

The use of cash and cashless payment instruments: a microeconomic analysis

Various payment instruments are available to consumers to pay for goods and services. They can choose between cash and cashless payment instruments. The Bundesbank regularly conducts surveys on this topic in order to obtain more detailed information about consumers' payment habits. In this issue of the Monthly Report, the results of a recently completed study are presented and compared with those of a similar study from 2008.

The current study concludes that individuals use cash for 53% of total expenditures – excluding regularly recurring payments such as rent. This makes it still the most-used payment instrument in Germany, despite a nearly 5 percentage-point decline in usage compared with 2008. Debit cards (in Germany principally the girocard, formerly known as the "ec-card") are used in 28% of payments, making them the premier cashless payment instrument; their share has gone up by nearly 3 percentage points. They are followed at some distance by credit transfers and credit cards.

In principle, the significance of cashless payment instruments has risen in recent years, whereas the intensity of cash usage has declined. However, this is a slow but continuous process which has already been evident for some years. In the short to medium term, a continued substitution of cash by cashless payment instruments may therefore be expected.

The increase in online shopping is likewise having an impact on payment habits. The use of cashless payment instruments is now virtually unavoidable in order to purchase products online which used to be purchased in traditional retail outlets and paid for in cash. Internet payment instruments are the beneficiaries. In addition, payment innovations – especially contactless payment instruments using payment cards or mobile phones – could accelerate the substitution of cash.

■ Issue to be discussed

The payment behaviour of consumers is the result of a multitude of individual microeconomic decisions, which are dependent on both the range of payment instruments available as well as on the socio-economic and socio-demographic characteristics of the payer. Generally speaking, the payer has a choice between cash and various cashless payment instruments, especially debit and credit cards.

In order to gain a better understanding of why consumers choose certain payment instruments when paying for goods, the Bundesbank commissioned an empirical study to be carried out in the autumn of 2011 in which more than 2,000 individuals were asked to keep a payments diary for a period of seven days. This was supplemented by individual interviews during which the respondents were asked questions about their payment habits.

A similar study was conducted by the Bundesbank in 2008,¹ which consequently allows comparisons to be drawn as to how the use of cash and cashless payment instruments has evolved over time. Cash was the most commonly used method of payment back in 2008, although debit and credit cards were also used on a considerable scale. This article focuses on whether and how the results have changed since the previous study was conducted.

■ Familiarity with and possession of payment instruments

Consumers generally have the choice between various payment instruments when paying for goods and services. As in 2008, the 2011 survey started off by ascertaining how much cash consumers carry in their wallets and how many and what type of payment cards the respondents carry with them.²

The individuals surveyed carried roughly €103 in their wallets, around €5.90 of which was in

coins. This is €15 less than in 2008. In particular, there was a slight decline in the number of individuals who carry more than €100 on them.

However, the amount of cash that people carry on them varies depending on an assortment of socio-demographic characteristics. Women carry much less cash than men. This is probably due to the lower value of the individual payments conducted by women. Furthermore, the amount of cash carried by individuals increases as the level of net household income rises. However, given that higher-earners tend to have a lower preference for cash than people with a lower income, this finding is based on the higher absolute expenditure of this group of individuals. Besides gender and income, age, in particular, influences the amount of cash that people carry on their person. Younger persons (18 to 24 year-olds) carry much less cash than those in the middle (25 to 54 year-olds) and the older (55 year-olds and above) age groups. The larger amounts of cash carried by respondents in the middle age group is probably due to a higher level of income or, among persons in retirement, to their much greater preference for cash. This is also supported by the fact that almost half of the older survey respondents stated that they pay exclusively in cash.

The following section looks at the two most significant types of payment cards in Germany, measured in terms of intensity of use as re-

Decline in the amount of cash carried by individuals ...

... number of payment card holders on the increase

¹ See Deutsche Bundesbank, Payment behaviour in Germany, 2009.

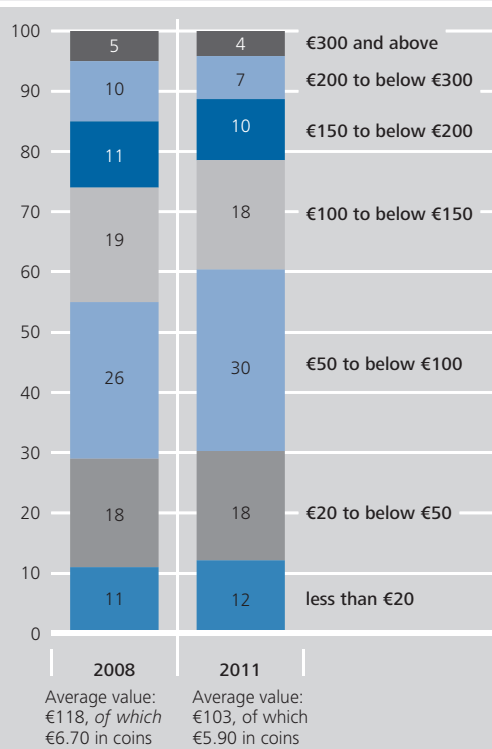
² The Bundesbank's 2008 survey on payment behaviour in Germany looked at the criteria which are crucial to the user's decision regarding whether to acquire a new payment instrument. Here it is to be assumed that, on the whole, the general attitude of consumers that was observed remains relatively stable over time. Overall, the respondents said that protection against financial loss and a high level of acceptance in retail outlets are the most important criteria when selecting a payment instrument. In addition to these two criteria, more than 50% of the respondents regarded cost, speed and anonymity as indispensable. The option of being able to use the payment instrument on the internet and to collect bonus points or qualify for discounts were seen as the least significant criteria. See Deutsche Bundesbank, Payment behaviour in Germany, 2009, pp 9-12.

corded in the payment diaries – debit and credit cards.³ The most widely used payment card on the German market is the debit card, which is issued to virtually every current account holder in Germany.⁴ Of those surveyed, 94% said that they owned a debit card (2008: 91%).⁵ Particularly sharp growth in debit card ownership was recorded in the 18 to 24 age group (84% to 92% since 2008). What is also striking is that 98% of respondents in gainful employment said that they owned a debit card, compared with 89% in the case of those respondents who are out of work.

Credit cards⁶ followed in second place (measured in terms of distribution), though at a considerable distance behind debit cards. 33% of the respondents said that they owned a credit card, which represents a surprisingly high growth rate of 6 percentage points compared with the previous study. Both the rise in demand, owing for example to their usability for making online purchases, together with the greater efforts by card issuers to promote their products have contributed towards the greater prevalence of credit cards. Respondents' familiarity with credit cards and their possible uses has risen by 18 percentage points to 64%. Credit institutions' risk management policies, in particular, influence their attitude towards credit card issuance given the risk of default. This would explain why higher-earners, those in gainful employment and older persons more frequently own a credit card. Given that credit cards, which are usually subject to a fee in Germany, face strong competition from the free-of-charge (from the consumer's perspective) debit card, credit cards play a less significant role than in Anglo-Saxon countries, for example. One of the main reasons for the relatively low prevalence of credit cards in Germany is likely to be that German credit cards are often issued as charge cards⁷ and not as "fully-fledged" credit cards. Added to this is the fact that consumers in Germany generally have access to an overdraft facility on their current account as a short-term financing option.

Cash in people's wallets

Figures in per cent



Deviations from 100% due to rounding.
 Deutsche Bundesbank

³ Observations on the frequency of usage of the *Geld-Karte*, pre-paid credit cards and store cards with a payment function can be found in the Bundesbank's detailed study on payment behaviour in Germany.

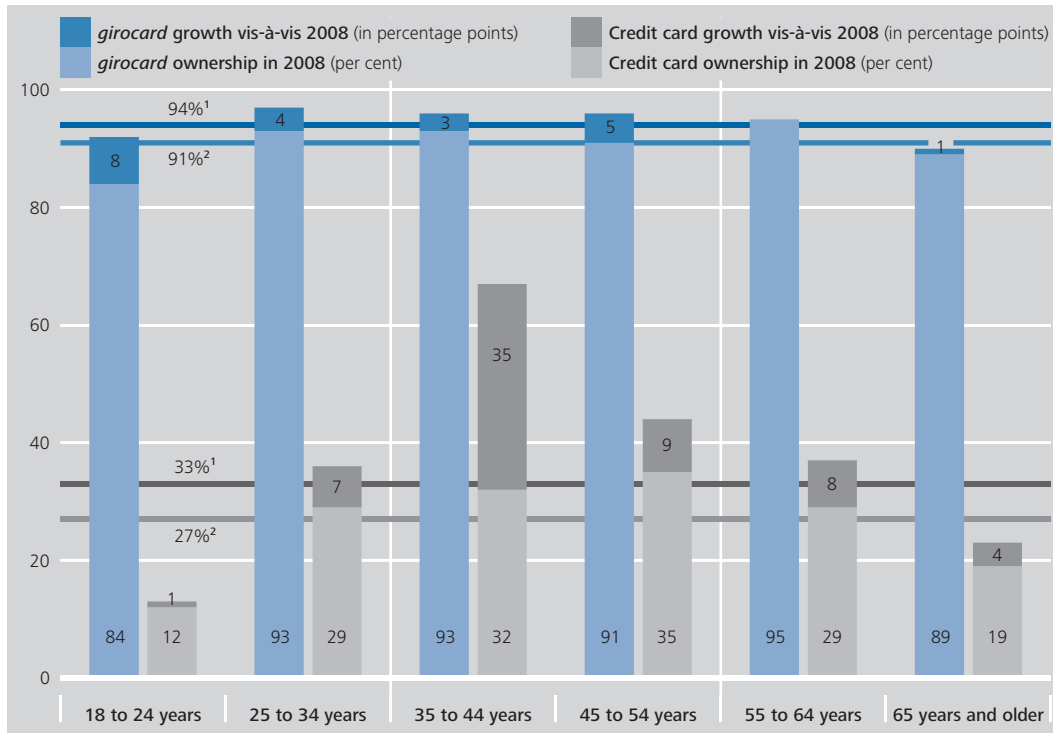
⁴ Payments made by debit card are immediately debited to the current account to which the card is assigned. The German banking industry operates a joint solution for debit cards known as the *girocard*, which can be used for making payments in retail outlets and for withdrawing cash from ATMs.

⁵ The actual diffusion of cards does not necessarily have to be consistent with the answers provided by the respondents, as it is possible that some respondents are not entirely sure which cards they actually have in their wallets.

⁶ Unlike in the case of debit cards, credit card payments are generally debited to the account holder's account with a time-lag, either as a lump sum (in the case of charge cards) or in instalments.

⁷ Charge cards are payment cards which the card holder can use to make purchases and/or to withdraw cash from ATMs. All the transactions made within a given period are charged to the card holder's account as a single amount (up to an agreed limit) at the end of the period.

Payment card ownership in 2011 and changes since 2008



Ownership in 2011 is calculated from the ownership figure in 2008 in per cent plus the change in percentage points. **1** Total ownership in 2011 across all age groups. **2** Total ownership in 2008 across all age groups.
 Deutsche Bundesbank

Choosing between cash and cashless payment instruments at the point of sale

Choosing between cash and cashless payment instruments at the point of sale

Given that payment cards are becoming ever more widespread, the majority of consumers are able to choose between cash and various cashless payment instruments at the point of sale. The study therefore analysed the factors which influence a consumer's decision at the point of sale based on the data collected from the self-assessments completed by the respondents.

28% of those respondents who carry both cash and payment cards with them said that they still generally pay in cash. 12% of the respondents said that they primarily use cashless payment instruments.⁸ This means that 40% of the respondents have already decided in advance which form of payment they intend to use at the point of sale. Those who pay solely in cash are generally under 25 or over 55 years of age

and often have a household income of less than €1,500 per month. Furthermore, there were a greater number of women who stated that they pay exclusively in cash. The majority of those respondents who pay by cashless means are between 25 and 54 years of age, have a monthly household income of over €3,000, are male and live in eastern Germany. These socio-demographic trends, which were observed on the basis of the self-assessment completed by the respondents, are also reflected in the actual payment behaviour recorded in the payment diaries. This will be investigated in greater detail in the following section.

Whereas those who pay exclusively in cash or primarily use cashless payment instruments generally make their choice of payment instru-

⁸ The wording "exclusively" use cashless payment instruments was purposely avoided as some shops, such as bakeries and kiosks, often only accept cash.

ment in advance, the remaining 60% of the respondents do not decide how they are going to pay until they arrive at the point of sale. This group of respondents was asked to specify the criteria which determine their choice of payment instrument.⁹

Amount of cash available in one's wallet is decisive, ...

According to the results of the predecessor study,¹⁰ the amount of cash available in one's wallet is the decisive factor when deciding how to pay. This would appear to be due to liquidity reasons. Even though the amount of cash available in one's wallet may be sufficient to make a purchase, people like to keep a certain cash reserve in their wallets in order for them to be able to make other, unexpected payments, which possibly can only be settled in cash (back-up reserve and liquidity motive). For this reason, people use cashless payment instruments above a certain subjective threshold amount so as not to further reduce the amount of cash they carry on them. The amount of cash available in one's wallet is particularly significant for younger respondents between 18 and 24 years of age. People with a college or university degree attach less importance to the amount of cash that they have on them compared with those respondents with other school-leaving qualifications.

... transaction amount is the second most important criterion

According to the results of the previous study, the transaction amount was the second most important criterion when deciding which payment instrument to use. The importance of this factor when deciding whether to pay in cash or by card rises continuously with the age and level of education of the respondents. Furthermore, this criterion was particularly significant for German citizens compared with those persons surveyed living in Germany as foreign nationals.

Now that the factors influencing the choice between cash and cashless payment instruments have been analysed based on the self-assessments completed by the interview participants, the following section will analyse the results of the payment diaries and describe the

actual payment behaviour observed and the payment decisions that respondents actually made.

Payment behaviour recorded in payment diaries

The interview participants were asked to keep a payments diary detailing every transaction that they made over a seven-day period, taking note of the place or location and the type of transaction and method of payment (selected from a list of 14 predefined payment instruments) they used. They were also asked to specify the transaction amount. The respondents were given the choice between all the common payment instruments, such as cash, debit card or credit card. Payment instruments which were still classed as "exotic" at the time of the survey, such as contactless card payments or prepaid credit cards, were also available for selection. This allowed the Bundesbank to ascertain how prevalent these payment instruments actually are. With regard to the payment locations and the type of transaction, the selection options ranged from retail payments for day-to-day needs (eg supermarkets), online and mail order trade to payments effected between individuals. Regularly recurring payments, which are generally settled by cashless means (such as rent), were not included as part of this study.

The study revealed that cash is still the most commonly used method of payment, accounting for a total share of 53% of all transactions. Compared with the previous study on payment behaviour, the cash share has declined by almost 5 percentage points, which is equivalent to an annual decline of around 1.4 percentage points. This development is in line with the

Cash still dominant despite growing share of card payments

⁹ The fact that not all retail outlets are equipped with terminals for settling payments using payment cards also inevitably plays a role when deciding which payment instrument to use at the point of sale.

¹⁰ See Deutsche Bundesbank, Payment behaviour in Germany, 2009, pp 37-39.

Payment instruments broken down by turnover and number of transactions in 2011 and 2008*

Payment instrument	Breakdown by turnover			Breakdown by number of transactions		
	Turnover in euro	Percentage share		Number of transactions	Percentage share	
		2011	2008		2011	2008
Cash payment	317,137	53.1	57.9	16,285	82.0	82.5
<i>girocard</i> with PIN	124,946	20.9	25.5	2,004	10.1	11.9
<i>girocard</i> with signature	44,147	7.4		665	3.3	
Credit card	44,369	7.4	3.6	360	1.8	1.4
Prepaid credit card	33	0.0	0.1	4	0.0	0.2
<i>GeldKarte</i>	782	0.1	0.5	48	0.2	0.5
E-payment scheme	10,115	1.7	0.3	148	0.7	0.1
Store card with payment function	715	0.1	0.2	11	0.1	0.1
Direct debit	4,268	0.7	1.9	58	0.3	0.6
Credit transfer	49,181	8.2	8.9	259	1.3	1.8
Contactless payment with a card	318	0.1	–	7	0.0	–
Other	1,269	0.2	0.4	21	0.1	0.2
Contactless payment via mobile phone	0	0.0	–	0	0.0	–
Other payment instruments based on mobile phone technology	0	0.0	–	0	0.0	–
Total	597,280	100	¹ 99	19,870	100	¹ 99

* The figures refer to the transactions made by the respondents during the diary week and are representative of Germany as a whole.
 1 Missing percentage point to 100%: payment instrument not stated.
 Deutsche Bundesbank

long-term trend. By contrast, the use of payment cards is on the increase. The payment share accounted for by debit cards, which were the second most frequently used payment instrument during the seven-day payment diary recording period, increased by 3 percentage points to over 28%. Credit cards also became more popular, accounting for a share of 7.4% (2008: 3.6%). It is therefore the “classic” cards, which are already well established on the market, that are partly displacing cash. By contrast, the acceptance of certain products which were once thought to be innovative, such as the *GeldKarte*, is declining (turnover share 0.1%), whereas today’s innovative payment instruments (contactless payment cards, payment instruments based on mobile phone technology) are still not very widespread on the market and are therefore rarely used.

It is not just the share of cash payments which has fallen, however. Direct debits (0.7%) and credit transfers (8.2%) are also being used less

frequently than in the past. Instead, the respondents said that they are increasingly using internet payment schemes, such as *PayPal*, *Giropay* or *SOFORT Überweisung*. Their turnover share now stands at 1.7%, which is attributable primarily to the dynamic growth in on-line shopping (see also the box on page 73).

Similar results can also be seen if the shares accounted for by the individual payment instruments are examined based on the number of transactions instead of the turnover share. While the share of cash payments measured in terms of transaction volume is significantly higher (82%) than when measured in terms of turnover share, the opposite holds true for virtually all other payment instruments. This observation can be explained by the predominant use of cash for small-value payments. Other payment instruments are generally only used for payments above a certain amount.

Payment instruments broken down into various transaction amount categories

2011, figures in per cent

Payment instrument	below €5	€5 to below €20	€20 to below €50	€50 to below €100	€100 to below €500	€500 and above
Cash payment	98.3	94.5	73.8	46.0	26.0	11.2
<i>girocard</i>	0.6	4.1	21.4	41.9	43.1	30.7
Credit card	0.2	0.2	2.2	6.0	12.3	23.8
E-payment scheme	0.0	0.6	0.8	1.7	3.4	2.9
Credit transfer	0.0	0.3	1.3	2.9	12.4	31.4
Other cashless payment instruments	0.9	0.4	0.5	1.4	2.8	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

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Cash is used primarily for small payments

A detailed overview of the usage of certain payment instruments broken down into various transaction amount categories can be found in the table above. Cash is the most commonly used payment instrument not only for small payments, but also for medium-sized payments. The very high level of usage for transaction amounts below €20 is certainly also connected with the fact that it is often not possible to pay by card in shops where transaction amounts tend to be smaller (eg in bakeries). Furthermore, retailers often set a minimum transaction amount below which debit cards are not accepted. It would appear that consumers also set themselves certain transaction limits before resorting to paying by card. More than 95% of those surveyed stated that they only use cashless payment instruments for transaction amounts of €20 and above. It is therefore not surprising that debit cards are only frequently used for transactions above €20, but also for amounts up to €500 and more. Credit transfers and credit cards play a more significant role for amounts above €100. These latter two payment instruments are therefore used for certain transaction amounts or transaction types (eg when travelling), whereas debit cards have almost become an “all-purpose” payment instrument.

Whereas the previous section focused on the general indicators for the intensity of usage of individual payment instruments, this section analyses the influence that the respondents’ socio-demographic characteristics have on payment behaviour. The impact that individual socio-demographic characteristics have on the intensity of usage of the individual payment instruments are generally analysed separately. There is, however, sometimes a correlation between the individual socio-demographic characteristics.¹¹ Unless otherwise stated, all percentage figures refer to the share accounted for by the individual payment instruments in the respective groups.

A key finding of the 2008 cash study was the significant impact that age has on payment behaviour. While younger respondents up to the age of 24 and older respondents over the age of 55 generally pay in cash, respondents in between these two age groups make greater use of cashless payment instruments. This finding is also confirmed in the latest study. Cash was the most frequently used payment instrument among the group of respondents over the age of 65, accounting for a share of 58% of all ex-

Younger and older respondents use cash particularly often, ...

¹¹ While there is a measurable correlation between a person’s age and level of education and between a person’s level of education and income, the correlation between age and income tends to be loose.

penditure during the payment diary recording period. The group of 25 to 34 year-olds use cash much less frequently (transaction share of 49%). By contrast, respondents in the middle age group (25 to 44 year-olds) use cashless payment instruments particularly frequently, with a preference for debit cards, which they use for around 36% of their total payments.

This finding can first be explained by the fact that younger and older persons tend to make lower-value purchases, which are very frequently settled in cash.¹² Second, older persons, in particular, own far fewer payment cards than would be expected on the basis of a proportional distribution across the population. Furthermore, the positive assessment of certain characteristics which older respondents consider important for a payment instrument, such as convenience and familiarity, also seems to support the use of cash. Older respondents feel that cash fulfils these requirements particularly well.¹³

... better educated people use cards more frequently

Age is not the only factor that has an impact on payment behaviour, however. The propensity to use cashless payment instruments also rises with the level of education of the payer. Whereas respondents who left school with a lower secondary school leaving certificate pay for 65% of their total expenditure in cash,¹⁴ this share is just slightly above 40% in the case of college or university graduates. This means that, in the highest level of education category, the cash payment share is equally as high as that of debit and credit cards. Credit card ownership and usage is significantly higher in the case of those respondents with a certificate of aptitude for higher education and those with a college or university degree than in the other level of education categories.

High-earners frequently pay by card, ...

In addition to age and level of education, net household income also has an impact on the intensity of use of cash and cashless payment instruments.¹⁵ Respondents with a low household income generally settle their payments in cash, whereas higher-earners make greater use

of cashless payment instruments. In the category with a monthly net household income of less than €1,500, 72% of all payments are settled in cash. By contrast, this share is 44% of all payments in the category of respondents with a net household income of over €3,000. The large percentage of low-value transactions conducted by respondents in the lowest income category is one reason for the disproportionately high use of cash. Another is that individuals with a low household income have a greater need to keep their spending in check. Cash would appear to be an appropriate payment instrument for this purpose.¹⁶ By contrast, respondents with a household income of €3,000 and above make a greater number of payments with a value of over €50 and disproportionately frequently own payment cards, especially credit cards.¹⁷

The differences in payment behaviour between citizens in eastern and western Germany are particularly striking. Respondents living in eastern Germany settle only 45% of their expenses in cash, compared with 55% in western Germany. The socio-demographic factors of age and income would tend to suggest that residents in eastern Germany pay in cash more fre-

... west Germans pay more frequently in cash

¹² Only 8% of all transactions effected by 18 to 24 year-olds have a value of over €50. Around 12% of purchases made by respondents aged over 65 have a value of over €50. In all other age categories, transactions in this amount range account for as much as 15% to 19% of all effected transactions.

¹³ See Deutsche Bundesbank, Payment behaviour in Germany, 2009, pp 8-9.

¹⁴ In this regard, age is a more significant determining factor than level of education. Older respondents often left school with just a lower secondary school leaving certificate.

¹⁵ Respondents who chose not to disclose their net household income were not included in the analysis (160 persons in total).

¹⁶ See U von Kalckreuth, T Schmidt and H Stix, Using cash to monitor liquidity, Deutsche Bundesbank Discussion Paper, Series 1, No 22/2011.

¹⁷ The impact of net household income dovetails with other socio-demographic factors. People with a high income are generally in the middle age group and relatively highly qualified. Young and older persons are very heavily represented in the low-income group of respondents.

Internet payments

With increasing internet use, the question of how payment is made when shopping online is gaining in relevance. An increase in the relative importance of payment instruments on the internet compared with their use in traditional retail outlets could exert a growing impact on general payment behaviour.

In contrast to payment at physical retail outlets, most internet payments are made without using cash,¹ with e-payment instruments becoming increasingly important. One example is *PayPal*. On the other hand, services have emerged which are based on the buyer's online banking application. This includes *Giropay*, which allows customers to buy securely from an internet trader's website by means of direct online transfers from their bank account, and *SOFORT Überweisung*, in which a technical service provider (non-bank) places a transfer request in the customer's own online banking application. Such online payment instruments are not only supplementing traditional cashless payment instruments, they are also increasingly displacing them. Besides payment by credit transfer upon delivery (48%), most people surveyed preferred online payment instruments (31%).² While the use of such payment instruments showed a marked increase of 21 percentage points compared with the previous study, payment in advance declined by 16 percentage points to 26%. By contrast, the use of credit cards remained constant at 21%. Particularly men and users between 25 and 34 years of age are very open to online payment instruments, while paying by credit card is clearly becoming more relevant for those persons surveyed who were aged 45 years or older.

In a second step, the e-payment schemes actually used by the respondents were ana-

lysed on the basis of the data provided in their self-assessment. A clear 87% majority of all users of e-payment schemes stated that they used *PayPal*; transfers by *SOFORT Überweisung* and *Giropay* were used by 9% and 3% respectively. It is striking that very young and older surveyees use *PayPal* more often than the average, whereas *PayPal* is used by only 77% and *SOFORT Überweisung* by 15% among the category of 25 to 34 year olds. Female surveyees also used *SOFORT Überweisung* relatively more often, although this had no impact on the intensity of use of *PayPal* within this category. Surprisingly, in contrast to general payment behaviour, neither educational background nor the level of net household income had an obvious impact on the use of the individual payment instruments. Moreover, in contrast to general payment behaviour on the internet, it was likewise irrelevant whether those surveyed came from eastern or western Germany. Those paying exclusively in cash at the point of sale use *PayPal* to the same extent as the average user of e-payment schemes, although the percentage of users of *SOFORT Überweisung* (14%) is somewhat higher in their case.

The marked trend towards using online payment instruments instead of traditional cashless payment instruments, such as credit transfers, points to a perceptible demand for specialised payment instruments for specific shopping situations.

¹ The data shown here were compiled with the aid of a questionnaire, ie they are based purely on the self-assessment of interviewees rather than on actually observed behaviour in line with a payments diary.

² Only two preferences could be stated at most.

quently than residents in western Germany.¹⁸ A greater prevalence of payment cards in eastern Germany cannot be substantiated on the basis of the survey data, ruling out this explanation, too. This leaves just the transaction amount as the sole factor which could explain the greater affinity of east Germans to payment cards. In actual fact, transactions with a value of €50 and above account for a 17% share of total expenditure in eastern Germany, compared with 14% in western Germany. Moreover, east Germans make fewer transactions than west Germans. Payment card usage in eastern Germany is supported by the fact that, on average, east Germans do not go shopping as frequently as their west German counterparts, but consequently make larger-value transactions when they do.¹⁹ Furthermore, residents in eastern Germany purchase a disproportionately large number of goods online. The use of cashless payment instruments is virtually unavoidable when making purchases online.

On the whole, the results recorded back in 2008 are confirmed in the 2011 study. Socio-demographic characteristics, such as age, level of education and household income had a significant impact on payment behaviour in the 2008 study, too. In addition to these socio-demographic characteristics, payment card ownership, transaction frequency and the transaction amount also have an impact on whether consumers pay in cash or by cashless means.

Innovative methods of payment at the point of sale

The internet is not the only technological advance which is affecting payment behaviour. With this in mind, the following section looks at three innovative methods of payment at the point of sale: contactless payment using payment cards or mobile phones as well as other methods of payment based on mobile phone technology.

In recent years, contactless payment methods, in particular, have been attracting greater attention. Here, the main focus has been on contactless payment cards, which are based on NFC technology.²⁰ With this technology, the customer's payment card no longer has to be inserted in a terminal, but just held in front of a card reader. The advantage for the customer is that the card no longer has to be handed over to the cashier. Retailers benefit first and foremost from the accelerated payment process at the point of sale as payments up to an amount of €20 or €25 (depending on the system) can be made without having to enter a PIN.

In Germany, this technology is already in use in a pilot area using a contactless debit card as well as at a number of contactless terminals throughout the country using contactless Visa or MasterCard credit cards. In addition, a number of sports venues are using both open and closed systems, the advantage of the open system being that the card can also be used for making payments outside the venue.

Despite the fact that these systems are still not very widespread across the country, 6% of the respondents said that they had heard of and were using contactless payment cards. On the whole, almost half of the respondents said that they have heard of card-based contactless payment schemes, even though only a small number of them have actually had any practical experience using such methods of payment.

Contactless payment by card

E-payment schemes are gaining in importance

¹⁸ In eastern Germany, persons aged over 55 were over-represented in the survey. Furthermore, a disproportionately high number of those respondents living in eastern Germany were represented in the lowest income category of below €1,500. The only factor that would explain the greater preference for card payments of east Germans is the disproportionately large number of persons with a college or university degree in eastern Germany compared with western Germany.

¹⁹ A similar behavioural pattern was observed in the case of cash withdrawals. Residents in eastern Germany withdraw cash at tellers and from ATMs less frequently, but consequently take out larger amounts than individuals living in western Germany when they do withdraw cash. See Deutsche Bundesbank, "Where does the cash in your wallet come from?", 2010, page 30.

²⁰ NFC stands for Near Field Communication and is a standard which enables data to be transmitted over short distances on a contactless basis.

What is particularly interesting here are the reasons stated by those respondents who said that they have heard of these instruments but do not use them. Contrary to the expectation that the inadequate infrastructure would be one of the main reasons why these methods of payment are rarely used, a number of respondents said that they are primarily concerned about the security of such systems.

Contactless payment via mobile phone

Given the increasing popularity of smartphones, more and more providers are trying to get their products to function as payment instruments. The providers are adopting various approaches in this regard. The most popular approach involves integrating the payment card function into the smartphone itself and then initiating the payment using NFC technology. As not all mobile phones are equipped with the technology required to do this at present, an interim solution under consideration is to attach the required technology to the casing of the smartphone in the form of an NFC sticker.

The survey results revealed that contactless payment via mobile phone is already more widely known than card-based contactless payment schemes. This is possibly due to the very high media attention being given to smartphones and thus greater consumer interest. Young and male respondents seemed to be the best informed about these instruments. Here, too, the primary concern was the security of such methods of payment.

Other innovative methods of payment via mobile phone

In addition to contactless forms of payment via mobile phone based on NFC technology, there are also other innovative forms of payment which enable payments to be settled via mobile phone. These include applications which allow the user to purchase goods and services and settle the transaction amount later via the customer's mobile phone bill. Much like in the case of the aforementioned payment innovations, only around half of the respondents had heard of these other mobile phone-based

payment instruments and only 2% actually use them.

In summary, innovative payment instruments at the point of sale may currently play only a minor role, yet they do have potential for the future. One in three respondents did, however, say that they do not see any need for new innovations on the payments market. The majority of potential users, however, did cite security concerns as the main reason for not using these cashless payment instruments.

■ Outlook

At the time of the survey, cash was still the most commonly used method of payment in Germany. Nevertheless, the share of cash payments effected during the payment diary recording week fell from around 58% in 2008 to 53% in 2011. The substitution of cash by cashless payment instruments is consistent with the long-term trend. The share of retail payments settled in cash, for example, has declined by 22 percentage points over the past 17 years.²¹

Slow but steady decline in the share of cash payments

This process is being influenced by a number of factors. One important factor is the greater prevalence and usage of payment cards.²² While debit cards have already reached a significant diffusion rate of 94% in Germany, credit cards still have potential for growth. The intensity of use of debit cards and credit cards has increased by 7 percentage points on the

Payment card ownership and usage are on the increase

²¹ This is the finding of a study carried out by the EHI Retail Institute. The EHI is a research institute which focuses on the German retail industry. Its survey looks at retail turnover in the narrower sense, ie excluding turnover in the automobile industry, petroleum industry, in pharmacies and in mail order trade. The slight deviations between the turnover shares of various payment instruments in the Bundesbank's and the EHI's surveys are due to the much greater scope of the survey conducted by the Bundesbank.

²² The question relating to the respondents' payment habits today compared with ten years ago revealed that over half of the respondents use cashless payment instruments more frequently today and only 5% said that they now use cashless payment instruments less frequently than they did ten years ago.

whole compared with 2008. Furthermore, the increase in the number of retail outlets accepting payment cards has also encouraged greater use of cashless payment instruments. The number of terminals required to process electronic payments has consequently risen from 593,000 in 2008 to 710,000 in 2011, which corresponds to a 20% increase.

Changes in purchasing patterns affect payment behaviour

Nevertheless, it is not just payment behaviour that is changing. The growth in online trade that has been evident for a number of years is also an indication of a transformation in consumer payment habits. The use of cashless payment instruments is virtually unavoidable given that goods and services are being increasingly purchased online rather than in traditional retail outlets. This is indicated by the growing popularity of e-payment schemes.

There are also a number of factors which promote the use of cash. The vast number of ATMs and the dense branch network of credit institutions in Germany make it easy for cus-

tomers to withdraw and to use cash. The number of ATMs and combined deposit and withdrawal machines has risen from 55,500 in 2008 to 56,500 in 2011. In addition, it is now also possible to withdraw cash at supermarket and filling station cash registers.

On the whole, the trend is slowly but steadily moving towards an increase in the use of cashless payments. It should, however, be noted that this is not self-propelling. Consumers and retailers ultimately decide which payment instrument they wish to use or accept and thus determine which instruments will be used and offered in future. Added to this is the fact that German consumers are conservative when it comes to their payment habits. Almost 60% of respondents said that they intend to continue using the payment instruments that they are familiar with, which is likely to counter any rapid change in payment behaviour and would suggest that cash is likely to remain a popular method of payment in the years to come.

Future developments will ultimately depend on consumers and retailers