

Chapter 2

The Use of Cash in Europe and East Asia

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Abstract This is an opportune time to think about cash. First, some academics are arguing for the abolition of cash in order to make monetary policy more effective by enabling a further decline in interest rates into the negative zone. Second, the rapid development of retail electronic payment and the emergence of digital currencies are making us rethink seriously the future of cash. Third, there is a growing discussion about whether to abolish high denomination banknotes and limit the maximum value of cash transactions on the grounds that cash is often used in illicit activities. My belief is that money is more important than monetary policy. An optimum response differs both across countries and over time. When it comes to the various proposals on cash, we should carefully and thoroughly perform a cost-benefit analysis and, even if it proves favourable, we should then proceed only gradually, while nonetheless remaining open to new technology and ideas.

2.1 Introduction

Why are we discussing cash now? There are many good reasons. First, some academics are arguing for the abolition of cash in order to make monetary policy more effective by enabling a further decline in interest rates into the negative zone. This is proposed on the grounds that the existence of cash sets the effective lower bound of interest rates.¹ Second, the rapid development of retail electronic payment and the emergence of digital currencies such as Bitcoin underpinned by blockchain technology are making us rethink seriously the future of cash. Third, there is a growing discussion about whether to abolish high denomination banknotes and limit the maximum value of cash transactions on the grounds that cash is often used in illicit activities. In this regard, the ECB governing council has recently decided to stop the issuance of the 500 € note.

¹Rogoff (2016).

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So, this is an opportune time to think about cash, one in which many questions arise:

- Is cash outdated?
- What is the intrinsic role of cash?
- How will the role of cash evolve in the future?
- Should we eventually abolish cash?

2.2 Two Basic Facts About the Use of Cash

Cash is something which provokes emotional reactions among people. And yet cash is perceived so differently. Here are some examples of such perceptions: cash is a symbol of freedom; cash is money used in illicit activities; cash is an outdated form of money which will eventually be replaced by more advanced forms of money, such as digital currency. As this shows, people have different reactions towards cash. When I read various speeches by central bank governors or research papers by the senior staff and economists at central banks, I am struck by the non-negligible difference in the nuances of the perceived role of cash in each society.²

Keeping these perceptions and viewpoints in my mind, I will start my remarks by observing two basic facts about the use of cash. Here, I used the word “use” loosely. Cash to GDP ratio could serve as a proxy of the extent to which cash is used, although this number might not be an ideal indicator of the use of cash in a society. When we look at cash to GDP ratios, we find some intriguing statistical facts. The first fact concerns the time dimension. Despite the popular talk of the advent of a “cashless society” over the past decades, cash has not died in many countries to date (Fig. 2.1).

The second fact is about the cross-section, because the use of cash varies considerably across countries (Table 2.1).

As I will explain later, on both counts, Japan is quite distinctive. Given that most analysis and policy debate on cash is shaped by the experience in the US and, to a lesser extent, Europe, it may be useful to explain the use of cash in Japan. I hope that an explanation of the use of cash in Japan will widen the perspective of this debate.

2.2.1 Increased Cash to GDP Ratio

The Cash to GDP ratio has noticeably declined in some countries, of which Sweden is an example, but it has also been increasing in many countries (Fig. 2.1). The most notable case of the latter is that of Japan. Cash to GDP ratio in Japan had been very stable at 8% for many years until the early 1990s, but, since then, it has started to rise and now stands at 20%. It gives us some insights into the role played by cash

²Boel (2016), Liikanen (2016), and Weidmann (2016).

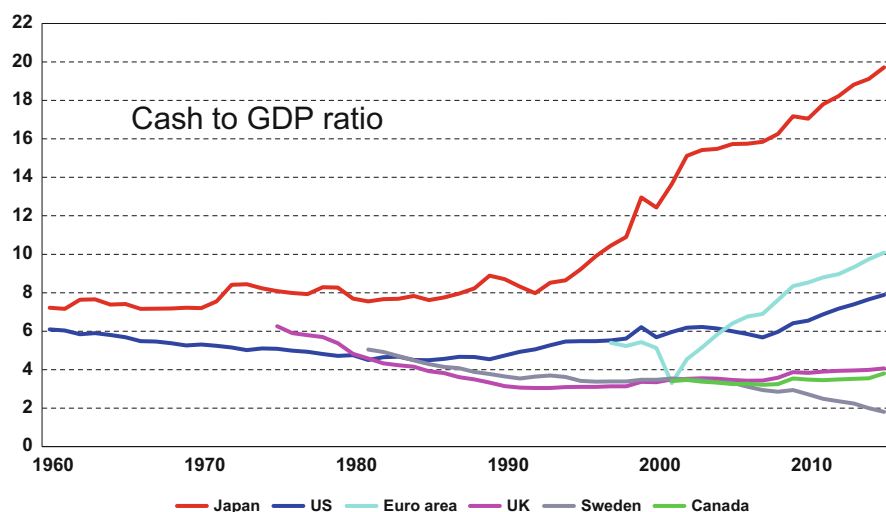


Fig. 2.1 Development of cash to GDP ratio in selected countries. Source: International Financial Statistics

Table 2.1 An international comparison of the stock of cash

	Value per inhabitant (US\$)	Value as a percentage of GDP	Value as a percentage of narrow money
Australia	2459	4.4	24.2
Brazil	410	4	62.9
Canada	1839	3.8	9.8
Hong Kong	6272	15.7	31.6
India	180	11.6	66.1
Japan	6429	20.1	15.8
Korea	1350	5	12.7
Mexico	607	6.2	36.9
Russia	1084	12.4	57.5
Saudi Arabia	1567	6.5	15.8
Singapore	4762	8.8	21.4
South Africa	217	3.6	10.8
Sweden	1108	2.1	4.1
Switzerland	8655	11	12.4
Turkey	480	5	33.5
UK	1587	3.6	4.3
USA	4218	7.7	45.1
Euro-area	3734	10.3	17.5
CPMI courtiers	1564	8.3	20.7

Source: BIS Committee on Payments and Market Infrastructures (2015)

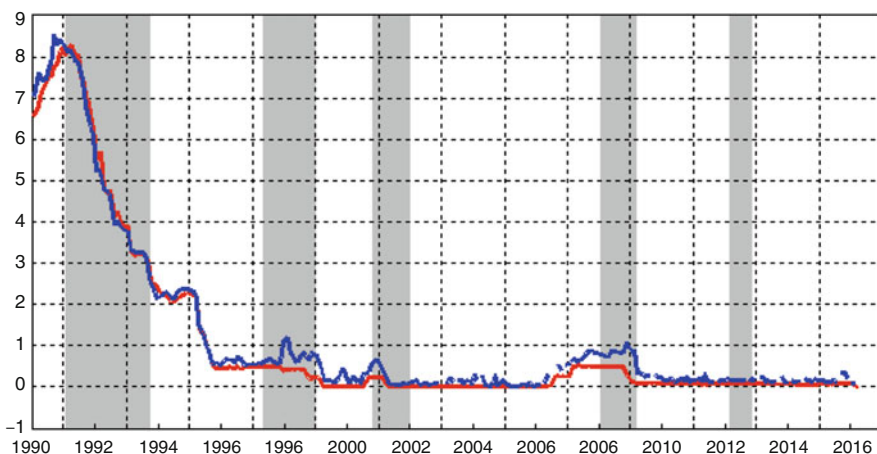


Fig. 2.2 Developments of short-term interest rates in Japan. *Red* denotes overnight interbank rate. *Blue* denotes 3-month interbank rate. Source: Bank of Japan

and makes us ask ourselves *why* it is increasing rather than decreasing. We can analyse the development of the cash to GDP ratio as an economic agent's decision on the selection of financial assets including cash holdings.

There are a couple of hypotheses which explain the increased cash to GDP ratio in Japan. First and foremost, the declining interest rate has definitely increased the demand for cash, since the opportunity cost of holding cash has decreased significantly (Fig. 2.2).

Second, the demand for cash as a safety precaution increased, although this was a temporary factor. Japan witnessed a heightened demand for cash in the financial crisis in the late 1990s (Fig. 2.3).

The same phenomenon was witnessed in the US and Europe during the global financial crisis in 2008 and 2009.

Third, demand for cash for motives of privacy seems to have increased. Specifically, it is said that recent changes in law regarding inheritance tax by lowering the exemption threshold and the commencement of the “My Number System”—an identity card of Japanese nationals—has created demand for privacy (anonymity) and thus demand for cash (Fig. 2.4).

Fourth, the inventory demand for cash at ATMs and vending machines is increasing, because the number of such terminals is increasing.

The above explanation is based upon the decision of economic agents to hold cash; the analysis is framed in terms of stock, rather than flow. But this way of analysis might not be able to explain fully the development of the cash GDP ratio in the era of a prolonged low-interest-rate environment. There is no strong incentive for people to rush to deposit cash in banks, once cash is withdrawn from bank accounts. They do not necessarily have a clear recognition that they have deliberately increased their cash holdings but, at macro level and over time, cash actually piles up, so to speak. Stock analysis and flow analysis are somewhat duplicated, but we need to complement stock analysis by flow analysis in the current extremely-

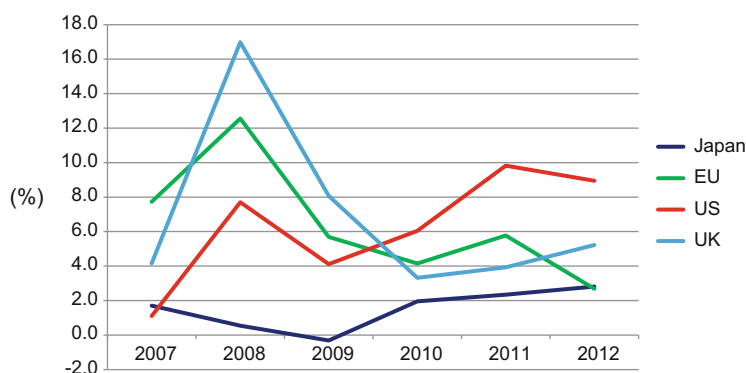


Fig. 2.3 Year-on-year change of cash outstanding in Japan's financial crisis (1997–1998). Source: Bank of Japan (Money stock statistic (notes and coins held by entities other than depository institutions))

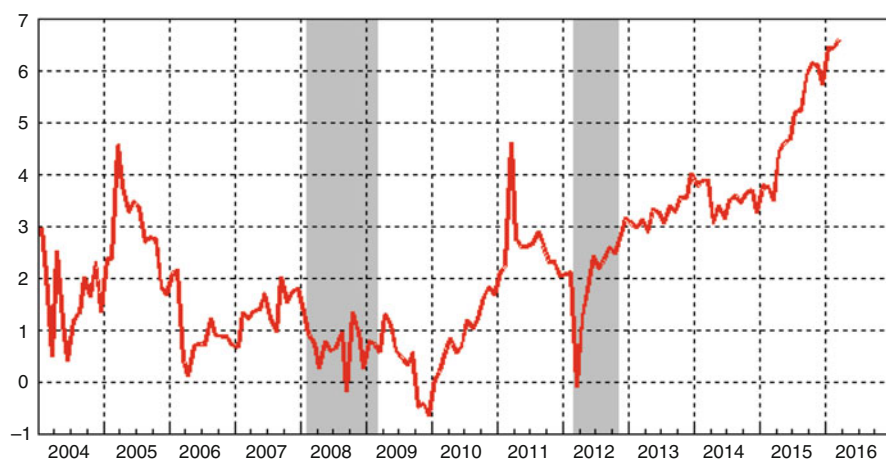


Fig. 2.4 Year-on-year change of banknotes in Japan. Source: Bank of Japan

low-interest-rate environment, given that the transaction costs involved delays in the adjustment to the stock equilibrium.

Aside from these analyses, it may be useful to ask ourselves why Japan is not witnessing the trend towards a cashless society that we can observe in Sweden. Cash is still convenient for small payments, especially in person-to-person transactions (hereafter, P-to-P transactions), even though bank transfers, credit cards, debit cards and e-money are increasingly being used. Payment habits are very difficult to change. One of the crucial factors determining the speed of embracing the new payment methods in society is the proportion of old people who are not necessarily knowledgeable about them. In this regard, the low penetration of new payment methods in Japan may be attributable to the fact that Japan is a country whose population is ageing rapidly.

2.2.2 *The Wide Variation of Cash to GDP Ratio Across Countries*

So far, I have analysed why the cash to GDP ratio has increased rather than decreased, despite the popular talk of the “advent of cashless society”. Now, I will turn to the cross-section dimension of currency holdings. The situation regarding cash varies considerably across countries. For comparison, I will take three countries: Japan, Switzerland, and Sweden. What all three countries have in common is that they have adopted negative interest rates in recent years. However, the cash to GDP ratios for these countries remains in stark contrast; it is as high as 20.1% in Japan, and 11.0% in Switzerland, while, in Sweden, it stands at a mere 2.1%, decreasing not only in proportion to GDP, but also in absolute terms (Fig. 2.5).

Why is Japan’s cash to GDP ratio so distinctively high? There are several hypotheses, although some of them are pure conjecture on my part.

First, Japan is very safe society, as is shown by its very low crime rate. In contrast, in a society where the crime rate is high, carrying banknotes, especially high denomination banknotes, is quite dangerous. Foreign visitors to Japan are often surprised when they see so many vending machines which accept large denomination banknotes on the streets.

Second, the high population density in Japan might have some bearing on the heavy use of cash. A form of transaction which is not easily replaced by the existing

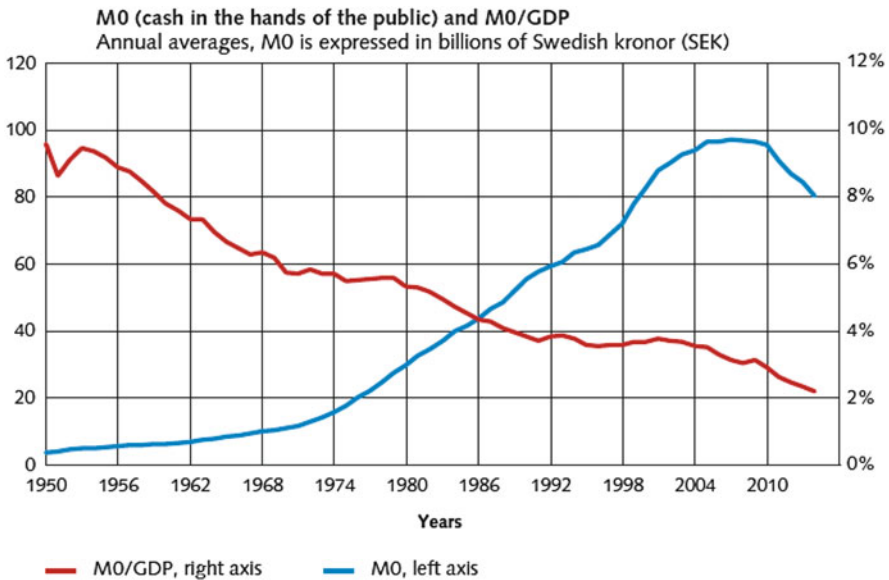


Fig. 2.5 The use of cash in Sweden. Source: Boel (2016, p.145)

payment methods is the P-to-P transaction, where cash still plays an important role. We can conjecture that the high concentration of the Japanese population in urban areas may contribute to the increasing use of cash.

Third, the strong pursuit of privacy or anonymity might increase the demand for cash. Even though Japan has recently introduced the “My Number System”, we still do not have a US style Social Security Number system, which shows how strong the Japanese abhorrence towards violation of privacy is. Some might wonder whether the use of cash in illicit activities plays a role here. But, according to a study cited by Ken Rogoff (2016), the size of the underground economy as a percentage of the economy in Japan is quite low in comparison with other nations.³

Fourth, the resistance of the public against shifting to “the digital processing and payment platform” is very strong. People are always asking for the co-existence of payment platforms. Since cash payment is supported by a de-centralised system,⁴ some sort of coercive measure might be needed if society really wants to make headway with the new payment methods quickly and on a significant scale. Generally speaking, Japanese society is not tolerant of such coercive measures. This is partly due to cultural reasons but it is also magnified by the rapid ageing of the population.

Fifth, against all these backgrounds, the density of ATMs and vending machines is quite high, which increases the demand for cash. Since a shortage of cash at ATMs is not tolerated by bank customers, banks are extremely cautious about running short of cash.

Sixth, old banknotes are honoured indefinitely. Japan has no fixed date beyond which an old banknote cannot be used legally or becomes very costly to convert into new banknotes.

Some of these factors are of a transitory nature but others are of a more structural nature, if not permanent. The reason why I have explained the situation regarding cash in Japan in detail is not because I think that the factors affecting the Japanese use of cash to be held universally, but because I want to emphasise that the use of cash is significantly affected by the characteristics of each society or economy. For example, when we analyse the use of the US Dollar in cash, we cannot ignore the fact that US Dollar banknotes are used heavily outside the country of issuance.

When it comes to the relationship between cultural and social background and cash holdings, we should go deeper into its causality. Which of the following propositions is correct?: “Use of cash dictates society” or “Society dictates use of cash”. Since cash has a comparative advantage in P-to-P transactions, we cannot neglect social factors affecting people’s behaviour, including how they choose to make payments. But, at the same time, we have to note that the opposite causality is working. The argument in favour of abolishing banknotes rests on the understanding that the very existence of high-denomination notes facilitates illicit activities. One of the issues here is to what extent central banks can and should, by their own

³See Rogoff (2016, p. 63).

⁴Ibid., p. 10.

judgement, intervene in the preferences or decisions of private individuals with regard to cash holdings. It is sometimes economically costly or politically unjustifiable to embrace some of such social factors, but is a central bank in a position to decide whether such factors are good or bad? This is a rather subtle issue. I will come back to this issue later.

2.3 What Is the Role of Cash?

Cash constitutes an important part of money. As the textbooks say, money plays three basic roles: (1) a medium of exchange; (2) a store of value; and (3) a unit of account. But this traditional typology based upon functionality, although quite correct, does not cover one important role that is played uniquely by cash, as opposed to bank deposits: cash provides private individuals with a legal alternative to private money. For private individuals, cash is the only form of central bank money to which they can get direct access, while private financial institutions can get access to central bank money through central bank deposits (reserves) as well. If it were not for cash, what would happen to private individuals? What are its implications for financial institutions and the financial system? At least, two issues immediately come to mind.

The first issue is the weakening of the disciplinary mechanism due to a change in the competitive balance between the central bank and private banks. When private individuals judge that the bank with which they have deposited their money is not safe, they will be able to shift their deposit to other banks which they regard as safe, even in the event that cash is abolished. This mechanism imposes a discipline on banks to run their institutions properly. Even though cash is not available for private individuals in this hypothetical world, they still have the option of shifting their deposits to good private banks just in case. So, we can count on the disciplinary mechanism. But, if the problem of banks is not of an idiosyncratic nature, but of a genuine systemic nature, private individuals cannot protect themselves. This is because they do not have direct access to risk-free money. If risk-free central bank money is no longer available because of the abolition of banknotes, it could have some long-term consequences on the financial system by weakening the disciplinary mechanism.

The second issue is that of contingencies. We cannot be confident that payment using bank accounts is always and everywhere available in the event of severe damage to the online network of banks due to natural disasters, terrorist attacks or other serious accidents. Japan has been hit hard by a tragic earthquake recently: the Great East Japan Earthquake in 2011. The online payment system continued to function well, but, in certain areas where branches and ATMs had been destroyed, cash became the most important method of exchange, especially for small retail payments. This experience makes us feel that a financial system which leaves us without an alternative means of exchange for bank deposits is not robust enough.

2.4 Arguments in Favour of the Abolition of Cash

Now, I will move on to the arguments about whether to abolish banknotes in more detail. People in favour of abolishing cash cite two reasons. One is that the existence of cash limits the effectiveness of monetary policy.⁵ If central banks really press to obtain low negative interest rates, people will withdraw cash from their bank deposits. Thus, central banks cannot lower interest rates deeply below zero. The other reason is that cash facilitates illicit activity and tax evasion.⁶ I will take up these two arguments in turn.

2.4.1 *“The Existence of Cash Limits the Effectiveness of Monetary Policy”*

If cash is abolished, central banks can lower interest rates deeply into the negative without worrying about dis-intermediation. But, if cash is abolished, can central banks achieve the intended goal of monetary policy? In order to answer this question, we have to think about the mechanism through which monetary easing, be it QE or a negative interest rate or any combination of both, becomes effective in the face of the zero lower bound of the interest rate. Essentially, there are two kinds of mechanisms for monetary easing to be effective.

One is to bring future demand to the present. Economic agents consider that now is the time to spend, simply because very accommodative monetary conditions prevail. This works. Households consume more and save less. Firms invest more. This essentially shifts the timing of expenditure from tomorrow to today. In this process, debt increases. But when tomorrow becomes today, we have to bring demand from the day after tomorrow. So, we need further monetary easing. Again, this works and debt increases further. But we cannot count on this mechanism indefinitely. After all, the demand that is brought forward from the future is determined by the potential growth of the economy. If expenditure continues to increase, it means that the level of debt becomes unsustainably high relative to the income-generating capacity (potential growth rate), which ultimately damages the stability of the financial system. The other mechanism is to bring demand from somewhere else to the home country by devaluing the exchange rate of the home currency. It works when a single country is hit by a demand shock. But if many countries are hit by a demand shock simultaneously, the exchange rate channel does not work collectively.

So, is there a case for abolishing banknotes on the grounds that it makes monetary policy more effective? I do not diametrically rule out this possibility,

⁵Rogoff (2016).

⁶Sands (2016).

but I do not consider the abolition of banknotes to be a solution to the problems that many countries are now actually facing. After all, the advanced economies have been resorting to unconventional monetary policies for many years. A case in point is Japan, where the short-term interest rate has been practically zero since the mid-1990s. The more demand we bring forward from the future, the less demand we are faced with. Some argue that lower or negative interest rates are needed, because the natural rate of interest is itself declining. This argument sounds plausible at first blush, but lowering the interest rate for an extended period of time also induces a decline in the natural rate of interest simply because demand has already “borrowed”. Monetary easing is effective and meaningful, but it is essentially a measure to buy time. It is not a solution to the underlying problem of the gradual decline in the potential growth rate which many countries are now faced with. Nevertheless, if central banks are bestowed with new capacity to engineer a deep negative rate by abolishing cash, I wonder how society and politics will respond. In order to extract a very marginal benefit, if any, should we pay the price by abolishing the basic infrastructure of cash? I am very sceptical.

2.4.2 “Cash Facilitates Illicit Activity and Tax Evasion”

There are three issues that need to be discussed. First, we have to define what is “illicit activity”. Second, we have to establish clearly what constitutes a high denomination banknote. Third, we have to assess quantitatively to what extent high denomination banknotes are used in illicit activities. These three issues are all interrelated.

When critics say that cash is used in illicit activities, it envisages such activities as tax evasion, the drug trade, extortion, bribes, human trafficking and money laundering. These are outright illegal activities. The distinction between such outright illegal activities and human behaviour motivated by natural anxiety or fear that privacy is being violated is clear in theory, but it is sometimes difficult for outside observers to distinguish between the two. On top of this, there is a grey area in between.

As for the issue of the definition of a high denomination banknote, the notion of “high” varies across countries. In the US, a 100 USD note is really a “high” denomination banknote. A study by economists at the Boston Fed says the following:

On a typical day in the United States, 5.2 percent of consumers have a \$100 bill in their pocket, purse, or wallet. But only 22 percent of U.S. consumers have at least \$100 in their wallet, pocket, or purse.⁷

In contrast, the situation in Japan is quite different. Although I do not know of a rigorous comparable study based upon Japanese data, the proportion of Japanese

⁷Greene and Schuh (2016).

consumers carrying a 10,000 Yen banknote in their wallet is much higher. This is because the cash system is well developed. This also means that it is difficult to define high denomination banknotes independently from how well the cash system is developed and how the average citizen in the street uses banknotes in his or her everyday life. This also means that the usage of cash might change over time. As time passes, the IT savvy generation, who are now young, will become dominant in society and the usage of cash might drastically change.

Finally, with regard to quantitative assessment, the information about the extent to which cash is used compared with the bank accounts of those involved in illicit activities is very limited. It may be that a prolonged period of extremely low interest rates is just masking the underlying situation regarding the use of cash.

All told, I can understand the argument in favour of abolishing high-denomination banknotes conceptually, but I feel that the actual implementation has to be decided upon the basis of a careful study in each country.

2.4.3 “Digital Currencies such as Bitcoin Replace Cash”

Now, I will move on to the argument that digital currencies will replace banknotes. Again, I do not diametrically rule out the possibility that digital currencies such as Bitcoin will replace cash in the future, given the history of paper banknotes, which are now the traditional means of payment, and were once a miraculous innovation when they were invented. The question here is one of a projection of what will occur in the next 20–30 years to come. I do not think that the possibility of moving completely to digital currencies is high. Even if digital currencies replace existing money as a medium of exchange, society will still need money to perform as a store of value and as a unit of account. Since a mechanism for keeping the value of digital currency stable is not incorporated, the space for it to be used as a store of value and as a unit of account is limited for the time being. One important issue here is whether central banks should issue digital currencies which allow private individuals to obtain direct access to credit risk-free money in a world where cash is replaced by digital currencies. There are many interesting issues to be studied and central banks should be open-minded about blockchain technology.

2.5 Final Thoughts and Conclusions

The monetary system is a crucially important form of infrastructure for both the economy and society. Even though we are gradually heading towards a cashless society, cash will still play an important role. When we think of whether we should deliberately reduce the role of cash and eventually whether we should actually abolish it, one thing we have to note is that the use of cash is run by a de-centralised system. Clearly, the central bank plays a crucial role as an issuer of money. Banks

play an important role in the distribution of cash. Both branches and the ATMs network are key forms of infrastructure, which definitely include the printing and minting of money (banknotes and coins). Given the rapid progress of computers and copying machines, co-operation between central banks and the producers of copying machines is critical in order to avoid the counterfeiting of banknotes in this age of technological change. In terms of the shipment and warehousing of cash, companies offering logistics services are also important. The point is that cash is built on the de-centralised network of trust of the many parties mentioned above, so to speak. This is in stark contrast to a wholesale or large-value system which is more of a centralised system. So, there is a possibility that the cash system will gradually deteriorate in an unnoticed manner. Once the cash system is destroyed, it will be quite costly to rebuild it. As I have discussed above, the loss of the availability of credit risk-free payment-means might have potentially significant implications in the long run. Moreover, an additional decline in interest rates enabled by the abolition of cash might lead to over-reliance on monetary easing without society addressing the problems that the economy is facing. History shows that tinkering with the monetary system in order to solve structural problems is very costly. Money is more important than monetary policy. And an optimum response differs both across countries and over time. So, my conclusion is rather simple: when it comes to the various proposals on cash, we should carefully and thoroughly perform a cost-benefit analysis and, even if it proves favourable, we should proceed gradually, while nonetheless remaining open to new technology and ideas.

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