

# *Should We Fear a Cashless Society?*

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**Abstract.** The concept of cashless payments has been gaining momentum globally, and recent innovations in digital payment solutions and central bank digital currency have made it an increasingly attractive option. This paper argues that a fully cashless society would have structural economic consequences, while some benefits of a cashless society are mentioned: less tax evasion, more efficient transactions. Based on the analysis, derived from network effect theory, information asymmetry theory and public goods theory, it is concluded that digital payment market could lead to a natural monopoly, favoring private platforms, that information asymmetries in the system between digitally included and digitally excluded populations could cause adverse selection and that cash is a public good and its withdrawal would make the system more fragile. Finally, the paper makes policy recommendations, such as extending the central bank's obligation to accept cash, mandating platform neutrality and ensuring the design of central bank digital currency respects privacy.

**Keywords:** cashless society, network effects, information asymmetry, public goods, financial exclusion

## **1. Introduction**

The payments system has completely changed in the last 20 years [1]. In some developed nations, digital payment platforms, including mobile wallets and central bank digital currencies, are more widely used than cash [1]. The proponents of such a change have noted that in such a system there could be efficiencies, including lower transaction costs, less tax evasion, and less cash-related crime [2]. However, there have been a number of recent studies that have shown negative effects that cash brings to the structure of economy after it is completely eliminated [3, 4].

Several issues have been noted in the literature. For example, Hedman and Henningsson [3] noted that digital payment systems seemed to lead to monopolistic markets, and Natile [4] noted the exclusionary effect of electronic banking on marginalized groups. Despite these contributions, no systematic literature exists to analyze distributional implications and systemic weaknesses of a cashless system that combines the basic principles of economics. This paper attempts to fill this gap and answer the question: "Should We Fear a Cashless Society?", utilizing three theoretically relevant lenses, network effect theory, asymmetric information theory, and public goods theory. A particular focus is on systemic risks that may be caused by a cashless society.

Section 2 reviews the related works on network effects and natural monopoly in payment markets. In Section 3, information asymmetries and their effects on financial exclusion are

discussed. In Section 4, the focus is on cash as a public good and systemic risks to cash. Section 5 addresses counterarguments. Policy recommendations are summarized in Section 6.

## 2. Related works

This section briefly reviews existing academic literature on structural economic effects of a cashless society, highlighting the network effects, natural monopoly, and market power. The economics of two-sided platforms and network externalities has been a topic of recent research and scholars have noted the tendency to market concentration in payment systems for these structural reasons [1, 3, 5]. These contributions are summarized below, offer a theoretical base for analysis in the next sections, and identify areas where scholars agree and disagree.

In academic community, the question of whether there are digital payment platforms with high network effects, typical for the economics of two-sided markets [1], has been debated. The more users who have this payment platform, the more valuable it is to any individual user [1]. A positive feedback loop implies that digital payment markets are likely to be concentrated and evolve towards a few dominant players [3]. Once a market reaches a critical mass of users, it is difficult to get other platforms into the game even if they offered a better service, due to two reasons: the difficulties of switching to another platform, and issues of coordination [5]. These network effects lead to a market that is analogous to a natural monopoly. According to classical economic theory, a natural monopoly exists in a market if a single firm can supply services to the market at a lower cost than several firms can [6]. Digital payment systems meet this definition: A high fixed cost, but a near-zero marginal cost to the use of the system for another transaction. Liebowitz [7] pointed out, however, that "high concentration is not limited to retail payments but is widely found in markets with strong economies of scale and network externalities.

A few private platforms can control the payment system and charge users what they want, charge transaction fees, and ban users whenever they choose [5]. Digital accounts, unlike cash, are not universally accepted and can be frozen by the platforms [3]. This is a significant transfer of economic power from individuals to private institutions. Empirical evidence of welfare costs of such concentration exists. Due to pricing power of dominant payment card systems, Carbó Valverde and Kahn [8] estimated that the payment card system in the United States transfers about \$30 billion of wealth annually from cash and debit card users to credit card users. This pricing power would be amplified in a fully cashless society, in which cash would no longer be an alternative payment method [3]. The economics of network effects thus suggest that a cashless society would be a reinforcement of monopolistic trends with a lower level of welfare for consumers and a higher level of economic power concentrated in a few private players.

## 3. Information asymmetry, adverse selection, and financial exclusion

### 3.1. Information asymmetry in digital payment systems

The term information asymmetry, coined by Akerlof [9] in the context of a lemon market, is used to describe a situation in which one party to a transaction has more information about itself than the other party. Such disparities can lead to a market failure, as Akerlof showed, when adverse selection forces the best goods out of the market. In a cashless society, a similar information asymmetry is present between the digitally included and the digitally excluded. Poorer, older, and less digitally literate people are more likely to use cash and therefore fail to create the transaction history that digital payment systems do automatically [2]. These digital records have now become key to

financial institutions' creditworthiness analysis and loan pricing [10]. Even if the borrower is creditworthy, there can be information asymmetry between the lender and the borrower, as Karlan and Zinman [11] demonstrate, with the potential to systematically exclude some borrowers.

### **3.2. Adverse selection and the vicious cycle of poverty**

In a cashless society, people without a digital payment history cannot exist in the credit system. Lenders would not be able to reassure lenders if they lacked the digital data that they need. Thus, vicious cycle of poverty is established: those who cannot use digital payments are unable to access credit markets, unable to invest in education, housing, or small business, and consequently end up with low incomes. This is not a short-term problem, but a structural problem of a cashless system. The restrictions placed on money users regarding any online transaction will worsen as more economic activity takes place online [12]. Over time, this digital divide widens; digitized citizens have a more detailed, comprehensive digital profile of data, whereas those who are not take on an "economically invisible" cast [13]. Tinn and Dubach [13] showed that electronic banking was a systematic form of discrimination against marginalized groups. This shift to a cashless society is not a neutral shift in technology, but a shift that is happening unequally, because of unequal access to financial information.

### **3.3. Counterarguments and limitations**

However, some scholars state that a well-designed digital financial inclusion can be used to reduce information asymmetry by offering alternative credit scoring models, based on non-conventional data sources [10]. As noted by Dhar et al. [14], however, data alone does not create equity; the ownership of data and algorithms used to process the data can be the cause of either increased or decreased information asymmetries. The divide between the potential and what is achieved for digital financial inclusion is a reminder that it is not just about being optimistic about technology, but also about institution design.

## **4. Cash as a public good and problem of systemic risk**

Cash is a public good because its defining properties are those of a public good. It is non-rivalrous in consumption; that is, the use of cash by one person does not prevent others from using it. It is also non-excludable, meaning that no private intermediary, like a bank, is needed to perform a cash transaction [3]. These properties make cash a uniquely inclusive payment mechanism, universally available and not dependent on private infrastructure [3]. The removal of cash from the payments system would remove this public good, and it would be replaced by privately controlled, inherently excludable digital systems [3]. Financial impacts of this replacement are important and should be examined theoretically. In public goods perspective, cash is the last payment system of society. Private corporations do not need to give it their permission, and it is not internet-linked or electrically powered. This infrastructure is a source of single point of failure risks, as recorded in systemic risk literature, which makes the economy susceptible to such risks if destroyed. Even the most efficient financial innovations can introduce fragility in a crisis, as highlighted by Carbó Valverde and Kahn [8]. A cashless society would also eliminate the most dependable cushion in the financial system and make it more vulnerable to systemic disruptions.

## 5. Counterarguments and rebuttals

### 5.1. The regulatory solution argument

One counterargument is that regulation can correct the issue of market concentration and exclusion, including by implementing data portability, platform interoperability, and universal service obligations. In this regard, Hedman and Henningsson [3] recognized that regulation can reduce the harm but cannot remove the structural concentration of power that exists because of network effects. Kazan et al. [5] demonstrated that there are inherent tendencies for concentration in two-sided markets that can only be bound by regulation, not overcome. Furthermore, regulation lags technological advancements, and once regulations are established, market structures are firmly in place. Moreover, the ability of regulatory institutions to regulate digital payment platforms may not be consistent across jurisdictions. In many developing economies, mobile money and digital payment take-up are the highest, with regulators having limited technical capacity, limited budgets, and insufficient statutory powers to regulate the cross-border payment platforms [1]. Digital payment markets are often characterized by the presence of a few big technology companies, whose operations are global and which have more legal capacity and resources than the national regulators responsible for their regulation. Even in the more developed jurisdictions, institutional rulemaking often doesn't keep up with technological advances in payment systems. Once a competition concern is formally identified and action taken, market positions are already in place, and habits have already been ingrained in consumers. The practical constraints highlight the role of regulation, but not as a substitute for structural protection, which is well established and occurs offline via the payment method.

### 5.2. The utilitarian trade-off argument

Some scholars support that the benefits of a cashless society, such as the avoidance of tax evasion, crime, and convenience, outweigh the disadvantages [1]. However, such a utilitarian view does not, consider distribution questions raised by information economics [1]. Falck [15] demonstrated that information asymmetry affects the disadvantaged more. Digital payments offer benefits to digitally included and financially literate individuals but the costs to digitally marginalized and financially excluded. The benefits of aggregate cannot be justified by the costs imposed on vulnerable groups without a corresponding benefit. One assumption for the utilitarian defense is that benefits of digital payments outweigh the costs of removing cash. In practice, gains and losses are distributed unequally. The advantages of convenience accrue to the digitally literate, the urban, and the affluent, and the costs of exclusion, higher fees, and diminished privacy falls on the elderly and the poor and on populations with less access to the internet in rural areas [2]. When costs and benefits are distributed, the overall welfare benefit is not as well defined. The utilitarian argument avoids the important normative question of who would take the risks in a cashless society, and whether the risks would be consensual.

### 5.3. The generational transition argument

The generational transition argument holds that the digital divide is a temporary phenomenon that will fade away as older generations give way to younger ones who are digital natives [14]. This perspective does not account for structural inequality. However, the digital divide extends beyond age to income, education, and geographical infrastructure divide [14]. Furthermore, the theory of

public goods implies that the withdrawal of cash is not a gradual process in which other options for payments are gradually introduced, but an active process in which a universally available payment option is withdrawn [16]. There is a clear relationship between the digital divide and income and education, even within the younger age groups, as evidenced by analysis of cross-sectional data for countries experiencing high adoption rates of digital payments [17]. The structural barriers that affect the quality of life for older people, such as lack of access to the broadband infrastructure, access to devices compatible with the broadband infrastructure, and lack of digital literacy, affect low-income young adults as well. These are not age-related disadvantages that are overcome over time and across generations, but rather are indications of greater socioeconomic inequalities endured across generations.

## 6. Conclusion

This paper has answered the question: "Should We Fear a Cashless Society?", utilizing three theoretically relevant lenses, network effect theory, asymmetric information theory, and public goods theory. The results show that network effects and natural monopoly dynamics give rise to market power of private platforms, which have negative effects on consumer welfare and allow unchecked private parties to determine who can participate in economic exchanges. Moreover, there is information asymmetry between digitally included and excluded populations, which presents adverse selection effects that exacerbate the issue of vulnerable populations staying in poverty due to their lack of access to credit markets. Furthermore, cash is a public good that offers a universally accessible, offline payment mechanism, and removing cash would leave financial system without its one safety net against single point failures and systemic shocks in times of crisis. These vulnerabilities are separate from, and complementary concerns related to, market power and exclusionary impacts.

However, there are limitations that should be noted. This paper is presented mainly based on theoretical reasoning and relies on empirical evidence from previous studies, not from primary quantitative research. To overcome these limitations, future studies should be based on primary data on consumer and merchant welfare conditions under different levels of cashless adoption in different institutional settings. Primary quantitative analysis of transaction-level data can be used to obtain more first-hand data of magnitude of the welfare losses resulting from market concentration and information asymmetry.

Based on these findings, three policy recommendations are made. First, governments should ensure that cash is lawfully and continuously accepted as a means of payment so that the public good nature of cash continues to exist as a fallback option. Moreover, the payment platforms should be subject to neutrality obligations, meaning that they should not discriminate against users or impose arbitrary restrictions on access to these services. Third, central bank digital currencies should be built to be privacy-enhancing, with features such as allowing payments to be made offline and providing anonymous transaction modes, to maintain the inclusive nature of cash.

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