Imagine swiping your card to take public transport home or buy a new flat-screen TV, but just a couple miles away, the government is tracking your exact purchases and location. In Hong Kong, this is reality. With more than 20 million Octopus cards in circulation and ownership rates reaching 98%, these seemingly innocent pieces of plastic generate detailed records of users' purchases and movements.[1] This has led to a spike in demand for cash since residents are afraid of being surveilled.[2] Looking further, people in Mainland China are now forced to self-censor their market activities because of the Social Credit Score system which tracks their purchases.[3] Similarly, in Western societies, intelligence, law enforcement, and private businesses also collect financial transaction data without consumer consent, showing that cashless systems can expose citizens to monitoring and surveillance even in democratic countries.[4] Beyond privacy concerns, cashless systems also raise issues of access and resilience: marginalized individuals without reliable technology may be excluded from everyday commerce, while power outages and cyberattacks could suddenly leave parts of populations without means of financial transaction.[5]

On the flip side, cash has its own drawbacks, including issues such as corruption, terrorist funding, and tax evasion.[6] A cashless payment system addresses some of these issues, making our society safer.[7] More importantly, at its core, cashless payments are economically efficient. In an IKEA store in Gavle, Sweden, managers decided to temporarily go cashless. They realized that fewer than 1% of shoppers used cash while employees spent about 15% of their time handling, counting, and storing money.[8] Our society has moved from livestock currency, to commodity money, then to centralized metal and paper currency, and now we are transitioning to digital forms of payment. All these shifts improved productivity for society by lowering the cost of transactions. In light of these tradeoffs, this essay argues that society should continue expanding and improving digital payment systems to reduce unnecessary reliance on cash, but a completely cashless society should still be feared because it could strip away privacy, exclude vulnerable groups, fail during crises, and remove consumer choice.

One major benefit of cash is its universality. Tischer et al. warn that "rural communities, those lacking digital skills and lower-income households all are at risk of being left behind and becoming 'trapped in a cash economy'."[9] With around 1.7 billion people globally who are unbanked or underbanked, the way to deal with this dilemma is to innovate for inclusiveness, not only exclusiveness.[10] Creating payment solutions for high-end consumers will likely be driven by free-market forces because it is economically rewarding, but developing near-instant, low-tech, and dependable cashless systems for individuals in emerging economies requires collaboration between governments, businesses, and civil society. The challenge is therefore not whether society should become more digital, but whether digital payment systems can become universal enough to reduce reliance on cash without excluding millions of people.

Beyond digital exclusion, the growing adoption of cashless payment systems has led to increased cybersecurity risks. The risk of cyberattacks can range from distributed denial-of-service (DDoS) attacks to frontier LLMs gaining capability of unearthing hitherto unknown bugs and system risks. DDoS attacks are "malicious attempts to disrupt the normal traffic of a targeted server, service or network by overwhelming the target or its surrounding infrastructure with a flood of Internet traffic."[11] One of the most prominent DDoS attacks in US history was Operation Ababil: an Iranian state-sponsored cyberattack that targeted and disrupted many of the biggest US banking services.[12] Additionally, financial cyberattacks lead to thefts at unimaginable scales. A major example was the Carbanak cyber heist, where

hackers infiltrated more than 100 financial institutions worldwide and stole over €1 billion by remotely controlling banking systems, manipulating accounts, and even forcing ATMs to dispense cash on command.[13] These risks are becoming even more serious as AI systems grow more capable of finding hidden software vulnerabilities. Anthropic released a new AI called Mythos, which is able to uncover decades-old bugs in software from even the most prominent tech companies and suggest how to fix them.[14] While Mythos is being safely deployed through Project Glasswing - where tech giants are using it to strengthen their systems - similar tools in the wrong hands can help attackers exploit hidden weaknesses in payment systems at catastrophic speed.[15] These examples show that as societies become more cashless, cybersecurity becomes essential to protecting everyday access to money.

Further, in countries where trust in local currency is low, people still often turn to other forms of cash rather than to digital currencies. Research by Oz Shy indicates that "foreign currencies from large democratic countries are viewed as stable stores of value when the purchasing power of the domestic currency is uncertain or when other assets lack sufficient anonymity, portability, divisibility, liquidity, or security."[16] Recently, Argentina's annual inflation reached around 95% in 2022, weakening trust in the peso and pushing many locals to seek U.S. dollars as a safer store of value.[17] Because strict currency controls limited access to official U.S. dollars, the black market "blue dollar" exchange rate rose to more than double the official rate (See Fig. 1).[18] This shows that even with cashless alternatives, people still actively sought out trusted currencies in cash when confidence in domestic money collapsed.

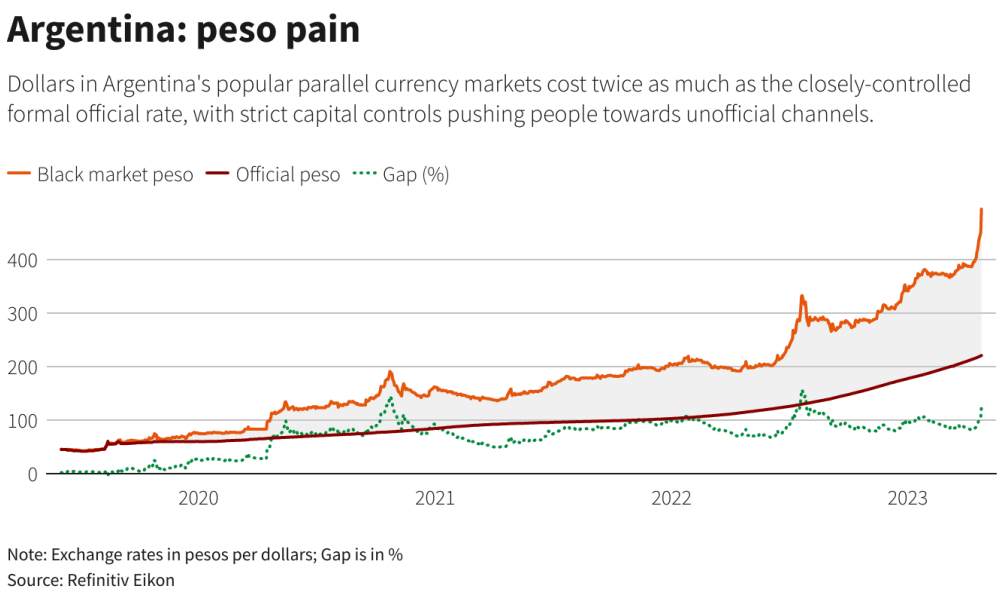


Fig. 1: Argentina's official peso and "blue dollar" rates.[19]

Finally, cash remains exchangeable when cashless systems fail, such as during blackouts, cyberattacks, wars, and political crises. We saw a recent example of this during the conflict in Iran where a "state-imposed internet blackout has reduced connectivity to roughly 1% of normal levels across Iran; mobile banking apps at the country's two largest banks have gone offline; and a combination of missile

strikes and cyberattacks has crippled Bank Sepah's infrastructure. For millions of Iranians, cash is the only option left."[20]

One of the strongest arguments for a purely cashless society is that cryptocurrency could offer a digital alternative to the anonymity that cash provides. These systems are powered by distributed ledger technology (DLT), which records transactions across a decentralized network to increase transparency and reduce reliance on a central authority. However, while cryptocurrency may seem to combine the convenience of digital payments with the privacy of cash, this comparison has several limitations. Cash in the US is defined as a "legal tender for all debts, public and private," ensuring that it holds its position as a medium of exchange in the future, a standard that even the strongest cryptocurrencies usually fail to meet. Zcash is a crypto that uses zero-knowledge proofs to ensure completely anonymous transactions by verifying a statement's validity without revealing the information that makes the statement true.[21] However, this anonymity comes at the cost of weak market regulation and a high degree of market volatility (See Fig. 2). Anonymous crypto tokens on private blockchains are not backed by the majority of world governments, and therefore it is not guaranteed as legal tender.[22] Moreover, without regulation, these currencies become the center of many scams with the most well known one being rug pulls: when a new crypto is launched, people build up hype around the token, then developers take all the invested money and disappear.[23] These limitations reinforce that, even in an increasingly digital world, cash continues to serve as the most reliable private form of payment.



Fig. 2: Fluctuations in Zcash price over the last one year illustrate the broader volatility in cryptocurrency markets.[24]

It is clear that cash is still necessary in the world today, but it is still incredibly inefficient. In order to use the five-dollar bill in your wallet today, it has to go through multiple steps of production, quality control, and transportation before reaching you (See Fig. 3).[25] One prominent example of the cost of cash was the recent decommissioning of pennies in the United States. With a value of one cent, the cost of producing

each penny rose to 3.69 cents. The discontinuation of penny production is projected to save $56 million annually just through reduced material costs.[26] Apart from the cost of moving and producing cash, there is also the risk of theft or loss for both businesses and everyday consumers.[27] If physical cash is stolen or misplaced, it is almost impossible to recover, unlike digital payments, which can sometimes be frozen, traced, or reversed. Cash also creates external costs to businesses because they must spend time counting money, storing it, transporting it to banks, and protecting it from internal or external theft. Therefore, while cash remains important for privacy, accessibility, and emergencies, its costs and inefficiencies show why societies should continue reducing their reliance on it where possible.

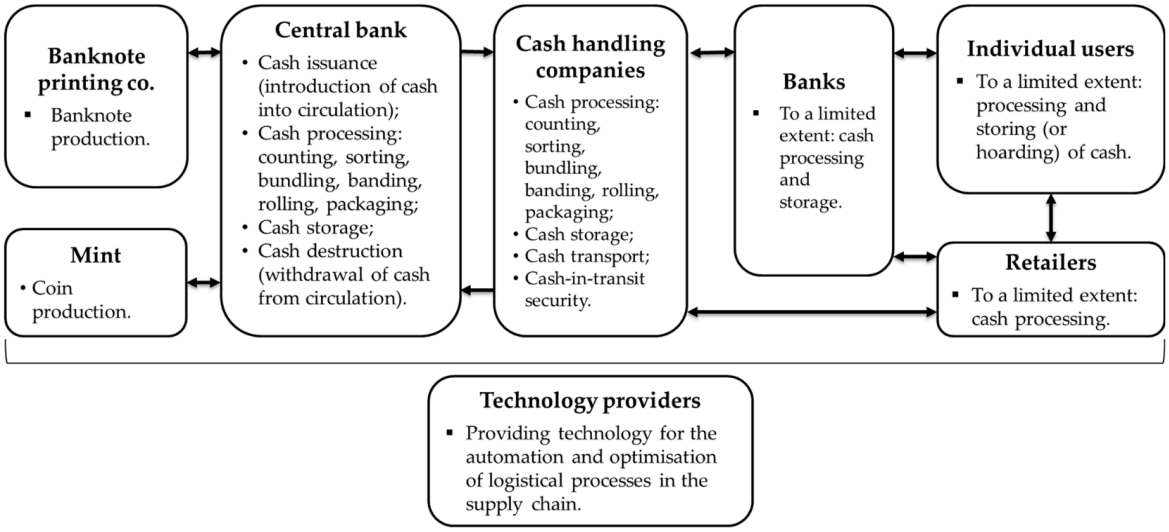


Fig. 3: Diagram of the movement of cash in our society.[25]

To create reliable alternatives to cash, we must first address gaps like digital inclusivity. Shifters of the demand curve are consumer taste and preference, market size, price of related goods, change in income, and future expectations. As increased attention is turned towards bridging the inequality gap and moving toward a more digital payment ecosystem, market size and future expectations shift the demand curve right. This creates a market opportunity for private companies to address. One noteworthy example is PaysafeCash: they built a system where consumers who needed to use cash for online payments could select PaysafeCash as their online payment method, generate a barcode, go to their nearest payment point, get the barcode scanned, and pay the outstanding amount.[28] This is not an isolated innovation. Similar developments include UPI in India ($10.3 billion worth of transactions per day in 2025)[29] and Alipay in China ($60 billion worth of transactions per day in 2025)[30].

Beyond making cashless systems inclusive, we must ensure that any cashless system is truly resilient to external shocks. On a day-to-day basis, this means ensuring that digital payment systems remain reliable during power outages, internet disruptions, server failures, or sudden surges in transaction volume. A recent example of a country that has made strides in resilience planning for cashless payments is Ukraine. In order to combat failing digital infrastructure at the beginning of the Russia-Ukraine war, “Monobank, Ukraine’s largest mobile-only bank, deployed IT systems to Amazon’s cloud servers, eliminating dependence on physical infrastructure.”[31] Ukraine also established a system called “powerbanking”: this

was a system where competing banks built a shared infrastructure where customers could seek help from any of the 2,360 included branches.[32] In order for other countries to rely more safely on digital payments, banks must explore cloud banking: cloud banking allows banks to access their servers and databases over the internet rather than on-premise data centers, and it offers "built-in disaster recovery capabilities that help financial institutions recover swiftly after a security breach or massive outage."[33]

Overall, these examples show that we cannot currently trust digital systems to reliably replace the economic roles that cash still fulfills. Money performs three essential functions. It acts as a medium of exchange, a store of value, and a safeguard against uncertainty. Cashless payment systems are increasingly effective at performing the first function. They reduce transaction costs, increase convenience, and create new opportunities for economic growth. Yet, cash still plays an important role in fulfilling the latter two. During cyberattacks, wars, internet blackouts, currency crises, and periods of political uncertainty, people return to cash because they trust it to remain accessible, private, and valuable.

The real fear, therefore, is that people could lose access to the essential functions cash provides before digital systems are trusted enough to perform them. Reaching a society where increased digital payments become viable requires governments to strengthen cybersecurity and digital infrastructure, while still protecting people's choice to use cash when they want to. Ultimately, we should fear a completely cashless society not because digital payments are bad, but because eliminating cash would remove one of the few payment systems that still protects privacy, access, resilience, and consumer choice.

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