Committee on Payments and Market Infrastructures

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CPMI Brief No 8

And so we pay: more digital and faster, with cash still in play

March 2025

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And so we pay: more digital and faster, with cash still in play

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And so we pay: more digital and faster, with cash still in play[1]

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Highlights

- The use of cashless payments continues to increase. In particular, the use of credit transfers and e-money has grown, especially in emerging market and developing economies (EMDEs).
- Fast payments are gaining further ground and a key driver of the growing use of credit transfers in many EMDEs. Fast payments are often associated with less cash in circulation, and with more and smaller card payments.
- The ongoing digitalisation of payments coincides with a further decline in cash in circulation. Even so, the demand for cash withdrawals has generally stabilised, which highlights the lasting role of cash.

Introduction

Driven by changing user demands and technological advancements, digital payments, and fast payments in particular, have been on the rise for years.[2] Yet cash has continued to play an important role as a means of payment.

This CPMI Brief highlights key retail payment trends as observed in the 2023 Red Book statistics. These statistics were collected in the second half of 2024 from member jurisdictions of the Bank for International Settlements (BIS) Committee on Payments and Market Infrastructures (CPMI) and are publicly available in the BIS Data Portal.[3] The Brief starts with an overview of the use of cashless payment methods and then focusses, in particular, on the use of fast payments and the provision of non-bank payment accounts.[4] It then discusses global trends in cash in circulation and cash withdrawals as proxies of the use of cash. It concludes with a summary of the key takeaways.

[1] We thank Danilo Bedotti, Thomas Lammer, Tara Rice and Takeshi Shirakami for their valuable comments and are grateful to Jirapat Siridhasanakul for his outstanding help in collecting the 2023 Red Book statistics, and Fanni Leppanen for excellent research assistance. The views expressed in this CPMI Brief are those of the authors and do not necessarily reflect those of the Bank for International Settlements, its Committee on Payments and Market Infrastructures or its member central banks.

[2] Fast payments, also referred to as instant or rapid payments, are typically small-value credit transfers in which the funds are made available to the payee in real or near real time and as near as possible to 24 hours a day and seven days a week (CPMI (2021)).

[3] This CPMI Brief has benefited from data provided for Argentina (AR), Australia (AU), Belgium (BE), Brazil (BR), Canada (CA), China (CN), the euro area (EA), France (FR), Germany (DE), Hong Kong SAR (HK), India (IN), Indonesia (ID), Italy (IT), Japan (JP), Korea (KR), Mexico (MX), the Netherlands (NL), Saudi Arabia (SA), Singapore (SG), South Africa (ZA), Spain (ES), Sweden (SE), Switzerland (CH), Türkiye (TR), the United Kingdom (GB) and the United States (US). See the CPMI webpages for the list of all CPMI jurisdictions.

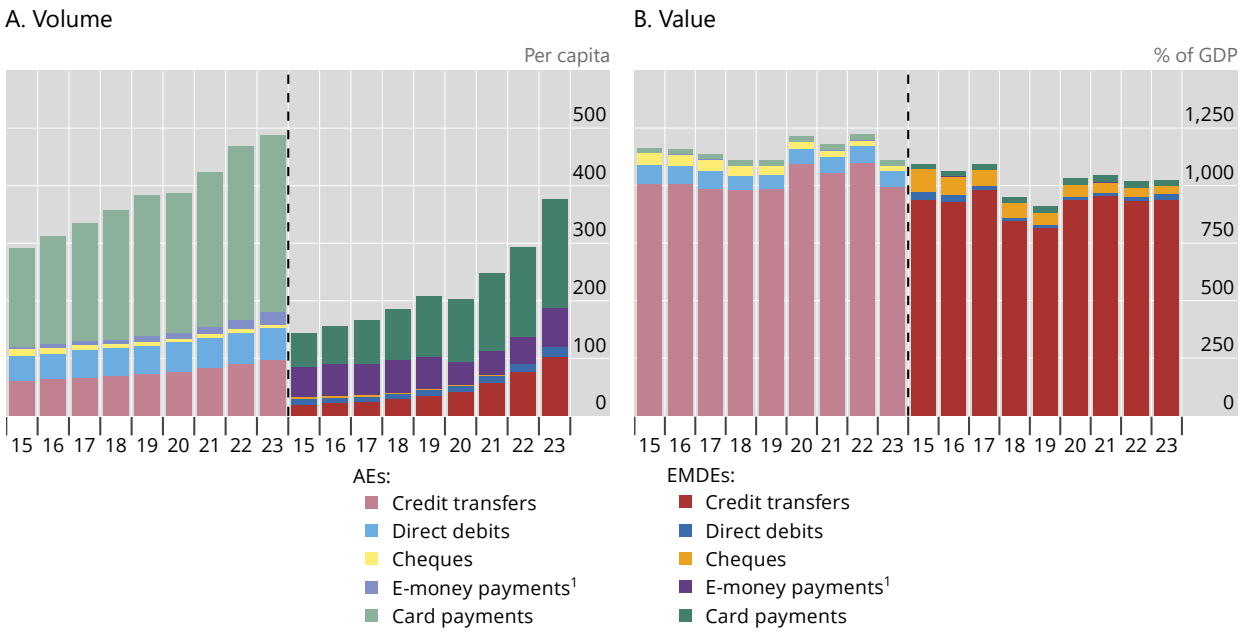
[4] In this CPMI Brief, cashless payments are considered to be all retail payments made without cash. Cheques are considered a cashless but not a digital means of payment since they start with the physical transfer of a paper cheque between the payer and the payee (even if they are now often presented in a digital form for clearing and settlement – a process called "truncation"). For this CPMI Brief, digital payments are defined as all payments made without cash or cheques. Credit transfers initiated on

Cashless payments gained further ground

The volume of cashless payments continued to rise in 2023. The growth was especially strong in emerging market and developing economies (EMDEs) (Graph 1.A). On average, the number of annual cashless payments per capita in EMDEs grew 29%, from 293 to 377, compared with 4% (from 468 to 487) in advanced economies (AEs). In particular, the use of credit transfers (+35%) and e-money (+48%) grew strongly in EMDEs. In many EMDEs, the rise in credit transfers was primarily driven by growing use of fast payments. On average, the per capita annual number of both credit transfers and e-money payments was higher in EMDEs (104 and 68, respectively) than in advanced economies (98 and 22, respectively). One additional noticeable difference between the two groups of jurisdictions is the use of payment cards. On average, in AEs, cards were used 306 times per person in 2023, as opposed to 188 times in EMDEs.

The value of cashless payments as a percentage of GDP generally declined or plateaued (Graph 1.B). In AEs, it fell 9%, returning to pre-pandemic levels, mainly driven by a drop in the total value of credit transfers. In EMDEs, it remained at the same level as in 2022. This, combined with the strong increase in number of cashless payments, suggests that digital payments are used more often for smaller amounts. For example, the average value of a credit transfer declined by 9% in AEs (from $6,808 to $6,169) and by 21% in EMDEs (from $4,051 to $3,220).[5]

Trends in cashless payments — Graph 1



[1] The distinction between card and e-money payments is not possible in the data for CA, CN, GB, MX, SA and ZA. For these jurisdictions, card payments may include e-money payments.

Sources: CPMI, Red Book statistics; authors' calculations.

paper are included within digital payments because of their negligible share in the total volume and value of credit transfers in most countries. Since the Red Book statistics do not include statistics on central bank digital currency (CBDC) usage, none of the definitions as used in this CPMI Brief cover CBDC payments.

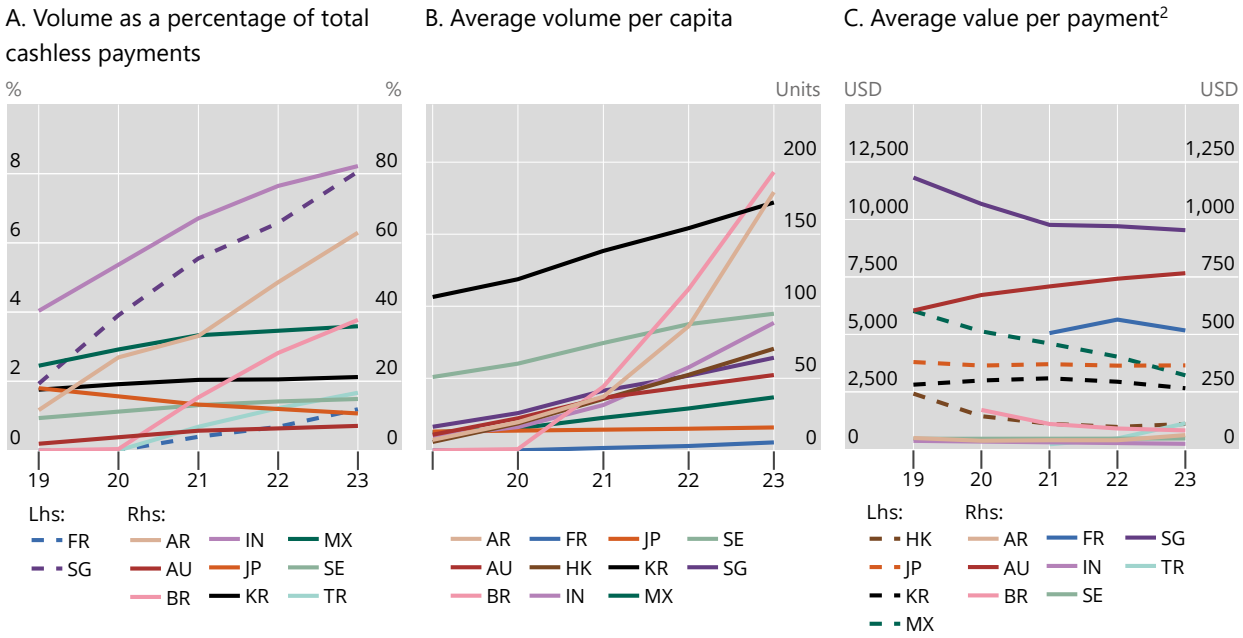
5 To remove the effect of changes in the exchange rates, we used the 2023 exchange rates to convert values expressed in domestic currency to US dollars.

The uptake of fast payments varies between jurisdictions

Over the last decade, many jurisdictions have introduced fast payment systems and services, and more will be launched in the coming years (CPMI (2021); World Bank (2021)). While most CPMI jurisdictions have at least one fast payment system or service, the use of fast payments is more widespread in some jurisdictions than in others. In 2023, the number of fast payments as a percentage of total cashless payments ranged from 1% in France and 7% in Australia to 63% in Argentina and 82% in India (Graph 2.A). In terms of payments per capita, Brazil and Argentina, in particular, saw significant growth in 2023 (Graph 2.B). As a result, the number of fast payments per person per year was highest in Brazil (193) and Argentina (179), followed by Korea (172) and Sweden (95).

Large jurisdictional differences exist in terms of the average size of fast payments (Graph 2.C). It was highest in Japan ($3,652), Mexico ($3,218) and Korea ($2,658), and lowest in Argentina ($62), Sweden ($47) and India ($24).[6] Apart from differences in the cost of living, this may reflect differences in the type of transactions using a fast payment (eg person-to-business transfers or person-to-person transfers) and the existence and level of transaction limits.

Trends in fast payments[1] Graph 2



[1] Jurisdictions represented in the graph are those that have data available for at least two consecutive years during 2019–23. [2] To remove the effect of changes in the exchange rates, we used the 2023 exchange rate to convert values expressed in domestic currency to US dollars for all observations shown in this panel.

Sources: CPMI, Red Book statistics; authors' calculations.

[6] To remove the effect of changes in the exchange rates, we used the 2023 exchange rates to convert values expressed in domestic currency to US dollars for all observations shown in Graph 2.C.

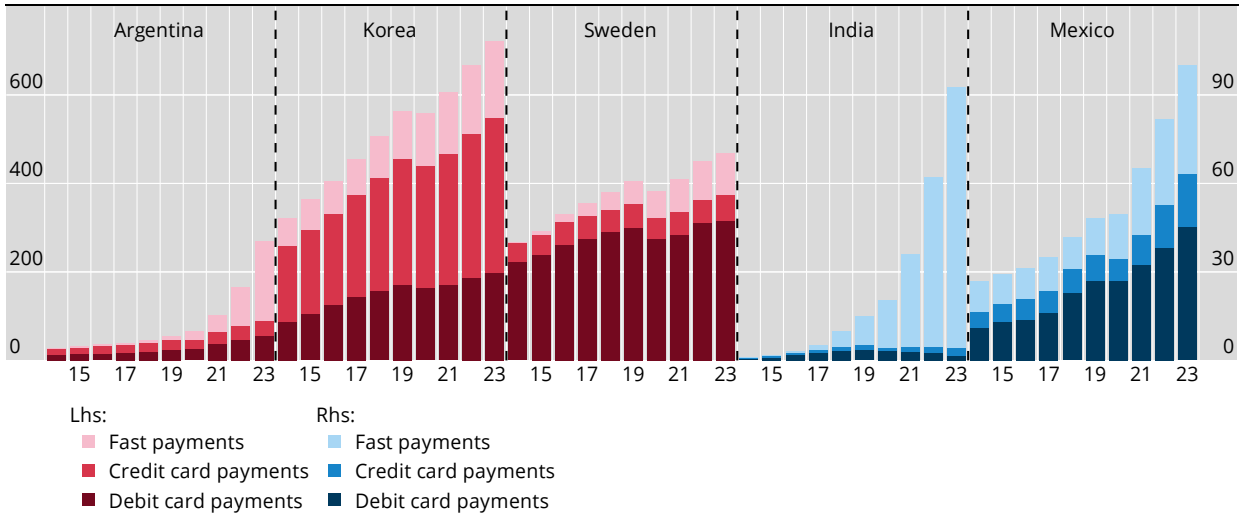
Fast payments as a litmus test for broader payment digitalisation

Fast payments can support a wide range of use cases, such as person-to-person payments, point-of-sale purchases, utility bill payments and cross-border payments (CPMI (2021)). Depending on the specific design of fast payment systems and services, their impact on traditional payment instruments, such as cash, traditional credit transfers and card payments, might differ across jurisdictions. While the 2023 Red Book statistics do not contain data that identify substitution, they hint at some general patterns.

The evolution of fast payments and card usage in the jurisdictions for which sufficient data are available shows that the strong growth in fast payments has not significantly affected the upward trend in card usage in Argentina, Korea, Mexico and Sweden (Graph 3). This suggests that, in these jurisdictions, fast payments and payment cards are likely used for different use cases, rather than as substitutes. By contrast, in India, the use of debit cards declined as fast payments grew, suggesting that fast payments are, to a certain extent, likely used as an alternative to debit cards.

Trends in card payments and fast payments[1]

Volume per capita — Graph 3



[1] Jurisdictions represented in the graph are those that have data available for consecutive years during 2014–23.

Source: CPMI, Red Book statistics; authors' calculations.

The average size of card payments is lower in jurisdictions with a higher uptake of fast payments (Graph 4.A). Smaller average card transaction values are generally tied to fewer cash payments in an economy.[7] Indeed, jurisdictions where fast payments have gained widespread popularity tend to have less cash in circulation (Graph 4.B). However, further research is needed to conclude whether fast payments are replacing cash, for example in person-to-person transactions or point-of-sale payments.[8] The correlation between the growth in fast payments and the decline in cash payments may merely reflect broader digitalisation of the economy as the common influencing factor: for example, a shift from point-of-sale to e-commerce payments may be reducing cash payments, whereas growing use of QR codes at

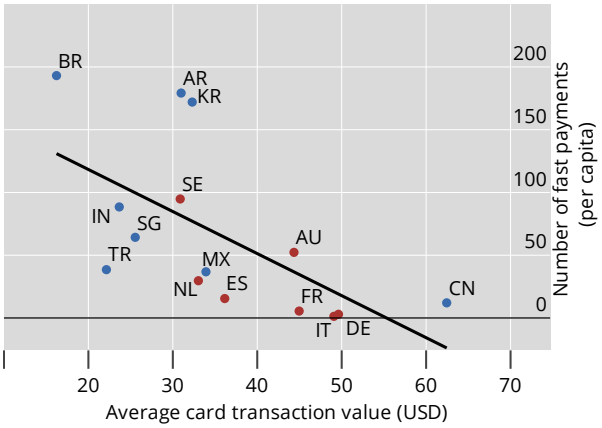
[7] See Di Iorio et al (2024).

[8] See Dev et al (2024).

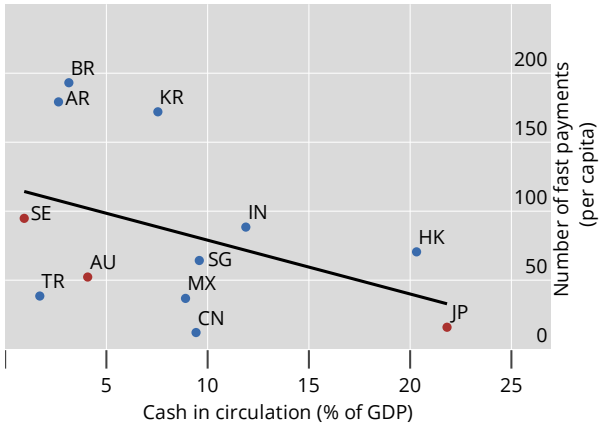
the point-of-sale may be inducing fast payments.[9] In any case, fast payments are a prominent sign of the increasing digitalisation of payments.

Fast payments as a sign of broader payment digitalisation — Graph 4

A. Relation between average card transaction value and fast payments[1]



B. Relation between cash in circulation and fast payments[2]



AEs EMDEs

[1] Jurisdictions represented in the panel are those that have data available for both average card transaction value and number of fast payments. The correlation coefficient for the regression is –0.62 and the p-value is 0.014. [2] Jurisdictions represented in the panel are those that have data available for both cash in circulation and number of fast payments. The correlation coefficient for the regression is –0.42 and the p-value is 0.17.

Sources: CPMI, Red Book statistics; authors' calculations.

The demand for non-bank accounts climbed to new heights in certain jurisdictions

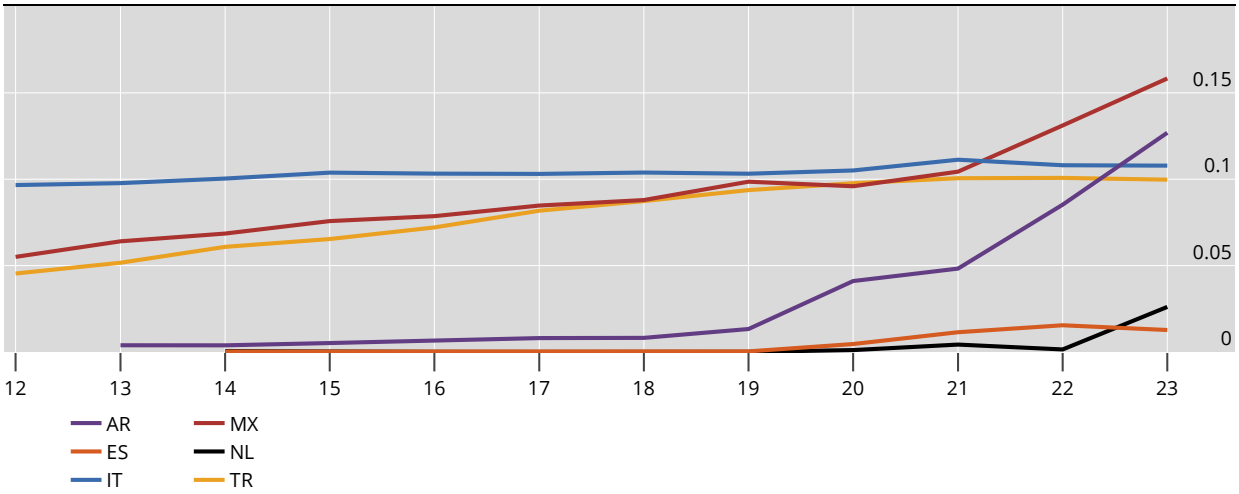
Over the past 10 years, the number of payment accounts offered by non-banks has grown (Graph 5). Mexico and Argentina recently experienced a sharp increase. Between 2020 and 2023, the number of non-bank payment accounts per capita grew by more than 65% in Mexico, and by more than 200% in Argentina. This growth was probably driven by a change in regulation. In 2020, the Central Bank of Argentina put in place a regulatory framework for non-banks providing payment services. Similarly, the Mexican congress passed a law to regulate financial technology providers in 2018, and subsequent regulations were introduced in the following years.[10]

[9] For example, results from the ECB SPACE survey show that the number of day-to-day point-of-sale payments decreased by 5% between 2022 and 2024, mainly in favour of online day-to-day payments (see ECB (2024)).

[10] See Diario Oficial de la Federación of 9 March 2018: www.dof.gob.mx/nota_detalle.php?codigo=5515623&fecha=09/03/2018#gsc.tab=0.

Number of non-bank payment accounts[1]

Per capita Graph 5



[1] Jurisdictions represented in the graph are those that have data available for at least two consecutive years during 2012–23.

Sources: CPMI, Red Book statistics; authors' calculations.

Cash in circulation steadily declined further, while cash withdrawals stabilised

In 2023, cash in circulation continued to decrease in most CPMI jurisdictions (Graph 6.A). As a percentage of GDP, it was nearly the same in AEs as in EMDEs (8% and 7%, respectively). However, there were large differences between jurisdictions. It was highest in Japan (22%) and Hong Kong SAR (20%) and lowest in Sweden (0.9%) and Türkiye (2%).

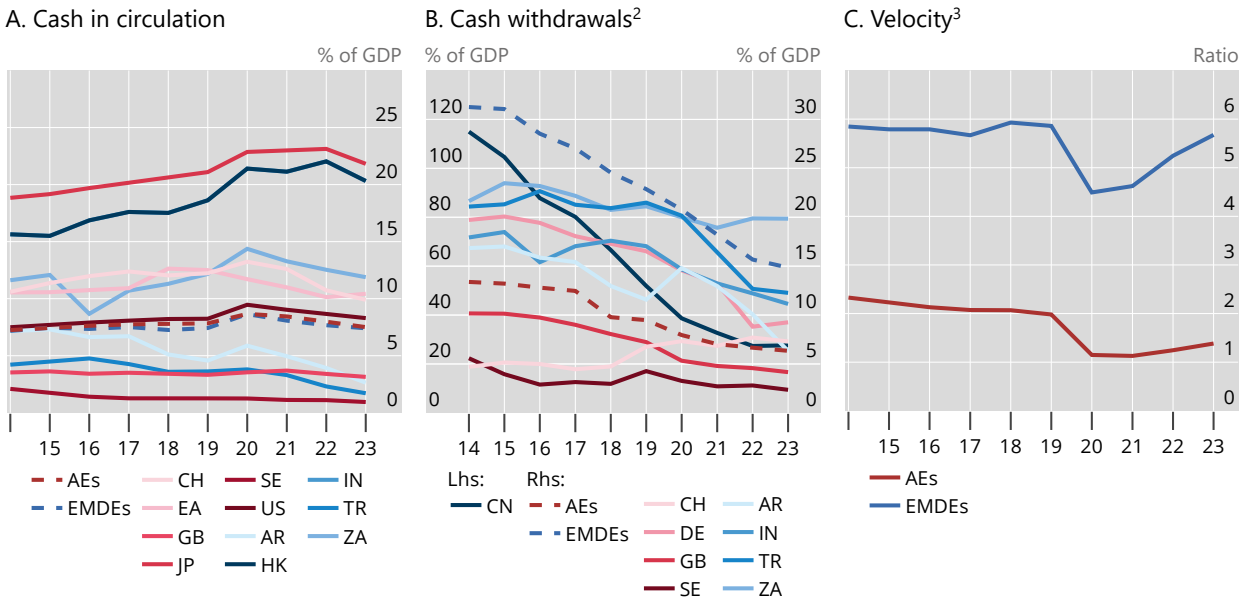
Of all outstanding cash in circulation, only the smaller denominations are generally used for payments.[11] For that reason, cash withdrawals are often taken as a better indicator of the use of cash as a means of payment than the total value of cash in circulation. After having declined for many years, cash withdrawals as a percentage of GDP generally stabilised in 2023 (Graph 6.B). While cash in circulation was similar in AEs and EMDEs, the value of cash withdrawals was generally lower in AEs (6% of GDP) than in EMDEs (15% of GDP). This may suggest that cash is used more as a store of value in AEs than in EMDEs, and more as a payment method in EMDEs than in AEs.[12] This hypothesis would be consistent with the lower velocity of money in AEs (Graph 6.C), indicating that money (both cash and deposits) circulates less quickly in AEs than in EMDEs.

[11] See eg Fischer et al (2004), Amromin and Chakravorti (2009) and Shy (2023).

[12] This may to some extent also reflect differences in the total size of financial assets between AEs and EMDEs.

Cash in circulation, cash withdrawals and velocity[1]

Graph 6



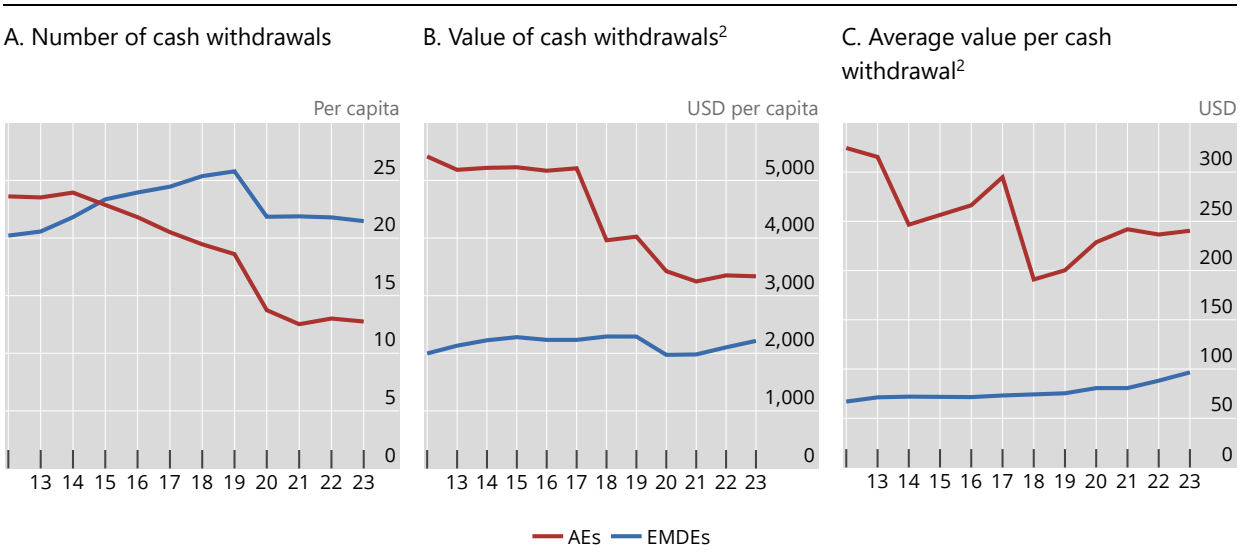
[1] For readability, panels A and B only show a selection of individual jurisdictions. However, the averages of AEs and EMDEs are calculated based on all jurisdictions for which data are available. [2] The panel shows data for cash withdrawals with cards issued inside the country. [3] The velocity is calculated using GDP/M1, where GDP is nominal gross domestic product and M1 is narrow money supply.

Sources: CPMI, Red Book statistics; authors' calculations.

The demand for cash in terms of number of withdrawals per capita also stabilised in most jurisdictions in 2023 – across both AEs and EMDEs (Graphs 7.A). Notably, the number of withdrawals per person was roughly one and a half times higher in EMDEs (21) than in AEs (13). The average withdrawal value in AEs barely changed compared to 2022 (from $237 to $240). It increased slightly from $88 to $97 in EMDEs (Graph 7.C).[13]

[13] To remove the effect of changes in the exchange rates, we used the 2023 exchange rates to convert values expressed in domestic currency to US dollars.

Trends in cash withdrawals[1] Graph 7



[1] All panels show country group averages for cash withdrawals with cards issued inside the country, at locations inside the country. [2] To remove the effect of changes in the exchange rates, we used the 2023 exchange rate to convert values expressed in domestic currency to US dollars for all observations shown in this panel.

Sources: CPMI, Red Book statistics; authors' calculations.

Conclusion

This CPMI Brief highlights the key trends in retail payments as observed in the 2023 Red Book statistics. It demonstrates that the use, or volume, of cashless payment methods continued to grow in 2023 and that consumers increasingly choose to pay digitally for small value transactions. Although broad based, the growth in cashless payments was especially strong in EMDEs, driven by a sharp increase in the use of credit transfers (mostly fast payments) and e-money.

While many jurisdictions have enriched their payments landscape with a fast payment system, the uptake of fast payments is more widespread in some than in others. It is generally higher in jurisdictions with lower levels of cash in circulation and wider use of payment cards, especially for small payments. Moreover, in various jurisdictions, the growth of fast payments has coincided with a further expansion of card payments. These observations suggest that fast payments are a prominent sign of the increasing digitalisation of payments. Alongside this, in various jurisdictions, there has been a surge in payment accounts offered by non-banks over the past decade.

Despite cashless payments gaining further ground in 2023, the Red Book statistics confirm the important role of cash in societies. While cash in circulation continued to decrease in many jurisdictions in 2023, the demand for cash withdrawals generally remained stable compared with previous years. This suggests that there is still a considerable demand for cash in making payments.

One of central banks' key tasks is to ensure that individuals and firms can make and receive payments safely and efficiently. Continued focus on data collection, consistency and monitoring are paramount to keep abreast of the latest developments in payments. The annual Red Book statistics are collected in a standardised and harmonised way from jurisdictions representing 59% of the world's population and 85% of global GDP. They are a unique source of jurisdictional-level data, allowing for a better understanding of how the use of payment methods and user preferences are changing.

References

Amromin, G and S Chakravorti (2009): "Whither loose change? The diminishing demand for small-denomination currency", *Journal of Money, Credit and Banking*, no 41, pp 315–35.

Committee on Payments and Market Infrastructures (CPMI) (2021): *Developments in retail fast payments and implications for RTGS systems*, December.

Dev, H, R Gupta, S Dharmavaram and D Kumar (2024): "From cash to cashless: UPI's impact on spending behavior among Indian users and prototyping financially responsible interfaces", arXiv:2401.09937v3, September.

Di Iorio, A, A Kosse and R Szemere (2024): "Tap, click and pay: how digital payments seize the day", *CPMI Briefs*, no 3, February.

European Central Bank (ECB) (2024): *Study on the payment attitudes of consumers in the euro area (SPACE) – 2024*, December.

Fischer, B, P Köhler, and F Seitz (2004): "The demand for euro area currencies: past, present and future", *European Central Bank Working Paper*, no 330.

Shy, O (2023): "Cash is alive: how economists explain holding and use of cash", *Journal of Economic Literature*, vol 61, no 4, pp 1465–520.

World Bank (2020): *Digital Financial Services,* April.

——— (2021): "Considerations and lessons for the development and implementation of fast payment systems", *World Bank Fast Payments Toolkit*, September.

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