Understanding Cash Usage

by
Guillaume Lepecq
and
Franz Seitz

CashEssentials
www.cashessentials.org
September 2019

Understanding Cash Usage

In February 2019, CashEssentials hosted a seminar in Athens bringing together central bank researchers, academics as well as payment professionals to further the understanding of cash usage.

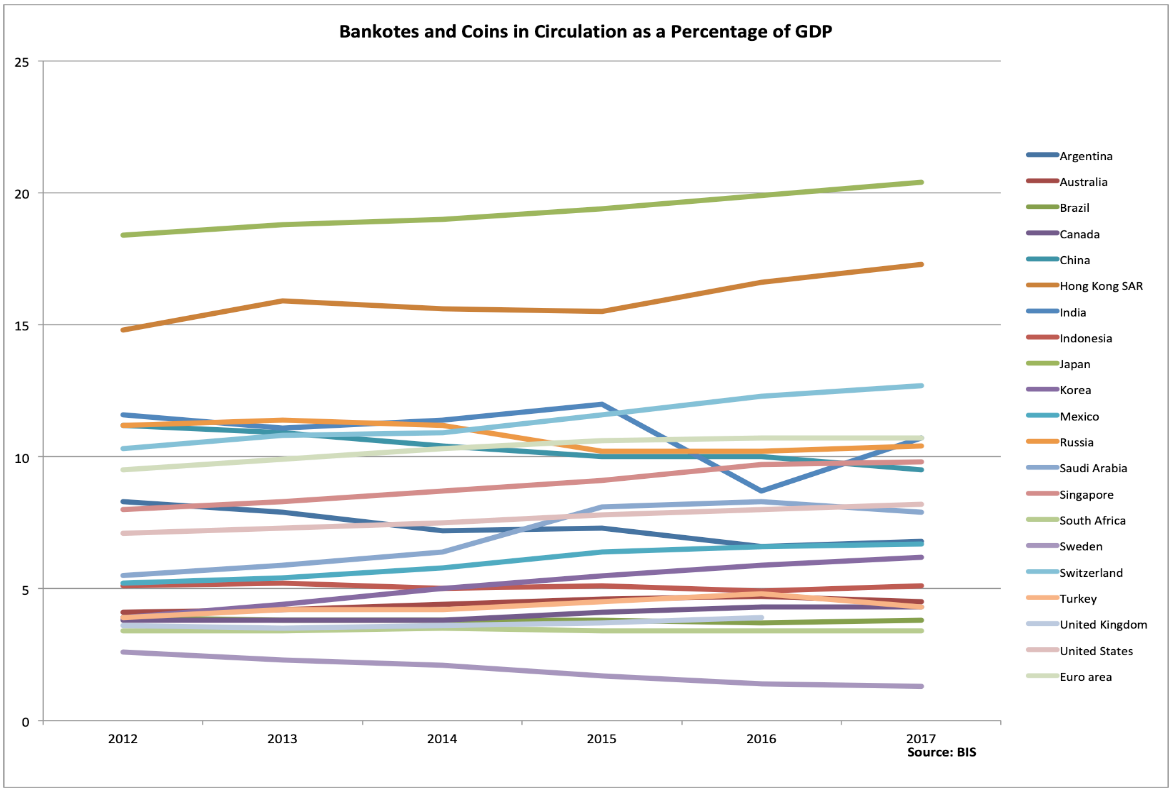
This article is an overview of some of the key take-aways that were discussed during the seminar. The views expressed here are those of the authors and do not represent the positions of their organisations.

Cash demand is growing in most markets even though levels of CIC and evolutions vary significantly across countries.

The vast majority of countries have been seeing continued growth in demand for banknotes and coins.

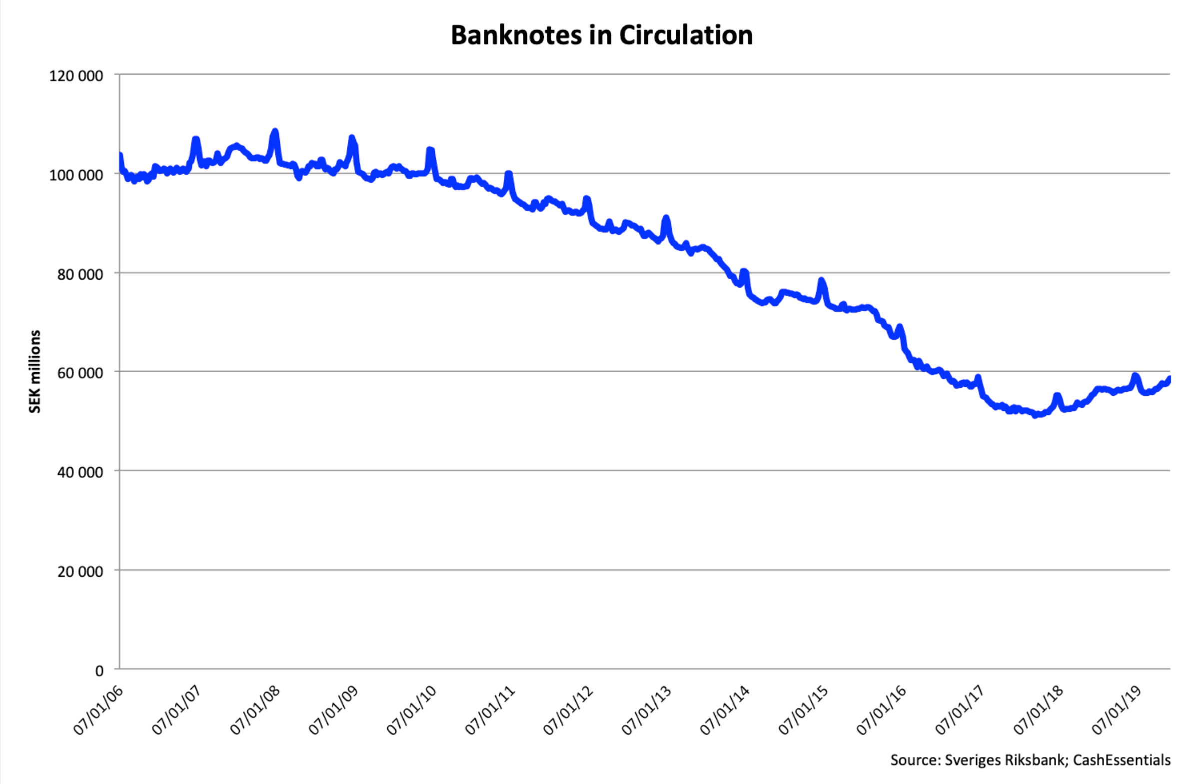
Chart 1 below shows the evolution of banknotes and coins in circulation in relation to GDP for the 21 markets, which are members of the BIS Committee on Payments and Markets Infrastructure (CPMI). For 16 of those currencies, demand has outpaced GDP growth. 5 have seen the currency in circulation/GDP ratio decline: Argentina, China, India, Russia and Sweden.

Chart 1. Evolution of CIC in CPMI countries



Both Argentina and Russia have experienced a period of economic and financial volatility. In India, the government decided to 'demonetise' the two highest denominations in November 2016 which led to a sharp decrease in the value of banknotes in circulation which are now back to pre-demonetisation levels. In China, cash demand has been growing but at a slower rate than GDP - +3.6% in 2018. This leaves Sweden, as the only CPMI country which has seen cash demand decline in value; between 2007 and 2018 the value of cash in circulation was almost halved. But then, rather unexpectedly, in May 2018 the curves crossed, pointing to a year-on-year increase of cash in circulation by 7.23 % in 2018. And at the end of February 2019, the trend has continued at a similar pace.

Chart 2: Cash in Circulation in Sweden



Monetary theory identifies three motivations to hold cash: transactional, store of value and international demand

The anonymous nature of cash makes it difficult to measure what drives demand. How can one measure whether a banknote withdrawn from an ATM or a bank branch, will be immediately spent in a store, held as a precautionary reserve or taken overseas? In addition, the actual boundaries between these various functions are somewhat blurred.

Consequently, there is no direct measurement of these motivations. They can only be estimated using indirect methods.

In the case of Switzerland, three different approaches were combined to measure the share of cash used as a store of value (non-transactional demand):

- The denomination mix: large denominations are mainly used as a store of value
- The life span of banknotes: a banknote which is stored will see its lifespan extended in comparison to transactional notes
- Seasonal patterns: stored notes will dampen the seasonality of demand.

The share of cash as a payment instrument is often estimated using payment diaries, but these surveys are complex and expensive to run. The evolution of low- and medium-sized denominations (e.g., withdrawals at ATMs) is often used as a proxy to measure transactional cash.

Cash is the most widely used payment instrument worldwide but its relative share is declining

Worldwide, cash is the leading payment instrument even if there are significant differences between countries. However, cross-country comparisons are difficult as the scope of transactions covered in payment diaries as well as the methodologies vary substantially. In the euro area, the share of cash transactions at the point of sale range from around 90% in southern Europe to less than 50% in the Netherlands and Estonia.

Chart 3: Share of cash as a payment instrument

	Share of cash as a payment instrument in % of transactions	Source
Euro Area	79	The use of cash by households in the euro area; Nov. 2017; ECB
Switzerland	70	Survey on payment methods 2017; Swiss National Bank
United States	30	2018 Findings from the Diary of Consumer Payment Choice; Federal Reserve Bank of San Francisco
Sweden	15	Payment patterns in Sweden; Sveriges Riksbank, May 2018

There is evidence that the share of cash as a payment instrument is declining. In the Netherlands, the share of cash payments has dropped from 64.7% in 2010 to 45% in 2016[1]. In the US, cash has seen its share decline from 33% of transactions in 2015 to 30% in 2017[2]. In the UK, cash payments have dropped from 63% of all payments in 2007 to 34% in 2017.[3]

The decline in transactional demand regularly makes the headlines and is used as signal of the demise of cash.

[1] Point of sale payments in 2016 ; results of the study by the Nederlandsche Bank and the Dutch Payments Association.
[2] 2018 Findings from the Diary of Consumer Payments Choice ; Federal Reserve Bank of San Francisco, Nov. 15 2018.
[3] Access to Cash Review Final Report - Final Report - March 2019. https://www.accesstocash.org.uk/media/1087/final-report-final-web.pdf

However, it should not be overestimated. In the above examples, cash is the most widely used payment instrument in the US and the second in the Netherlands and the UK. In the euro area, the circulation of low denomination notes is increasing albeit at a lower pace than high-denomination notes, indicating that transactional demand (internally and externally) is continuing to grow.

Socio-demographic criteria do influence the choice of a payment instrument but transaction characteristics are the main determinants

In many countries the impact of socio-demographic criteria in the choice of a payment instrument are quite similar:

- Men make significantly more cash payments than women
- The use of cash increases with age and decreases with income

However, the transaction characteristics are the main determinant, and above all the value of the transaction. Cash is used first and foremost for low-value transactions. In France, 90% of transactions under €5 are paid in cash vs 12% of transactions above €50. In the US, 55% of transactions under $10 are settled in cash vs 7% of transactions above €100. Another characteristic which plays an important role is the place of purchase, clearly pointing towards a specialisation of payment instruments. In the euro area, 90% of transactions at street or market vendors (news agents, florists etc.) as well as bars and restaurants are paid in cash whereas the accommodation sector (hotels guest houses and campings) only receive 45% of their payments in cash. In Hungary, a spill-over effect has been evidenced[4] whereby enterprises which receive cash payments will tend to use cash in its supplier relations or to pay wages.

The demand for cash as a store of value is increasing in most countries

The increase in cash in circulation as illustrated in Chart 1 is largely due to an increase in large denominations as evidenced by the Bank for International Settlements[5]. “Over the last decade, the demand for large denomination notes has outpaced that for smaller denominations”. This suggests that cash is increasingly used as a store of value. Four countries have estimated in further detail the share of cash as a store of value as illustrated in Chart 4.

Low interest rates are an obvious factor which has fostered store of value demand. Japan provides a clear illustration, as it has experienced an extended period of low interest rates since the late nineties which followed a severe banking crisis. This has coincided with a steady increase in the cash in circulation/GDP ratio from approximately 8% in 1991 to over 20% in 2017. This increase is entirely due to store of value as transactional demand has followed similar patterns as the euro area or North America.

---

[4] Exploring the drivers of cash usage. An overview of consumer and business payment behaviour in Hungary; http://english.hitelintezetiszemle.hu/letoltes/fer-17-4-st3-illes-belhazy-vegso-bodi-schubert.pdf

[5] Payments are a-changin' but cash still rules; BIS Quarterly Review, March 2018 https://www.bis.org/publ/qtrpdf/r_qt1803.pdf

Chart 4: Estimated Components of Currency in Circulation

	Transactional	Store of Value	International
Germany	5-10	25	65-70
Euro area	25	45	30
Switzerland	20-40	60-80	
Japan	58	42	

In Germany, banks are currently holding an additional amount of approximately €18 billion worth of banknotes in order to avoid negative interest rates. Overall, the store of value component of cash represents approximately €140 billion but that is only 2% of financial balances of private households.

But interest rates are not the only factor impacting the store of value demand for cash. Demand is also determined by internal and external factors: events such as the collapse of Lehman Bros in 2008 or natural disasters such as the Hurricane Harvey in 2017 coincide with spikes in currency in circulation. In the case of international currencies, external events such as Argentinian crisis at the turn of the century or the Ukrainian crisis in 2014 also fuel demand.

Sweden is noteworthy outlier as it is one country which has not seen an increase in store of value demand. This is illustrated by the fact that demand for high denomination notes has declined in Sweden between 2000 and 2017. There are signs that this is changing.

Decline in transactional demand is driven by both demand and supply-side factors

Two factors explain the relative decline of cash in payments on the demand side.

On the one hand, substitution of cash by digital payments and in particular contactless payments seems to play a role as consumers are changing their payment habits; 10% of all Point of Sale transactions use contactless technology in the Netherlands in 2016; in the UK, contactless payments grew by 99% in 2017 to 4.3 billion transactions vs 13 billion cash transactions. Until recently, it was often considered that new payment instruments were mostly cannibalizing existing digital payments rather than replacing cash. It appears that this could be changing.

On the other hand, there are signs that the overall number of payments is declining. In the US, participants in the Diary of Consumer Payments made approximately 1.3 payments per day in 2017, down from 1.5 and 1.6 payments per day in 2016 and 2015, respectively. This is particularly true for transactions that are made in person which have dropped from 79% in 2015 to 77% in 2017.

On the supply side, one key factor is access to cash. Sweden provides a good illustration as cashless branches appeared as soon as 2010, but now over half of the bank branches are cashless making it difficult for consumers to withdraw but also for merchants to deposit cash. Other factors include government policies to promote digital payment or to restrict cash usage. In Hungary, the government launched a programme in 2016 to support the development of POS terminals; in Europe, 11 countries have introduced regulations restricting payments in cash above a certain threshold.

Does the decrease in transactional demand matter?

Financial inclusion also remains a challenge including mature economies; in the euro area the majority of consumers own a payment card but 7% do not, and card ownership drops to 66% in Cyprus[6]. In the US[7], estimates from the 2017 FDIC survey indicate that 6.5 % of households were unbanked. This proportion represents approximately 8.4 million households. An additional 18.7% of U.S. households (24.2 million) were under-banked, meaning that the household had a checking or savings account but also obtained financial products and services outside of the banking system.

The decline in transactional demand first has an impact on the **cash infrastructure**. A number of countries are experiencing a similar trend to Sweden with the closure of bank branches and ATMs making it increasingly difficult to access cash. In turn, if cash is less accessible then the transactional usage will likely continue to decrease.

Several countries have launched initiatives to ensure equal access to cash throughout the territory. In Sweden, lawmakers are debating a proposal which would force banks to provide cash services to their customers. In the UK, the Access to Cash Review was commissioned as a response to growing concerns about whether people can use or access cash. In the US, several states are legislating against stores and restaurants, which refuse to accept cash on the basis that it discriminates those who need or prefer to pay in cash.

Cash contributes to the **robustness** of the payments infrastructure. If a merchant's POS terminal is out of service, if the payer's card has expired or if the network is down, cash provides a robust solution for transactions. If transactional usage declines, the dependence on digital payment systems increases. It is however important to realise that access to cash is already largely dependent on digital networks.

Cash has also demonstrated its important role in the case of natural disasters or financial crises. Stefan Ingves, Governor of the Swedish central bank wrote in February 2018[8]: "In times of crisis, the general public has always sought refuge in risk-free assets, such as cash, that are guaranteed by the state. The idea of commercial agents shouldering the responsibility to satisfy public demand for safe payments at all times is unlikely."

The payments industry is characterized by a high level of **concentration**. And the concentration is accelerating as

[6] The use of cash by households in the euro area; ECB Occasional Paper Series N° 201; Nov. 2017

[7] Federal Deposit Insurance Corporation National Survey of Unbanked and Underbanked Households ; https://www.fdic.gov/householdsurvey/

[8] Payments in the future and legal protection for the Swedish krona https://www.riksbank.se/en-gb/press-and-published/notices-and-press-releases/debate-articles/payments-in-the-future-and-legal-protection-for-the-swedish-krona

illustrated by a wave of mergers in recent years; in July 2018, the Financial Times reported that the first six months of 2018 had seen 102 mergers and acquisitions worth a total of $46 billion, surpassing 2017's full year figure of €32.9. In June 2019, Christine Lagarde, Managing Director of the IMF warned of the threat to financial stability raised by the arrival of Tech companies in the banking industry: "These developments hold out the promise of accelerating inclusion and modernizing financial markets, but raise, in addition to privacy issues, competition and market concentration concerns, both of which could lead to vulnerabilities in the financial system." Currently, cash provides an alternative to digital payments systems, it guarantees access to safe central bank money and legal tender for everybody and ensures a level of competition between providers.

Conclusion: time to reduce frictions on cash payments?

The majority of countries are experiencing growth in cash in circulation. However, this growth is largely due to store of value demand (non-transactional demand) rather than transactional demand. The level and pace of decline of transactional demand differs significantly between countries.

But many countries are recognizing that the decline raises major concerns in terms of financial inclusion, of the robustness of the payments infrastructure and in terms of competition. In that case, what measures can be adopted to reverse the trend?

One solution to ensure that cash remains widely used would consist in removing existing frictions on cash usage. Many of these frictions were introduced either to limit cash usage or to increase the quality or security of cash.

Chart 5. Frictions on cash

Frictions on cash
Abolishing high denominations
Caps on cash payments by value
Limitations on legal tender
Clean note policies
Recirculation policies
Closing central bank branches

Bibliography of Presentations

Matthias Uhl, Deutsche Bundesbank

Presentation: Determinants of the demand of cash in Germany

Paper:
https://www.bundesbank.de/resource/blob/635018/b9c217d602062cb6c62ccdc9afc8b65e/mL/2017-04-24-uhl-data.pdf

Tamás Végsö, The Central Bank of Hungary

Presentation: Exploring the drivers of cash usage. An overview of consumer and business payment behaviour in Hungary.

Paper:
http://english.hitelintezetiszemle.hu/letoltes/fer-17-4-st3-illes-belhazy-vegso-bodi-schubert.pdf

Emmanuelle Politronacci, Banque de France

Presentation: Determinants of cash usage in France

Paper : https://publications.banque-france.fr/en/use-cash-france-payment-method-choice-low-value-purchases

Jörn Tenhofen, Swiss National Bank

Presentation: The demand for Swiss banknotes: stylized facts and some new evidence

Paper:
https://www.bundesbank.de/resource/blob/634978/37bde6a7e7fedbd9d67f84b4907b9c5a/mL/2017-04-24-tenhofen-data.pdf

Hiroshi Fujiki, Chuo University

Presentation: Cash Usage in Japan

Paper: http://tcer.or.jp/wp/pdf/e131.pdf

Ben Fung, Bank of Canada

Presentation: Will cash disappear? Is a cashless society problematic?

Paper: https://www.bankofcanada.ca/wp-content/uploads/2018/10/sdp2018-12.pdf

Cécile Becuwe, European Central Bank

Presentation: Does the declining transactional demand for cash matter?

Paper: https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op201.en.pdf

Gerhard Rösl, Ostbayerische Technische Hochschule Regensburg

Presentation: Money services and seigniorage

Paper: NA

Alexander Bau, Cash Product Office Federal Reserve System

Presentation: Rethinking volume forecasting: observing cash's evolution in the economy, and the subsequent impact on the cash handling industry

Paper: https://www.frbsf.org/cash/publications/fed-notes/2018/november/2018-findings-from-the-diary-of-consumer-payment-choice/

About Us

CashEssentials is as an independent initiative, which aims at offering a platform for debate about the payments and monetary ecosystems, to conduct and foster high-quality research on cash and its future.

www.cashessentials.org

Guillaume Lepecq is the chair of CashEssentials and founder of AGIS Consulting.

Prof. Dr. Franz Seitz is a professor at the Weiden Techncal University of Applied Sciences and a member of the CashEssentials Steering Committee.