

EFFECTS OF CARD PAYMENTS ON SUPERMARKET PURCHASES

Article by Frank van der Horst and Jelle Miedema, De Nederlandsche Bank



Frank van der Horst



Jelle Miedema

No-one looks forward to the moment of having to pay for their weekly purchases at the till. Consumers experience some form of "payment pain" when making purchases.

This pain varies for different payment instruments: the more consumers perceive an instrument as transparent, the more pain they feel, and this affects the volume and value of their purchases. Cash money is tangible, and you can see the contents of your wallet decreasing with each payment. This is why cash money is regarded as the most transparent payment instrument and causes the most pain. Multiple studies have shown that paying in cash limits spending compared to paying by debit card. Moreover, in 2011, American researchers⁽¹⁾ discovered that paying in cash may also help to curb unhealthy product purchases. Since DNB is responsible for banknote circulation in the Netherlands, and it is important for both DNB and society to gain insight into the effects of the use of cash, we replicated the American study in cooperation with the Vrije Universiteit Amsterdam. The reports are published on DNB's website.⁽²⁾

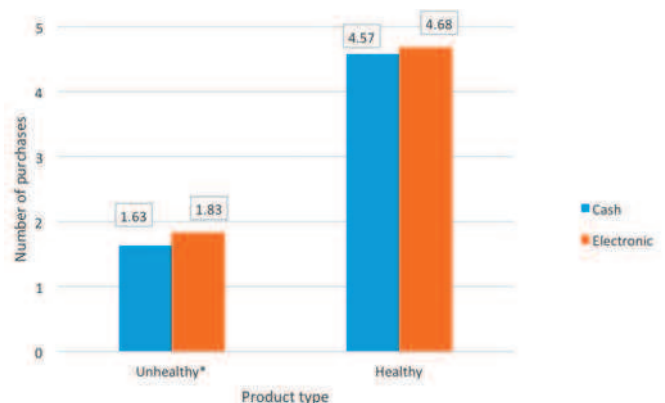
In an online shopping setting, a representative panel of 2,213 participants was presented with: 20 products, 10 healthy products and 10 unhealthy products. For each product, they were asked to either buy it or discard it. The payment instrument with which participants had to pay was assigned to them at random. The payment instrument was communicated to them repeatedly, both before and during the experiment, and could be either cash, credit card, debit card or contactless. The participants were asked to act as if they were in a regular supermarket, and to make purchases as they would do normally.

After the supermarket experience, participants were asked to complete an online questionnaire about their perceptions, thoughts and feelings during the supermarket experience. The questionnaire also asked about their everyday shopping behaviour and payment preferences.

On average, the Dutch panel bought more healthy than unhealthy products (4.6 vs 1.7), and they bought slightly more products when paying by card compared to paying in cash (6.5 and 6.2, respectively), also if credit card payments were excluded.

Participants who paid by electronic means (debit cards, credit cards and contactless payments) bought significantly more unhealthy products compared to participants paying in cash (1.8 vs 1.6). Participants who paid by card also bought slightly more healthy products (4.7 vs 4.6), but this difference is not statistically significant. The interaction effect – i.e. the difference between the differences – also is not statistically significant. Figure 1 summarises the results.

Figure 1 — Average number of purchases by product type and payment instrument



* significant difference, $p < 0.01$

Using regression analysis, we looked at the prediction indicators for purchasing healthy and unhealthy products (Table 1).

We found seven variables that partially explain why people buy unhealthy products. First, in line with the findings described above we demonstrated that card payers purchase more unhealthy products than cash payers (the effect for healthy products is similar but not significant). In addition, participants who described their own shopping behaviour as 'impulsive' and 'easily swayed' bought more unhealthy products. Participants who expressed a desire to eat healthy, bought fewer unhealthy products. Men bought more unhealthy products than women, and younger participants bought more unhealthy products compared to older participants. Finally, more highly educated participants bought fewer unhealthy products than lower educated participants.

We found that different variables play a role in purchasing healthy products, sometimes with an inverted effect, e.g. for the gender, age and healthy eating variables: women, older participants and healthy eaters bought more healthy products. Participants who described their shopping behaviour as restrained bought fewer

healthy products, while those who described themselves as self-disciplined bought more healthy products. Participants who described themselves as spenders bought more healthy products, as did participants who felt happy during the experiment.

Table 1 — Regression analysis results for numbers of healthy and unhealthy purchases

Variable	Healthy		Unhealthy	
	B	P	B	P
Describes their shopping behaviour as:				
- impulsive	.058	.421	.189	<.001
- easily swayed	.115	.123	.211	<.001
- restrained	-.181	.002	-.058	.172
- disciplined	.154	.027	.039	.434
Wants to eat healthy	.740	<.001	-.542	<.001
Felt happy during the experiment	.196	.015	.080	.167
Sees themselves as spenders rather than thrifty	.117	.004	.044	.134
Female	.242	.024	.660	.001t
Age	.015	.001	.009	.001
Education				
Electronic payment condition in experiment	.038	.281	.108	.001
	.140	.172	.227	.002
B = regression coefficient p= significance level; p<0.05 is in bold				

Overall, the American study was partially replicated in the Netherlands. We found that card payments do have an impact on the purchase of unhealthy products. However, we were unable to conclude whether this impact is stronger for unhealthy products compared to healthy products. Generally, participants bought fewer products when paying in cash.

Our results confirm that using cash money may help to curb spending. As the issuer of banknotes, this is an important conclusion for DNB now that the acceptance of cash is increasingly under pressure. The results support the shared vision of DNB and the Dutch National Forum on the Payment System that cash must remain available for the time being as a payment instrument at points of sale.

¹ Thomas, M., Kaushik Desai, K. & Seenisvan, S. (2011). How credit card payments increase unhealthy food purchases: visceral regulation of vices. *Journal of consumer research*, 38, 126-139.

² Van der Horst, F., Miedema, J., Schreij, D. & Meeter, M. (2017). Effects of payment instruments on unhealthy purchases. Working paper No. 582. www.dnb.nl