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ARTICLE

The medium is the message: The geographies of cryptocurrency remittances to Venezuela

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Abstract

Cryptocurrency remittances overcome many regulatory and practical barriers, but there is little empirical research into this increasingly popular remittance medium. In response, this article explores cryptocurrency remittances from Latin America and the Caribbean into Venezuela. Cryptocurrencies as a remittance medium conveys important messages for advocates and critics. To appropriately critique cryptocurrencies, it is important to understand how they are used in the 'every day' rather than how their use may be characterised by ideologues. Rather than directly relying on 'trustless' and decentralised blockchain technology, 'really existing' cryptocurrency remittances are highly intermediated. Access to this medium is often hierarchical, stemming from knowledge barriers but also legal status (and by extension, economic status). The 'need' for trusted intermediaries prompts discussions around the relationship between 'trustless' blockchain technology and cryptocurrency remittances. This article shows that stablecoins (cryptocurrencies pegged to fiat currencies—usually the US dollar) are the most popular cryptocurrency remittance medium. Stablecoins challenge institutional attempts to geographically restrict currencies, yet also contribute to global processes of dollarisation. This is important to understanding how stablecoins simultaneously undermine spatial barriers to financial access yet may create new ones in the process.

KEYWORDS

cryptocurrencies, dollarisation, fintech, migration, remittances, Venezuela

1 | INTRODUCTION

This article examines the role that cryptocurrencies play in remittances to Venezuela, as well as how remittance recipients use cryptocurrencies. In the context of hyperinflation, researchers have suggested that cryptocurrencies offer 'a panacea for the Venezuelan crisis' (Kliber & Świerczyńska, 2019) and 'a path out of misery' (Bahar et al., 2018). Others

see potential for cryptocurrencies to enable remittances that avoid traditional barriers (Jegerson & Mertzanis, 2024). Cryptocurrency remittances are often portrayed as a way to use financial infrastructure to empower those traditionally subordinated by mainstream finance. These narratives suffer from two problems. The first problem is functional. As Nelms et al. (2018) observe, although scholars have long investigated money and payment, 'rarely did the technological and institutional systems facilitating such relations and transactions come into view' (p. 17). The second problem is agential: the empirical findings of the article reveal that the actual repertoires of cryptocurrency use are unlike those posited in the literature. The 'medium is the message' (McLuhan, 1964) was coined by McLuhan to argue that the means by which media is broadcast itself conveys significant information. Cryptocurrencies as a remittance medium conveys important messages for those who see cryptocurrencies in terms of their emancipatory potential, but critics of cryptocurrencies (on for example regulatory or environmental grounds) will also benefit from the empirical evidence presented. This research thus has wider applicability beyond remittances, since the ways cryptocurrencies are used in the 'every day' are often poorly understood by advocates and critics alike. It shows that although cryptocurrencies have the (theoretical) capacity to enable remittances according to rules and values intended by the creators, developers and early adopters of blockchain technology (Nakamoto, 2008; Swartz, 2018), none of the respondents in this study used them in the way these groups intended. Arguably, the way remitters use cryptocurrencies to send remittances is a *misuse* since they do not interact with a blockchain at any point in the transaction. Instead, their method constitutes an 'inventive practice' (Rodima-Taylor & Grimes, 2019a, 2019b). Venezuelan remitters are adopting aspects of an existing technological infrastructure and co-opting it for purposes for which it was not explicitly intended.

Yeung (2023) calls for economic geographers to explore the relationship between '(geo)politics, economies and space', stating we should 'theorise more robustly such inter- and intranational politics of economic processes and demonstrate empirically their consequential effects on people, places and economies' (p. 674). Yeung also asks that 'future economic geography research must necessarily take into account how new forms of risks and uncertainties are translated into material practices' (p. 674). This article responds to these two calls. First, the popularity of cryptocurrency remittances to Venezuela is an outcome of not only the political processes within Venezuela, but also the responses these processes have generated, particularly from the USA. Second, and relatedly, the economic crisis in Venezuela has generated a multitude of not only national, but regional 'risks and uncertainties' that, this article argues, has aided in making cryptocurrency remittance practices more popular. This article thus explores an 'emergent migrant infrastructure' that is shaped by and in turn shapes financial technology (fintech) services and the 'regulatory regimes' that govern them (Cirolia et al., 2022, p. 64). It is also important to understand cryptocurrency remittances' relationship with space and the ways in which they both undermine and reinforce, and even create new, economic hierarchies at multiple scales. Cryptocurrency remittances thus raise questions about 'the intersection between space, place and financial subjects' (Hall, 2012, p. 407) and offer new insights into the financial subjectivities of migrant remitters. Their existence also affirms Potts' observation that:

> transnational economic processes are governed not by a quilt of national regulatory spaces … [or] … a neatly nested hierarchy of local, national and international regulatory spaces, but … by a much messier series of overlapping and sometimes contradictory formal and informal rules and institutions.
>
> (Potts, 2023, p. 683)

However, as we shall see, the interviewees' ability to use cryptocurrency remittances is structured not only around institutional barriers such as legal and regulatory status, but by 'knowledge barriers' (Howard, 2022), and trust in cryptocurrencies and associated fintech.

This article is an output from a project on alternative remittances to Venezuela that forms part of a wider attempt to 'decentre research on financial subject formation beyond … the Global North' (Guermond, 2022a, p. 801). Interviews with migrants[1] are ongoing, conducted online or in person. Forty-one people have been interviewed in Trinidad & Tobago, Brazil, Argentina and Venezuela (online) and Madeira (in person). Ages range from 18 to 55. Further (in person and online) interviews will be collected in Brazil, Argentina, Panama, the USA and Venezuela (online only). In keeping with the average profiles of international Venezuelan migrants (Chaves-González et al., 2021), most interviewed have tertiary education. Many were professionals in Venezuela but experienced socio-economic decline in the host countries. In addition, 10 experts have been interviewed including economists, c-level industry experts and lawyers. I contacted UNHCR in Trinidad & Tobago who sourced 10 interviewees. A research assistant sourced 10 more participants. 'Snowball' sampling meant interviewees would introduce others. Interviewees were paid for their time. Interviews have been transcribed then coded using NVivo with a 'grounded theory approach' taken to uncover themes which are then explored. Interviewees are pseudonymous. This article takes the following form. Section 2 contextualises the rise of alternative remittances

against the background of Venezuelan migration. Section 3 reviews the narratives in the cryptocurrency remittances literature. Section 4 uses the empirical data to interrogate the 'ideal' form of cryptocurrency remittances against 'really existing' cryptocurrency remittances. It problematises the narratives reviewed in Section 2. Section 5 focuses on the regulatory and research implications of the article's findings.

2 | THE VENEZUELAN MIGRATION CRISIS: THE RISE OF ALTERNATIVE REMITTANCES

Almost a quarter of the Venezuelan population are currently living outside of the country: over seven million people (UNHCR, 2023). The leading cause has been rampant hyperinflation making life unaffordable (Stampini et al., 2021). Hyperinflation has been blamed on United States' (US) interference in domestic affairs (such as sanctions) and structural dependence on oil placing the country at the mercy of oil price volatility. Others blame the incompetence and poor policy of the Maduro government and a deterioration of democratic accountability (Bull & Rosales, 2020). For those without access to foreign or alternative currencies, 'it is almost impossible to survive' (Freier, 2018, p. 2). Remittances have increased over 10,000% since 2014. 5% of Venezuela's GDP now comes from cash remittances: $3.7 billion (Orozco & Klaas, 2020); in 2014 it was 0.04% (Valev, 2024). 'In-kind' remittances' estimated value is around $2 billion per year (Orozco & Klaas, 2020). But the Venezuelan government has neglected to create policies to encourage remittances (Pedroza & Palop-García, 2019). The lack of policy coherence, hyperinflation, and practical and legal difficulties in sending remittances means many alternative methods been adopted by Venezuelan migrants. US sanctions especially have historically created substantial barriers. Even if personal remittances do not contravene sanctions, they may still be blocked or delayed. Therefore, Venezuelans' incentives for using alternative remittance methods such as cryptocurrencies are greater than many other migrants. Venezuelan alternative remittance practices are thus an example of how 'risks and uncertainties are translated into material practices' (Yeung, 2023, p. 674). As Pieke and colleagues emphasise, these 'informal remittance mechanisms' are dynamic and adaptive. They are not 'leftovers of a pre-capitalist past', but instead have arisen because of a unique set of 'constraints and opportunities presented by current migration orders, serving very specific needs of migrants not met by conventional financial institutions' (Pieke et al., 2007, p. 362). As cryptocurrencies began to grow in popularity within Venezuela (Di Salvo, 2019), so too did their use as a remittance medium. Venezuela receives an estimated $3 billion per year of crypto transfers from abroad (Chainalysis, 2020).

3 | A SUMMARY OF CRYPTOCURRENCY NARRATIVES

Migrants often face barriers to sending remittances, including high fees, blocked and delayed transactions, restricted access due to legal status and even fraudulent remittance services (Metzger et al., 2019; Ndung'u, 2018). In response, researchers have speculated on how blockchain-based cryptocurrencies as a remittance medium could overcome these barriers. This speculation is based around three narratives in the literature: (1) trust versus trustlessness, (2) centralisation, access and censorship, and (3) cost and speed.

3.1 | Trust versus trustlessness

The first narrative pertains to trust in remittance transfers. Within 'informal' remittance channels especially, remitters must not only trust financial institutions, but also rely on various small businesses or individual operators (see Figure 3). This 'infrastructure of mutual responsibility is sustained by close circuits of trust' (Cirolia et al., 2022, p. 69). Hawala[2] systems especially demand high levels of trust between the hawala agent themselves as well as between remitter and hawala agent (Gräbner et al., 2021). As Malit Jr. et al. (2017) observe of hawala, levels of trust can even affect the level of preferential treatment a remitter will receive since the closer the relationship between the migrant and the hawala agent, the greater the scope of services they will have access to (p. 80). Conversely, blockchain-based remittance systems are usually framed in opposition to this need for trust since blockchains and the cryptocurrencies that exist on these chains are touted as trustless. Rodima-Taylor and Grimes note that 'blockchain technologies promise solutions to the growing problems of public distrust with traditional financial intermediaries (such as banks) and transactions' (Rodima-Taylor & Grimes, 2018, p. 119). Cryptocurrencies are 'a purely peer to peer version of

electronic cash [that] … allow online payments to be sent directly from one party to another without going through a financial institution' (Nakamoto, 2008 p. 1). Rodima-Taylor and Grimes (2019b) thus observe that blockchain does 'raise novel questions about the nature of trust' (p. 2) since cryptocurrency transactions are predicated on the assumption that no party need trust another to act honestly. Remitters need only trust in blockchain, which is secured only by 'cryptographic proof' (Nakamoto, 2008, p. 1). Sandberg and Lindblom (2024) object that remitters also need to trust that the cryptocurrency has value. But here the value proposition itself is that it is framed as being secured by blockchain not by a financial intermediary. As van Rosales et al. (2024) note, 'crypto-space leverages people's trust in digital technology'. By trusting in blockchain, remitters are said to be acknowledging the value proposition. Consequently, these allegedly 'trustless' remittance systems are even proposed by some as a tool to 'fight informal money transfer systems' (Mirabile, 2022, p. 83).

3.2 | Centralisation, access and censorship

The second narrative regards centralisation, access and censorship. This narrative is related to the narratives around 'trust', but extends into the logical consequences of what a 'trustless' value transfer system entails. Because blockchains are decentralised (they do not have a single point of failure), trusted intermediaries are allegedly not needed. Consequently, this means no institution or person can exert control over what it records (Nakamoto, 2008), meaning remittances sent via blockchains are asserted to be less prone to censorship (Jegerson & Mertzanis, 2024). This emphasis on decentralisation is typically juxtaposed with issues associated with legacy money transfer operators (MTOs). Transfers via MTOs may be blocked by local recipient banks for reasons that are rarely clear (Ndung'u, 2018). Sandberg and Lindblom (2024) suggest that 'these problems would be less likely with Bitcoin' (p. 315). Uncensorable monetary exchanges exemplify the ideological underpinnings behind cryptocurrency evangelism (Swartz, 2018). Cryptocurrency users are portrayed as being in complete control of their financial transactions. Some have criticised cryptocurrencies' association with decentralisation. Although the technology itself may be decentralised, this technology always occurs within a specific socio-political geography. Writing in the context of Bitcoin mining, van Rosales et al. (2024) explain:

> Despite crypto communities' rejection of centralised intermediaries … spatially, as these interests rely on favourable local governance regimes … they often become more geographically centralised.
>
> (p. 46)

As this article will show, 'really existing' cryptocurrency remittances are highly digitally centralised. But the extent of their centralisation is dependent on more than 'favourable local governance'.

3.3 | Cost and speed

Reducing remittance costs to 3% of the amount sent is now one of the Sustainable Development Goals (Rodima-Taylor & Grimes, 2019a). The average fee in 2019 was 7% of the total transacted amount (Metzger et al., 2019). Coutinho et al. (2023) note that remittance transfer costs can, in some regions, reach up to 35%. In these contexts remittances not only 'expose security risks and lack transparency … [but are also] … expensive, opaque, and slow' (p. 4). Cirolia et al. (2022, p. 69) record not only high transaction fees but that these fees can vary depending on the remitters' personal relationship with the remittance operator(s). 'Blockchain' is said to potentially lower these costs considerably (Carare et al., 2022; Coutinho et al., 2023; Metzger et al., 2019; Rühmann et al., 2020) because they allegedly remove 'unnecessary intermediaries' (Soufaih, 2020). Even the World Bank and the UN claim 'blockchain' could reduce remittance costs and increase speed (UN, 2019; World Bank, 2017). The literature emphasises that through 'blockchain', migrants could avoid delays, transaction fees or unfavourable exchange rates compared with not only traditional remittance services but also with other alternative 'informal' services (Flore, 2018; Metzger et al., 2019). However, the value of most cryptocurrencies is notoriously unstable so costs would be difficult to predict. In spite of Bitcoin becoming legal tender in El Salvador, it is not widely used as a remittance or payment medium (Alvarez et al., 2023). Consequently, some researchers (Kulkarni et al., 2020; Murakami & Viswanath-Natraj, 2021) advocate for 'stablecoins'—cryptocurrencies whose value is pegged to fiat currencies. Indeed, stablecoins are the cryptocurrency of choice for remitters. But the use of (usually US dollar denominated) stablecoins immediately problematises many of these narratives.

3.4 | Summary of narratives: identifying the 'ideal' crypto remittance

Although other aspects of cryptocurrencies such as mining have been treated more critically (Rosales, 2019; van Rosales et al., 2024), within the literature on cryptocurrency remittances, the tone is largely optimistic and uncritical. Krige (2015) suggests, for example, that remitters (and others) can not only 'appropriate the world of finance for their own social and economic ends' (p. 62), but they can even become their own 'world of finance'; one that apparently does not rely on financial intermediaries. These narratives suggest that rather than be victims of 'financial subordination' (Guermond, 2022b, p. 387), migrant remitters can become their own financial subjects, freed from the often exploitative intermediaries that characterise both 'formal' and 'informal' remittance channels. Yet what is apparent about the cryptocurrency remittances literature is that it shares many methodological and analytical presuppositions. These narratives are frequently written in terms of *potential*: using conditional and future voices. The bulk of literature on cryptocurrencies is theoretical (Crandall, 2019) and this is especially so regarding cryptocurrency remittances. Although there are exceptions (Rodima-Taylor & Grimes, 2018), there is little empirical observation of how cryptocurrencies are currently used by remitters. Further, the precise details of how these remittance services function and the resulting implications of the way they function are underexamined. In response, this article takes an empirically led, inductive approach to cryptocurrency remittances that challenges and nuances the narratives around cryptocurrency remittances. Before turning to the empirical material on the nature of 'really existing' cryptocurrency remittances, it is first helpful to clarify the idealised, hypothetical cryptocurrency remittance. This 'ideal' method by which cryptocurrencies and blockchain technology *could* (or *should*) be used to send remittances is the method that underpins much of the literature and rhetoric on cryptocurrencies' potential to 'revolutionise' the remittances industry.

The 'ideal' cryptocurrency remittance is illustrated in Figure 1. A migrant could receive their salary in cryptocurrency directly to their own non-custodial wallet (account). They would then make a transfer for a small fee to the wallet of their family. The fact that this family member resided in another country would be irrelevant to the time, cost or likelihood of the payment arriving. The family member could then use this remittance to make purchases in cryptocurrency in Venezuela.

Examining Figure 1, one can immediately see the appeal of such a system. It has removed the need for a myriad of obstacles and intermediaries. The arrow in the image represents a blockchain transaction which is complex, but for the user it is a straightforward, low-cost and near instantaneous process. Only a mobile phone and internet access is needed.

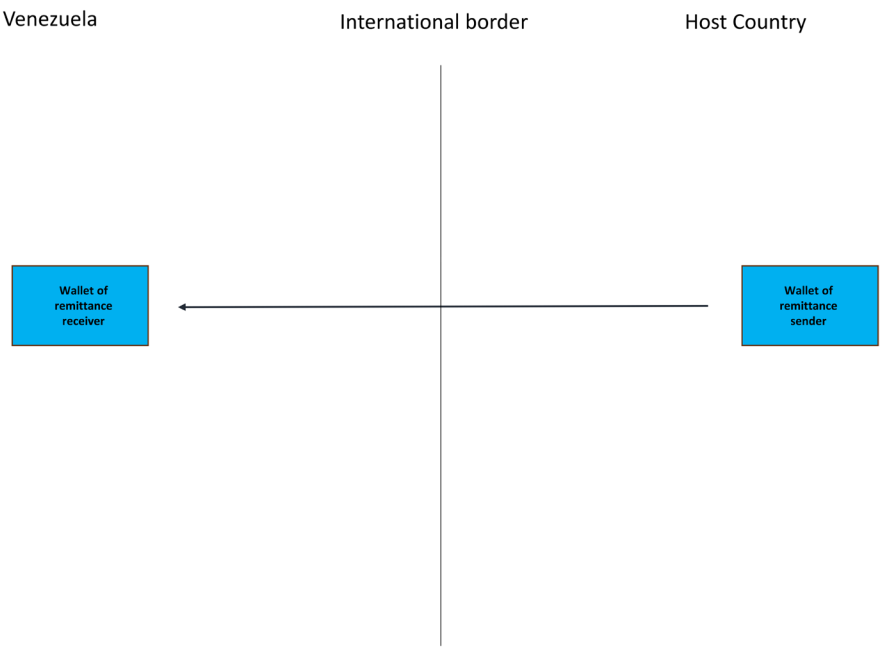

FIGURE 1 The 'ideal' cryptocurrency remittance transfer.

4 | CHALLENGING THE NARRATIVES—CRYPTOCURRENCY REMITTANCES AS 'INVENTIVE PRACTICE'

The most obvious complication is that most are not paid in cryptocurrencies. Converting fiat currencies to cryptocurrencies presents the first hurdle for understanding the role that cryptocurrencies play in remittances. The second issue mentioned earlier is that due to the volatility of cryptocurrencies, stablecoins are the most appropriate unit of transaction. But these two issues immediately create space for intermediaries (Motsi-Omoijiade, 2018). The 'need' for intermediaries means that claims of the revolutionary potential for 'blockchain' to transform remittances are, empirically speaking, missing the mark. Much of the cryptocurrency remittance literature seems to ignore how cryptocurrency remittances operate. Remitters are simply not using them in the way Nakamoto et al. envisioned. In fact, their use is arguably a 'misuse' of blockchain and cryptocurrency financial infrastructure. It is what Rodima-Taylor and Grimes (2019a, 2019b) term an 'inventive practice'. A 'recombination of existing tools and repertoires' (p. 19) that demonstrates that 'remittance infrastructure is neither monolithic nor (at least in whole) intentional in nature' (p. 4). This section first explains the mechanics and key intermediaries involved in 'really existing' cryptocurrency remittances. It then sets the qualitative data against the three narratives from Section 2: trust versus trustlessness, centralisatoin, access and censorship, and cost and speed. Finally, it explores how cryptocurrencies are used inside Venezuela.

4.1 | 'Really existing' cryptocurrency remittances

Venezuelan migration scholars have recorded cryptocurrency remittances in Brazil (Costa Xavier, personal communication) and Argentina (Del Real et al., 2023), but attempts to measure how many remitters use (and more importantly, how remitters use) cryptocurrencies are limited. Chainalysis (2020, 2023) estimate that significant flows of cryptocurrencies move from Argentina to Venezuela especially. Orozco (2022) estimates cryptocurrency remittances to Venezuela to make up between 1% and a2% of the total, but counts cryptocurrency remittances sent using exchanges separately. He instead considers them 'informal transfers' (p. 7). Four of his survey's top 10 most popular transfer companies offer cryptocurrency services. Characterising these as 'informal transfers' is understandable when one examines how these cryptocurrency exchanges are used. Instead of sending remittances via blockchain transactions (Figure 1), my interviewees and their recipients relied on centralised but peer-to-peer (P2P) marketplaces, with cryptocurrency exchanges providing an escrow[3] service between buyer and seller. The remitter sends fiat to the P2P seller's bank account, and the seller deposits stablecoins (crypto US dollars) into the remitter's exchange account via an internal transaction. The remitter then internally transfers the stablecoins to the recipient's exchange account who sells the stablecoins for fiat using the same P2P service. The fiat is transferred to their bank account via a regular domestic bank transaction (Figure 2). The small amounts moving in and out of personal bank accounts are difficult for authorities to link to cryptocurrency purchases. It is important to underline that no blockchain transaction occurs here—the transactions happen within the cryptocurrency exchanges' platforms. Vidan and Lehdonvirta (2019) observe the same problem of a 'bottleneck' (p. 47) between the worlds of fiat and crypto, noting that historically, exchanges' 'gatekeeping role … went relatively unexamined' (p. 48). The problem is actors are incentivised to retain cryptocurrencies on an exchange since transactions occurring within this 'walled garden' (Nelms et al., 2018, p. 26) do not incur a fee and are instantaneous. Since there is little incentive for remitters to leave these exchanges, this 'gatekeeping role' is key.

But cryptocurrency exchanges' primary business purpose is to allow customers to speculate on cryptocurrencies. Stablecoins were originally intended to provide a 'safe haven' for traders in the face of volatility as well as boosting trading liquidity. The fact that migrants are, in growing numbers, using these companies' stablecoin offerings to send remittances is very much a second order effect. A senior employee at a cryptocurrency exchange commented on this:

> I would say that's not our primary customer target, but people certainly use this that way.
>
> (Interview online in English, 12 May 2023)

One fintech expert underscored how cryptocurrency platforms were not originally intended to be used as remittance platforms. He explained:

> [cryptocurrency exchange] is not an easy-to-use platform. It's not like something that you pull out and you understand with two clicks and use how you like … it's kind of an uncomfortable way to do things … if you

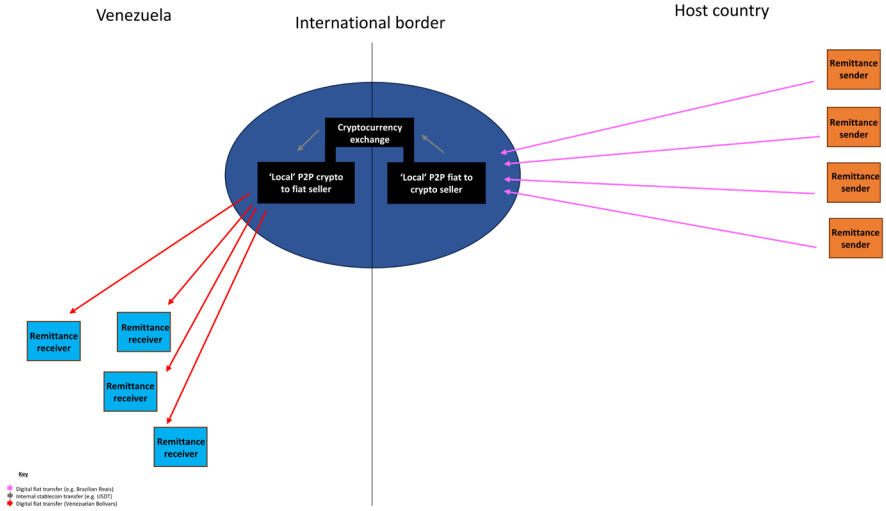

FIGURE 2 'Really existing' cryptocurrency remittances.

> asked someone, design a product that will solve your [remittance] needs, they won't design that platform right? It's too sophisticated.

This quote also demonstrates how using crypto currency exchanges to send remittances constitutes an inventive practice. Regarding the ideological beliefs of the cryptocurrency exchanges, there is a contradiction. On the one hand, unrestricted access to financial services, as 'blockchain' promises, does seem to be a core ideal behind many of these companies as an employee here indicates:

> And that's why crypto is interesting because there's more of a philosophical bent to it ... we're willing to [provide unrestricted global access] because it's not necessarily about being a financially viable decision, but we have a philosophical commitment to financial access.

Access to these services is portrayed as democratised, but it is democratised not according to the logic of self-custody that blockchain idealism advocates. Although, committed to the ideal of unrestricted access, by providing this access these companies themselves become another intermediary. 'Democratisation' is enabled by a new set of intermediaries. This is problematic for advocates of disintermediated and 'trustless' transactions. Further, the fact that stablecoins are the preferred medium of exchange means that remitters are also relying on the private companies that mint these stablecoins as secondary intermediaries. Although some stablecoins are secured by decentralised protocols (Bullmann et al., 2019), the remitters in this study exclusively used the most popular stablecoin, USDT, minted by a private company—Tether. The next section uses the empirical data to interrogate the first two narratives together (since they are intricately linked)—trust versus trustlessness, and centralisation, access and censorship.

4.2 | Trust versus trustlessness, and centralisation, access and censorship

Not only has cryptocurrency infrastructure been 'recombined' by migrants and 'stayers', but it is done in such a way that users need not understand, trust or believe in the technology as it was originally conceived. Instead, remitters and remittance recipients place their trust in various intermediaries. The picture that emerges is more like legacy remittance systems (both 'formal' and 'informal') than would first appear. But the differences that do exist have important implications for both researchers and policy makers. First, there is the issue that these intermediaries are often 'rogue': they are often poorly regulated, frequently disregarding 'regulatory money transfer compliance' (Orozco, 2022, p. 7). There is also the problem that this method is exclusionary in that it is available only to those who understand its mechanics. There are fairly substantial 'knowledge based barriers' (Howard, 2022, p. 321) around cryptocurrency remittances. This casts a new light on the financial subjectivities of remitters who use cryptocurrencies, especially since this method was often

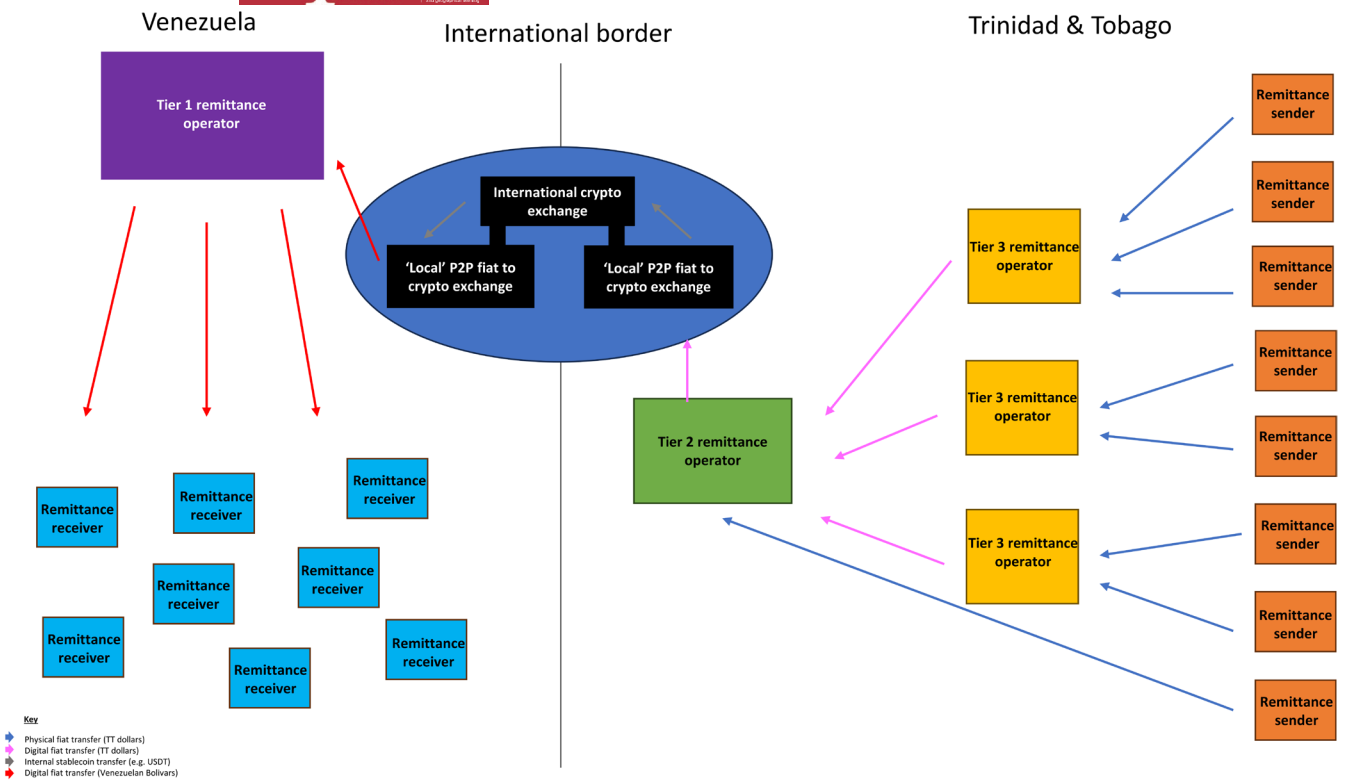

FIGURE 3 The role of cryptocurrencies in 'informal' remittance services in Trinidad & Tobago.

used without the remitter's direct knowledge. In Trinidad & Tobago, using 'friends' was the most popular method. But this often meant using cryptocurrencies, unbeknownst to the remitter (see Figure 3).

Contrary to the ideal of borderless, uncensorable transactions, the country that Venezuelan migrants resided in did play a role in terms of the remittance options that were easily available. For the first time, many of Venezuela's neighbours are having to accommodate for uncontrolled, and at times unrecorded, major regional migration flows. There are significant differences between how countries have adapted to these new immigration streams. In Trinidad & Tobago, few migrants are documented due to a government policy of 'strategic indifference' that aims 'neither to exclude nor fully integrate refugees or migrants' (Greenidge, 2023, p. 161). In Brazil, almost all Venezuelans are documented with full rights to work and access government and financial services (Sarmiento, 2022). This difference in legal status impacts the remittance options available to migrants, but regarding cryptocurrency remittances the relationship is more nuanced. Agosto, 38, living in Mato Grosso, Brazil described his remittance method:

Agosto: I'm legal here … I use [cryptocurrency exchange]. I buy USDT and send it to my wife's [exchange] account and she just sells it for bolívars.
Interviewer: Is this method popular?
Agosto: Most people don't do it right? But there are people who do this service for others. Many people just use someone's service, pay a fee, like 2%–3%.
Interviewer: Do you do this for other people?
Agosto: I help friends out.
Interviewer: Why don't they open their own [exchange] accounts?
Agosto: Many people do not understand the process, they don't understand how to register.

Agosto reveals a key barrier to access, unrelated to legal recognition (since almost all Venezuelans in Brazil are documented). Instead, it is understanding of cryptocurrencies and their associated infrastructure which restricts entry. 'Knowledge barriers' allow for the creation of a 'knowledge hierarchy' with those who do understand this remittance method able to provide a service for others who must pay an additional fee. There is some evidence, limited by the qualitative nature of the research, that one barrier that can inform this knowledge hierarchy is not only the remitter's but the recipient's age. This chimes with Maurer's observation that different payment methods are popular with different age

brackets (Maurer, 2017, p. 216). Maria, 42, living in Buenos Aires, Argentina, explained why she did not use cryptocurrencies to send remittances.

> I use them here, but my mom doesn't use it there ... she doesn't understand, she's an old lady ... It seems much better to me because I wouldn't spend so much money but no, I have tried but she doesn't understand.

Maria, like many in Argentina had turned to stablecoins as a means of countering domestic inflation, but was unable to send cryptocurrency remittances due to her mother's inability to understand the technology. Returning to Agosto's statement, it implies a phenomenon that was made explicit in the interviews with Venezuelans in Trinidad & Tobago. Remitters were often unaware they were relying on cryptocurrencies at all (see Figure 3). Although it is possible to convert fiat to stablecoins face-to-face in cash, awareness of this possibility was extremely low. Further, cryptocurrency usage in Trinidad is low in general. Instead, most respondents reported that they used 'friends' to make transfers, but often were not sure exactly how the money would arrive in their families' bank accounts. As one interviewee, Martin, 40, explained:

> [W]e don't really know. I know that I just call a person, and I give my mommies contact information and she will transfer the money ... I don't know how they do it, but that's what I do.
>
> (interview in English 29 October 2023)

Martin had been living in Trinidad & Tobago for nine years. Unlike many Venezuelans, he was fully documented and able to use 'formal' remittance services. Still, his awareness of cryptocurrency remittances was low. Martin was aware that other methods were cheaper, but chose to use the more expensive option because of lack of trust in other possibilities since these possibilities were seen as also dependent on having the right 'friends'.

> Using [e-money app], that will be a little bit cheaper, but I don't know anybody right now that does it, ... I don't have anybody. I know it's cheaper, but I don't trust just anybody.

Others knew of the process but still did not have any direct experience. Alison explained:

Alison: I give the Trinidadian dollars to a person and that person makes a bank transfer to Venezuela.
Interviewer: Do you know how they manage to get money from Trinidad to Venezuela?
Alison: I'm not sure but it seems to me that it is because of a cryptocurrency platform. (Interview in Spanish 2 February 2024)

The role that cryptocurrencies play in this informal network of 'friends' was made clear by Bella who had previously worked as a tier three remittance operator (Figure 3). She explained the process:

> There is always a person in Venezuela who has an account ... You make the request to another person [in Trinidad] who works for that person [in Venezuela] .... You give the Venezuelan account details [of your family] ... but you give him [the person in Trinidad] the money. That person communicates with the person in Venezuela. The person in Venezuela will make the transfer from bank to bank ... there. Now, how does someone who is there get their money back [from Trinidad to Venezuela]? ... They send it through cryptocurrencies. Mostly I sent it in cryptocurrency [USDT] ... and sent it to the person [in Venezuela] who makes the transfer [bank to bank in bolívars] .... At the same time, that person who sells me dollars [on the exchange's P2P marketplace], he takes a percentage ... it is a monopoly. They take advantage of [Venezuelans] everywhere, but right now they are currently working with virtual currency, this is how that is working.
>
> (Interview in Spanish, 12 January 2024)

As Bella indicates, migrants' reliance on a 'monopoly' of operators meant they were often taken advantage of since they had limited access to and knowledge of alternatives. These quotes further underline the role of 'trusted' intermediaries that 'fill in the gaps' caused by a combination of knowledge barriers around cryptocurrencies, legal status of migrants

and the availability and popularity of cryptocurrencies within national borders. Remitters in Trinidad & Tobago were thus subject to high fees and varying transaction speeds.

4.3 | Cost and speed

More optimistically, cryptocurrency remittances are cheaper and faster than other methods, both formal and informal. This is important to consider in light of the UN's Sustainable Development Goal to reduce the cost of remittances (Rodima-Taylor & Grimes, 2019b). But using cryptocurrencies was only cheaper for those able to use this method directly. For those who had to rely on 'friends', costs varied. In Trinidad & Tobago, the rate of exchange available to migrants was higher than the official one. One interviewee, Carmen, explained, 'for my sister to receive 100 USD, I must send approximately 1000TT'. Martin confirmed this was the case due to the fact this remittance system used the 'parallel'[4] exchange rate:

> Martin: For example, if I can do it officially with the official rate from the bank, and if I want to send a 100 US, I will have to send 800 TT dollars ... but in this case [using the 'informal' remittance system], as everybody gets commission, I must pay 1000 TT to get 100 US dollars in Venezuela.

The rate offered by a Trinidadian cryptocurrency exchange was 800 TT per 100 US dollars. Thus, those with access to this direct method incurred fewer costs. Gordon, 27, an analyst who lived in Anzoátegui, Venezuela, summarised the advantages of cryptocurrency remittances:

> It's easier to make the exchange, no commission charge, and no intermediaries.

This system actually requires several intermediaries, but these intermediaries are not as apparent given that, unlike with legacy MTOs, the costs are much lower. Regarding speed, although some remitters who depended on 'friends' were fortunate enough to see their remittances arrive with their families near instantly, this was not always the case. Delays could sometimes occur. Conversely those who sent cryptocurrency remittances directly would always see them arrive rapidly (see Figure 4).

4.4 | Cryptocurrency usage within Venezuela

Some USDT recipients would keep the remittance as USDT, meaning its value would not only be retained against the bolívar but that they could even use their cryptocurrency exchange accounts as quasi digital wallets to buy goods in local stores who also possessed an account with the same exchange. Gordon, explained:

> The stores just provide us with a QR code for the USDT to be paid [into their exchange account]. There are no crypto debit cards in Venezuela.

Jason, a veterinarian, 26, who lived in Yaracuy, Venezuela recounted:

> In general, the businesses that accept it are small businesses run by young people who know [about USDT] and are comfortable with using it.

Martina, 23, a remitter who previously used cryptocurrencies when she was still living in Venezuela recalled that her and her friends would exclusively use USDT amongst cryptocurrency options:

> We would only use USDT. We would use it to buy fast food at local restaurants.

In the absence of more formal forms of payments infrastructure such as crypto debit cards, 'inventive practices' (Rodima-Taylor & Grimes, 2019a) extend throughout the payments chain. Cryptocurrency exchanges were not intended to enable these kinds of purchases, but remittance recipients have created a parallel payments ecosystem. Interestingly,

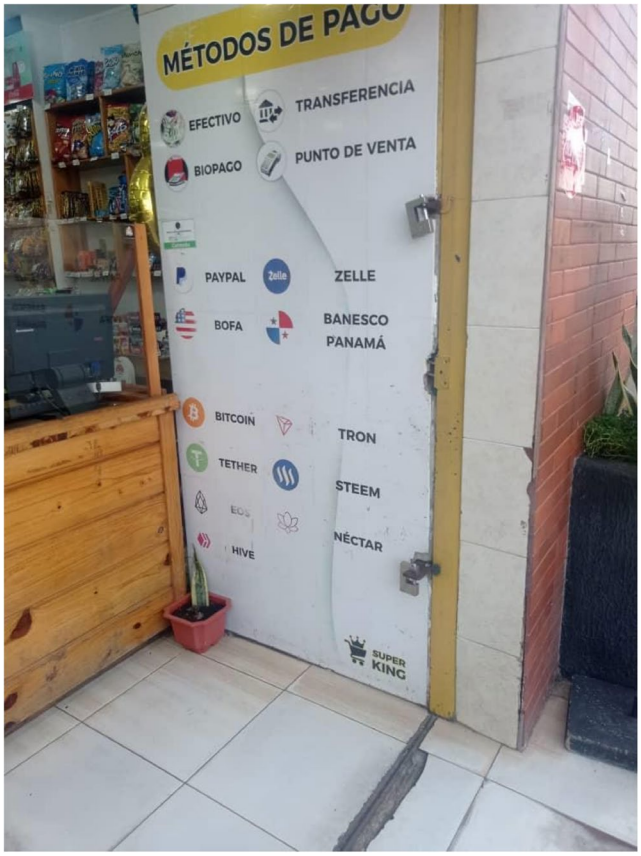

FIGURE 4 A store in Venezuela displaying available payment options including USDT (Tether).

some exchanges have recognised this unintended use case and have launched services targeting this emerging payments market (Major, 2021). Venezuela has been experiencing de facto dollarisation for many years. The growing popularity of USDT thus needs to be understood in the context of a country where many people are already used to transacting with physical US dollars. But USDT, although less popular than physical dollars, has many advantages over cash. First, it does not suffer from scarcity and does not need to be 'smuggled' into Venezuela. Some interviewees in Venezuela who relied on a different alternative remittance method in which they were able to collect physical US dollars from 'semi-formal' remittance agents described delays in receiving remittances due to shortages of US dollars. Conversely, USDT is borderless, limited only by one's position in the 'knowledge hierarchy' and one's trust in cryptocurrencies as money (Sandberg & Lindblom, 2024). It is also suitable for transactions worth less than 1 US dollar since there is no minimum amount that exchange users can send each other. That physical US dollars could not easily be used for small transactions or for transactions that required small change was a problem noted amongst interviewees. The popularity of USDT within Venezuela and among Venezuelan remitters has important research and regulatory implications as the next section reveals.

5 | THE MEDIUM IS THE MESSAGE: REGULATORY AND RESEARCH IMPLICATIONS

A key 'inventive practice' of the remitters was the use of USDT as a remittance medium even though its original purpose was to serve as 'stable' liquidity in cryptocurrency trading. Stablecoins like USDT as a remittance medium as well as the popularity of USDT within Venezuela poses some unique research and policy challenges. This section explores these challenges in conversation with various industry experts to illustrate the scope of the 'messages' within cryptocurrencies as a remittance medium. This section speaks to Yeung's (2023) interest in the links between geopolitical processes and 'people, places and economies' (p. 674). It also responds to Potts's (2023) concern that 'economic geographers should … pay more attention to *trans*national economic relations and governance' (p. 682) since the (in)ability of regulatory

regimes and other national authorities to control the spread of USDT is a key factor in its new success as a remittance medium.

5.1 | A 'borderless' dollar

As mentioned, Venezuela has been de facto dollarised for many years, but usage of US dollars has traditionally been limited by how many are physically present inside the country. That Venezuelans both at home and abroad can use USDT unimpeded challenges attempts by governments to define what constitutes money within borders. This is especially the case now that the Venezuelan government as well as small and medium enterprises in the 'formal' economy are attempting to adopt USDT to circumnavigate new US sanctions (Buitrago & Parraga, 2024; Hamid, 2023). That a private US company can mint US currency that can be used by a national government sanctioned by the USA also demonstrates that stablecoins themselves are 'uncharted regulatory territory' (Ferreira, 2021 p. 757). For their part, Tether have vowed to block Venezuelan government wallets from using USDT (Knight, 2024). It remains to be seen how effective this will be. As Omarova (2020) notes, the rise of stablecoins 'potentially renders the current approach to financial regulation outdated as a matter of principle, rather than degree' (p. 5). For the remittances industry, stablecoins also create new regulatory issues. Indeed, as Cirolia et al. (2022) observe, 'regulation is a central aspect of the remittance debates' (p. 65). Jegerson and Mertzanis conclude that, cryptocurrency remittances indicate a 'paradigm shift' that 'underscores the need for regulatory frameworks … to maximise the benefits of these innovations' (Jegerson & Mertzanis, 2024 p. 19). That the Venezuelan government moved from competing with USDT via their own (now defunct) cryptocurrency—the 'Petro'—to embracing USDT, underscores the difficulties facing all governments when confronted with a borderless and difficult to censor form of the US dollar.

For documented Venezuelan migrants (as almost all are in Brazil), access to cryptocurrency remittance transfers was based on knowledge rather than legal status. Cryptocurrency exchanges are often 'borderless' in that they are not necessarily incorporated in the countries they operate in. One must only have a valid ID from any country, but it need not be issued by the country one is residing in. Moreover, there are services that allow for the exchange of physical cash for cryptocurrencies in most countries. The legal status of cryptocurrencies within a country is less relevant. These difficulties around regulation are only partially related to the decentralised, uncensorable nature of blockchain acting as a 'place' for stablecoins to exist. Equally salient are the vagaries of international law in its ability to restrict a digital company from offering services in certain physical regions. As Potts (2023) writes:

> [I]t is not always clear which [regulatory regime] has the most authority, and struggles over such authority are only likely to intensify as the hegemonic (neo)liberal logics of the past few decades increasingly rub up against very different views about how to structure state–market relations.
>
> (p. 683)

In response to stories that the Venezuelan government was at one point attempting to restrict access to cryptocurrencies, a compliance expert at an exchange explained:

Expert 1: We don't [officially] operate there. So, this is the key, right? We are not subject to Venezuela because we don't have a license with them … we're not incorporated there. We don't have an office, we're not subject to their restrictions. People have access … the website is not blocked.
Interviewer: But they'd have the power to [block it] if they wanted to.
Expert 1: But even China. China famously has restricted access. We have Chinese clients; we don't restrict access to Chinese clients because 'China' has restricted access. We've decided that there's value to providing access [to people] even if it is being restricted by their country. We don't see the risk [to people].
Interviewer: So, the individual has a right to access?
Expert 1: Exactly.

As Maurer observes, 'Chinese adherents trade in [cryptocurrency] despite their government's efforts to crack down against it' (Maurer, 2017, p. 217). Many cryptocurrency exchanges are not formally registered or incorporated anywhere while providing access to cryptocurrencies on centralised servers—essentially issuing cryptocurrency 'IOUs'. A blockchain transaction is only needed should a user wish to leave the 'walled garden' of the cryptocurrency exchange and

withdraw cryptocurrencies to their own non-custodial wallet.[5] Globally, the majority of users choose to keep their cryptocurrencies on an exchange (Jonas, 2021) as did all interviewees in this article. Regardless of why governments find it difficult to restrict cryptocurrency access, that citizens do have increasing access has been framed as a threat to 'monetary sovereignty' (Carare et al., 2022, p. 5). One industry expert explained:

Interviewer: Regarding the future direction of remittances, do you see the role of crypto growing?
Expert 2: I'm not ideological about crypto at all. But … There is a massive implication to giving people access to the US dollar, and that is something that I can't wrap my head around. The total implications of that, but I don't think there's a putting the cat back in the bag. If someone doesn't have other options and they know how to do this, it does make sense.

If stablecoin access increases, the volatility of domestic currencies can always be measured against the performance of the dollar. As long as using stablecoins to send remittances remains cheaper than other methods, they will likely continue to grow in popularity. Given that over 60% of the world now own a smartphone (Turner, 2024), on the national scale, spatial barriers may become less significant. On smaller scales, 'knowledge barriers' linked to education and age may remain.

5.2 | Stablecoins, centralisation and currency hierarchies

The bulk of literature on 'real world' use of cryptocurrencies focuses on Bitcoin (Jegerson & Mertzanis, 2024). But the question of whether Bitcoin can or should be treated as money (Alvarez et al., 2023) or whether it is suitable as an international payments medium (Boos & Grigera, 2023; Metzger et al., 2019) is, empirically, increasingly irrelevant. Boos and Grigera (2023) even suggest that '[r]emittances seem to fit the only strength of Bitcoin as currency, namely its role as potential international currency' (p. 15). Yet they acknowledge there is no empirical evidence of this. As Swartz notes, 'Bitcoin has not proven to be a practical money form in most circumstances' (Swartz, 2018, p. 623). Instead, focusing on Bitcoin ignores the fact that it is dollar denominated stablecoins which are the international payments medium of choice. Bitcoin is unsuitable as money because its short-term value is volatile and in the long term, it is deflationary. Instead, stablecoins are the most popular form of cryptocurrency for sending remittances and other types of transfers. An industry expert explained, 'The speed of which stablecoins have taken over … is just … we're not talking about Ethereum and Bitcoin anymore … the vast majority of activity is now in stablecoins'. Stablecoins, and specifically the way they are used by the remitters in this article, prompt a different set of concerns than Bitcoin. Researchers should focus more attention on stablecoins over Bitcoin et al.

In his contemplation of the alternative economic practices that appeared in Argentina during the economic crisis of the early 2000s, North (2007) asks:

> Can they best be thought of as a way of surviving through a financial crisis or as a … challenge to neoliberal financial stability …? Alternatively … is usage of alternative currencies … part of the problem?
>
> (p. 149)

In the context of this article, the answer is 'yes' to all three. To the remitters and recipients, USDT is simply a means to an end. There is little ideological baggage attached to their use. Expert two commented, 'I don't think people in Argentina and Venezuela are using crypto because it's cool … They use it because it's an option'. Stablecoins may challenge 'neoliberal financial stability' since they expose a contradiction in neoliberal economic logic. Neoliberalism has traditionally championed the unrestricted, 'borderless' movement of all forms of economic activity but there is an element of 'disciplining' in that currencies themselves are highly bordered. This is because fiat currencies are only based on trust in the issuing national authority. They 'need' to be geographically restricted for them to function as intended. The supremacy of USDT thus simultaneously affirms and undermines the established 'currency hierarchies' (Guermond, 2022b, p. 387) that govern global finance and partly result from the geographical restrictions that are placed on national currencies. This may reflect 'the international hierarchy of national states and imperial power' (Alami, 2019, p. 14), but the Federal Reserve does not have any direct control over how many dollar-pegged stablecoins are minted and it cannot control where they are used. Yeung (2023) records a recent 'push back' against the traditional neoliberal policy stance of globalised trade, what he terms 'deglobalisation' in the context of a 'recent geopolitical drive in the US and the EU towards

reshoring manufacturing activity abroad' (p. 673). It is ironic that this move towards protectionism around trade and manufacturing has coincided with a technological innovation that has caused the dollar to become even more ubiquitous. Still, stablecoins are also 'part of the problem' in that they operate within the same logic as the formal economy: of trust in and dependence on financial intermediaries. The question that stablecoins ultimately pose for financial and economic geographers is: should non-US citizens have a 'right' to access the US dollar? If so, what should this access look like?

5.3 | Blockchain not needed?

Venezuelan migrants have re-worked existing infrastructure to find a method that is cheaper than any that directly relies on blockchain. This 'inventive practice'(Rodima-Taylor & Grimes, 2019b) has not gone unnoticed. Recently, many new app-based companies that focus on stablecoin access for migrants and non-US citizens have appeared. In theory, they may rely on 'the use of blockchain as a settlement trail' (Motsi-Omoijiade, 2018, p. 218). But in practice, they prefer the centralised 'walled garden' (Ferreira, 2021; Nelms et al., 2018) approach described in this article. Rella notes that 'cross-border payments have been one of the earliest and most promising applications of blockchain technologies' (Rella, 2019, p. 2). Similarly, Rühmann et al. (2020) argue, 'it is essential to recognise blockchain technology as a possible tool to facilitate better [remittance] services'. The irony is that the most popular method of cryptocurrency international payments that is fast, low cost and difficult to track and censor, does not involve any blockchain transactions. Although blockchain idealism does seem to at least hint at the possibility of a disintermediated financial system, the remittance practices using cryptocurrencies that are described in this article are not such an example. Vidan and Lehdonvirta (2019) also agree that dependence on centralised fiat on and off ramps is a major issue for proponents of cryptocurrencies' claims to trustlessness and disrupts the 'platonic' ideal of cryptocurrency payments in Figure 1. Nelms et al. (2018) describe this ideal as 'just us' (p. 27) payments—payments disintermediated from governmental and financial institutions. These payments take place in the context of a 'political vision that goes under the name of "the social" and its avatars of relationality, especially trust' (p. 27) But they note that this dream of a disintermediated, decentralised payment system is, 'caught up in a process of simultaneous de- and re-centralization, disintermediation and re-intermediation … Centralization reasserts itself not in the form of government … but in the form of start-ups and tech companies' (p. 27).

New issues around financial subjectivities are also raised. For remitters unaware of cryptocurrencies, they must also trust an informal network of 'friends' to enable the cryptocurrency transactions on their behalf. For those who understand cryptocurrencies, they must trust the private companies that operate the exchanges they use and mint the stablecoins they send. These practices are arguably antithetical to the values underpinning blockchain (Tan & Saraniemi, 2023). There is in fact a complex web of trusted intermediaries and agents at play. Even to describe cryptocurrency conversion services as 'P2P' (Figures 2 and 3) is as Maurer et al. point out, 'a misnomer: the service depends on a network of human agents who serve as cash-in/cash-out points' (Maurer et al., 2018, p. 72). The empirical findings of this article nuance claims of the revolutionary nature of blockchain in enabling new forms of remittances. In one sense, Orozco (2022) is correct to categorise cryptocurrency remittances sent using intermediaries as merely another form of 'informal' remittance. It is possible to use cryptocurrencies in a manner closer to that envisioned by those who write of its potential, but it seems remitters prefer using the centralised services offered. A Mastercard survey showed not only that 51% of Latin Americans had used cryptocurrencies at least once to make a purchase but, 'Nearly 70% of … consumers said they would feel more comfortable investing and transacting in crypto if there was a trusted organization in the middle' (Engler, 2023). Using cryptocurrency intermediaries is inexpensive and arguably more secure than the 'ideal' method described in Figure 1 since it requires less technical knowledge. Contrary to libertarian and egalitarian (Sandberg & Lindblom, 2024) or 'cipherpunk' and crypto-anarchist (Swartz, 2018) imaginaries of cryptocurrencies, the picture that emerges from this empirical investigation is closer to an anarcho-capitalist vision of centralised but private money (rather than decentralised, public money as Bitcoin was intended to be) since this payments system depends on various intermediaries. Stablecoin issuers serve as semi-regulated pseudo commercial banks and global cryptocurrency exchanges can function as unregulated e-money platforms similar to Apple Pay or Venmo in the domestic context and MTOs like Western Union and Moneygram in the context of international remittances.

This is also important for opponents of cryptocurrencies to understand. Those who oppose cryptocurrencies on the grounds of its links to terrorism and crime must understand the implications of 'really existing' cryptocurrency usage, which heavily relies on centralised 'rogue' intermediaries, rather than 'blockchain' per se. This is evidenced by the recent anti-money laundering (AML) related charges against Binance (a major cryptocurrency exchange). Further, many have objected

to cryptocurrencies on environmental grounds (Howson, 2023). It is true that Bitcoin mining and the transactions that occur on the Bitcoin blockchain are energy intensive. But this needs to be conceptually separated from the centralised transactions (i.e., the bulk of cryptocurrency transactions), described in this article, which use no more energy than email.[6] But as Jegerson explains, 'the blockchain is [still] the primary technology enabling the success of cryptocurrencies' (Jegerson et al., 2022, p. 5). Clearly this remittance method does depend on blockchain technology even if it is not to enable the actual transactions. Without blockchain allowing the existence of 'borderless' US dollars, these new remittance intermediaries could not exist. This ability of blockchains to allow the existence of a 'global' US dollar is revolutionary even if practical usage is highly intermediated. The role of blockchain based stablecoins in 'really existing' cryptocurrency remittance systems is to function as a global liquidity pool. However, this liquidity pool does not need to be directly operationalised to settle cryptocurrency remittance transfers. Instead, it is only enough that these 'borderless', 'locationless' US dollar denominated liquidity pools exist; or rather, similar to fractional reserve banking, all parties must at least believe they exist of a size adequate to settle all transactions. The relationship between 'trustless' blockchains and 'trusted' cryptocurrency remittances channels (and other cryptocurrency payments) is complex and must be theorised more deeply.

6 | CONCLUSION

Much cryptocurrency remittances literature is theoretical. In response, this article has taken an inductive, empirical approach. It explored the role of cryptocurrencies in alternative remittances from Latin America and the Caribbean into Venezuela. It argued that the role cryptocurrencies play in the remittance practices described constitutes a 'misuse' of blockchain technology and cryptocurrency financial infrastructure. Instead, it should be considered an 'inventive practice' (Rodima-Taylor & Grimes, 2019b). It showed that 'really existing' cryptocurrency remittances are highly intermediated. They are often hierarchical stemming from knowledge barriers, but also legal status (and by extension, economic status). This contrasts with assumptions of equality in narratives about P2P transactions. The article also revealed cryptocurrencies' role in informal payments methods within Venezuela. This has profound implications for understanding the Venezuelan economy. This article thus responded to Yeung's (2023) call for economic geographers to empirically explore the consequences and effects of the 'inter- and intra-national politics of economic processes' (p. 674). It also revealed the importance of 'friends' in these remittance channels, which is relevant to broader study of informal economic geographies. It explored what the popularity of US dollar denominated stablecoins may portend for governments, regulators, and commercial and central banks as well as researchers. It showed that stablecoins challenge institutional attempts to geographically restrict currencies. For economic geographers, this is important to our understanding of how stablecoins simultaneously undermine spatial barriers to financial access yet may create new ones in the process. It reflected on how the desire, and arguably, the 'need' for trusted intermediaries, continues to play a vital role in cryptocurrency remittance channels. It prompted discussions around the relationship between 'trustless' blockchain technology and cryptocurrency remittances.

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DATA AVAILABILITY STATEMENT

Data available from author upon request.

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Endnotes

[1] This article uses 'migrants' inclusively. 'Migrants' can be read as 'refugees and other migrants' (Carling, 2017).

[2] A traditional system of international money transfer. The remitter gives money to an agent who requests their partner (often a relative) in the recipient country to pay the remitter's family.

[3] A neutral third party holds funds until both 'buyer' and 'seller' are satisfied with the terms of the exchange.

[4]The unofficial rate. In countries such as Venezuela and Argentina, the 'unofficial' rate is more widely used than the 'official' government rate, raising questions about which is the 'real' rate.

[5]A cryptocurrency 'account' that only the user can access.

[6]Also, the blockchains that host most stablecoins are Proof of Stake (POS) rather than Proof of Work (POW). POS is much less energy intensive (De Vries, 2023).

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