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From cash to cards

How debit card payments overtook cash in the Netherlands

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From cash to cards: how debit card payments overtook cash in the Netherlands

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From cash to cards
how debit card payments overtook cash in the Netherlands

By Nicole Jonker, Lola Hernandez (De Nederlandsche Bank), Renate de Vree and Patricia Zwaan (Dutch Payments Association)

Abstract:
In this study, we present and discuss the developments in the use of instruments of payments in the Netherlands from 2010 to 2016. During this period, the Dutch retail payments landscape has undergone major changes which have influenced the way consumers and merchants behave. The results come from a longitudinal survey on consumers' payment behaviour carried out yearly since 2010 which gathers payment diary data from 119,117 Dutch consumers aged 12 years and older. The results reveal a gradual substitution of cash by debit card payments between 2010 and 2016. In 2015 Dutch consumers for the first time made more payments with debit cards than with cash.

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1 Introduction

Stakeholders in the payments market have a need to be informed about which payment instruments consumers use at physical points-of-sale (POS) and why. It helps them to monitor the developments in the retail payments market and to identify which factors drive changing payment behaviour. Stakeholders use this information to assess the efficiency and safety of the POS payment system as a whole, and to forecast the future need for electronic payment instruments and cash. The latter element is especially important for central banks, as they issue banknotes and are responsible for the quality of cash circulation. Furthermore, information on the demand for cash is crucial from a monetary policy perspective, notably if interest rates are negative.

During the past decade, the need for information about POS payment behaviour has grown in the Netherlands due to several changes in the Dutch payment landscape. Cash usage by consumers at the point-of-sale declined from 85% of the total number of POS payments in 2002 (Brits and Winder, 2005) to 72% in 2007 (De Nederlandsche Bank, 2009) and 45% in 2016. An important driver for this change comes from the Payment Covenant in 2005 (see box), which resulted in lower merchant fees for debit card transactions and the promotion by merchants of debit card usage. Another fundamental change concerns the harmonisation and integration of national payment markets into a Single Euro Payments Area (SEPA). The aim of SEPA is to enable consumers and businesses to make domestic and cross-border payments using a single set of payment instruments in the European Union under the same conditions as for national payments. SEPA may yield economic benefits, by fostering competition and driving innovation at a European level. Because of the competition with the international debit card schemes in the SEPA context, Dutch banks decided as of 1 January 2012 to replace the Dutch debit card scheme PIN by the European debit card schemes Maestro or V-Pay (Dutch Payments Association, 2017). From a consumer and merchant perspective, the transition was very smooth because most debit

cards were already co-branded with one of these international debit card schemes. The discontinuation of the Dutch e-purse system Chipknip as of 1 January 2015 is another important change. This system was introduced as a substitute for low value cash payments, but had never become popular among consumers. Because of required investments in the payment infrastructure and declining Chipknip usage, scheme owner Currence decided in 2013 to discontinue Chipknip after extensive consultation of stakeholders (Currence, 2016). As an electronic alternative for Chipknip, Dutch banks introduced contactless card and mobile payments.

Box 1 2015 Payment Covenant and additional agreements

In order to promote the use of debit cards and thus reduce costs, banks and retailers agreed on the Payment Covenant in November 2005. Under this agreement banks offer retailers a discount of at least 0.01 euro on their transaction fees for debit card payments. Furthermore, in cooperation with retail organisations, banks set up a foundation for the promotion of efficient payment (Stichting Bevorderen Efficiënt Betalen), which supports projects designed to improve the safety and efficiency of POS payments. On 27 May 2009 banks and retailers signed the Additional Agreement, with new agreements in a European context. This was followed by another Additional Agreement on 3 September 2014 for the period 2014 – 2018 in which they continued their cooperation to promote efficient and safe payment methods. Among others, banks and merchants agreed to take measures to reverse the share of cash and debit card payments on the total number of POS payments from 60%-40% in 2014 to 40%-60% in 2018.

This study by De Nederlandsche Bank (DNB) and the Dutch Payments Association (DPA) discusses the results of a longitudinal survey on consumers' payment behaviour carried out every year in the Netherlands from 2010 to 2016. We collected data on payment transactions using shopping diaries. Our contribution to the literature is fourfold. First, we estimate the use of cash on an ongoing basis, enabling us to track the extent to which cash payments are substituted by card payments. Second, continuous data collection provides us with a unique opportunity to identify seasonal patterns in payment behaviour. Third, we provide information on the differences in cash substitution between industries and consumer segments. Fourth, we track the adoption of a new payment method, i.e. contactless payments, from its introduction in the Dutch payment market among different consumer segments.

The results show a gradual substitution of cash by debit card payments, with the share of cash in the total number of POS payments falling from 65% in 2010, to 45% in 2016. In 2015 Dutch consumers for the first time made more debit card payments than cash payments. There has been a marked increase in debit card use among all consumers, but growth in debit card usage has been strongest among people aged 34 and younger. The early adopters of contactless card payments are men, young adults and highly-educated people. With respect to consumer payment behaviour in different types of shops, we find that consumers have used debit cards more often in all of them, with card usage growing strongest in vending, the catering industry, and do-it-yourself (DIY) and hardware stores.

One of the challenges when monitoring the usage of POS payments concerns accurately measuring cash usage. Unlike electronic payment instruments, cash payments are not centrally registered. Researchers therefore have to rely on surveying consumers. Boeschoten (1992) was the

first to use shopping diaries in which households could register their daily payments. Recently, several researchers have employed diaries, like Bounie and François (2006), Jakobsen and Nielsen (2011), the Payments Council (2011), Deutsche Bundesbank (2015), Henry, Huynh and Shen (2015) and Danmarks Nationalbank (2017). Bagnall, Bounie, Huynh, Kosse, Schmidt, Schuh and Stix (2016) compare cash usage among seven countries and find that although the level of cash usage differs across countries, there are also similarities with respect to the factors influencing consumers' payment choice. Esselink and Hernandez (2017) study cash usage in euro area countries. They find that cash is the dominant instrument of payment at the POS and that there are large differences in cash usage between countries. Cash was used least in the Netherlands, Estonia and Finland, where the cash share in the number of POS payments ranged between 45% and 54%. A recent study by Danmarks Nationalbank (2017) shows that cash usage in Denmark is even lower; Danish households used cash in 23% of POS transactions in 2017.

This study proceeds as follows: Chapter 2 discusses the scope, the research methodology and the samples used, as well as weighting and validation procedures. Chapter 3 describes the main findings. In particular, it presents the use of cash and payment cards by the amount paid, by industry and seasonal patterns. Chapter 4 describes the influence of demographic characteristics on how people pay, the cash by cards substitution and cash holdings, and it pays attention to the adoption of contactless payments. Then, it describes consumers' preferences for cash and card usage in general and in specific situations or locations. Furthermore, it discusses the extent to which consumers experience actual constraints. Chapter 5 summarizes and concludes.

2 Research method and sample

2.1 Research scope and research population

The aim of this study is to analyse the development of the number and value of cash payments made in the Netherlands between 2010 and 2016. In order to bring into focus the role played by cash, we also consider other commonly used POS payment instruments such as prepaid payment cards, debit cards and credit cards. Our study is limited to payments made in the Netherlands by Dutch residents over 12 years of age. The total sample size used between 2010 and 2016 amounts to 119,117 respondents. We exclude transactions made by Dutch consumers abroad, non-Dutch speaking residents, children below the age of 12, tourists and other non-residents.

2.2 Sample

The Survey on Consumers' Payments (SCP) was carried out between 2010 and 2016 by two different research companies. Heliview Research carried out the field work during the first three years of the study. During this period the survey was held in September, a month which we considered as fairly average with respect to POS payments made by consumers. From 2014 onwards the field work has been carried out by market research institute GfK and conducted throughout the whole year. This means that each day of the year, a group of respondents was asked to register and report on their payments in a diary. Respondents can participate a maximum of four times per year, with an "in-between" pause of at least three months. In practice, however, 85% of all participants only participate once a year.

The survey sample is representative for the Dutch population aged 12 years and older based on four demographic aspects: gender, age, ethnicity and education. Other items factored into the sample were region, country of origin and income.

As purchasing and payment behaviour differs from day to day, the assessments were spread evenly over the days of the month. For every day of the week and every week in the month, the number of respondents was sufficiently large and representative in terms of gender, age, ethnicity, education, region, country of origin and income.

Table 1 presents the number of respondents, participating in the survey each year, as well as the total number of collected payment diaries and the total number of recorded transactions. As can be seen, the annual sample

Table 1 Number of survey participants, payment diaries and transactions

Year	Sample size	Payment diaries	Transactions
2010	7,499	7,499	14,447
2011	7,944	7,944	15,416
2012	8,354	8,354	14,521
2013	8,707	8,707	15,350
2014	40,955	50,740	114,892
2015	20,875	29,694	49,262
2016	24,783	29,820	50,452
Total	**119,117**	**142,758**	**274,340**

Note: In 2014 DNB carried out an experiment to investigate panel conditioning effects due to a higher frequency of respondents' participation. For this reason, the number of respondents in the month of March 2014 amounted to 16,652 participants. Additionally, we decided to draw a representative sample of the Dutch population to be surveyed in the month of September in order to compare results from 2014 using two field work methodologies: i) field work concentrated in September (as implemented during 2010-2013) and ii) field work distributed throughout the whole year. The results under the new field work method proved to be successful and did not produce a change in the trend of the number and value of payments. Therefore, we decided to distribute the field work across the whole year for 2015 and 2016.

size varies according to the field work method used each year: i) field work concentrated in September (2010-2013) and ii) field work distributed across the whole year (2014 onwards).

Since 2010, a total of 119,117 respondents have participated in the SCP. During the first four years, the annual sample size ranged from 7,499 to 8,707. With the introduction of a new field work method implemented as of 2014, the sample size increased to more than 20 thousand participants per year. This allowed the use of cash and other payment instruments to be studied, and for the first time provided data from different consumption cycles throughout the year.

Before deciding to implement the new field work method, DNB and the DPA carried out different checks to confirm the suitability of the new method, as well as to identify beforehand potential disruptions in the trend of the number and value of payments. First, an experiment was carried out in order to check for potential panel conditioning effects due to a higher frequency participation of each respondent. Findings show that participants' reporting behaviour does not change when they are approached to participate in the survey up to four times per year, see Hernandez, 't Hoen and Raat (2017). Second, in 2014 we decided to carry out the survey using both field work methods in order to be able to compare results and avoid a break in the trend of the number and value of payments. For these reasons, the sample size for this year grew to 40,955 respondents. The results under the new field work method proved to be successful and did not produce a change in the trend of the number and value of payments when compared with the results from the field work concentrated in September. Therefore, we decided to distribute the field work throughout the entire year for 2015 and 2016.

2.3 Research method

Although the survey was carried out by two different research companies and different field work methods, we used a unique research methodology during the whole study. The survey consisted of two parts: a 1-day shopping diary and a questionnaire. The first gathered information about the characteristics of each payment or cash withdrawal carried out during the diary day. For each payment, respondents had to record the instrument used (cash, pre-paid card, debit card, credit card or other), the place of purchase (16 branches, e.g. a supermarket, street vendor, non-food retail shop, charity), the value of the purchase, and whether they were able to use their preferred payment method. For each cash withdrawal, they had to report the source (ATM, bank counter, other) and the value of the withdrawal. Using a diary helps respondents to register all the purchases they made during a day, also the smaller ones which are usually paid in cash. We chose to let the respondents record their payments in a diary on just one day in order to avoid diary fatigue which especially affects the reporting of small value cash payments, see Schmidt (2011) and Jonker and Kosse (2013). The second part of the survey consisted of a questionnaire gathering information registered in the payment diary, background information on respondents' demographic characteristics as well as questions on issues that may influence their payment behaviour, for example, payment preferences, reasons to use cash or cards, et cetera.

Respondents were asked to register their payments on a predetermined day. It was made clear to respondents that even if they did not make any purchases on the respective day, this was still relevant information. Respondents were therefore asked to complete their diaries even if they made no payments. They were also asked to record the amount of money that they had on them at the start of the day, how much money they had withdrawn, and/or received during the day, and how much money

they had left at the end of the day. The information was used to check whether the respondents did not forget to report any cash payments in the questionnaire.

2.4 Recruitment of respondents and data collection

A combination of online and telephone-based methods were used for recruiting survey participants and for collecting the answers to the questionnaire. As internet penetration is very high in the Netherlands[1], the main interview mode was online. As a result, an average of 97% of all interviews were carried out online, the rest were carried out by telephone. By using different recruitment and interview modes, the final sample provided a good representation of the different ways in which Dutch consumers pay. The telephone sample mainly comprised participants in the older age cohorts, e.g.: 90% are 55 years old or older. In contrast, the online sample is not concentrated in a specific age group. In line with expectations, respondents with internet access report a lower number of cash payments than similar respondents who do not have access or decided to be interviewed by phone.

To ensure the representativeness of the findings per day of the week, Heliview and GfK drew a monthly sample of its panel and evenly distributed it over the days in the month. Days to be registered in the survey were randomly selected. In this way, the representativeness of the sample on a daily basis was guaranteed. Respondents can participate a maximum of four times per year, with an 'in-between' pause of at least three months.

1 According to Statistics Netherlands (CBS), only 3% of the population does not have access to the internet.

According to Hernandez et al. (2017), the reporting behaviour of diary survey participants does not change when they are interviewed up to four times per year.

2.4.1 Online interview mode

The online process from sending the invitations to participate in the survey to sending reminders to non-respondents was managed by the research consultancies Heliview and GfK, which used similar field work processes[2]. Invitations to register to participate in the study were sent one week before the actual diary survey took place. This included the diary as an attachment to the email invitation which the participants were encouraged to print. The following process consisted of three key days: Day 1, one day before the diary survey, registered participants were reminded to keep a diary of all their purchases for the following day; the diary was again attached to this email. Day 2, one day after the actual diary survey took place, participants received an email with a link to the questionnaire. Day 3, participants who failed to fill in the diary survey were reminded to do so. They had the chance to again confirm if they wished to continue participating in the survey. Those who did not complete the diary given that they did not carry out any purchases, were invited to answer the questionnaire nevertheless.

2 Jonker, Kosse and Hernandez (2012) provide a detailed description of the recruitment of respondents and the data collection method used by Heliview in the period 2010 - 2012.

2.4.2 Telephone interview mode

Heliview and GfK have a group of panellists without access to the internet who can be reached via the post and / or telephone communication. Every week, the research companies drew a sample of these panellists to be contacted by phone. Once respondents agreed to participate, a confirmation letter, including a printed diary book, was sent by written mail. Furthermore, participants had the option to choose the day they preferred to participate in the diary survey. In order to ensure representativeness by day of the week, only a limited number of respondents could choose a day of the week to report on.

2.5 Weighting and validation

Because the sample is not perfectly representative, as is the case in many surveys, sample weights were needed to correct differences with the research population. The key variables used for the post-stratification adjustment were gender, age, education, ethnicity, day of the week and month. In addition, a second weighting phase was considered in order to adjust the results by the actual number and value of debit card payments as reported in statistics from the Dutch Payment Association.

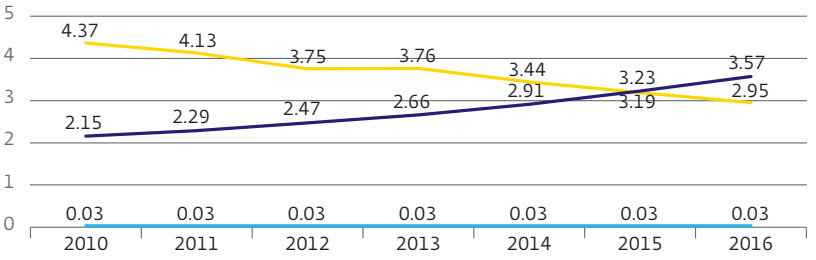
3 Cash and card payments, 2010-2016

3.1 Cash and card usage at the POS

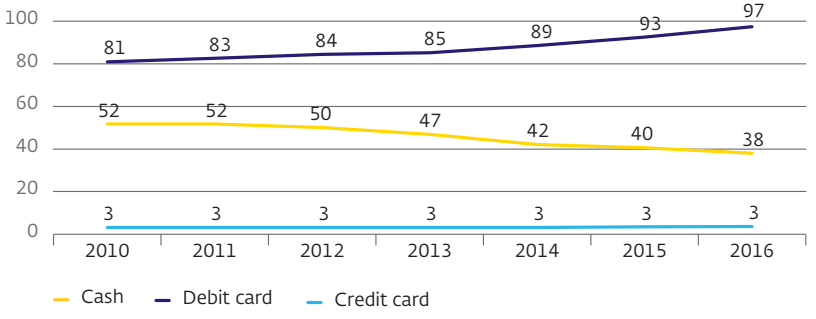
Dutch consumers have changed the way they pay, turning the debit card into the most frequently used instrument of payment. As the use of debit cards among consumers increased by on average 9% each year since 2010, the substitution of cash by cards reached a turning point in 2015 (see Chart 1a and 1b). In this year, Dutch consumers made for the first time more debit card payments than payments using cash. By then, contactless payment cards were accepted by merchants and used by consumers after their introduction in 2014 following the discontinuation of the Chipknip prepaid card.

Chart 1 Total of payments

a. Total number of payments in billions



b. Total value of payments in EUR billions



Between 2010 and 2016, the total number of cash payments decreased by one-third, from 4.37 billion transactions to 2.95 billion, while the total value of cash payments decreased by 27% from EUR 52 billion in 2010 to EUR 38 billion in 2016. Cash is primarily used for minor purchases as it was in 2010. However, the smallest purchases are no longer exclusively paid for by using cash. With the increased usage of debit card payments and the introduction of contactless cards, the average value of a cash transaction has increased by more than one euro, from EUR 11.80 to EUR 12.85.

The number of debit card payments has increased by almost one-third, from 2.15 billion transactions in 2010 to 3.57 billion in 2016. The total value has increased by 20% from EUR 81 billion in 2010 to EUR 97 billion in 2016. The trend of consumers often paying for smaller purchases with their debit card still continues. The average transaction value has decreased by 27%, from EUR 37.56 in 2010 to EUR 27.25 in 2016.

The credit card continues to be the least popular instrument of payment in the Netherlands. Little has changed since 2010. In terms of numbers, the number of credit card payments has remained stable at around 30 million transactions. The value, however, has increased by 12%, from EUR 3 billion to EUR 3.4 billion.

As shown in Charts 1a and 1b, the substitution of cash by cards seems to have slowed down during 2012 and 2013. Between these years, the number of cash payments remained at 3.8 billion transactions. This could be due to the financial crisis, which had the most severe impact on households in 2013. Especially low-income households faced declining purchasing power compared to previous years, according to a joint study by Statistics Netherlands and the Netherlands Institute for Social Research (2014).

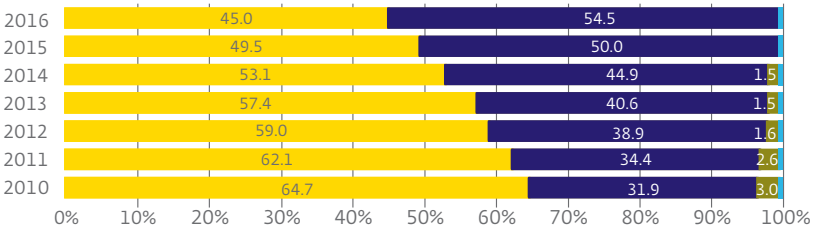
Household income largely determines POS payment preferences of consumers; low-income individuals prefer to pay for their purchases using cash, whereas high-income individuals favour debit card payments (see e.g. Bagnall et al. 2016; Hernandez, Jonker and Kosse, 2017).

Debit card payments in the Netherlands have become the prevalent instrument of payment at the POS over the last six years (see Charts 2a and 2b). Between 2010 and 2016, the proportion of POS payments accounted for by cash payments fell by 19.7 percentage points from 64.7% to 45.0%, whereas debit card payments increased by 22.6 percentage points from 31.9% to 54.5%.

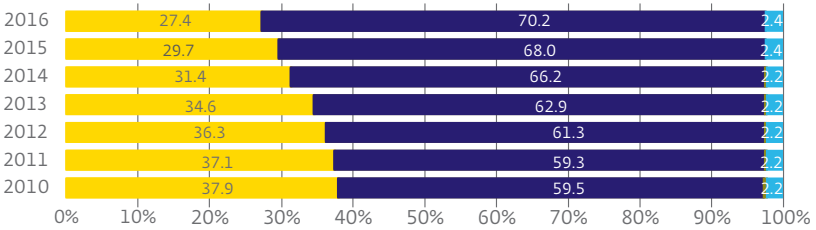
Looking at the trend in cash payments as a percentage of the total value of all POS payments, the decline is large, however less sharp than for the number of payments, i.e. a decline of 10.5 percentage points from 37.9% in 2010 to 27.4%. The growth in the proportion of debit card payments is comparable, from 59.5% in 2010 to 70.2% in 2016. In the last six years, Dutch consumers have not only continued using their debit cards more frequently to pay for relatively small amounts, but also started using them for the smallest amounts up to EUR 5, which are often the most frequent daily purchases i.e. for a coffee or sandwich at a convenience store. This was possible with the introduction of contactless payments in 2014, allowing consumers to make payments by briefly holding their debit card or smartphone against a POS terminal. Consumers do not need to enter a PIN code when using their contactless cards for amounts of up to EUR 25, which makes it a very fast and convenient payment method for small purchases.

Chart 2 Relative use of payment instruments

a. Total number



b. Total value



After the first year of the introduction of contactless cards, the total number of contactless payments increased by more than sixteen times, from 8 million transactions in 2014 to 135 million transactions in 2015. Between 2015 and 2016 the number of contactless payments almost quintupled to 630 million. One third of all contactless payments in 2016 were for amounts less than EUR 5.

3.2 Use of cash and cards by the amount paid

Although on average the proportion of POS payments with debit cards increased, the rise in debit card usage varies by transaction amount. Chart 3 shows that the share of debit card payments has increased for all ranges of transaction values in the last six years. However, the substitution of cash by debit card has been highest for low value payments up to EUR 10. In 2010, consumers settled most of their purchases of up to EUR 10 using cash. In 2016, they mainly used cash for their purchases up to EUR 5; for purchases between EUR 5 and EUR 10 they used cash almost as often as the debit card and for purchases above EUR 10 they preferred to use the debit card.

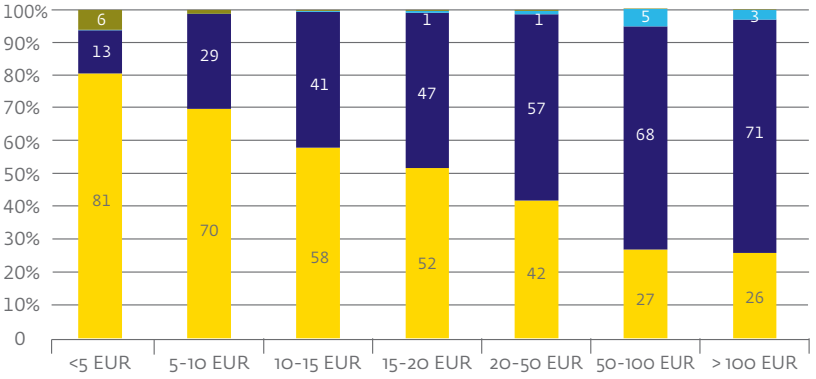
3.3 Use of cash and debit card by market segment

Consumers taking part in the study also specified the market segments in which they spent their money. Chart 4 shows the breakdown of all payment instruments in the retail and non-retail sectors. 64% of all POS payments in terms of numbers occur in the retail sector[3], comprising market segments such as supermarkets, grocery stores and department stores. 36% of all POS payments occur in the non-retail sector, comprising market segments such as catering, service providers, vending machines and petrol stations.

3 This study considers a wide range of segments of the retail and non-retail market sectors operating at the POS only. We have grouped them into 16 categories with the purpose of making the survey as understandable as possible for respondents. However, it should be borne in mind that some segments have been grouped in the 'other' category due to their limited size.

Chart 3 Relative use of payment instruments, by amount

Percentages 2010



Percentages 2016

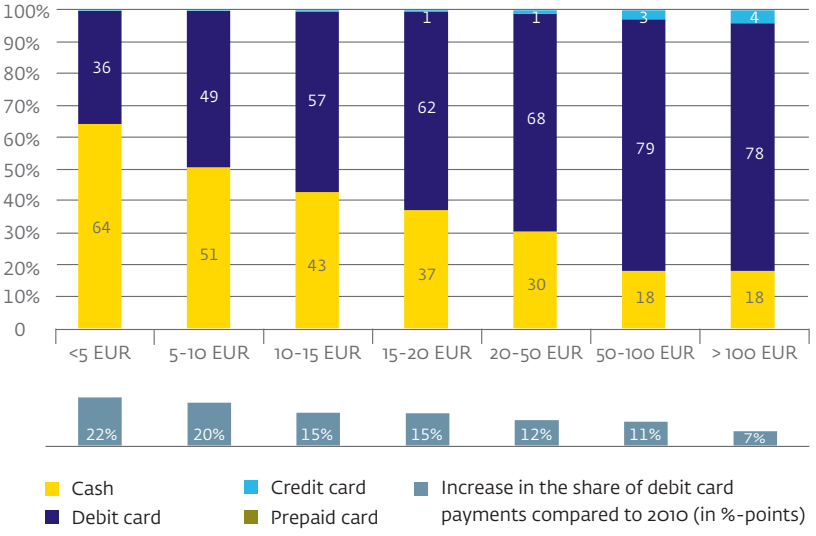
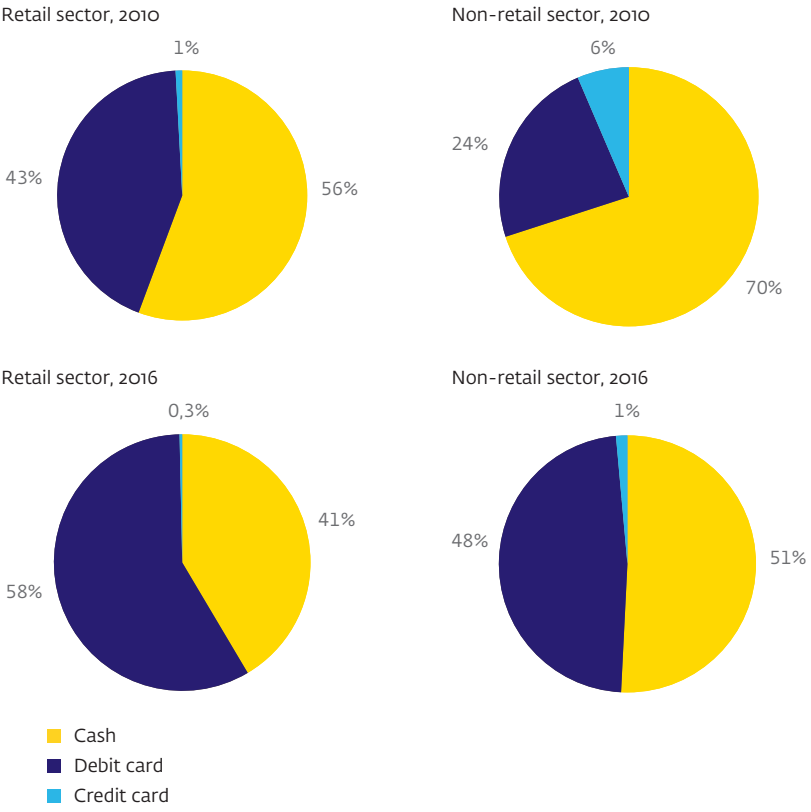


Chart 4 Share in numbers cash and card usage, by sector, 2010 and 2016



Given its size, developments in the retail sector have a strong impact on the share of cash and cards in all POS payments. By 2010, the total share of debit card payments in this sector accounted for 43% of all payments. By then, a number of policies had already been implemented by banks and retailer organisations with the objective of increasing card acceptance among merchants as well as card usage among consumers for efficiency and safety reasons. These included launching a long-term public campaign in 2007 to encourage consumers to pay with debit card rather than with cash, also for small amounts, see also Jonker, Plooij and Verburg (2017). Since 2010, the share of debit card payments in this sector increased on average by 2.5 percentage points per year. In 2016, debit card payments reached a 58% share of all payments carried out in the retail sector. On the other hand, the share of cash payments fell from 56% in 2010, to 41% in 2016.

Although the non-retail sector at the POS is proportionally smaller than the retail sector, it has played an important role in the ongoing substitution of cash by cards. The share of debit card payments in the non-retail sector has increased faster than in the retail sector, on average 4 percentage points a year, rising from 24% of all transactions in 2010 to 48% in 2016. The share of cash payments declined by 19 percentage points from 70% of all payments in 2010, to 51% in 2016.

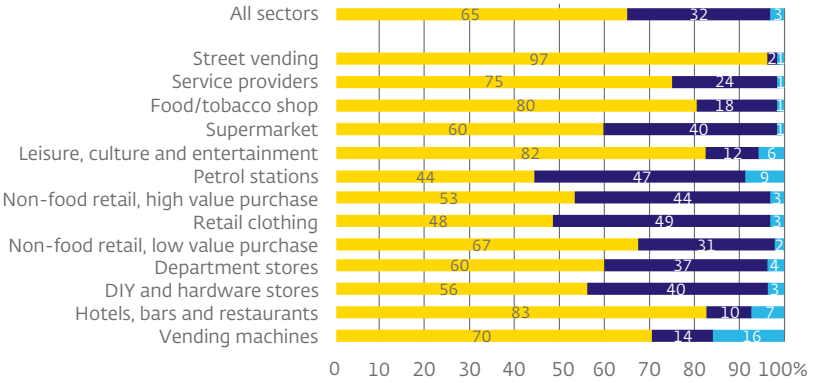
Charts 5a and 5b show the relative use made of cash and debit cards by market segment in terms of numbers of payments in 2010 and 2016, as well as the growth in debit card usage within a sector.

Note that the Dutch have made the greatest number of debit card payments in supermarkets, which account for one-third of all POS purchases. In 2016 consumers settled 42% of their grocery purchases using cash and 58% using the debit card. Cash usage was relatively high in street vending (86%), the recreation and cultural sector (64%), food, tobacco and liquor stores (63%) and service providers, whereas debit cards were the dominant means of payment in segments like retail clothing (75%), petrol stations (72%) and DIY and hardware stores (70%).

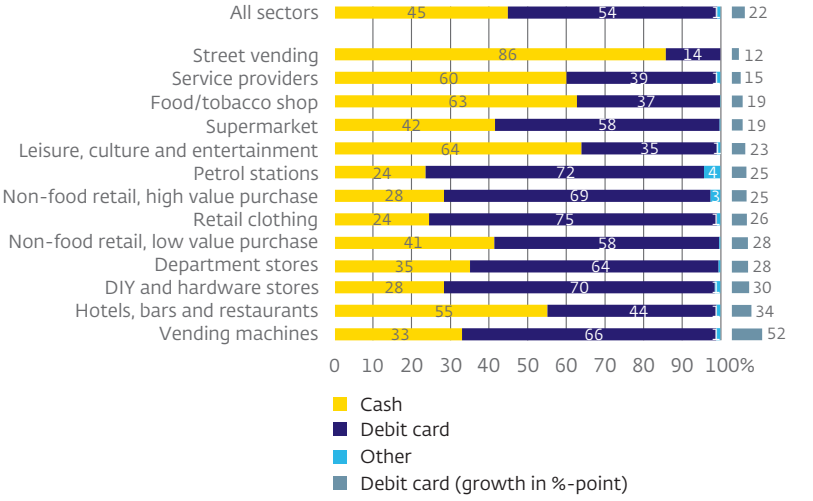
Between 2010 and 2016 the share of debit card payments increased most in market segments such as vending machines, hotels, bars and restaurants and DIY and hardware stores. The first two segments belong to the non-retail sector and have traditionally been known as cash-intensive market segments. However, changes in payment infrastructure, increased cost efficiency for merchants (Panteia, 2013), modification of vending machines to accept debit cards, as well as the introduction of contactless payments have resulted in wider acceptance of debit card payments, increased card usage and, consequently, a higher share of debit cards as compared to cash.

Chart 5 Relative use of payment instruments by market segment

Percentages 2010



Percentages 2016



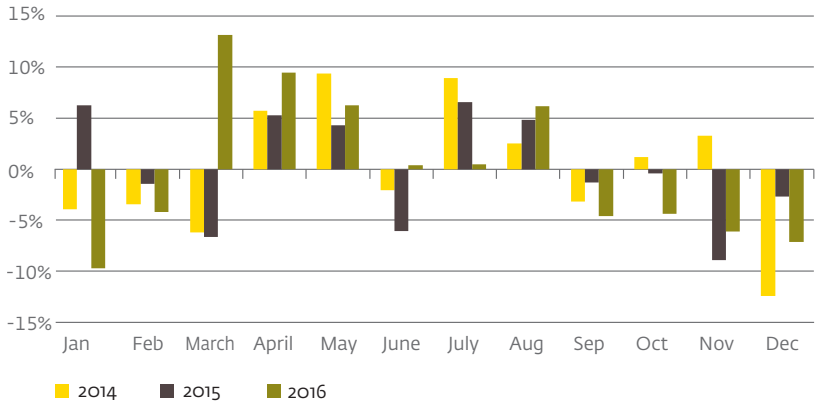
3.5 Seasonality

From 2014, we have collected payment diary data on all days of the year, enabling us to examine seasonal patterns in payment instrument usage. Consumers' payment behaviour is affected throughout the year by many factors such as holidays, weather, holiday bonuses and 13th -month pay packages. Charts 6a and 6b show seasonal patterns in cash and debit card usage. They depict the relative deviation in the number of cash and debit card payments respectively, compared to the annual average.

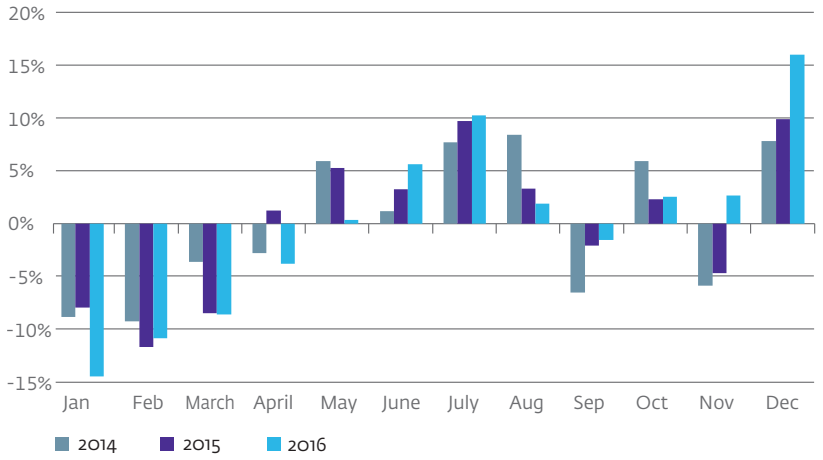
In the period 2014 – 2016 consumers' usage of debit cards peaked in the festive month of December, but the opposite held for cash usage. During the first months of the year, consumers made relatively few (cash and) card payments, probably in order to compensate for the expensive December month, and due to the low number of purchasing days in February. They make relatively many cash and debit card payments in May, when they have just received their holiday bonus, and during the summer holiday season.

Chart 6 Relative deviation of monthly payments compared to the annual average, 2014-2016

a. cash payments



b. debit card payments

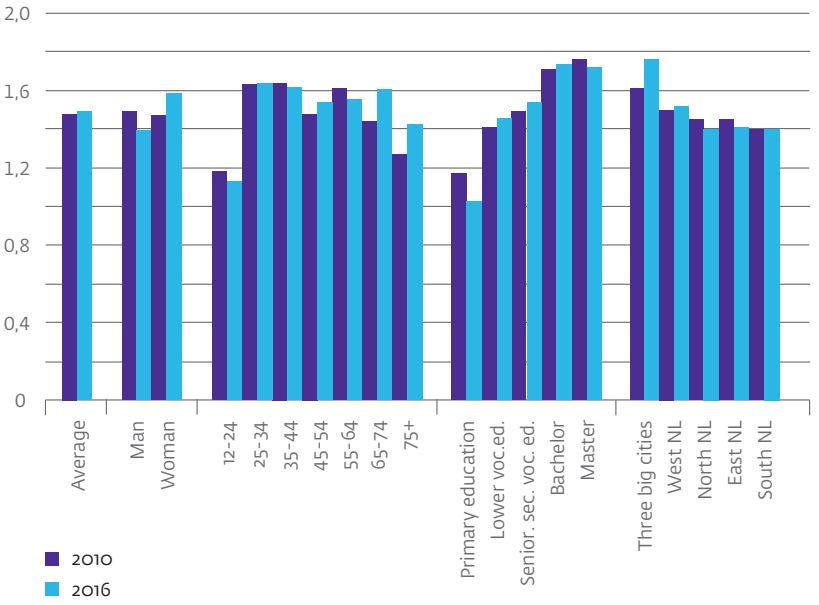


4 Who pays how?

4.1 Number of daily POS payments

In 2016, the Dutch made on average about 1.5 payments at points-of-sale per person per day, corresponding to about 10 POS payments a week. The number of POS payments have hardly changed over time (see Chart 7). The total number of POS payments differs by gender, age, education but also by region of residence. As Chart 7 shows, in 2016 women made more purchases than men (1.6 purchases as opposed to 1.4 purchases per day,

Chart 7 Average number of POS payments per person per day, 2010-2016



Note: figures are standardised according to the relative use of contactless payments as part of the total number of retail purchases made by the average Dutch consumer

respectively). People aged between 25 and 45, and newly-retired people (65-74 years) make most purchases, i.e. about 1.6 payments a day, whereas teenagers and young adults (12-24 years) make fewest purchases, i.e. fewer than 1.2 payments a day. Educational level also matters: the higher people's educational level, the more POS payments they make. This probably stems from the positive correlation between education and income. The region of residence also appears to influence consumers' purchasing behaviour: people living in the three largest cities in the Netherlands made more payments a day compared to the rest of the population.

Overall, the number of POS payments made per day has remained fairly stable between 2010 and 2016. However, there are some exceptions. Women make more payments than in 2010, while men make fewer. Furthermore, elderly people (65+) make more payments in 2016 than six years ago, whereas the number of POS payments made by people in other age categories has remained stable. We also see that people with the lowest educational level (primary education) make fewer payments than in 2010, and that the number of payments made by people living in one of the three major cities has increased from 1.6 to 1.8 purchases per day.

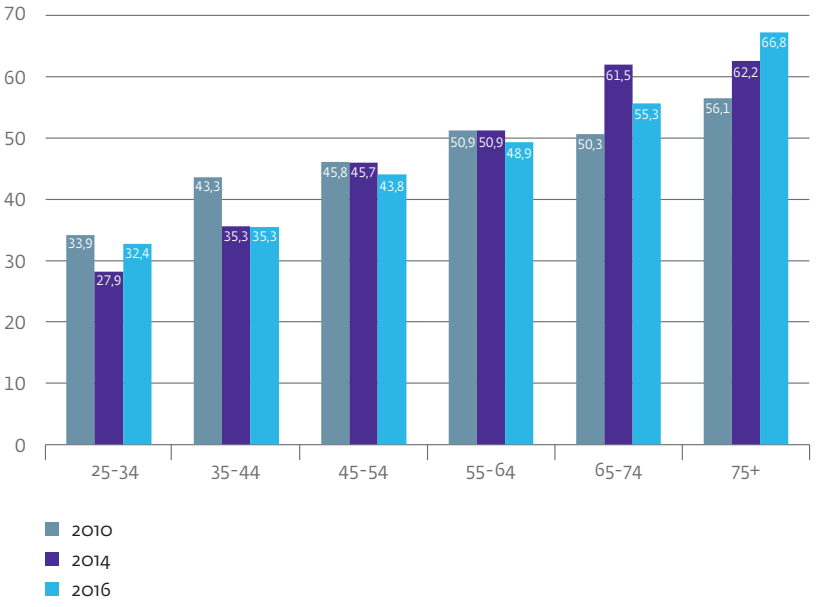
4.2 Cash holdings

In 2016, Dutch consumers on average carried EUR 40.59. In 2010 and 2014 the average amount of cash in the wallet also hovered around EUR 40. So, despite the declining usage of cash by the Dutch, the amount of cash in their wallets has remained fairly stable. However, we see a modest increase in the share of people who do not carry any cash on them. In 2016, 9% of all consumers did not carry any cash with them, while in 2014 this share was 8% and in 2010 it was 7.5%.

The amount of cash that consumers carry increases with age (see Chart 8). In 2016, people over 75 carried an average of EUR 66.82 in cash with them, while people aged 25-34 had around EUR 32.43 with them. With the exception of people older than 75, the amounts of cash carried have declined in the past few years for most age groups over 35.

Chart 8 Cash in wallet, 2010-2016

in euro's



4.3 Relative usage of cash and cards at the POS

The increased use of debit cards in 2016 compared to 2010 is evident in all demographics groups. On average, in 2016 Dutch consumers paid 55% of their payments with debit cards, but this does not apply to all demographic groups. Of all the groups, consumers between the ages of 25-34 made relatively least cash payments (33% of all their POS purchases) and relatively most debit card payments (66%).[4] Children aged 12-18, people over 65 and people with a lower educational level use cash the most, i.e. in two-thirds of their POS purchases.[5]

Compared to 2010, debit card use has increased the most among young people aged 12-34, from 29% of their POS payments to 56% (people aged 12-24) and from 39% to 66% (people aged 25-34). The largest increase in debit card usage is among college graduates, from 35% to 64% of their POS payments. Gender appears to have virtually no influence on changes in payment behaviour. Men made 55% of all their POS payments with debit cards and women 54% in 2016, while in 2010 men used the debit card in 34% of their purchases and women 32%.

4 In 2010 we could not yet distinguish between youths aged 12-18 and young adults aged 19–24. For reasons of comparability we show the payment behaviour of youth and young adults together in Chart 9. However, please note that in 2016, young adults made relatively many debit card payments, i.e. 68% of their POS payments was settled using the debit card.

5 In 2016, children (12-18 years old) made relatively many cash payments, i.e. 61% of all their POS payments

Chart 9 Usage of POS payment instruments, by demograhpic characteristics, 2010 – 2016

a. 2010, in percentage

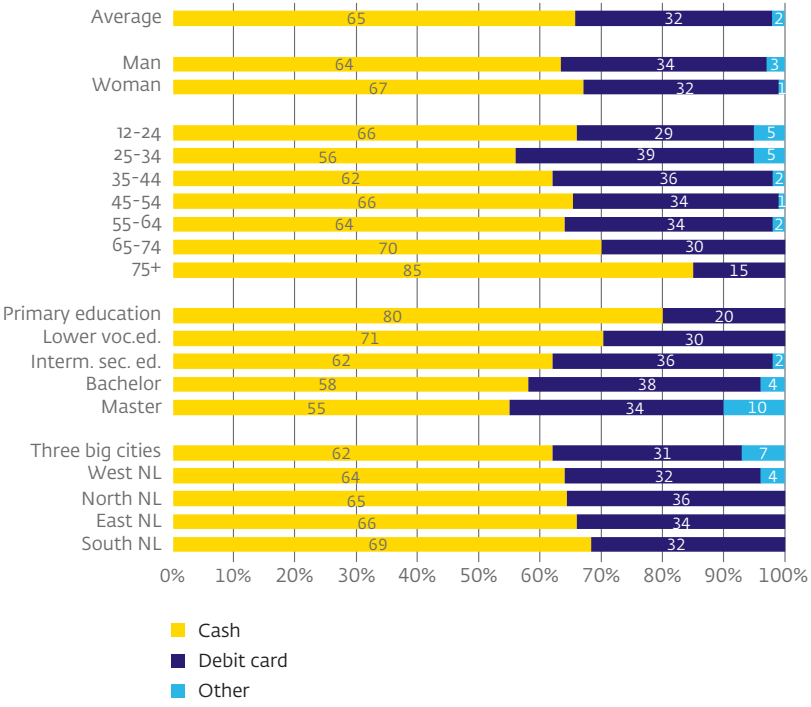
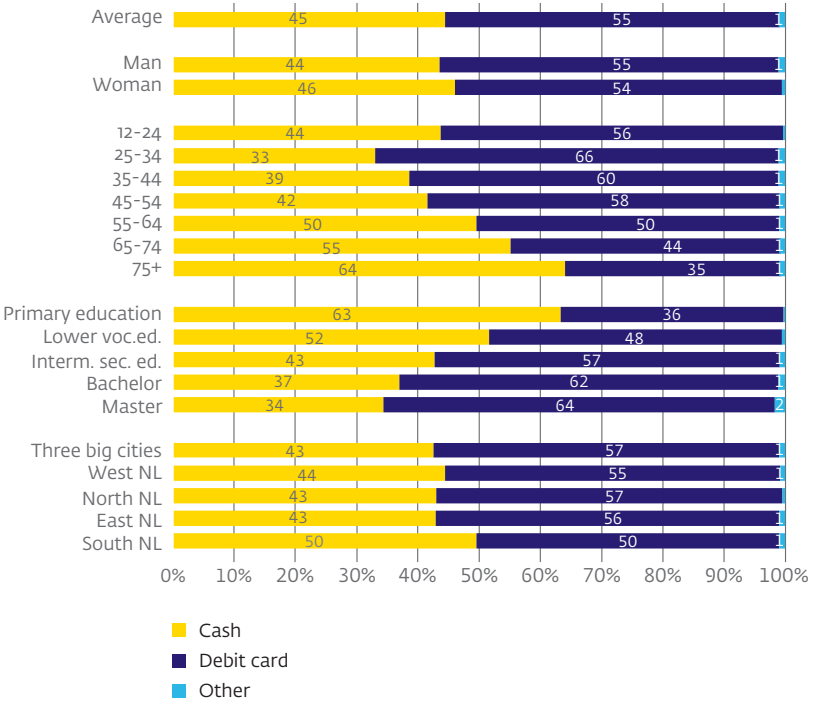


Chart 9 Usage of POS payment instruments, by demograhpic characteristics, 2010 – 2016

b. 2016, in percentage



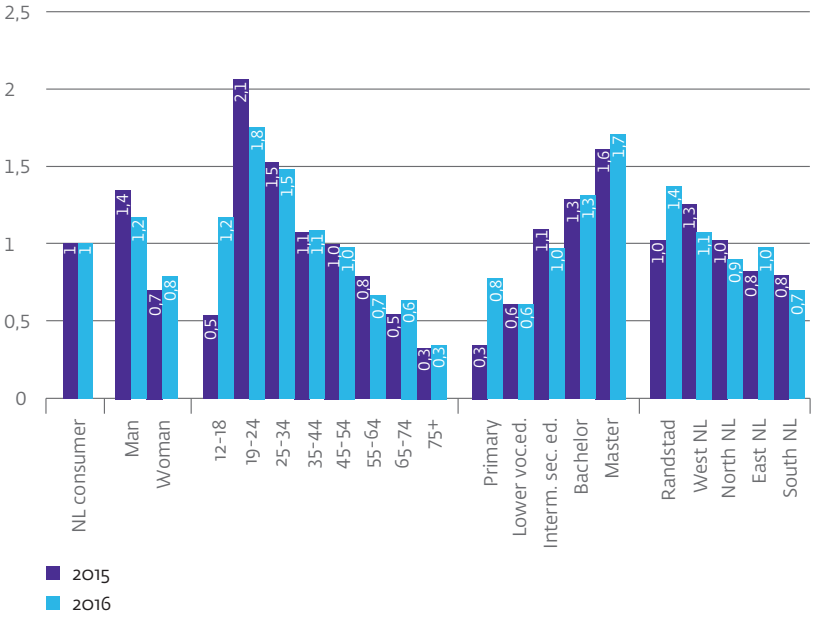
4.4 Who uses contactless payment instruments?

In 2014 contactless payments were introduced in the Netherlands. In that year, the use of contactless payments was still limited, at 8 million payments. In 2015 consumers made a total of almost 135 million contactless payments. There was a strong increase in the number of payments in 2016, to approximately 630 million. Chart 10 provides an indication of the adoption of contactless payments by consumers over time. It depicts how intensively certain demographic groups make use of contactless payments compared to the average consumer. The figures in the chart represent the extent to which consumer segments make more or less use of contactless payments compared to the average Dutch consumer, which is represented by 1.

With respect to the adoption of contactless payments we see a pattern which is quite common for early adopters of innovations. The adoption depends on gender, age, educational level and place of residence. In 2016 men made relatively many contactless payments, almost 20% more than the average consumer, while women made relatively few contactless payments, about 20% less than the average consumer. Also, young adults, aged 19-24, made relatively many contactless payments compared to the average consumer (+80%), as well as the college educated (+70%) and people living in one of the three largest cities in the West (+40%). Children (-50%), people over the age of 65 (-40% or more) made relatively few contactless payments.

In general, the differences in the adoption of contactless payments between demographic groups shrank between 2015 and 2016. In 2016, the share of contactless payments in total POS payments by men was 1.5 times that by women, whereas it was twice this share in 2015. People with only primary education are also clearly catching up, from -70% to -20% of the average consumer. Also in other demographic groups the differences in contactless payment usage are narrowing. However, among the cohort aged over 75, the use of contactless payments remains relatively low.

Chart 10 Relative use of contactless payment by gender, age, educational level and region



Note: figures are standardised according to the relative use of contactless payments as part of the total number of retail purchases made by the average Dutch consumer.

At the regional level there are some shifts, indicating that regional differences in the use of contactless payments have risen. In 2016, the use of contactless payments was relatively high in the three largest cities in the west of the Netherlands (+40%), while it was average in 2015. Residents living in the east of the Netherlands made relatively little use of contactless payments in 2015 (-20%), but in 2016 they made almost as much use of contactless payments as the average Dutch consumer. This is not the case for people in the west (the three largest cities excluded), north and south

of the Netherlands. In the latter two regions, consumers on average made fewer contactless payments than the average Dutch consumer in 2015, and this difference increased between 2015 and 2016.

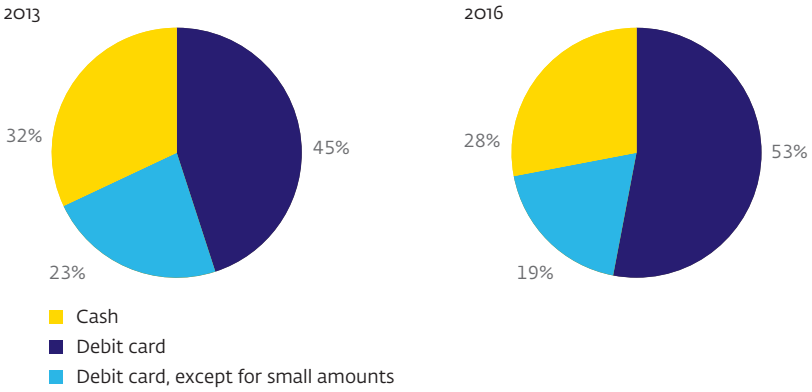
4.5 General payment preferences

Respondents were asked in 2013 and in 2016 which means of payment they prefer to use at the POS: cash or debit card. Chart 11 shows that in 2016 most Dutch consumers (72%) prefer using their debit card for payments at the point of sale, with 53% favouring debit cards for all payments and 19% only for the 'larger' payments (over EUR 5). The general preference for debit card has grown in the last three years with 8 percentage points. This is partially at the expense of a preference for cash, which has dropped from 32% in 2013 to 28% in 2016.

Although there has been a shift in the preferred way of paying from cash to debit card, the reasons for the preference are generally the same. The most frequently cited reasons for the preference of debit card are speed (73%), always having enough money at hand (71%) and it being a habit (70%). Cash is still most preferred because of budget reasons; seeing what is still left in the wallet (and what is not) helps people keeping track of their spending (82%). Other frequently mentioned reasons for preferring cash are that it is a habit (68%) and that the payment feels 'more real' with cash than with debit card.

One fifth of the Dutch consumers have a general preference for debit card, but prefer to pay small amounts (up to 5 euro) using cash. Like in 2013, the main reason for this difference in preference is the idea that using a debit card is too much effort for small amounts. Paying cash feels easier and faster (71%). For other people, it is a good way to get rid of their small change (64%). Compared to 2013 fewer people give as reason that they think the debit card is inconvenient for the retailer (25% in 2013 vs. 21% in 2016). This might be the

Chart 11 Payment preference, 2013 vs 2016



result of the public campaign 'Klein bedrag, pinnen mag' (best translated as: Small amount, please use your debit card), aimed at letting people know that most retailers prefer debit cards for all amounts, including small amounts.

4.6 Payment preference versus use

Consumer preference for payment methods is often not in line with actual use of payment methods at the point of sale. For example, consumers who expressed a general preference for debit cards still made 28% of their purchases in cash in 2016. The reverse is also true; those with a general preference for cash paid for 22% of their purchases with debit cards. 121 research (2010) shows that actual payment behaviour of the Dutch is determined not only by preference, but also by situations, locations and constraints. This explains part of the difference in actual debit card usage and the preference to pay by debit card, with people using cash more often than they actually think. In addition, according to Cruijsen, Hernandez and Jonker (2017) the way people pay is for a large part based on habits, which are also determined by circumstances.

As shown in Chart 12 the gap between preference and use has become smaller in the last three years. The share of debit card payments of all POS payments made by people who prefer debit cards increased by 11 percentage points, from 61% in 2013 to 72% in 2016. Remarkably, people with a preference for cash also paid a larger part of their transactions with debit card, although this increase is limited.

4.6.1 Payment use in different situations

When consumers were asked how they would pay in various situations, it appears that their preferences depend to some extent on the circumstances, see Chart 13. For example, if there is a long queue at the point of sale, or when people want to keep track of their purchases most of them prefer to pay by debit card. However, if consumers have large amounts of cash on them or are required to split the bill with other people, over half would choose to pay by cash.

Chart 12 Preferred vs used payment instrument, 2013 vs 2016

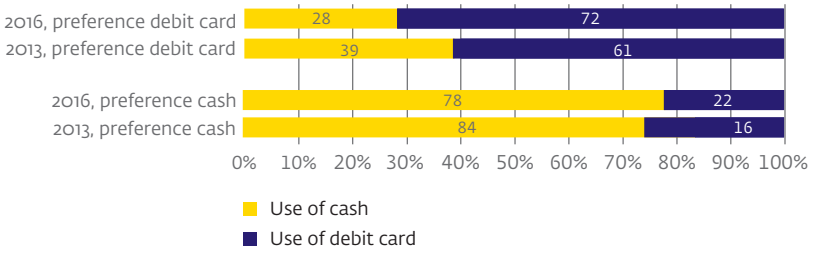
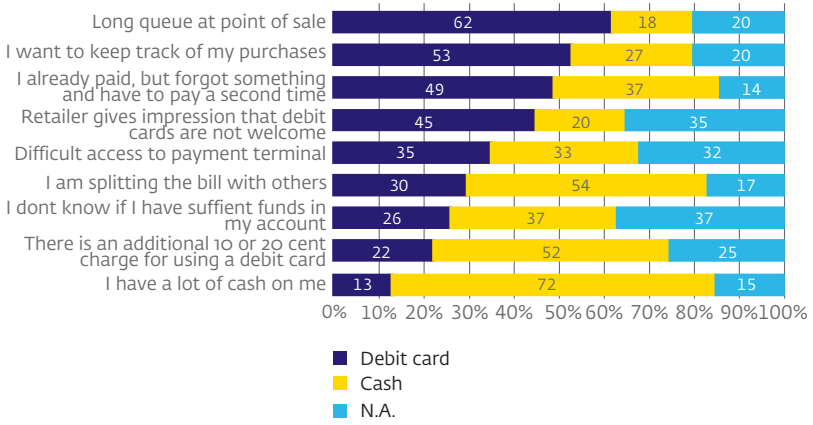


Chart 13 Payment use in different situations, 2016

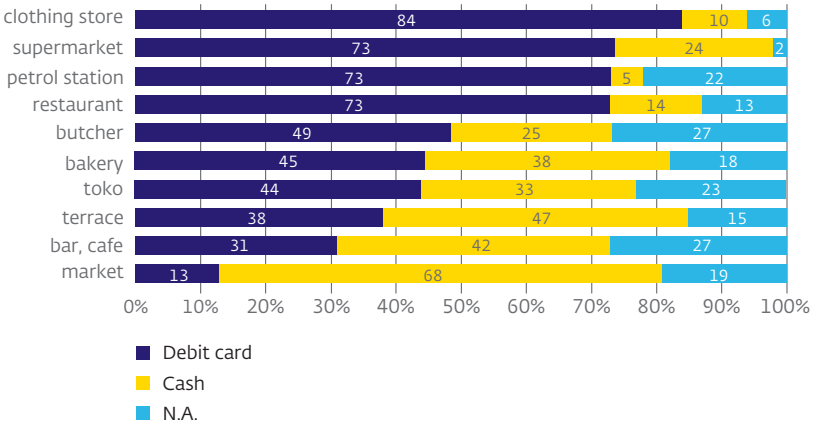


Most situations have become less of an influence in the last three years. For instance, compared to 2016, more people would pay with cash in 2013 when they forgot something and had to pay a second time (+9 percentage points), when they had to pay 10 or 20 cent extra for using a debit card (+8 percentage points) or when splitting a bill with others (+7 percentage points).

4.6.2 Payment use at different locations

The use of payments methods does not only depend on the situation, the location of the payment also matters. As shown in Chart 14, consumers are more inclined to pay with debit card at the supermarket than at the butchers or the bakery. And they are more likely to pay with cash at the market or the bar. Although these differences are still considerable, they have decreased in the last three years. The share of debit cards especially increased at the terrace (+12 percentage points), the bakery (+11 percentage points), the bars (+11 percentage points), the butcher (+9 percentage points) and the toko (+8 percentage points).

Chart 14 Payment use in different locations, 2016



4.6.3 Constraints for paying the preferred way

In some cases people experience actual constraints in how they want to pay at the point of sale. The number of transactions paid for differently to the preferred way decreased in the last few years. In 2010, 2.7% of all cash transactions would have been paid with debit card if that was possible, versus 1.6% in 2016. The reasons most often mentioned by consumers for not paying cash when they wanted to are the fact that they didn't have enough cash at hand or a lack of acceptance at the specific point of sale. With debit cards the number of constraints experienced dropped even more, from 2.1% in 2010 to 1% in 2016. It is likely that increased debit card acceptance by retailers and less failures in the debit card payment chain resulted in fewer people being hindered to pay with the debit card (NFPS, 2017; Dutch Payments Association, 2016).

Between 2010 and 2016 consumers' payment behaviour at the point-of-sale has undergone large changes in the Netherlands, with the debit card gradually taking over the role of cash as dominant means of payment. In this study, we present and discuss the outcomes of a longitudinal survey on consumers' payment behaviour carried out during the period 2010 to 2016. We have collected data among Dutch consumers aged 12 years and older using single day payment diaries.

The results reveal a gradual substitution of cash by debit card payments, with 2015 being the year in which the number of debit card payments exceeded the number of cash payments for the first time. In 2010, 65% of the POS payments were effected using cash and 32% using the debit card. In contrast, in 2016 consumers paid for 45% of their purchases using cash and 55% using their debit card. In terms of value, cash and the debit card represent 27% and 70% respectively of the value of all POS payments.

Collecting payment data 365 days of the year allows us to examine seasonal patterns in cash and card usage. Debit card usage peaks in December, but the opposite holds for cash usage. During the first months of the year, consumers make relatively few (cash and) card payments, maybe in order to compensate for the expensive December month. They make relatively many cash and debit card payments in May and during the summer holiday season.

In 2016 debit card usage was highest among people aged between 19-34 years old and among people with a college education, whereas people with at most primary education or aged 75 or older were among the most intensive cash users. The growth in debit card usage has been widespread. It was highest among people aged 34 and younger, but also card usage by the elderly grew considerably, being twice as high in 2016 than in 2010. In 2014 contactless payments were introduced in the Netherlands.

Men, young adults and highly-educated people were among its early adopters. However, the differences in usage between consumer segments is narrowing down rapidly.

Regarding payment behaviour in different sectors, we find that consumers have used debit cards more often in all of them, with growth in card usage being strongest in vending machines, the catering industry, and in DIY and hardware stores.

Given the ongoing substitution of cash by debit cards, fuelled by increased debit card acceptance, the successful adoption of contactless payments in 2014 and recent innovations such as payment apps, we expect that the usage of debit cards and other electronic means of payments will continue to rise and substitute cash payments in the next decade.

5 Concluding remarks

The continuing substitution of cash by debit cards has several advantages for society. It is conducive to the safety in retail trade as retailers will have less cash on their premises, making them a less attractive target for criminals. In addition, it stimulates the cost efficiency in the POS payment systems as debit card payments are usually less costly for retailers and banks than cash payments. However, it is also important from both an accessibility as well as a financial stability point of view that it should remain possible for consumers to pay for their purchases at the POS using cash. Some consumers have a clear preference for cash, as they do not have access to a debit card, like children, or experience difficulties in using it. This holds in particular for vulnerable consumer segments such as the visually impaired and people who choose to use cash to control their spending. Moreover, the resilience of the POS payment system is best served if cash remains available as a reliable alternative next to the electronic payment system in case of technical failures.

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