

## Cash withdrawals and payments in urban and rural areas

*Do rural regions in Germany have the same access to cash as urban areas? Do consumers in rural areas use different payment methods to consumers in towns and cities? The Bundesbank regularly conducts representative surveys on payment behaviour in Germany, which can also be used to examine regional differences in the supply and use of cash in urban and rural areas.*

*The nearest cash withdrawal facility is somewhat more difficult to access in rural regions compared with towns and cities. According to respondents in the survey on payment behaviour in Germany, the nearest source of cash is 9.3 minutes away on average in urban areas, and 10.7 minutes away in rural areas. However, access to cash is ensured in both urban and rural areas, as only around 6.5% of survey participants from towns and cities and only 10.3% of survey participants in rural areas report having to make a greater effort or a relatively great effort to withdraw cash. Differences in cash withdrawal and payment behaviour between consumers from urban and rural areas are barely discernible. Respondents from rural areas obtain cash at a similar frequency to those from urban areas and use it for the settlement of payments to a similar extent.*

*Differences in access to cash and in the use of cash should continue to be monitored in future to ensure that consumers in Germany in all regions and from all population groups are able to use cash or other means of payment in accordance with their preferences.*

## ■ Background

*Bundesbank mandate to promote smoothly functioning cash transactions*

The Bundesbank has a mandate to promote the smooth functioning of cash payment transactions.<sup>1</sup> For this reason, the Bundesbank conducts regular surveys on the use of cash and other payment instruments in Germany.<sup>2</sup> Based on the data collected in 2017, this article examines the extent to which cash withdrawal and payment behaviour differs between urban and rural regions.

*Cash is the most commonly used means of payment*

Throughout Germany, cash is the most commonly used means of payment. For example, for everyday purchases in 2017, cash was used to pay for 74.3% of transactions, accounting for 47.6% of turnover. However, the general public's use of cash is by no means homogeneous. For example, the percentage of cash expenditure varies according to age, income and education level.<sup>3</sup>

*Differences in the use of cash in urban and rural areas*

By contrast, very little is known about whether the use of cash differs from region to region. The increased closure of bank branches, including in rural areas, has attracted attention in recent years. Overall, the number of branch offices fell from around 37,000 in 2014 to around 28,000 in 2018. That said, this development does not necessarily mean that access to cash in Germany has deteriorated markedly. In Germany, the primary place to withdraw cash is the cash dispenser (ATM),<sup>4</sup> the number of which has remained largely constant in recent years despite the closure of bank branches (see the chart on p. 35).<sup>5</sup> However, the machines do not have to be distributed evenly across all areas in Germany, but may be concentrated in towns and cities. In general, maintaining a sufficiently dense cash supply infrastructure in less populated rural areas is likely to be comparatively more costly than in towns and cities. It is therefore conceivable that difficulties in the provision of cash tend to arise in rural areas rather than in urban areas. At the same time, the growth in the number of retail outlets across Germany offering withdrawal services at the point of sale (POS) is providing an alternative to

the cash infrastructure offered by the banking sector.<sup>6</sup> These structural changes give cause to examine whether the supply of cash in rural areas is ensured to the same extent as in towns and cities. It is also important to examine whether the potentially lower supply density in rural areas could have a detrimental effect on consumers in their choice of payment instrument.

Based on these considerations, this article addresses the following questions: Do people in rural areas need to make a greater effort to withdraw cash than people in urban areas? If so, can these differences be observed in their actual withdrawal behaviour? For example, do people in rural areas withdraw cash less frequently but at higher amounts – or do they make more frequent use of withdrawal services at the point of sale? Does this have consequences for the use of cash as a means of payment? Is there a greater use of cashless means of payment in rural areas? The evaluations are based on the Bundesbank's survey data on the public's payment and withdrawal behaviour in 2017. The analysis employs both descriptive methods and a regression analysis.

*Scope of this study*

## ■ 2017 survey on payment behaviour in Germany

The Bundesbank's study on payment behaviour is a representative survey of individuals in the German population on their payment and withdrawal behaviour that has been conducted

*Study series on payment behaviour in Germany*

<sup>1</sup> See Section 3 of the Bundesbank Act. The cash infrastructure in Germany is described in more detail in Deutsche Bundesbank (2011).

<sup>2</sup> See Deutsche Bundesbank (2018), Deutsche Bundesbank (2015), Deutsche Bundesbank (2012) and Deutsche Bundesbank (2009a).

<sup>3</sup> See Deutsche Bundesbank (2018).

<sup>4</sup> On average, respondents in the survey on "Payment behaviour in Germany" withdraw 87% of the total amount they withdraw at ATMs, 11% at bank counters and 2% at points of sale; see Deutsche Bundesbank (2018).

<sup>5</sup> See Deutsche Bundesbank (2019).

<sup>6</sup> See Deutsche Bundesbank (2014) for more information on the importance of point-of-sale cash withdrawals for consumers in obtaining cash.

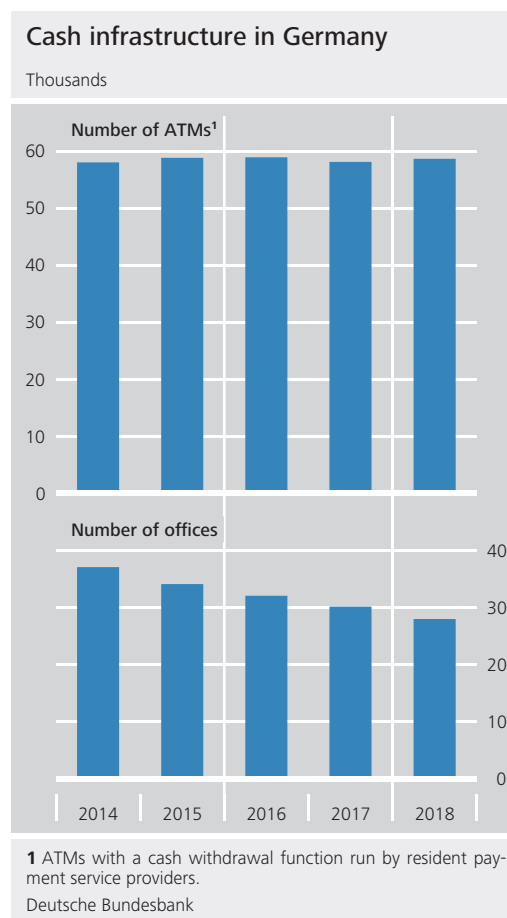
at regular intervals since 2008.<sup>7</sup> Every three years, around 2,000 people are selected at random and surveyed by trained interviewers. The study consists of a computer-assisted personal interview (CAPI) on the ownership of and attitudes towards various payment instruments and a one-week payments diary that captures actual payment behaviour. The surveys on payment behaviour in Germany provide information on the distribution and use of payment instruments and this information supports the Bundesbank in fulfilling its tasks in the field of cash and cashless payments. This series of studies also forms an important basis for scientific studies on payment behaviour.<sup>8</sup>

*Definition of urban and rural areas*

The evaluations presented here are based on the latest survey on payment behaviour in Germany from 2017.<sup>9</sup> Information on respondents' place of residence can be used to assign them to rural and urban regions. This allocation is based on the classification by the Federal Institute for Research on Building, Urban Affairs and Spatial Development (BBSR) of single municipalities and municipal associations into cities, towns and rural municipalities depending on their size and function.<sup>10</sup> A regional unit is classified as a town or city if it has at least 5,000 inhabitants or at least functions as a lower-order centre, i.e. it is responsible for the basic and local supply of day-to-day needs.<sup>11</sup> The roughly 4,500 regional units monitored by the BBSR are divided into around 1,700 rural municipalities and 2,800 towns and cities. In the case of towns and cities, a distinction is made between cities, medium-sized towns and small towns. Although rural municipalities cover around 35% of Germany's total area, they are only home to just over 10% of the country's population.<sup>12</sup> Of the 2,059 participants interviewed in the payment behaviour study, 1,827 lived in urban areas and 232 in rural areas.<sup>13</sup>

*Change in payment behaviour*

The studies carried out by the Bundesbank at regular intervals since 2008 suggest that consumers' cash withdrawal and payment habits are changing only slowly. As more recent data



are not yet available, data from 2017 were used to study structural differences between urban and rural regions. Since payment habits are changing only gradually, it is assumed that the findings can generally be applied to a longer period of time after the data are collected. In the wake of the COVID-19 crisis, there are currently deviations from the long-term trends (see the box on pp. 36 f.). However, there are no indications that residents of urban and rural areas are reacting differently during the coronavirus crisis. Ultimately, the

<sup>7</sup> See Deutsche Bundesbank (2018), Deutsche Bundesbank (2015), Deutsche Bundesbank (2012) and Deutsche Bundesbank (2009a).

<sup>8</sup> See Arango-Arango et al. (2018), Bagnall et al. (2016), von Kalckreuth et al. (2014a) and von Kalckreuth et al. (2014b).

<sup>9</sup> See Deutsche Bundesbank (2018).

<sup>10</sup> See Federal Institute for Research on Building, Urban Affairs and Spatial Development (2019).

<sup>11</sup> See Greiving et al. (2014).

<sup>12</sup> See Federal Institute for Research on Building, Urban Affairs and Spatial Development (2019).

<sup>13</sup> The evaluation only considers persons who have carried out at least one payment transaction in the survey week.

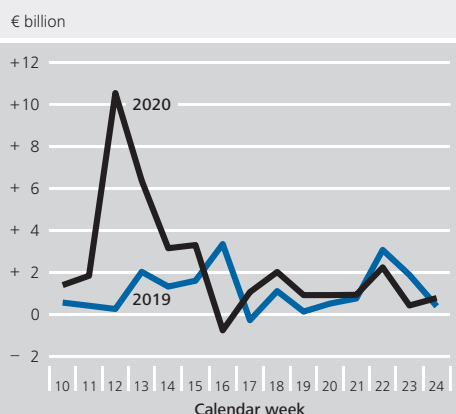
## Demand for cash and payment behaviour during the coronavirus crisis

In the wake of the coronavirus crisis, there were noticeable changes in banknote demand from mid-March 2020 (see the chart below). The Bundesbank's net issuance amounted to €10.5 billion in the week beginning 16 March 2020 (calendar week 12) and €6.4 billion in the week beginning 23 March 2020 (calendar week 13).<sup>1</sup> These levels of net issuance were well above the corresponding figures for the previous year and are comparable to the increases in demand observed during the financial crisis in autumn 2008.<sup>2</sup> It is more difficult to interpret year-on-year changes in net issuance in the following weeks because of the different timing of public holidays in 2019 and 2020 (see the chart below). Overall, however, net issuance, having risen sharply beforehand, began to normalise from the end of March/start of April. While the notable increases in net issuance in the calendar weeks beginning 16 and 23 March 2020 are chiefly attributable to significantly higher withdrawals, both withdrawals and deposits tended to decline in the following weeks. The increase in withdrawals at the start of the coronavirus crisis could be due

to general precautionary demand from consumers as well as credit institutions and other enterprises.<sup>3,4</sup> One major reason for the decline in deposits is likely to have been the extensive shop closures and the resulting drop in retail sales. Moreover, altered payment behaviour could play a role, as consumers were asked by retailers to make greater use of cashless means of payment in the context of the coronavirus crisis.

In order to learn more about the changes in the payment behaviour of the population, 1,005 German-speaking persons aged 16 and over representatively selected from the total population were interviewed by telephone on behalf of the Bundesbank in the period from 2 to 7 April 2020. Three out of

**Net issuance of euro banknotes by the Deutsche Bundesbank**



Deutsche Bundesbank

<sup>1</sup> The net issuance of a central bank is calculated as withdrawals less deposits of banknotes. The Bundesbank and the other national central banks of the Eurosystem hold a strategic reserve to ensure that they are also able to meet unexpectedly strong demand for euro banknotes. This ensures the Eurosystem's ability to supply cash, even if demand for banknotes increases sharply.

<sup>2</sup> See Deutsche Bundesbank (2009b).

<sup>3</sup> In a representative telephone survey conducted at the beginning of April 2020 on behalf of the Bundesbank, respondents indicated whether they had withdrawn more cash than usual in recent weeks owing to the coronavirus crisis or whether they planned to do so. Only a small minority of 5% of respondents confirmed this. The main reason for higher cash withdrawals was to avoid having to go to ATMs or banks as frequently. Thus, the results do not indicate that a large part of the population is keeping higher cash holdings than usual. However, it is possible that respondents with increased cash withdrawals did not provide any information on this. It is also conceivable that only a small part of the population increased its cash withdrawals, but that those people withdrew very large amounts.

<sup>4</sup> The cash holdings of credit institutions are recorded in the Bundesbank's monthly balance sheet statistics. In March 2020, cash holdings increased by €7.9 billion, reaching their highest level up to that point of €48.1 billion. This observed increase is likely to be at least partly due to the fact that credit institutions stocked up their cash holdings for precautionary reasons so that they could continue to disburse cash even if the crisis intensified. However, the coronavirus crisis did not lead to any restrictions on the supply of cash.

four respondents stated that they were using the same means of payment as before the start of the coronavirus crisis. Of those who had changed their payment behaviour, 90% were using cash less frequently to pay for their purchases. These respondents cited hygiene reasons, avoiding contact and preventing infection as the main reasons for their less frequent use of cash (53%). Requests and information on display in-store led 25% of respondents to change their payment behaviour. The speed of payment and practicality played a role for just 5% of those who paid in cash less frequently.

Precise statements about any permanent change in payment behaviour can only be made once the next comprehensive payment behaviour study is conducted. At present, however, the series of studies on payment behaviour in Germany cannot be

continued using the usual methodology, as personal interviews cannot be conducted owing to contact restrictions.

level shifts observed in cash and cashless payments do not call into question the analysis of the regional differences in cash withdrawal and payment behaviour.

## Comparison of urban and rural population

*Differences between urban and rural population*

The table on p. 38 shows a comparison of selected characteristics of urban and rural respondents. According to the data from the table, the average age of the urban and rural population is roughly the same. Respondents from rural areas are more rarely unemployed and report more frequently that they earn a household income of €4,500 or more. However, these observed differences in employment status and income are not significant according to statistical criteria. By contrast, there are statistically significant differences in terms of school qualifications. Respondents from urban and rural areas are similar in terms of their expend-

iture patterns and their attitudes. Both groups spend a large part of their outgoings on day-to-day retail purchases and at pharmacies. However, people in rural areas are more likely to shop at petrol stations, while those from towns and cities allocate a larger share of their expenditure on services outside their home.<sup>14</sup> E-commerce and mail order trade play a more important role for respondents in rural areas than for urban respondents, even if the difference observed is not significant according to statistical criteria. Comparing the general attitudes toward cash and other means of payment reveals that cash is popular in both rural and urban areas. According to the survey results, cash is easy and quick to use, provides a clear overview of spending and allows privacy to be maintained. According to statistical criteria, however, cash is perceived as a particu-

<sup>14</sup> This includes, for example, going to hairdressers and auto repair shops but also travel using public transport (taxi, bus, rail and aeroplane).

### Differences between the population structures of urban and rural areas<sup>o</sup>

Item	Urban areas	Rural areas
<b>Age (in years)</b>	50.7	50.3
<b>Education (as a percentage of respondents)***</b>		
Lower secondary or intermediate secondary school qualification	69.9	79.0
Entrance diploma for university of applied sciences or university	27.8	17.5
Other/not specified	2.3	3.5
<b>Net household income in groups (as a percentage of respondents)</b>		
Below €1,500	18.7	15.4
€1,500 to less than €3,000	49.4	47.1
€3,000 to less than €4,500	23.1	22.4
€4,500 or above	8.8	15.1
<b>Unemployed (as a percentage of respondents)</b>	3.3	2.2
<b>Pattern of expenditure (as a percentage of turnover)</b>		
Day-to-day retail purchases and pharmacies	47.3	47.6
Retail purchases of durable goods	8.8	8.7
Petrol stations***	11.1	14.3
Services outside the home, restaurants, bars, cafes, delivery services, hotel, guest house, entertainment, recreation**	19.4	16.4
Household services and payments to individuals	4.1	3.1
Vending and ticketing machines	0.9	0.7
E-commerce and mail order	5.0	6.4
Other	3.5	2.8
<b>Does cash provide the following features? (Affirmative responses in %)</b>		
Quick payment	88.8	93.0
Ease of use	94.4	94.6
Widely accepted	79.8	79.8
Protection against financial loss*	43.4	45.2
Overview of spending	90.6	93.8
Privacy	93.2	95.3
Familiarity	96.1	98.4
Financial incentives	37.8	43.7

<sup>o</sup> Respondents' data weighted. The statistical significance of the differences between urban and rural areas was determined for continuous variables by means of a t-test and for categorical variables by means of a chi-square test. \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels.  
 Deutsche Bundesbank

larly secure means of payment somewhat more frequently in rural areas than in towns and cities.

As some of the differences mentioned above may be significant for cash use, they have to be taken into account in the following analysis.<sup>15</sup> Otherwise it would be unclear whether observed differences in cash withdrawal and payment behaviour in urban and rural populations can be attributed to differences in the cash withdrawal facilities available or are merely the result of different shopping and payment preferences among the population. These factors are taken into account using what is known as

*Consideration of differences between urban and rural areas in multivariate regressions*

a multivariate regression analysis. This process compares the cash withdrawal and payment behaviour of the urban and rural population under the assumption that the other known characteristics of the respondents are the same. The regressions carried out are described in more detail in the box on p. 39. Nevertheless, even this approach cannot rule out the possibility that observed differences in cash withdrawal and payment behaviour are not attributable solely to infrastructural differences but also to other unobserved differences between urban and rural regions.<sup>16</sup>

### Effort involved in withdrawing cash

In order to assess cash withdrawal options in urban and rural areas, respondents to the survey on payment behaviour were asked how far away the cash withdrawal facility that they use most frequently was from their home or workplace. Respondents were asked the distance in minutes with the means of transport that they normally use to get there. The upper chart on p. 40 shows the resulting mean values for Germany as a whole and separately for urban and rural areas. The results of the survey show that, at 10.7 minutes, people in rural areas need roughly 1.4 minutes longer to get to the nearest source of cash withdrawals than respondents in urban areas. According to statistical criteria, this difference is highly significant.

*Distance to nearest source of cash withdrawals*

In addition, respondents were asked to assess the effort involved in withdrawing cash. The reason for this question is that distance alone is not informative if cash withdrawals are made while carrying out other errands. The vast majority of respondents across Germany, namely 93%, report that withdrawing cash involves

*Effort involved in withdrawing cash low overall*

<sup>15</sup> For example, the share of cash payments increases with age and decreases with higher levels of income and education, see Deutsche Bundesbank (2018).

<sup>16</sup> There may be unobserved differences, for example, in personality traits that are difficult to measure, such as affinity for technology or attitude to risk.

## Regression analysis of differences in cash withdrawal and payment behaviour between urban and rural areas

The regression analysis is based on a multivariate, linear model of the form

$$y = \alpha + \beta x + \gamma'Z + u.^1$$

This model is estimated separately for various dependent variables. In the analysis of withdrawal behaviour, the dependent variable  $y$  contains for each respondent the number of withdrawals per year (separately for ATMs, bank counters and points of sale), the withdrawal amount (separately for ATMs, bank counters and points of sale – provided that the respective source of cash withdrawals is used), and the share of each source of cash withdrawals in the total withdrawal amount (separately for ATMs, bank counters and points of sale). To examine payment behaviour, the dependent variable indicates for each respondent the share of transactions paid in cash.

The explanatory factors of the model are  $x$ , an indicator variable that assumes the value of 1 when a person lives in a rural area and 0 if they do not, and  $Z$ , a vector of control variables. The control variables reflect the socio-demographic structure of respondents with regard to age, gender, education, household income, region (western and eastern Germany), employment status, nationality and household size, as well as their spending behaviour and attitudes toward cash. A descriptive presentation of some of these control variables can be found in the table on p. 38.  $u$  is the disturbance term and reflects all other determinants of cash withdrawal and payment behaviour that are not explicitly included in the model.

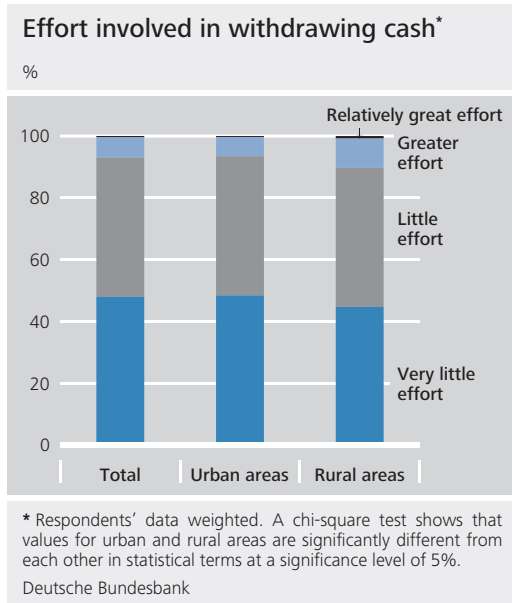
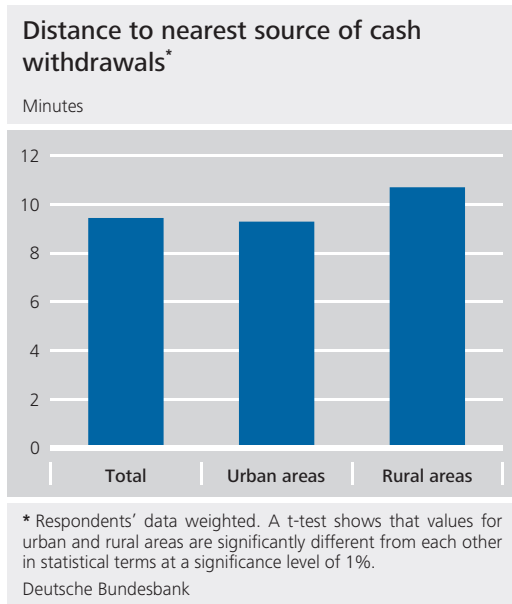
The model estimates  $\alpha$ , the intercept, and  $\beta$  and  $\gamma$ , the slope parameters of the explanatory variables, using the method of

ordinary least squares. The statistical inference is based on heteroscedasticity and autocorrelation robust standard errors.

The estimated value for  $\beta$ , designated as  $\hat{\beta}$ , shows the partial correlation between a person's cash withdrawal and payment behaviour and the fact that they live in a rural area. It can be interpreted as a proxy for infrastructure-related differences in cash withdrawal and payment behaviour between rural and urban areas, as differences in population structure are largely absorbed by the control variables.

---

<sup>1</sup> See Wooldridge (2010).



little or very little effort. Only 6.5% report that it involves greater effort and just 0.4% report that it involves relatively great effort.<sup>17</sup> However, statistically significant differences between urban and rural areas are also apparent here (see the chart directly above). For example, the share of those who report at least a greater effort is around 4 percentage points higher in rural areas.

## Cash withdrawal behaviour

Are the differences in the perceived effort for cash withdrawals in urban and rural areas also

reflected in respondents' actual cash withdrawal behaviour? In the classic Baumol-Tobin model of cash balances held for transaction purposes, withdrawal behaviour is determined by income, the interest rate which measures the opportunity costs of holding cash and the fixed transaction costs per withdrawal.<sup>18</sup> In the case of higher transaction costs, for example in the form of greater effort required to travel to the nearest cash withdrawal facility, it is therefore to be expected that people will withdraw cash less frequently, but withdraw larger amounts. In addition to this transmission channel for the effort involved in withdrawing cash, which is captured in the Baumol-Tobin model, people with higher transaction costs could try to reduce these costs, for example by making greater use of withdrawal services at supermarket cash registers.

*Determinants of cash withdrawal behaviour*

Respondents' cash withdrawal behaviour is determined by the frequency with which they make withdrawals at ATMs, bank counters and points of sale, as well as the amounts they withdraw. The results of this are shown in the table on p. 41, both for all respondents (column 1) and separately for urban and rural areas (columns 2 and 3). ATMs are by far the most popular source of withdrawals, being used by respondents on average 41 times a year. By contrast, respondents withdraw cash at bank counters only around four times a year and use withdrawal services at points of sale roughly just twice a year, on average.

*Frequency of cash withdrawals by source*

Withdrawal amounts are largest at bank counters, at an average of €447 per withdrawal. The amounts withdrawn at ATMs and points of sale are significantly smaller, at an average of €189 and €87 respectively. This pattern can be explained by the fact that the majority of with-

*Withdrawal amounts by source*

<sup>17</sup> This figure is close to the European average. In a study on the use of cash in all euro area countries, 94% of respondents reported that it is very easy or fairly easy to get to a cash withdrawal facility. The share of people for whom withdrawing cash is fairly difficult or very difficult varies between around 2% in Cyprus and 12% in Lithuania; see Esselink and Hernández (2017).

<sup>18</sup> See Baumol (1952) and Tobin (1956).



Cash withdrawal and payment behaviour in urban and rural areas <sup>o</sup>				
Item	Mean value	Mean value urban areas	Mean value rural areas	$\hat{\beta}$ (standard errors in parentheses)
<b>Cash withdrawal behaviour</b>				
Number of withdrawals per year				
ATM	40.5	40.2	43.3	2.868 (1.988)
Bank counter	3.7	3.7	3.8	-0.302 (0.867)
POS	1.9	1.9	1.6	-0.097 (0.466)
Average amount per withdrawal (in €) (user)				
ATM	189.3	187.1	206.0	5.676 (11.462)
Bank counter	446.6	406.8	774.8	103.140 (147.466)
POS	87.1	84.0	114.4	25.942 (9.520)***
Share of each source of cash withdrawals in the total withdrawal amount (%)				
ATM	87.0	86.7	89.4	0.028 (0.016)*
Bank counter	10.6	10.8	9.0	-0.024 (0.152)
POS	2.4	2.5	1.6	-0.003 (0.006)
<b>Payment behaviour</b>				
Share of cash payments (%)	75.2	75.4	74.2	-0.011 (0.016)

<sup>o</sup> Mean values are based on weighted data of respondents. In the regression results, \*, \*\* and \*\*\* denote statistical significance at the 10%, 5% and 1% levels.

Deutsche Bundesbank

drawals for day-to-day purchases are made at ATMs. By contrast, the majority of respondents visit the bank counter only in exceptional cases where larger amounts of cash are required.

*ATMs the dominant source of withdrawals*

Individual withdrawal amounts and frequencies can also be used to calculate the share of each respondent's total withdrawals attributable to the three withdrawal sources. In this respect, too, the significance of the ATM as the dominant source of withdrawals is evident, accounting for an average of 87% of the total withdrawal amount. At an average of 11% and 2% respectively, bank counters and points of sale play only a secondary role.

*Only few differences in cash withdrawal behaviour in urban and rural areas*

If one compares cash withdrawal behaviour in urban and rural areas, what is initially striking is that there is hardly any difference in the frequency of withdrawals. Despite the greater effort involved, respondents in rural areas withdraw cash almost as often as those in urban areas. By contrast, the amounts withdrawn by users at ATMs, bank counters and points of sale are significantly higher in rural areas. Overall, therefore, stronger demand for cash can be observed in rural areas. This result could be due to the structural differences in the population described in the table on p. 38, which obscure the impact of the infrastructural differences between urban and rural areas. For this reason, in

the fourth column of the above table, the results of several regressions are used for the analysis. The table shows the estimated mean differences ( $\hat{\beta}$ ) in cash withdrawal behaviour in urban and rural areas, i.e. the differences that would still be observed even if the population structure were the same. These differences can largely be attributed to the infrastructure conditions in urban and rural areas (see the box on p. 39).

As a result of the population structure being taken into account in the regression analysis, the differences in withdrawal amounts are now significantly smaller and are no longer significant for ATMs and bank counters. However, it is still the case that people in rural areas who withdraw cash at points of sale withdraw considerably higher amounts than people in urban areas (around €26 more). It is possible that a larger percentage of users in rural areas consider points of sale to be an equivalent alternative to the ATM and withdraw similar amounts there. However, the relevance of points of sale in covering the rural population's total demand for cash is no greater than in urban areas and, at around 2%, is low overall. On the contrary, ATMs even appear to have a somewhat greater significance for the supply of cash in rural areas than in urban areas. As with the descriptive comparison, there are no differences in the fre-

*Multivariate regression analysis confirms results*

quency of withdrawals in the regression analysis either. In particular, there is no evidence to support the assertion that the rural population might withdraw cash less frequently owing to the greater effort involved. This result may be due to the fact that both the urban and rural population consider the effort involved in withdrawing cash to be low overall.

## ■ Payment behaviour

*Payment behaviour in urban and rural areas*

Finally, the use of the amounts that are withdrawn, i.e. payment behaviour, is examined in greater detail. The lower part of the table on p. 41 shows the average share of cash payments among respondents. On average, respondents settled 75% of their transactions using cash during the survey week in 2017. As with cash withdrawal behaviour, the table shows a simple comparison of mean values between urban and rural areas as well as the conditional mean differences after accounting for differences in the population structure by means of a regression analysis. Neither comparison reveals significant differences in payment behaviour in urban and rural areas. There is therefore no indication that payment behaviour in rural areas could be influenced by infrastructural deficits.

## ■ Conclusion

*Are there differences in the supply of cash in urban and rural areas?*

This report focuses on differences in cash withdrawal and payment behaviour in rural and urban areas. The objective is to examine access to cash in rural areas and possible effects on cash withdrawal and payment behaviour. For this purpose, the data of around 2,000 re-

spondents in the 2017 survey on payment behaviour were analysed – both in descriptive terms and using multivariate methods which take account of structural differences in the population.

Overall, people in rural areas report somewhat greater effort involved in withdrawing cash. However, the differences between urban and rural areas are fairly minor, and the effort involved in accessing cash is considered low overall in both urban and rural areas. The moderately greater effort is not reflected in the rural population's cash withdrawal and payment behaviour. Respondents in rural areas withdraw cash approximately just as frequently as those in towns and cities. Although the rural population withdraws higher amounts, this can be primarily attributed to the difference in composition of the population and not to infrastructural factors. Both in urban and rural areas, the ATM is the dominant source of withdrawals. There are also no significant differences in payment behaviour between urban and rural areas. Cash was the most-used means of payment in 2017, both in urban and rural areas.

*Access to cash possible in urban and rural areas with little effort*

In light of these results, there is currently no indication of a general inadequate provision of cash to rural regions. In future, access to cash and withdrawal and payment behaviour should continue to be analysed in a differentiated manner, from both a regional and socio-economic perspective, in order to ensure that access to cash remains guaranteed for all population groups. Reliable access to cash and sufficient acceptance of cash payments are key to ensuring that consumers are not restricted in their freedom to choose a payment method.

*Access to cash ensures consumers have freedom of choice when paying*

## ■ List of references

Arango-Arango, C.A., Y. Bouhdaoui, D. Bounie, M. Eschelbach and L. Hernandez (2018), Cash remains top-of-wallet! International evidence from payment diaries, *Economic Modelling*, Vol. 69, pp. 38-48.

Bagnall, J., D. Bounie, K.P. Huynh, A. Kosse, T. Schmidt, S. Schuh and H. Stix (2016), Consumer cash usage: A cross-country comparison with payment diary survey data, *International Journal of Central Banking*, Vol. 12, pp. 1-61.

Baumol, W.J. (1952), The transactions demand for cash: An inventory theoretic approach, *The Quarterly Journal of Economics*, Vol. 66, pp. 545-556.

Deutsche Bundesbank (2019), *Statistics on Payments and Securities Trading, Clearing and Settlement in Germany 2014 to 2018*.

Deutsche Bundesbank (2018), *Payment behaviour in Germany in 2017: Fourth study of the utilisation of cash and cashless payment instruments*.

Deutsche Bundesbank (2015), *Payment behaviour in Germany in 2014: Third study of the utilisation of cash and cashless payment instruments*.

Deutsche Bundesbank (2014), *Cash withdrawals at the point of sale: motives for use and implications for cash holding*, *Monthly Report*, June 2014, pp. 69-80.

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

Deutsche Bundesbank (2011), *The banknote cycle and banknote recycling in Germany*, *Monthly Report*, January 2011, pp. 17-27.

Deutsche Bundesbank (2009a), *Payment behaviour in Germany in 2008: An empirical study of the selection and utilisation of payment instruments in the Federal Republic of Germany*.

Deutsche Bundesbank (2009b), *Demand for banknotes during the financial crisis*, *Monthly Report*, June 2009, pp. 52-53.

Esselink, H. and L. Hernández (2017), *The use of cash by households in the euro area*, *ECB Occasional Paper Series*, No 201, European Central Bank.

Federal Institute for Research on Building, Urban Affairs and Spatial Development (2019), *Laufende Stadtbeobachtung – Raumabgrenzungen: Stadt- und Gemeindetypen in Deutschland*, <https://www.bbsr.bund.de/BBSR/DE/forschung/raumb Beobachtung/Raumabgrenzungen/deutschland/gemeinden/StadtGemeindetyp/StadtGemeindetyp.html>, accessed on 17 June 2019.

Greiving, S., R. Winkel, F. Flex and T. Terfrüchte (2014), *Reform der Zentrale-Orte-Konzepte in den Ländern und Folgen für Siedlungsstruktur und Daseinsvorsorge*, Federal Institute for Research on Building, Urban Affairs and Spatial Development.

von Kalckreuth, U., T. Schmidt and H. Stix (2014a), *Choosing and using payment instruments: evidence from German microdata*, *Empirical Economics*, Vol. 46, pp. 1019-1055.

von Kalckreuth, U., T. Schmidt and H. Stix (2014b), Using cash to monitor liquidity: Implications for payments, currency demand, and withdrawal behavior, *Journal of Money, Credit and Banking*, Vol. 46, pp. 1753-1785.

Tobin, J. (1956), The interest-elasticity of transactions demand for cash, *The Review of Economics and Statistics*, Vol. 38, pp. 241-247.

Wooldridge, J. (2010), *Econometric Analysis of Cross Section and Panel Data*, MIT Press.