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DISCUSSION PAPER SERIES

Mattresses versus Banks - The Effect of Trust on Portfolio Composition

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Mattresses versus Banks

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Portfolio Composition in a Low Trust Environment.

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Abstract: this paper adds to the growing literature that studies whether trust affects the financial decisions of people. More specifically, we investigate whether lack of trust in banks can explain why people save their savings in cash, 'under the mattress', rather than deposit their savings at the bank. We find a significant effect of lack of trust on the likelihood that a person saves money in cash but also that lack of trust can only provide part of the explanation for the 'money under the mattress' phenomenon. Other factors that matter are the financial awareness and location of the individual.

JEL Codes: G21, O16

Keywords: trust, bank deposits, cash savings, financial awareness

Introduction

There is a substantial amount of evidence that a well-functioning banking system stimulates economic growth (Levine and Zervos, 1998, Allen and Carletti, 2010). One of the reasons that banks are important for growth is that they transform the maturity of assets, transforming relatively short-run deposits into long term financial assets. In many countries, however, banks can only play this role to a limited extent, because rather than depositing their savings at the banks, people keep their savings at home 'under the mattress'. This phenomenon of 'mattress money' is widespread in developing and transition countries[1], but can also be observed in developed countries[2].

Existing studies about this phenomenon are rare, however. Exceptions are the theoretical model of Spagat (1993) which implies that given that there is a non-zero probability that banks do fail, rational individuals will keep some savings under the mattress, the paper by Ramirez (2009) who shows that the press uses the words "hidden money" more after a financial crisis and the paper by Guiso et al (2004) which links cash holdings at home to social capital. Indirect evidence of the 'mattress money' phenomenon comes from the fact that bank crises often go together with outflows of deposits (see for example, Guiso et al (2009) and Ramirez (2009)) and from studies that look at 'unbanked' populations (typically poor people who do not use bank services, see for example Djankov et al, 2008). The former studies only provide indirect evidence as deposit outflows, at least partially, can be used to finance consumption or repayments of debts rather than representing a switch of savings from banks to mattresses. The latter studies also only provide indirect evidence as 'unbanked' people are often people who do not and cannot save at all. Hence, unbanked people have neither savings at the bank nor savings under the mattress.

[1] Table 1 in Claessens (2005) gives for several countries the percentage of people who save and the percentage of people who use formal institutions to save. The ratio of these 2 numbers can be considered as a proxy for savings at home. For the Kyrgyz Republic and Vietnam, the ratio is about one out of ten, against almost 1 in Guatemala.

[2] A UK survey found that 4 percent of respondents would prefer to keep their money under the mattress rather than to save it as a bank deposit (http://www.callcredit.co.uk/press-office/research-and-insight/2009/02/uk-is-a-nation-of-spenders-and-mattress-stashers). See also http://www.cbsnews.com/stories/2007/06/23/national/main2970973.shtml for anecdotic evidence for the US.

In this paper, we use data from Ukraine, a country which has low levels of trust in financial institutions, to study how trust in banks affects the choice to save in cash (under the mattress) rather than to deposit savings at a bank. Trust has been shown to affect people's portfolio composition in developed countries: More specifically, Guiso et al (2008) show that individuals who trust less are less likely to buy stocks, and if they buy stocks they buy less stock than trusting individuals. Given that in developing and transition countries, only a tiny share of the population invests in stocks (less than 1 percent in our sample), the relevant decision in these countries is not whether to hold stocks or not, but rather whether or not to deposit one's savings at a bank or not.

We find that lack of trust does matter, individuals who do not trust banks are 10 to 15 percentage point more likely to keep all their savings in cash rather than having at least some savings deposited at a bank. At the same time, lack of trust can only explain part of the decision to save at home. Other factors like the level of awareness about financial markets and access to bank services (as proxied by settlement type – village versus cities) also matter.

In the following section, we will focus on trust in financial institutions and how it affects financial decisions. Then we will present the data and the regression results. Section 5 concludes.

II. Background

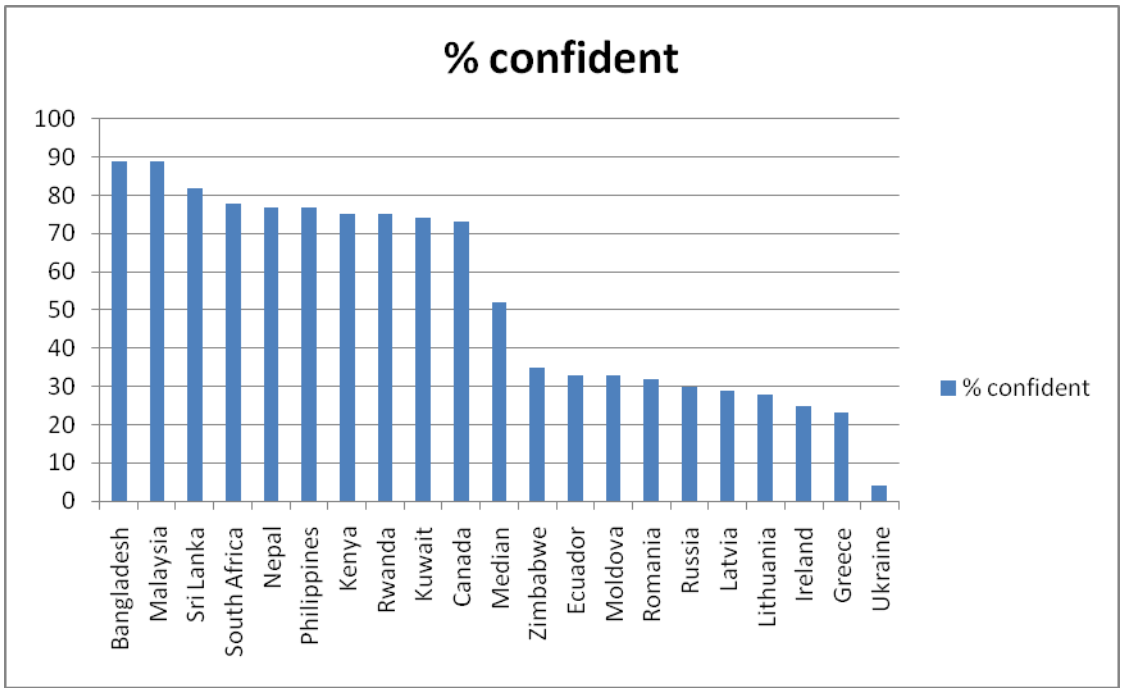
When compared to other countries, both developed and developing, people in transition countries in general, and Ukraine in specific, have low levels of trust in financial institutions.

To illustrate this we use the Gallup World View dataset[3] which brings together data from surveys in more than 100 countries. In these surveys, respondents were asked whether they have confidence in 'financial institutions or banks', a question they can answer with yes or no. Figure 1 gives the the bottom 10 and the top 10 countries when we restrict the sample to those countries for which we have 2009 survey data[4].

[3] https://worldview.gallup.com/signin/login.aspx?ReturnUrl=/default.aspx

[4] These data were obtained from the free version of the Gallup World Poll in February 2010.

Figure 1: Confidence in financial institutions or banks, top and bottom 10 countries, 2009.



Note that the top performers are mainly developing countries and that the bottom countries are mainly transition countries, with Ukraine gaining the bottom place with a mere 4 percent of people saying they have confidence in financial institutions or banks (compared to a median of over 50 percent internationally) in 2009.

The low level of trust in Ukraine predates the 2008 financial crisis (which hit Ukraine hard, including Ukraine's banks, several of which had to be bailed out by the Ukrainian government). Figure 2 is based on the EBRD's 2006 Life in Transition Survey which also included a question about trust in banks and the financial system. The graph shows both the percentage of people who trust (the sum of those having some trust and those having complete trust) and the percentage who distrust (the sum of those having some distrust and those having complete distrust) the banks and the financial system[5].

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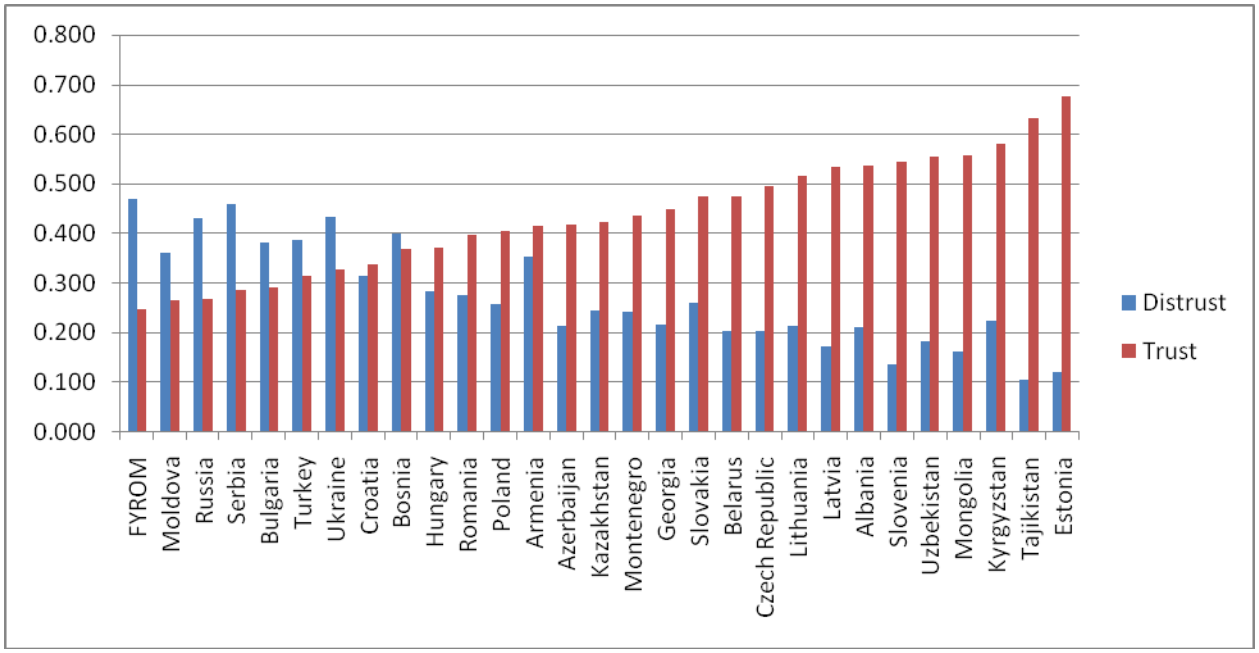
[5] The omitted category being 'neither trust nor distrust'. We exclude those answering ' difficult to say'.

Figure 2 - Trust in banks and the financial system in transition countries, 2006



Even among transition countries, the variation in the level of trust in banks in 2006 was substantial, from about 25% in Macedonia (FYROM) to about 55% in Estonia. Ukraine took 3rd place in terms of the percentage of people distrusting banks, with over 40 % of respondents saying they distrust banks.

Little is known about the factors that determine whether people trust or distrust banks. Two micro studies have focused on high trust countries. Mosh and Prast (2008) found that over 90% of Dutch households trust the Dutch banking system. Only 15% ever considered that a bank in the Netherlands can go bankrupt and very few doubt that their bank will pay back their money. They also found that age of an individual does not matter for trust in banks, that having knowledge about financial regulation increases trust, though that more education in general reduces trust in the banks. Knell and Sixt (2009) studied Austrian households and showed that subjective variables, like how an individual assesses the current situation and the future, are the most important determinants of trust in banks. Reading a quality newspaper was not found to have an effect. Trust in banks in Austria is fairly high (70%) and the financial crisis only had a relatively small negative effect on trust in banks in Austria, with trust decreasing more in regions where a troubled bank had been more active.

One study, Mudd and Nalev (2009), focuses on trust in a transition country, Hungary, a country with a relatively low level of trust in banks. They show that people who lost money during a bank crisis in the nineties, are, 12 years later still more likely to expect a new crisis. For 'informed people', that is, those who are able to answer correctly a question related to the level of inflation, however, this is not true.

As far as I am aware, there are no macro studies that try to explain the cross-country variation in the level of trust, though Stevenson and Wolfers (2011), who use the Gallup World Poll to compare trust in banks before and after the 2008 crisis, find that changes in trust are linked to changes in unemployment, the latter proxying for the extent of the crisis. Consistent with this, one possible explanation for the low level of trust in transition countries is the fact that many of these countries have had bank crises in the past that affected depositors. Laeven and Valencia (2008) identify 124 systemic banking crises over the period 1970 to 2007. Looking into the details of 42 of these crises, they found that only in 13 cases (25%), losses were imposed on depositors. Out of these 13, 6 had small to moderate losses for depositors, 7 had large losses among them the Ukrainian 1998 crisis (see Table 8 in Laeven and Valencia, which is reproduced in the appendix). Five out of the bottom 10 countries in Figure 1 are among these 'losses to depositors' countries. At the other side, Estonia had a case of large depositors' loss in 1992 but is in the middle of the Gallup poll ranking.

This paper, rather than looking at the determinants of trust, focuses on how trust affects the decision to save money in cash rather than at the bank.

There do exist a few studies that estimate how the (lack of) trust affects individuals' financial decisions[6]. Djankov et al (2008) and Osili and Paulson (2008) focus on the 'unbanked'. Djankov et al (2008) compare the characteristics of households that have a saving account to households in the same neighborhood that do not have such bank account. They find that when people are asked why they do not have bank accounts, 89 percent of people say they do not have money, 6 percent say they do not want to have a bank account and only 2 percent mention they do not have confidence in the banks. Given this low percentage, they conclude that trust is not a major issue

[6] At the macro level, Calderon et al (2002) show that in a sample of 41 countries higher level of general trust go together with more financial depth and efficiency.

in Mexico. Osili and Paulson (2008), however, found that banking crises have a long term effect – migrants who experienced a banking crisis while in their home country, are more likely not to have a bank account in the US. Unlike our paper, these studies do not focus on people who actually do have the ability to save, and hence have a choice between saving at home or at the bank.

Guiso et al. (2008) focus on the effect of trust on the decision to invest in stocks, rather than on the choice between banks and cash savings. They find that people who trust less (whether it is banks or other people in general) are less likely to invest in stocks, and if they invest they invest less. As explained above, in developing and transition countries, the relevant decision is not whether or not to invest in stocks, rather it is whether or not to save money at home, or at the bank.

Most closely related to our study is Guiso et al. (2004) who find that people in Italian provinces with more social capital (as measured by voter turnout and blood donations) tend to have less cash (relative to their wealth) at home. They do not have, however, individual measures of trust in banks among their explanatory variables. Moreover, one can keep cash at home not only for savings but also for transaction purposes.

Summarizing, while there are some studies that look at the determinants of trust in financial institutions and some that focus on the impact of trust on financial decisions, no study has directly studied the link between trust in financial institutions and the decision of people to save money as cash rather than as bank deposits.

III. Data

The data we use come from FINREP Ukraine, a USAID project that conducted a large scale survey on pension reforms in 2010[7]. While most questions were related to pension reforms, this

[7] This is a representative survey of the Ukrainian population, though on purpose the survey over-represented the age category of 18-36. In the tables with descriptive statistics below we do not correct for this and the numbers thus reflect the sample, more so than the population at large. In the regression analysis we do control for age and thus decided not to use survey weights.

survey also included a section on trust in financial institutions. In this section, there are also questions on the portfolio choices of the respondents. More specifically, question A26 reads as following: “Could you, please, tell whether you personally, not a member of your family, are using any of these methods of saving and augmenting money now?”

Respondents are then given 15 categories out of which they can choose (see table 1). Multiple answers are allowed.

Table 1: Methods of saving, current and planned.

Method of Saving	Now	Plan
Saving in cash in the Hryvnia	41.06	40.96
Saving in cash in foreign currency	12.01	17.99
Bank deposits (time deposits) and saving accounts	6.73	8.37
Payment cards and current accounts	12.41	8.57
Banking (precious) metals or deposits in precious metals	0.10	0.60
Payments to Credit union	0.25	0.25
Participation in non-state pension funds	0.20	0.75
Participation in investment funds	0.15	0.25
Investment in shares and bonds of enterprises	0.10	0.35
Investment in state securities	0.05	0.20
insurance policy	0.80	1.15
Purchase of real estate as investment	2.19	5.38
Lending money to other people at interest	0.65	0.70
Precious metals	1.35	2.09
Plots of land	2.59	4.73

Numbers in the table are the percentages of respondents selecting a specific method.

Only 57 percent of the respondents use at least one savings method, with cash savings in Hryvnia (UAH) to be, by far, the most popular saving method (41 % - see table 1). Twelve percent of respondents save cash in foreign currency. Only 6.7 percent of the respondents admit to having savings in the form of bank deposits and 12.4 percent have a current account/payment card. Other saving methods are used infrequently. Summarizing, in Ukraine, mattresses clearly beat the banks in popularity, despite recent inflation rates of 10 percent and more.

In addition to the question about whether respondents use a specific method of saving, there is also a question about whether respondents are planning to use a specific method of saving

(column 3 of table 1). Clearly, there are no major plans to switch from cash savings to bank savings either.

To estimate the determinants of preferring mattresses over banks we create an indicator variable that equals 1 if a person has cash savings (in whatever currency) but does not have bank deposits, and equals 0 if a person has bank deposits. We do not take into account whether a person has a current account or a payment card as such cards often come with salaried employment (and hence does not really represent a personal choice to use the services of a bank[8]). Using this definition, we have a sample of 972 respondents who actually save money, 86 percent of which are mattress savers and 14 percent who are bank savers[9]. If we look at planned methods of saving and create a similar dummy, we find 84 percent mattress savers and 16 percent bank savers[10].

Our main explanatory variable of interest is the trust the respondents have in banks. Respondents were asked about the trust they have in different types of financial institutions.

Table 2: trust in banks

	Fully trust	Rather trust	Rather do not	Do not trust at	Answered,
State owned	9.56	31.59	27.05	31.8	1893
Private banks	1.94	15.6	34.72	47.74	1904
Insurance	1.47	11.73	31.81	54.99	1833
Investment	0.83	8.01	32.78	58.39	1547
Non-state	1.15	6.42	33.02	59.41	1572
The State	14.44	45.47	19.77	20.32	1821
Individuals'	2.65	15.76	35.03	46.56	1396

Numbers in columns 2 to 4 are the percentages of respondents selecting a specific category.

Table 2 illustrates well the lack of trust in banks in Ukraine. About 60 percent does not, or rather does not, trust state owned banks. For private banks and for the deposit insurance fund this percentage is even over 80 percent. In our regression analysis below, we will use the highest

[8] Including current accounts in our dependent variable does not change our conclusions, however.

[9] More precisely, they have bank deposits and could in addition save in cash.

[10] By focusing on those individuals that do save, we ignore another possible effect of the lack of trust in banks, namely, the fact that individuals might decide not to save at all because of the lack of trust they have in the financial system. Modeling the decision to save or not, however is much more complex and the dataset at hand does not cover this issue well.

level of trust in any bank, private or public, as explanatory variable. We do this because we analyze the choice between saving under the mattress and saving in the form of bank deposits. Whether those deposits are at a state bank or a private bank is not known to us.

Table 3: Highest Level of Trust in public or private bank

Highest Level of Trust in public or private bank	
Fully trust	10.03
Rather trust	33.15
Rather do not trust	26.9
Do not trust at all	29.92
# answered, out of 2007	1,855

Numbers in rows 2 to 5 are the percentages of respondents selecting a specific category.

From table 3, we see that the about 43 percent of respondents have at least some trust in some type of banks. In fact, almost all people who have some level of trust in private banks also have trust in public banks, suggesting that having trust in public banks is a first step towards trusting banks in Ukraine.

The low level of trust is also confirmed by the fact that respondents are much more likely to see bank deposits as less safe (relative to other methods of savings) than savings in cash, especially saving in foreign currency (see table 4). Cash Savings in foreign currency are also seen by somewhat more respondents to be more profitable (relative to other forms of saving) than bank deposits, which in turn are only seen by slightly more respondents as more profitable than cash savings. This suggests that people prefer cash over banks because the perceived higher risk of banks is not compensated enough in terms of perceived higher profitability.

Table 4: Risk versus Profitability

safety (relative)	Cash UAH	Cash Foreign	Bank Deposits	Profitability (relative)	Cash UAH	Cash Foreign	Bank Deposits
High	28.59	28.48	11.62	High	19.93	24.58	20.11
Medium	30.47	38.5	32.57	Medium	35.1	44.7	44.86
low	40.94	33.01	55.81	Low	44.97	30.72	35.03
# answered out of 2007	1,595	1,457	1,179	# answered out of 2007	1,470	1,367	1,139

Numbers in rows 2 to 4 are the percentages of respondents selecting a specific category.

For the regression analysis below, where we do not care about whether the savings under the mattress are in local or in foreign currency, we create a categorical variable that compares how the respondent classifies his/her safest form of cash savings to his/her classification of bank deposits. This leads to three possibilities: the respondent's safest form of cash saving is classified in a safer category than the category in which the respondent puts deposits, the respondent classifies deposits and the safest form of cash in the same category, or bank deposits are classified as safer. A similar approach is used to classify deposits and cash savings into profitability classes[11].

Table 5: comparing banks and mattresses in terms of safety and profitability

	Safety	Profitability
Mattress>Banks	46.5	29.6
Mattress=Banks	43.8	50.6
Mattress<Banks	9.7	19.8
# answered out of 2007	1,179	1,139

Numbers in rows 2 to 4 are the percentages of respondents falling in a specific category.

From table 5, we can see that mattresses are more often classified as safer than banks, while banks and mattresses are classified most often in the same profitability class.

Besides our main variable of interest which reflects the level of trust of respondent, we also have a wide range of background variables that allow us to check several other hypotheses. Other than the lack of trust, Djankov et al. (2008) offer 2 more possible reasons why some individuals remain unbanked. For some people, opening a bank account might be too costly relative to the size of their savings or because the bank is located too far away. Second, uneducated people might be uncomfortable dealing with banks.

The first hypothesis can be captured by the size of the community where the individual lives, as in villages, the typically distance to the nearest bank branch will be further than in cities. In addition, we have a categorical indicator for the budget situation of the individual (ranging from

[11] Unfortunately, we can only make this comparison for about half of the respondents as many people answer that it is hard to say in which category a specific method is or that they are not familiar with a specific method.

‘have to economize on food’ to ‘can make any necessary purchase at any time’), which can proxy for the size of the savings.

The second hypothesis can be captured by dummies reflecting the respondents’ level of education. We create 4 levels of education. One group consist of people with not more than secondary education (this includes people with no elementary education, with incomplete secondary education, with basic and with full secondary education), another group of people with incomplete higher education, a third group with people with unfinished higher education and a final group of people who have finished higher education[12]. In addition to these dummies for types of general education, we also have a categorical variable that reflects the self-assessed financial awareness of the respondents (table 6).

Table 6: Awareness

How could you estimate your awareness of financial market operations?	
Better than that of most citizens	3.3
Same as that of most citizens	53.4
Worse than that of most citizens	43.42
# answered out of 2007	1741

Numbers in rows 2 to 4 are the percentages of respondents selecting a specific category.

Interestingly, few people think they are more aware than most others and many people think they are less aware. This is consistent with table 7 where we find that about 60 percent of the respondents never follow financial news, even not during the financial crisis.

Table 7: Following the financial news

Do You Follow the Financial Market News?	%/#
Follow regularly	9.26
Follow only during financial crises	29.13
Never follow	61.61
# answered out of 2007	1943

Numbers in rows 2 to 4 are the percentages of respondents selecting a specific category.

[12] More detailed definitions can be found in the appendix.

Finally, we include a number of more general control variables. We know the region where the respondent lives (Kyiv, Central, Eastern, Western, Northern and Southern), the profession (employees, self-employed, unemployed, do not work, pensioners and students), the gender of the respondent and the age of the respondent. To allow for a non-linear effect in age, we also create a squared age variable.

IV. Regression Results.

Our dependent variable is a dummy variable which indicates whether a person saves, or plans to save, in cash rather than using bank deposits. Given the discrete nature, we therefor run logit regressions[13]. We start with a basic specification that focuses on the link between trust and the choice of the method of saving, both currently (columns1 and 2) and planned (columns 3 and 4). We proxy trust in two ways: first, through the answer on the question to what extent on trusts banks (as explained in detail above – columns 1 and 3). Second, through the perceived safety and perceived profitability of saving in cash and saving in bank deposits (columns 2 and 4).

Table 8 gives the results of this basic specification[14].

Table 8: basic specification

	Mattress	Mattress	Plan Mattress	Plan Mattress
	(1)	(2)	(3)	(4)
Rather trust	0.021		0.004	
	0.67		0.12	
Rather do not trust	0.117***		0.144***	
	3.32		3.6	
Do not trust at all	0.227***		0.177***	
	4.94		4.22	
Profitability Mattress=Banks		-0.124***		-0.122***
		-2.72		-2.77
Profitability Mattress<Banks		-0.118**		-0.130**
		-2.13		-2.44
Safety Mattress=Banks		-0.047		-0.062

[13] Using probit regressions gives the same results.

[14] We compute average marginal effects using STATA 11's margins command. Conclusions are robust to computing average marginal effects using the margeff command or to computing marginal effects at the average values of the explanatory variables using the mfx command.

		-1.17		-1.57
Safety Mattress<Banks		-0.129**		-0.126**
		-2.37		-2.26
Pseudo R^2 .	0.064	0.03	0.054	0.029
N	930	482	997	522

Numbers in the table are average marginal effects after a logit regression. * means significant at 10 %, ** at 5 % and *** at 1 %.Omitted categories are trusting banks, and perceiving cash to be better than banks in terms of profitability and safety, respectively.

We find a significant effect, both statistically and economically, of (lack of) trust on the portfolio decision of our respondents. Rather not trusting banks increases the probability of currently saving under the mattress by about 12 percentage point, answering one does not trust banks even increases this probability by over 20 percentage points. The results are qualitatively and quantitatively similar when looking at the planned rather than current saving method[15].

Using our second way of measuring trust we get broadly similar results. If one considers bank deposits to be a safer way of saving than cash, one is about 12 percentage points less likely to have one's savings under the mattress. And if one perceives bank deposits to be more profitable than saving cash, one is about 13 percentage point less likely to have one's savings under the mattress. And even if one allocates bank deposits and cash to the same category of safety or profitability, one tends to be less likely to keep one's savings cash. When looking at planned rather than current savings, the results are similar.

Despite the significance and size of our main variables of interest, they explain only a small part of the decision to save in cash rather than in deposits, as our pseudo R^2 is only about 5 percent. This is consistent with the descriptive statistics (of our dependent variable) which showed that only 14 percent of respondents who save, choose to save at banks, while 43 percent of respondents had at least some trust in banks. Hence, the lack of trust in banks can only partially explain why banks are not used for savings.

[15] In our context reverse causality is likely to be of only minor importance. First, it is unclear how keeping money in cash will increase or decrease one's trust in banks. Second, one could argue that the experience of having a bank account will increase one's level of trust in the banks. While this is a valid point, given that trust levels tend to be fairly stable over time, this change is likely to be small relative to the individual's initial level of trust.

Next we add a rich set of control variables to our basic specification, thus also testing the two other hypotheses we mentioned above (table 9).

Table 9: Extended Specification

	Mattress	Mattress	Plan Mattress	Plan Mattress
	5	6	7	8
Rather trust	0.032		-0.002	
	0.96		-0.04	
Rather do not trust	0.170***		0.126***	
	4.41		2.94	
Do not trust at all	0.230***		0.166***	
	5.07		3.7	
Profitability Mattress=Banks		-0.139***		-0.139***
		-3.1		-3.02
Profitability Mattress<Banks		-0.079		-0.121**
		-1.37		-2.16
Safety Mattress=Banks		-0.042		-0.057
		-1.01		-1.35
Safety Mattress<Banks		-0.117**		-0.107*
		-2.01		-1.75
Awareness Same	0.046	0.083	0.052	0.054
	0.94	1.04	0.94	0.62
Awareness Worse	0.112**	0.190**	0.103*	0.116
	2.14	2.21	1.78	1.25
Secondary or Less	0.046	0.059	-0.002	-0.031
	1.38	1.09	-0.06	-0.58
Incomplete	-0.003	0.027	-0.028	-0.012
	-0.07	0.32	-0.59	-0.16
Unfinished	-0.007	-0.053	-0.023	-0.095*
	-0.22	-1.13	-0.69	-1.92
self employed	-0.104***	-0.146**	-0.029	-0.002
	-2.69	-2.27	-0.6	-0.03
unemployed	-0.008	-0.052	-0.041	-0.077
	-0.2	-0.83	-1.02	-1.28
do not work	-0.006	0.051	0.012	0.006
	-0.13	0.63	0.24	0.07
pensioners	0.042	-0.022	0.026	-0.017
	0.7	-0.25	0.46	-0.21
Students	0.169**	0.218	0.136**	0.14
	2.22	1.42	2.06	1.37
Cities<500	-0.099***	-0.126***	-0.034	0.013
	-3.19	-2.73	-1.14	0.28

Cities>500	-0.120***	-0.197***	-0.025	-0.002
	-3.01	-3.34	-0.61	-0.03
Can buy Food	-0.156*	-0.315**	-0.099	-0.289*
	-1.82	-2.05	-1.19	-1.67
Can buy clothes	-0.075	-0.235	-0.075	-0.284*
	-0.89	-1.53	-0.92	-1.65
Can buy all but expensive items	-0.067	-0.211	-0.064	-0.269
	-0.77	-1.35	-0.76	-1.54
Need to Save to buy car or flat	-0.071	-0.268	-0.084	-0.322
	-0.74	-1.6	-0.81	-1.62
Other	-0.105	-0.123	-0.165	-0.391*
	-0.96	-0.61	-1.52	-1.83
Male	0.041*	0.051	0.005	-0.002
	1.7	1.35	0.21	-0.06
Age	-0.001	-0.001	0.001	0.007
	-0.12	-0.09	0.15	0.88
Age Squared	0	0	0	0
	0.39	-0.2	0.07	-0.96
North	0.059	-0.082	-0.087	-0.311*
	0.96	-0.77	-0.95	-1.71
West	0.006	-0.16	-0.042	-0.287
	0.11	-1.58	-0.45	-1.59
Central	0.153**	0.017	-0.036	-0.175
	2.16	0.14	-0.37	-0.88
South	0.085	0.017	-0.09	-0.368**
	1.51	0.16	-1.02	-2.07
East	0.110**	-0.068	-0.073	-0.342*
	2.12	-0.73	-0.86	-1.95
Pseudo R^2	0.161	0.159	0.091	0.093
N	824	444	882	473

Numbers in the table are marginal effects after a logit regression. * means significant at 10 %, ** at 5 % and *** at 1 %.Omitted categories are trusting banks, and perceiving cash to be better than banks in terms of profitability and safety, respectively, female, Kyiv region, higher education, more aware than others about financial markets, employee, village, economize on food.

Adding these variables, while roughly tripling the explanatory power of our model, does not change the findings we reported so far, however the significance levels of the coefficients in the profitability/safety regressions does decrease.

The extended specification does add several interesting results:

- We can explain more, and more variables are significant when looking at current saving than when looking at planned saving.

- Easy access to banks as proxied by settlement type matters for current savings – individuals in villages are more likely to keep savings in cash than individuals who live in cities. For planned savings, this difference does not seem to matter. The positive coefficients of the dummies that reflect the material position of the respondent indicates that richer people tend to be less likely to save in cash. However, these coefficients are not significant.

- People who think they are less aware about financial markets than other are significantly more likely to save in cash (roughly 10 percentage points). The findings for education in general are more mixed - most education coefficients are insignificant and those that are significant change from one specification to another.

- The professional levels matters more for current than for planned savings, with self employed being less likely and students more likely to choose for cash savings (as compared to employees).

- Age does not have a significant effect.

- There is limited evidence that males are somewhat more likely to have current savings under their mattress, but gender does not matter when looking at planned savings

V. Robustness Check: Trust in Other Institutions

Most other studies that investigate the impact of trust look at the impact of general trust (i.e. trust in other people) rather than of trust that is specific to the financial sector. While our dataset has no question that directly reflects this general trust, we do have an indicator of trust in non-banking institution which can proxy for it. More specifically, the questionnaire also asks for the level of trust one has in the State Pension Fund of Ukraine. Table 2 above indicated that this pension fund is fairly well trusted (about 60 percent either trust or rather trust it), especially when compared to the banks. People with low levels of general trust would be likely to neither trust banks nor the pension fund, but in our sample a considerable number of people do trust the

pension funds while not trusting banks. Hence, by including indicators for both the trust in banks and the trust in the pension fund we can distinguish between the effect of general trust and of trust in the financial sector.

Table 10: Adding trust in the State Pension Fund

	Mattress	Mattress	Plan Mattress	Plan Mattress
	5	6	7	8
Rather trust	0.012		-0.013	
	0.32		-0.32	
Rather do not trust	0.121***		0.079*	
	2.72		1.67	
Do not trust at all	0.176***		0.132**	
	3.36		2.55	
Profitability Mattress=Banks		-0.146***		-0.146***
		-3.25		-3.18
Profitability Mattress<Banks		-0.072		-0.131**
		-1.25		-2.33
Safety Mattress=Banks		-0.055		-0.076*
		-1.3		-1.74
Safety Mattress<Banks		-0.120**		-0.153**
		-2		-2.46
Rather trust Pension Fund	0.037	0.130**	0.023	0.065
	1.03	2.42	0.61	1.13
Rather do not trust Pension Fund	0.123***	0.311***	0.186***	0.306***
	2.67	4.7	3.52	4.14
Do not trust at all Pension Fund	0.100*	0.277***	0.056	0.191***
R Adj sq.	0.172	0.238	0.116	0.168
N	772	415	824	438

Numbers in the table are marginal effects after a logit regression. * means significant at 10 %, ** at 5 % and *** at 1 %. The control variables from the extended specification are also included but not reported here. Omitted categories are trusting banks, and perceiving cash to be better than banks in terms of profitability and safety, respectively, female, Kyiv region, higher education, more aware than others about financial markets, employee, village, economize on food, trusting the pension fund

From table 10, we can see that adding trust in the pension fund to the regression does not change our main conclusions so far. Hence, trust in bank matters, not just general trust. At the same time, we do find that general trust matters too: the coefficients on the different general trust categories are significantly positive implying that people who trust less in general are more likely to keep their money at home.

In addition to questions on trust in banks and trust in the pension funds, respondents were also asked about trust in the deposit insurance system. Table 2 showed that the level of trust in this deposit insurance system is low in Ukraine, with trust levels similar to trust levels in private banks but way below trust levels in state owned banks. One further noteworthy point given by table 2 is the relative low percentage of people who express a clear opinion on the deposit insurance fund, with about 30 percent of people saying it is hard to say whether or not this fund is trustworthy or not (compared to 15 to 20 percent of the respondents when asked about trust in other institutions).

One could argue that as long as one trusts the deposit insurance system, trust in banks is less important as the deposit insurance system will reimburse (at least part of the) deposits that are lost when a bank goes bankrupt. To test whether trust in the deposit insurance system can substitute for trust in the banks, we run a regression that includes both kinds of trust as explanatory variable[16].

Table 11: Adding trust in the Deposit Insurance Fund

	Mattress	Mattress	Plan Mattress	Plan Mattress
	5	6	7	8
Rather trust	-0.019		0.009	
	-0.44		0.21	
Rather do not trust	0.114**		0.134***	
	2.4		2.77	
Do not trust at all	0.189***		0.218***	
	3.23		3.89	
Profitability Mattress=Banks		-0.190***		-0.154***
		-3.91		-3.14
Profitability Mattress<Banks		-0.084		-0.119*
		-1.34		-1.94
Safety Mattress=Banks		0.002		-0.03
		0.04		-0.64
Safety Mattress<Banks		-0.054		-0.098
		-0.91		-1.57
Rather trust Deposit Insurance Fund	-0.008	0.022	-0.074	-0.098
	-0.13	0.26	-1.07	-1.12

[16] Given that many people choose the hard to say category, we do have a substantially smaller sample for this regression though.

Rather do not trust Deposit Insurance	0.091	0.140*	0.034	0.121
	1.54	1.71	0.51	1.4
Do not trust at all Deposit Insurance Fund	0.076	0.286***	-0.008	0.158*
	1.21	3.46	-0.11	1.8

Numbers in the table are marginal effects after a logit regression. * means significant at 10 %, ** at 5 % and *** at 1 %. The control variables from the extended specification are also included but not reported here. Omitted categories are trusting banks, and perceiving cash to be better than banks in terms of profitability and safety, respectively, female, Kyiv region, higher education, more aware than others about financial markets, employee, village, economize on food, trusting the pension fund

Table 11 shows that adding lack of trust in the deposit insurance does not affect our conclusions much – lack of trust in banks continues to have a sizeable and significant effect on the probability of having one's savings at home. Lack of trust in the deposit insurance fund does have a positive sign as expected but has little significance. When looking at the alternative way of measuring trust, through relative safety and profitability, the significance levels of the profitability/safety categories do decrease while the significance of the trust in deposit insurance categories increases. Conclusions about other variables remain as before[17].

VI. Conclusions.

This paper provides evidence that the lack of trust in banks drives people to keep their savings under the mattress rather than on deposit accounts at the bank. Lack of trust thus presents a barrier to the development of a countries' banking system, and ultimately, because it prevents savings to be turned into investments, presents a barrier to the growth of countries. Bankers and politicians alike should thus be interested in stimulating trust in the banks.

Besides through stimulating trust, this paper shows that bankers and governments also have other ways to influence individuals' propensity to save at banks. Our findings suggest that banks, by expanding their presences in villages, could tap more of the savings of the villagers and that both banks and governments can get people's money from under their mattress by making them better aware of the financial markets.

[17] Note that if we include both the level of trust in the Pension Fund and in the Deposit Insurance Fund in one regression, we lose even more observations and both kinds of trust lose significance.

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