

REMITTANCES AND GLOBAL DEVELOPMENT

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ABSTRACT

High transmission fees for remittances sent through traditional channels sap a large portion of potential development impact from what is one of the largest sources of development capital in the Global South. Such fees deprive developing economies and families from millions, if not billions, of development dollars. This Note will consider whether cryptocurrencies can be part of the solution to this problem. Cryptocurrencies are unlikely to provide a comprehensive solution to the high cost of remittances, mainly due to crypto's high financial and knowledge-based barriers to entry for both senders and recipients, as well as its general price instability. Governments of remittance-dependent countries should instead focus on facilitating the inflow of remittances by reducing transmission costs and by promoting their citizens' access to banks and credit.

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I. INTRODUCTION

Remittances, most generally, are transfers of money by migrants to their family still living in their country of origin.¹ They are an important byproduct of globalization which are only made possible because of an interconnected global economy and transfer of people across international borders. Remittances have grown rapidly in recent years. Although they are difficult to monetarily quantify because of their informal nature (e.g. transfer of money between family members), the World Bank estimated that \$630 billion in remittances would flow from developed economies to low and middle income regions in 2022.² Remittances, thus, are economically vital for individuals in, and governments of, developing nations. By some estimates, remittances are the second largest source of external finance for developing countries, after inter-governmental assistance, representing around double the amount of official aid received.³

Remittances, however, are not without criticism. Some studies have argued remittances are an example of the “Dutch disease”: while they tend to boost economic growth, remittances also tend to increase the value of domestic currency and, paradoxically, hurt national exports.⁴ Furthermore, some believe remittances may have adverse effects on domestic institutional quality and governance.⁵ However, this Note focuses on the main problem that impacts the usefulness of remittances as tools for development: though technology has greatly reduced the cost of sending remittances through traditional means, their cost remains so high that a large portion of remitted monies never gets to migrants’ home countries, removing consequential

1. See Dilip Ratha, *Remittances: Funds for the Folks Back Home*, INT’L MONETARY FUND (Feb. 24, 2020).

2. KNOMAD, WORLD BANK, MIGRATION AND DEVELOPMENT BRIEF ix (2022).

3. Reena Aggarwal, Asli Demirgüç-Kunt & María Soledad Martínez Pería, *Do remittances promote financial development?*, 96 J. ECON. DEV. 225, 225 (2011).

4. Burçak Polat & Antonio Rodríguez Andrés, *Do emigrants’ remittances cause Dutch disease? A developing countries case study*, 30 ECON. & LAB. REL. REV. 59, 72 (2019).

5. Yasser Abdih, Ralph Chami & Jihad Dagher, *Remittances and Institutions: Are Remittances a Curse?*, 40 WORLD DEV. 657, 663–664 (depicting that when households receive remittances, the government “finds it less costly to free ride on households and their emigrant relatives and divert resources for its own purposes”).

sums from the pockets of remitees and national economies as a consequence.

Recent developments in academia and technology seek to address this issue by means of cryptocurrency. Some scholars have posited that use of cryptocurrency in remittance-making may contribute to lowering costs while increasing the speed of remittance-sending.⁶ Popular discussion of crypto's potential boon to remittances was sparked by El Salvador's adoption of Bitcoin as an official currency.⁷ This leads to the question of whether cryptocurrencies can really solve remittance's cost problem. While cryptocurrencies, in theory, greatly reduce transaction costs and facilitate the transmission of even greater flows of remittances from developing countries to the Global South, I argue that three fundamental flaws with cryptocurrencies make this extremely unlikely. First, high knowledge and technological barriers make it difficult for remitters and remitees to transfer money. Second, because remittances are primarily used to purchase goods and services and few countries have adopted Central Bank Digital Currencies ("CBDCs"), remitees would eat the cost of conversion pre-sale or in the form of increased prices. And third, price instability of crypto in recent years makes crypto an unwise option for sending money. Instead, governments should seek to increase overall societal benefit by reducing the costs of traditional remittance channels while increasing their citizens' access to banking.

II. MORE MONEY, MORE PROBLEMS: THE ISSUE WITH REMITTANCES

A. *How Are Remittances Used and How Do They Impact Development?*

Why do migrants send remittances? The most common traditional explanation assumed that remittances were sent for purely altruistic purposes: migrants simply care for those that were left behind in their country of origin, such as spouses, children, siblings, or parents.⁸ While this is likely a primary motivating factor, "patterns of remittances are . . . better explained as familial inter-temporal contracts than as a result of altruism or other purely individualistic consideration."⁹ In other words, remittances combine altruism,

6. See generally Martina Metzger, Time Riedler & Jennifer Pédussel Wu, *Migrant Remittances: Alternative Money Transfer Channels*, 3 (Institute for Int'l Pol. Econ. Berlin, Working Paper No. 127, 2019).

7. See Morgan Chittum, *El Salvador's Bitcoin Wallet Could Disrupt Traditional Remittance Market*, BLOCKWORKS (Sept. 9, 2021), <https://perma.cc/WV7A-GPXT>.

8. See Hillel Rappoport & Frédéric Docquier, *The Economics of Migrants' Remittances*, in 2 HANDBOOK OF THE ECONOMICS OF GIVING, ALTRUISM AND RECIPROCITY 1136, 1171 (Serge-Christophe Kolm & Jean Mercier Ythier eds., 2006) (describing how remittances incorporate a variety of motives, including altruism, exchange, insurance, loan repayment, and investment, some or all of which could be operative simultaneously); see also Thomas Straubhaar & Florin P. Vădean, *International Migrant Remittances and their Role in Development*, in INTERNATIONAL MIGRATION OUTLOOK: SOPEMI 2006 EDITION 145 (2006) (detailing that, hypothetically, because migrants derive "satisfaction" from the well-being of their relatives back home, they choose to send financial support).

9. Rappoport & Docquier, *supra* note 8, at 1171.

repayment of loans, insurance, inheritance, and exchange of services.¹⁰ This is because migrants, when moving from their home country to another country to work, encounter high financial up-front costs due to emigration which include, but are not limited to, high cost of travel, cost of finding an accommodation, and increased cost of living. Migrants have often borrowed substantial sums from family members to cover these costs.¹¹ This may help explain why remittances nonetheless are very stable, even during times of economic turmoil.¹²

And how are remittances used once they are received? Remittances are primarily used by recipients in two ways: personal or familial consumption and investment.¹³ Of these, familial consumption is generally thought to be much larger, with some surveys showing eighty-five to ninety percent of remittances being spent on necessities, like food, clothing, and other consumer items.¹⁴ The remainder, then, is used for investment, typically in housing, education, transportation, and the like.¹⁵ Of course, this is not always the case. Sometimes, depending on the economic circumstances of the home country, investments may take up a higher percentage of total remittances sent.¹⁶

Of note, remittance spending on consumption and investment positively impacts gross national product (GNP).¹⁷ Even when not invested, remittances

10. Dean Yang, *Migrant Remittances*, 25 J. ECON. PERSPECTIVES 129, 135–36 (2011).

11. Rappoport & Docquier, *supra* note 8, at 1142.

12. Yang, *supra* note 10, at 135–36 (detailing that, in the wake of the 2008 financial crisis, foreign direct investment plummeted almost 40 percent between 2008 and 2009, while remittances remained stable). Remittances are generally understood to be extremely stable, partially due to interpersonal relationships between migrants and remittance-recipients, and partially due to the intertemporal relationships involved in sending remittances. *See id.*; Rappoport & Docquier, *supra* note 8, at 1142.

13. Peter Nderitu Githaiga, *Foreign Remittances, Banking Sector Development and Private Sector Investment*, 10 J. BUS., ECON. & ENV'T STUD. 7, 9 (2020).

14. Anthony L. Hall, *Moving away from poverty: Migrant remittances, livelihoods, and Development*, in MOVING OUT OF POVERTY: CROSS-DISCIPLINARY PERSPECTIVES ON MOBILITY 1, 313 (1st ed. 2007); *see also* WORLD BANK, THE USE OF REMITTANCES AND FINANCIAL INCLUSION 11 (Sept. 2015) (detailing that remittances are mostly used for purchasing basic necessities, with remainder funds being invested in human capital, health and education, or housing); Christine Nanjala Simiyu, *Remittance and Household Expenditures in Kenya*, 2 J. EMERGING ISSUES IN ECON., FIN. & BANKING 718, 726 (detailing that remittances received by households in Kenya were mainly spend on daily consumption needs).

15. Hall, *supra* note 14; WORLD BANK, *supra* note 14.

16. *See* Cristian Încalțărău & Liviu-George Maha, *The impact of remittances on consumption and investment in Romania*, 3 E. J. EUR. STUD. 61, 76 (2012) (explaining that, between 1990 and 2009, the impact on household consumption was much lower than investment; an explanation offered by the authors suggest that, because remittance recipients knew they would receive money from abroad, they saved other amounts of money for consumption and used money sent via remittances for more significant investments, such as home improvements, purchasing cars, or starting businesses); *see also* Richard H. Adams, Jr. & Alfredo Cuecuecha, *The Impact of Remittances on Investment and Poverty in Ghana*, 50 WORLD DEV. 24, 38 (2018) (finding that Ghanaian households that receive either internal or international remittances spend less at the margin on food and more at the margin on education, housing, and health); Farai Jena, *Migrant Remittances and Physical Investment Purchases: Evidence from Kenyan Households*, 54 J. DEV. STUD. 312, 321 (2018) (determining that remittances have positive effects on purchases of physical investments, which may be used to generate income).

17. *See* Adela Shera & Dietmar Meyer, *Remittances and their impact on Economic Growth*, 21 SOC. & MGMT. SCI. 3, 15 (2013) (detailing that every “migradollar” spent in Mexico induced a GNP increase of USD 2.69 for remittances received by urban households and USD 3.1 for rural households).

can have an outsized impact on the home country's surrounding economy via the "multiplier effect." For example, one dollar sent via remittances and spent on necessities will stimulate retail sales, increasing demand for goods and services, which further stimulates output and employment.¹⁸ This means that although recipients of remittances benefit directly from increased consumption, benefits are also spread to non-migrant households as well.¹⁹ Remittances have been found to have a positive impact on the financial development of countries overall, and also have been found to increase recipients' use of financial services, particularly for deposits.²⁰ Importantly, remittances are generally understood to alleviate poverty—a ten percent increase in shares of remittances can lead to a decrease in percentage of citizens in poverty by up to three-and-a-half percent.²¹

At the same time, many scholars have noted that remittances, while directly beneficial to recipients, may have concrete and consequential negative impacts on development. If remittances generate demand faster than the home economy can supply, remittances can cause inflation, potentially erasing gains made by receivers of remittances.²² Furthermore, some scholars believe that remittances may serve to exacerbate "brain drain," where well-educated persons are incentivized to work abroad by higher wages, depriving the home economies of skilled labor and corresponding human capital gains, even if they increase the amount of remittances for family back home.²³

Nonetheless, on the individual level, remittances undeniably serve two important gap-filling functions. First, they connect recipients—people who, because of status, location, lack of education or lack of opportunity, have historically been disconnected from the global economy and financial institutions—to new sources of capital. And second, migrants who emigrate to developed economies receive higher compensation for their human capital, enabling them to send money back home. Understandably, remittances have large societal implications: they are credited with reducing poverty,²⁴

18. Straubhaar & Vādean, *supra* note 8, at 155.

19. See Egbe Etowa, *Remittance Multiplier Effect: Do Migrant Remittances Impact the Mass of Non-Migrant Households in Nigeria?*, 1 SAVINGS & DEV. 29, 44 (2016) (noting that spending by remittance recipients increased incomes for non-remittance recipients in Nigeria, meaning the multiplier effect will enable overall economic growth so long as there exists a robust economy driven by entrepreneurial activities).

20. See María Soledad Martínez Pería, Yira Mascaró & Florencia Moizeszowicz, *Remittances and Financial Development*, in REMITTANCES AND DEVELOPMENT: LESSONS FROM LATIN AMERICA 198 (Pablo Fajnzylber & J. Humberto López eds., 2008).

21. WORLD BANK, *supra* note 14, at 14.

22. See Shera & Meyer, *supra* note 17, at 15 (detailing that, between 1980 and 1986, the price for agricultural land in Egypt rose 600 percent because of remittances).

23. See Albert Bollard, David McKenzie, Melanie Morten & Hillel Rapoport, *Remittances and the Brain Drain Revisited: The microdata show that more educated migrants remit more* 16 (Ctr. for Int'l Dev. at Harv. Univ., Working Paper No. 190, 2009) (detailing that, because more educated migrants earn more money, they remit more money than low skilled migrants; thus, "an income effect is the dominant channel through which education operates").

24. See, e.g., John C. Anyanwu & Andrew Erhijakpor, *Do international remittances affect poverty in Africa?*, 22 AFR. DEV. REV. 51, 80 (2010) (demonstrating that "a 10 percent increase in official international remittances as a percentage of GDP will lead, on average, to a 2.9 percent decline in the share of

increasing access to education,²⁵ aiding domestic financial sector development,²⁶ and being relatively stable sources of cross-border financing even when global finance is not.²⁷ Perhaps even more importantly, by some estimates, remittances outpace foreign direct investment to be the largest source of international non-governmental financing.²⁸ Remittances, then, should be understood as important tools for development, albeit indirectly.

B. *The Problem with Remittances*

The main issue with remittances is the continuing high costs of transmission. While use of the internet in sending remittances has contributed to a significant decrease in the overall cost of sending money,²⁹ costs related to sending remittances remain high, with the global average cost of sending \$200 standing at 6.01% as of June 2022.³⁰ These high costs can include both high transfer fees and high foreign exchange margins.³¹ As of 2022, transfer fees account for the largest portion of the costs for remittance services.³² While it is generally less expensive to send larger amounts,³³ fees still

people living in poverty”); Pablo Acosta, Pablo Fajnzylber & J. Humberto Lopez, *The Impact of Remittances on Poverty and Human Capital: Evidence from Latin American Household Surveys* 32 (World Bank, Pol’y Rsch. Working Paper No. 4247, 2007) (finding that, in general, remittances “appear to lower poverty levels in recipient countries”); J. Edward Taylor, Jorge Mora, Richard Adams & Alejandro Lopez-Feldman, *Remittances, Inequality and Poverty: Evidence from Rural Mexico* 26 (U.C. Davis, Dept. of Agric. and Res. Econ., Working Paper No. 05-003, 2005) (demonstrating that, despite remittances’ positive effect on inequality, “international migrant remittances reduce rural poverty [] by a greater amount than internal remittances”).

25. See Zohid Askarov & Hristos Doucouliagos, *A meta-analysis of the effects of remittances on household education expenditure*, 129 WORLD DEV. 1, 10 (2020) (finding that both internal and external remittances increase spending on education, with international remittances having a larger impact); see also Maria Cristina Zhunio, Sharmila Vishwasrao & Eric P. Chiang, *The influence of remittances on education and health outcomes: a cross country study*, 44 APPLIED ECON. 4605, 4613 (2012) (detailing that a higher level of per capita real remittances correlates with higher secondary enrolment rates). *C.f.* José R. Bucheli, *Mixed effects of remittances on child education*, 8 IZA J. DEV. & MIGRATION 10 (finding that there are mixed results for families missing one parent due to migration).

26. Aggarwal, Demirgüç-Kunt & Martínez Pería, *supra* note 3, at 262.

27. See Yang, *supra* note 10, at 129 (detailing that, in the wake of the 2008 financial crisis, foreign direct investment plummeted almost 40 percent between 2008 and 2009, while remittances remained stable); see also Kangni Kpodar, Montfort Mlachila, Saad Quayyum & Vigninou Gammadigbe, *Defying the Odds: Remittances During the COVID-19 Pandemic* 24 (IMF, Working Paper No. WP/21/186, 2021) (detailing that, remittances defied the odds by rising in most sampled countries during 2020).

28. Donna Barne & Florina Pirlea, *Money sent home by workers now largest source of external financing in low- and middle-income countries (excluding China)*, WORLD BANK BLOGS (July 2, 2019), <https://perma.cc/6QS2-CL2Z>.

29. Thorsten Beck, Mathilde Janfils & Kangni Kpodar, *What Explains Remittance Fees? Panel Evidence* 30 (IMF, Working Paper WP/22/63, 2022) (detailing that payments over the Internet attract lower remittance fees). The share of fees corresponding to Internet access increased from 18 to 33 percent between 2011 and 2020, *id.* at 12, indicating that digitalization of remittances has already helped bring down remittance costs.

30. WORLD BANK, REMITTANCE PRICES WORLDWIDE QUARTERLY 6 (June 2022), <https://perma.cc/638R-R3LX>; see also Beck et al., *supra* note 29, at 11 (detailing that the median remittance price has decreased from 7.7 percent in 2011 to 5.7 percent in 2020).

31. WORLD BANK, *supra* note 30, at 15–16.

32. See *id.* at 16 (noting that, in Figure 12, fees make up most of the transaction cost in each region, no matter if remittance was digital- or cash-based).

33. Stephen Cecchetti & Kim Schoenholtz, *The stubbornly high cost of remittances*, CTR. FOR ECON. POL’Y RSCH. (Mar. 27, 201), <https://perma.cc/7UJF-94GR>.

remove large sums of money from the pockets of migrants, remittance receivers, and remittance-dependent developing economies.

High fees reflect the means by which remittances are typically sent. Most remittances continue to be sent via money transfer operators (MTOs),³⁴ non-bank financial companies that engage in cross-border transfer of funds via their own internal systems, or through other cross-border private companies that charge additional fees to complete the transmission.³⁵ Such wire transfer companies, like Western Union or MoneyGram, dominate the remittances markets and are by far the most common means of dispatching remittances, even seeing remarkable growth through the expansion of digital remittance products because of social distancing requirements necessitated by the Covid-19 pandemic.³⁶ Between 2008 and 2018, the global average cost of sending money fell from 9.8% to 7.1%, while the cost of sending money via MTOs stagnated. After falling by 2.5 percentage points before 2014, the average charge remained around 8% in 2018.³⁷

There has been a slight shift towards digital remittances in recent years, especially because of the COVID-19 pandemic and the necessity of social distancing.³⁸ Aside from the pandemic, one reason motivating a shift may be the fact that costs for non-digital services remain consistently higher than those for digital services, regardless of region or corridor where money is being sent.³⁹ As of June 2022, banks continue to be the costliest remittance service provider, with an average cost of 10.64% in the second quarter of 2021, followed by post offices at 6.43%, MTOs at 5.50%, and mobile operators at 4.39%.⁴⁰ However, a shift to mobile or internet-based transfers may not be feasible in many parts of developing countries around the world, where residents lack reliable access to the internet or cellular service.⁴¹

In some developing countries, the high cost of formal remittance services may push some migrants to send remittances via informal channels, which can include personal or business relationship-based cash transfers, courier company transfers, friends, relatives, or by oneself.⁴² These informal money

34. VISA ECONOMIC EMPOWERMENT INSTITUTE, *THE RISE OF DIGITAL REMITTANCES: HOW INNOVATION IS IMPROVING GLOBAL MONEY MOVEMENT* 13 (2021).

35. INT'L MONETARY FUND, *INTERNATIONAL TRANSACTIONS IN REMITTANCES: GUIDE FOR COMPILERS AND USERS* 9 (2009).

36. See generally MANUEL OROZCO & MATTHEW MARTIN, *FAMILY REMITTANCES IN 2021* 13-14, INTER-AMERICAN DIALOGUE (2022), <https://perma.cc/C4RE-X8A8>.

37. Cecchetti & Schoenholtz, *supra* note 33.

38. MANUEL OROZCO & KATHRYN KLAAS, *A COMMITMENT TO FAMILY: REMITTANCES AND THE COVID-19 PANDEMIC* 10 (2022) (noting that seven percent of surveyed migrants in the US said they were using a different sending method at the time of the survey than they were before the pandemic; the largest growth, according to respondents, was in using mobile apps for sending remittances).

39. WORLD BANK, *supra* note 30, at 15.

40. *Id.* at 15-16.

41. Dan Okoth, *Reliable Internet unavailable for the world's poorest*, ITU (Mar. 29, 2022), <https://perma.cc/6NWP-U5WP> (describing that a decent internet connection is out of reach of ninety percent of people in low- and middle-income countries).

42. Caroline Freund & Nikola Spatafora, *Remittances: Transaction Costs, Determinants, and Informal Flows* 2 (World Bank Policy Research Working Paper 3704, 2005).

transfer channels can be cheaper than formal channels.⁴³ One such example of an informal remittance system is Pakistan's "hawala" system. There, the "hundiwallah," or person who handles the hawala operation, is located outside of Pakistan and receives the money transfer.⁴⁴ Instead of wiring money from outside the country to a bank inside the country, the hundiwallah calls their agent in Pakistan and asks them to make an equivalent transfer.⁴⁵ The hundiwallah and the agent both make a small profit by charging a fee from the migrant making the transfer and a higher rate of exchange from the recipient;⁴⁶ however, the fee is lower than those charged by official remittance channels, such as MTOs and banks.⁴⁷ The transaction is inherently trust-based;⁴⁸ as a result of the transmission of the remittance, the hundiwallah in the sending country owes its agent in the home country money. A settlement of the incurred liability created by the initial transaction can be done through importation of goods or "reverse hawala," even potentially involving multiple hundiwallah and other hawala transactions.⁴⁹

The main issue with such an informal system is that it does not benefit the overall economy as much as traditional remittances. There is no additional money injected into the home country's economy, because the hawala transfer simply moved money between two different accounts in two different countries. Thus, the multiplier effect is not felt by the local economy. While family members are increasing their spending, there is no increase in total demand, reducing the effect on employment.⁵⁰ Furthermore, because these transfers are often made illegally, outside the scope of banks and regulators, there is greater potential for fraud.

High costs involved in money transfers along many remittance corridors reduce the benefits of migration, particularly for poor workers without adequate access to banking in origin countries.⁵¹ High costs are due to continuing reliance on more traditional methods of remitting money, such as MTOs and bank transfers. While digital remittances or mobile transfer may lower the costs of transmission, many migrants may seek even lower prices and turn to illegal, black-market remittances to save more money. This leads to an important question: can cryptocurrencies solve these problems?

43. *Id.* at 4.

44. Rashid Amjad, *Remittances and Poverty in Pakistan: A Note*, in DEVELOPMENT, EQUITY AND POVERTY: ESSAYS IN HONOUR OF AZIZUR REHMAN KHAN 171, 175 (2010).

45. *Id.*

46. *Id.*

47. *Id.*

48. See Roger Ballard, *Hawala*, 42 INT'L INST. ASIAN STUDIES NEWSLETTER, U. LEIDEN 8–9 (2005), <https://perma.cc/FV6F-86AM>.

49. See Mohammed El-Qorchi, Int'l Monetary Fund, *Hawala*, 39 FIN. & DEV. (2002), <https://perma.cc/3J9Q-U8QX>.

50. *Id.* at 175–76.

51. World Bank, *Migration and Remittances: Recent Developments and Outlook*, 31 MIGRATION AND DEV. BRIEF 5 (2019).

III. SOMETHING THAT (ISN'T) GREEN: CAN CRYPTOCURRENCIES TRANSFORM REMITTANCES?

A. *Digital Remittances, Mobile Money, and Crypto: What's the Difference?*

Cryptocurrencies, when used to send remittances, can be seen both as a continuation of and departure from our current digital remittance market practices. Digital remittances are typically defined as a function of e-commerce in that they happen over the internet using a computer, phone, or app.⁵² Digital remittances are cheaper than more traditional MTO or bank transfers as they take advantage of new money movement networks, which lowers corresponding costs and increases the transmission speed of remittances.⁵³ Digital remittances not only include digital MTO transfers and digital bank-to-bank transfers, but also include “neo-banks” and “fintechs.”⁵⁴

Mobile money, also known as “mobile financial services,” can be considered a form of digital remittances. As such, it is a variation of the same process of mobile money most commonly used within international borders as a way of facilitating payments and commerce.⁵⁵ Mobile money allows people who do not have access to banks to use their mobile phones as a bank account—they can deposit, withdraw, and transfer money, and pay bills and merchants for goods.⁵⁶

Currently, mobile money is the cheapest way of making remittances.⁵⁷ This may be one reason for its widespread adoption in Sub-Saharan Africa. Kenya's mobile money transfer service M-Pesa is perhaps the best known version. Started in 2007, M-Pesa has thirty million active users in Kenya alone as of 2022.⁵⁸ M-Pesa requires no fee to register, works on all phone brands, and users do not need bank accounts in order to transfer money or make payments.⁵⁹ While internet access in Kenya remains an issue,⁶⁰ mobile phone use is high; as of June 2022, Kenya's Communications Authority reported that the country had a mobile (SIM) penetration level of

52. VISA ECONOMIC EMPOWERMENT INSTITUTE, *supra* note 34, at 23.

53. *Id.* at 24.

54. *Moving money: capturing the digital remittances opportunity*, VISA NAVIGATE (Sept. 2021), <https://perma.cc/9Q3K-48TW>.

55. See Kazuko Shirono Bidishia Das, YingjieFan, Esha Chhabra & Hector Carcel-Villanova, *Is Mobile Money Part of Money? Understanding the Trends and Measurement* 13-14 Box 1 (Int'l Monetary Fund, Working Paper No. WP/21/177, 2021) (showing that, in Kenya, the world's largest mobile money market, less than 0.02 percent of transactions surveyed were international remittance-based).

56. María Paula Subia & Nicole Martinez, *Mobile Money Services: “A Bank in Your Pocket” – Overview and Opportunities* 5 (ACP Observatory on Migration Working Paper No. BN13, 2014).

57. VISA ECONOMIC EMPOWERMENT INSTITUTE, *supra* note 34, at 21.

58. Otiato Guguyu, *Safaricom's M-Pesa crosses 30 million active users in Kenya*, EAST AFRICAN (Mar. 10, 2022), <https://perma.cc/H7B8-N2XE>.

59. Subia & Martinez, *supra* note 56, at 9 (noting that, to use M-Pesa, all one needs to do is install the M-Pesa application on a SIM card).

60. Simon Kemp, *Digital 2022: Kenya*, DATAREPORTAL (Feb. 15, 2022), <https://perma.cc/XKL2-Y5XM> (detailing that fifty-eight percent of Kenyans do not use the internet).

130.9 per cent.⁶¹ As of March 2022, there were 64,961,031 registered SIM cards throughout the country,⁶² with a population just shy of fifty-five million people.⁶³ This means that there are significantly more SIM cards than people in Kenya. Mobile money's popularity in Kenya indicates the potential for mobile financial services in developing nations, but also highlights the investment such nations must make in technological and other infrastructure to enable widespread access.⁶⁴

Proponents argue that crypto, like digital remittances, has the potential to facilitate cross-border payments, reducing costs of transmission by potentially eliminating fees charged by traditional intermediaries, MTOs, and banks.⁶⁵ Proponents also argue that crypto can play a similar role to mobile money, connecting some of the most vulnerable people with sources of financing, especially when traditional sources of funding are scarce due to political, economic, or infrastructural problems.⁶⁶ However, the effectiveness of cryptocurrency as a means of remitting depends heavily on how the cryptocurrency itself is structured and governed.

B. *Crypto: How would it work?*

In general, there are two main types of cryptocurrencies that could be used in remittance transactions. First, non-governmental distributed ledger coins such as Bitcoin are appealing as they offer the flexibility of cross-border transactions, especially where governments may try and prevent transmission.⁶⁷ Alternatively, Central Bank Digital Currencies ("CBDCs") may be attractive, as they come with the full faith and credit of the issuing government, as well as the potential for more price stability due to monetary policy control. However, both types have fundamental flaws, limiting their usefulness as a means of remitting.

61. COMMC'N AUTH. OF KENYA, FOURTH QUARTER SECTOR STATISTICS REPORT FOR THE FINANCIAL YEAR 2021/2022 1 (2022).

62. *Id.*

63. *Population, total – Kenya*, WORLD BANK (2019), <https://perma.cc/8HA9-9847>.

64. Subia & Martinez, *supra* note 56, at 16 (detailing that Kenya's successful use of mobile money is heavily due to Kenya's widespread telecom infrastructure).

65. See Terence Zimwara, *Why Migrants Are Turning to Crypto: The Key to Attaining the UN Goal to Reduce Remittance Costs to Less Than 3% by 2030*, BITCOIN.COM (July 14, 2022), <https://perma.cc/2ES7-JCPP> (noting that besides being a faster and possibly more secure way of sending funds, "cryptocurrencies are noticeably much cheaper when compared to the so-called formal channels").

66. See Joshua Jahani, *Crypto Remittances are a Lifeline for the World's Most Vulnerable*, TECHCRUNCH (Oct. 29, 2021, 9:23 AM), <https://perma.cc/JPW2-5EAE> (detailing that crypto has "already revolutionized remittances in unstable, conflict-ridden places," like Afghanistan, Lebanon and Venezuela, places experiencing political and economic turmoil impacting traditional banking infrastructure).

67. This Note does not address the other large and growing type of DLT coin, stablecoins, as little study has been done on its use for remittances. Thus, stablecoins are outside the scope of this Note. I observe in the conclusion, however, that this may be an area worthy of future research.

1. *Non-Governmental Distributed-Ledger Cryptocurrencies*

Non-governmental distributed-ledger cryptocurrencies include Bitcoin, Ethereum, Dogecoin, and others. Distributed ledger technology (“DLT”) is a means of recording data across multiple ledgers, each maintained and controlled by a distributed network of computer servers called nodes.⁶⁸ Blockchain is a form of DLT which organizes data into blocks that are chained together in an append-only mode.⁶⁹ Although there had been previous attempts at creating online currencies,⁷⁰ Bitcoin was the first cryptocurrency to be fully realized, starting with the dissemination of an ambiguous academic paper distributed to a mailing list discussion on cryptography during the depths of the financial crisis in 2008.⁷¹ Bitcoin’s purpose was to deviate from the pervasive pattern of commerce on the internet, dominated by financial institutions serving as trusted intermediaries, to a process of electronic transactions between strangers.⁷² Having an electronic payment system based on cryptographic proof instead of trust would allow two willing parties to transact with each other directly, removing the need to pay a bank to serve as a trusted third party.⁷³

Cryptocurrency proponents believe that Bitcoin and other distributed ledger coins are promising as vehicles for international and other remittances. The conventional wisdom is that because Bitcoin functions as a peer-to-peer means of transferring money without a financial institution facilitating the transaction, the cost of sending remittances would be significantly lower,⁷⁴ by some estimates as low as one percent of the transaction amount.⁷⁵ Furthermore, transaction times would be greatly reduced: as long as both the sender and receiver had smartphones with internet access, transfer of Bitcoin would be near-instantaneous.⁷⁶ People who live without ready access to banking or financial services could benefit as Bitcoin transfers need no

68. *Blockchain & Distributed Ledger Technology (DLT)*, WORLD BANK (Apr. 12, 2018), <https://perma.cc/PV3E-U4Y6>.

69. *Id.*

70. Bernard Marr, *A Short History of Bitcoin and Crypto Currency Everyone Should Read*, FORBES (Dec. 6, 2017, 12:28 AM), <https://perma.cc/9BLX-4QW7> (noting two examples, B-Money and Bit Gold, of online currencies that were formulated but never fully developed).

71. *Id.*; see Satoshi Nakamoto, *Bitcoin: A Peer-to-Peer Electronic Cash System* (2008), <https://perma.cc/2DH6-ESKQ>.

72. Nakamoto, *supra* note 71, at 1.

73. *Id.*

74. Friederike Rühmann, Sai Aashirvad Konda, Paul Horrocks & Nina Taka, *Can Blockchain Technology Reduce the Cost of Remittances* 16 (OECD Development Co-operation Working Papers 2020).

75. Jared Cotton, *Sending a Bit More Coin Home? An Analysis of Retail User Protection in Bitcoin Remittance Markets*, 49 VICT. U. WELLINGTON L. REV. 107, 115–16 (2018) (N.Z.) (providing an estimation from Goldman Sachs).

76. See Maksym Iavorskyi, *A lightning disruption of remittance costs: a silver lining for entrepreneurship during a crisis?*, WORLD BANK BLOGS (Oct. 26, 2021), <https://perma.cc/2BP8-YRZU> (detailing that if remitters and receivers use Bitcoin’s Lightning Network, a second layer blockchain protocol for instant payments on top of Bitcoin protocol, remittances can be sent instantaneously).

physical location to access the remittance funds.⁷⁷ Security could be greatly increased at least in theory, meaning only the party to whom the money was sent could access the remittance.⁷⁸ Senders could also place limits on exactly how remittances may be used: blockchain based smart contracts could, for example, help senders ensure that money was used for education of girls as all transactions would be recorded on the distributed ledger and could be monitored by the sender to ensure compliance.⁷⁹

2. Central Bank Digital Currency

Central Bank Digital Currencies (“CBDCs”) are the other main possibility of cryptocurrency use in remittance transactions. CBDCs are digital versions of fiat currency issued and regulated by national central banks.⁸⁰ As such, proponents argue that they are more secure and less volatile.⁸¹ Because they are backed by the full faith and credit of the issuing governments, they also can be used as a tool for monetary policy by central banks.⁸² Proponents argue that, like non-governmental DLT cryptocurrencies, CBDC-based solutions could lower costs and significantly reduce the number of intermediaries involved in cross-border payments.

There are two main choices by central banks when adopting a CBDC system, each impacting how and why the CBDC would be used. First, the central bank must choose whether to have a retail or wholesale CBDC. Retail CBDCs target consumers with the end goal of being a medium of exchange for purchases or person-to-person payments, while wholesale CBDCs target financial institutions and large corporate treasury centers as their primary users, aiming to improve the efficiency of settlements.⁸³ Second, the central bank must determine whether to use an account-based CBDCs versus token-based CBDCs. The account-based model ensures that transactions are approved by both the sender and receiver based on verification of the users’ identities.⁸⁴ This means that no user would be anonymous to the central bank, meaning that all transactions of each individual would be known by the

77. MARTINA METZGER, TIM RIEDLER & JENNIFER PÉDUSSEL WU, INST. FOR INT’L POL. ECON. BERLIN, WORKING PAPER NO. 127, *MIGRANT REMITTANCES: ALTERNATIVE MONEY TRANSFER CHANNELS*, 18–19 (2019) (detailing how Bitcoin may thus provide undocumented immigrants access to the financial system).

78. *See id.* at 18 (detailing that when remittances result in cash being tendered to the receiver, this allows potential exploitation by third parties by collection by other people or robbery).

79. *See id.* at 19.

80. Andrew Stanley, *The Ascent of CBDCs*, IMF: FIN. & DEV. (Sept. 2022).

81. *Id.* This is because the full faith and credit of the issuing government stands behind the CBDC.

82. *See* MATTHEW MALLOY, FRANCIS MARTINEZ, MARY-FRANCES STYCZYNSKI & ALEX THORP, *RETAIL CBDC AND U.S. MONETARY POLICY IMPLEMENTATION: A STYLIZED BALANCE SHEET ANALYSIS*, 2–12 (2022).

83. Oliver Denecker, Arnaud d’Estienne, Pierre-Matthieu & Elia Sasia, *Central bank digital currencies: An active role for commercial banks*, MCKINSEY & CO. (Oct. 13, 2022), <https://perma.cc/7KE7-HA2T>.

84. *See* LAURENT COLLET, PATRICK LAURENT, PASCAL EBER, PASCAL MARTINO, FRANCESCA MESSINI, ALEXANDRE HAVARD, BENOIT SAUVAGE & GIULIA PESCATORE, *ARE CENTRAL BANK DIGITAL CURRENCIES (CBDCS) THE MONEY OF TOMORROW?*, 1, 6 (2020).

government. Compare this with token-based CBDCs, which require senders and receivers to approve transactions based on public-private key pairs and digital signatures; this does not require access to a user's identity.⁸⁵ Token-based CBDCs provide more user privacy, but also hamper anti-money laundering efforts by governments; furthermore, if users lose or forget their private keys, they permanently lose access to their funds.⁸⁶

Currently, there are just four live retail CBDCs: the Sand Dollar in The Bahamas, JAM-DEX in Jamaica, DC Cash in the Eastern Caribbean, and the e-Naira in Nigeria.⁸⁷ However, as of July 2022, over 100 CBDCs were in research or development stages,⁸⁸ indicating what the future may hold for CBDC adoption. There are serious reasons for considering CBDCs—in recent years, overall cash usage has significantly declined, threatening to marginalize central banks' role in the financial system as the sole source of public money in many economies.⁸⁹ Furthermore, financial inclusion is a key policy goal of many of the governments researching CBDCs,⁹⁰ thus, CBDCs may serve an important role in developing the domestic economy and increasing the standard of living of developing countries' citizens.

3. *Why Crypto Fails*

Crypto, in whatever form, suffers from flaws that currently prevents widespread adoption by migrants. First, high technological barriers make it difficult for remitters and remitees to transfer money. The overall success of peer-to-peer cryptocurrency transactions rely on the accessibility of digital infrastructure, such as mobile connectivity, email, or access to electricity.⁹¹ For example, SafariCom and mobile money's success in Kenya is primarily due to Kenya's widespread telecom infrastructure, enabling strong penetration rates of both cell phones and mobile money use.⁹² However, for many people in developing countries, the technological infrastructure needed for widespread cryptocurrency adoption is not present, making its use for remittances impracticable or impossible. In a quarter of the world's forty-six least developed countries, more than seventy-five percent of the population does not have access to electricity.⁹³ In 2020, just over seven percent of South

85. *Id.*

86. *Id.*

87. Central Bank Digital Currency Tracker, ATL. COUNCIL, <https://perma.cc/ED9V-VJYA> (last visited Feb. 21, 2023).

88. Stanley, *supra* note 80.

89. See Denecker et al., *supra* note 83.

90. See RAPHAEL AUER, HOLT BANKA, NANA YAA BOAKYE-ADJIE, AHMED FARAGALLAH, JON FROST, HARISH NATARAJAN & JERMY PRENIO, CENTRAL BANK DIGITAL CURRENCIES: A NEW TOOL IN THE FINANCIAL INCLUSION TOOLKIT? 4–5 (2022).

91. Rühmann et al., *supra* note 74, at 24.

92. Subia & Martinez, *supra* note 56, at 16.

93. See *Over half of the people in least developed countries lack access to electricity*, UNCTAD (July 1, 2021), <https://perma.cc/T27K-LQBM>.

Sudan's population had access to electricity, while slightly over fifteen percent had it in the Central African Republic.

Furthermore, access to the internet is a necessary precursor for adoption of cryptocurrencies. While global internet access has greatly improved over the last decade,⁹⁴ more than a third of the world's population has never used the internet, with ninety-six percent of non-users living in developing countries.⁹⁵ Only six-and-a-half percent of South Sudanese had access to the internet in 2020, while the Central African Republic reported slightly over ten percent. This poses a large problem for many developing nations which do not have the available funds, industrial capacity, or technological know-how needed to establish and grow such infrastructure.

Crypto remittees also face a "last-mile" delivery problem as remittances in general are primarily used to purchase goods and services and because cash "remains king" in many developing countries.⁹⁶ To use money sent by cryptocurrency, recipients would have to convert the cryptocurrency to local currency, eating the cost of conversion.⁹⁷ This undermines one of the key reasons to adopt cryptocurrencies for remittances, to lower cost and thereby keep more money in the hands of the recipients. Even if there were widespread adoption of cryptocurrency, many developing nations lack the necessary infrastructure to allow users to cash out cryptocurrency for domestic currency.⁹⁸ Furthermore, the proliferation of cryptocurrencies in recent years risks moving costs from "cross-border" to "cross-chain," reducing the potential benefits of crypto adoption.⁹⁹ All this, combined with crypto's recent instability and rise of speculative cryptocurrency investing,¹⁰⁰ makes national investment in cryptocurrencies a risk-filled proposition.

Third, there likely is an adoption problem for remitters. Personal use of cryptocurrency in the United States is generally correlated with specific socio-economic and demographic factors, which can pose a problem for crypto's use in remittances. Although access to Bitcoin has improved in recent years, adoption of Bitcoin in the United States is still largely dependent on key demographic categories, such as one's gender, education level, and wealth. For example, some estimate that seventy percent of cryptocurrency owners are male while males make up only forty-eight percent of the U.S. population.¹⁰¹

94. See Simon Kemp, *More than 5 billion people now use the internet*, WE ARE SOCIAL (Apr. 27, 2022), <https://perma.cc/F2JY-FFCX> (estimating that the percentage of global internet users went from 2.17 billion to slightly over five billion from 2012 to 2020).

95. AFP, *More than a third of world's population have never used the internet*, says UN, GUARDIAN (Nov. 30, 2021), <https://perma.cc/BJB4-96XK>.

96. See Rühmann et al., *supra* note 74, at 23.

97. *Id.*

98. *Id.*

99. Ludovico Rella, *Blockchain Technologies and Remittances: From Financial Inclusion to Correspondent Banking*, 2 FRONTIERS IN BLOCKCHAIN 1, 10 (2019).

100. See Dietmar Peetz & Gregory Mall, *Why Bitcoin is not a currency but a speculative real asset* 6 (2018), <https://perma.cc/AB7G-WVLG>.

101. CHARLOTTE PRINCIPATO, MORNING CONSULT, *THE STATE OF CONSUMER BANKING & PAYMENTS* 27 (2022), <https://perma.cc/BZT7-M6Z3>.

High income individuals also are overrepresented in cryptocurrency owners, with one-quarter earning more than \$100,000 annually.¹⁰² Millennials constitute the vast majority of cryptocurrency users while only representing about one-third of U.S. adults.¹⁰³ The people sending remittances from developed countries tend to be migrants, who are statistically less likely to be white or high earners.¹⁰⁴

Socioeconomic factors may also point toward there being high knowledge barriers to adoption, preventing widespread adoption of cryptocurrencies as a means for remittances. In developing countries where a substantial portion of the population lacks access to the internet or electricity, there likely are issues regarding digital literacy. Having prior digital financial experience, such as having a debit card and using a mobile app to pay for products and services, increases the likelihood of cryptocurrency recognition.¹⁰⁵ Without prior experience with online banking or commerce, residents of developing countries may not have the required pre-existing knowledge to allow them to effectively use cryptocurrencies in their day-to-day spending, let alone convert cryptocurrencies to local fiat currencies.

Furthermore, users may not fully understand the risk of entering into cryptocurrency transactions.¹⁰⁶ Because Bitcoin operates outside the formal financial sector, it lacks the robustness expected of currency exchange. Furthermore, because Bitcoin has no central authority, mistaken or fraudulent transfers cannot easily be stopped or undone.¹⁰⁷ If a user forgets or loses their private key, there is no possible recourse to retrieve their Bitcoin; they are lost and irretrievable.¹⁰⁸ There is even risk in where you store your Bitcoin. Many Bitcoin wallet providers and exchanges have folded, suspending services and being liquidated due to hacks or other improprieties.¹⁰⁹ Theft of Bitcoin and other cryptocurrencies is rampant; some estimate that hackers had stolen over \$3 billion between January and October 2022 in just 125 attacks.¹¹⁰

102. *Id.* (detailing that only 15 percent of the general population earns more than \$100,000 annually).

103. *Id.*

104. See generally Cecilia Esterline & Jeanne Batalova, *Frequently Requested Statistics on Immigrants and Immigration in the United States*, MIGRATION POL'Y INST., <https://perma.cc/SE7V-A2WT>.

105. Raphael Auer & David Tercero-Lucas, *Distrust or Speculation? The socioeconomic drivers of US cryptocurrency investments* 29 (Bank of Int'l Settlement, Working Paper No. 951, 2021).

106. Jared Cotton, *supra* note 75, at 116.

107. *Id.* at 117.

108. *Id.*; see also Nathaniel Popper, *Lost Passwords Lock Millionaires Out of Their Bitcoin Fortunes*, N.Y. TIMES (Jan. 12, 2021), <https://perma.cc/M4B6-S9PU> (detailing that around twenty percent of all existing Bitcoin may be lost or otherwise stranded in wallets).

109. Cotton, *supra* note 75, at 117.

110. Khristopher K. Brooks, Money Watch, *Hackers have stolen record \$3 billion in cryptocurrency this year*, CBS NEWS (Oct. 13, 2022, 4:16 PM EST), <https://perma.cc/UFL6-3N9Q>; see also Matt Binder, *The biggest crypto scams of 2022 (so far)*, MASHABLE (Oct. 3, 2022), <https://perma.cc/NA73-D64H> (detailing how Celcius, a large crypto lender, functioned much like a Ponzi scheme, paying off early investors with funds from later investors).

However, most importantly, the failure of cryptocurrencies to provide a reliable and stable means of payment make cryptocurrencies a poor vehicle for the sending of remittances.¹¹¹ A central requirement for currency price stability is trust; trust “is the raw material from which all types of money are minted.”¹¹² People trust government-issued fiat currencies because the full faith and credit of the issuing government is standing behind the currency. Bitcoin, however, has nothing standing behind it, which is why some U.S. officials have called the cryptocurrency an “asset for speculation.”¹¹³ Bitcoin especially has been prone to “flash crashes” where Bitcoin’s market value has fallen in a short amount of time.¹¹⁴ Furthermore, Bitcoin has had many high-profile incidents of fraud,¹¹⁵ corruption,¹¹⁶ and scandals,¹¹⁷ pushing many would-be investors away from crypto. This makes many cryptocurrencies an unreliable means for payment, reducing crypto’s utility in remittances.¹¹⁸

CBDCs do seem to be a safer and more realistic option for remittance transactions, as government-backed cryptocurrencies likely would not suffer from wide variances in prices and would likely be more secure. However, for CBDCs to become effective means of sending remittances worldwide, central banks around the world would have to be intimately involved in the process of setting up and operating the interlinking or common infrastructure. A

111. Rühmann et al., *supra* note 74, at 18.

112. YUVAL NOAH HARARI, MONEY 11 (2018).

113. See Ben Winck, *Bitcoin won't replace the dollar because it's too volatile, Fed's Powell says*, MARKETS INSIDER (Mar. 22, 2021), <https://perma.cc/7M5X-YEL7>.

114. Cotton, *supra* note 75, at 116–17.

115. See Matthew Goldstein, *S.E.C. Charges Sam Bankman-Fried With Defrauding FTX Investors*, N.Y. TIMES (Dec. 13, 2022), <https://perma.cc/YE6C-CVAX> (detailing that Mr. Bankman-Fried was alleged to have “orchestrat[ed] a massive, yearslong fraud, diverting billions of dollars of [FTX’s] customer funds for his own personal benefit and to help grow his [personal] crypto empire”); see also Jonathan Stempel, *U.S. charges fraud in Mango crypto manipulation case*, REUTERS (Dec. 27, 2022, 2:56 PM PST), <https://perma.cc/LE2Y-FNFF> (detailing that the government alleges in its criminal complaint that Mango Markets cryptocurrency exchange user Avraham Eisenberg used two accounts to concurrently buy and sell futures based on the relative values of MNGO and the stablecoin USD Coin (USDC), making off with \$110 million in cryptocurrencies from other investors’ deposits).

116. See Allyson Versprille, *Crypto Use Is More Prevalent in Corrupt Countries, IMF Study Finds*, BLOOMBERG (Apr. 8, 2022, 9:58 AM PDT), <https://perma.cc/WZ2A-PGV2> (noting that cryptocurrencies are more popular in countries perceived as corrupt or without strict capital controls); see also Angus Berwick, Dan Levine & Tom Wilson, *Exclusive: U.S. Justice Dept is split over charging Binance as crypto world falters*, REUTERS (Dec. 12, 2022, 9:05 AM PST), <https://perma.cc/G4K3-WDN5> (detailing that the Department of Justice is currently weighing charging Binance, one of the largest cryptocurrency exchange platforms, with unlicensed money transmission, money laundering conspiracy and criminal sanctions violations).

117. See Robert McMillan, *The Inside Story of Mt. Gox, Bitcoin's \$460 Million Disaster*, WIRED (Mar. 3, 2014), <https://perma.cc/L5LH-DBNB> (noting Mt. Gox, the largest Bitcoin trading platform at the time, collapsed because of the disappearance of \$460 million stolen by hackers, with its bankruptcy revealing another \$27.4 million missing from its bank accounts); see also Press Release, Dep’t of Just., U. S. Att’y’s Off. S.D.N.Y., *Texas Man Sentenced For Operating Bitcoin Ponzi Scheme* (July 21, 2016), <https://perma.cc/H2PL-376J> (noting that, by offering to pay users up to seven percent interest weekly to their bitcoin to Bitcoin Savings and Trust (“BCTS&T”), Tendon T. Shavers operated an illegal Ponzi scheme, fraudulently obtaining approximately 146,000 Bitcoin in BCS&T investments worth approximately \$807,380).

118. See Eswar Prasad, *Five myths about cryptocurrency*, WASH. POST (May 20, 2021, 12:38 PM EST), <https://perma.cc/V7A6-GHQX>.

high “buy in” is required to establish a CBDC and many central banks might not be willing or able to expend the effort or capital to do so.¹¹⁹ Furthermore, many governments disagree about how best to respond to the challenges posed by blockchain and related crypto assets,¹²⁰ leading to potential fragmentation.

C. Case Study: El Salvador

At a Bitcoin conference in June 2021, President of El Salvador, Nayib Bukele, announced that he would attempt to adopt cryptocurrency as legal tender in the country.¹²¹ He claimed that, in the short-term, making cryptocurrency legal tender would generate jobs and provide “financial inclusion to thousands outside the formal economy.”¹²² A primary motivation for doing this was the fact that El Salvador relies heavily on external remittances; as of 2020, six billion dollars of remittances were sent to the country,¹²³ representing over twenty-four percent of the GDP.¹²⁴ Furthermore, Bukele argued that large amounts of money were being lost to intermediaries;¹²⁵ fees for remittances from the United States to El Salvador can cost 30–50% of the value of the transfer.¹²⁶ Bukele also claimed that Bitcoin would help provide financial inclusion for the seventy percent of Salvadorans who do not have bank accounts and work in the informal economy.¹²⁷ Prior to adoption, many were excited about the government’s plan. Many were optimistic about the potential for widespread adoption and transformative power of person-to-person payment systems.¹²⁸

In short order, El Salvador adopted Bitcoin as legal currency on September 7, 2021. The enacted legislation not only required Bitcoin to be accepted as a means of payment for taxes and debts, but also required all businesses to accept it as a medium of exchange for all transactions.¹²⁹ To encourage use of

119. WBG PAYMENT SYSTEMS DEV. GROUP, CENTRAL BANK DIGITAL CURRENCIES FOR CROSS-BORDER PAYMENTS: A REVIEW OF CURRENT EXPERIMENTS AND IDEAS, 27 (Biagio Bossone et al. 2021).

120. *How Blockchain-Based Technology Is Disrupting Migrants’ Remittances: A Preliminary Assessment*, JRC, JRC113484 27-28 (2018).

121. *El Salvador’s President Proposes Using Bitcoin as Legal Tender*, NPR (June 6, 2021), <https://perma.cc/ZDH4-MWL8>.

122. *Id.*

123. WBG, Personal remittances, received (% of GDP) – El Salvador, <https://perma.cc/TFJ5-SQL4> (last visited Feb. 21, 2023).

124. El Salvador: Remittances, percent of GDP, GLOB. ECON., <https://perma.cc/JF5L-UDD9> (last visited Feb. 21, 2023).

125. NPR, *supra* note 121.

126. HENRI ARSLANIAN, ROBERT DONOVAN, MATTHEW BLUMENFELD & ANTHONY ZAMORE, EL SALVADOR’S LAW: A MEANINGFUL TEST FOR BITCOIN, PRICEWATERHOUSECOOPERS BUSINESS SERVICES SRL (2021), <https://perma.cc/S26V-S3M5>.

127. NPR, *supra* note 121.

128. See Frances Coppola, *Why Bitcoin Could Be Good for El Salvador*, COINDESK (Jun. 23, 2021), <https://perma.cc/3PT3-5FVJ> (noting that El Salvador could potentially attract Bitcoin businesses, potentially increasing GDP).

129. Fernando E. Alvarez, David Argente & Diana Van Patten, *Are Cryptocurrencies Currencies? Bitcoin as Legal Tender in El Salvador* 1 (Becker Friedman Inst. Working Paper No. 2022-54, Apr. 2022).

Bitcoin, the government created a mobile wallet app, “Chivo Wallet,” for trading Bitcoins for dollars without transaction fees.¹³⁰ It came preloaded with \$30 USD as a bonus as an incentive for downloading and using the wallet.¹³¹ Aside from a few concerns regarding technical glitches,¹³² more than one thousand people protested in the capital city San Salvador against Bitcoin’s adoption.¹³³ Later that day, as the currency’s price began to wobble, the government purchased an additional 150 Bitcoins, worth approximately \$7 million.¹³⁴

El Salvador’s adoption of Bitcoin suffered from the same issues mentioned earlier. First, there remain high technological barriers to use Bitcoin in El Salvador. According to the World Bank, nearly half the population of El Salvador has either spotty or no access to the internet,¹³⁵ with internet penetration standing at just over fifty percent.¹³⁶ Mobile phone usage is much higher,¹³⁷ but the people who would benefit the most from Bitcoin adoption, the poor and unbanked, remain largely excluded. This severely undercuts Bitcoin’s ability to provide remittances to those who have historically been underbanked.

Second, there are high social barriers to adoption. Prior to the government’s adoption of Bitcoin as legal tender, El Salvador was and remains a cash-dependent society.¹³⁸ Most people used cash for their day-to-day expenditures, posing a social issue for the adoption of a cryptocurrency. Cash payment preferences are borne out by a nationally representative survey of 1,800 households after Bitcoin’s adoption.¹³⁹ While sixty-eight percent of respondents were aware of the existence of Chivo Wallet, just over half of respondents tried downloading it,¹⁴⁰ indicating a general disinterest toward cryptocurrency. Forty percent of all downloads happened within a month of adoption, and virtually none have taken place in 2022.¹⁴¹ Only twenty percent of all respondents report that they continued using Chivo Wallet after

130. John Hawkins, *One year on, El Salvador’s Bitcoin experiment has proven a spectacular failure*, CONVERSATION, (Sept. 11, 2022, 4:10 PM EDT), <https://perma.cc/2WJL-JGGQ> (noting that “chivo” is slang for “cool”).

131. *Id.* (noting that the median weekly income in El Salvador is about \$360 USD).

132. See Nelson Renteria & Anthony Esposito, *El Salvador’s world-first adoption of bitcoin endures bumpy first day*, REUTERS (Sept. 8, 2021, 5:11 AM EDT), <https://perma.cc/8BYT-S4U8> (noting that in the first few days post-legalization, the government-backed bitcoin app was not available on various internet platforms including Apple and Huawei).

133. See Wilfredo Pineda, *Salvador street protest breaks out against bitcoin adoption*, REUTERS (Sept. 7, 2021, 1:21 PM PDT), <https://perma.cc/C5K8-SQ9W>.

134. Renteria & Esposito, *supra* note 132.

135. *Id.*

136. See SIMON KEMP, DATAREPORTAL, DIGITAL 2021: EL SALVADOR (Feb. 11, 2021), <https://perma.cc/8VLB-K5E5>.

137. *Id.* (detailing that the number of mobile phone connections in El Salvador in January of 2021 was equal to 145.5 percent of its population, indicating that many people own more than one SIM card or mobile phone).

138. Alvarez et al., *supra* note 129, at 2 (detailing that, of 1800 households surveyed, over half responded that they only used cash to pay for their expenditures).

139. *See id.*

140. *See id.* at 2.

141. *See id.*

spending the \$30 bonus.¹⁴² These data suggest that many Salvadorans were either skeptical of Bitcoin or did not see Bitcoin as a useful replacement of fiat currency in their day-to-day lives.¹⁴³

While traditional remittances to El Salvador benefit from lack of foreign exchange margins as El Salvador uses the US Dollar as one of two fiat currencies,¹⁴⁴ costs of remitting Bitcoin are more expensive than once thought. On some of the most popular Bitcoin exchanges in the United States where migrants may buy Bitcoin, there are several fees that are tacked onto currency transactions. Exchanging \$200 for Bitcoin costs between \$2.99 to \$7.67 on Coinbase, depending on whether the transaction is funded using ACH, PayPal, or debit.¹⁴⁵ There is also a network fee, approximately \$3, for sending Bitcoin from Coinbase to a Chivo Wallet, paid to crypto miners who process transactions on a blockchain.¹⁴⁶ The exchange can even charge an additional spread for the transaction, addressing the gap between the bid and offer prices for Bitcoin on its exchange.¹⁴⁷ Furthermore, because only twenty percent of businesses report accepting Bitcoin as a means of payment,¹⁴⁸ Bitcoin-remittance recipients will likely have to convert Bitcoin to cash again to spend the remittance, potentially adding additional costs.

But perhaps most importantly, Bitcoin's price instability made it a poor vehicle for remittances. At the time of adoption, Bitcoin was valued at just over \$46,843;¹⁴⁹ as of November 16, 2022, Bitcoin was priced at just \$16,918.¹⁵⁰ El Salvador's total Bitcoin holdings have lost sixty percent of their purchased value in the wake of the FTX bankruptcy and ensuing scandal.¹⁵¹ And importantly, between these two extremes, the price of Bitcoin did not remain static. On January 2, and March 30, 2022, Bitcoin was priced around \$47,500; however, between these dates, there were eighteen peaks and troughs, with the price of Bitcoin falling to a low of \$35,071, representing a twenty-six percent decline in price. This is another factor for why so few people used Bitcoin to send money home to El Salvador; in 2022, well under two percent of all remittances to the country were made in the form of Bitcoin.¹⁵²

142. *See id.*

143. *See id.* (noting that the two main reasons why people who knew about the Chivo wallet did not download it were user preference to use cash and users not trusting the system or bitcoin itself).

144. *See* Juanita Darling, *Adoption of Dollar Irks Salvadorans*, L.A. TIMES (Jan. 6, 2001, 12:00 AM PST), <https://perma.cc/PQ24-JV3A>.

145. John Detrixhe, *Remittances to El Salvador are cheaper without using bitcoin*, QUARTZ (Sept. 14, 2021), <https://perma.cc/Q96H-979P>.

146. *Id.*

147. *Id.*

148. Alvarez et al., *supra* note 129, at 2.

149. *See* Timeline of price of Bitcoin, COINDESK, <https://perma.cc/F4R4-8YVE> (follow hyperlink; then select start date as Sept. 7, 2021).

150. *See id.*

151. Michael D. McDonald, *El Salvador's Bitcoin Holdings Lose 60% of Their Value in Crypto Selloff*, BLOOMBERG (Nov. 10, 2022), <https://perma.cc/XAH2-9UHF>.

152. *See* MacKenzie Sigalos & Arjun Kharpal, *El Salvador's bitcoin experiment: \$60 million lost, \$375 million spent, little to show for*, CNBC (Oct. 12, 2022, 7:00 AM EST), <https://perma.cc/KU23-9RAB> (detailing that just 1.6 percent of all remittances were sent via Bitcoin to Chivo wallets).

El Salvador's adoption of Bitcoin as legal tender has important consequences for its overall monetary policy and financial standing. The IMF was highly critical of El Salvador's adoption of Bitcoin, recommending the country not go forward with it.¹⁵³ They warned that because Bitcoin is prone to large swings in value, households and businesses that save in Bitcoin "could lose wealth through large swings in value, and in a digital environment, cybercrime and theft is always a risk."¹⁵⁴ There were concerns that because the government invested so heavily in Bitcoin, it might have difficulties paying some amortized debt coming due in January 2023.¹⁵⁵

In sum, El Salvador's adoption of Bitcoin serves as a clear warning to other countries looking to increase flows of remittances and reduce costs of transmission by adopting cryptocurrency. To be successful, countries need to first plan to invest time, resources, and energy into creating, purchasing, and financing the key elements upon which cryptocurrencies are made: widespread electrical, telecommunications, and internet infrastructure. Without these key ingredients, no true national cryptocurrency program can be successful. El Salvador ought to serve as a cautionary tale: governments of developing countries should seek innovation, but should first ensure that its domestic population has access to these basic and life-changing resources.

IV. HOW DO YOU SOLVE THE PROBLEM WITH REMITTANCES?

Instead of adopting cryptocurrencies to solve the problems with remittances, governments of remittance-dependent developing countries should focus on what would have the greatest impact on the lives of its citizens and its economy. Governments should facilitate the flow of remittances by reducing the cost of sending money and promote domestic access to savings, loans and health insurance products linked to remittances. Both actions would increase both the benefits for individual remittance receivers and the national domestic economy.

Reducing costs of remitting is a goal shared by many developing countries and development institutions. The UN's 2030 Sustainable Development Goals include a target of reducing remittance costs to less than 3% by 2030.¹⁵⁶ This goal makes intuitive sense—a one percent drop in cost of transferring \$200 is associated with as much as 1.6% increase in remittance flows.¹⁵⁷ Reducing the cost of remitting from 7% to 3% would double the volume of formal remittances, making international migration a more effective

153. See *El Salvador's Comeback Constrained by Increased Risks*, INT'L MONETARY FUND WESTERN HEMISPHERE DEP'T (Feb. 16, 2022), <https://perma.cc/FAK2-S33B>.

154. *Id.*

155. See Matt Youkee, *China circles El Salvador's economy as country edges toward crypto plunge*, GUARDIAN (Nov. 15, 2022, 5:30 AM EST), <https://perma.cc/9YYE-8J2G>.

156. G.A. Res. 70/1, at 21 (Sept. 25, 2015) (with the UN also aiming to eliminate remittance corridors with costs higher than 5 percent).

157. Junaid Ahmed, Mazhar Mughal & Inmaculada Matinez-Zarzoso, *Sending money home: Transaction cost and remittances to developing countries*, 44 WORLD ECON. 2434, 2449 (2021).

tool for fostering development because households would get a greater share of money sent by migrants abroad.¹⁵⁸ Furthermore, reducing remittance costs has been shown to help increase flows through formal remittance channels, especially banks. This directly aids the receiving country's foreign account balance and helps improve poorer people's access to banking, thus expanding the formal financial sector.¹⁵⁹ Importantly, this also applies to private MTOs—reduction in remittance costs increases the size of remittances across the board, helping MTOs' bottom line.¹⁶⁰

Bringing down the cost of remitting increases the funds available to migrants in their new home and family members in the country of origin.¹⁶¹ Remittances are credited with increasing positive health outcomes, especially for children.¹⁶² Remittances tend to decrease poverty, increase standards of living, and improve educational access for underserved communities. But they also have important consequences for the overall society. A reduction in the price of remittances, in the aggregate, leads to a decrease in interest rates, lower desires to migrate, and an increase in human capital.¹⁶³

But how can governments reduce costs? One method is by promoting competition among money transfer operators and banking institutions; a wider availability of remittance service providers tends to decrease the cost of remittances.¹⁶⁴ Many countries have exclusive partnerships with MTOs,¹⁶⁵ reducing competition and imposing a de facto tax on remittance senders and recipients.¹⁶⁶ Governments instead should try to ensure a level playing field for all players in formal financial markets, enabling competition to decrease prices charged by MTOs, banks, and other providers. Furthermore, governments should look to improve transparency and comparability of remittance service pricing.¹⁶⁷ To do this, governments should strengthen the collection of demand-side and supply-side data on the remittance market via national surveys while also establishing automated data collection processes to get data from remittance service providers.¹⁶⁸ Remittance senders would then be

158. *Id.*

159. *Id.* at 2434.

160. *Id.*

161. *Id.*

162. See Dilip Ratha, *The Impact of Remittances on Economic Growth and Poverty Reduction*, Migration Pol'y Inst. Policy Brief No. 8 (2013).

163. See Maroula Khraiche & James Boudreau, *Can lower remittance costs improve human capital accumulation in Africa*, 42 J. POL'Y MODELING 1000, 1014–15.

164. See LEON ISAACS & KIMBERLEY WATSON, AFRICAN UNION, REDUCING REMITTANCE COSTS: CONSOLIDATING TRENDS AND HARNESSING GAINS 15–16, AFRICAN INSTITUTE FOR REMITTANCES (AIR) (2021).

165. See Daniel Webber, *What Could Stop Remittance Giant Western Union Acquiring MoneyGram and Changing the Money Transfer Sector Forever*, FORBES (June 18, 2020), <https://perma.cc/W57U-KMQ5>.

166. See Mahmoud Mohieldin & Dilip Ratha, *How to keep remittances flowing*, BROOKINGS (June 11, 2020), <https://perma.cc/3KZL-CZM9>.

167. Ahmed, *supra* note 157, at 2449.

168. See REMITTANCES IN CRISIS: RESPONSE, RECOVERY, RESILIENCE, REMITTANCE COMMUNITY TASK FORCE SECRETARIAT, INT'L FUND FOR AGRICULTURE DEV. 21 (2022).

able to choose cheaper remittance options, increasing the proportion of remittance received by the recipient.

To benefit from the inflows of remittances, remittance-dependent governments should also encourage the expansion of their domestic banking networks, especially in rural areas, to connect unbanked people with financial services and provide them with low-cost remittance-related services. Increasing access to basic financial services, like credit, savings, or transaction accounts, help those experiencing poverty increase their incomes and become more resilient in the face of economic hardship.¹⁶⁹ This can be in the form of digital financial services (DFS), which can lower costs and increase availability of financial services.¹⁷⁰ Of course, these changes are dependent on increasing both electricity and internet availability in remote parts of developing countries. Furthermore, programs would need to be created to educate rural people on how to use financial services and the internet safely and securely. Raising awareness through financial education and training can also mitigate the use of informal channels for sending and receiving remittances. Governments can provide pre-departure training to migrants and financial education to remittance recipients and should take the necessary steps to prevent unofficial migration.¹⁷¹

V. CONCLUSION

Remittances play an important role in global development. They are a vehicle of transformational change, made possible only because of our interdependent and global world. Remittances are more than just funds for the people back home; they are lifelines, providing opportunity and hope to those historically excluded from traditional financial channels. They impact not just those that receive funds directly—spending by remittance recipients buoys the local economy, benefitting other citizens indirectly due to the multiplier effect. In this way, remittances should be considered tools of development.

However, remittances are still plagued by the scourge of high costs, eating away at funds that could help better recipients' lives and their local economies. Many have floated the idea of cryptocurrencies being used in remittance transactions, especially because of their potential to reduce costs, transaction times, and because of the internet's reach into underdeveloped and disconnected areas away from developing nations' urban centers.

169. See Ceyla Pazarbasioglu & Alfonso Garcia Mora, *Expanding digital financial services can help developing economies cope with crisis now and boost growth later*, WORLD BANK BLOGS (Apr. 29, 2020), <https://perma.cc/8AWD-F22V>.

170. Ceyla Pazarbasioglu, Alfonso Garcia Mora, Mahesh Uttamchandani, Harish Natarajan, Erik Feyen & Mathew Saal, WORLD BANK, DIGITAL FINANCIAL SERVICES 2 (2020), <https://perma.cc/P846-7KBR>.

171. Md. Azad Uddin, Masaru Ichihashi & Shubhasish Barua., *Financial Sector Development and the Preference for Informal Remittance Channels: Evidence from Bangladesh*, 58 J. DEV. STUDS., 1231, 1250–51 (2022).

However, at least in the near future, it is unlikely that cryptocurrencies will replace fiat currency in international remittances. While cryptocurrencies may reduce costs and improve remittance efficiency, they remain too speculative to be an effective medium of exchange. Furthermore, many developing countries lack the technological infrastructure to allow for easy crypto-based remittance, nor do its citizens have the technological or financial know-how to use crypto.

That is not to say that cryptocurrencies could never function as efficient methods of remitting. Rather, if governments of developing countries are serious about increasing financial cohesion via crypto-based remittances, they should make concrete improvements to rural regions' technological and financial infrastructure first, ensuring that all citizens have ready access to electricity, internet, and mobile phone service. Furthermore, countries should avoid non-governmental DLT-based coins, opting instead for the stronger protections afforded by CBDCs.

One area for potential research not addressed by this Note would be remittances via stablecoins, crypto assets backed either by fiat currency, non-cash equivalent assets, or other crypto assets.¹⁷² Stablecoins backed by cash would be redeemable by the issuer at face value, meaning there would likely be more regulation required by governmental entities, and would provide higher levels of transparency for users.¹⁷³ Stablecoins also may serve as an important stop-gap, endearing higher levels of trust from users because of their direct connection to fiat currency. However, there remain downsides, such as documented "coin runs" driven by doubts about their redeemability.¹⁷⁴

172. See Monetary and Capital Markets (MCM), IMF, *The Crypto Ecosystem and Financial Stability Challenges*, in GLOBAL FINANCIAL STABILITY REPORT: COVID-19, CRYPTO, AND CLIMATE: NAVIGATING CHALLENGING TRANSITIONS 47–48 (2021).

173. See *id.*

174. See *id.* "Coin runs" here are similar to "bank runs" experienced by banks prior to formalized deposit insurance in many countries. Because there is general doubt about the value or redeemability of the crypto coin for cash, holders rush to withdraw their money, causing massive liquidity issues for crypto wallets while also crashing the market price of the coin.