

Cash withdrawals at the point of sale: motives for use and implications for cash holding

The present article aims to investigate the role played by point-of-sale (POS) withdrawals – ie withdrawals of cash at supermarket and filling station checkouts – for consumers in Germany when obtaining cash and the implications that this has for their cash holding. The empirical analysis is based on data from the Bundesbank's 2011 study on payment behaviour, which was the first time that questions were asked specifically about this new option for withdrawing cash.

A descriptive analysis of the data shows that point-of-sale withdrawals are being used only to a small extent in Germany at present. An average consumer in Germany covers no more than 1% of his or her annual cash requirements using this form of cash withdrawal. Of those surveyed, 92% stated that they had not made use of this option at all so far. Persons making POS cash withdrawals did so very largely because they had forgotten to obtain cash elsewhere in another way. The most commonly cited reasons for not making POS withdrawals were a sufficiently large number of available automated teller machines (ATMs) located nearby, a lack of confidence in retailers, and not being aware of the existence of this facility.

The probability of making a POS withdrawal is higher for persons living in rural areas and who hold an account with a bank which has a low ATM coverage. Furthermore, it is evident that persons making more frequent use of POS withdrawals keep a lower stock of cash on average. The resulting effects on the amounts of cash held for transaction purposes in Germany are, however, negligible in macroeconomic terms – even if this facility were to be used more widely in future.

POS as an additional withdrawal option alongside ATM and counter withdrawals

■ Introduction

Despite the steady increase in card payments, cash was still the most frequently used means of payment in German retail outlets in 2011 with a transaction share of 82%.¹ What consumers particularly like about cash is that it is quick and convenient to use and also protects their privacy. On the other hand, the fact that cash is used up when shopping and constantly has to be “stocked up” might be felt to be a drawback. Besides bank counters and automated teller machines (ATMs) as the traditional sources for withdrawing cash, there is now also the option at various retailers of withdrawing cash at the checkout. The present article is concerned with this new method of withdrawing cash, known as point-of-sale (POS) withdrawals.

Innovations in the field of supplying cash to consumers are of great interest to central banks, since this may lead to changes in the demand for cash. In the past, for example, the universal availability of ATMs as an alternative to withdrawals at the counter led in many countries to a marked decline in the average amount of cash held for transaction purposes.² The option of POS withdrawals makes consumers’ cash management easier in two ways. First, it creates an additional cost-free possibility of obtaining cash, as no fees are charged for POS withdrawals in most cases. Second, withdrawals at the checkout save time, since they are made at the same time as the purchases. Such changes in the cost structure could lead to consumers changing their withdrawal behaviour. In much the same way as after the widespread introduction of ATMs, it is possible that consumers would withdraw cash more often but in smaller amounts. As a result, the average amount of cash held for transaction purposes would decline.

The present article first gives an overview of the scale on which consumers in Germany currently make use of POS withdrawals and what factors play a part in this. Furthermore, we look

into the impact that greater use of POS withdrawals has on consumers’ cash holding.

■ Cash withdrawals at the point of sale

For the purpose of this article, POS withdrawals are understood to be the option of withdrawing cash at a retail checkout at the same time as making the payment transaction.³ POS withdrawals are currently offered by various supermarkets and filling stations. The methods used differ in terms of the conditions of use for the consumers and how they work technically.

The methods used at supermarkets are also commonly known by the term “Cash back”. In this instance, customers can withdraw cash in the amount of up to €200 when purchasing goods to the value of at least €20 which are bought using a payment card with PIN authorisation. To do this, the amount to be deducted at the card terminal is increased by the desired amount to be withdrawn. The withdrawn cash is paid out directly by the employees from the cash register. The withdrawals *per se* are free of charge. For some customers, however, general fees for the use of the card may be charged by their bank.

Withdrawing cash at filling stations is not conditional on making a purchase or refuelling. Since this option is based on a cooperative agreement with a commercial bank, withdrawing cash is subject to withdrawal fees for customers of other banks. A further difference from the supermarket schemes is that the participating filling stations operate integrated

Providers

Conditions of use and method of operation

¹ See Deutsche Bundesbank (2012), Payment behaviour in Germany in 2011 – An empirical study of the utilisation of cash and cashless payment instruments.

² See W Boeschoten (1998), Currency use and payment patterns, Financial and Monetary Policy Studies, Vol 23, Dordrecht: Kluwer Academic Publishers; H Stix (2004), How do debit cards affect cash demand? Survey data evidence, *Empirica* 31(2-3), pp 93-115.

³ This term does not cover ATMs which are located at a retail outlet, but which cannot be used for payment transactions.

cash management systems. These have the advantage that the money paid in is checked for authenticity and fitness not only by the cashiers but also by machine. Automatic checking is performed in accordance with a procedure certified by the Eurosystem.

Assessment of POS withdrawals from the retailers' point of view and ...

POS withdrawals have various advantages from the retailers' point of view. This facility can attract additional customers who visit the retail outlet because they need cash. At the supermarkets, sales may increase if consumers who want to withdraw cash have to buy more products to reach the minimum purchase amount of €20. At the filling stations, the magazines of the fully automatic cashier systems have to be emptied less frequently. The higher transaction costs resulting from POS withdrawals are a drawback for the retail trade, however. For every debit card transaction, a given percentage of the recorded amount – irrespective of whether it has been paid or withdrawn – has to be transferred to the payment service provider.

... from the consumers' perspective

From the consumers' perspective, POS withdrawal facilities present an additional withdrawal option which is generally free of charge. This is an advantage primarily for customers of banks with a thinly spread network of ATMs. Furthermore, customers can save time by making POS withdrawals as they can combine purchasing and withdrawal transactions. Nevertheless, this procedure also has some features that consumers might feel to be a disadvantage. POS withdrawals at supermarkets depend on paying for the goods using a card. In view of the above-mentioned large share of transactions at German retail outlets which have hitherto been conducted in cash, most consumers would therefore have to alter their payment behaviour in order to withdraw cash there. Added to this is the fact that the withdrawal process which consumers in supermarkets have to perform themselves at the POS payment terminal requires data input and actions which differ from those at an ATM, which likewise requires a certain degree of familiarisation. Moreover, customers might feel it disadvanta-

geous that when withdrawing cash in a supermarket – unlike at a bank ATM – the banknotes paid out to them have not been checked automatically for authenticity and fitness. Even so, they enter the same risk when accepting change and in the case of withdrawals at a bank counter.

Cash management of consumers in Germany

According to the Bundesbank's 2011 study on payment behaviour, a representative consumer in Germany withdraws an amount of cash totalling €8,072 annually. In Germany, there generally exists the option of obtaining cash from ATMs, at bank counters or at selected points of sale. Consumers can withdraw differing amounts of cash and decide how often and where they wish to withdraw it. This raises the question as to the strategy they use to obtain their cash.

Withdrawal strategies

The chart on page 73 shows how often ATM, counter and POS withdrawals are usually conducted. In addition to the information from 2011, the 2008 figures are shown for comparative purposes.⁴ By far the most frequently used location for withdrawing cash is the ATM. Of those surveyed, 89% (2008: 88%) stated that they regularly visit an ATM, with the average user making 40 (2008: 43) withdrawals a year. Counter withdrawals are made much more rarely. Of those surveyed, 54% state that they had not made use of this option at all so far. The remaining 46% make a counter withdrawal about 13 (2008: 17) times a year.⁵ POS withdrawals are made least often. Only 8% of those surveyed stated that they make regular

Frequency of withdrawal

⁴ For more detailed information on withdrawal behaviour in Germany in 2008, see Deutsche Bundesbank (2010), Where does the cash in your wallet come from? – An empirical study of the cash withdrawal behaviour of the German population at ATMs and bank counters in Germany.

⁵ The survey data on the frequencies of ATM and counter withdrawals are consistent with the commercial banks' data in the official statistics. See Deutsche Bundesbank (2013), Payment and securities settlement statistics in Germany 2008-2012.

Underlying data: the Deutsche Bundesbank's study on payment behaviour

The Bundesbank's study on payment behaviour provides the underlying data for the present analysis. These data are derived from a survey of consumer payment and withdrawal behaviour which the Bundesbank conducts at regular intervals in cooperation with a market research provider. Data from the years 2008 and 2011 are available to date. The surveys of around 2,000 people in each case are representative of the German-speaking population aged 18 years and above.

Numerous analyses have already been conducted on the payment behaviour of consumers in German retail outlets using these data.¹ In a second step, this article provides more detailed information about the withdrawal behaviour of consumers, in particular the use of POS withdrawals, which were recorded in the survey for the first time in 2011.

Questions about withdrawal behaviour are generally aimed at determining

- which places of withdrawal are used (ATM, bank counter, POS) and how frequently
- the average size of the amounts withdrawn
- and why certain places of withdrawal are used or not used.

Here are some examples of questions asked in 2011.

To all participants

- How often do you generally withdraw cash at the following places: ATM, bank counter, POS?

- How high is the average amount per withdrawal at the respective place?
- How much cash do you usually still have in your wallet or purse before you decide to make a new withdrawal of cash?

To users of POS withdrawals

- Why do you use the option of withdrawing cash at supermarkets and filling station counters?

To non-users of POS withdrawals

- Why do you not use the option of withdrawing cash at supermarkets and filling station counters?

¹ See Deutsche Bundesbank (2012), Payment behaviour in Germany in 2011, An empirical study of the utilisation of cash and cashless payment instruments; M Eschelbach and T Schmidt, Precautionary motives in short-term cash management – evidence from German POS transactions, Deutsche Bundesbank Discussion Paper, No 38/2013; C Arango et al, Cash management and payment choices: a simulation model with international comparisons, Deutsche Bundesbank Discussion paper, No 04/2014.

use of this withdrawal method, with users making POS withdrawals roughly nine times a year.

Average amount

The chart below shows the average amounts withdrawn at ATMs, bank counters and at the POS for the respective users. An average ATM user withdraws €215 per transaction. The average amount of a counter withdrawal is significantly higher at €436 (2008: €376). This is due to the fact that counter withdrawals are being used more and more rarely to cover the everyday need for cash. Rather, they are used to obtain cash for particular purposes. For example, 50% of the surveyed users in 2011 stated that they had a special reason for making a cash withdrawal at a counter. The most frequently cited reasons are major purchases, craftsmen's invoices and holidays, ie occasions that entail comparatively large expenditure.⁶ Of all three withdrawal options, POS shows the lowest average amount and, at only €105, is well behind the figure for counter and ATM withdrawals.

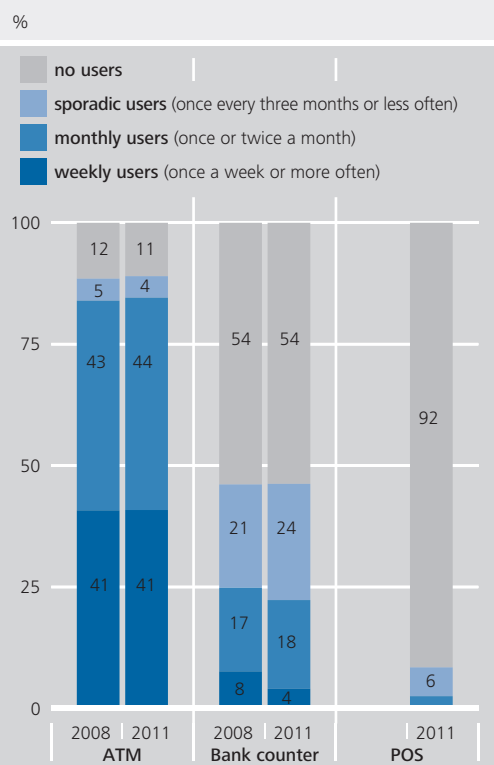
POS withdrawals as a percentage of total withdrawals

The low frequency of use and the small amount withdrawn already point to the fact that POS withdrawals still play no more than a minor role in Germany at present. In order to quantify their actual significance, the percentage values of POS, ATM and counter withdrawals are to be finally calculated for an average user.⁷ It

⁶ The stated figures are average values for the individual users. Combining the surveyed microdata on amounts withdrawn and frequencies of withdrawal and, instead, calculating the average values for the transactions conducted in 2011 produces an average figure of €163 at the ATM and an average figure of €306 at the counter. The figure for the ATM is consistent with the commercial banks' data in the official statistics (€161). The counter figure, on the other hand, is distinctly higher in the official statistics at €1,178 per withdrawal transaction. This suggests that those surveyed for the payment behaviour study did not mention their extremely high-value withdrawals, say, for hoarding purposes. See Deutsche Bundesbank (2013), Payment and securities settlement statistics in Germany 2008-2012.

⁷ To do this, for each survey respondent the value of yearly withdrawals is calculated separately for ATM, counter and POS as the product of the average amount withdrawn and the frequency of withdrawal. These variables are then expressed as a ratio of the survey respondent's total withdrawals. In a final step, the three percentages are averaged over all respondents.

Frequency of use of various points of withdrawal



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Average amount withdrawn by point of withdrawal*



* The figures refer to those persons who actually use the stated points of withdrawal.

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becomes apparent that the ATM with an average share of 80% is the dominant point of withdrawal. The share of counter withdrawals is much smaller at around 19%. As expected, POS withdrawals occupy last place. Their share of an average consumer's total withdrawals amounts to only 1%.

Cash withdrawals at the point of sale: motives

Subjective assessment of the survey respondents

In the 2011 study on payment behaviour, users of POS withdrawals were asked why they used this procedure. Those who do not make POS withdrawals were asked to state their reasons for not doing so. Those surveyed were presented with a series of suggested answers. It was also possible, however, to give an alternative individual answer to the question. The selection of suggested reasons was based on the system's advantages and drawbacks as outlined above.

Reasons for making POS withdrawals

The chart below shows the distribution of the most frequently stated reasons for making POS withdrawals. Roughly 71% of users withdraw cash at the checkout when they have forgotten to obtain cash elsewhere. Convenience, speed and lack of charges are cited as a key factor by around one-third of users in each case. Only 4% state that they use the POS as a point of withdrawal because they have no other suitable option available to them. These responses suggest that the key advantages of POS withdrawals – convenience, speed and lack of charges – do indeed play a part in the decision

whether to use it. Nevertheless, the majority of users do not see POS as a primary withdrawal option, but as an alternative that can be used in an emergency.

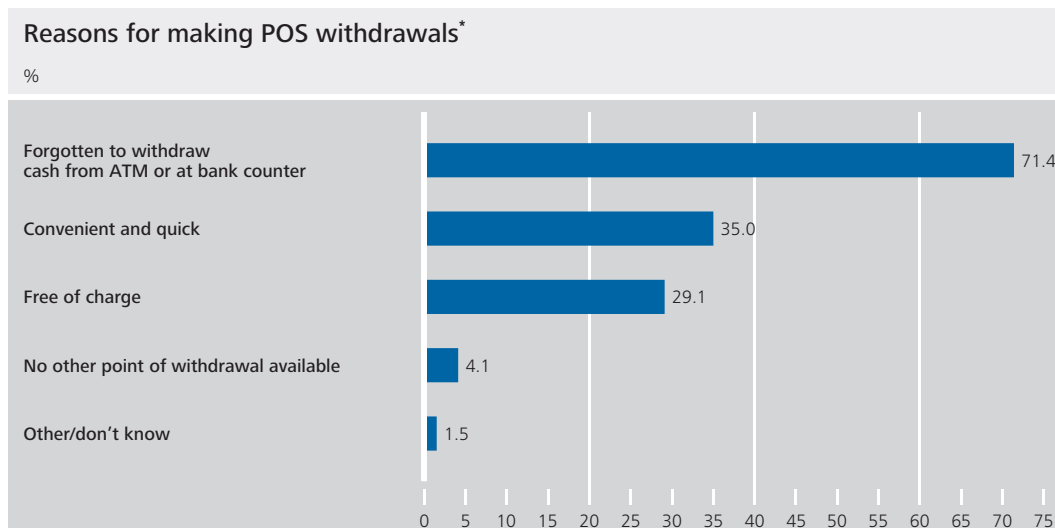
The chart on page 75 shows the most frequently cited reasons for not using POS withdrawals. Roughly one-third of the surveyed non-users do not see any need to make a POS cash withdrawal, since the closely-knit network of ATMs and banks in Germany is sufficient. Furthermore, in matters pertaining to cash almost one-quarter of non-users trust solely their own bank and not retailers. A lack of awareness of the possibility of withdrawing cash at the supermarket or at a filling station is in third place among the cited responses. Of the survey respondents, 13% stated that they make purchases only in retail outlets where POS withdrawals are not possible. Only 1.7% of those surveyed give the poor quality of the paid-out banknotes as their reason.

Reasons for not making POS withdrawals

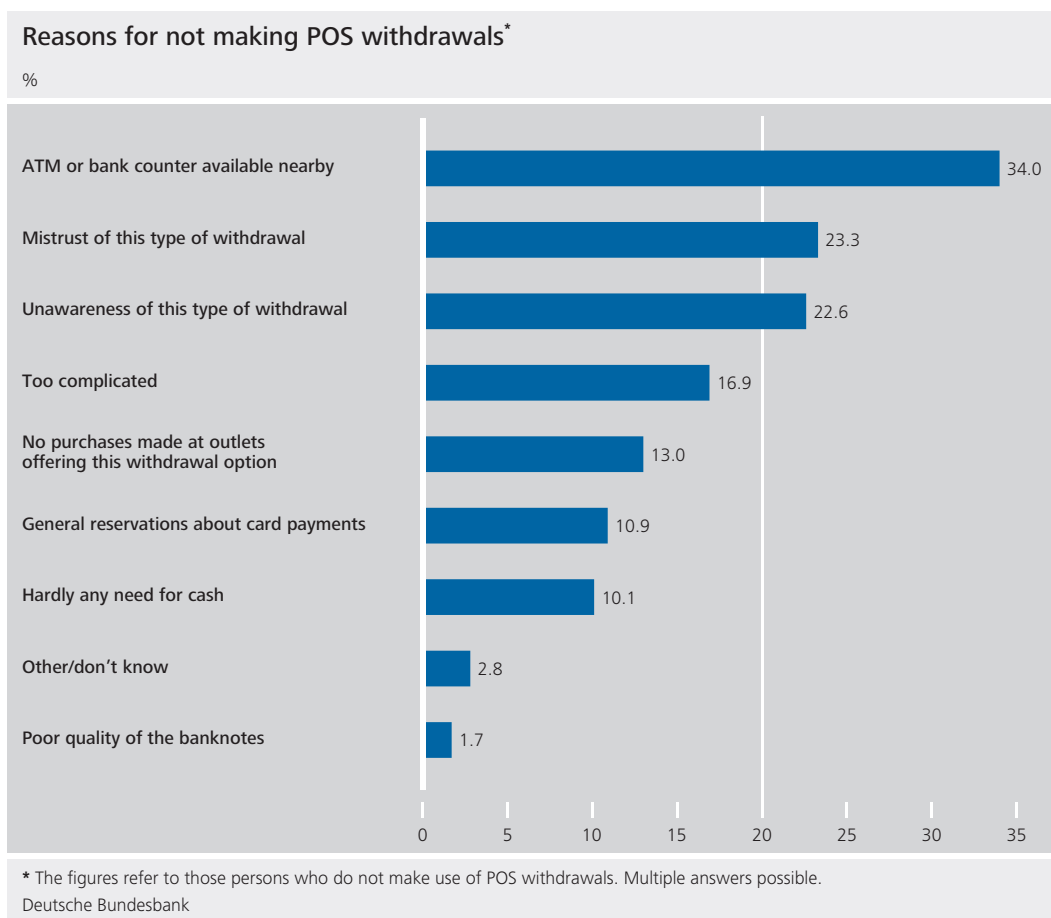
Institutional determinants

The cited reasons show, on the one hand, that POS withdrawals are only a low-priority alternative to ATMs and bank counters. On the other hand, it can be concluded from the responses that POS withdrawals at supermarket

Access to cash



* The figures refer to those persons who actually make use of POS withdrawals. Multiple answers possible.



and filling station checkouts can be a practical solution for a small group of persons who otherwise have poor access to cash withdrawal facilities. How far institutional factors actually play a part in deciding which option to use can be determined using a simple regression analysis. For persons holding a current account at a bank with a thinly spread network of ATMs and persons living in rural areas there should, all other things being equal, be a higher probability of withdrawing cash when going shopping.

In actual fact, an individual's alternative withdrawal options appear to be an important factor in the decision on use. At around 6%, customers of savings banks and People's banks and Raiffeisen banks (*Volksbanken and Raiffeisenbanken*) who can withdraw cash in many locations owing to their dense networks of ATMs are, all other things being equal, the least likely on average to make a POS withdrawal. By contrast, customers of direct banks are the most likely to do so at around 17%. When comparing places where people live, persons living in localities with less than 2,000 inhabitants are, all other things being equal, the most likely to make POS withdrawals at roughly 20%. Persons living in urban areas with 100,000 to 500,000 inhabitants are the least likely to do so at around 5%.

Regression analysis

In the following probit regression, the probability of a person making a POS withdrawal at least once a year is modelled as a function of bank affiliation (the bank with which he or she holds an account), the size of the locality (city, town etc) where he or she lives, and other socio-demographic factors.⁸ The chart on page 77 shows the most important findings of the regression analysis. The full results can be found in the table on page 78.

⁸ Descriptive statistics on the observed institutional and sociodemographic features may be found in the table on page 76.

Descriptive statistics on the variables in the regression analysis*

Explanatory variable	Mean value
	in years
Age	1 48.20
	%
Gender: Male	45.65
Highest educational qualification	
Lower / intermediate secondary school leaving certificate	9.67
Senior school leaving certificate	75.15
University degree	13.54
No school leaving certificate / not specified	1.64
Household income (€)	
less than 1,000	8.75
1,000 to less than 1,500	14.46
1,500 to less than 2,000	14.80
2,000 to less than 2,500	15.43
2,500 to less than 3,000	13.88
3,000 to less than 3,500	10.93
3,500 to less than 4,000	7.30
4,000 to less than 4,500	3.48
4,500 to less than 5,000	2.61
5,000 and above	1.98
Not specified	6.38
Giro account held with a	
Savings bank or Landesbank	48.94
People's bank / Raiffeisenbank	22.82
Big bank	20.31
Cash pool	4.55
Direct bank	1.21
Other	1.69
Not specified	0.48
Size of locality (inhabitants)	
less than 2,000	4.55
2,000 to 4,999	8.46
5,000 to 19,999	23.36
20,000 to 49,999	17.84
50,000 to 99,999	9.19
100,000 to 499,999	19.68
more than 500,000	16.92
Share of cash payments	67.02
	€
Annual withdrawal volume	2 7,770.19
Amount of cash held for transaction purposes	3 153.34

* Number of persons: 1,904. The figures shown are descriptive statistics on the variables used in the regression analyses. Observations with missing values in continuous variables are excluded. No weighting was used to calculate the statistics. **1** Standard deviation: 17.48. **2** Standard deviation: 6,797.01. **3** Standard deviation: 134.03.

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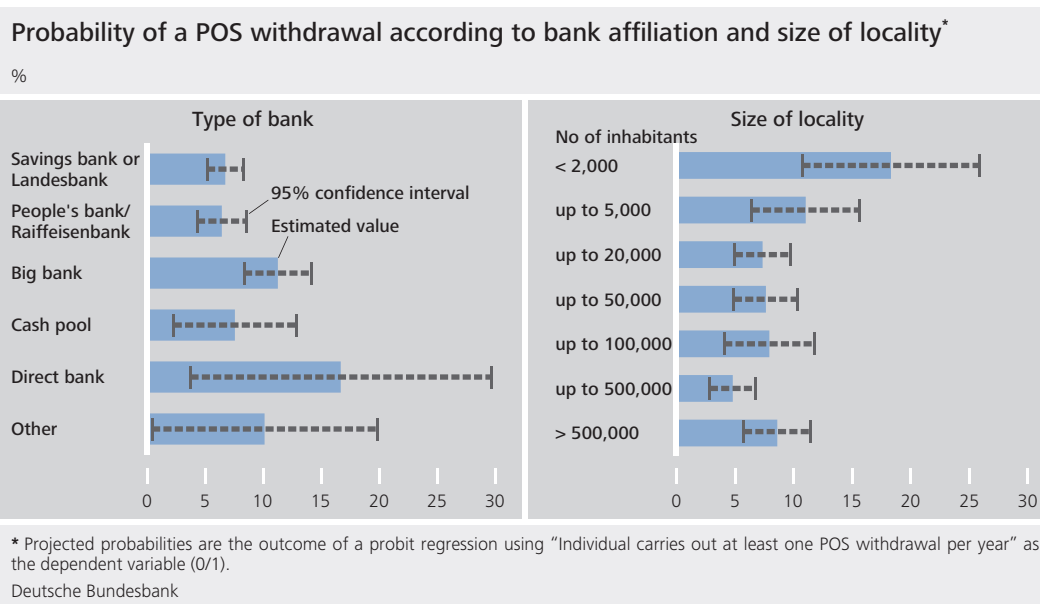
Cash withdrawals at the point of sale: implications for cash holding

Finally, we intend to study how the availability of POS withdrawals impacts on consumers' cash holding habits. Of particular interest is whether, given more intensive use of this procedure, amounts of cash held for transaction purposes in Germany might fall.

Consumers who would like to pay for their purchases in cash have to decide how much they keep for this purpose in their purse or wallet. In economic theory, the optimum amount depends on three factors: first, the value of the transactions to be paid in cash; second, the costs that arise from holding cash (for example, forgone interest income or loss of cash due to theft); third, the costs that arise from the replacement of cash (for example, withdrawal charges or the time and costs of getting to the place of withdrawal). Replacement costs are reduced for consumers by the option of POS cash withdrawals. First, additional charge-free withdrawal options are created, which are especially advantageous for persons holding a current account at banks with a thinly spread ATM network. Second, the processes of payment and withdrawal take place virtually simultaneously, which additionally saves time. Baumol (1952) and Tobin (1956) showed that, given lower replacement costs, it is optimal for consumers to withdraw cash more often but in smaller amounts.⁹ For a consumer with a given cash transaction volume and given costs of cash holding, the use of POS withdrawals should therefore lead to a reduction in the average amount of cash held for transaction purposes.

Economic theory

⁹ See W Baumol (1952), The transactions demand for cash: an inventory theoretic approach, *Quarterly Journal of Economics* 66 (4), pp 545-556; J Tobin (1956), The interest elasticity of the transactions demand for cash, *The Review of Economics and Statistics* 38 (3), pp 241-247.



Apart from the lowering of replacement costs, however, there is also a simple technical reason why less cash might be held. At many supermarkets, the withdrawal amount is limited to €200. This could prompt consumers who make POS withdrawals to withdraw and hold less cash.

plicity that an amount of cash withdrawn at a given time from an ATM, a counter or from a POS has been spent in regular and equal amounts by the time of the next withdrawal. If that is the case, at any given time an individual holds, on average, one-half of the amounts he or she regularly withdraws in his or her wallet or purse.¹² The amount of cash that an individual usually still has in his or her wallet or purse when he or she makes a new withdrawal of cash has to be added to this. This basic amount of money is always in his or her possession and

Regression analysis

In order to examine the connection between POS withdrawals and the average amount of cash held for transaction purposes, a microeconomic money demand function is estimated.¹⁰ To do this, a linear regression is performed. The dependent variable is the average amount of cash a person holds for transaction purposes. The key explanatory variable is the percentage of POS withdrawals in a person's total annual withdrawals of cash. As further explanatory variables, the model contains the annual total volume of withdrawals, the percentage of card payments in weekly overall expenditure, bank affiliation, the size of the locality where he or she lives, age, the highest educational qualification, income and the individual's gender.¹¹

Before the estimation, the average amount of cash held for transaction purposes as well as the POS withdrawals as a percentage of all cash withdrawals first has to be calculated. To calculate the amount of cash held for transaction purposes, it is assumed for the sake of sim-

¹⁰ See W Boeschoten (1998), Currency use and payment patterns, Financial and Monetary Policy Studies, Vol 23, Dordrecht: Kluwer Academic Publishers; H Stix (2004), How do debit cards affect cash demand? Survey data evidence, *Empirica* 31(2-3), pp 93-115.

¹¹ Descriptive statistics on these explanatory factors are shown in the table on page 78.

¹² The assumption that cash is spent in regular and equal amounts is plausible for withdrawals made to cover the usual needs for cash. If, on the other hand, cash is withdrawn for special purposes, such as buying a second-hand car, this assumption is problematic since it can be assumed that the cash will be spent soon afterwards. In this case, the assumption that cash is spent in regular and equal amounts would result in the estimated amount of cash used for transaction purposes being overstated.

Regression analysis of the motives for making POS withdrawals*

Explanatory variable	Marginal effect	Standard error
Age (in years)	- 0.0019***	0.0004
Gender: Male	0.0216*	0.0119
Highest educational qualification		
Lower / intermediate secondary school leaving certificate	Ref	Ref
Senior school leaving certificate	0.0056	0.0199
University degree	0.0318	0.0248
No school leaving certificate / not specified	- 0.0442	0.0315
Household income (€)		
less than 1,000	Ref	Ref
1,000 to less than 1,500	0.0324	0.0204
1,500 to less than 2,000	0.0476**	0.0212
2,000 to less than 2,500	0.0679***	0.0218
2,500 to less than 3,000	0.0467**	0.0208
3,000 to less than 3,500	0.0566**	0.0227
3,500 to less than 4,000	0.0111	0.0215
4,000 to less than 4,500	0.0638*	0.0365
4,500 to less than 5,000	0.1068**	0.0483
5,000 and above	0.0632	0.0481
Not specified	0.0178	0.0234
Giro account held with a Savings bank or Landesbank	Ref	Ref
People's bank / Raiffeisenbank	- 0.0030	0.0135
Big bank	0.0453***	0.0170
Cash pool	0.0083	0.0281
Direct bank	0.0996	0.0667
Other	0.0339	0.0501
No answer given	0.0450	0.1019
Size of locality (inhabitants)		
less than 2,000	Ref	Ref
2,000 to 4,999	- 0.0728	0.0450
5,000 to 19,999	- 0.1097***	0.0404
20,000 to 49,999	- 0.1068***	0.0410
50,000 to 99,999	- 0.1039**	0.0433
100,000 to 499,999	- 0.1351***	0.0399
more than 500,000	- 0.0971**	0.0415

* Number of persons: 2,068. The table shows the results of two probit regressions with "Individual carries out at least one POS withdrawal per year" (0/1) as the dependent variable. Column two shows the marginal effect on the decision on use for each characteristic under observation. In the case of cardinally scaled variables (eg age), this measures the extent to which the probability of making a POS withdrawal changes when the explanatory variable under consideration is increased by one unit. In the case of non-cardinally scaled variables (eg "Individual has a senior school leaving certificate") the marginal effect shows by how much the probability of use increases if the individual in question has the characteristic under consideration. Furthermore, column 3 shows robust standard errors, which, in combination with the marginal effects, allow conclusions to be drawn as to the statistical accuracy of the estimation. ***, **, * denote statistical significance at the 1%, 5% and 10% level.

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therefore has to be assigned entirely to the amount of cash held for transaction purposes.¹³

Based on the calculation method described above, the upper chart on page 79 shows the distribution of the average amount of cash held by the survey respondents for transaction purposes as a histogram. On average, an individual holds about €153 in cash. The amounts range between €7.50 and €1,800, with 95% of individuals holding less than €400.

The share of POS withdrawals in relation to the survey respondents' annual withdrawals has already been determined in the calculations above (see also footnote 8). As mentioned earlier, only around 8% of the survey respondents use the POS as a withdrawal location, thus producing a zero share of use for 92% of the respondents. On average, an individual makes only 1% of his or her withdrawals at the POS. For the group of POS users, the centre chart on page 79 shows as a histogram the distribution of POS as percentages of total withdrawals. Individuals making POS withdrawals obtain 12% of their cash reserves in this way on average. Nevertheless, for 95% of these persons, the share of POS withdrawals is only 2% (or less).

The lower chart on page 79 shows the most important results of the regression analysis. The full estimation results are shown in the table on page 80. The hypothesis of a negative correlation between the extent to which POS withdrawals are used and the average amount of cash held for transaction purposes is confirmed: the higher the percentage of POS withdrawals

¹³ Specifically, the following calculation formula is used for the amount of cash held for transaction purposes (German: *Transaktionskasse, TK*).

$$TK = \frac{\sum_j f_j b_j}{\sum_j f_j} / 2 + r.$$

Here, f_j denotes how many times a year an individual withdraws cash from an ATM ($j=1$), a counter ($j=2$) and from a POS ($j=3$). b_j denotes the relevant amount that is usually withdrawn. Thus, $\frac{\sum_j f_j b_j}{\sum_j f_j}$ is the average amount withdrawn by an individual over all three withdrawal options, half of which he or she holds in his or her wallet or purse. If the basic amount of money r is added, this gives us the average amount of cash held by an individual for transaction purposes.

is, the smaller the average amount of cash held for transaction purposes. This correlation is statistically significant. From a macroeconomic perspective, however, the estimated effects are slight. Increasing the intensity of use by 1 percentage point would, all other things being equal, lower the amount of cash an individual holds for transaction purposes by 52 cents. Even with a tenfold increase in the intensity of use from 1% at present to 10%, the average amount of cash held for transaction purposes would decline only from €153 at present to roughly €149, which is equivalent to a percentage change of about 3%. If consumers switched over completely to POS withdrawals, the average amount of cash held for transaction purposes would go down to about €97, which corresponds to a roughly 37% reduction.¹⁴

Summary and conclusions

POS withdrawals only a stopgap, but a good alternative for individuals who otherwise have poor access to cash

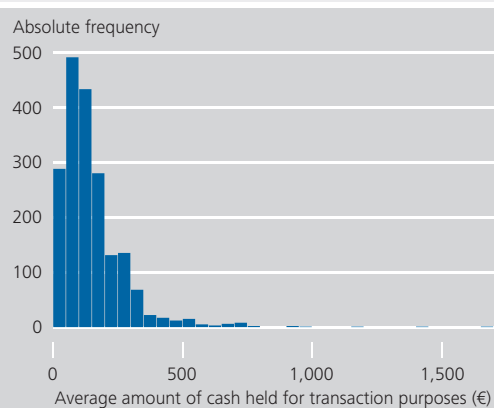
In conclusion, it may be noted that awareness and utilisation of POS withdrawals are still at very low levels in Germany. For consumers, withdrawing cash from an ATM remains the norm. The POS withdrawal facility is used only if an individual has forgotten to withdraw cash from an ATM or if circumstances make it difficult to do so. Persons who have tended to have poor access to cash in the past appear to benefit from this facility, however. A significantly higher probability of use is shown by customers of banks with a thinly spread ATM network as well as by individuals living in what tend to be more rural areas.

Minor effects on the amount of cash held for transaction purposes in Germany

POS withdrawals have had only minor effects on consumers' cash holding so far. Although there is a statistically significant correlation between the intensity of use and the amount of

¹⁴ The regression results should nevertheless be viewed as an indication – not as proof – of a decline. Problems might arise if users and non-users of POS withdrawals differ fundamentally in their cash holding habits and these differences cannot be captured adequately using the explanatory factors of the model.

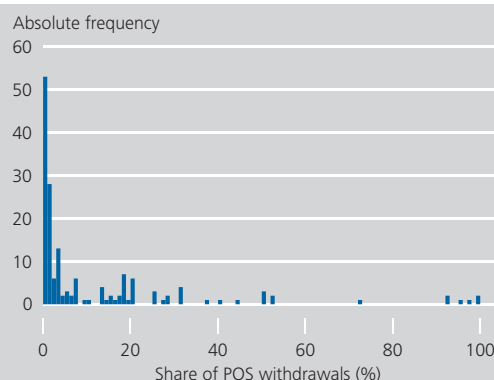
Distribution of the average amount of cash held for transaction purposes*



* The class width is equal to €50.

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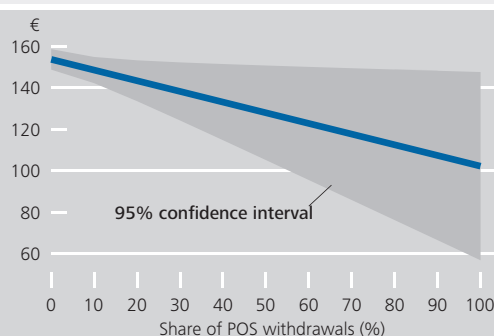
POS withdrawals as a percentage of total withdrawals*



* Survey participants who make a POS withdrawal at least once a year. The class width is equal to 1 percentage point.

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Estimated amount of cash held for transaction purposes in relation to the percentage of POS withdrawals*



* Projected values are the outcome of a linear regression using the average amount of cash held by an individual for transaction purposes as the dependent variable.

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Regression analysis of the impact of POS withdrawals on the average amount of cash held for transaction purposes*

Explanatory variable	Marginal effect	Standard error
Total volume of withdrawals per year (logarithmic)	66.9525***	5.1092
Giro account held at a		
Savings bank or Landesbank	Ref	Ref
People's bank / Raiffeisenbank	– 10.1086	6.6514
Big bank	– 4.8702	6.0675
Cash pool	– 4.4021	9.4023
Direct bank	– 20.5280	14.2130
Other	68.1679**	34.2040
Not specified	– 0.9054	30.9870
Size of locality (inhabitants)		
less than 2,000	Ref	Ref
2,000 to 4,999	– 10.9573	21.7714
5,000 to 19,999	– 6.7155	20.1472
20,000 to 49,999	– 15.7847	20.1247
50,000 to 99,999	– 15.2834	20.7946
100,000 to 499,999	– 22.5216	19.3377
more than 500,000	– 21.1457	19.7034
Share of POS withdrawals in relation to the total volume of withdrawals (0-1)	– 0.5151**	0.2329
Share of card payments in relation to total expenditure (0-1)	0.1389	0.0918
Age (in years)	2.1602***	0.1596
Highest educational qualification		
Lower / intermediate secondary school leaving certificate	Ref	Ref
Senior school leaving certificate	– 11.3259	9.9085
University degree	– 4.9612	11.8274
No school leaving certificate / not specified	– 6.2686	17.7311
Household income (€)		
less than 1,000	Ref	Ref
1,000 to less than 1,500	2.0479	7.5138
1,500 to less than 2,000	9.6018	8.4407
2,000 to less than 2,500	17.5974**	8.2757
2,500 to less than 3,000	33.1483***	9.2363
3,000 to less than 3,500	33.7562***	9.4761
3,500 to less than 4,000	34.9490***	10.9962
4,000 to less than 4,500	28.7481*	15.9041
4,500 to less than 5,000	29.0178*	15.2387
5,000 and above	73.8085**	35.4702
Not stated	28.2293*	17.1998
Gender: Male	16.3014***	5.2970

* Number of persons: 1,922. The table shows the results of a linear regression with the average amount of cash held by an individual for transaction purposes as the dependent variable. Column 2 shows the marginal effect on the decision on use for each characteristic under observation. In the case of cardinally scaled variables (eg age), this measures the extent to which the amount of cash held for transaction purposes changes when the explanatory characteristic under consideration is increased by one unit. In the case of non-cardinally scaled variables (eg "Individual has a senior school leaving certificate") the marginal effect shows by how much the amount of cash held for transaction purposes is greater if the individual in question has the characteristic under consideration. Furthermore, column 3 shows robust standard errors, which, in combination with the marginal effects, allow conclusions to be drawn as to the statistical accuracy of the estimation. ***, **, * denote statistical significance at the 1%, 5%, and 10% level.

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cash held for transaction purposes, it is quantitatively very small and – in combination with the low intensity of use – negligible from a macroeconomic perspective.

It remains to be seen whether POS withdrawals will play a significant role in supplying cash to consumers in the future. Their increasing importance is suggested by the growing number of providers who are also promoting this facility more and more strongly. Furthermore, the growing trend for card payments among consumers is consistent with a move towards demand for this facility. In countries such as the United Kingdom and Australia where cashless payments are much more common, there is also more widespread use of POS withdrawals, for example. What argues against growing use of this facility is the fact that many users see this procedure only as a second-class alternative to the ATM and bank counter. The crucial matter is whether the system's key advantage – saving time – will be enough to make people switch from their longstanding routine practice of withdrawing cash from an ATM or at a counter.