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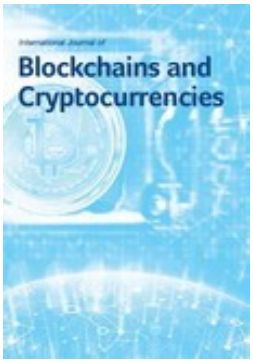

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The possible contributive value of cryptocurrencies to Small Island Developing States

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Abstract: Digitalisation has engendered interesting discussions about social and economic life for the future. Since the start of the COVID-19, there has been an increasing trend towards digitisation and digitised services which have created a need for safe and secure digital identities. One of these manifestations is the cryptocurrency phenomenon. Cryptocurrencies have become even more important as a solution to the financial and economic challenges faced by many developing countries during the current COVID-19 pandemic. However, where cryptocurrencies are concerned, most of the research done has been preoccupied with the current and future role of the industrialised and developing countries. Not surprisingly, virtually little research has been undertaken to examine the contributive value of cryptocurrencies for Small Island Developing States (SIDS). Using exploratory case study methodology and document analysis, this study attempts to fill the gap in the literature by exploring the possible contributive value of this technology for SIDS.

Keywords: cryptocurrencies; Small Island Developing States; SIDS; blockchain; bitcoin; financial technology.

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1 Introduction

The SARS-COVID-19 pandemic highlighted the urgent need to expedite the digital ecosystem, particularly in Caribbean Small Island Developing States (SIDS). Within the last year, there has been an exponential increase in digitised services globally which has quelled some of the resistance surrounding cryptocurrencies as the new normal, thus forcing a fast-track of the phenomenon in the world's economy (Black, 2021; Inman, 2020). Similar to operatives in the tech industries and other digital nomads, people are now forced to work, conduct business, communicate and even play online. The rapid shift from offline to online is unprecedented for Caribbean SIDS, unlike more developed countries who have always had a higher daily reliance on online transactions. Before the COVID-19 pandemic, the drive towards digital uptake was moderate. In a recent study on digital uptake among Latin American and Caribbean countries, Barbados was declared 'slow moving' while Bahamas, Belize, Jamaica, Trinidad & Tobago were declared 'steadily advancing'[1] (Chakravorti and Chaturvedi, 2018) Additionally, Caribbean SIDS financial space is plagued by issues such as: de-risking, lack of trust and confidence among international customers. Therefore, Caribbean MSMEs are marginalised and disadvantaged within the global economy (Collinder, 2015; Erbenová et al., 2016; Torbati, 2016). The adoption of cryptocurrencies, along with the increased efforts to transition to the online space, can reposition marginalised Caribbean SIDS in the global economy, and significantly bolster economic growth.

In the last decade, cryptocurrencies have been popular among financial institutions, various investors, academics, and other interested parties in the intellectual space. An outpouring of scholarly works revealed the evolution of cryptocurrencies and the promise of blockchain-the technology on which it runs. More specifically, research and interest have evolved around: The history of cryptocurrencies (Berentsen and Schär, 2018); behavioural issues (Aspembitova et al., 2021; Breidbach and Tana, 2021; King and Koutmos, 2021; Mills and Nower, 2019); evolution of academic scholarship focussing on cryptocurrencies (Klarin, 2019); price movements (Valencia et al., 2019); different kinds of cryptocurrencies (Li and Whinston, 2020); use of cryptocurrencies as a hedge fund (Baur and Hoang, 2021; Mokhtarian and Lindgren, 2018; Venegas, 2018); challenges of and opportunities for taxation (Peláez-Repiso et al., 2021); risks and returns of cryptocurrencies (Liu and Tsyvinski, 2018); impact of cryptocurrencies on and from inflation (Chohan, 2019; Marthinsen and Gordon, 2020; Moreno, 2016; Stensås et al., 2019); working mechanism of the cryptocurrency (Joshi et al., 2018); the cryptocurrency mining techniques (Mukhopadhyay et al., 2016); electricity and cryptocurrency mining (Kroll et al., 2013; Li and Whinston, 2020); stability of cryptocurrencies during the COVID-19 pandemic (Bouri et al., 2017a; Bouri et al., 2019; Mnif et al., 2020; Shahzad et al., 2019; Urquhart and Zhang, 2019); regulation of cryptocurrency (Law Library of Congress, 2018); criminal uses of cryptocurrencies (Houben and Snyers, 2018); persistence of cryptocurrencies (Bouri et al., 2016; Caporale et al., 2018); legal status of cryptocurrencies (Stolbov and Shchepeleva, 2020); volatility of the cryptocurrency market (Bouoiyour and Selmi, 2015; Carrick, 2016; Cheung et al., 2015; Dwyer, 2015); national cryptocurrency models (Mikhaylov, 2020), as well as anomalies in the cryptocurrency market (Caporale and Plastun, 2017; Kurihara and Fukushima, 2017). As can be seen, interest in cryptocurrencies was identified in disciplines as diverse as

computer science, economics, law, public policy, banking and finance, accounting, and environmental sciences (Holub and Johnson, 2018).

The agility of digital systems in industrialised countries makes them a rich source for research in cryptocurrencies (El Islamy, 2021; Jeribi and Manzli, 2021). The few studies undertaken in SIDS are promising, although they mostly constitute reports by international government organisations (e.g., Bissessar, 2016), and provide a descriptive or comparative account of the experiences and possibilities for the larger developing countries. More importantly, most of these studies fail to provide an inclusive account of the implications of cryptocurrencies for SIDS. The examination of this gap in literature is important as local experts tend to have a greater understanding of what is possible within the available timeline with available resources. This present study attempts to address these gaps through the lens of the Indigenous researcher.

This article uses an exploratory case study methodology to discuss how and in what ways, Commonwealth Caribbean SIDS could benefit from cryptocurrency adaptation. The case-SIDS within the Commonwealth Caribbean[2], refers to a distinct group of English speaking small island developing countries facing social and economic vulnerabilities (Herbert, 2019; Peters, 2017; UNCTAD, 2021). Compared to developed and developing countries, Commonwealth Caribbean SIDS are more vulnerable to economic and financial shocks. Their lack of economic diversity (service dependent economy-tourism); limited economies of scale; predominantly informal economy; post-colonial context of technological and innovation deprivation pre-disposes the Commonwealth Caribbean as a unique space which could potentially benefit from the use of cryptocurrencies. To explore the phenomenon of cryptocurrencies for the Caribbean, this paper unfolds as follows: Section 2 of the article provides an overview of crypto currencies; Section 3 discusses the potential impact of crypto currencies on Caribbean SIDS; Section 4 discusses the adoption of cryptocurrency and how it could engender macro-economic stabilisation for citizens; Section 5 concludes the analysis.

2 The world of cryptocurrencies

Cryptocurrencies or ‘cryptos’ is a complex form of digital or virtual payments or digital money or digital cash or digital asset which, conceptually speaking, are made through unregulated digital currencies and managed by a global network of intermediaries. They represent innovation or disruption in the financial technology (FinTech) ecosystem (Hossain, 2021); no wonder they are also referred to as ‘digital gold’, ‘speculative bubble’ or even a modern-day ‘Ponzi scheme’. What differentiates cryptocurrencies from other forms of digital money is their decentralised and current unregulated nature. As the ultimate futuristic collision of finance and technology, cryptocurrencies are currently used in the trading of goods and services; as a store of value; and a medium of exchange. They are used in a distributed and decentralised manner by certain virtual communities or digital users (Crosby et al., 2016). Cryptocurrencies can be defined as a type of “medium of exchange that operates like a currency in some environments but does not have all the attributes of real currency” [US Department of Treasury, (2013), p.1]. Nevertheless, based on observations made by Mohammed (2021), the ‘intrinsic value’ of cryptocurrency “derives mainly from the trust of its users and also gets protected by its idiosyncratic features and distinguishing properties” (p.3). In other words, cryptocurrencies are of value to many people (Chaim and Laurini, 2018).

Interestingly, the most recent literature represents cryptocurrency as a fast, secure, and inexpensive means of anonymous borderless transactions (Hönig, 2020). Cryptocurrencies are safeguarded by various cryptographic techniques and with the right conditions, they can be used and accessed by virtually anyone (Grundlehner and Schürpf, 2020; Hönig, 2020; Lo and Wang, 2014).

The secondary literature presents cryptos as a technology which is based on the principle of an online distributed ledger: it has a very strong cryptography-based system called a clever private/public key encryption system connected through a network of computers and peer-to-peer networking (Böhme et al., 2015; Grundlehner and Schürpf, 2020; Hönig, 2020; Lo and Wang, 2014; Nakamoto, 2008; Sansonetti, 2014). The transactions made with this digital signature are done with digital currencies called tokens. The transactions and associated data are then made public and distributed via the internet to thousands of connected computers referred to as nodes. The data itself is therefore accessible everywhere but privately accessible using specific protocols (Schmidt et al., 2018).

Cryptocurrencies are essentially a peer-to-peer system that enables users anywhere in the world to make financial transactions and have been represented as having value, a medium of exchange, money, or virtual money (Grundlehner and Schürpf, 2020; Hassani et al., 2019). Based on the existing literature, when transactions are undertaken, they are recorded in a public ledger in a digital wallet or e-wallet which encloses a user's public address as well as their private keys. These are usually stored on applications, a vault service, or through a web service (Hassani et al., 2019; Hönig, 2020; Hossain, 2021). It is important to note here that this is a phenomenon that has been observed for several years (Sansonetti, 2014).

There are almost 7,000 cryptocurrencies that can either be bought using fiat money (or other cryptos) on cryptocurrency exchanges such as Bitfinex91, CashApp, HitBTC92, Kraken93, and Coinbase GDAX (Bonneau et al., 2015; Wangler, 2018). In addition to buying cryptocurrencies through specific companies, they can also be purchased from another user or given as a gift, mined, received for goods and service, or provided as incentives from coin offer before the official release of a new crypto-coin or asset. There are currently several categories of cryptocurrencies. These include bitcoin which was the first and most well-known cryptocurrencies; altcoins which are alternatives to bitcoin that are built using the bitcoin open protocol and stablecoins which are a type of cryptocurrencies designed to maintain a stable value. Stablecoins are stabilised by attaching an item to other assets or resources such as national currencies or gold such as the gold-backed PAX Gold cryptocurrency. This is a digital token that is "backed by one troy ounce (t oz) of a 400 oz London Good Delivery Gold bar held in custody by Paxos Trust Company" (Wasiuzzaman et al., 2021; see also Baur and Hoang, 2021). In addition to 'altcoins' and 'stablecoins' there are also Socialcoins, which are cryptocurrencies used as community currencies (Bates, 2016).

Cryptocurrencies run on an ever-evolving technology based on a decentralised system that is spread across several computers. These computers record and manage crypto-transactions by recording transactions into blocks of information and timestamps The aforementioned process allows for the unique identification of specific coins within that currency; transactions are broadcasted to the network along with a digital signature and, is based on a two-factor authentication process (Böhme et al., 2015; Hönig, 2020; Lo and Wang, 2014; Pichl et al., 2020). The signatures provide information that an unaltered

transaction has been made. This type of distributed ledger system generally relies on miners to validate transactions by verifying the existence of the data being transferred. Miners play an indispensable part in the cryptocurrency ecosystem. The process of adding blocks is based on a mathematical calculation called a hash algorithm.

3 Cryptocurrencies and opportunities for small island developing states

Caribbean SIDS face a host of challenges because of their size and remote geography. They are unable to actively participate in the world supply chain; they have financial systems that are either non-existent or inadequate and high costs for imported goods and materials (Aisen and Veiger 2006). These SIDS have unregulated financial and business activities occurring alongside the formal economy where entrepreneurs face limited access to finance and financial services, information, talent, and the international market, with sometimes a low trust in government and other citizens. One popular explanation includes a perception of high incidents of corruption, weak currencies that are tied to an industrialised country, high inflation, and lack of enforcement of rule of law, political instability, and unethical practices in governance. Although SIDS may not have access to the latest technology, very often, as early adopters, they have high internet penetration but low online access. Caribbean SIDS are often challenged by the high cost of energy, infrastructure, communication, telecommunication and raw material, growing populations; high volatility of economic growth; limited opportunities for MSMEs, weak governance systems, and crime. Caribbean SIDS are also vulnerable to the impacts of climate change – rising sea levels, tsunamis, and other climate challenges as well as dependence on industrialised countries for goods and services (Aisen and Veiga, 2006; Barham et al., 1995; Beck and Demirguc-Kunt, 2006; Johnson, 2019; Krause, 2016; Olken, 2006). Because of these conditions, Caribbean SIDS are classified as vulnerable countries.

Cryptocurrencies have the potential to provide Caribbean SIDS with solutions to many of the challenges that they typically face; arguably they could help people escape poverty, and transform the economies of SIDs. Cryptocurrencies can help these SIDS facilitate financial inclusion, participation, and protection for the poor, scale and expand the range, scope, and accessibility of MSMEs.

3.1 Financial inclusion, livelihood development, and poverty reduction through cryptos

Cryptocurrencies can contribute positively to the lives of impoverished citizens in SIDS by promoting financial inclusion, participation, and protection, and consequently contribute to national development (Darlington, 2014; Honohan, 2018; Scott, 2016). For example, bitcoin is used in Cuba to facilitate access to global financial services which was previously impossible because of the US trade embargo. Remittances may be possible in Cuba through cryptocurrency exchanges. Undoubtedly, this can improve the livelihood of many Cubans.

Cryptocurrencies can be a welcomed alternative for citizens of Caribbean SIDS, who have a history of innovation during economically stressful times. Usually, communities set up financial cooperatives (box hand, pardner, susu) where members pool financial resources to save. Through this unregulated banking system, each community member

gives one member a specific amount of money to keep for some time. The retainer is referred to as the banker Hossein (2014). Each member of this partnership will be able to access the collective fund which is recorded and physically stored by the banker. Partners systematically receive the total funds stored by the banker until all members are paid out. Payments are made through brick and mortar means (cash in hand), via mobile apps, or lodged in their account (Handa and Kirton, 1999). This system has contributed to the economic wellbeing and livelihoods of many citizens living in Caribbean SIDS and has been a practice since slavery.

These partnerships, although often problematised, have contributed to employment, productive capacity, livelihood development and expansion, social inclusion, and responsible consumption. The funds are used to pay for education, healthcare, expand livelihoods as well as promote cooperation and solidarity between and among participants. There are instances where they have been used to facilitate short-term loans (while the banker holds the funds). As banks for the poor, particularly citizens unable to participate in the financial system because they lack the necessary prerequisites, from a macroeconomic standpoint, these informal banking systems contribute to the local and sustainable economic development of Caribbean SIDS (Hirota, 2016). They also facilitate inclusion by having each individual participate in the informal banking system regardless of status.

The lack of security, privacy, and frequent trust issues characteristic of the aforementioned financial cooperatives is a call for a better system. There have been cases where the 'banker' has misappropriated or used the funds in storage, preventing a partner from getting access to their entitlement at the appointed time leading to the eventual collapse of the system. Trust, privacy and security issues are compounded within the context of small countries, where personal information is readily accessible and the crime rate is high. For example, in Jamaica many individuals including government officials, are reluctant to reveal their business activities and transactions for fear of being targeted by criminals.

According to Mora et al. (2020), cryptocurrencies can be used to build trust and confidence in social currencies and possibly to expand them by strengthening their security apparatus. Simultaneously, it facilitates and most likely, enhances the efficiency and effectiveness usually enjoyed by regulated financial transactions. Similarly, Gómez and Demmler (2018) explain that cryptocurrencies, such as social cryptocurrencies are social coins such as HIVE and PIBBLE enable communities to safely, reliably, and efficiently engage in financial transactions (Gómez and Demmler, 2018). Indeed as Vincent and Evans (2019, p.259) observed:

> "...countries with higher levels of cryptocurrency, internet usage, and mobile subscriptions have higher levels of financial inclusion and financial sector development."

Indeed, stablecoins in particular, because of their properties, are seen as more stable and therefore have the potential to expand the economic base of citizens in SIDS participating in such networks and, it also has the potential to expand and diversify these networks through digital or smart contracts (Estevam et al., 2021; Kõlvart et al., 2016; Yadav et al., 2020a). Smart contracts are decentralised applications (DApps) that are built and run without any downtime, control systems, fraud, or an intermediary and offer a safe, reliable, and fast way to, among other things, manage agreements and release payments (Heng et al., 2020; Kõlvart et al., 2016; Raskin, 2016; Yadav et al., 2020b). They

encourage trust and confidence in digitalisation and are particularly beneficial for social currencies (Mendoza-Tello et al., 2018, 2019). They have even been identified as being able to facilitate safe, secure, and reliable peer-to-peer lending.

3.2 Scale and expand the range, scope, and accessibility of MSMEs

Cryptocurrencies, as a medium of exchange and as a unit of transaction, offer MSMEs, especially informal microenterprise entrepreneurs, the option to participate in the formal economy. Caribbean SIDS have a large informal economy, the entrepreneurs operating within these spaces are not registered businesses and do not pay taxes associated with opening and operating a business (Handa and Kirton, 1999; Hossein, 2014). This status has significant implications for how these entrepreneurs do business. For example, in Jamaica, microenterprise entrepreneurs operating in the informal economy cannot open a business account at a bank. To open a business account in Jamaica, one requires specific business documents indicating that the entrepreneur is operating a registered business and is paying taxes. Consequently, many entrepreneurs of such microenterprises do not have a bank account and therefore cannot do any form of international business requiring tying transactions to a local bank account using a SWIFT identification protocol. In the Caribbean, for example, approximately 50% of citizens, particularly poor persons, do not have a bank account (Demirgüç-Kunt, 2017). Although this figure is based on a report done five years ago, I argue that there has been no reason for a substantive increase in this number. The poor in particular, as well as those with the eligibility requirements for a bank account, are therefore hindered from selling their goods and services globally (Scott, 2016). Additionally, many are unable to access loans needed to drive innovation, scale, and competitive advantage.

This has been the case for many craft workers operating in the Caribbean tourism space. A large number of these entrepreneurs operate in the informal economy. They sell their craft to tourists at booths in their countries; however, they are not able to do online commerce because many do not have a bank account to start this process. Additionally, the clientelistic nature of SIDS, means that owners of MSMEs operating within both the formal and informal economy are often excluded from participating in the economic life of a country due to their age, gender, social class, race, geographic location, family and friend connections, and ethnicity.

There is overwhelming evidence to support cryptocurrencies' ability to help MSMEs access a bank account (Cifuentes, 2019; Kwok and Koh, 2019; Denning and Lewis, 2017; Moreno, 2016; Manurung and Paath, 2020). MSMEs would not need to endure the rigorous process of setting up a bank account but can access an e-wallet instead directly or through one of several vendors globally. These wallets can act as a quasi-bank account. Through this quasi-bank account, MSMEs including those informal MSMEs, would be able to participate in the global system as they would be facilitated to make small-scale international transactions such as selling goods and services in exchange for cryptocurrencies. The aforementioned process allows MSMEs to circumvent traditional e-commerce systems which would generally be inaccessible (Denning and Lewis, 2017). For example, customers can pay MSMEs in any country in cryptocurrencies even if that MSME does not have a bank account. Furthermore, the reduced transaction cost associated with such international transfers using cryptocurrencies means reduced savings and thus increased profit for the MSMEs (Manurung and Paath, 2020). These costs are generally high and a turnoff for many microenterprise entrepreneurs in

particular. Though some would problematise the fact that it will be difficult for MSMEs to access their cash in several countries through the use of cryptocurrencies, the funds can be stored in the e-wallet and can be used for trade, purchasing goods and services needed to scale a business or making the business more resilient (Manurung and Paath, 2020).

Most recently, the Caribbean Tourism Organization announced the inclusion of bitcoin as an alternative form of payment for tourists doing business in the Caribbean (Bridglal, 2018; Tassev, 2018). This is no doubt of strategic value to many tourism-dependent SIDS. Certainly, this move will enable many travellers now financially challenged by the Pandemic, to be able to use cryptocurrencies for their vacation to book hotels; access attractions, and participate in all the training activities normally associated with destination experiences (Pilkington et al., 2017). Unarguably, the applications appear to be endless as this could also be extended to restaurants, spas, and other amenities of interest to travellers.

Businesses and individuals in the industrialised world are cautious about entering into agreements with businesses and other individuals in Caribbean SIDS (CaPRI, 2016). This is understandable as the Caribbean financial space has been the subject of 'de-risking', since 2015. Financial institutions in the USA and the UK, have stymied these small states access to global finance by downsizing their financial service to the Caribbean region (Collinder, 2015; Erbenová et al., 2016; Torbati, 2016). MSMEs are further challenged by the ineffectiveness of the justice systems in resolving conflicts, and the non-recognition of the final court of appeal by countries outside the Caribbean. These challenges lessen MSMEs chances of participating in the global system.

Cryptocurrencies such as Ethereum – one of the second largest cryptocurrencies, offer a secure Smart Contract technology that enables users to honour their contractual agreements (Estevam et al., 2021; Heng et al., 2020; Kõlvart et al., 2016). Smart contracts are self-executing software programs and protocols which help to legally and automatically execute, control or document the requirements of a contract anonymously (Heng et al., 2020; Kõlvart et al., 2016; Raskin, 2016). Digital contracts reduce the need for trusted third parties or enforcement costs and lessen the concern about countries not honouring and enforcing contracts. Actors living outside a particular Caribbean SID will feel more at ease in their business transactions with the same, as trust issues would have been mitigated. Cryptocurrencies can therefore be also articulated as a unit of trust.

Although cryptocurrencies offer an opportunity for MSMEs in SIDS to participate in the global market through increasing customer trust and confidence, there is no guarantee that operators of informal MSMEs will readily gravitate to this emergent technology. Within the Caribbean context, the fear of cybercrime and cyber space is especially high among older persons, rural residents and those with no formal education (Waller et al., 2015). Moreover, the use of cryptocurrencies requires knowledge of the technological space, financial literacy, mobile technology, perceived usefulness, perceived ease of use, trust and confidence in technology (Arias-Oliva et al., 2019; Gupta et al., 2021; Klapper et al., 2015). It is expected that the usage and uptake of cryptocurrencies will be concentrated among the younger and more educated group. Within the Caribbean, fear of cybercrime was lowest among this group; they showed greater propensity to participate in cyberspace (Waller et al., 2015). This is in keeping with a global trend, as young people are more likely to use technology for their livelihood development.

Perhaps the take-off of cryptocurrencies in the Caribbean and maximisation of the opportunity it provides for MSMEs could be fuelled by a campaign where social media

influencers highlight its ease of use and perceived usefulness. Singh et al. (2021) highlighted the case of Reddit as a useful social media space for crowdsourcing financial information. Over the past two years, Reddit has been used to engender users' perceived utility of, ease of use, trust, and confidence in digital currencies. For instance, Kharpa (2021) and Toh (2021) explained that dogecoin, which emerged as a parody, had its valued increased by 373% after widespread discourse on Reddit.

3.3 Creating an enabling environment for middle-class investments and savings

As mentioned earlier, Caribbean SIDS suffer from undeveloped financial systems, poor governance structures, and weak political leadership. Inadvertently, this has a negative influence on their central bank (Acemoglu and Robinson, 2012). Caribbean SIDS peg their currencies to more stable currencies to stabilise their fiat currency. For example, the Jamaican, Barbadian, Trinidadian and Tobagonian and Eastern Caribbean dollar are tied to the US dollar. These countries sometimes limit access to these dollars to avoid depleting their reserves of US dollars. This process helps stabilise a nation's currency and can mitigate inflation (Aisen and Veiga, 2006). Inflation is the increase in the price level of a select group of goods and services in an economy. Inflation impacts the purchasing power of the currency of a nation. Higher inflation generally means a decrease in the purchasing power of the citizens of a nation. Inflation has wider implications for foreign investment; the economic stability of a country and; citizen's trust and confidence in a country's leadership. More importantly, inflation also has severe social implications including rising crime and limited access to healthcare, education and finances (Johnston and Montecino, 2011; Stabroek News, 2021; Thompson, 2020).

Citizens of SIDs have often sourced US dollars in black market – a behaviour which can cause instability in economy. Citizens deal with economic instability by acquiring inflationary currencies. Cryptocurrencies offer a solution to citizens who are tempted to save illegally purchased monies in a foreign currency. Just as gold and the US dollar are the only two investment options for citizens of these nations, cryptocurrencies can be used as a safe-haven asset in that they can create a cash equivalent for the cryptocurrency market (Baur and Hoang, 2021; Calcaterra et al., 2019). Simply put, cryptocurrencies can be traded unrestricted around the world by global financial indices such as Dow Jones industrial average, exchange rates, the gold standard, price of oil, and consumer price index. Therefore, cryptocurrencies can mitigate the disruptive external challenges that SIDS (and their citizens) often face because of their peculiar circumstances. In this context, cryptocurrencies can be used as a store of value for many citizens and even businesses operating in the developing world (Baur and Hoang, 2021; Calcaterra et al., 2019).

Larger developing countries such as Nigeria, Vietnam, the Philippines, Turkey, and Peru have either created an environment for cryptocurrency experimentation or refrained from establishing barriers to deter them. This attitude has provided opportunities for many people in these countries to not only use cryptocurrencies as a medium of exchange but as a store of value. Cryptos have also been used to facilitate high-risk investments through hedge funds called crypto funds or crypto hedge funds. These are investment firms with more leeway to invest. The available evidence seems to demonstrate that the opportunities provided by crypto Funds have significantly contributed to the wealth of many citizens around the world, including citizens from SIDS (Baumöhl and Vyrost, 2020; Baur and Hoang, 2021; Leask, 2021; Mokhtarian and Lindgren, 2018; Venegas,

2018). Governments of SIDS will need to examine their macroeconomic conditions and their legal and regulatory framework. Using existing models, they will have to create an enabling environment for the creation of wealth through cryptocurrency technology. Citizens, and by extension the country, stands to benefit from a crypto ecosystem that makes life and business much easier.

In the Caribbean, SIDS such as Barbados are well ahead of the game. The country has facilitated the establishment of start-ups providing cryptocurrency services for trade in goods and services and to send and receive money globally using smartphones (Jessop, 2021; Marsh, 2021). Going forward, the country plans to leverage its traditional offshore financial service to compete in the blockchain and cryptocurrency space. Jamaica, another island nation in the Caribbean, is planning to launch a central bank digital currency (CBDC) in 2022. Handagama (2021) – a media platform dedicated to inform, educate and connect the global investment community, summarises Jamaica's planned entry into the cryptocurrency space:

> "The government of Jamaica views the accelerated transition to a digital society and economy as vital to economic recovery following the COVID-19 pandemic, Clarke said, adding that a CBDC can greatly improve financial inclusion by making financial services available to the Caribbean nation's unbanked population...with the government-issued CBDC, households, and businesses will be able to make payments and store value at no cost, while customers can do business with other people directly using their mobile phones, bringing 'tens of thousands of Jamaicans' into the formal financial system." (p.1)

The CBDC will be a form of stablecoin; however, it will not be tradeable against physical cash in the same way that cryptocurrencies such as bitcoin are and can only be used in Jamaica. In addition, the country's major Stock Exchange has recently signalled to enable secure live trading of digital assets. The Eastern Caribbean has either independently undertaken or is undertaking projects to regulate and or facilitate various forms of cryptocurrencies. Not surprisingly, BITT Inc. – a Barbados-based Blockchain company, is currently working on the collective development of a Digital Eastern Caribbean Dollar Indeed a cryptocurrency frenzy is currently happening all across the Caribbean, fuelled by the belief that this technology will either help these SIDS recover from the effects of COVID-19 or help many of them to finally thrive (Coto, 2021).

4 Macroeconomic stabilisation for citizens

Beyond the benefits derived from cryptocurrencies for the citizens of SIDS, are the macroeconomic benefits for entire countries. Cryptocurrencies such as bitcoin can be seen as stateless virtual currencies that are free from government control and thus exchange manipulation. Cryptocurrencies, therefore, offer citizens the opportunity to, on one hand, enhance their resilience with what can be regarded as an anti-inflationary store of value, while on the other hand, help to stabilise national currencies (Chohan, 2019; Marthinsen and Gordon, 2020; Moreno, 2016). In other words, cryptocurrencies are an alternative financial option during a financial crisis and a hedge against inflation. Both options offer the possibilities of not only macroeconomic stability as was the case of Argentina, but also increases trust and confidence in government spending (Cifuentes, 2019; Moreno, 2016). The latter is particularly important to SIDs, whose small size leads

to a high level of familiarity between government officials and some sections of the populace, and a consequent distrust of governments and their spending.

Today, cities such as Buenos Aires have become one of the world's crypto hotspots. Although Argentina is a developing economy, it faces similar problems to SIDs. However, their experiences provide us with a window into the ways cryptos can positively transform a nation's economic challenges. Like many other developing countries, Argentina is dependent on tourism. Tourism contributes to poverty reduction, employment, livelihoods, and economic development but the country still struggles with inflation. Many businesses in Argentina are now allowing tourists to trade in goods and services using cryptos (Cifuentes, 2019). Cryptocurrencies have helped many Argentineans store money and do financial transactions, consequently acting as a hedge for insurance. The experiences of African countries such as Botswana, Ghana, Kenya, Nigeria, Uganda, South Africa, and Zimbabwe have certainly raised awareness about the potentials of bitcoin for contributing to the economic resilience of developing countries and SIDS struggling with inflation. For example, the Hashemi (2020), a non-profit that fights poverty, has observed that:

> "In 2020, despite the global economic uncertainties brought by COVID19 bitcoin trading has continued to increase in Africa. In May 2020, Nigeria had the highest trading volume in one week at $7.2 million, its third-best P2P trading week. Kenya was second with another record week by trading $1.6 million. South Africa came in third, exchanging $1.1 million in a week." (p.1)

African countries not alone in this regard as cryptocurrencies have also been used by Venezuelans to deal with their current inflation challenges. Cryptocurrencies are now so commonplace in Venezuela where cryptocurrencies can be traded. There are similar cases of countries where cryptocurrencies have been represented as a store of money, a medium of exchange, or a haven asset; these countries have been struggling with inflation and include as Lebanon, Brazil and Chile. Other countries have established their currencies within a cryptocurrency ecosystem; these include Tunisia's eDinar, Venezuela's Petro, Senegal's eCFA, Dubai's EmCash, Japan's Jcoin, and Estonia's Estcoin. This move have seen significant benefits for citizens and economies. Though researchers such as Salzman (2022) would caution against this process, the experiences of these and other countries have thus far indicated success (Benigno, 2019; Bouri et al., 2017a, 2017b; Chohan, 2019; Dyhrberg, 2016; Marthinsen and Gordon, 2020; Moreno, 2016; Popper, 2015; Stensås et al., 2019). For example, Stensås et al. (2019) in their study of whether bitcoin is a diversifier, hedge, or haven tool, observed that:

> "During the US election in 2016, Brexit referendum in 2016, and the burst of the Chinese market bubble in 2015, Bitcoin acted as a safe haven asset for both the US and non-US investors." (p.1)

Bouri et al. (2017a, 2017b) had also posited a similar conclusion but, with the caveat that suggests that the 'safe haven' function of cryptocurrencies such as bitcoin, is even more profound when global uncertainty is high (see Stensås et al., 2019).

5 Conclusions

This study draws attention to the possibilities, concerns and, dialogue on cryptocurrency and SIDS. There are many aspects of 'cryptos for SIDS' which are a concern as has been articulated, problematised, and taken into consideration. Cryptocurrencies, therefore, offer SIDS a means for investors to shift monies from their own falling currencies to cryptos. Additionally, governments have an opportunity to prevent hyperinflation. Indeed, governments of SIDS should recognise the economic benefits of not regulating cryptocurrencies to the point of making them illegal, or creating barriers in using the technology as a store of value or currency of exchange. Governments should create an enabling environment for the flourishing of cryptocurrencies while implementing monitoring systems for the mitigation of the bad and ugly of cryptocurrencies. This is especially critical as the pandemic worsens and countries struggle to stabilise their economics.

Cryptocurrencies must not be seen as a Fad. Just as Amazon disrupted retail, Uber disrupted transport and Airbnb disrupted the hotel, housing, and bed and breakfast markets, cryptocurrencies are disrupting finance and, like the great tech disruptors of the 21St century, they provide people with an opportunity to transform their lives. Government officials in Caribbean SIDs would agree that the last three industrial revolutions, along with the innovations in technologies which accompanied them is proof that change is constant and can have direct and indirect benefits on people's lives. The fourth industrial revolution is no different, the frenzy and uncertainty surrounding cryptocurrencies vaguely resembles the mistrust which surrounded the use of the internet at its inception (Chainanalysis Team, 2020). The use of cryptocurrencies can be similarly normalised. Cryptocurrencies may not replace fiat money in the near to medium future but they are likely to complement other centralised, legally recognised and state-backed digital currencies (Kuikka, 2019). They may even morph into mainstream national, regional, and global financial systems, and perhaps some countries will find a mechanism for offloading the billions of dollars' worth of bitcoin located in e-wallets globally, and in doing so, transform their economics.

Therefore, I conclude by drawing on the study by Stensås et al. (2019, p.2) which stated that "existing studies on bitcoin have not distinguished the benefits of bitcoin to investors in the developed versus developing markets". Such an argument can be extended to SIDs given the unique, unregulated, and global nature of cryptocurrencies, as supported by the data analysis. In other words, it is plausible to argue that the same benefits derived from cryptocurrencies for individuals and businesses, can be extended to SIDS. Governments of SIDS will therefore need to start including cryptocurrencies as an element of the development planning mechanisms and identify ways of harvesting the benefits to be derived from this technology. This move can help in mitigating the anticipated economic fall-out influenced by the Pandemic which, by all accounts, has begun in earnest.

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Notes

1 States were measured on a four point scale: declining, slow moving, steadily advancing, rapidly advancing.

2 Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts-Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago, and the British colony Montserrat.