

Cash without future? Future without cash? A wider view

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*Recently, proposals to abolish cash or to restrict its use have been put forward by economists and policymakers. There are three main lines of **argument** brought forward **against cash**: first, it is costly, inefficient and outdated. Second, it facilitates criminal activity, money laundering and tax evasion. Thus, cash generates negative externalities. Third, it limits the leeway for monetary policy to drive nominal interest rates deeply into negative territory to fight recessions and deflation. Are these arguments valid?*

*In this note, we evaluate and confront the charges against cash with a number of **counterarguments**: Cash is still the preferred means of payment of many people in many countries. It is fast and easy to use, and facilitates the monitoring of expenses; thus it is particularly important for young, old, less educated and lower income groups. It preserves privacy and anonymity both vis-à-vis the state and against transaction partners. It limits states' powers over individuals, which may be particularly urgent in unlawful states and in countries with hyperinflation. Thus, world currencies available in cash generate positive externalities. Cash prevents central banks from implementing excessively low interest rates, which erode pension savings and lead to resource misallocation as well as asset price bubbles. It generates seigniorage for states, rather than for private payment service firms.*

*We argue for a research and evidence-based evaluation of this issue. **Costs and risks** of both cash and non-cash payment systems must be estimated far more carefully than has been done so far. Uneven effects **on different parts of society** as well as important **economic and non-economic externalities** across the world need to be considered. The role of cash should be viewed **beyond the narrow focus of economics or efficiency**: the existence of cash, in the sense of an anonymous and untraceable means of payment is seen as a tool of crime by some, and as a pillar of individual liberty by others.*

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1. Costs and efficiency: Let the market decide?

The use of **cash involves sizable costs** for central banks as issuers, for commercial banks as distributors, for merchants (handling time and security costs), for consumers (shoe leather costs, risk of theft, robbery etc.) and for states in terms of costs of tax evasion and other crimes. Some of these costs are explicitly charged for (e.g. banks are charged by central banks for cash logistics, merchants pay for cash handling by banks, retail customers in some countries pay for cash withdrawals). But in many cases, the prices charged for the handling and usage of cash **do not fully reflect the true total costs**. Thus, opponents of cash argue, individuals choose to use cash on the basis of transaction costs which are biased to the downside through various subsidies and non-incorporation of important social costs. Furthermore, cash is also privileged in most countries by being the only means of payment enjoying the status of **legal tender** (see e.g. Leinonen, 2015).

Defenders of cash argue by contrast that **non-cash transactions are cross-subsidized** and thus put at an advantage over cash: E.g. within the European Union SEPA bank transfers up to EUR 50,000,-- are priced at the same low level as domestic money transfers, irrespective of the costs generated at banks. **Many countries actively discriminate against the use of cash** by introducing upper limits on cash transactions, above which these transactions involve various disadvantages (loss of tax recognition or hard legal prohibitions).² The privilege of the legal tender status of cash is in practice not enforceable if e.g. large denomination banknotes are simply not accepted by merchants e.g. for fear of counterfeiting (see e.g. Krüger, 2015). The very existence of cash as a cheap means of payments (from a consumer perspective) may limit the pricing leeway for electronic payments and thus forces payments services to innovate in order to compete; if cash were abolished, **oligopolistic market structures in payments services** might otherwise lead to sharp price increases in electronic payments.

Means of payment are characterized by important **network economies and economies of scale**. So, while at first glance letting market preferences decide on the choice of payments services appears an obvious avenue to follow, numerous cross-subsidization schemes and **difficulties in establishing the true total cost per transaction** renders the hope for a fair, cost-based market competition between cash and non-cash forms of payments illusionary (see e.g. Krüger, 2015).

Cost considerations are incomplete if they ignore risks. The cheapest **payment system may not be optimal if it involves undue systemic risk**. Electronic payment systems rely on the smooth functioning of IT systems, electricity grids etc..³ **Cybercrime** may cause large-scale damage to a vast number of users of electronic payment systems. Defenders of cash argue that cash is more **robust** against such large-scale failure and in times of crises (see e.g. Bernholz, 2015; Krüger, 2015).

Finally, even if cash and non-cash transactions were priced fully and correctly and even if cash transactions really turned out to be more expensive than non-cash transactions, it would not necessarily follow that (all) users would opt for – or would be able to use – electronic payments. Some people may have no access to a bank account. **Financially constrained, lower income and financially less educated persons** may find it **easier to keep control of “physical” cash payments than of “virtual” electronic payments** (see Jonker, 2015). Ideally, this advantage of cash should be taken into account when calculating the social benefits of cash and weighing them against the social costs of cash.

² For an overview on limitations on cash payments in EU member states see: <http://www.evz.de/en/consumer-topics/buying-goods-and-services/cash-payment-limitations/>

³ However, cash is only advantageous in such circumstances if a sufficient amount of cash is in circulation because the provision of cash (e.g. via ATMS) could also be affected by failures in IT or electricity networks.

How should policymakers and lawmakers react? In the end, it may be argued, democratic and inclusive societies should take people's preferences seriously, recognizing that preferences across countries and among different groups of society within countries might differ. For certain, **over time preferences may evolve**, and so might the legal and institutional framework governing the pricing of payments services. What is important to recognize, though, is that **costs, preferences and the legal and institutional frameworks mutually influence each other**: There is **no single most efficient outcome**.

2. Abolishing cash to fight criminal activity: effective and adequate?

It is often argued (e.g. Buiters, 2009; Rogoff, 2014) that cash facilitates tax evasion, drug trafficking, organized crime, terrorism and money laundering because it does not leave traces. How relevant is this claim? In particular, to what extent would constraints on, or the abolition of, cash help to curb crime? Is the abolition of cash the most effective measure, or are there better alternative steps to be taken before?

Schneider et al (2015) confirm that **cash does play an important role in international organized crime**. The resulting cash proceeds are subsequently to a large part channeled into the official sector through multiple methods of money laundering. The various methods for estimating the volume of international organized crime yield quite different figures, but the orders of magnitude involved, at 1.5-5.5% of world GDP, are undoubtedly important. Furthermore, the volume is generally estimated to have nearly doubled between 1996 and 2009. Cash seems to be most important in drug trafficking but is also important in other areas such as human trafficking and illegal trade of wildlife or timber.

Even though cash facilitates crime, it is nevertheless not clear that a restriction in the use of cash would be an effective and adequate response. With regard to **effectiveness**, it is questionable whether restrictions on the use of cash will lead to a sizeable reduction in criminal activity. The idea that crime can be curbed by banning cash transactions seems to rely on an unrealistically static conception of criminal activity. The very nature of crime as activities that actively aim to circumvent law makes a **dynamic view of crime-related payments** more realistic, implying that **cash substitutes**, such as precious metals, trading of pre-paid cards, payment in kind etc. would rapidly develop. For sure, restrictions on the use of cash would **increase transaction costs** and therefore reduce profits from crime. However, since the profit margins of illicit activities are very high, this increase in transaction costs would be comparatively modest. This leads Schneider et al (2015) to conclude that **restrictions on cash would only lead to a relatively minor reduction in criminal activities**. In this context, it is also noteworthy that nearly one fifth of worldwide money laundering happens in the United States, a country without high-denomination banknotes and with a long-standing and widespread use of non-cash payments.

With respect to **adequacy**, the question arises whether criminal activity should not preferably be fought at the source and to what extent we accept less privacy in order to reduce crime (see Berentsen, 2015; Krüger, 2015). Furthermore, behavioral economics suggests that people might be more dishonest in a cashless society. Ariely (2012) argues that people quite often want to regard themselves as honest even though they act in a dishonest way. However, most people are not able to maintain this illusion if cash is involved. As a simple illustration: Most people will not pocket cash (not even a few cents) from a cash box at their workplace. On the other hand, few people feel dishonest when they take a pencil.

3. Does cash hamper adequate expansionary monetary policy?

The quest for ultra-expansionary monetary policies in response to the economic and financial crisis has revived the debate on the **zero lower bound (ZLB) of interest rates**. If cash is available as an alternative zero-interest store of value, nominal interest rates on financial assets cannot be lowered much below zero. Thus, in periods of very low inflation or even deflation, real interest rates cannot be driven as low as necessary to ensure an economic recovery or, more seriously, to avoid a deflationary spiral and debt-deflation cycles. Proponents of restricting the use of cash argue that the lower bound on interest rates is more likely to be binding than in the past because the level of nominal interest rates has dropped considerably (reflecting lower inflation as well as a long period of ultra-easy monetary policies in response to the crisis; see e.g. IMF, 2014; Rogoff, 2014). The call for negative interest rates is also related to the discussion on secular stagnation implying a negative equilibrium real interest rate (Summers, 2014, and, for an overview, Teulings et al, 2014; Bernanke, 2015). Therefore, in order to enable central banks to bring nominal and real interest rates sufficiently down, cash opponents argue, cash should be abolished (or be modified in a way that makes a reduction in its nominal value over time feasible).

Several issues need discussion in this context: First, where is the actual lower bound of nominal interest rates (commonly termed “effective lower bound” or ELB), given that cash holdings involve transaction and storage costs? Second, which other alternatives to implement an expansionary stance does monetary policy have once the ELB has been reached? And, finally, are negative (nominal and real) interest rates desirable at all? Is the ELB on interest rates maybe a useful “natural” limit against ever more monetary expansion? ⁴

Regarding the first question, holding large amounts of cash at home involves non-negligible risks of loss, theft or destruction. For firms and institutional investors, the transaction, storage and security costs are sizable as well. Recent experience in countries (Switzerland, Sweden, Denmark) with negative official rates suggests that the **effective lower bound on nominal interest rates may be as low as -1%**. So, from a “technical” perspective, no major central bank has fully exhausted its expansionary leeway as set by the ELB. In other words, the existence of **cash has so far not prevented central banks from further lowering nominal policy rates**.

Regarding the second question, monetary policy implementation during the economic and financial crisis has demonstrated that **central banks do have alternatives to soften the monetary policy stance** beyond bringing official rates into (further) negative territory. In particular, they have softened overall financing conditions by extending the maturity of their open market operations (in the case of the ECB so far up to four years), by easing collateral requirements for open-market operations, by conducting large-scale **asset purchase programs** (mostly but not exclusively involving government bond purchases), and by providing **forward guidance** on their future monetary policy course (time-dependent and/or state-contingent, e.g. conditioned on the attainment of certain target variables such as inflation, the unemployment rate etc.). **These policies have proven very powerful** in bringing down the term premium, longer-term risk-free interest rates as well as risk premiums. They were also successful in stopping and reversing an undesired downward slide in inflation expectations (see e.g. Ulbrich, 2015). Furthermore, it is likely that macroeconomic shocks that require a strong fall in policy rates also lead to an impairment of the monetary policy transmission mechanism. Hence, only lowering the policy rate could be ineffective in such situations (Cœuré, 2015).

⁴ Disagreement among economists on these issues is documented by Armstrong et al (2015).

On the other hand, Agarwal et al (2015) argue that there may be a limit for quantitative easing above which quantitative easing leads to no further stimulus. Furthermore, according to these authors, our theoretical understanding of quantitative easing is quite limited. By contrast, experience allows us to gauge the effects of negative nominal and real interest rates with more confidence.

The third question is probably the most fundamental one. The presence of cash will only restrict monetary policy, **if negative interest rates are indeed considered desirable in the first place**. Four issues are relevant in this context:

- First, **can negative nominal interest rates effectively stimulate investment and curb savings?** There are good reasons to expect that once interest rates have reached a level close to zero, savings and investment can no longer be influenced much by a further lowering of interest rates. Banks may in the first place not pass on negative policy rates to retail rates⁵. As is suggested by savings behavior in past periods of negative real interest rates on savings deposits, the return motive seems to play no dominant role for savings decisions, while precautionary saving, which is hardly interest-sensitive and which gains in importance in uncertain times, may be more important. Investment decisions are more importantly driven by sales expectations than by the level of interest on debt financing, which during ultra-low-interest rate periods in any case constitute a minor fraction of total costs⁶. Furthermore, Hannoun (2015) argues that in balance sheet recessions, balance sheets should rather be repaired through structural reforms instead of low interest rates. Prolonged accommodative monetary policy could even be counterproductive, if it encourages reform delays.
- Second, it is often argued that ultra-easy monetary policy, in particular negative policy rates, are a **powerful tool to bring down the exchange rate** of the respective country. Judging from the experience during the economic and financial crisis, this seems indeed to be the case. However, an associated cost is heightened exchange rate volatility which may be detrimental to international trade. Furthermore, devaluations are only useful in a global perspective if business cycles are fairly uncorrelated. Otherwise using negative interest rates with the aim of devaluing the exchange rate may amount to a zero sum game at the global level. However, as Söderström et al. (2009) argue, this effect is mitigated or even reversed when low interest rates aim at stimulating the economy by lowering real interest rates because the expansionary effect could also increase demand for imports.
- Third, is the **risk to financial stability** that may be caused by ultra-low interest rates over a long period of time justifiable? There is broad consensus that ultra-easy monetary policies that last over an extended period of time may contribute to the building up of price bubbles in various asset classes (stocks, bonds, real estate etc.) (see e.g. Borio, 2012, 2014). In addition, ultra-low interest rates, after initially generating valuation profits, in the longer run erode banks' and other financial institutions' (in particular pension funds' and life insurers') revenues. It may either drive them into more risky investments; or it may weaken their capital base. It may also render long-standing "conservative", risk-averse business models no longer viable for temporary, policy-driven reasons, while these business models would in principle in a long-run perspective continue to add value to society (see e.g. Lambert, 2015; Beer et al, 2015a and 2015b).

⁵ With respect to retail deposit rates, Agarwal et al (2015) suggest that banks will not pass on modestly negative interest rates to legacy customers with small deposits. By contrast, "hot-money" customers as well as customers with very large accounts will be charged negative rates. Eventually, retail banks will charge negative rates only from a small fraction of customers but on the bulk of the volume of deposits. The latter effect should help stimulate the economy. See also Jensen et al (2015).

⁶ However, the expenses saved due to low interest rate payments add to firms' net cash flow, thus making internal funding available for investment.

- Fourth, it is sometimes also argued that negative real interest rates encourage socially **suboptimal investment and wasteful resource allocation**. According to e.g. Berentsen (2015), negative interest rates⁷ imply that investment projects that yield a negative return can be profitable from the individual firm's perspective, as long as the private return is less negative than the firm's negative borrowing rate. For society as a whole they imply, however, a waste of resources. Furthermore, should interest rates rise again at some later point, these investment projects will cease to be profitable and should lead to firm failures, which may in turn cause macroeconomic instability. According to Forbes (2015) a prolonged period of near-zero interest rates⁸ could negatively affect productivity. This could happen, if low interest rates allow less efficient companies to survive, thereby hampering "creative destruction", or if low interest rates reduce the incentive of companies to carefully assess investment projects. Forbes (2015) refers to Japan during the 1990s when forbearance by banks led to the emergence of "zombie" companies. In this respect, Caballero et al. (2008) show that zombie firms can indeed lower productivity.

There are some further interesting questions that call for careful prior study when considering a cashless world.

- First, the elimination of the zero lower bound of interest rates or the shift of the effective lower bound further into negative territory would render one of the main arguments for non-zero, positive inflation targets obsolete: If nominal interest rates can become deeply negative, so can real interest rates, irrespective of the rate of inflation. Thus absolute price stability, i.e. zero inflation (as suggested e.g. by Agarwal et al, 2015) might become worth considering (leaving aside the issue of downward wage rigidities which would remain valid as an argument).
- Second, the issuance of non-interest bearing cash generates seigniorage to central banks. This income normally ensures the financial independence of central banks, which in turn is regarded a central ingredient of modern monetary constitutions. What is more, central banks transfer their profits (i.e. seigniorage income after expenses) to governments. Thus, it is taxpayers and society at large that benefit from the income generated from the operation of cash as a means of payments. This would not or to a lesser degree be the case if cash were abolished in favor of privately run payments systems.

4. Privacy, citizens' rights and crisis resilience

Cash, in informational terms, is a delicate compromise. Money certifies that the bearer has a claim on resources: that the individual has earned more than he spent in the past or that he is believed by others to earn more than he will spend in the future. In this sense "money is memory" (Kocherlakota, 1996). Cash, as a particular form of money, performs this certification role without disclosing where the bearer's claim comes from. **Cash certifies without disclosing why. Cash in this sense has a very short memory.**

Advocates of **individual freedom and individual citizens' rights** regard the possibility to make payments while **preserving privacy** as a value in itself. In this view, consumption habits and income sources (and in principle also financial matters) are a matter of privacy; related payments should thus not be potentially exposed to transaction partners or the state (see e.g. Bernholz, 2015). If this comes at the cost of a certain amount of tax evasion, then so be it; some even argue that the possibility to avoid taxes is part of a system of checks and balances between the state, which is seen to have a bias towards higher expenditure and taxation, and taxpayers (see, e.g. Krüger, 2015).

⁷ The argument in the text applies to negative real interest rates, irrespective of whether these are caused by negative nominal rates or (the more frequent case) by a positive inflation rate.

⁸ The arguments should apply even more to negative interest rates.

A related argument is that the possibility for central banks to drive nominal interest rates deeply into negative territory is, from a savers' perspective, economically equivalent to a rise in inflation (by driving down the real interest rate). By mandating central banks to safeguard price stability, modern central bank laws limit the extent of the "inflation tax", not least because taxation has distributional consequences and should thus be subject to standard democratic decision making procedures and not be decided by central banks.⁹ Negative nominal interest rates amount to a **wealth tax** on savings (the mirror image being a **subsidy** for borrowers). The idea that cash should be abolished to enforce this tax confirms the notion of negative interest rates being a form of **financial repression** (see e.g. Berentsen, 2015; Bernholz, 2015).

These liberal views contrast with the view that the interests and the privacy of the individual must be subordinated to the interests of society and the state. In this view, there is little or **no room for privacy on financial matters, including income, wealth and financial transactions**. In particular, **ensuring that individuals pay their taxes** warrants full transparency of all payments (see, e.g., Leinonen, 2015). At the other end of the spectrum, there is the argument that the protection of society against organized crime and terrorism requires more far-reaching monitoring and surveillance powers for the state, including of individuals' payments. Thus, also from such a "**law and order**" perspective, cash payments may be seen to hamper the proper functioning of the state.

Five extreme **examples** may illustrate the idea that cash can be viewed as a useful means of payment and store of value in extreme situations and crises, thus as an **insurance against really bad outcomes** (see e.g. Berentsen, 2015, Bernholz, 2015, Krüger, 2015).

- First, in "**unlawful states**" such as dictatorships and other autocratic regimes the availability of domestic or foreign cash helps citizens to escape totalitarian arbitrariness of state control. In this line of argument, the provision of stable international currencies in the form of cash provides a positive externality for citizens from such states.
- Second, a similar argument applies to **wars**, in the sense that they are commonly associated with a drastic reduction in individual citizens' rights. The possibility to conduct anonymous payments may at least alleviate some of the financial hardships inflicted by wars.
- A third example is **hyperinflation**. Flight into stable foreign currency and bank deposits is a way for citizens to escape some of the hardships inflicted by harmful state policies. In practice, such capital flight may often take the form of foreign cash hoarding.
- Fourth, cash – domestic or foreign – is often regarded as a means of payment and store of value that is more **robust in crisis situations**, including financial crises. This is also evidenced by the empirical observation that financial crises trigger a sharp increase in currency circulation in relation to nominal GDP (see Stix, 2015).
- A fifth example illustrates how attempts to prevent terrorist acts through restrictions on cash-related, anonymous international money transfers can hurt socially disadvantaged groups in developing countries. Many migrants in Western countries use alternative international payments services such as hawala to make **remittance payments** to their families. Such payments may through standard bank transfer services be too costly (in particular if amounts are quite small) or altogether impossible (if no functioning banking system exists in the country of destination), which may affect the livelihoods of families in developing countries. Passas (2015) therefore calls for a **proportionality of the regulation** of such payments.

⁹ It follows also that proposals to increase the inflation target instead of establishing negative interest rates should be seen equally critically.

From a practical perspective, the question arises **whether and how alternative forms of non-cash payment could be designed to ensure the same privacy and reliability as cash transactions**. Is a credibly anonymous (privately operated or state-run) form of electronic money (technically) feasible? How much information do the different parties in a transaction actually need to know, and how long does this information need to be saved? For example, does a bank need to know the purpose of a credit card payment? This issue is also related to the discussion on putting an expiration date on information (Mayer-Schönberger, 2011).

How to abolish or restrict cash in practice? A continuum of ideas

Restricting the use of cash or reducing the demand for cash by making the holding of cash more costly can take many forms. Buiter (2005) and Buiter's follow-up articles on this topic suggest classifying approaches to restrict the use of cash in the following three categories:¹⁰ first, abolishing currency, second, taxing currency, and third, decoupling the unit of account from the medium of exchange and introducing an exchange rate between them. Additionally, access to cash can be made more costly by putting charges on cash retrieval.

Abolishing cash altogether is obviously the most radical approach. Eventually, this means to replace cash by electronic deposits and means of payments. As a first step, the abrogation of large denomination notes is suggested (e.g. Rogoff, 2014). Others (e.g. Leinonen, 2015) argue that small coins should also be abolished. Keeping small denomination banknotes is a concession to people that prefer cash or are unbanked.

Apart from abolishing cash altogether, mechanisms can be introduced that **make the use of cash more costly**. One approach is to **tax cash**. A prominent example is **Silvio Gesell's** proposal for stamped money. The idea is that fees (stamps) have to be paid regularly in order that cash keeps its value. Alternatively, a **depreciation schedule** for cash can be introduced.¹¹ From a technical point of view, the implementation of such a scheme should have become easier since Gesell's time. For example, Goodfriend (2000) mentions using magnet strips attached to banknotes that record when the bill was withdrawn. Based on this information a tax depending on the time the banknote was in circulation can be deduced. Nevertheless, as Buiter et al (2015) point out, there are further practical impediments to the introduction of a carry tax on cash. E.g., discontinuing the status of legal tender if banknotes are not 'stamped' will not suffice, because if widely accepted, such banknotes can still be used as a medium of exchange or means of payment. Hence further sanctions (e.g. fines) would be necessary to implement such schemes.

Another type of proposals would introduce an **exchange rate between cash and deposits**. A precursor of this approach was Eisler (1932). As pointed out by Buiter (e.g. 2009), introducing such an exchange rate allows unbundling the unit of account and the medium of exchange or means of payment. In Buiter (2009) central bank reserves act as unit of account in which prices are set. When the policy rate, i.e. the rate on the unit of account, becomes negative, the exchange rate between deposits and currency will deviate from one. In a similar vein, Agarwal et al (2015) suggest introducing a time-varying paper currency deposit fee between private banks and the central bank.

A further mechanism to reduce the use of cash makes the access to cash more costly, e.g. by **introducing fees for the withdrawal of cash** (both at bank counters and at automatic teller machines).

¹⁰ Apart from Buiter (2005) see also Buiter (2009) and Buiter et al (2015) and the literature cited there. A comprehensive overview of different mechanism can also be found in Kimball (2013). See also the discussion in Agarwal et al (2015).

¹¹ If banknotes are declared invalid in a random manner (e.g. based on their serial number) the expected costs of holding cash can be equal to the costs of a tax on cash (such an approach is discussed by Mankiw, 2009).

5. Conclusion: Why abolish an important state institution such as cash without overwhelming and robust supporting evidence?

The coming years will undoubtedly bring numerous **innovations** in means of payments and changes in **payments behavior**, which will also be influenced by wider **developments in the financial industry**. Private **cryptocurrencies** such as Bitcoin are already in use. Alternative means of **anonymous payments** are developing; it is, however, still open to what extent users consider them as being as credibly anonymous as cash. The next years will also likely bring further **national and international initiatives and regulations** aiming to curb tax evasion and to fight international crime and terrorism.

Of course, if, at some point, people had all switched to electronic payments and no longer chose to use cash, there would be little point in keeping it. But such a **“market-driven” outcome** seems to be unlikely, at least in the foreseeable future. Furthermore, establishing the conditions for a **“fair” competition** between different forms of payment seems to be **unrealistic**.

Should governments and central banks **take active steps to phase cash out**? The various pro and con arguments brought into the debate and summarized above show that the question on the – likely and desirable - future role of cash is far more **complex** than is suggested by some commentators. Various externalities, distributional consequences, robustness and stability considerations as well as broader considerations extending beyond the field of economics call for caution. An **important state institution such as cash** should not lightheartedly be abolished without overwhelming and robust supporting evidence.

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