



Changing payment patterns at the point-of-sale: their drivers

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Consumer payment behaviour at the point-of-sale (POS) has changed over time

- ❖ The use of electronic payment instruments has increased, at the expense of cash.
- ❖ Stream of studies on consumers' payment behaviour (Kosse, 2014); results show that behaviour depends on demographics, transaction characteristics and perceptions.
- ❖ Deutsche Bundesbank (2012): 2008-2011 preferences in specific retail locations and situations remained stable as did the ranking of criteria for choosing which payment instrument to use and the effects of demographic factors.
- ❖ Klee (2006): 1995-1998-2001 significant changes in adoption and use but the effects of demographic characteristics generally remained the same.

Our research: potential changes in the influence of determinants over time

Research questions:

- ❖ How have payment patterns changed the past decade in the Netherlands?
- ❖ Which factors influence the adoption of payment instruments?
- ❖ Which factors influence the intensity of use of payment instruments?
- ❖ Does the relevance of factors change over time?
- ❖ Does the relevance of factors differ per point-of-sale (POS)?

Changing payment patterns at the POS...



We have studied the drivers behind changing payment patterns at the POS

- ❖ Using survey data from 2004 and 2014
- ❖ Measuring changes in:
 - Adoption of payment instruments
 - Intensity of use
 - Perceptions of various characteristics of payment instruments
- ❖ Using models for payment patterns in general and per POS

Survey data from 2004 and 2014

- ❖ CentERpanel: representative for the Dutch population
- ❖ Payment behaviour at different types of POS
- ❖ Broad set of socio-demographic variables
- ❖ Consumers' perceptions of the characteristics of payment instruments

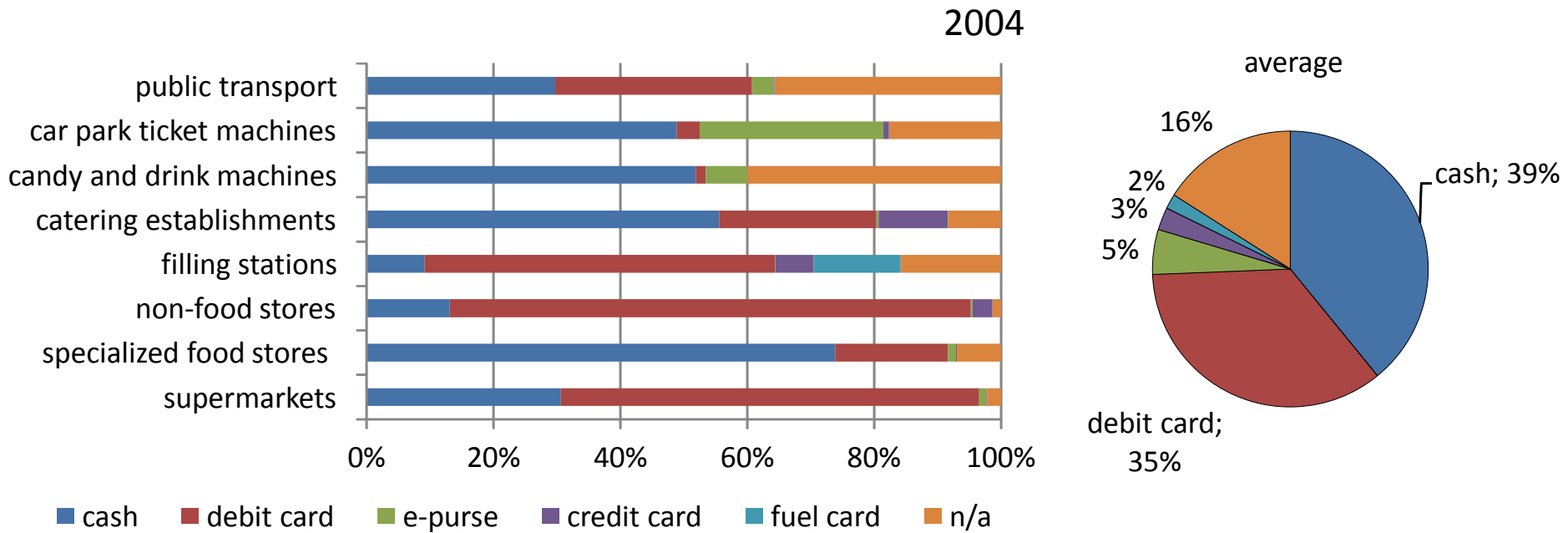
Adoption: mostly stable, slight increase for credit card

2004		2014	
debit card	98%	Dutch debit card that can also be used abroad	98%
e-purse	55%	foreign debit card from a bank from another euro country	2%
credit card	49%	credit card	55%
fuel card	16%	mobile phone with which I can pay in stores	3%
other electronic payment instrument	3%	none of the above	1%
I don't have electronic payment instruments	1%		

Note: N=2019.

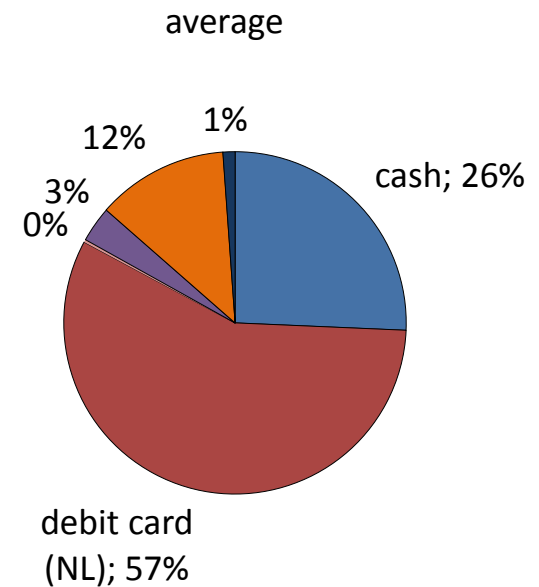
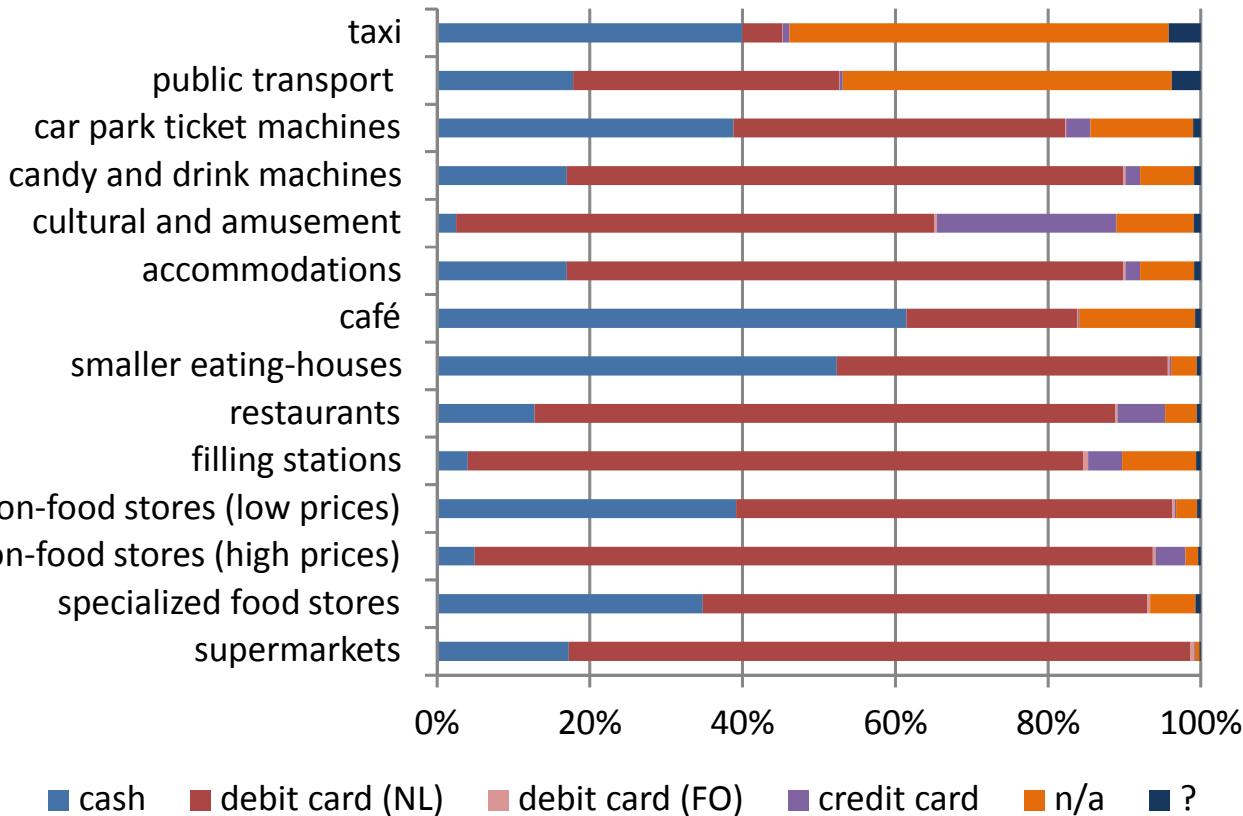
Note: N=2634.

Intensity: in 2004, cash was still number 1



Intensity: in 2014, debit card preferred at most POS

2014



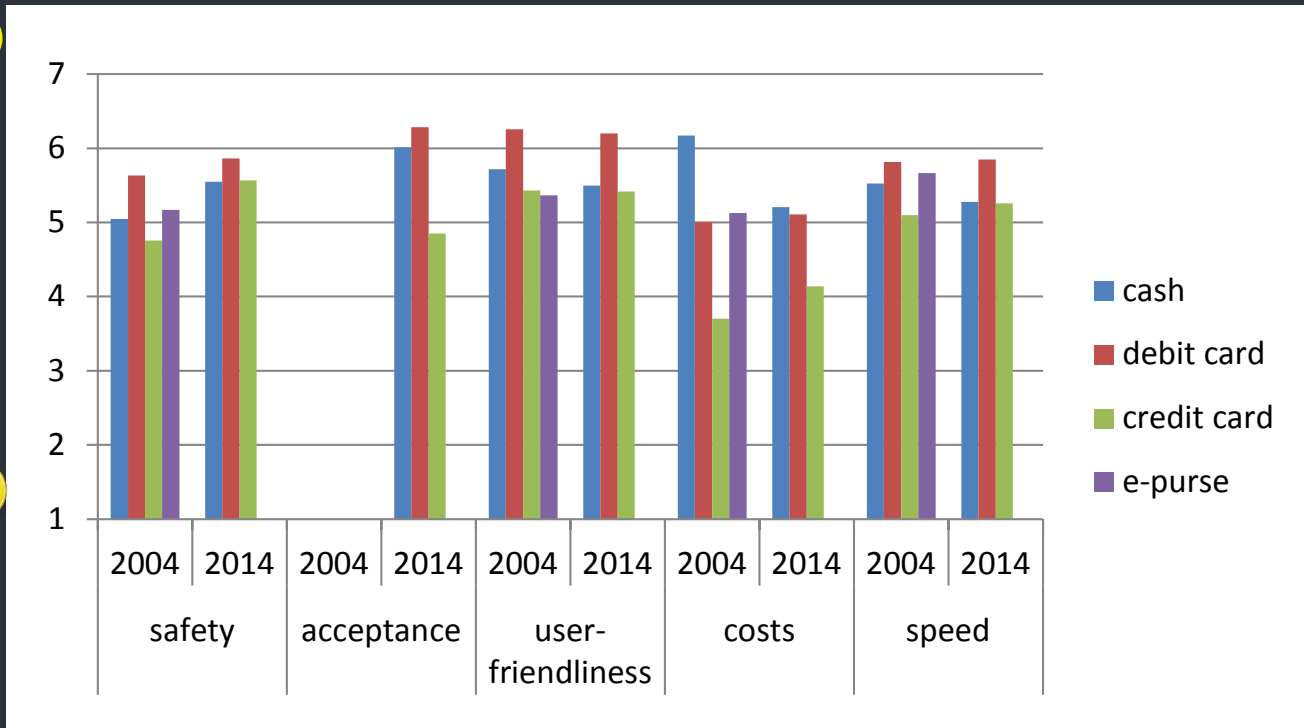
Cash has yielded pride of place to the debit card

2004		2014	
cash	47%	cash	34%
debit card	42%	Dutch debit card that can also be used abroad	62%
e-purse	6%	foreign debit card from a bank from another euro country	0%
credit card	3%	credit card	4%
fuel card	2%		

Note: N=2012. *Note:* N=2623.

- ❖ Cash intensity = $(\sum_{POS=1}^{POS=N} cash\ dummy_{POS})/N$
- ❖ $cash\ dummy_{POS}$: (1=mostly cash, 0= mostly other payment instrument).
- ❖ N= total number of POS that the respondent visits.
- ❖ For example, Cash intensity = 0.25 means that at 25% of the places the respondent visits, he/she mostly uses cash.

Difference between perceived costs of cash and debit card has almost disappeared



Empirical models – general and per POS

- ❖ Payment patterns in general
 - Adoption => probit models ($y=1$ if adopted, 0 else)
 - Intensity of usage => second stage Heckman selection model (cash: OLS)
 - various payment instruments, 2004 & 2014, perceptions and socio-demographics
- ❖ Payment patterns per POS
 - Intensity of usage => probit models ($y=1$ for respondents that mostly pay cash at a particular POS, $y=0$ for respondents that mostly pay electronically)
 - various payment instruments, 2004 & 2014, perceptions and socio-demographics

Results show changes in effects of determinants over time

1. Certain demographic characteristics are no longer relevant for intensity of debit card use in 2014.
2. Regional patterns have changed.
3. The payment behaviour of young people has changed considerably.
4. The importance of perceived payment instrument characteristics has changed.

1. Certain demographic characteristics are no longer relevant for debit card use

- ❖ Education: in 2004 low education -> debit card used less; in 2014 -> no effect on debit card use
- ❖ Homeownership: in 2004 -> debit card used more; in 2014 -> no effect on debit card use
- ❖ Income: in 2004 low income -> debit card used less; in 2014 -> no effect on debit card use
 - This may reflect different stages in the adoption process of a payment instrument.

2. Regional patterns have changed

- ❖ In 2004 inhabitants of urban areas used cash more; in 2014 they used the debit card more.
- ❖ In 2004 inhabitants of urban areas were more likely to pay cash at specialised food stores; in 2014 this was no longer the case.
 - This may be due to initiatives to stimulate card acceptance in ethnic stores, which are more common in cities.
- ❖ The importance of regional variables has increased: in 2004 regional effects at 3 out of 8 POS; in 2014 at 12 out of 14.
- ❖ The strongest regional effects are found for car park ticket machines: much less cash usage in the three largest cities than elsewhere.

3. The payment behaviour of young people has changed considerably

- ❖ In 2004, people under 25:
 - Higher cash usage in general
 - More likely to pay cash in supermarkets and catering establishments
 - More likely to pay cash at non-food stores with on average low prices
- ❖ In 2014: all of these effects have disappeared.
 - This may be because young people have grown up with higher card acceptance rates at these types of POS.

4. The importance of perceived payment instrument characteristics has changed

- ❖ The importance of safety has increased; this characteristic is particularly relevant at non-food stores with low prices, smaller eating-houses, cafes and taxis.
- ❖ For the debit card perceived speed and user-friendliness have become insignificant.
- ❖ The intensity of cash use no longer depends on perceived costs.
 - Surcharges for debit card payments have almost completely disappeared; hardly any difference anymore in perceived costs between cash and debit card payments.
- ❖ Speed has become a relevant factor at specialised food stores and non-food stores with on average low prices.

Conclusion: it is important to look at behaviour per POS and to have recent data

- ❖ For those who wish to steer consumers' payment behaviour: it is important to take into account which group of consumers one wants to influence (*who*) and at which point of sale (*where*).
- ❖ It is important to keep track of determinants of payment behavior because their relevance can change substantially over time (*when*).

Annex 1 – regression results adoption

	2004		
	debit card	credit card	e-purse
safety	0.00** (0.00)	0.07*** (0.01)	0.04*** (0.01)
speed	0.00 (0.00)	-0.01 (0.01)	0.05*** (0.01)
costs	-0.00 (0.00)	0.01 (0.01)	0.02 (0.01)
user-friendliness	0.00*** (0.00)	0.08*** (0.01)	0.03*** (0.01)
...			

Annex 2 – regression results intensity

	2004				2014		
	debit card	credit card	e-purse	cash	debit card	credit card	cash
safety	0.01*	0.01	0.01	0.01	0.01*	0.01***	0.01***
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
speed	0.03***	-0.00	0.01*	0.01***	0.01	0.00	0.01**
	(0.01)	(0.00)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
costs	-0.00	0.00	0.00	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
user-friendliness	0.02***	0.02***	0.03***	0.03***	0.01	0.01***	0.02***
	(0.01)	(0.01)	(0.01)	(0.00)	(0.01)	(0.00)	(0.00)
...							