

# The safety of POS payment instruments

A study on the perception & behaviour  
of Dutch consumers

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## Outline

1. Background
2. Research objective & questions
3. Literature
4. Conceptual model
5. Data collection
6. Results
7. Conclusions and policy implications



## Background (1/2)

Definition of safety of POS payment instruments:

*degree to which consumers are protected against all kinds of damages when carrying payment instruments or when using them at the POS or ATM*

Risks of carrying and using POS instruments:

- Loss, pickpocketing, violent robbery
- Mistakes or fraud



## Background (2/2)

'Actual' safety level of Dutch POS payment system (2008):

- Pickpocketing:  $\pm 1 / 200$  inhabitants
- Robbery:  $\pm 1 / 700$  inhabitants
- Euro counterfeiting:  $\pm 25 / 1,000,000$  tested banknotes
- Skimming fraud:  $\pm 1 / 450$  debit card holders

Social impact may be larger than sum of personal damages:

- Loss of trust
- Shift towards less efficient payment behaviour

'Actual' safety levels may deviate from 'perceived' safety levels!



## Research objective

*To gain a better understanding of the relation between consumers' safety perception of POS payment instruments and their payment behaviour*



*To provide handles for preserving and further improving current safety and efficiency levels*



## Research questions

- To what extent do Dutch consumers feel safe when carrying and using POS payment instruments?
- What factors influence consumers' safety perception?
- What is the role of safety perception in consumers' payment behaviour?
- What is the impact of communication about safety concerns?



## Literature

**Factors influencing payment choice:** Zinman (2004), Bounie & Abel (2006), Borzekowski et al. (2006), Rysman (2007), Keinonen (2007), Jonker & Kettenis (2007), Amromin & Chakravorti (2007)

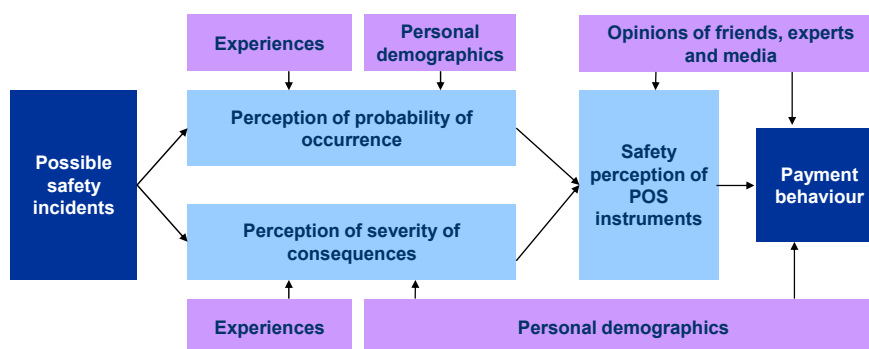
**Role of safety and security:** Boeschoten (1992), Mot & Cramer (1990), Humphrey et al. (1996), Yin and DeVaney (2001), Cheney (2006), Jonker (2007), Benton et al. (2007), Borzekowski et al. (2007), Jonker & Kosse (2008), Schuh and Stavins (2009)

- Profound analysis of consumers' safety perception in the context of POS payment behaviour is lacking



## Conceptual model

Intuition from models of food safety & purchase behaviour



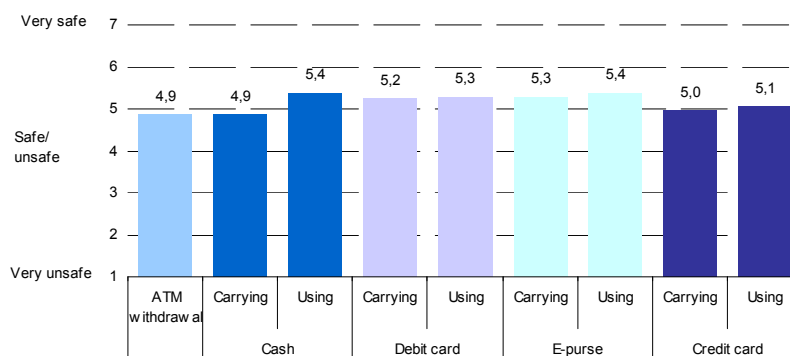
## Data collection

- Consumer survey 4 – 7 April 2008
- CentERpanel: response 1.672 (65%)
- Questions on: perceived safety levels, perceived probabilities of incidents to happen, perceived severity of possible incidents, personal experiences with safety incidents, precautions taken and general payment behaviour
- Structure of questionnaire:
  - Cash, debit cards, e-purse and credit card
  - Skimming fraud



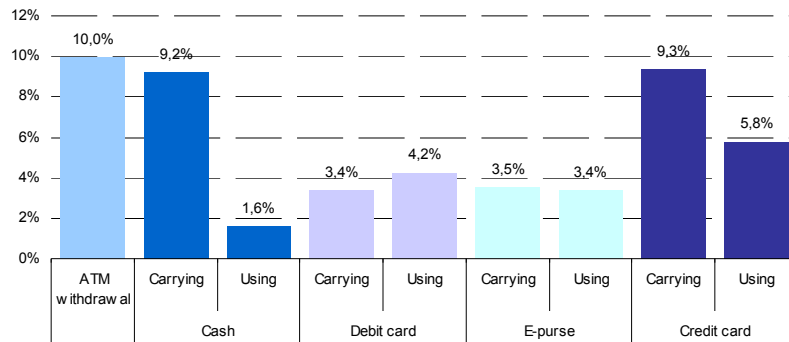
## Results (1/15)

### Perceived safety of POS instruments



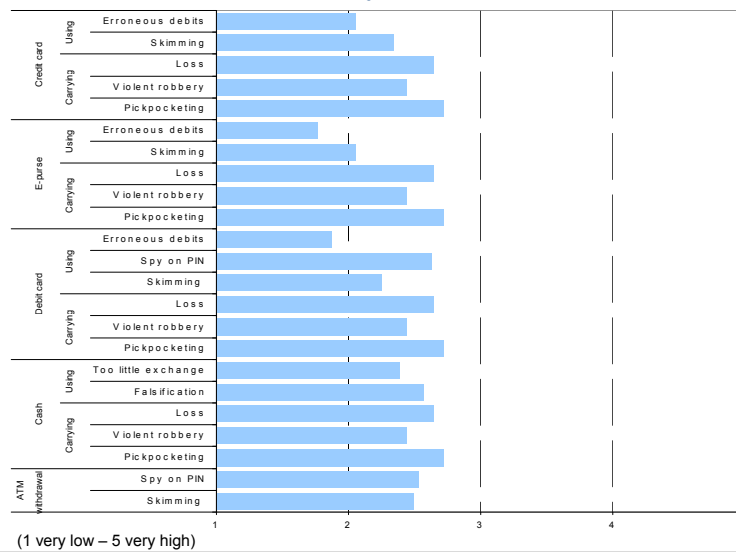
## Results (2/15)

### Feelings of unsafety



## Results (3/15)

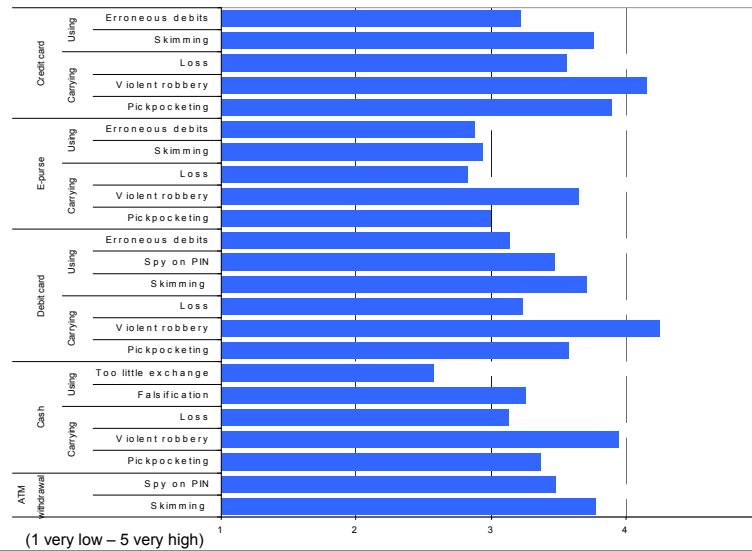
### Perceived probability of occurrence



(1 very low – 5 very high)

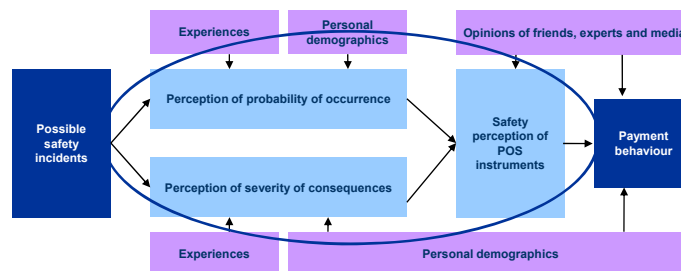
## Results (4/15)

### Perceived severity of consequences



## Results (5/15)

### Estimating the role of perceived probabilities & consequences



Ordered logit regressions:

- Dependent variable: perceived safety level of POS instruments
- Explanatory variables: perceived probability of occurrence and perceived severity of consequences of possible incidents

## Results (6/15)

Results:

- Perceived probabilities  $\uparrow$   $\rightarrow$  perceived safety  $\downarrow$
- Perceived consequences  $\uparrow$   $\rightarrow$  perceived safety  $\downarrow$

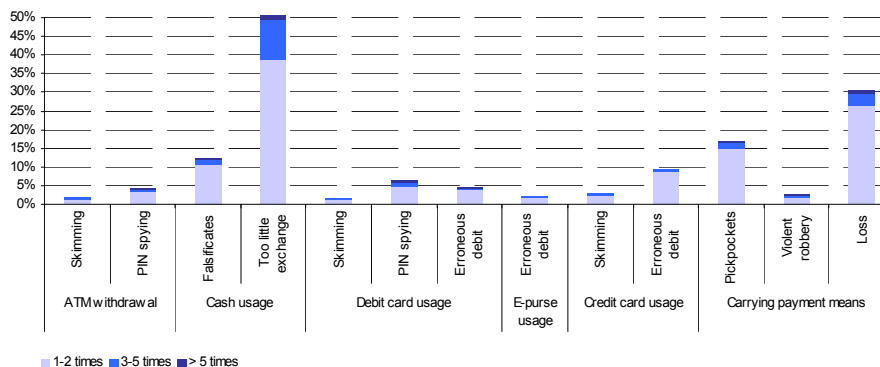
Safety perception of carrying POS instruments and ATM withdrawals most sensitive to *probability* perception

Safety perception of using POS instruments influenced by perceived *consequences* as well



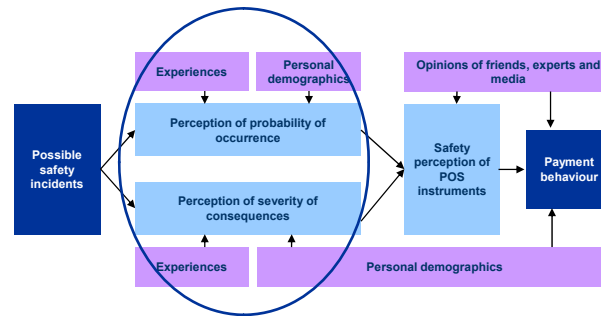
## Results (7/15)

Personal experiences with safety incidents



## Results (8/15)

Estimating the impact of personal experiences & characteristics



Bivariate probit regressions:

- Dependent variables: perceived probability of occurrence and perceived severity of consequences of possible incidents
- Explanatory variables: personal experiences (yes or no) and personal demographics

## Results (9/15)

Results:

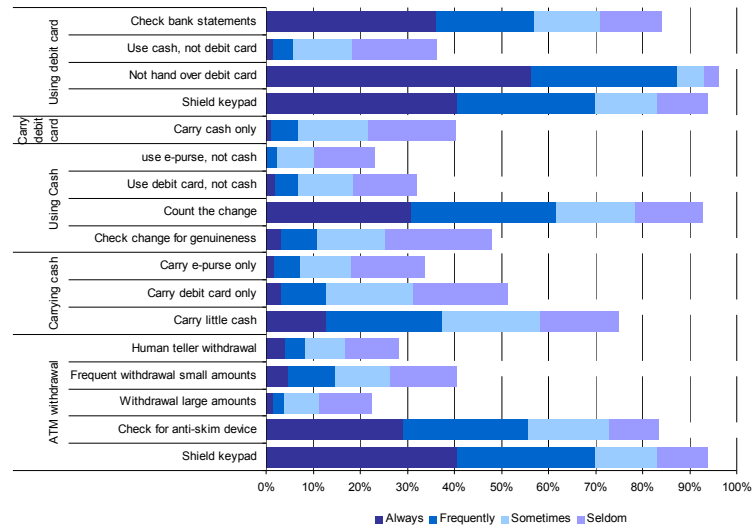
- Experiences → perceived probability ↑
- Experiences → perceived consequences of minor incidents ↑
- Experiences → perceived consequences of major incidents ↓

Impact of personal characteristics:

- Age (women: perceived probability & consequences ↑)
- Income (perceived probability & consequences ↓)
- Education (perceived probability ↓ & consequences ↑)
- Urbanisation degree (perceived probability ↑)

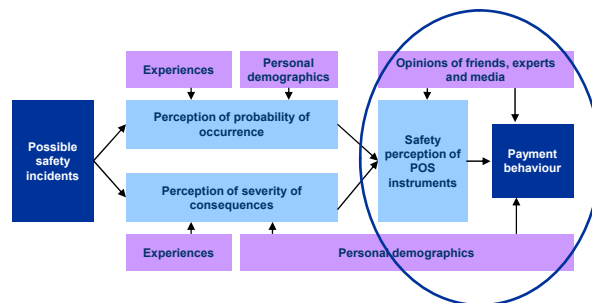
## Results (10/15)

### Precautions taken by consumers



## Results (11/15)

### Estimating the impact of perceived safety on payment behaviour



## Results (12/15)

Ordered logit regressions:

- Dependent variables: degree to which safety measures are taken
- Explanatory variables: perceived probability of occurrence and perceived severity of consequences of possible incidents

Results in general:

- Perceived probabilities  $\uparrow$   $\rightarrow$  frequency of taking precautions  $\uparrow$
- Perceived consequences  $\uparrow$   $\rightarrow$  frequency of taking precautions  $\uparrow$

Some exceptions:

- Perceived probabilities  $\uparrow$   $\rightarrow$  frequency of taking precautions  $\downarrow$
- Perceived consequences  $\uparrow$   $\rightarrow$  frequency of taking precautions  $\downarrow$



## Results (13/15)

Probit regressions:

- Dependent variables: frequent cash user (yes or no) and frequent debit card user (yes or no)
- Explanatory variables: perceived safety levels of POS instruments and personal characteristics

Frequent cash users (sign. at 10% level):

- Perceived safety of carrying cash (+)
- Perceived safety of carrying debit card (-)
- Perceived safety of carrying e-purse (-)
- Women (+)
- Age (+)
- Urbanisation degree (+)
- Income (-)



## Results (14/15)

Frequent debit card users (sign. at 10% level):

- Perceived safety of ATM withdrawals (-)
- Perceived safety of carrying cash (-)
- Perceived safety of carrying debit card (+)
- Perceived safety of carrying e-purse (-)
- Perceived safety of using debit card (+)
- Urbanisation degree (-)
- Education (+)



## Results (15/15)

Probit regression:

- Dependent variable: having substituted debit cards by cash after having heard about skimming (yes or no)
- Explanatory variables: source of skimming information and personal characteristics

Probability of having substituted debit cards by cash:

- Being informed about skimming fraud by radio (+)
- Age (+)
- Education (-)



## Conclusions

- Safety perception of POS instruments is especially sensitive to changes in perceived probabilities of incidents to happen, followed by the perceived severity of their consequences
- Past experiences and personal characteristics strongly influence safety perception
- Both the frequency of taking safety precautions and consumers' general payment behaviour are influenced by perceptions of safety
- Cash, debit card and e-purse are to a certain extent used as substitutes
- Communication about safety concerns might have widespread consequences



## Policy implications

The results underline the importance of...

- ...all stakeholders taking their responsibilities to minimise the risks and consequences of possible safety incidents
- ...clear communication towards consumers about:
  - the actual risks, to better align perception and reality
  - the safety measures (to be) taken, to stimulate consumers to pay as efficiently and safely as possible



## Questions?

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