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Potential roles of blockchain in fighting poverty and reducing financial exclusion in the global south

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ABSTRACT

The *visible effects* of blockchain *are already* being noted in the Global South. This editorial presents early evidence linking the use of blockchain in overcoming economic, social, and political challenges facing economies in the Global South. Highlighted are the key applications and uses of blockchain in addressing these challenges. The political, social, and economic effects of blockchain are systematically evaluated. This essay demonstrates how blockchain can help promote transparency, build trust and reputation, and enhance efficiency in transactions.

KEYWORDS

Blockchain; digital identity; financial exclusion; global South; poverty

Introduction

Similar to its recent predecessors such as cloud computing (Kshetri, 2011) and the Internet of Things (IoT) (Kshetri, 2016), blockchain is considered to be a technology that has the potential to bring major economic benefits to the people living in poverty in the Global South (hereinafter: GS) (Kshetri, 2017a, b). The main focus of this editorial is on the potential roles of technology in fighting poverty and reducing financial exclusion in GS economies. This issue has significant humanitarian and economic implications for our society for the simple fact that over 2.5 billion adults worldwide lack an account in the formal banking sector. According to the World Bank, in some economies, such as Cambodia, the Democratic Republic of Congo, Guinea, the Kyrgyz Republic, Turkmenistan, and the Republic of Yemen, over 95% of adults do not have an account at a formal financial institution. Among Southeast Asia's 600 million people, only 27% have a bank account. This proportion is as low as 5% in Cambodia¹. A key policy concern is thus how financial inclusion can be stimulated in these economies

Broadening financial inclusion should be a key policy issue. Prior research suggests that financial deepening is pro-growth as well as pro-poor. Especially, evidence suggests that financial development boosts the growth in income of the lowest income quintile compared with the other quintiles. Financial deepening also reduces the share of people living on less than a dollar per day (Beck, Demirgüç-Kunt, & Ross, 2007). Controlling for everything else, 30% of the total cross-country variation in changing poverty rates is explained by the variation in financial development (Beck, Demirgüç-Kunt, & Honohan, 2009).

In light of the above observations, this essay explores the potential of blockchain to overcome barriers in accessing financial services among disadvantaged groups in the GS economies. It discusses some key mechanisms that are being explored by blockchain startups and some established companies.

Before proceeding further, we provide some clarifying definitions. A distributed ledger technology (DLT) enables users to store and access information or records in a shared database (the ledger). The information or records may be related to assets and holdings. The ledger has its own standards and

processes and is capable of operating without a central validation system (Kakavand, Sevres, & Chilton, 2017). Whereas standard accounting ledgers function as a centralized entity, DLTs are maintained by a distributed network of participants, also referred to as nodes. DLTs also use cryptography to store assets and validate transactions. The Chicago-based intellectual property law firm Marshall, Gerstein & Borun LLP suggests that a minimal definition of blockchain should include the following: “a distributed ledger network using public-key cryptography to cryptographically sign transactions that are stored on a distributed ledger, with the ledger consisting of cryptographically linked blocks of transactions”. The cryptographically linked blocks of transactions form a blockchain. Note that doing something cryptographically or in a cryptographic manner means that mathematical techniques are used for encrypting and decrypting data. Doing this ensures that data is kept private when it is being transmitted or stored electronically.

Proving disadvantaged groups' bankability

Many individuals are unable to prove who they are. According to the United Nations, about 20% of the world's population – 1.5 billion people – lack any proof of identity such as driver's license, birth certificate, and Social Security card equivalent. These include children whose births have not been registered and many women in rural areas of Africa and Asia. Some countries have a notoriously poor record, even in registering the children born. Estimates suggest that only 44% of children under 5 years of age in sub-Saharan Africa (SSA) economies have been registered. The proportions are even lower in rural areas. According to the United Nations Children's Fund (UNICEF), in Eastern and Southern Africa, the proportion is reported to be 38% and it is estimated to be as low as 3% in Somalia.

Worse still, in order to open an account in many countries, banks demand a variety of other documents in addition to identification cards. Financial institutions have imposed these oppressively burdensome requirements in order to prevent money laundering. They include recommendation letters, wage slips, and proof of the place of residence. For instance, to open a checking account, banks in Bangladesh, Cameroon, Chile, Nepal, Sierra Leone, Trinidad and Tobago, Uganda, and Zambia require four or more documents (Beck, Demirgüç-Kunt, & Soledad Martinez, 2008). In many low-income countries, a majority of the population lacks such papers, especially for those that are not employed in the formal sector (Beck et al., 2009). Many people living in slums in countries such as India and Nigeria cannot provide birth certificates or utility bills required by banks.

Many individuals thus cannot prove who they are. In this regard, a number of startups such as Humaniq, BanQu, Credits.vision, OneName, ShoCard, and BitNation are launching blockchain-powered digital identity programs that can help create and validate the identity of individuals.

For instance, blockchain *startup* Humaniq's Ethereum blockchain-based app creates user profiles based on *biometric* data such as facial and voice recognition algorithms. Humaniq users can complete the bio-identification process in about 20 seconds. The company's initial target audience is people in emerging economies with low level of literacy. Potential users are not required to have a passport or an email account. A person can use a smartphone to take a photo of himself/herself and records a video making facial gestures. The user is also required to pronounce a randomly selected text shown on the screen to record voice. Humaniq offers an initial deposit of Humaniq tokens (HMQ) once a consumer completes the bio-identification process. The HMQ tokens can be used as store of value and a means of payment and a medium of exchange on the platform. They can be exchanged with the third-party services utilizing Humaniq such as insurance, data security, small business loans, and pensions². In order to make it affordable to poor people, the Humaniq app would run on the cheapest Android smartphones.

Fighting against frauds and discriminatory policies and practices

According to the United Nations Conference on Trade and Development (UNCTAD), for a bank in a developing country, a major moral hazard is that of insider lending, in which a high proportion of lending is likely to be provided to projects that are connected to the banks' directors and managers. Indeed, insider lending is arguably a major cause of bank failure worldwide (Caprio, 1997).

A large body of research dealing with access to finance in developing countries also indicates that compared with disadvantaged groups without political connections, politically connected firms tend to enjoy better and undeserved treatment from governments or financial institutions. For instance, in China, private enterprises are treated unfavorably compared with state-owned enterprises (SOEs).

A related point is that banks in many GS economies are ill-prepared to fight frauds. For instance, the use of fake export invoices to disguise cross-border capital flows has been pervasive in China. Since China has maintained strict capital controls regimes, some importers and exporters falsify trade transactions in order to move capital in and out of the country. Many banks do not check the authenticity of trade documents. During April–September 2014, China found US\$10 billion worth of fake trade transactions. Some major fraud cases were in Qingdao, the world's seventh-busiest port. Some firms had used fake receipts to secure multiple loans against a single cargo of metal (Kshetri, 2017a).

The Qingdao frauds involved 300,000 tons of alumina, 20,000 tons of copper, and 80,000 tons of aluminum ingots. Due to the scandals, Chinese banks charge higher interest rates and have a lower tendency for collateral financing. A key point from our perspective is that the higher interest rates affect disadvantaged groups more negatively.

Frauds are rampant in the microfinance sector too. According to a newindianexpress.com article published on March 4, 2015, during 2010–2012, in India's Kerala state, president and secretary of the Adoor Sree Narayana Dharma Paripalana Union received loans of US\$1.15 million from Bank of India on behalf of 5,000 families. The families had no knowledge of the loans but faced debt collection proceedings.

Blockchain would help guard against discriminatory practices. Using blockchain, it is possible to keep an audit trail of transactions. In this way, accountability and transparency can be achieved in the data-exchange process. Discriminatory practices that prevent disadvantaged groups' access to financial services cannot take place in the blockchain world. Data manipulation is practically impossible without getting caught. Blockchain can possibly prevent frauds such as those observed in Qingdao and the Adoor Sree Narayana Dharma Paripalana Union.

Enabling business models that can meet the needs of disadvantaged groups

In many cases, scale economies work against disadvantaged groups such as smallholder farmers. Many financial institutions have minimum account size requirements or they charge fees to open and maintain accounts. For example, to open a checking account in most parts of Africa, banks may require a minimum deposit that is equivalent to 50% of the per capita GDP (Kshetri, 2017b). Such high fees exclude large parts of the population.

Mainstream financial institutions tend to locate retail banking services in relatively prosperous neighborhoods. Poor people thus tend to be located far from banks. This problem is not limited to the developing world. According to a bloomberg.com article published on May 2, 2013, following the 2008 global financial crisis, US banks had closed 1,826 branches as of May 2013; 93% of the closings took place in postal codes where the household income was below the national median. Indeed, an economist.com article noted that US banks are estimated to lose money on 37% of the customer accounts, which means that even those of many middle-income customers are unprofitable.

Blockchain-based solutions can be used to develop offerings that are appropriate to meet the needs of disadvantaged groups. Blockchain-based business models can enable the economics of small transactions. That is, using blockchain, banks and financial institutions can possibly exploit zero or very low marginal cost economics.

Concluding comments

Disadvantaged groups' lack of access to financial services has become one of the main problems that the world is facing today. Blockchain-based solutions could be the answer to many of these problems. What is new in blockchain is the combination of decentralized access and immutability, which makes it difficult to engage in opaque transactions that take place between companies, individuals, and institutions. Blockchain is likely to reduce or even eliminate fraudulent lending practices such as insider lending. Likewise, some mechanisms that fraudsters use such as falsification of identities of persons and assets can be detected and prevented using this technology. Blockchain provides an accurate way to pinpoint the party at fault. While it is yet to be proven in the long term, early evidence indicates that blockchain may offer great hope and promise to stimulate access to financial services for disadvantaged groups.

Notes

1. See: <https://home.kpmg.com/xx/en/home/insights/2016/04/fintech-opening-the-door-to-the-unbanked-and-underbanked-in-southeast-asia.html>.
2. See: <http://www.nasdaq.com/article/humaniq-aims-to-tackle-barriers-to-economic-inclusion-with-blockchain-app-cm764760>.

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