

university of innsbruck

Markus Riek, Rainer Böhme



Analysis of the European citizen survey  
on the impact of cybercrime victimisation

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# Motivation

Why do we need citizen surveys to measure the costs of cybercrime ?

Shortcomings of other data sources:

- ▶ Police-recorded statistics are not reliable.
- ▶ Technical indicators suffer from incomplete coverage.
- ▶ Companies are often not willing to share data.

**Representative surveys add insight for online banking and shopping.**

Shortcoming of existing surveys:

- ▶ Effects of victimization unclear
- ▶ No quantitative measurement of economic costs
- ▶ No consideration of indirect effects of cybercrime prevalence

**The ECRIME survey fills these gaps for six European countries.**



# Agenda

## A. **Data collection**

### B. Direct cost measures

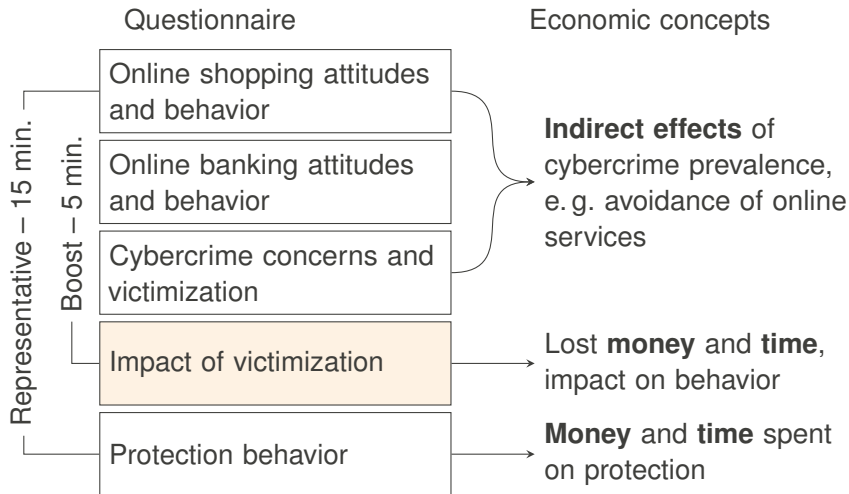
- ▶ Losses of cybercrime victims
- ▶ Estimating the overall impact

### C. Indirect cost measures

- ▶ Victims' reactions to cybercrime
- ▶ Factors influencing the use of online services
- ▶ Estimating the impact

### D. Concluding remarks

# Instrument Design



# Breakdown of Profit-oriented Cybercrimes

1. Online shopping fraud
2. Identity theft wrt online shopping
3. Identity theft wrt online banking
4. Identity theft wrt credit card information
5. Identity theft wrt PayPal
6. Extortion
7. Scam

## Question wording for *identity theft wrt online banking*

“Someone getting access to your bank account password (to buy something in your name, take money from your account, open a credit etc.)”

# Fieldwork

Data collection in six different EU member states.

**IPSOS** administered  $N = 6\,394$  standardized interviews (CATI)

- ▶ Field time:  
July 2015 – October 2015
- ▶ Representative sample of adult (18+) Internet users in six EU member states
- ▶ Oversampling of cyber crime victims ( $N' = 1\,242$ )



# Technical Remarks

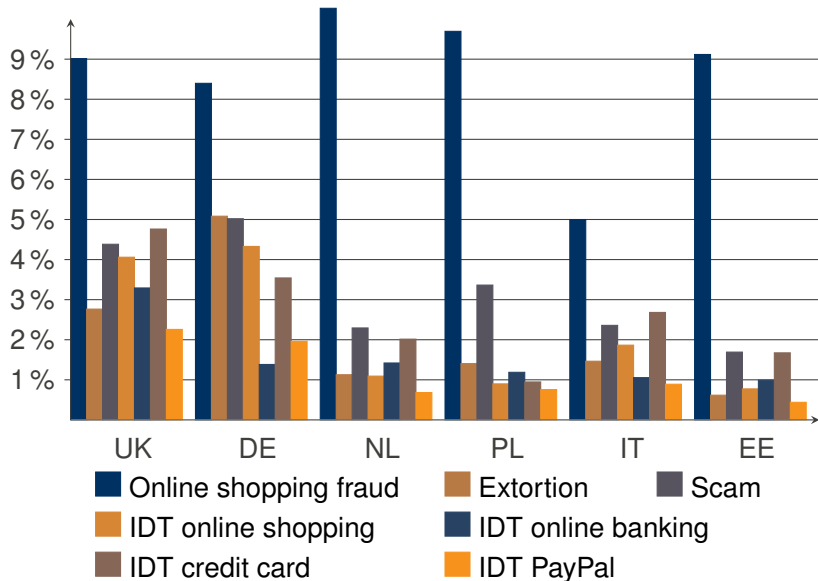
## Sampling weights

- ▶ Country specific weights: individual vs. cross-country analysis.
- ▶ Correct consideration of the oversampling of  $N = 256$  victims.

## Proxy variable to identify victims of *online shopping fraud*

1. The respondent is only victim of online shopping fraud or the severest incident is online shopping fraud.
2. The respondent lost money due to the incident.
3. The respondent was not able to recover 100 % of the loss.

## Cybercrime Incidents by Country



Citizens who reported to have been victim in the last five years (including multiple victimization; N = 6 394).



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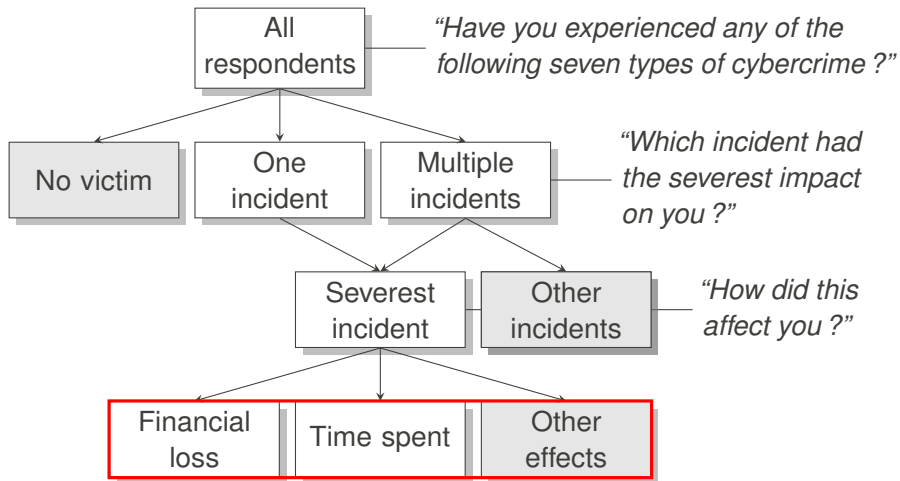
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# Measuring the Losses of Cybercrime Victims



# Consequences of Cybercrime Victimization

Most victims lose time, defrauded online shoppers also lose money.



## Data Availability on Direct Losses

Small number of severest incidents with financial losses per country.

Type of Cybercrime	Incidents with financial losses						Total
	UK	DE	NL	EE	PL	IT	
IDT online shopping	5	3	1	1	1	4	15
IDT online banking	10	1	1	6	2	1	21
IDT credit card	13	4	11	18	2	18	66
IDT PayPal	5	2	2	2	0	1	12
Online shopping fraud	78	72	99	91	92	47	479
Extortion	2	3	1	2	4	1	13
Scam	15	17	11	18	13	14	88
Total	128	102	126	138	114	86	694

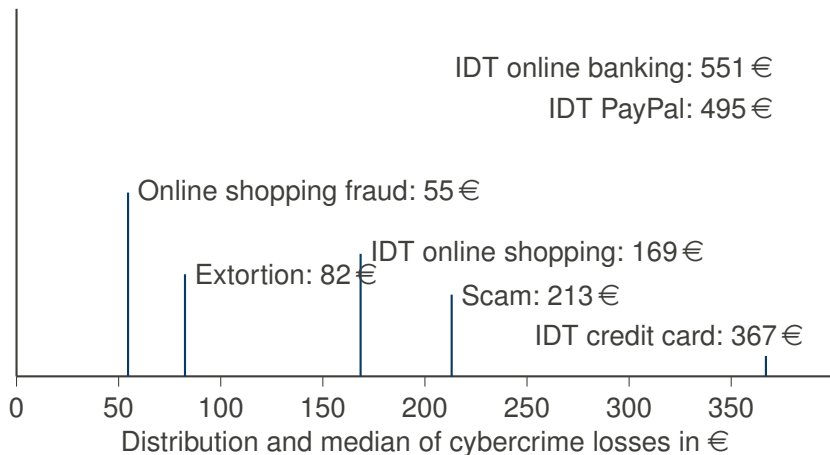
United Kingdom (UK), Netherlands (NL), Estonia (EE), Germany (DE), Poland (PL), Italy (IT)

Number of severest incidents with financial losses by type of crime and country (N = 694).



# Quantifying Direct Losses

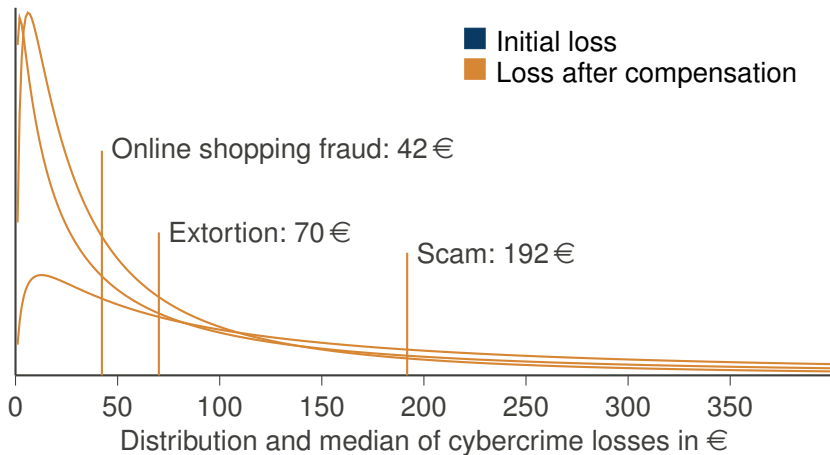
Identity theft causes the highest losses on average.



Estimates based on reported values for the severest incident; Median imputation for categorical responses;  $N = 694$ .

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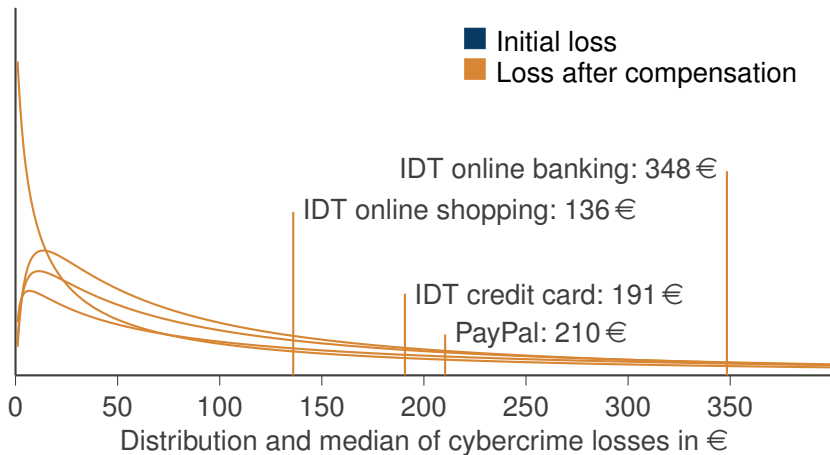


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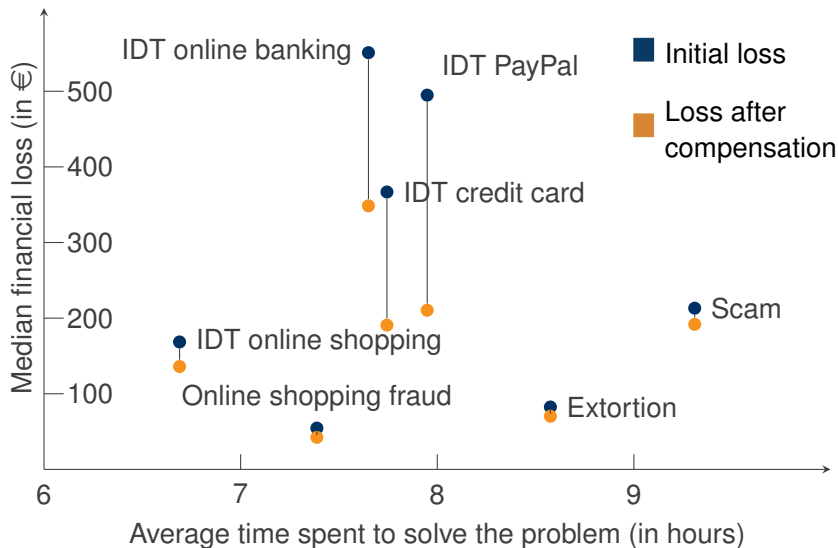
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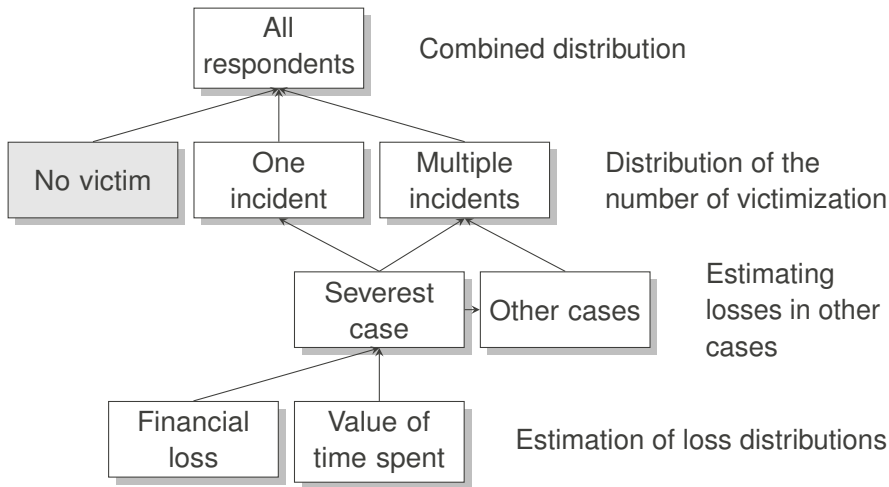
## Time, Money, and Compensation

The financial industry socializes cybercrime losses through compensation.





# Aggregating the Costs of Victimization



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- ▶ Losses of cybercrime victims
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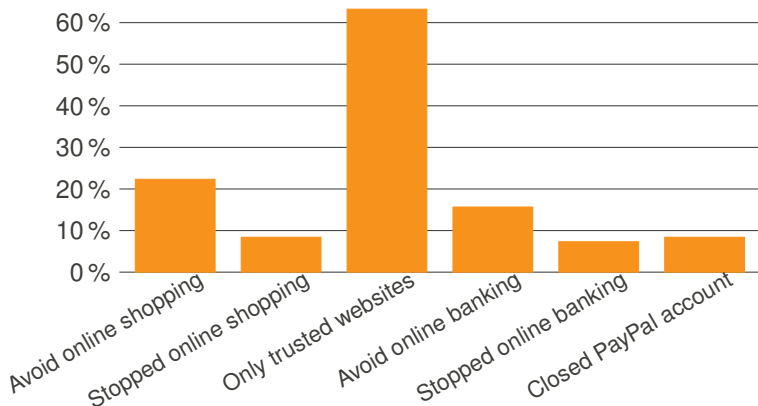
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# Reactions to Cybercrime Victimization

Cybercrime drives customers towards trusted brands.



Reported reactions of victims after the severest incident;  $N = 1\,242$ .



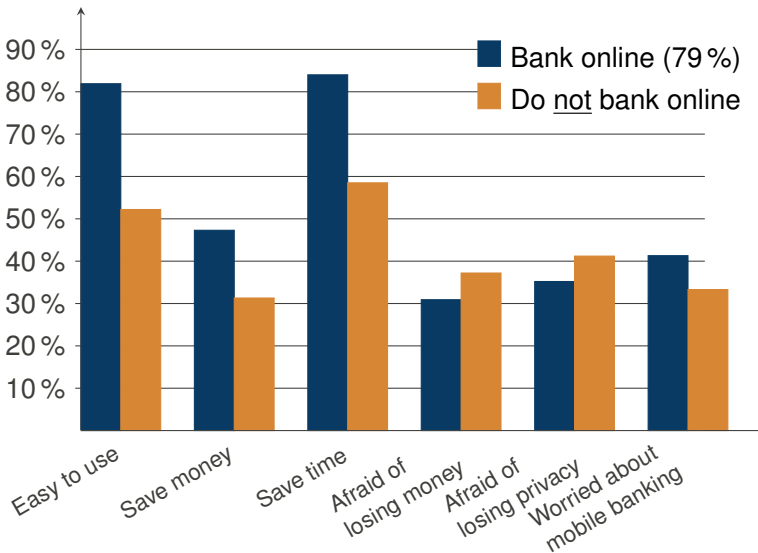
# Attitudes Towards Online Shopping

Worries of losing money and privacy are high among all Internet users.



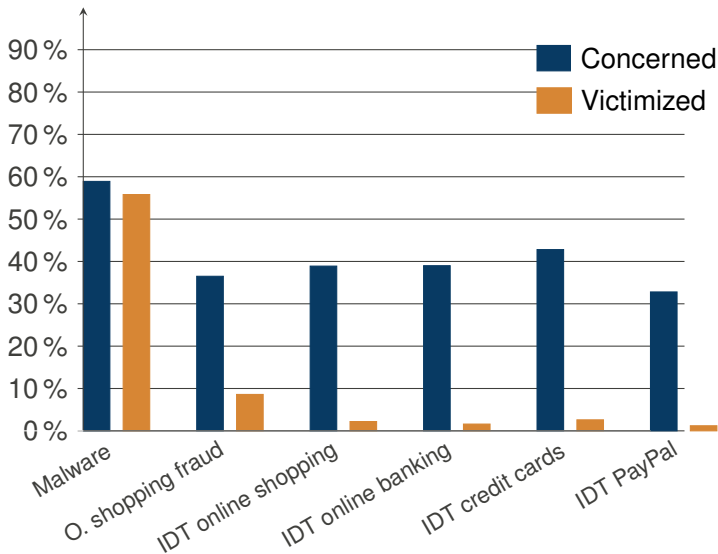
# Attitudes Towards Online Banking

Security concerns somewhat lower for online banking.



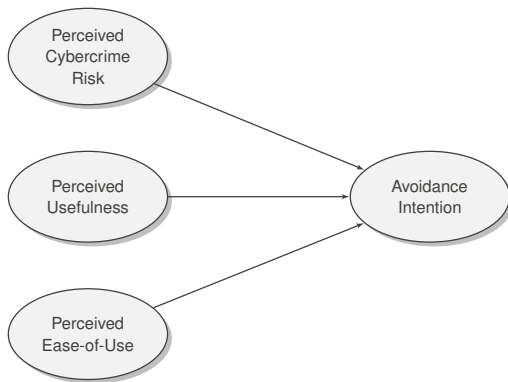
# Concerns of Cybercrime

Typical for crime, concerns exceed actual victimization.



# Estimating the Economic Impact of Cybercrime

Use behavioral theories to account for avoidance effects as indirect costs.



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## Key Take Aways

- ▶ First representative data on detailed financial and non-financial losses of cybercrime victimization for selected countries
- ▶ Highest prevalence of cybercrime in the UK and Germany
- ▶ Loss of time more prevalent than financial losses
- ▶ The financial industry socializes large parts of financial losses through compensation
- ▶ Security concerns more pronounced for online shopping than for online banking
- ▶ Cybercrime concern significantly higher than actual victimization
- ▶ Representative micro data allows us to investigate these hypotheses further, controlling for potential intervening variables, and cross-checking against other data sources

# university of innsbruck

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Thank you for listening.

markus.riek@uibk.ac.at

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