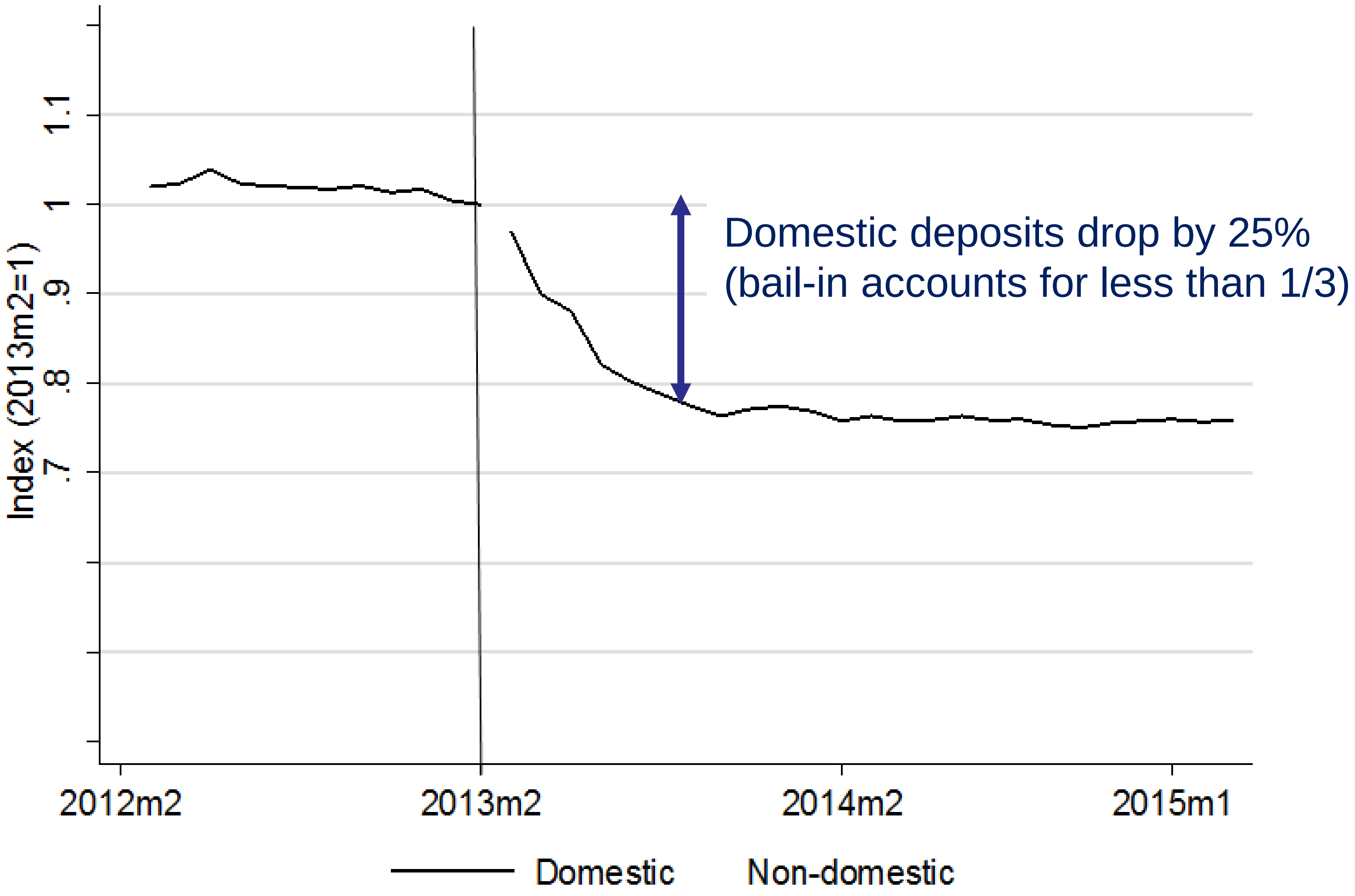
Banking crises, Bail-ins and Money Holdings

Martin Brown (University of St. Gallen)
Ioanna S. Evangelou (Central Bank of Cyprus)
Helmut Stix (Oesterreichische Nationalbank)

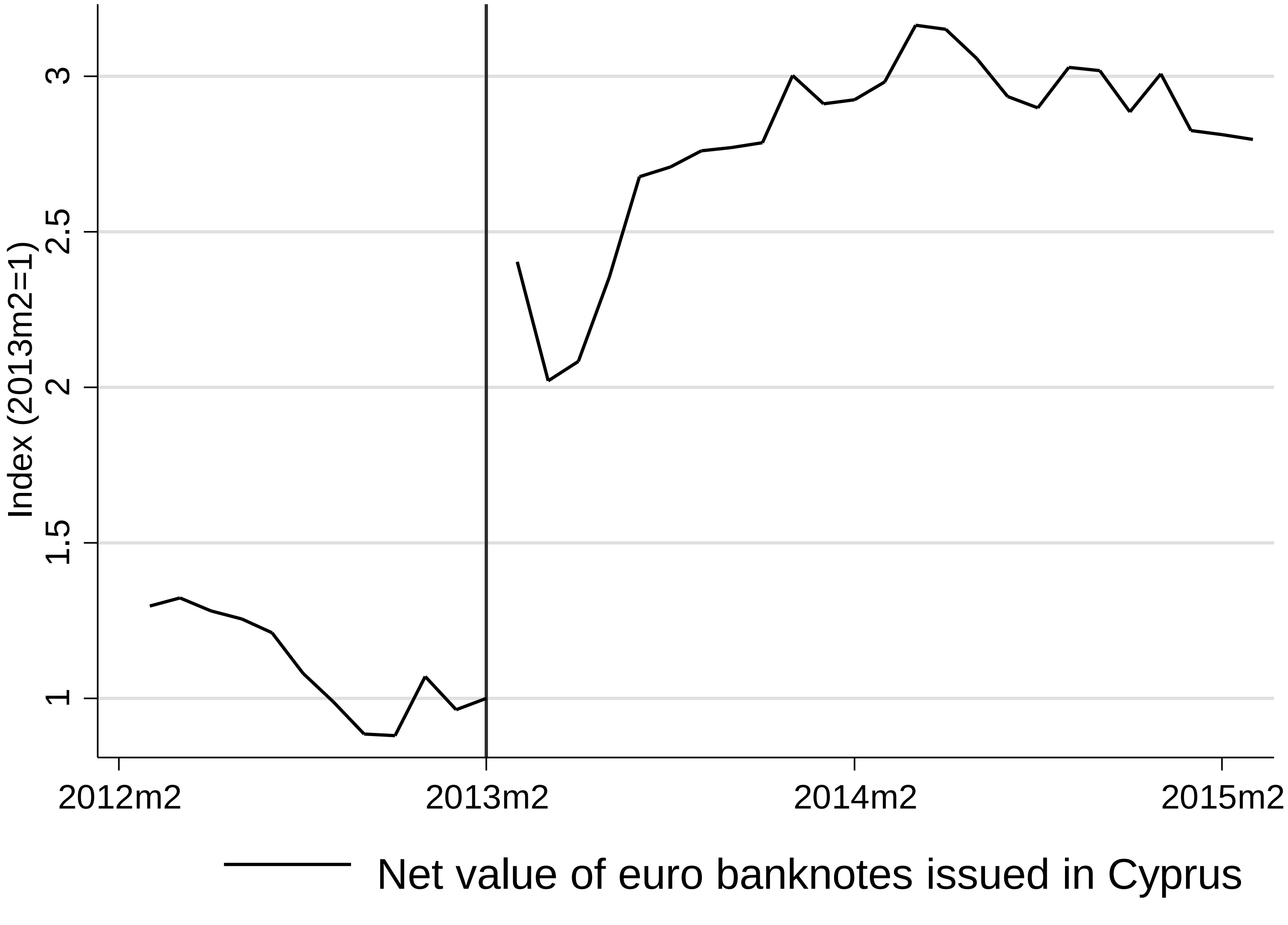
1st Annual Workshop of ESCB Research Cluster 3
2 November 2017, Central Bank of Greece

Aggregate behavior: Bank deposits



Source: Central Bank of Cyprus

Aggregate behavior: Cash



Source: Central Bank of Cyprus

Research questions

- How do bail-ins affect depositor behavior / confidence ?
- How does the reaction of households differ by their exposure ?
  - deposit bail-in
  - capital securities loss
  - equity loss
  - no loss, but client of bailed-in bank

Contribution

- Financial crises and household financial behavior

  Malmendier & Nagel (QJE 2011), Osili & Paulson (JFE 2014), Brown & Stix (EP 2015)

  … we relate reaction of households to their personal exposure

  … we examine different types of exposure

- Bank distress and household deposit behavior

  Iyer et al. (JF 2015), Van der Cruisen et al. (JCA 2012), Brown et al. (2017)

  … we provide novel evidence on bail-ins (and capital controls)

  … we study depositors with significant exposure

Institutional Background

CNN Money

International +

Markets Economy Companies Tech Autos Video

The New Europe

Rush to ATMs in Cyprus on EU bailout tax

by Mark Thompson @MarkThompsonCNN

March 17, 2013: 3:38 PM ET

Cypriots are rushing to their banks to withdraw cash after a bailout of Cyprus imposed a hefty tax on depositors.

Social Surge - What's Trending

This 14-year-old could become a vending machine mogul

Man who foresaw oil crash bets against Saudi Arabia

Can't afford to save? Stop doing this

A planned tax on Cyprus bank depositors as part of a European Union bailout is sending people rushing to ATMs to withdraw cash.

March 2013 agreement between the Eurogroup and the Cypriot government

- Winding down of Laiki Bank, recapitalization of Bank of Cyprus (market share of > 50%)
- Laiki was resolved immediately with full contribution from shareholders, bondholders and uninsured depositors.
- BoC: bail-in amounted to 47.5% of uninsured deposits (July 2013)
- After re-opening of banks, strict capital controls (until April 2015)

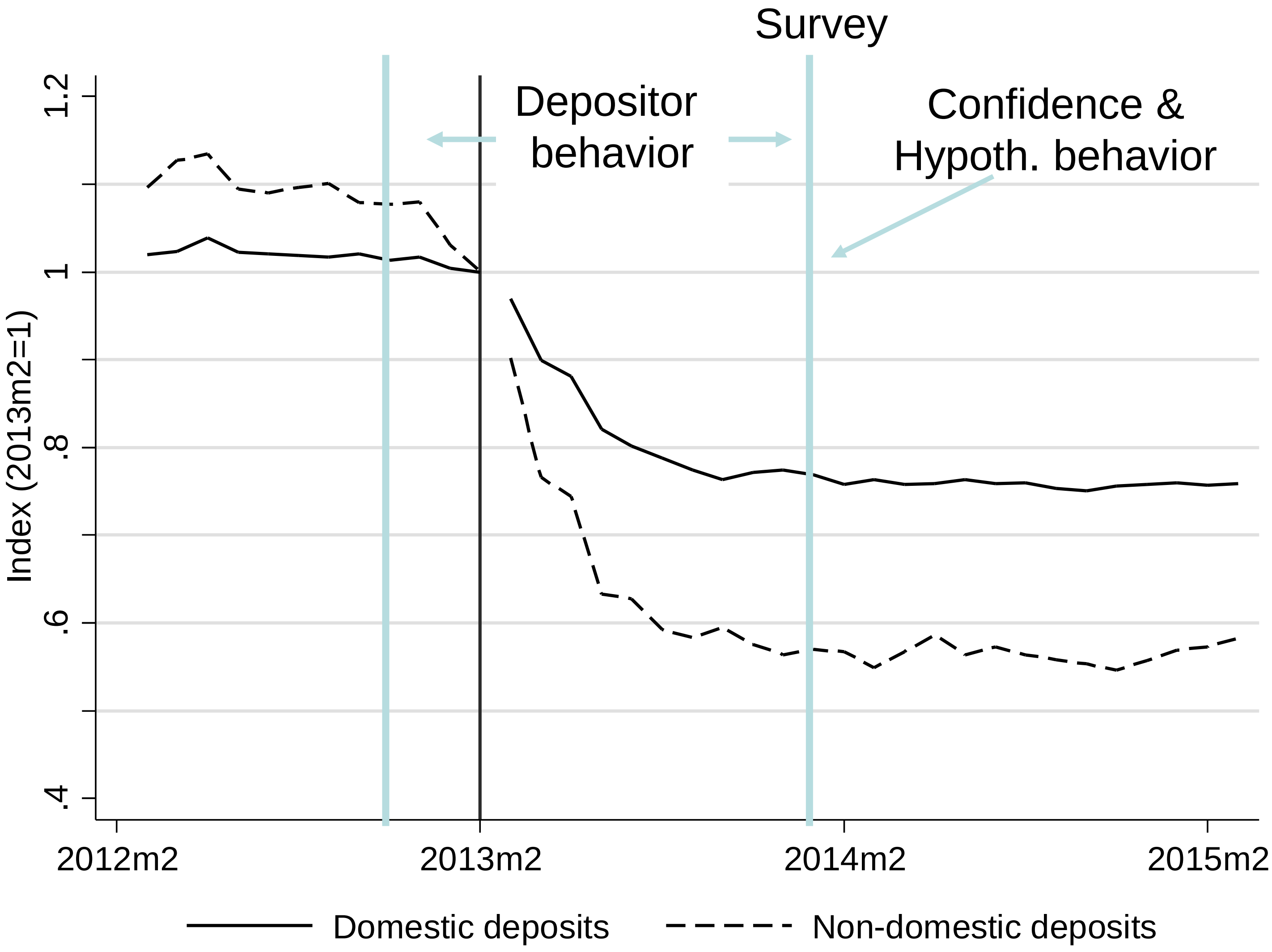
Story before, cf Michaelidis (2014)

Survey

- Survey of 807 households with a savings account > 5’000 euro at end 2013
  - sampled from depositor registry (anonymized)
  - representative of bank market shares

    …. 50% from non-bailed in banks
  - oversampling of uninsured deposits (49% of sample)
- Survey conducted in January - February 2014
  - face to face interviews implemented by the University of Nicosia
  - 35 minutes at residence of respondent
  - no remuneration

Survey timing



Identification

$$Y_i = \alpha + \beta \cdot LossType_i + \gamma \cdot X_i + \varepsilon_i$$

- Outcome variables (Y_i):
  - Deposits decreased, Deposits decreased >25%
  - More cash

- Explanatory variables ($LossType_i$)
  - Deposit bail-in, Bond bail-in, Equity loss
  - omitted category = no loss

- Selection on observables (X_i):
  - Loan, > 1 bank relationship (in Jan 2013)
  - Education, Gender, Age, Region, City
  - *(Wealth, Income, Activity, Financial literacy in Feb 2014)*

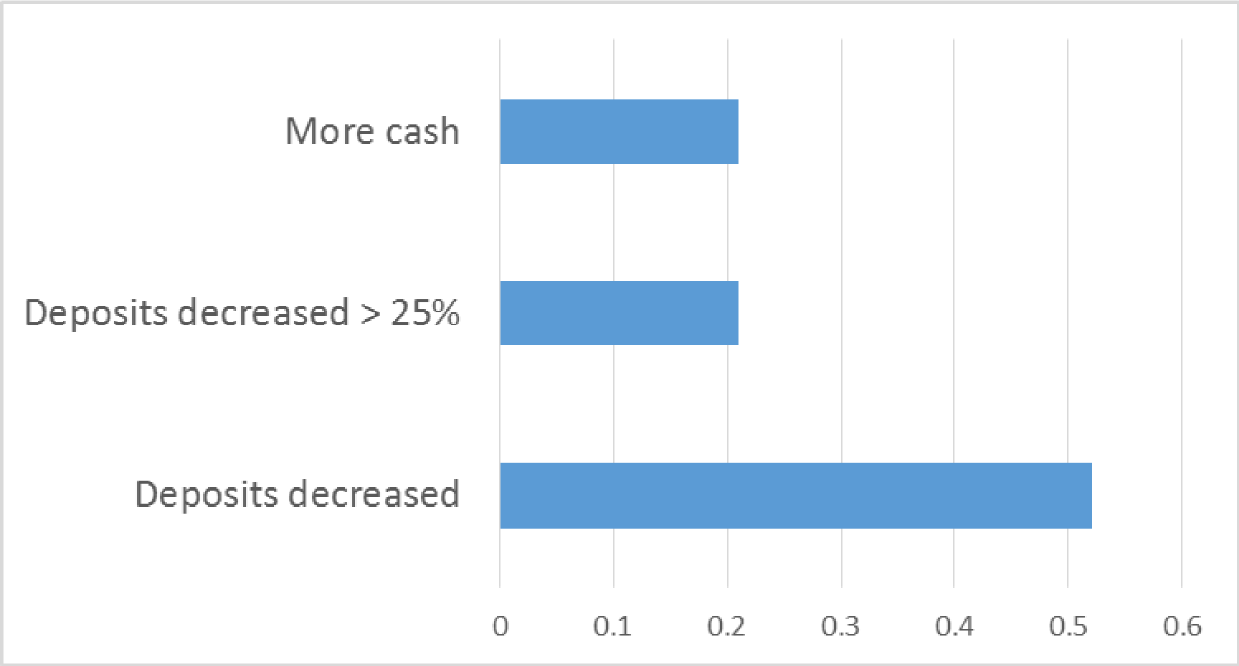
Outcome variables

Has the overall amount of your household's deposits at banks / coops decreased since January 2013 ?

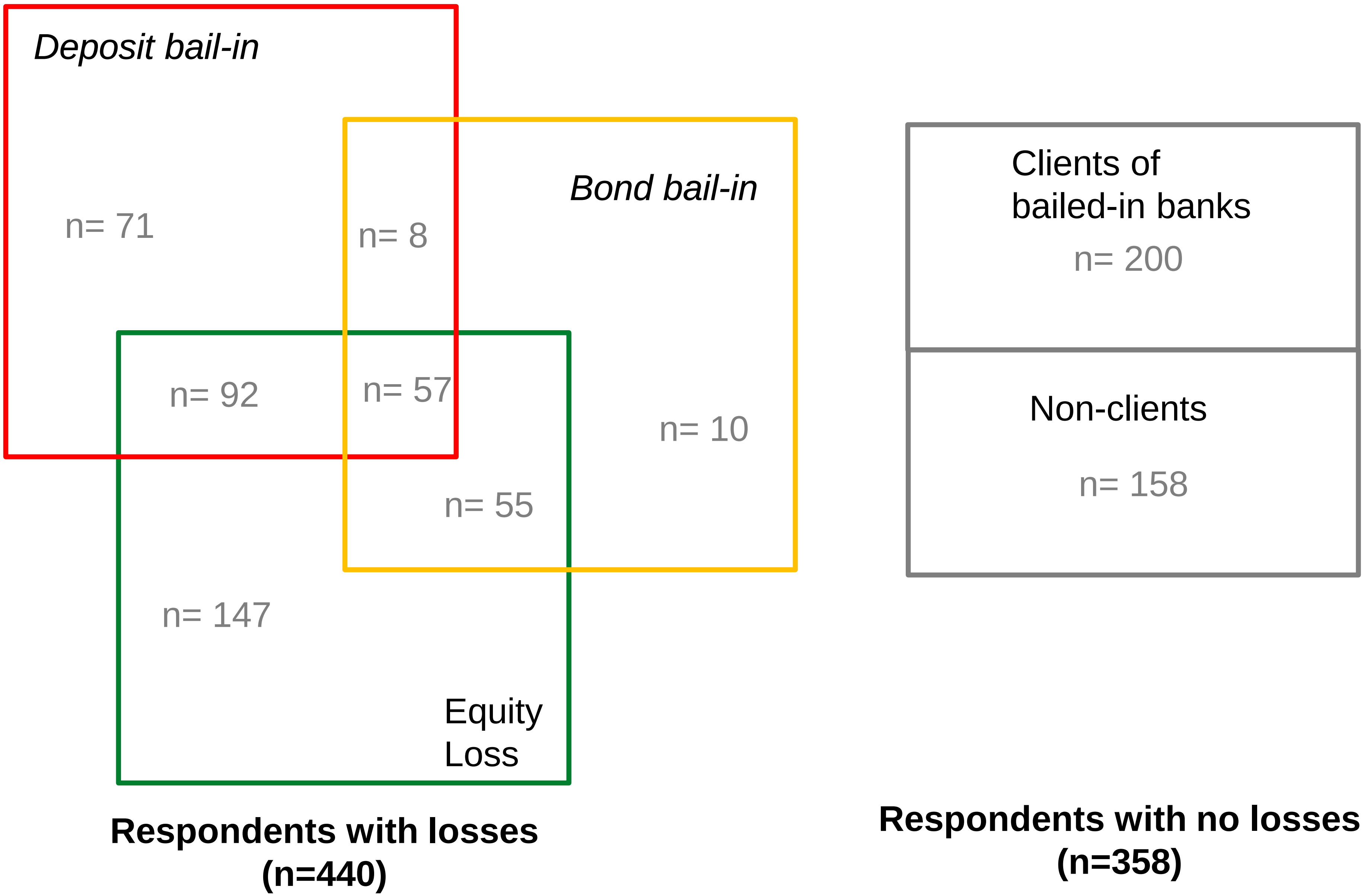
- If yes, by what percentage ?

How much cash does your household hold ? (compared to expenditures, income, savings)

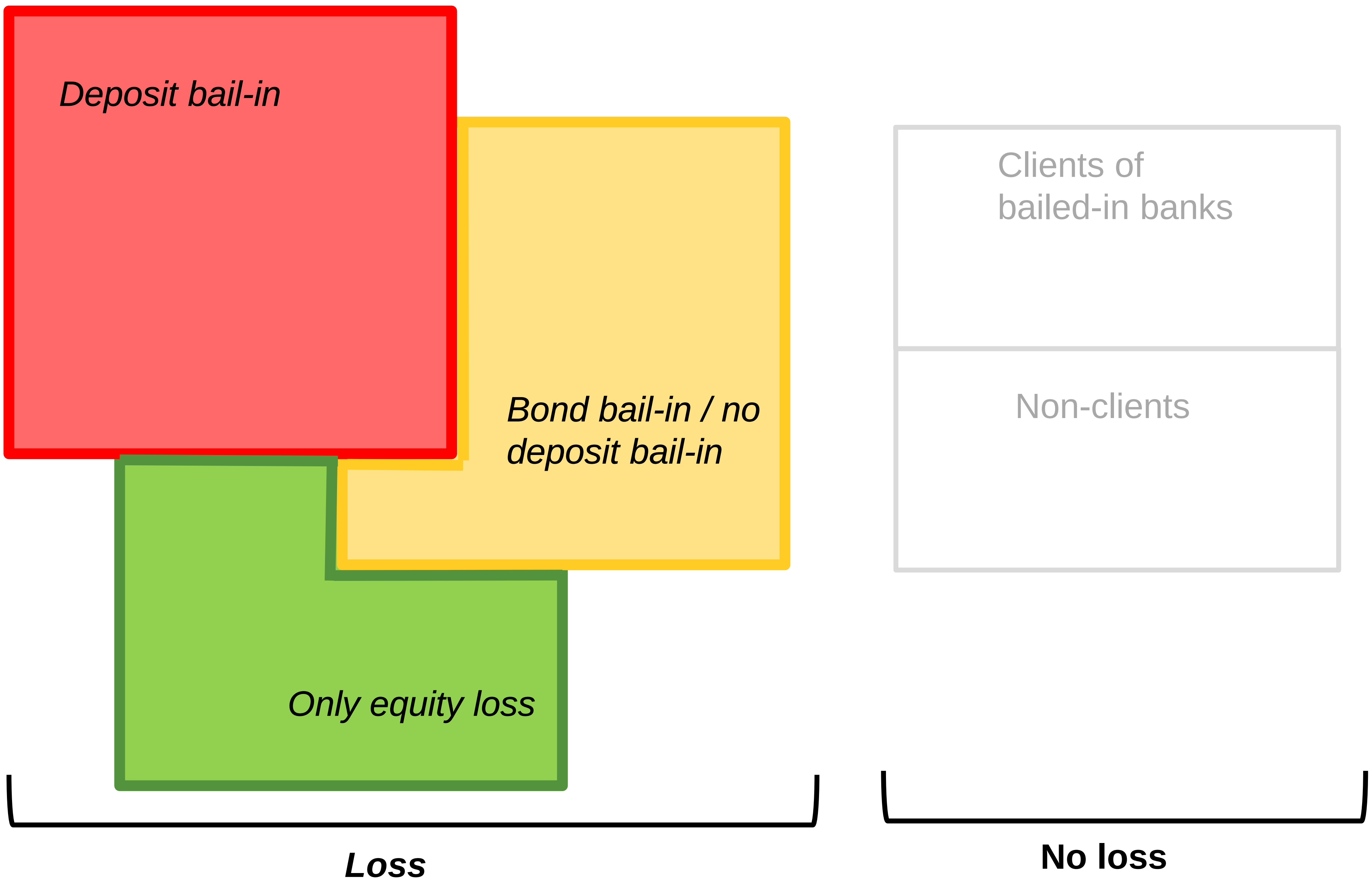
- How much cash was held in January 2013?



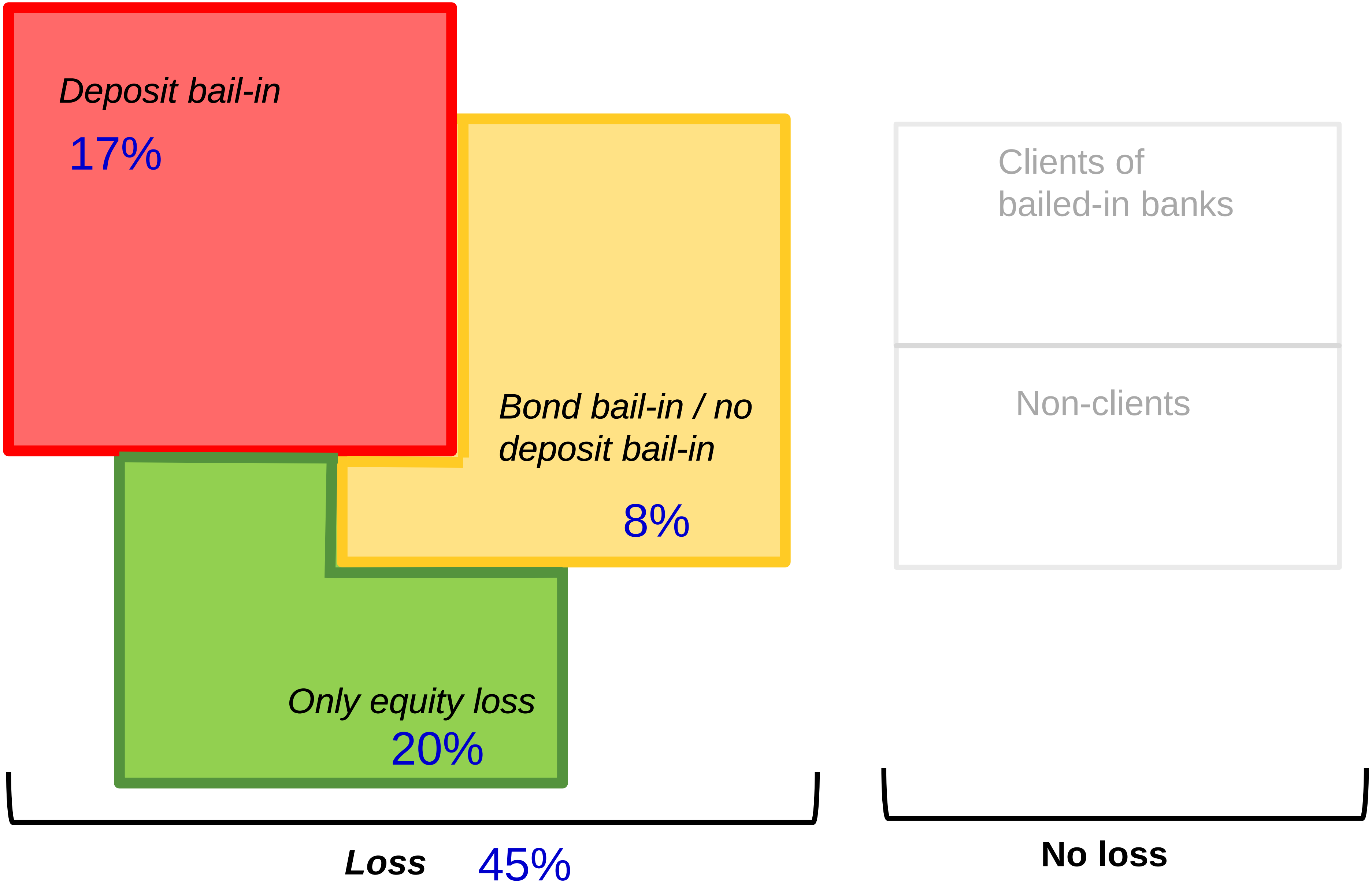
Differential exposure



Definition of exposure



Definition of exposure



Losses and depositor behavior

$$Y_i = \alpha + \beta \cdot LossType_i + \gamma \cdot X_i + \varepsilon_i$$

Column	(1)	(2)	(4)	(5)	(7)	(8)
Dependent variable	Deposits decreased		Deposits decreased > 25%		More cash	
Equity loss	0.061	0.036	0.002	-0.022	-0.001	-0.023
	(0.059)	(0.059)	(0.045)	(0.046)	(0.044)	(0.045)
Bond bail-in	0.254***	0.239***	0.147*	0.144*	0.173**	0.153*
	(0.076)	(0.080)	(0.077)	(0.082)	(0.078)	(0.080)
Deposit bail-in	0.266***	0.245***	0.182***	0.155***	0.131**	0.105**
	(0.055)	(0.056)	(0.054)	(0.054)	(0.053)	(0.054)
Basic controls	No	Yes	No	Yes	No	Yes
Extended controls	No	No	No	No	No	No
Tests of equal coefficients (p-value)						
Equity loss = Bond bail-in	0.02	0.02	0.08	0.05	0.04	0.04
Equity loss = Deposit bail-in	0.00	0.00	0.00	0.00	0.03	0.04
Deposit bail-in = Bond bail-	0.88	0.94	0.69	0.90	0.64	0.60
Households	788	773	777	764	785	771
Mean of dependent variable	0.50	0.49	0.21	0.21	0.21	0.21

Reasons for deposit reductions ?

	No loss (1)	**Loss** (2)	p-value (2) vs (1)	N	N
Living expenses	0.78	0.47	0.00***	130	254
Pay loans	0.09	0.15	0.05**	130	254
Cash hoarding	0.11	0.25	0.00***	130	254
Transfer abroad	0.00	0.07	0.00***	130	254
Invest	0.02	0.04	0.14	130	254
Other reason	0.00	0.01	0.11	130	254

- More cash hoarding, repayment of loans and transfers abroad among households which experienced losses

Households with no losses: Client effect ?

$$Y_i = \alpha + \beta \cdot Client_i + \gamma \cdot X_i + \varepsilon_i$$

Column	(1)	(2)	(4)	(5)	(7)	(8)
Dependent variable	**Deposits decreased**		**Deposits decreased > 25%**		**More cash**	
Client of resolved bank	0.060	0.070	0.092**	0.077	0.048	0.044
	(0.062)	(0.071)	(0.045)	(0.049)	(0.046)	(0.051)
Basic controls	No	No	No	No	No	No
Extended controls	No	Yes	No	Yes	No	Yes
Households	347	344	343	341	350	347
Mean of dependent variable	0.38	0.38	0.13	0.13	0.16	0.16

- Difference between clients and non-clients is sizeable

  .. but not precisely estimated…

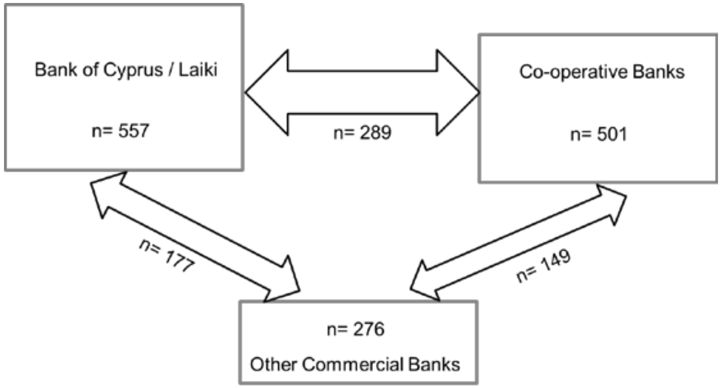
Further results

- Reallocation of deposits between banks
  - 14% of households reallocate deposits between banks
  - clients of affected banks are more likely to reallocate (10 pp)

- Confidence and hypothetical deposit behavior
  - 70% do not consider it safe to hold uninsured deposits
  - 30% do not consider it safe to hold insured deposits
  - confidence is unrelated to loss exposure
  - confidence influences hypothetical future deposit behavior

Further Results I:
Deposit Reallocations

- Survey provides information on reallocations of deposits between banks in Cyprus
- Utilize data on account level
- Can control for unobserved household heterogeneity, many households have accounts at several banks

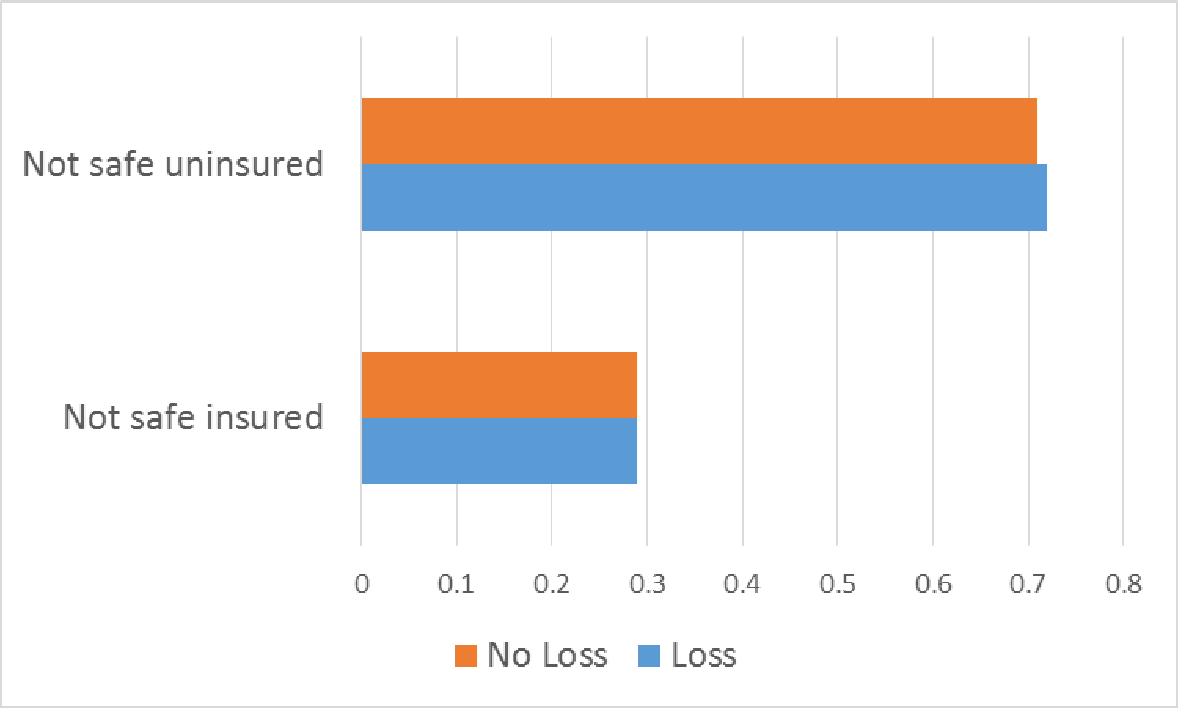


<u>Results:</u>

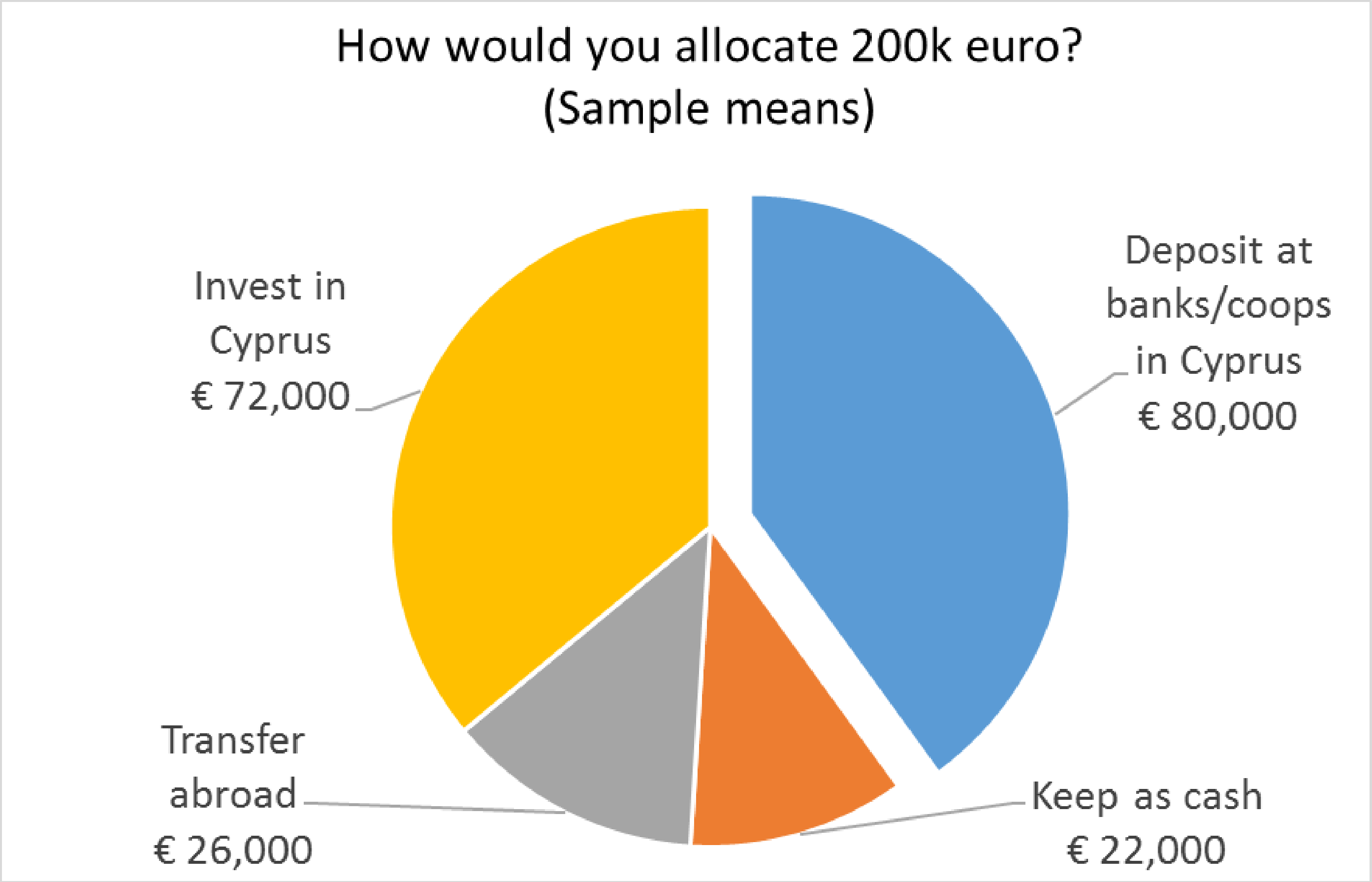
- Substantial amounts (more than €5,000) were transferred from 14% of term deposits
- Reallocations much more likely for accounts at distressed bank (10pp)

Further Results II: Confidence is unrelated to losses

- Do you consider it safe to deposit the following amount at a Cypriot bank / coop ?
  - 50‘000 euro (insured)
  - 200‘000 euro (uninsured)



Hypothetical deposit behavior



Share deposit=0: 34%

Share deposit <100k: 78%

Confidence and hypothetical behavior

$$Y_i = \alpha + \beta \cdot LossType_i + \gamma \cdot X_i + \varepsilon_i$$

- Loss type → no impact on hypothetical behavior

$$Y_i = \alpha + \beta \cdot Confidence_i + \gamma \cdot X_i + \varepsilon_i$$

Column	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	*Deposit share*		*Deposit share=0*		*Deposit share <100K*	
Range of dependent variable	from 0 to 1		0/1		0/1	
Not safe insured	-0.155***	-0.125***	0.226***	0.196***	0.088**	0.064*
	(0.036)	(0.035)	(0.048)	(0.048)	(0.038)	(0.037)
Not safe uninsured	-0.075**	-0.078**	0.05	0.059	0.109**	0.112**
	(0.036)	(0.036)	(0.045)	(0.046)	(0.044)	(0.044)
Basic controls	No	Yes	No	Yes	No	Yes
Extended controls	No	Yes	No	Yes	No	Yes
Households	785	765	785	765	785	765
Mean of dependent variable	0.42	0.42	0.32	0.32	0.75	0.75

Summary of results

- Significant reallocation of money holdings from bank deposits to cash in the immediate aftermath of the crisis

- Exposure matters for immediate flight to cash
  - households that lost deposits or capital securities reacted similarly
  - weaker effect for equity holders and unaffected households

- Exposure hardly matters for medium term confidence
  - the crisis shattered confidence in the banking sector
  - but less so in deposit insurance

What can policy makers learn ?

1. Retail clients do not differentiate between deposits and non-deposit debt
    - prioritization in bank resolution?
    - strengthen retail investor protection

2. Policy initiatives to ‘replace’ cash may have serious side effects
    - high demand for ‘safe’ liquid asset during crisis

3. Resolution policy requires well-prepared support mechanisms
    - emergency liquidity assistance
    - “generous” capital controls
    - ability to reduce exposure (co-signing, prepayment of loans)

Thank you!

(helmut.stix@oenb.at)