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The Curse of Cash by Kenneth Rogoff, 248 pp. Princeton University Press, Princeton, New Jersey (2016), US$29.95.

Money has been an integral part of our society for nearly 3,000 years, and has acquired varied forms under different monetary systems, including its most recent digital version, made possible by advances in technology, *i.e.*, crypto currencies. Over time, however, the difference between money held in its most conventional form — currency — and money in its modern form,which reflects the influence of financial innovations and advances in technology, has widened considerably. This has triggered a debate on cash versus non-cash modes of money, and the importance of downsizing or completely eliminating high-denomination currency notes. In this context, Kenneth Rogoff, the former chief economist of the International Monetary Fund (IMF), has also been propagating the idea of getting rid of the US$100 bill for the last two decades. His book, *The Curse of Cash*, highlights the still very important role of currency in the modern era, and how it can constrain monetary policy to deal with recession — particularly in recent times when interest rates are quite low. The book covers the history as well as future prospects of paper currency by exploring various related theoretical paradigms and different viewpoints, spread over fourteen chapters in three parts.

The initial chapters of the book provide an outline of the intriguing history of money and showcase its deep interlinkages with the development of technology and society. The book highlights that 'as societies become more developed, however, with diverse goods and large populations, achieving allocation without some form of money has long proven nearly impossible'. Rogoff recounts the history of money through metal coinage, Lydian coins and innovative ideas on the usage of coins by Alexander the Great during the fourth century BC. The book provides an insightful narrative of how various commodities and items were seen as alternatives to money. Rogoff suggests that the biggest benefit of cash is that it is a solution to the problem of "double coincidence of wants" as it eliminates the need to enter into a barter transaction. Also, cash generates revenue for the government if the value of money exceeds its production costs. Lastly, cash provides anonymity of transactions and allows individuals to enter into transactions without any oversight by the government authorities.

The book highlights the important role that cash plays across developed countries, despite proliferation of alternative payment mechanisms. In the United States, for example, per capita use of cash is roughly about US$4,200, 80 per cent of which is in high denomination bills of US$100 (84 per cent if US$50 denomination is also included). Even in Japan and the Euro area, high denomination notes still exist, *i.e.*, 10,000-yen note (equivalent to about US$93 at present) and the Eurozone's €500 note (equivalent to about US$570). The author argues for gradually moving towards a less cash economy in the advanced economies, by phasing out large denomination notes. For instance, in the United States, the author suggests the phasing out of US$100 notes first, then US$50 notes, and, eventually, the smaller currency notes like US$20 and perhaps even US$10. The speed of the proposed transition, however, needs to be slow, over at least ten to fifteen years.'Gradualism helps avoid excessive disruption and gives institutions and individuals' time to adapt'.

The idea of phasing out high-denomination currency is based on two arguments. The first is that a majority of high-denomination notes are the preferred mode of transaction for unlawful activities and, therefore, promote a broad range of criminal activities, including drug trafficking, racketeering, extortion, corruption of public officials, human trafficking and money laundering. The author supports this argument by extrapolating the estimates gathered by the Internal Revenue Service (IRS) of the United States (US) of the legally-earned but unreported taxes from 2006 to 2015. He estimates that there is a net tax gap of US$500 billion, and more than half of it originates from cash transactions. He suggests that eliminating cash can help close this tax gap by at least 10 per cent, leading to an annual potential gain of US$50 billion for the US government, and an additional US$20 billion gain for the state and local tax authorities. The author provides estimates of unreported legal activity in other economies at 28.9 per cent of Gross Domestic Product (GDP) for Turkey, 22.3 per cent for Italy, and 15.3 per cent for Sweden, compared to 7.1 per cent for the US. The author further states that, despite having a similar overall GDP as the US, Europe's shadow economy at about US$3 trillion, is more than double the size of the shadow economy of the former. And this may be attributed to higher tax rates and more burdensome regulations in Europe.

The book provides several interesting facts highlighting the link between money and criminal activities such as illegal drugs, corruption, and human trafficking. To weigh the importance of cash in the drugs market, Rogoff points out that about 90 per cent of all the US currency has traces of cocaine. The RAND Corporation's estimates placed the market of four major illegal drugs in the US, namely cocaine (including crack), marijuana, meth and heroin, at more than US$100 billion in 2010. Phasing out high-denomination cash would be a significant blow to drug cartels in the US, as other means for doing such transactions are quite hard to adopt and are not as safe for routine use on a large scale. Furthermore, the use of other forms of money such as commodities (as in the barter era), foreign currency, or even over-reporting of invoices do not provide the convenience or anonymity that cash offers.

Rogoff's second reason for proposing elimination of high currency notes relates to monetary policy and macroeconomic stability. He argues that monetary policy may turn ineffective in dealing with deep and prolonged recessions in a high-cash economy. Negative interest rate policies may make cash more attractive than bank deposits and bank reserves, leading to weaker transmission of such policies.

The second part of the book explores the area of negative interest rates in terms of the relationship between paper currency and a central bank's policy. Ever since the financial crisis of 2008, the global economy, particularly the advanced economies, are experiencing a phase of low interest rates and inflation along with slow output growth rate. Macroeconomic theory suggests that the central bank of a country can lift an economy out of recession by pushing down the interest rates. However, a zero lower bound for nominal interest rates could constrain conventional monetary policy. Quantitative easing and negative interest rate become unconventional policy options in such cases. The author explains that paper currency can be thought of as a zero-interest-rate bond. As long as people have the choice of paper money, they will not prefer any instrument with a negative rate of interest. Central banks of Denmark, Switzerland, Sweden, the Eurozone, and Japan are the early adopters of negative interest rate policy on bank reserves. This policy puts pressure on private banks to charge negative rates on deposits with them. The private banks in some of the countries that used the negative interest rate policy (e.g., Denmark, Switzerland, and Sweden) have been able to pass on negative rates to their large clients, but they have not yet dared charge negative rates to their ordinary retail customers, at least not in a transparent fashion. However, banks that are charging negative interest rates will recoup their costs either by charging customers higher on other services or by charging higher for loans that the banks provide. One of the criticisms related to negative interest rates is that it might be regarded as a violation of the trust that citizens place in their government by giving it a monopoly over the currency supply. Rogoff thinks that these people are victims of the illusion of money, as one should actually see the real rate of interest on currency.

The negative interest rate policy might lead to instability in prices, financial markets, and a departure from rule-based monetary policy. Rogoff mentions that Friedman's alternative of limited monetary expansion, according to a fixed rule,would not work. Friedman thought that there was a fixed relationship between the quantity of money and prices, but this has not always proved to be the case. Rogoff argues that the ideal monetary system is the one that balances flexibility and commitment. If central banks had an option of setting interest rates to negative levels without limit, they would have had far more scope than they do today for pushing an economy quickly out of a deflationary spiral and also for counteracting the effects of credit contraction after a systemic financial crisis. To achieve monetary policy goals, therefore, it is necessary to enhance the likely effectiveness of a negative rate policy by discouraging cash holdings through the implementation of various legal, tax, and institutional changes.

Rogoff's proposal for less cash or elimination of currency leads to a few concerns though. The radical change will imply erosion in the income of central bank or seigniorage, which is the difference between the face value of currency minted by the government or the central bank and the cost of inputs, including both materials and production costs. The author places the estimated loss of revenue for various advanced economies' central banks at 0.3 per cent of GDP, which is way below the estimated tax evasion of 2.7 per cent of GDP for federal taxes alone, and perhaps another percentage point higher if state and local taxes are included. Nonetheless, the central bank would still earn money from electronic bank reserves even in a situation where there is a complete elimination of paper currency. The second crucial concern relates to the disruptive effect it will have on the poor who use currency intensively. Rogoff suggests that this concern can be addressed by providing subsidised access to financial services for the poor, giving them equal access to electronic currency, and, at the same time, helping reduce some of the costs associated with financial exclusion. These measures aimed at improving financial inclusion will have numerous collateral benefits in fighting domestic inequality as well.

The Curse of Cash is a well-written and engaging book with many intriguing claims and insights. The book has more to offer than just the narrative of the claims and debates over the benefits and costs of cash. Rather it covers a broad range of related issues which provide clarifications to many popular misconceptions. Topics such as international policy dimensions and the future of cash, in terms of exploring the digital currencies, provide food for thought to the readers.

Rogoff acknowledges that digital currencies indeed have important implications for financial technology going forward, and they raise important questions and challenges for the regulators. However, they are simply not central to the case for drastically scaling back paper currency. Regardless of whether the first generation of crypto currencies survives the next decade, the public ledger encryption technology they pioneer might provide a roadmap to better security over a broad range of financial transactions. Further, the author is of the view that international factors are important and can potentially affect the design and implementation of any plan to phase out paper currency, but, overall, these issues should not alter the scenario where the costs outweigh the benefits. A coordinated phase-out of currencies in advanced countries could be the most desirable policy.

This book, which is backed by compelling arguments and evidence, has the potential to serve as an important guide for moving towards a less cash economy and ultimately towards a cashless economy. The book is persuasive enough to motivate policymakers to recalibrate their own currency reforms.

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