related to financial products of this bank are lengthy and difficult to read.

d) The share price of this bank drops sharply.

e) Family and friends are advising you to withdraw funds from this bank.

f) There are media reports that customers of this bank are withdrawing funds.

g) The bank receives government support to stay financially healthy.

h) The government nationalizes the bank.

B.) We submitted the following questions on crisis experiences to the members of the CentERpanel in 2010.

Q27: During the past 3 years did a bank at which you were customer go bankrupt?

a) yes, DSB.

b) yes, Icesave.

c) yes, other .

d) no.

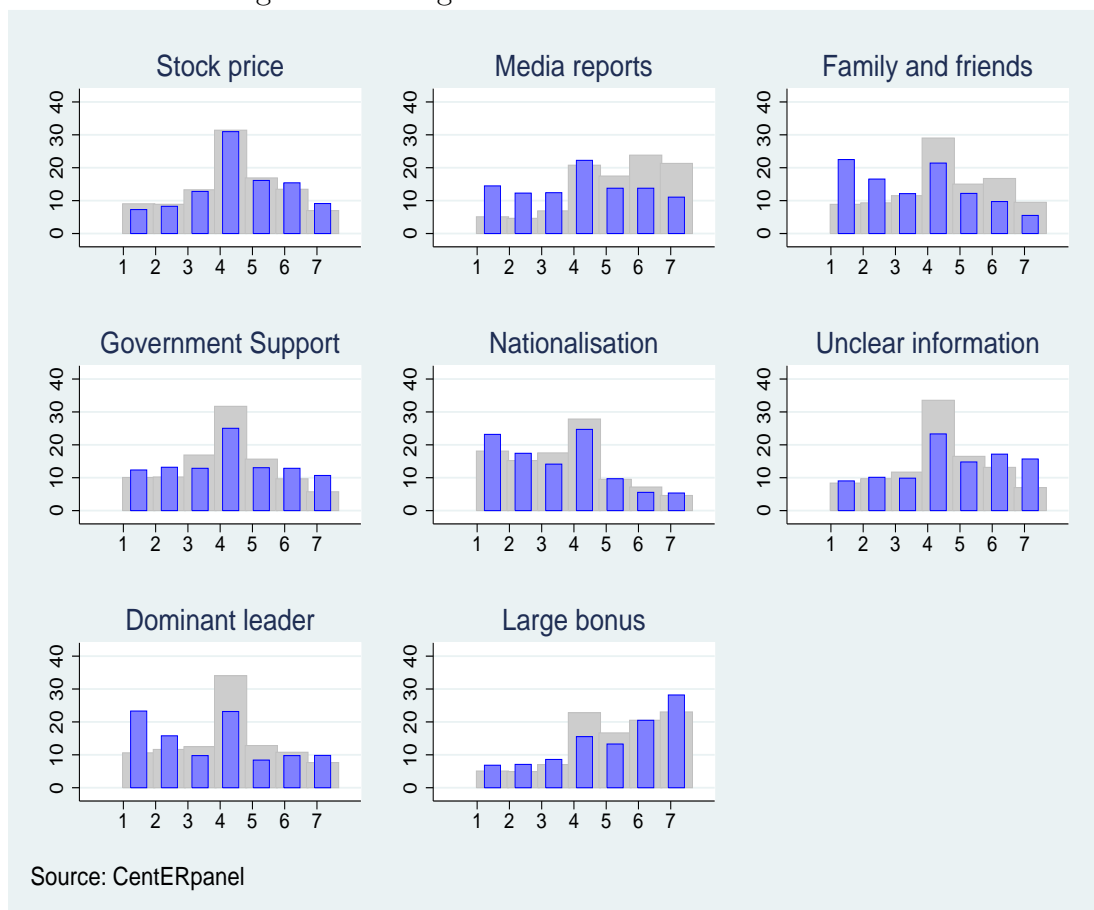
Q28: During the past 3 years did a bank at which you were customer survive with the help of government support?

a) yes.

b) no.

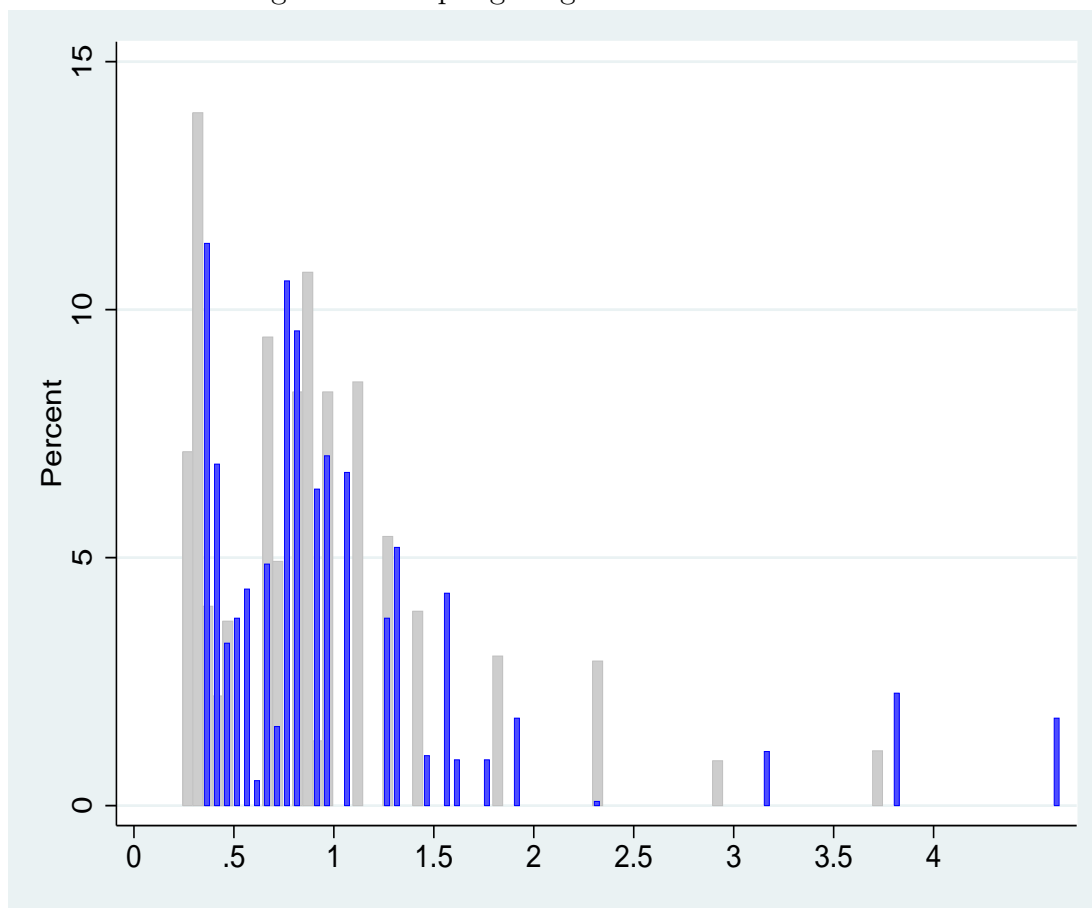
c) I don't know.

Figure 1: Losing trust in banks: which motives?



Notes: The histograms summarize, for eight hypothetical events, the answers to the question ‘How likely is it, that the following events will lead you to withdraw funds from your bank, as you no longer trust the bank?’. The thin dark bars summarize answers for the 2012 sample, while the thick bars in grey report for the 2010 sample. The vertical axes show the percentage of total respondents. The hypothetical events are described in detail in Appendix A.

Figure 2: Sampling weights for 2010 and 2012



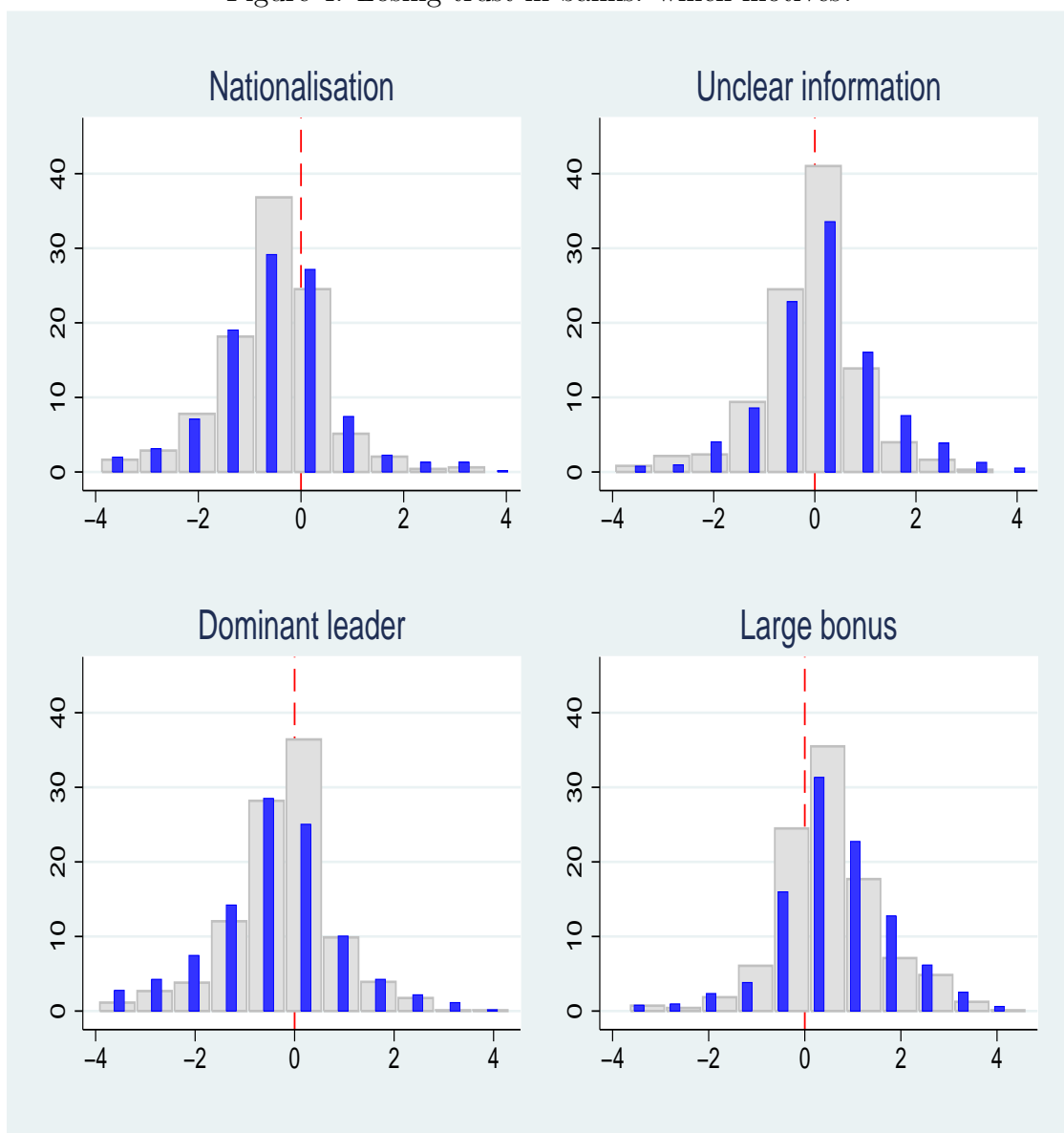
Notes: The histograms shows sampling weights for the 2010 and 2012 sample. We construct weights by rebalancing for age, gender and education. Dark, thin bars denote the 2012 sample, while grey, thick bars are for the 2010 sample.

Figure 3: Losing trust in banks: which motives?



Notes: The histograms summarize, for four hypothetical events, the answers to the question ‘How likely is it, that because of the following events, you will withdraw the funds from your bank, as you no longer trust the bank due to these events?’. For each raw answer (as shown in figure 1), we subtract the mean response for all eight questions per individual. Also, we apply sampling weights computed using information on age, gender and education. The thin dark bars summarize answers for the 2012 sample, while the thick bars in grey report for the 2010 sample. The vertical axes show the percentage of total respondents. The hypothetical events are described in detail in Appendix A. Some outliers not plotted to improve legibility.

Figure 4: Losing trust in banks: which motives?



Notes: The histograms summarize, for four hypothetical events, the answers to the question ‘How likely is it, that because of the following events, you will withdraw the funds from your bank, as you no longer trust the bank due to these events?’. For each raw answer (as shown in figure 1), we subtract the mean response for all eight questions per individual. Also, we apply sampling weights computed using information on age, gender and education. The thin dark bars summarize answers for the 2012 sample, while the thick bars in grey report for the 2010 sample. The vertical axes show the percentage of total respondents. The hypothetical events are described in detail in Appendix A. Some outliers not plotted to improve legibility.

Table 1: Summary statistics for covariates

| | (1) | | (2) | |
|-----------------------------|-------------|--------|-------------|--------|
| | 2010 sample | | 2012 sample | |
| Age | 55.70 | (0.44) | 54.88 | (0.44) |
| Female | 0.41 | (0.02) | 0.41 | (0.01) |
| Bachelor degree | 0.30 | (0.01) | 0.28 | (0.01) |
| Master degree | 0.15 | (0.01) | 0.16 | (0.01) |
| Low income group | 0.37 | (0.02) | 0.41 | (0.01) |
| Medium income group | 0.47 | (0.02) | 0.41 | (0.01) |
| High income group | 0.16 | (0.01) | 0.18 | (0.01) |
| Home owner | 0.78 | (0.01) | 0.76 | (0.01) |
| Degree of urbanisation | 3.02 | (0.04) | 2.96 | (0.04) |
| Single | 0.25 | (0.01) | 0.25 | (0.01) |
| Work: agriculture | 0.01 | (0.00) | 0.01 | (0.00) |
| Work: construction | 0.02 | (0.00) | 0.02 | (0.00) |
| Work: cultural sector | 0.02 | (0.00) | 0.02 | (0.00) |
| Work: education | 0.05 | (0.01) | 0.05 | (0.01) |
| Work: financial institution | 0.03 | (0.01) | 0.02 | (0.00) |
| Work: health care | 0.09 | (0.01) | 0.10 | (0.01) |
| Work: hotel or restaurant | 0.01 | (0.00) | 0.00 | (0.00) |
| Work: industry | 0.07 | (0.01) | 0.06 | (0.01) |
| Work: non-profit | 0.01 | (0.00) | 0.00 | (0.00) |
| Work: public administration | 0.06 | (0.01) | 0.06 | (0.01) |
| Work: professional services | 0.08 | (0.01) | 0.08 | (0.01) |
| Work: trade | 0.05 | (0.01) | 0.06 | (0.01) |
| Work: transportation sector | 0.02 | (0.00) | 0.03 | (0.00) |
| Work: utilities | 0.01 | (0.00) | 0.00 | (0.00) |
| Retired | 0.28 | (0.01) | 0.29 | (0.01) |
| Domestic worker | 0.09 | (0.01) | 0.08 | (0.01) |
| Job seeker | 0.02 | (0.00) | 0.03 | (0.00) |
| Disabled | 0.06 | (0.01) | 0.04 | (0.01) |
| No occupation: other | 0.03 | (0.01) | 0.06 | (0.01) |
| Observations | 1000 | | 1191 | |

Notes: This table shows estimates for means and standard errors of the mean (in parentheses)

for the main covariates. Age is shown in levels, as is the degree of urbanisation. All other

means represent fractions of the total number of respondents.

Table 2: Losing trust in banks: mean tests

| | (1) μ (2010) | (2) μ (2012) | (3) Δ (2012-2010) |
|---------------------|---------------------|---------------------|-----------------------------|
| Stock price | -0.07 (0.04) | 0.23** (0.04) | 0.30** (0.05) |
| Media reports | 0.68** (0.04) | 0.21** (0.05) | -0.47** (0.07) |
| Family and friends | 0.09* (0.04) | -0.22** (0.06) | -0.31** (0.07) |
| Government Support | -0.21** (0.03) | -0.01 (0.04) | 0.20** (0.05) |
| Nationalisation | -0.62** (0.04) | -0.67** (0.05) | -0.05 (0.07) |
| Unclear information | -0.14** (0.04) | 0.21** (0.05) | 0.35** (0.06) |
| Dominant leader | -0.30** (0.04) | -0.46** (0.05) | -0.15* (0.07) |
| Large bonus | 0.58** (0.04) | 0.71** (0.05) | 0.14* (0.07) |
| Observations | 995 | 1191 | 2186 |

*Notes: This table shows estimated means and standard errors (in parentheses) for the trust factors $w\tilde{T}_i^j$, as defined in equation 2. Observations were weighted on the basis of age, gender and education. Column 1 has results for the 2010 sample, while column 2 has results for the 2012 sample. Column 3 shows results for unpaired two-sample t-tests comparing means for 2012 and 2010. * $p < 0.05$, ** $p < 0.01$*

Table 3: Losing trust in banks: panel regressions (1)

| | (1) | (2) | (3) | (4) |
|-----------------------------|------------------|------------------|--------------------|--------------------|
| | Stock price | Media reports | Family and friends | Government support |
| Bailout | 0.03 (0.06) | 0.13 (0.08) | 0.06 (0.08) | -0.17** (0.06) |
| Bankruptcy | 0.01 (0.09) | -0.20 (0.13) | -0.09 (0.12) | -0.00 (0.10) |
| Age below 34 | -0.07 (0.12) | -0.08 (0.16) | 0.22 (0.16) | 0.23* (0.10) |
| Age between 35 and 44 | 0.02 (0.10) | 0.12 (0.12) | 0.23* (0.11) | -0.05 (0.09) |
| Age between 55 and 64 | 0.09 (0.09) | -0.16 (0.11) | -0.37** (0.10) | -0.02 (0.08) |
| Age above 65 | 0.30* (0.13) | -0.36* (0.15) | -0.44** (0.14) | 0.03 (0.13) |
| Bachelor degree | 0.04 (0.07) | -0.04 (0.09) | 0.04 (0.09) | -0.18* (0.07) |
| Low income group | -0.03 (0.08) | -0.17 (0.10) | -0.02 (0.09) | -0.05 (0.08) |
| High income group | -0.19* (0.08) | 0.02 (0.12) | -0.05 (0.11) | -0.00 (0.09) |
| Work: education | -0.16 (0.16) | -0.14 (0.20) | 0.21 (0.21) | 0.13 (0.17) |
| Work: financial institution | -0.09 (0.20) | -0.04 (0.28) | 0.10 (0.26) | 0.39 (0.20) |
| Work: industry | -0.10 (0.16) | -0.25 (0.18) | 0.06 (0.19) | 0.10 (0.15) |
| Work: public administration | -0.09 (0.16) | -0.19 (0.19) | -0.01 (0.19) | -0.06 (0.15) |
| Work: professional services | -0.18 (0.14) | -0.11 (0.18) | 0.08 (0.19) | -0.07 (0.14) |
| Observations | 1709 | 1709 | 1709 | 1709 |
| Number individuals | 1217 | 1217 | 1217 | 1217 |
| Number clusters | 972 | 972 | 972 | 972 |
| R-squared overall | 0.05 | 0.09 | 0.09 | 0.06 |
| Chi-squared | 90.0 | 175.1 | 133.4 | 103.7 |
| p-value | 0.00 | 0.00 | 0.00 | 0.00 |

Parameter estimates and standard errors (in parentheses) for random effects panel regressions. The dependent variables are demeaned trust variables as defined in equation 1. The reference category is the average answer, given in 2010, by a male, between 45 and 54 years old, from the medium income group, who is not a home-owner, lives in the province Zuid-Holland, works in the health care sector, and has not experienced a nationalisation or bankruptcy of his bank during the financial crisis. Only selected coefficients are shown. Standard errors clustered by households. * $p < 0.05$, ** $p < 0.01$.

Table 4: Losing trust in banks: panel regressions (2)

| | (1) | (2) | (3) | (4) |
|-----------------------------|-------------------|---------------------|------------------|-------------------|
| | Nationalisation | Unclear information | Dominant leader | Large bonus |
| Bailout | -0.26** (0.07) | 0.05 (0.07) | 0.19* (0.08) | -0.04 (0.07) |
| Bankruptcy | -0.06 (0.12) | -0.01 (0.10) | 0.01 (0.12) | 0.32** (0.10) |
| Age below 34 | 0.33** (0.13) | -0.12 (0.13) | -0.07 (0.15) | -0.46** (0.13) |
| Age between 35 and 44 | 0.04 (0.11) | -0.15 (0.11) | 0.01 (0.11) | -0.25* (0.11) |
| Age between 55 and 64 | -0.07 (0.10) | 0.20* (0.10) | 0.19 (0.10) | 0.15 (0.10) |
| Age above 65 | 0.01 (0.15) | 0.13 (0.14) | 0.16 (0.14) | 0.19 (0.15) |
| Bachelor degree | -0.10 (0.08) | -0.02 (0.08) | 0.02 (0.09) | 0.23** (0.09) |
| Low income group | -0.08 (0.08) | 0.05 (0.08) | 0.30** (0.09) | 0.02 (0.08) |
| High income group | -0.01 (0.10) | 0.08 (0.10) | 0.14 (0.11) | 0.00 (0.10) |
| Work: education | 0.12 (0.19) | -0.27 (0.18) | 0.21 (0.20) | -0.07 (0.19) |
| Work: financial institution | 0.42 (0.24) | -0.35 (0.21) | 0.29 (0.27) | -0.71** (0.22) |
| Work: industry | 0.18 (0.17) | 0.01 (0.17) | 0.22 (0.18) | -0.22 (0.19) |
| Work: public administration | -0.00 (0.17) | -0.03 (0.17) | 0.40* (0.18) | 0.03 (0.17) |
| Work: professional services | -0.15 (0.18) | -0.01 (0.18) | 0.43* (0.18) | 0.05 (0.17) |
| Observations | 1709 | 1709 | 1709 | 1709 |
| Number individuals | 1217 | 1217 | 1217 | 1217 |
| Number clusters | 972 | 972 | 972 | 972 |
| R-squared overall | 0.07 | 0.07 | 0.05 | 0.06 |
| Chi-squared | 115.2 | 124.8 | 86.8 | 105.4 |
| p-value | 0.00 | 0.00 | 0.00 | 0.00 |

Parameter estimates and standard errors (in parentheses) for random effects panel regressions. The dependent variables are demeaned trust variables as defined in equation 1. The reference category is the average answer, given in 2010, by a male, between 45 and 54 years old, from the medium income group, who is not a home-owner, lives in the province Zuid-Holland, works in the health care sector, and has not experienced a nationalisation or bankruptcy of his bank during the financial crisis. Only selected coefficients are shown. Standard errors clustered by households. * $p < 0.05$, ** $p < 0.01$.

Previous DNB Working Papers in 2013

- No. 367 **Andrea Colciago and Lorenza Rossi**, Firm Entry, Endogenous Markups and the Dynamics of the Labor Share of Income
- No. 368 **Dirk Broeders, Paul Hilbers and David Rijsbergen**, What drives pension indexation in turbulent times? An empirical examination of Dutch pension funds
- No. 369 **Luca Arciero, Ronald Heijmans, Richard Heuver, Marco Massarenti, Cristina Picillo and Francesco Vacirca**, How to measure the unsecured money market? The Eurosystem's implementation and validation using TARGET2 data
- No. 370 **Stijn Claessens and Neeltje van Horen**, Impact of Foreign Banks
- No. 371 **Gabriele Galati, Federica Teppa and Rob Alessie**, Heterogeneity in house price dynamics
- No. 372 **Jan Willem van den End**, A macroprudential approach to address liquidity risk with the Loan-to-Deposit ratio
- No. 373 **Jon Frost and Ayako Saiki**, Early warning for currency crises: what is the role of financial openness?
- No. 374 **Ronald Heijmans, Lola Hernández and Richard Heuver**, Determinants of the rate of the Dutch unsecured overnight money market
- No. 375 **Anneke Kosse and Robert Vermeulen**, Migrants' Choice of Remittance Channel: Do General Payment Habits Play a Role?
- No. 376 **Jacob Bikker**, Is there an optimal pension fund size? A scale-economy analysis of administrative and investment costs
- No. 377 **Beata Bierut**, Global liquidity as an early warning indicator of asset price booms: G5 versus broader measures
- No. 378 **Xiao Qin and Chen Zhou**, Systemic Risk Allocation for Systems with A Small Number of Banks
- No. 379 **Niels Gilbert, Jeroen Hessel and Silvie Verkaart**, Towards a Stable Monetary Union: What Role for Eurobonds?
- No. 380 **Mauro Mastrogiacomo**, Reform of the mortgage interest tax relief system, policy uncertainty and precautionary savings in the Netherlands
- No. 381 **Christiaan Pattipeilohy, Jan Willem van den End, Mostafa Tabbae, Jon Frost and Jakob de Haan**, Unconventional monetary policy of the ECB during the financial crisis: An assessment and new evidence
- No. 382 **Alexander Popov and Neeltje Van Horen**, The impact of sovereign debt exposure on bank lending: Evidence from the European debt crisis
- No. 383 **Andrea Colciago**, Imperfect Competition and Optimal Taxation
- No. 384 **Richhild Moessner**, Effects of explicit FOMC policy rate guidance on market interest rates
- No. 385 **Steven Ongena, Jose Luis Peydro and Neeltje van Horen**, Shocks Abroad, Pain at Home? Bank-Firm Level Evidence on the International Transmission of Financial Shocks
- No. 386 **Jakob de Haan and Razvan Vlahu**, Corporate governance of banks: A survey
- No. 387 **Saskia van Ewijk and Ivo Arnold**, How bank business models drive interest margins: Evidence from U.S. bank-level data
- No. 388 **Paul Hilbers, Karina Raaijmakers, David Rijsbergen and Femke de Vries**, Measuring the effects of financial sector supervision
- No. 389 **Carin van der Crujsen, Jakob de Haan and David-Jan Jansen**, Trust and Financial Crisis Experiences
- No. 390 **Richhild Moessner**, Effects of explicit FOMC policy rate guidance on equities and risk measures
- No. 391 **Christiane Kneer**, The Absorption of Talent into Finance: Evidence from U.S. Banking Deregulation
- No. 392 **Christiane Kneer**, Finance as a Magnet for the Best and Brightest: Implications for the Real Economy
- No. 393 **Clemens Bonner, Iman van Lelyveld and Robert Zymek**, Banks' Liquidity Buffers and the Role of Liquidity Regulation

Previous DNB Working Papers in 2013 (continued)

- No. 394 **Paul Neisingh and Ad Stokman**, What drives consumer confidence in times of financial crises? Evidence for the Netherlands
- No. 395 **Richhild Moessner**, Effect of the zero lower bound on bond yield sensitivity to news in Canada in comparison with the UK and US
- No. 396 **Koen van der Veer and Marco Hoeberichts**, The Level Effect of Bank Lending Standards on Business Lending
- No. 397 **Zhongbo Jing, Jakob de Haan, Jan Jacobs and Haizhen Yang**, Identifying Banking Crises Using Money Market Pressure: New Evidence for a Large Set of Countries
- No. 398 **Richhild Moessner**, Reactions of real yields and inflation expectations to forward guidance in the United States
- No. 399 **Leo de Haan, Jeroen Hessel and Jan Willem van den End**, Are European sovereign bonds fairly priced? The role of modeling uncertainty
- No. 400 **Maarten van Oordt and Chen Zhou**, Systematic tail risk
- No. 401 **Wilko Bolt and David Humphrey**, Competition in bank-provided payment services

