Bluechip

The Ramping Bottleneck

Cost & Quality Constraints in Stablecoin Adoption

By Vaidya Pallasena
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01 Executive Summary

"Stablecoins move money faster, and in many corridors, at meaningfully lower costs. The effectiveness constraint is the cost and quality of ramps."

All-in ramping costs

In the US, EU and UK, bank account-funded ramping on exchanges or direct ramps costs 0-0.3%. Card-based ramping costs 3-5% in developed markets and 7-10% in many emerging markets. In Latin America and Southeast Asia, costs on P2P markets are the lowest at around 0.5%, but highly variable elsewhere. Ramps in Africa typically cost 4-6% at the lower end, and go up to 15-20%.

High-volume corridors

Stablecoin transfers are often 50-90% lower than the average traditional cost and 20-70% lower than the cheapest listed provider. Settlement takes less than 30 minutes. Traditional methods range from same day to T+5 depending on rails.

High-cost corridors

Across several African and Southeast Asian routes, stablecoins are 58-94% cheaper than the World Bank's reported averages and often lower than the best listed money transfer operators. Savings are most consistent within Africa and from Africa and Asia.

Cross-border B2B corridors

Stablecoins are not always the cheapest in established corridors with tight FX spreads. They still slash settlement from days to minutes. In under-served routes, stablecoins often win on both cost and speed.

Market structure

Centralized exchanges remain the backbone for liquidity, but specialized liquidity providers also exist. Orchestrator-ramps widen access and compress costs. The licensing landscape is fragmented. Ramps use a mix of greenfield applications, acquisitions, and license-as-a-service to scale.

Outlook

Full-stack orchestration and the stablecoin tech stack changed the game. End-user prices should keep compressing. The next wave of breakout fintech companies will be built on stablecoins. What's missing? Simpler UX, institutional-grade privacy, banks as first-class ramps, and reusable ID verification.

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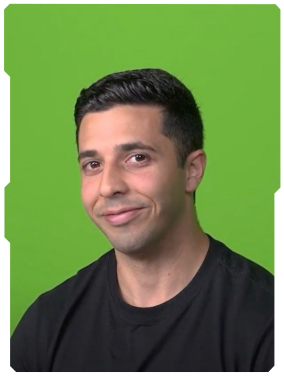

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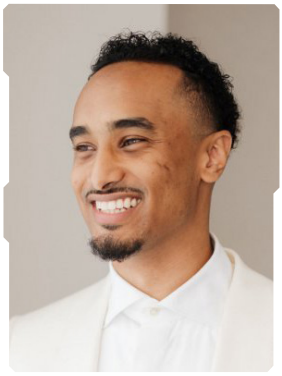

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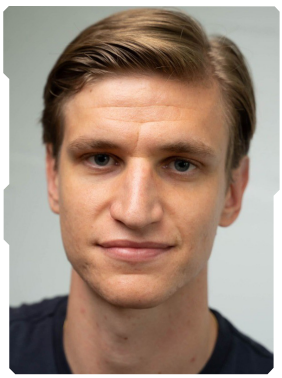

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03 Introduction to Stablecoin Ramps

Key Insights

- Institutions have embraced crypto assets, especially Bitcoin and stablecoins, with interest driven by Stripe's acquisition of Bridge, Circle's strong post-IPO performance, and U.S. enactments such as the GENIUS Act.

- Stablecoins offer lower costs, faster settlement and more programmability. They power remittances, B2B payments, treasury operations, and broader access to financial services.

- For most consumers new to crypto, stablecoins are the first port of entry and exit due to a one-to-one link to fiat currency limiting price volatility.

- Concerns about reserves, transparency and governance are fewer today as issuers publish attestations of reserves, follow clear governance rules, and operate under existing or new laws.

- Widespread adoption depends on better on-ramps and off-ramps that cut costs, streamline the user journey, improve success rates, and enhance fiat-stablecoin fungibility for deep liquidity.

- Worldwide view of ramps now spans exchange-only models, standalone ramps, OTC desks and peer-to-peer markets, with orchestration platforms such as Bridge and BVNK connecting stablecoins to existing rails.

3.1 Introduction to Stablecoin Ramps

In the past three years, institutions have embraced crypto assets, especially Bitcoin and stablecoins, bringing them into mainstream finance. Stripe's billion-dollar acquisition of Bridge, Circle's strong post-IPO performance, and recent U.S. legislative enactments such as the GENIUS Act have driven institutional interest in using stablecoins.

Stablecoins offer lower costs, faster settlement and more programmability compared to traditional payment systems. Businesses now look at stablecoins to speed up remittances and B2B payments, improve treasury operations, and expand access to financial services.

For most consumers and businesses new to crypto, stablecoins serve as the first port of entry and exit. A stablecoin's one-to-one link to fiat currency limits price volatility and makes it easier for mainstream users and risk-sensitive businesses. Concerns about stablecoin reserves, transparency and governance are fewer today than they were a few years ago. Most issuers publish regular attestations of reserves, follow clear governance rules and operate under existing or new laws in key markets.

However, widespread stablecoin adoption depends on better ramps. Reliable on-ramps and off-ramps let consumers and businesses move funds between fiat and stablecoins with minimal friction. That ease builds confidence and encourages more use. By cutting costs, streamlining the user journey and improving success rates, modern ramps can improve fiat-stablecoin fungibility and support the deep liquidity needed for large-scale retail and institutional use cases.

Despite their importance, ramp operations are opaque to most users. To address that, this report examines the value chain, and outlines common licensing approaches, followed by an exploration of some emerging ramp models and use cases.

3.2 Worldwide View of Ramps

Over the last decade, fiat-stablecoin ramps have expanded beyond exchange-only models to include standalone ramps, OTC desks and peer-to-peer markets. Centralized exchanges were the primary option for retail users, while large institutions used direct mint and redeem windows with issuers and OTC desks for larger flows. In recent years, orchestration platforms such as Bridge and BVNK have provided routing and settlement tooling that connects stablecoins to existing payment rails, enabling ramping for non-speculative use cases.

Across regions, centralized exchanges continue to handle a large share of fiat on- and off-ramp volumes through native ramps while partnering with local ramps or P2P providers where they lack licensing. In North America and Europe, market leaders like Coinbase and Kraken handle a large share of volumes. For retail users, card-based services like MoonPay offer simple flows. For institutional users, dedicated OTC desks and market makers handle larger tickets.

In Africa, South Africa and Nigeria are among the largest markets by infrastructure and liquidity. Exchanges such as Busha and VALR serve retail users, while OTC desks including Ovex and FiveWest support institutional on-ramping and off-ramping. Outside the main hubs, pan-African ramps like Yellow Card and Kotani Pay or peer-to-peer platforms such as Fonbnk serve a broader set of markets via mobile-money and other localized payment methods, alongside informal P2P markets that remain significant.

In Asia-Pacific, ramping infra is comparatively mature in several markets. Licensed exchanges in Singapore, Indonesia, Australia, Thailand, Philippines, and South Korea serve both retail and corporate users. Similarly, Gulf markets are served by licensed regional exchanges and OTC desks.

In Latin America, ramp adoption is growing amid FX volatility, inflation concerns and remittance demand. Exchanges such as Bitso, consumer apps like Dolar App and P2P platforms like El Dorado enable retail access via real-time local payment methods, while OTC firms like Rio and Solidus support fintech and PSP use cases. Despite varied models and improving access, users seek cost-efficient, reliable rails between fiat and stablecoins.

04 The Value Chain of Stablecoin Ramps

Key Insights

- Six ramp models serve distinct users: CEX order book (low cost, complex), CEX convert (simpler, pricier), issuer windows (cheapest, institutions), standalone ramps (premium user experience), OTC desks (tight spreads, large tickets), and P2P (variable, long tail).
- The stack spans issuers, liquidity firms, orchestration platforms, access points, compliance, and end users. Liquidity comes from market makers, liquidity providers, and OTC desks.
- Issuers mint and redeem directly with institutions. Models include single issuer, multi-issuer, and network-led. CEXs skew retail via order books, direct convert, or embedded third party ramps.
- Orchestration platforms collapse integrations into APIs, from pure routing to full-stack with licensing and liquidity.
- Cost drivers include payment rails, foreign exchange and liquidity spreads, compliance overhead, platform take rates, onchain gas fees, and friction like prefunding and settlement delay.
- Net economics range from basis points for institutional flows to 5%+ for retail card-funded ramps in emerging markets.
- Licensing is fragmented by region. Operators expand via M&A, regulatory tech partners, and bank relationships to access accounts, foreign exchange, and issuance.

4.1 Overview of Stablecoin Ramp Models

Stablecoin ramps can broadly be bucketed into five main venues, each one targeting particular user personas.

Model	Cost[1]	Complexity	Size	Speed[2]	Audience
CEX - Order Book	Low (0-0.3%)	High	Up to $5M	Minutes to hours	Retail + Institutions
CEX - Convert	Medium (0-1.5%)	Low to medium	Up to $10K	Instant to hours	Retail
Issuer Window	Lowest (0-0.1%)	Medium to high	Over $100K	Instant to T+3 days	Institutions
Standalone Ramps	High (1-4%)	Low	Up to $10K	Instant to T+3 days	Retail + B2B
OTC Desks	Low (0.02-0.2%)	Medium	$25K to over $10M	Hours to T+1 day	Institutions + HNWI
P2P Platforms	Low to high (0.1-0.5%)	Medium to high	Up to $10K	Instant to hours	Retail

[1] Based on USD <> USD-denominated stablecoins. Cross-currency FX spread not included.

[2] Speed is a function of user execution speed and funding method speed.

Centralized Exchanges (CEXs)

Centralized exchanges remain the dominant entry point into stablecoins. They offer deep liquidity and integration with fiat rails. They provide two main pathways:

- Order Book Trading: Users deposit funds via bank transfer or card, and then trade against order books (e.g., USD/USDC, EUR/USDT). This is generally the cheapest venue for retail users, but requires navigating exchange mechanics. It is also suitable for non-retail users without access to cheaper venues.

- Direct Fiat Conversion: Many exchanges also provide “instant buy” functions, where fiat deposits can be converted directly into stablecoins without interacting with order books. This is faster but usually includes a premium, especially in non-US/non-EU markets.

Issuer Window

Most stablecoin issuers allow zero-cost minting without limits and instant free redemptions up to specific thresholds, and unlimited free redemptions for non-instant (up to T+2) processing, while some leading issuers charge a flat 0.1% fee for all redemptions. Typical users are enterprises, payment firms, and financial institutions with sufficient scale.

Stablecoin Ramps

Purpose-built on-ramping and off-ramping platforms provide direct fiat-stablecoin gateways with simplified UX for individuals either through their own front-ends or through integrations with wallets, apps and dApps. For corporates, offerings usually include ramp-as-service for internal business use or whitelisting for serving their end customers.

These ramps support a wide range of payment methods such as cards, bank transfer, mobile payments and local payment methods (PIX, UPI, SEPA etc).

Historically, they have charged a significant premium over rates found on centralized exchanges (2x-10x more) due to the simple user experience they provide. They handle all compliance, FX and liquidity sourcing at the backend.

However, with stablecoin orchestration going mainstream and streamlining the entire ramping stack, challenger ramps like Sphere Labs are quickly gaining market share, providing smooth ramping experiences without the convenience premium.

OTC Desks

CUMBERLAND
A DRW COMPANY

Keyrock

FIVEWEST

Aimed at high-net worth individuals and institutions, over-the-counter (OTC) trading desks handle high-value flows with minimums of $25,000 to $50,000 and up to millions of dollars. These desks provide services that are high-touch and confidential, much like traditional private banking.

They provide a single-window for clients to access large blocks of liquidity at very low spreads, with multi-currency, multi-jurisdiction capabilities. OTC desks support a wide variety of mediums like APIs, webapps, chat and voice.

In developed markets, centralized exchanges operate an in-house OTC desk. In other, external OTC desks are contracted by centralized exchanges to provide competitive stablecoin-fiat liquidity in order books.

Peer-to-Peer (P2P) Platforms

BINANCE P2P

paxful

EL DORADO

P2P exchanges allow individuals to trade against one another. Such platforms facilitate discovery and add trust between strangers through inbuilt escrow mechanisms and dispute resolution processes.

These platforms play a critical role in emerging and underdeveloped markets where centralized exchanges often don't have native ramping capabilities or are too expensive.

4.2 Participants, Roles, And Process Flows

Unlike traditional financial systems which operate solely on fiat rails, a stablecoin ramp straddles blockchain and fiat rails. The inherent non-interoperability between these two rails requires specialized participants that link the two.

Participant	Layer	Institutional Flow	Retail Flow
Stablecoin Issuers	Issuance layer	Mint/redeem directly to orchestration platforms, market makers (MMs), liquidity providers (LPs), and OTC desks	Same as institutional flow. Issuers feed liquidity directly into intermediaries
Markets Makers, Liquidity Providers, OTC Desks	Liquidity layer	Provide wholesale liquidity to orchestration platforms, fintech firms	Provide liquidity to CEXs, ramps, and orchestration platforms that feed retail users
Orchestration Platforms	Orchestration layer	Route stablecoin-fiat liquidity to fintech, and B2B tech firms	Route liquidity to ramps and apps or dApps
CEXs, Ramps, Apps	Access layer	Fintech firms, B2B tech firms use for payroll, merchant payouts, cross-border B2B	Ramps and apps embed stablecoin on/off-ramps for consumers
KYC, AML Providers	Compliance layer	Required at onboarding stage for fintech firms, and end businesses	Required for retail users at ramps, CEXs, apps
End Users	User layer	Business payout/payin and cross-border payments	Buy, sell, and use in apps or dApps

Stablecoin Issuers

Stablecoin issuers, the foundational layer of the stack, mint and redeem stablecoins against fiat deposits and withdrawals. Models come in a variety of flavors including the vanilla single issuer model popularized by Tether and Circle, the multi-issuer, multi-jurisdiction model pioneered by M0, and the network-led multi-jurisdiction model of Paxos. Stablecoin issuers may interact with participants in the liquidity layer, orchestration layer and access layer, depending on the scale of participants and use cases.

Market Makers, Liquidity Providers, OTC Desks

Market makers and liquidity providers provide fiat-stablecoin liquidity by sitting in between ramps and stablecoin issuers. They may either be trading firms or turnkey infrastructure providers. These firms operate at a wholesale level and supply liquidity either on exchange order books or through APIs to orchestration platforms and ramps. Many of these firms also operate OTC desks serving end customers for high value orders.

Often, such firms also provide the regulatory licensing infrastructure in addition to liquidity services. Ramp services that do not have their own licenses may expand into new jurisdictions by piggybacking on the licenses of their partners.

Orchestration Platforms

Historically, the ramp stack was divided into distinct layers: Issuance, Liquidity, Access, Compliance and End-User. In recent years, the Orchestration layer has emerged as a critical addition to the stack. What once required multiple distinct integrations and partnership developments across the stack and across jurisdictions has now collapsed into developer friendly APIs that can be integrated into applications, cutting down the time to go-to-market.

Orchestration platforms act as the connective tissue between stablecoin issuers, liquidity providers, fiat payment rails, ramps and apps to facilitate seamless fiat-stablecoin conversion.

These platforms can take distinct approaches:

- Pure-play APIs: In this model, the platform only offers APIs for routing optimization of orders and liquidity. Examples: Borderless, Circle Payments Network, Fireblocks Network, Checker Finance.

- Full-stack Platforms: Under this model, platforms may deliver technology, licensing and liquidity under one roof. In some cases, they may also engage in stablecoin issuance. Examples: Bridge, Brale, BVNK, Rail.

Orchestration has enabled fintechs, payment companies and financial institutions to quickly deploy applications and products across a range of use cases such as cross border B2B payments, treasury, pay-ins, remittances, and payroll.

Centralized Exchanges (CEXs)

Centralized exchanges have evolved from being the go-to ramps for all use cases to retail and speculator-focused ramps. They enable fiat-stablecoin liquidity through the following ways:

- Orderbooks: Fiat-stablecoin pairs supported by market makers (MMs) and liquidity providers (LPs).
- Direct Fiat Convert: Enabled through ties with issuers, allowing one-click fiat-to-stablecoin swaps.
- Embedded third-party ramps: Used in regions where the centralized exchange lacks licensing and outsources fiat rails to ramps like LegendPay, Banxa, Transak and MoonPay.

Stablecoin Ramps

Stablecoin ramps serve as the interface between liquidity layers and end users (retail and institutions). In addition to operating their own front ends for retail access, ramps work with other institutions to embed their products into apps, dApps, wallets and orchestration platforms.

Ramps handle user onboarding, payment handling, compliance checks and liquidity routing in the background. Although ramps often claim to have global coverage, the reality is that practical usability is restricted to a handful of geographies and currencies.

Operating a truly global ramp requires multi-jurisdiction licensing that spans crypto, banking, payment and AML laws, a significant capital- and time-intensive pursuit. The ramps of today that support global flows can overcome these constraints by integrating with orchestrators, to tap into a global network of region-specific ramps.

KYC, AML Providers

As ramping flows touch both fiat and crypto, it becomes necessary to comply with financial regulations aimed at combating fraud, money laundering, terrorism financing and sanctions evasion. This can get especially complex when a transaction touches multiple jurisdictions, and has several intermediaries like custodians, wallet and other service providers in the flow. Moreover, the use of blockchains and self-custodial wallets adds a layer of anonymity which can obfuscate the true nature of transactions and parties involved.

To tackle this, ramps and exchanges rely on a mix of compliance tools that support identity verification, fraud detection, sanctions checks, and AML screening. These tools enable platforms to automate transaction reviews with jurisdiction-specific approval/rejection logic, and without delaying transaction processing.

Integrators

Integrators are B2B/B2C fintechs and other non-financial apps/infrastructure solutions that build services on top of ramps and orchestration platforms. They facilitate merchant pay-ins & pay-outs, payroll & contractor disbursements, cross border B2B settlements, remittance services and more. Examples:

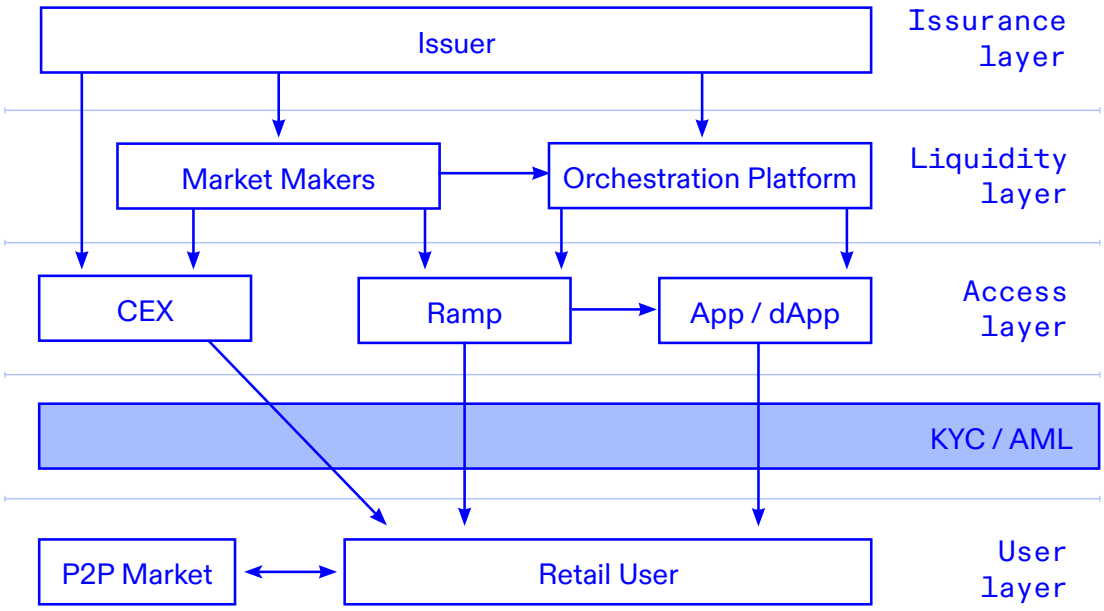
- Dakota: A business banking platform built on stablecoins, leveraging Bridge's Orchestration API to handle and move customer funds and the Issuance API to create its own stablecoin, DKUSD, for use on its internal platform.
- Deel: A global payroll platform, partnered with BVNK to enable stablecoin payouts to its contractors, lowering cross border friction.
- Félix: A remittance app focused on the US to Latin America corridor, using Circle Mint to instantly convert the sender's fiat into USDC. The USDC is then sent to Bitso, a Mexican exchange, where it is converted into local currency and then deposited in the recipient's bank account.
- Stables: A stablecoin neobank initially focused on the APAC market, integrating with Yellow Card to allow users to convert their stablecoin balances into fiat currency in Africa for spending.
- Aspora: A global neobank for the Indian diaspora, plugging into OpenFX to provide its users the best FX rates for remittances.

Together, all these participants play a pivotal role in establishing fungibility between fiat and stablecoins. Although these roles in the value chain are often distinct, it is not uncommon for players to pursue a full-stack approach.

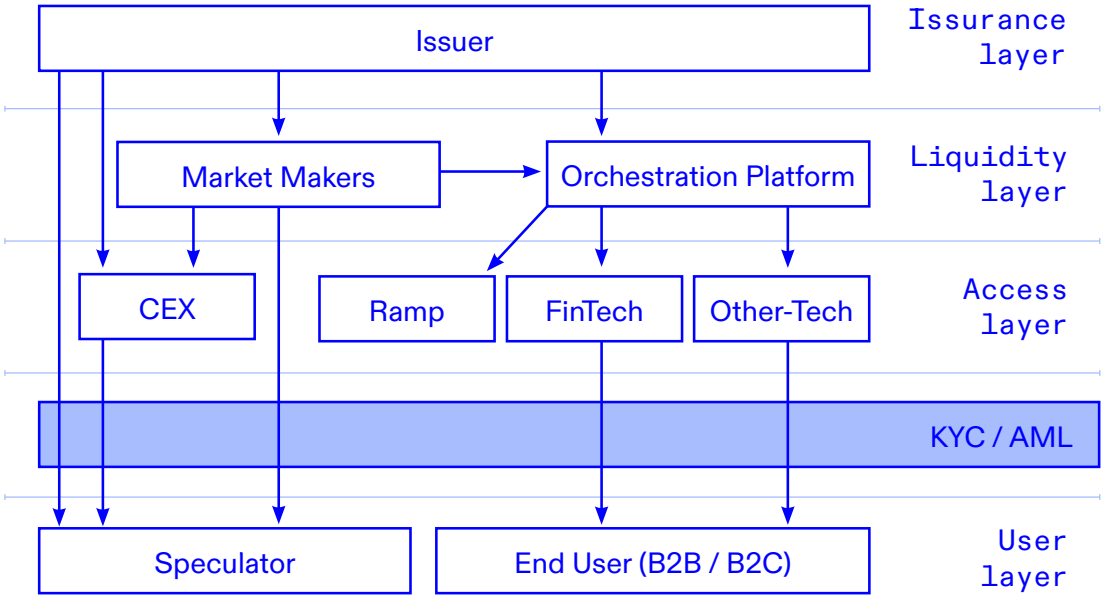
The payment processing giant, Stripe, identified the critical role of ramping infrastructure early on and executed on its vision through the acquisitions of Bridge and Privy, which allow it to issue stablecoins, orchestrate payments and provide crypto-native infrastructure for non-crypto businesses. In Latin America, the centralized exchange Bitso has also adopted this full-stack strategy.

It issues its own peso denominated stablecoin, controls liquidity through its exchange order book and OTC desk, and has local payment system integrations, all of which feed into its orchestration platforms for PSPs, money transmitters, fintechs and other tech businesses.

Illustrative Stablecoin Flow: Retail

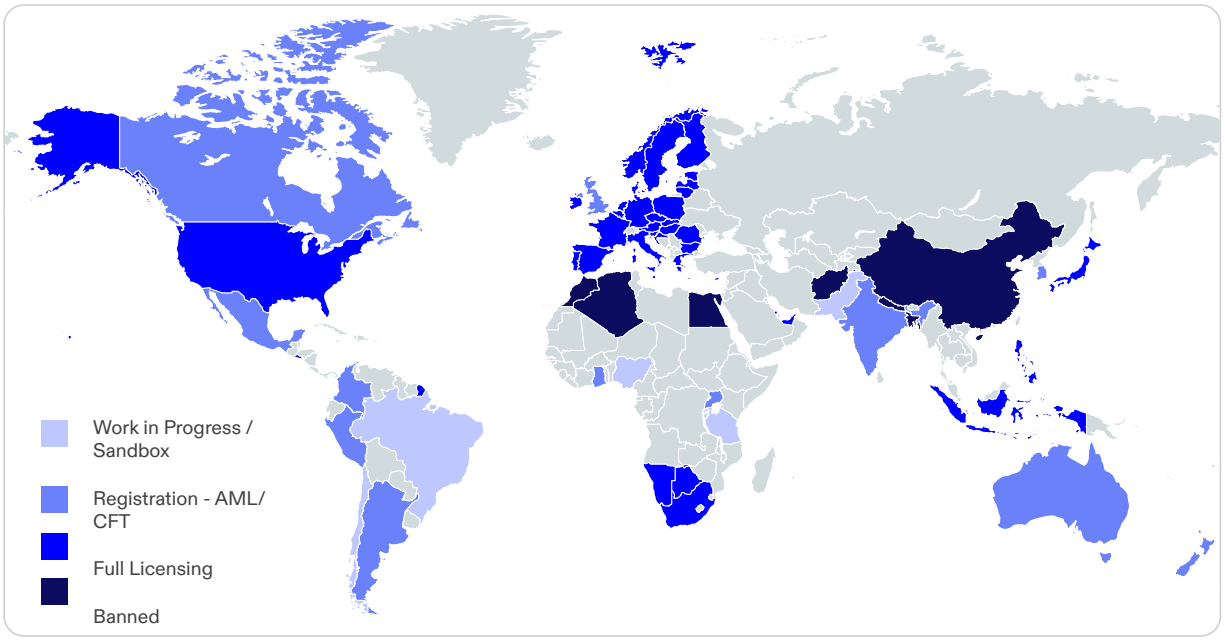


Illustrative Stablecoin Flow: Institutional



4.3 Licensing Landscape

Regulations that govern ramps vary across countries, with some jurisdictions requiring full prudential licenses, and others taking a lighter approach requiring registration and reporting under AML/CFT laws. In this section, we take a quick look at how select markets have chosen to regulate fiat-stablecoin conversion.



United States

All crypto activity requires registration as a Money Services Business (MSB) with FinCEN, including full Anti-Money Laundering (AML) and Counter-Terrorism Financing (CTF) programs. Ramps looking to operate in the US may either obtain their own licenses or partner with a license sponsor.

For fiat-to-crypto and crypto-to-fiat activity, most states require a Money Transmitter License (MTL). Some states have amended or

introduced laws to include crypto activities. For example, New York requires a BitLicense, and Louisiana has its own virtual currency license. As a result, firms must often hold 30+ state licenses, comply with overlapping AML rules, and undergo regular examinations.

Canada

Crypto exchanges and ramps are regulated as 'dealers in virtual currency' for both crypto-to-crypto and fiat-to-crypto activities. Businesses are mandated to register as Money Service Businesses (MSBs) under FINTRAC, complying with AML/CTF mandates. Businesses in Quebec also require a MSB license from Revenue Quebec.

European Union

Before MiCA, there was no unified licensing regime for crypto exchanges. Instead, the 5th Anti-Money Laundering Directive (AMLD5) required member states to register and supervise crypto-fiat exchange providers and custodial wallet providers for AML purposes. AMLD5's scope was primarily fiat-to-crypto exchange and custody. Crypto-to-crypto was generally not included in the EU AML mandate. Companies had to register in each state of operation. Some chose one "home" (Lithuania/Estonia) and served others cross-border without explicit authorization.

Before MiCA, payment licenses were generally not required for on/off-ramping transactions which did not involve a transfer of assets to a third party.

Markets in Crypto-Assets Regulation (MiCA) took effect in Dec 2024. Since then, operating an exchange or ramp requires authorization as a Crypto Asset Service Provider (CASP) in one EU country, with EU-wide passporting. Firms with existing national registrations can continue operating until July 2026 but must seek a MiCA license in the interim.

Additionally, stablecoins fall under the definition of E-Money Tokens under MiCA, as a result of which both MiCA and PSD2 (payment regulations) apply. The European Banking Authority issued a 'No Action' letter on June 1, 2025 providing guidance that stablecoin-fiat conversions were not to be considered as payment services for a transitional period up to March 2026, hence PSD2 authorization is not required even if handling fiat. But if such conversion also involves transfer of crypto (stablecoins) on behalf of consumers, PSD2 would apply. In such cases, a PSD2 authorization or a partnership with a PSP is required.

United Kingdom

Crypto exchanges and ramps must register with the FCA under AML rules. The registration covers crypto-fiat and crypto-crypto, crypto ATMs and P2P platforms facilitating exchanges. Although mandatory, the registration is merely an AML oversight mechanism, not prudential oversight.

Additionally, if a service involves offering e-money accounts for fiat or facilitating fiat payments, an Electronic Money Institution (EMI) or Payment Institution (PI) license (or an agent arrangement with a licensee) is needed. Many crypto on-ramps like Ramp Network partner with FCA-authorized EMIs (Modulr Finance) for handling fiat, while being FCA-registered for crypto.

The Financial Services and Markets Act 2023 introduced "Digital Settlement Assets" to cover stablecoins used for payments. This empowers regulators (FCA, Bank of England) to oversee stablecoin issuers and payment systems. However, detailed rules are yet to be rolled out.

The UK is considering a broader crypto authorization regime (similar to MiCA) in the near future, but currently, AML registration and existing financial services laws (for any fiat aspects) are the framework.

Brazil

Law 14.478/2022 designates the Central Bank of Brazil (BCB) as supervisor of Virtual Asset Service Providers (VASPs). The VASP designation covers crypto-crypto and fiat-crypto conversions.

Although the law has been enacted, the rules and regulations that govern the scope of services, and VASP's responsibilities are yet to be finalized.

Mexico

The 2018 Fintech Law classifies crypto as 'virtual assets'. Non-bank VASPs providing exchange/ramp services must register with Mexico's UIF (Financial Intelligence Unit) as a provider of 'Vulnerable Activities'.

However, there is no crypto-specific licensing currently applicable. For fiat handling and SPEI integration, businesses may also require an Electronic Payment Institution license.

Argentina

Argentina's VASP framework is officially a registration system, it functions as a hybrid model. It mandates strict AML/CFT compliance under the purview of the UIF while also enforcing a wide range of prudential and market conduct rules under the Comisión Nacional de Valores (CNV), making it substantially more rigorous than a simple registration for AML purposes. It was implemented through Law No 27.739 in March 2024. It established a national VASP registry under CNV oversight.

Additionally, a Payment Service Provider (PSP) License issued by the BCRA (Central Bank of Argentina) may also be needed for handling fiat payments. However, as of 2023, there is a ban on payment service providers from engaging in crypto. VASPs must operate as standalone businesses. But many of the leading crypto companies in the country have been able to avoid this ban by segregating the licensed activities across distinct operating entities.

Colombia

No crypto-specific license.
Exchanges and ramps must comply with AML/CFT obligations and report to the UIAF (AML regulator). A proposed draft bill includes the licensing of Virtual Asset Service Providers (VASPs), AML/KYC rules and stronger oversight.

El Salvador

Any company providing digital asset exchange, transfer, custody, or related services (including stablecoin issuance) must be licensed as a Digital Asset Service Provider (Proveedor de Servicios de Activos Digitales, PSAD). The primary regulator that issues the license is the National Digital Assets Commission (Comisión Nacional de Activos Digitales, CNAD). Companies dealing exclusively with Bitcoin may apply for the Bitcoin Service Provider license. This covers payment processors, custodial or non-custodial wallets, and exchanges.

Additionally, AML/CFT compliance is enforced by the Financial Intelligence Unit (Unidad de Investigación Financiera, UIF)

Chile

Chile passed the ‚FinTech Law' in 2022 that brings crypto platforms under regulations. Although the law has been enacted, implementation still appears to be ongoing.

VASPs are required to register with the Financial Market Commission (CMF) as a licensed Financial Service Provider (FSP). While no VASPs have formally been authorized yet, a few are said to have their applications pending. Additional AML oversight by the Financial Intelligence Unit (UAF) is also mandatory.

Peru

Peru has no crypto exchange license. However, companies must register with the FIU and comply with the broader AML framework applicable to traditional financial institutions.

Under Law no 29985 (2013) on Electronic Money and the BCRP's Interoperability Strategy (2022) implemented through various regulations, VASPs in Peru can tap into full interoperability within fiat systems, allowing them to connect fiat and crypto tails.

Nigeria

Digital assets are under the oversight of the Nigerian Securities and Exchange Commission (SEC). At present, only two crypto exchanges, Busha Digital and Quidax Technologies, have received an In-Principle Approval to commence operations under the SEC's Accelerated Regulatory Incubation Program (ARIP), which was launched in 2024. Further amendments to Nigeria's crypto laws are expected.

In December 2023, the Central Bank of Nigeria lifted its earlier ban that prevented banks from servicing VASPs. Through the circular, it provides guidance to banks and financial institutions engaging with VASPs.

South Africa

Crypto activities are governed by South Africa's Financial Service Conduct Authority (FSCA).

VASPs must obtain a Financial Service Provider (FSP) license and register with the Financial Intelligence Centre. Ramp service providers require a Category 1 FSP License. FSPs can handle fiat if they comply with FAIS and FICA (AML) responsibilities.

Botswana

The Non-Bank Financial Institutions Regulatory Authority (NBFIRA) governs virtual asset business under the Virtual Assets Act 2022. Ramp services must seek a VASP license from the NBFIRA for crypto-crypto and fiat-crypto activities. Further, registration with the Financial Intelligence Unit for AML/CFT compliance is also mandated.

Mauritius

Under the Virtual Asset and Initial Token Offering Services Act (VAITOS Act), ramp services providers must obtain either a Class M (Broker-Dealer) or Class S (Market Place) license.

This is granted by the Financial Services Commission of Mauritius, depending on the company's operational model. Stablecoin issuers must hold fiat reserves in segregated accounts with Mauritian banks. The reserves need to be attested quarterly by a registered auditor.

Singapore

Singapore's Payment Services Act (PSA) provides the framework for crypto exchange activities.

The Monetary Authority of Singapore (MAS) requires all providers of ramping services to obtain a Payment Institution license with a 'Digital Payment Token (DPT)' authorization. Companies facilitating money transfers using stablecoins may also require Domestic or Cross Border Money Transfer authorizations.

Australia

All businesses facilitating the conversion between crypto and fiat are required to obtain registration as a Digital Currency Exchange under the Australian Transaction Reports and Analysis Centre (AUSTRAC). This registration is primarily for AML/CFT compliance and reporting.

Proposed draft legislation includes a regulatory framework for stored value facilities like stablecoin issuers or wallets that hold customer funds.

India

No sectoral crypto license currently exists. However, from 2023, Virtual Digital Asset (VDA) service providers are required to register with the Financial Intelligence Unit as 'reporting entities' under the Prevention of Money Laundering Act (PMLA) for AML/CFT reporting. While detailed licensing or issuance rules for stablecoins are still under development, the central bank has previously advised a cautious stance.

Japan

Crypto activities are regulated under the Payment Services Act (PSA) and the Financial Instruments and Exchange Act (FIEA) by the Financial Services Agency of Japan (JFSA).

Crypto exchanges are regulated by the JFSA as Crypto Asset Exchange Service Providers (CAESP). Under the PSA, fiat-backed stablecoins are categorized as ‚Electronic Payment Instruments' (EPIs).

The 2023 amendment to the PSA introduced the EPI Exchange Service Provider (EPIESP) registration. As a result, companies providing stablecoin on-ramping and off-ramping services require an additional license.

Philippines

All virtual currency exchanges are required to register under the Bangko Sentral ng Pilipinas (BSP) as a Remittance & Transfer Company.

As registered entities they must comply with all AML/CFT requirements. This registration enables companies to engage in virtual currency exchange, money changing and FX dealing. A Philippine peso-backed stablecoin graduated from a regulatory sandbox, piloted by the central bank.

UAE

Crypto regulations in the UAE are fragmented, with multiple regulatory bodies exercising powers over different jurisdictions. In the Mainland UAE (excluding Dubai and Abu Dhabi's ADGM), the VASP regime is governed by the Securities and Commodities Authority (SCA), a federal body.

Within Dubai and its freezones, licensing falls under the Virtual Assets Regulatory Authority (VARA). In the Abu Dhabi Global Market (ADGM) freezone, the Financial Services Regulatory Authority (FSRA) licenses crypto businesses. Both VARA and ADGM are prudential regulators.

Bahrain

Crypto businesses in Bahrain are regulated by the Central Bank of Bahrain (CBB). The CBB has provided a clear legal and operational framework for crypto businesses through its 'Crypto-Asset Module'. Stablecoin issuers are required to hold reserves in high quality liquid assets and undergo annual audits. Companies already licensed to operate in Bahrain will need written approval from the CBB to offer stablecoin services.

Building Global Coverage Through Licenses

Compared to a few years ago, handling fiat-stablecoin conversions isn't enough. As stablecoins shift from being a product to becoming infrastructure, ramps need the ability to connect a wide range of fiat and payment rails.

For operators with global ambitions, licensing is the main hurdle. Getting approvals from scratch is slow and expensive. Greenfield applications in the U.S., EU, or Singapore can drag on for a year or longer. That's why we've seen consolidation through acquisitions: Stripe buying Bridge, MoonPay picking up Helio and Iron, and Ripple acquiring Rail. For firms without the balance sheet for M&A, partnering with reg-tech providers like ZeroHash, or regional players like YellowCard in Africa, offer plug-in licensing that gets you live faster.

Larger companies looking to expand beyond remittances into a full-suite financial platform can partner with financial institutions. Some recurring names in this space are Lead Bank and Cross River Bank in the US, Banking Circle and Modulr Finance in EU/UK, Juicyway in Africa, Braza Bank and Ouribank in Latin America, and Rapyd in Asia. These partnerships open access to higher-value services such as virtual accounts, FX, card issuance, merchant services.

For smaller startups, the faster route is to build on stablecoin-native stacks like Bridge or BVNK, which package licensing and infrastructure into a ready-to-use platform.

4.4 The True Cost of Ramps

Every layer in the ramping stack adds its own set of fees, spreads, and operational overheads that, when added together, define the true cost of moving between fiat and stablecoins. It's tempting to contrast blockchain transfers that settle for a few cents with bank wires or remittances that can cost over $20, but that comparison misses the point.

The real costs are in the conversion layers, i.e. the funding instruments, liquidity sources, and compliance processes that sit between a user's bank account and their stablecoin wallet. These costs can look very different depending on the ramp model, the intermediaries involved, and the currencies being used.

Payment Processing Fees

Payment rails are the first and often most visible source of cost.

- Bank transfers: In developed markets, these are inexpensive, typically 0-0.1%.
- Card funding: Within Europe, these transactions incur costs of 0.1-0.3%, and outside Europe, that figure goes up to 1-4%.

Retail standalone ramps often rely on cards, meaning effective entry costs are much higher, while institutional OTC or direct issuer flows usually rely on local bank transfers (zero/minimal cost) or international wires ($25–$50).

P2P platforms bypass intermediaries entirely by settling directly via real-time bank rails or local payment systems, often at no additional cost.

Liquidity and FX Spreads

Liquidity provision and currency conversion are the second major component.

- CEXs: Across the board, order books offer some of the tightest spreads of 0-0.3% in G10 currency pairs and 0.5-2% for non-G10 pairs.
- Issuer windows: Although direct issuer windows price at par (1:1) for qualified institutions, international minters face bank FX-spreads of 0.03-0.15% for G10 currency pairs and 0.2-0.5% for non-G10 pairs.
- Ramps: Retail ramps may charge 1.2-1.5% in G10 pairs and 2-5% in emerging market pairs, while non-retails ramps are priced competitively at 0.05-0.3% for G10 and 0.2-1% for non-G10.
- MMs, LPs, and OTC desks: Generally, these firms price institutional orders at 0.05-0.2% for G10 and 0.1-1%+ for non-G10 pairs.
- P2P platforms: Costs are highly variable. They price at 0-2% in liquid markets, and more than 2% in capital-controlled or high-inflation markets.

Compliance, Licensing & Regulatory Overheads

Regulated entities like CEXs, issuers, ramps, and OTC desks must implement KYC/KYB and AML programs, which carry significant fixed and variable costs. P2P platforms are often unregulated or lightly supervised, which

lowers operator costs but shifts risk to users and raises regulatory scrutiny.

- Staffing: $200k-500k+ annually for compliance teams.
- Screening tools: $50k-200k+ annually for KYC/KYB and AML products.
- Reviews: $20k-100k annually for audits and third-party opinions.
- Applications: $50k-500k globally, depending on jurisdictions, for application and maintenance fees. Example ranges are $100k-200k in the US, €10k-100k in Europe, $5k-10k in Singapore, and $10k-50k in the Middle East.
- Minimum capital: $500k-1m+ in upfront commitments for securing licenses.

These requirements create high barriers to entry but also form competitive moats for incumbents. P2P operators, often unlicensed, avoid these costs but remain exposed to shutdown risk.

Platform Take Rates

Beyond underlying costs, platforms impose their own take rates.

- CEXs: Orderbook trading fees are 0-0.5%, with direct convert features adding further markups of 0.25-0.5%.
- Issuer windows: While minting is always free, redemptions can cost up to 0.1%. The yield on reserves retained by issuers is a hidden cost.
- Standalone ramps: Retail ramps may earn 1-4% on every transaction, with FX-margins (i.e. the difference between the ramps' FX cost and FX spread charged to customers), accounting for half or more of the take rate. For non-retail ramps, take rates tend to be 0.1-1%.
- OTC desks: Costs vary from 0.05-1%, negotiated on a case by case basis depending on the relationship.
- P2P platforms: Costs vary from 0.1-1% on non-CEX P2P platforms.

Gas or Network Fees

Blockchain gas fees are generally negligible. Most service providers rely on low cost networks like Polygon, Base and Solana whose fees are often a few cents or less.

Hidden Costs

Not all of the expenses associated with stablecoin ramping are visible in the headline fees or spreads. There are often hidden costs in the background that erode efficiency, tied to operational frictions, capital requirements, and settlement delays.

- Prefunding requirements: This ties up working capital to facilitate just-in-time inventory replenishment.
- Settlement delays: 1-3 days for fiat wires imposes opportunity costs.

- Retail ramps: These suffer from high KYC failure rates (20-40%) and chargeback risk. Data from Onramper shows that completion rates for card-fund on-ramp transactions are 21% globally, ~6% in Africa, ~7% in Asia and ~17% in South America.

When you put all of these costs together, it becomes clear that stablecoins aren't really as inexpensive as they're portrayed. High value institutional flows can run from a few basis points and retail card-based ramps in emerging markets can climb well above five percent. This uneven cost structure is what shapes the economics of the ramp value chain and the lack of fungibility between fiat and stablecoins.

Ramping Costs Around the World

For end users, when using stablecoins, what matters is the total cost of moving in and out of stablecoins, not just gas fees. That all-in cost depends on the funding instrument (bank, card, or mobile money), the currency, and the type of ramp being used.

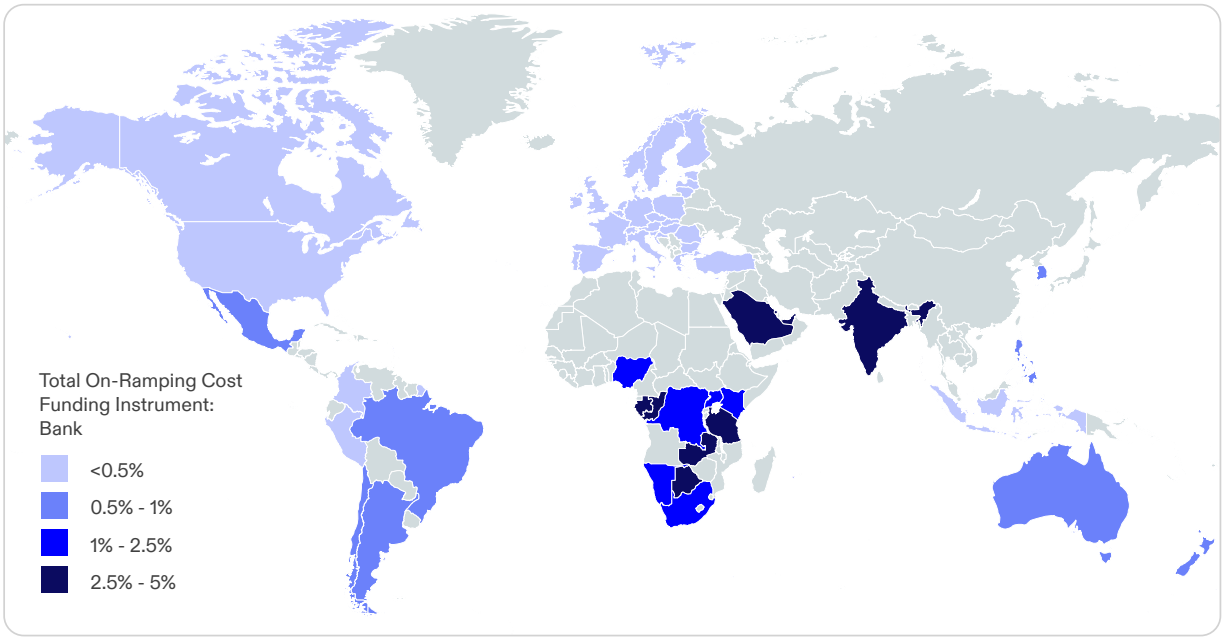
In developed markets with efficient banking rails, costs can stay under 0.3%. In emerging markets, where card rails dominate or where local FX spreads are wide, costs can quickly rise above five percent.

This section looks at those differences, showing how fees, spreads, compliance overheads, and platform mark-ups stack together to define what a user actually pays to convert fiat into USD-denominated stablecoins and back again. The maps in this section illustrate the user-facing all-in cost (AIC) of on-ramping and off-ramping across regions, specifically for local fiat to USD-stablecoin transactions and vice versa.

All numbers are sourced directly from centralized exchanges, ramp providers, and P2P platforms. The costs shown here reflect retail pricing. While lower or higher quotes may be available in certain cases, the figures presented represent what users can reasonably expect to pay on widely accessible platforms.

Banks Deposits and Withdrawals to/from CEX and Direct Ramps

When available, on-ramping and off-ramping transactions funded through bank transfers and other bank account-linked payment methods offer the lowest costs. Typically, this is possible through order books on regulated exchanges and ramps in developed markets and some emerging markets.

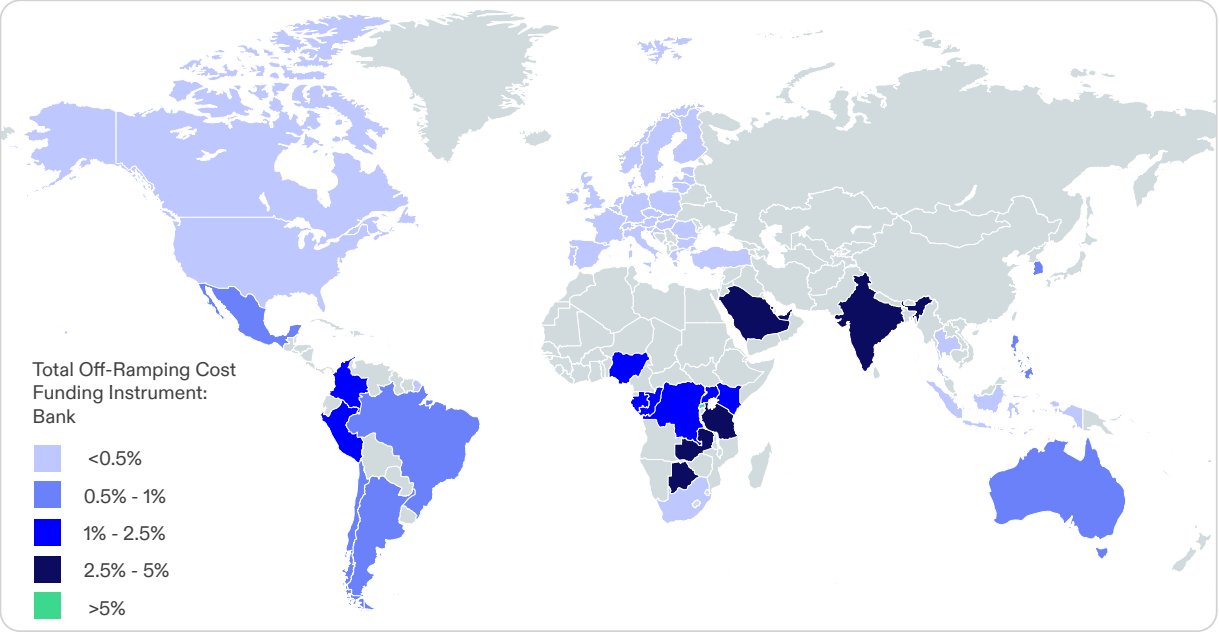


- Developed markets: In markets such as the USA, Canada, EU and UK, costs generally sit under 0.3% for on-ramping and off-ramping, compared to the over 1% rates from just a few years ago.

  Exchanges in these regions are regulated and have strong fiat-handling and banking capabilities. Further, large stablecoin issuers have partnerships with these exchanges. Consequently, users benefit from ramping costs as low as zero.

  With the rise of full-stack stablecoin orchestration platforms like Bridge, stable-coin on-ramping and off-ramping costs are sharply compressing. These low costs are accessible not only through exchange order books, but also through direct ramps and apps built on top of such platforms.

  According to the founder of a company building on Bridge, “All on-ramp and off-ramp fees are going to zero. The Bridge acquisition basically accelerates the timeline and retail users are going to win.”



- Latin America: We see wide dispersions in on-ramping and off-ramping cost behaviour. In Argentina, there is strong demand for holding dollars amidst a backdrop of high inflation. Here, we use the street or 'Blue Dollar' bid/ask rates to calculate the total ramping costs.

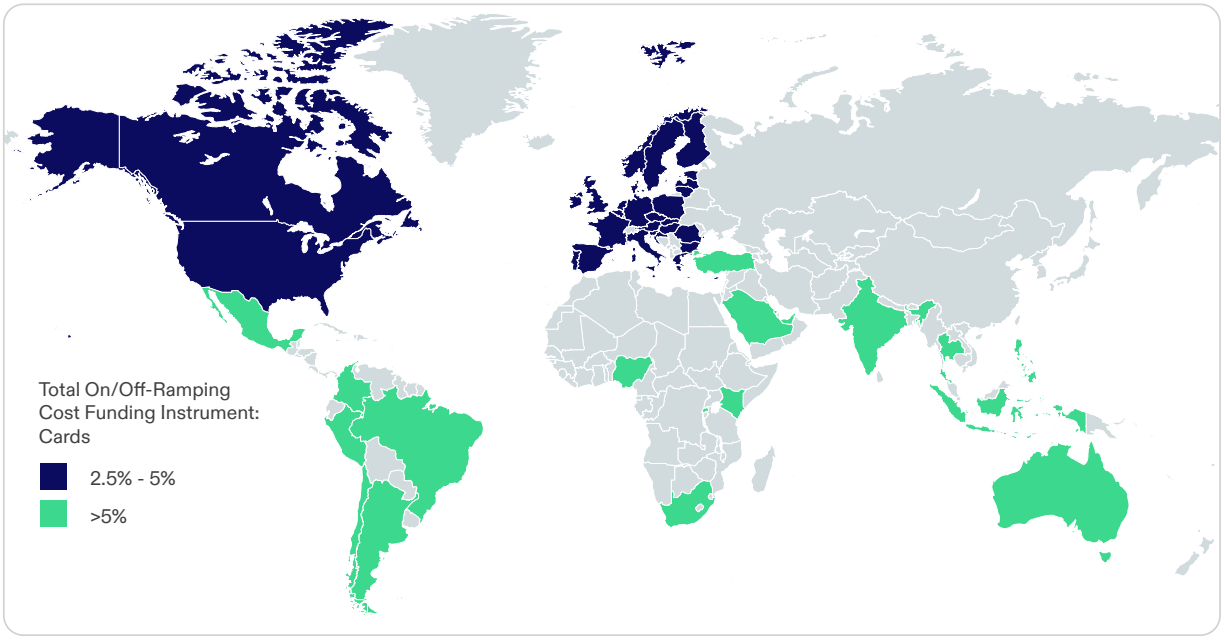
  Consequently, on-ramping costs vary widely between 0% and 1%, depending on FX market volatility. While off-ramping, users sit on the receiving end of the dollar premium. However, in Colombia, people favour the local currency over stablecoins, with on-rampers enjoying a discount and off-rampers paying around 1.5%.

  A similar behaviour is observed in Peru with negative on-ramping costs and off-ramping costing 1-3%. Mexico and Brazil lack these idiosyncrasies, where on and off-ramping costs are uniform at 0.5-1.2% and 0.2-0.9% respectively.

- Sub-Saharan Africa: As one would expect, Sub-Saharan Africa is the most expensive region for ramping. On-ramping costs hover around 1% in Nigeria and South Africa, while off-ramping can either cost or earn up to 1% depending on market conditions.

  Ramping costs in Botswana, Kenya and Uganda range between 1.5% and 2.5%, while in Congo, Gabon, Rwanda and Zambia, they are around 4-5%. These high costs reflect the cost of maintaining inventory of exotic currencies and operating in uncertain and high-risk business environments.

Payment Cards



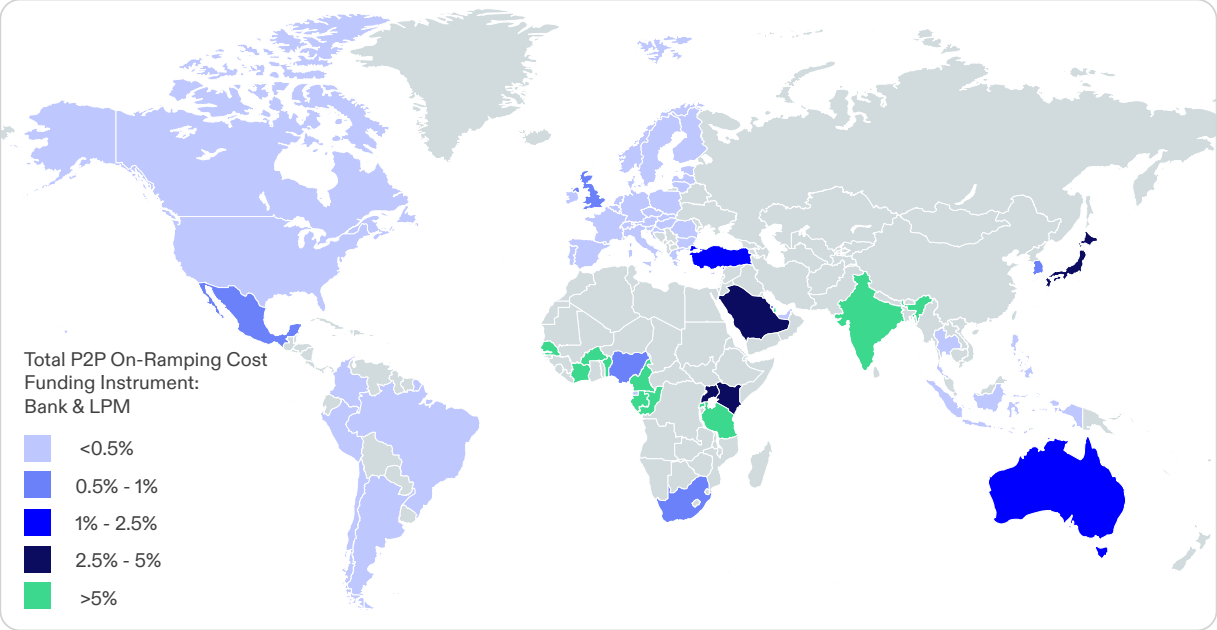
For retail users, card payments offer the slickest and most familiar ramping experience. Payments are instant, the UX is simple and the rails are already embedded into Apple Pay and Google Pay. But cards' economics is very different from those of bank rails. Costs sit at 3-5% even in developed markets like the US and EU, and rise to 7-10% in emerging markets where FX spreads are wider.

The primary driver of these costs is risk. Card payments carry a merchant discount rate (MDR) of 1-3% to cover credit risk and fraud, a cost borne by merchants. In crypto, the risk profile is far higher. Ramps like MoonPay that accept cards face not only the usual MDR, but also need an additional premium to cover chargeback risk, fraud losses, and the volatility associated with handling crypto-linked flows. Those higher risks are priced into the fees retail users pay.

The high-cost problem is structural. With stablecoins, the fair value of the asset is fixed at one dollar, or another fiat currency. Unlike e-commerce or retail, where MDR can be absorbed through product margins, there is no room to hide card fees through price inflation. That makes stablecoin economics fundamentally incompatible with card economics. The result is that cards remain the most expensive funding instruments for ramping.

Local Payment Methods & Bank Transfers in P2P Transactions

- Developed markets: In North America and Europe, P2P rates are almost identical to order book and standalone ramp rates. Costs cap out at 0.5%, and in many cases sit at zero. This is natural. Easy access to regulated exchanges and low or zero cross-currency spreads compress overall across the board.



- Latin America: The story is very different. The region has some of the deepest P2P markets in the world. In most cases, ramping through P2P platforms tied to exchanges is cheaper than using exchange order books or standalone ramps. Order books typically charge a trading fee of 0.2-0.7%, while P2P platforms are often free to use. In many cases, spreads can even flip negative, meaning users earn a premium when off-ramping into local fiat.

The following table illustrates how P2P venues offer the best pricing in most cases.

Latin America	On-ramping		Off-ramping	
	CEX/Ramp	P2P	CEX/Ramp	P2P
Mexico	↔	↔	✕	$
Brazil	✕	✓	✕	$
Argentina	✕	✓	✕	$
Colombia	✕	$	✕	✓
Peru	↔	↔	✕	✓
Chile	✕	✓	✕	✓

↔ Same $ Earn ✕ Expensive ✓ Cheaper

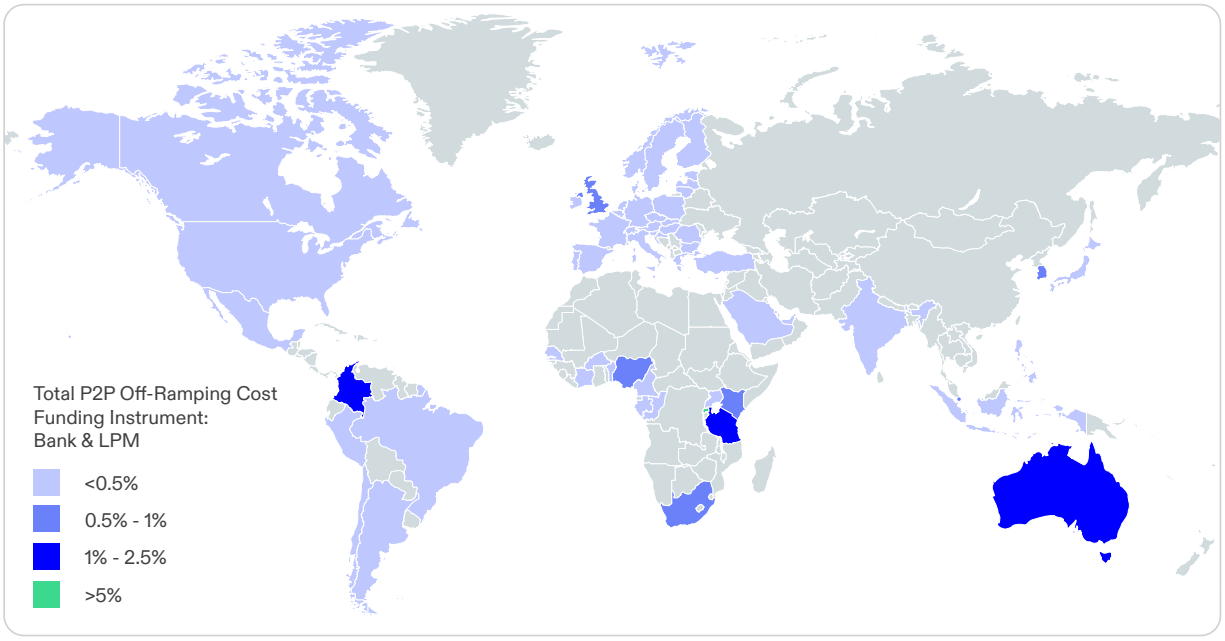
- Sub-Saharan Africa: The picture is uneven. South Africa, Nigeria and Kenya have relatively lower ramping costs under 1%. In Western African countries, on-ramping costs 8-10% while off-ramping is near zero or negative.

  In Central Africa, on-ramping is the steepest globally at 15-20%, but users earn 5-10% more when off-ramping. The market is also largely unorganized, with users relying on informal WhatsApp groups or the P2P platforms of major exchanges.

  Chuk Okpalugo notes that local telco agents like corner shops and kiosks, through their own mini distribution networks, act as the central point for on/off-ramping. These agents quote prices and facilitate trades. Startups like Fonbnk aim to provide a trusted interface for end users, exchanges and ramps to source and aggregate liquidity from these isolated pockets of local vendors.

- Asia-Pacific: The split is stark. Off-ramping costs are almost universally low, under 0.5% in most markets, and in India, the Gulf (UAE, Saudi, Bahrain, Qatar), and a few others, one benefits from the strong demand for stablecoins. On-ramping, however, is much more expensive, typically more than 2.5%.

  Southeast Asia is the exception. Indonesia, the Philippines and Thailand all have liquid P2P markets with spreads under 0.5% in both directions. In contrast, Australia's P2P market has 1-3% wide spreads for buys and sells.



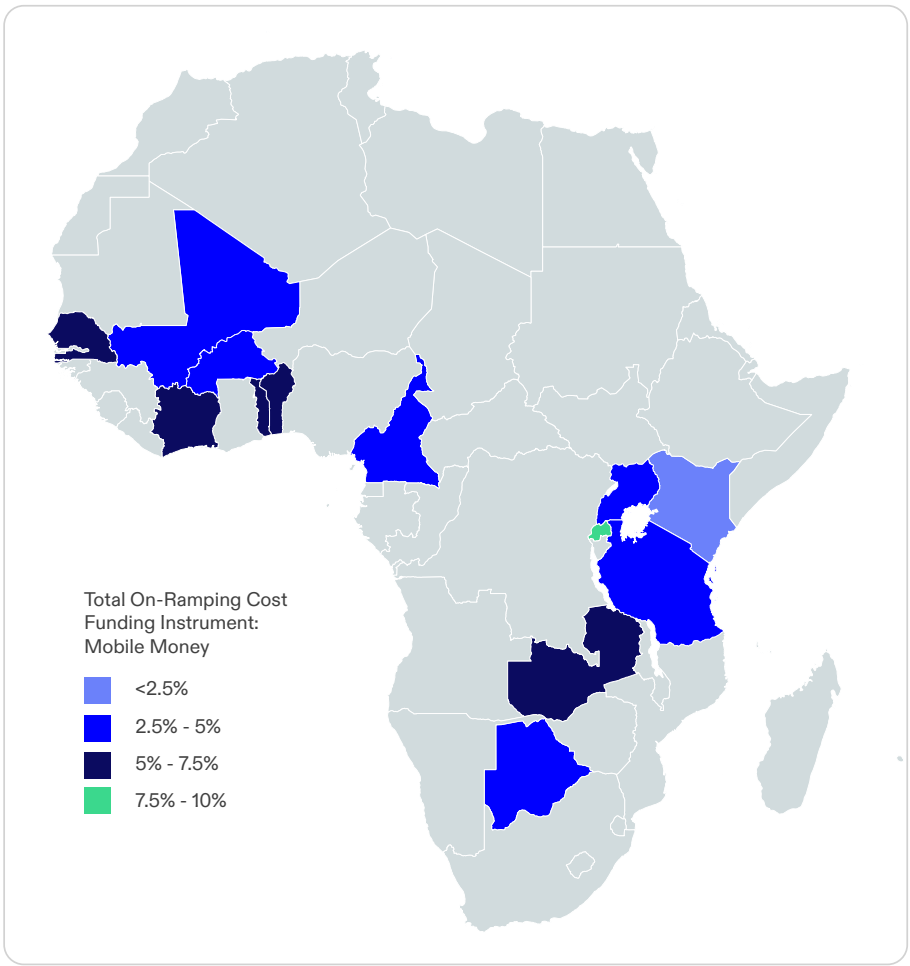
Mobile Money

Africa's banking rails are too inefficient to meet the day-to-day needs of its users. Mobile money, however, has transformed how Africans manage their finances, by making transactions cheaper and widely accessible. Platforms like M-Pesa and MTN Mobile Money have become the de facto financial rails for hundreds of millions, enabling savings, bill payments and peer-to-peer transfers without the need for a bank account.

Until recently, mobile money's reach has largely been domestic and regional. But combined with stablecoin rails, mobile money-stablecoin integrations are opening up borderless opportunities. Yellow Card, the leading pan-African stablecoin ramp, has stitched this link together, enabling users to jump between stablecoins and mobile wallets. The result is a pathway for African users to access global digital dollars directly from their phones.

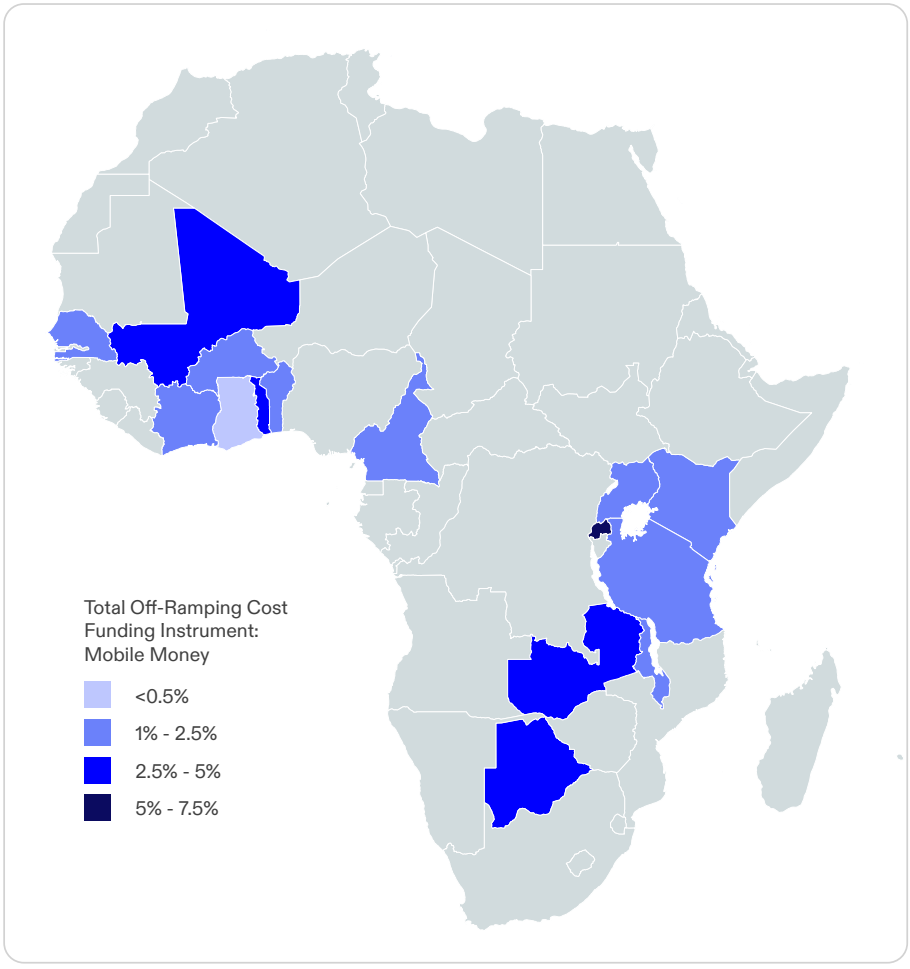
In most markets, mobile money ramps like Yellow Card provide the lowest-cost path into stablecoins with reliable liquidity depth, typically in the 4-6% range for on-ramping. These look high until you compare to alternatives and FX constraints. Other attempts at organized P2P marketplaces in the region often quote prices that are 30-100% more expensive.

Moreover, for many users using stablecoins is the way to hedge local currency volatility or to pay business suppliers in dollars when formal FX is unavailable. Against this backdrop, paying a 4-6% premium looks far more reasonable than relying on unstable local currencies or informal FX markets.



The reality is that the price of access to stablecoins still depends heavily on where you live. In much of the developing world (excluding Sub-Saharan Africa and the Middle East), retail users can on-ramp and off-ramp for about 0.5% on average. But these rates only exist on centralized exchanges (CEX) or P2P platforms.

CEXs offer safety but with clunky user journeys, and P2P can be cheap but exposes users to fraud, scams and even the risk of frozen bank accounts. Neither path is built for mass adoption. While cost matters, what people really need is a way in and out that feels seamless, predictable and safe for all, not just crypto-savvy individuals. Until that gap narrows, stablecoins will keep growing, but the people who could benefit most will remain on the sidelines.



05 Alternative Ramp Models

Key Insights

- Early on/off-ramps focused on exchanges and trading, while new models integrate stablecoins into everyday payments, savings, and settlements.
- Stablecoin-backed cards (ex. by Visa partners) enable direct spending from stablecoin balances through existing merchant networks.
- Visa provides the core network and partnerships, while platforms like Rain handle card issuance and compliance.
- Consumer apps such as Stables Money function like neobanks, combining fiat on-ramps, card spending, remittances, and on-chain yield.
- In emerging markets, crypto-native neobanks compete with traditional challengers by pairing fintech UX with on-chain capabilities.
- Crypto-native invoicing and payment platforms (like Acctual) let payers and payees mix fiat and stablecoins, lowering fees vs Stripe and easing cross-border ops.
- Bill-pay and credit-line products (BitPay, HODL Pay with Aave) remove cash-out steps or allow spending without selling collateral.
- Cash networks (like MoneyGram's Ramp) link wallets to cash pickup points globally, helping unbanked users swap between stablecoins and local currency.
- P2P Digital Escrow platforms (like protocol-based ZKP2P) automate cheap escrow for P2P stablecoin trades via apps like Venmo or Wise, offering private, low-cost exchange without intermediaries.

5.1 Emerging On/Off Ramp Models

The first generation of on-ramps and off-ramps were built around exchange access and trading. More recent models focus on integrating stablecoins into everyday savings payment and settlement flows.

Stablecoin Cards

Stablecoin-backed cards let users spend against stablecoin balances through familiar checkout flows. Artemis reports monthly card transaction volumes rising from $231M (Jan 2023) to $1.1Bn (Feb 2025).

This strong uptake is enabled by the infrastructure layer created by global payment networks such as Visa. Networks like Visa do not directly issue cards or custody assets, but provide the infrastructure and partnerships that allow developers and fintechs to issue stablecoin-backed cards.

When a consumer uses such a card, their stablecoin balance can either be converted to fiat at the backend or used to fulfill settlement obligations. This opens up the network's entire merchant network to users of stablecoin-backed cards without the need to build a new acceptance network

Specialized stablecoin issuance platforms such as Rain, a Visa Principal Member, use this infrastructure and provide developer-facing tools for card issuance, processing and compliance for fintechs.

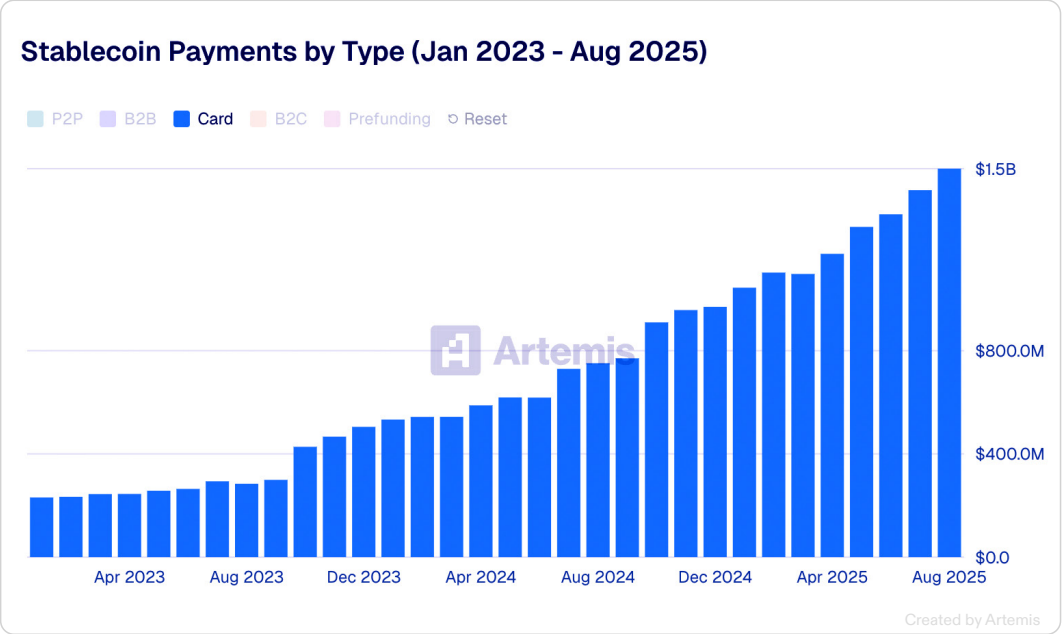
At the consumer layer, companies such as Stables Money, offer mobile apps that function like neobanks. Users can on-ramp from local currencies into stablecoins, spend with their cards, make bank transfers and remittances, and access on-chain yields.
The result is an all-in-one spending and saving experience.

These cards reduce the need to sell on an exchange, wait for settlement, and move proceeds to a bank account before spending.

In emerging markets such as Latin America, Africa and Asia, these products may compete

directly with neobank and challenger banks. As digital currencies become more familiar, crypto-native neobanks can appeal to the same users by offering the convenience of modern fintech apps along with on-chain features.

Stablecoin Payments by Card



Crypto-Native Invoicing and Flexible Payments

Acctual

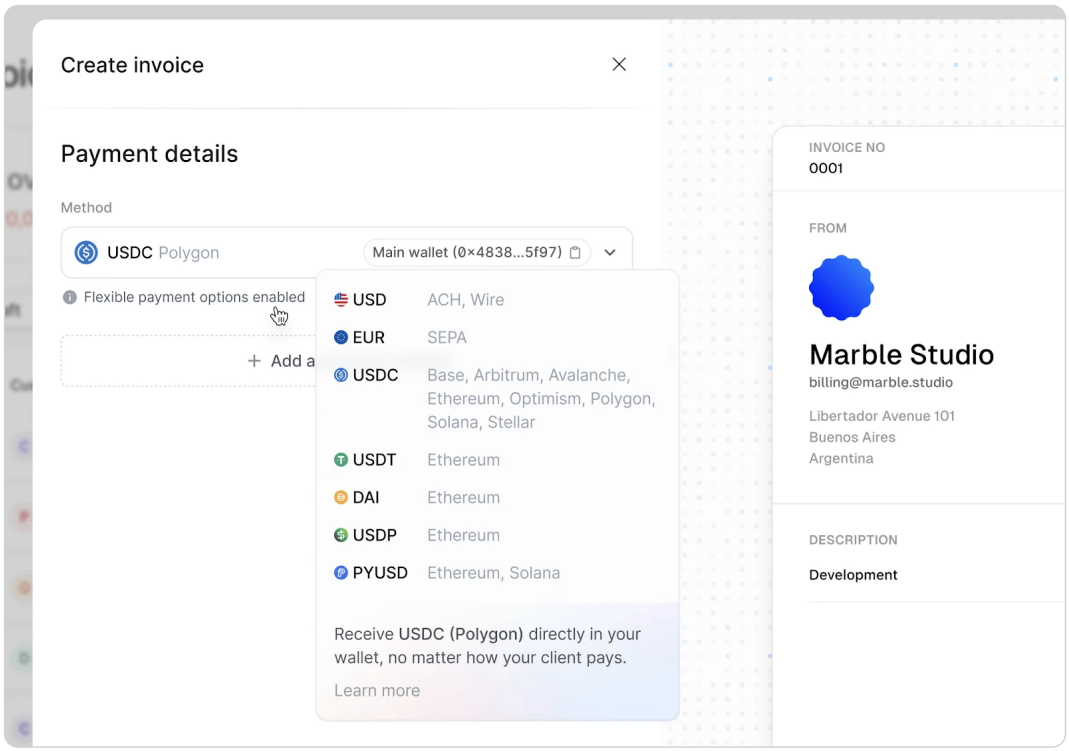
As businesses adopt stablecoins, many find that traditional invoicing and payment processors do not handle crypto and fiat preferences on both sides of a transaction. Back-office financial operations are burdensome for solo and lean teams, especially across borders.

Solutions like Acctual aim to simplify this by embedding payment options directly in the invoice so payers can choose fiat or crypto and payees can choose how they receive funds.

While 'pay with crypto' buttons have existed for years, they often assume one party's preference.

Acctual's approach supports both sides' choices. In the example provided, a small business would pay an all-in cost under ~1% (invoicing + settlement) with Acctual, whereas a similar transaction processed via Stripe is ~2% (~0.5% invoice + 1.5% stablecoin payment).

Acctual User Interface

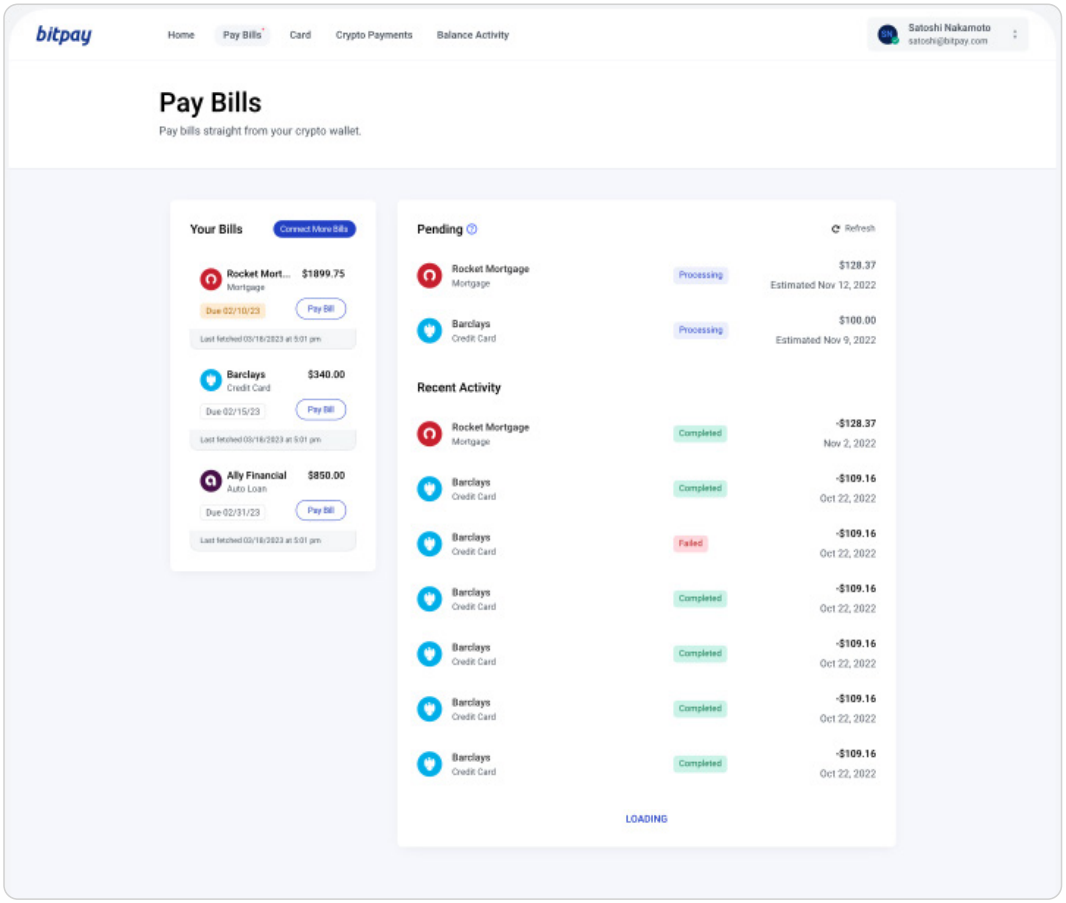


BitPay addresses the ‘last mile’ by letting users pay common bills (mortgage, auto and credit card) directly from stablecoin balances, avoiding a separate cash-out step.

On the merchant side, ‘Pay by Crypto’ has been available through multiple processors, but adoption has been limited in many markets. Potential reasons include the absence of card-style rewards and a user preference to hold crypto rather than spend it.

Another alternative off-ramp offered by BitPay is HODL Pay. Through a native integration with Aave, users can obtain a credit line against their supplied crypto in real-time to pay bills. This avoids selling assets, while introducing collateral and liquidation considerations.

BitPay User Interface

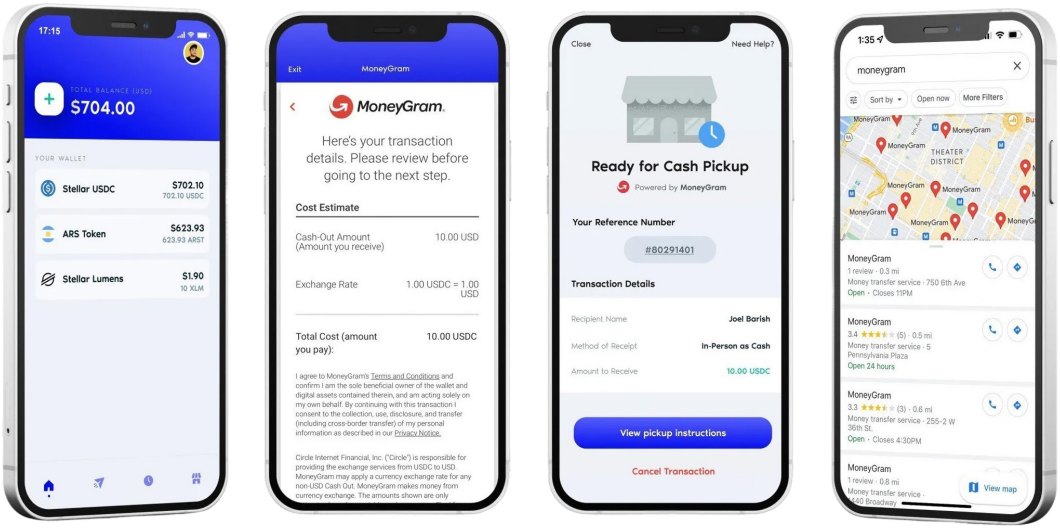


A new offering that serves cash-reliant users is MoneyGram's Ramp. The developer platform allows digital wallets and fintechs to connect to MoneyGram's network of agents so users can convert cash to crypto or crypto to cash at retail locations.

Cash on-ramping is available in ~30 countries, while off-ramping USDC is available in 170+. Each participating MoneyGram branch serves as a stablecoin access point for those without bank accounts.

In countries with unstable currencies, this setup can help users hold value in USDC and quickly withdraw local currency when needed.

MoneyGram Ramps User Interface



Digital Escrow P2P Ramp without Human-in-Loop

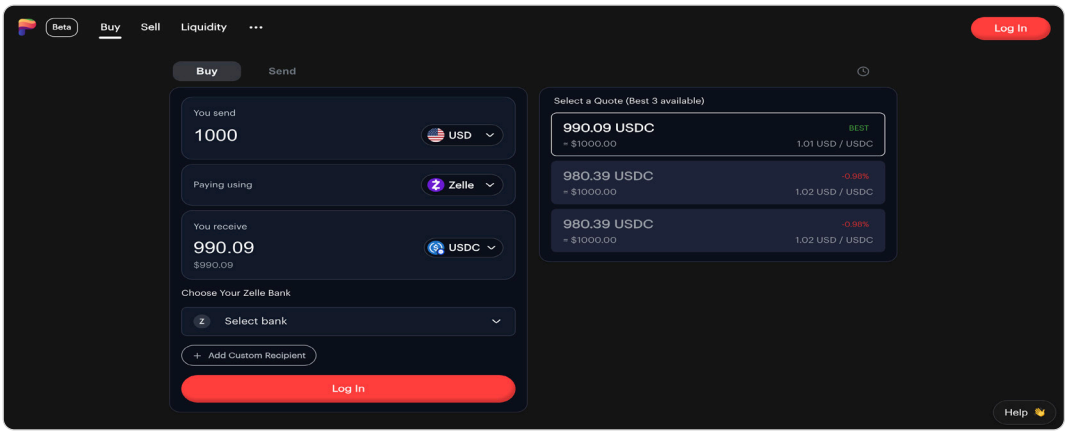
Imagine Alice wants to buy USDC and Bob wants to sell USDC for fiat. They do not know each other, but both trust Charlie to ensure fairness. If Bob sends USDC and Alice sends fiat, Charlie confirms both happened and releases the funds; if either side fails, funds are returned.

Now replace Charlie with a software that can 'see' and verify that Alice has sent Bob the money, and Bob has sent Alice the USDC. If Alice fails to send the money, the computer can ensure Bob gets his USDC back. And vice versa.

This computer program is ZKP2P, a protocol-based P2P ramp with escrow built in. It allows two complete strangers to buy and sell stablecoins cheaply and privately, without relying on a centralized exchange, using familiar payment apps like Venmo, Revolut and Wise, while benefiting from automated escrow protections.

Sellers deposit their USDC in escrow contracts and buyers make payments to the seller's account through their browser. A pre-installed browser extension securely captures and verifies the transaction, before releasing the USDC to the buyer. All of this happens in minutes. ZKP2P provides a low-cost, private P2P ramp without a centralized intermediary.

ZKP2P User Interface



06 Better Ramps Unlock Use Cases

Key Insights

- Stablecoin adoption depends on reliable, low-cost fiat on/off-ramps integrated into local financial systems.
- Stablecoins are now a major rail for cross-border payments, used in both remittances and B2B flows.
- Stablecoin rails bypass correspondent banking, offering faster and cheaper cross-border transfers.
- Global treasury operations benefit via faster settlement (instant vs T+2), same-day vendor payouts, and reduced pre-funding needs.
- Corporates can deploy liquidity across subsidiaries efficiently, reducing repatriation and FX risks.
- Payroll platforms (like Bitwage, Remote.com, TransFi) enable fiat or crypto funding and local or stablecoin payouts. Stablecoin payroll flows can cut total costs by 5–10% compared to traditional SWIFT and FX routes.
- Humanitarian aid benefits from direct wallet disbursements and local agent cash-outs (e.g., MoneyGram Ramp in 170+ countries). Pilots by UNHCR (Ukraine) and MercyCorp–Project Lydian show stablecoin feasibility for crisis relief.
- Atomic FX settlement via smart contracts enables payment-versus-payment (PvP) clearing without Herstatt risk. Stablecoins allow real-time FX settlement for currencies outside CLS coverage (e.g., MXNB/BRL1 pairs).

6.1 Cross-Border Payments

Cross-Border Payments

OpenFX Remitly

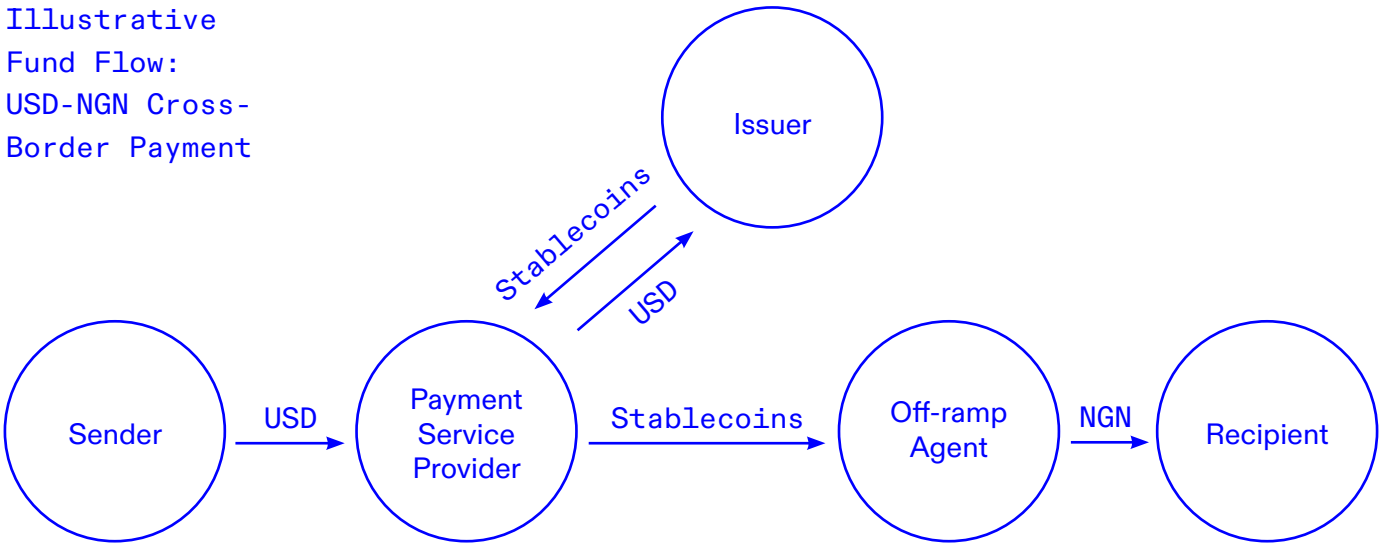
Much of the promise of stablecoins hinges on the infrastructure that supports it. The ability to reliably and affordably move fiat into stablecoins and back to local currencies, wallets and financial systems, at scale, shapes whether they will be used day to day.

Stablecoins are an increasingly common rail for cross-border payments, both in remittances and B2B flows. An Artemis study finds that aggregate monthly B2B volume of firms surveyed grew about 24x over the last two years, from roughly $120Mn to about $3Bn. A similar trend appears in consumer remittances. Rob Hadick, General Partner at Dragonfly, estimates that “as much as 10% of the remittance corridor volumes of US to India and US to Mexico might be happening in stablecoins right now”.

Modern FX platforms built on stablecoins, such as OpenFX, are seeing strong demand from payments & remittance providers. OpenFX’s annualized TPV grew from about $1Bn within three months of launch to over $15Bn less than a year later.

By bypassing the correspondent banking network, cross-border money movement on stablecoin rails is typically faster and lower cost in many corridors for both retail and business users.

Illustrative Fund Flow: USD-NGN Cross-Border Payment



6.2 Global Treasury Management

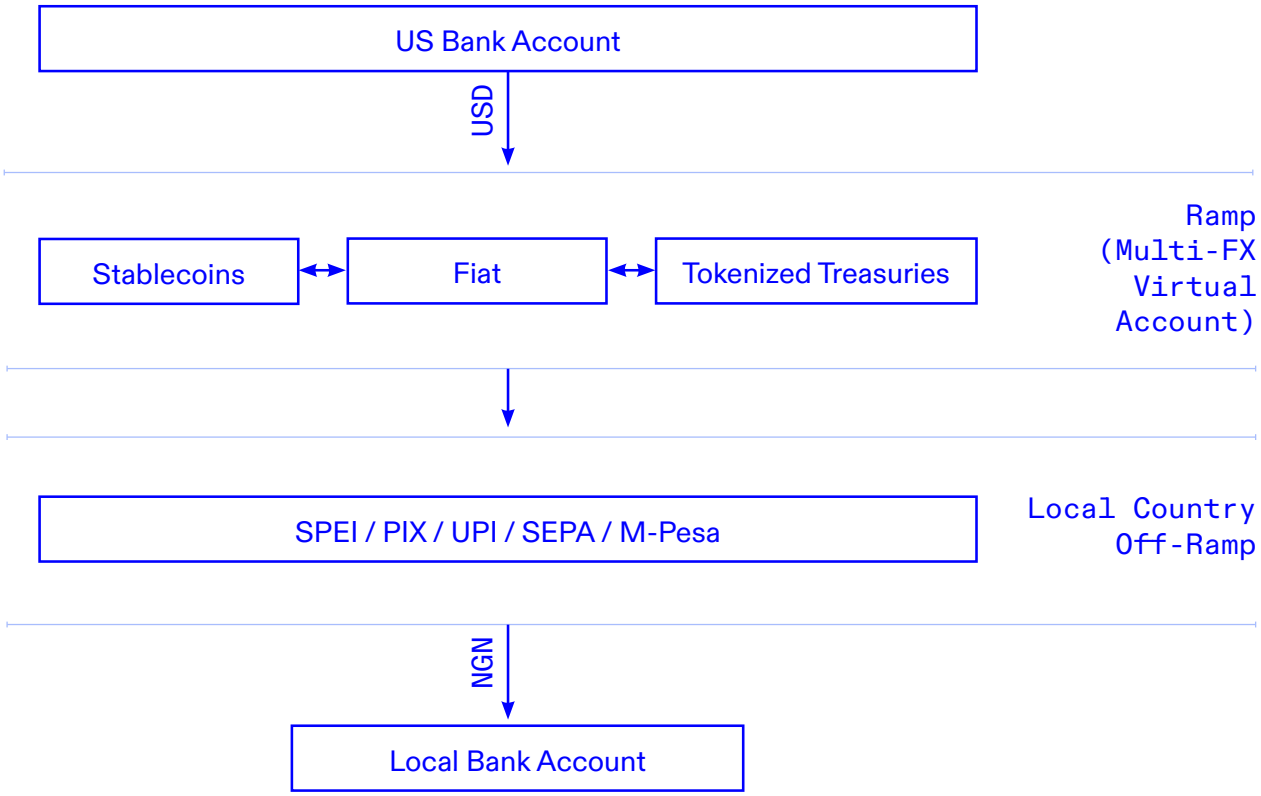
Global Treasury Management

BVNK

Organizations with global operations can use stablecoins to support more efficient treasury workflows. A modern stack includes multi-currency fiat and stablecoin support, embedded ramps, tokenized treasury instruments, and connections to domestic payment rails in key jurisdictions.

This result can be faster cash and treasury switches versus T+2 settlement in traditional flows, same day cross-border vendor payouts, lower pre-funding in foreign subsidiaries and better visibility of cash flow positions.

An example of this is a global beverage company contemplating the use of stablecoins to move funds efficiently to its African operations. The company can ensure that it has exactly as much liquidity as it needs, when it needs it, in its African subsidiaries, without



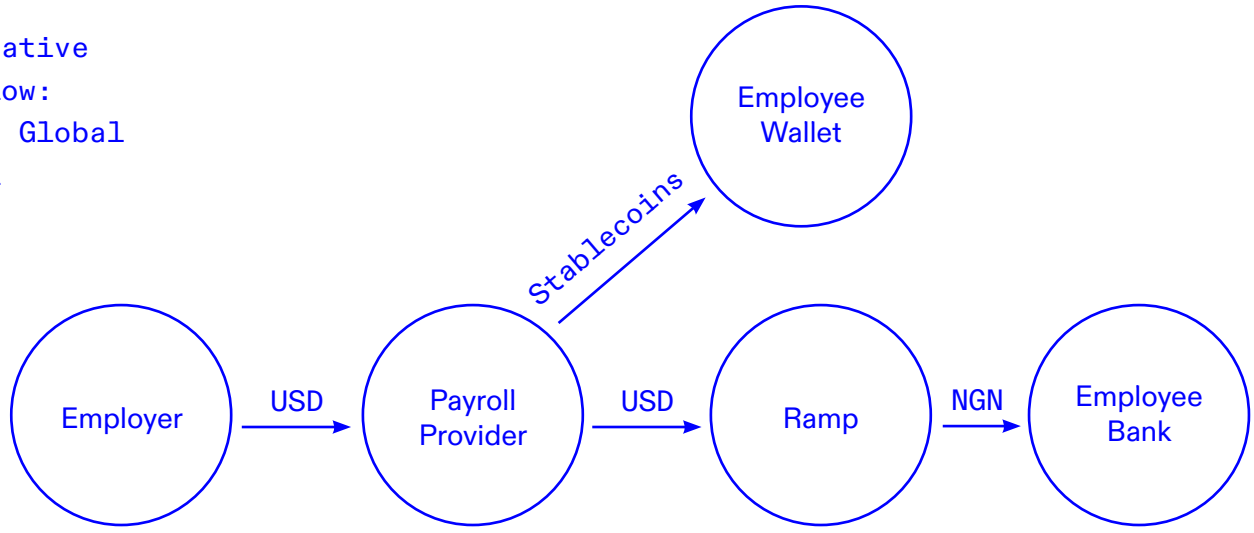
6.3 Global Payroll and Contractor Payouts

Global Payroll and Contractor Payouts

bitwage remote TransFi

Stablecoins are changing how salaries and contractor payments are sent across borders. Payroll platforms allow employers to fund in fiat or crypto and pay in local currency or stablecoins. For instance, TransFi can take a USD bank deposit and deliver USDC or local fiat to freelancers in Nigeria within minutes and often at lower cost. Without embedded ramps, similar transactions often cost 5-10 percent more when SWIFT fees, FX spreads, and local on-ramping costs are combined, depending on the corridor and instruments used.

Illustrative Fund Flow: USD-NGN Global Payroll



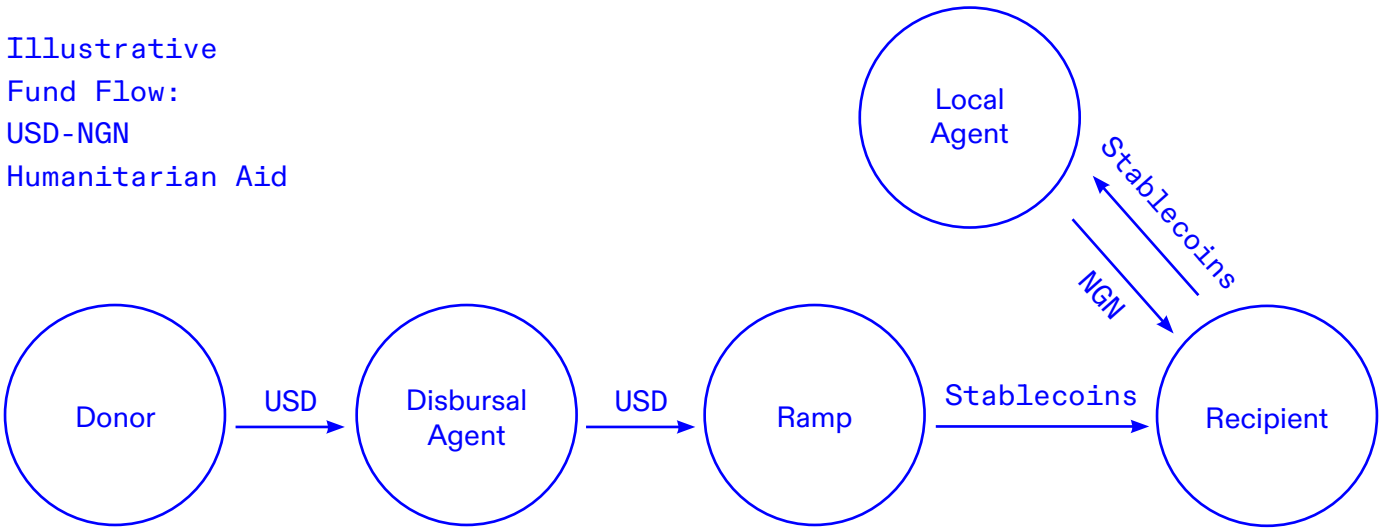
6.4 Humanitarian Aid

Humanitarian Aid

In crises, bank infrastructure can be slow, unreliable, or unavailable. Stablecoins allow agencies to send funds to a recipient's wallet and enable cash-outs through local agents, reducing reliance on intermediaries that add cost and delay. Key pieces of this infrastructure already exist. MoneyGram's Ramp product supports cash out of USDC in more than 170 countries. Stablecoins can also provide more timely visibility into disbursements, which can improve program oversight.

Early pilots such as UNHCR's work in Ukraine with Stellar, Circle and MoneyGram, and the MercyCorp-Project Lydian pilot, have demonstrated feasibility for emergency aid.

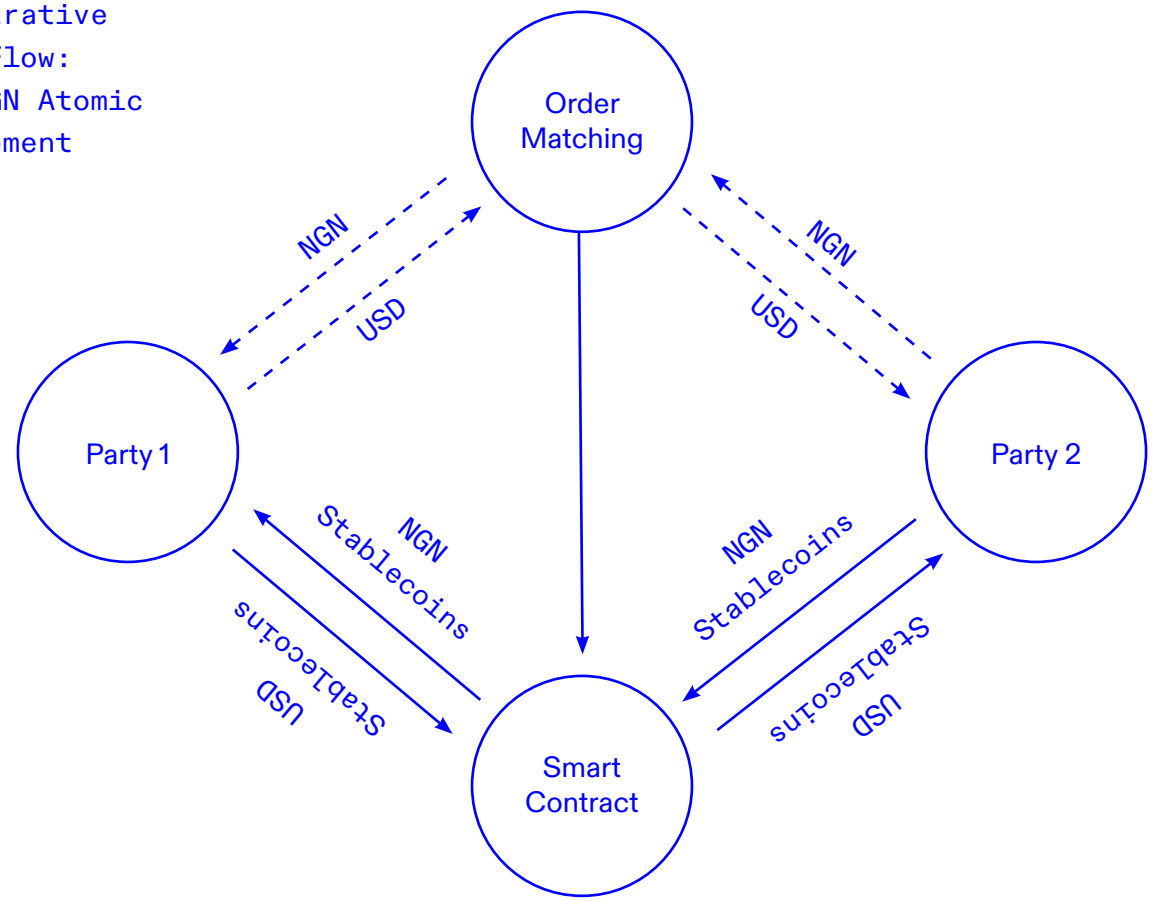
Illustrative Fund Flow: USD-NGN Humanitarian Aid



6.5 Atomic FX Settlement

Stablecoins offer an alternative approach to addressing Herstatt risk, where one leg of an FX trade settles and the other doesn't. With smart-contract-based payment-versus-payment (PvP), both legs settle simultaneously on-chain, reducing time gaps and counterparty exposure. Today's CLS system mitigates this risk for 18 major currencies but it does not cover many emerging market currencies, does not operate 24/7, and is limited to certain financial institutions. Stablecoins, especially non-US stablecoins, provide an alternative rail in such cases. For instance, a liquidity provider in Mexico settling MXN/BRL with a trading desk in São Paulo could use MXNB and BRL1 stablecoins to clear the trade atomically in real-time, including on weekends.

Illustrative Fund Flow: USD-NGN Atomic Settlement



07 Stablecoins Move Money Better

Key Insights

- Stablecoins cut remittance fees sharply. Across the US→Mexico, India, China, Philippines, Vietnam, costs drop 50–90% vs traditional averages and often 20–70% vs the cheapest providers.

- Settlement is far faster: under one hour for stablecoin transfers versus T+1 to T+5 days for bank or money-transfer operators.

- High-cost origin routes (e.g., Tanzania→Kenya, South Africa→China) show savings of 60–94% against World Bank price averages and strong gains even versus low-cost MTOs.

- African and Africa–Asia corridors benefit most, but stablecoins stay competitive even where traditional costs are already low.

- In cross-border B2B payments, stablecoins trim 25–60% of fees in developing corridors and settle within 30 minutes, while banks take 1–5 days; even when pricing is similar, speed is a clear edge.

- Adoption is growing as remittance firms and payment providers test stablecoin rails to bypass correspondent banking and improve cost, transparency, and market reach.

7.1 Consumer Remittances

Moving money across borders has always been slow, expensive, and opaque, whether it's a business paying an overseas supplier or an individual sending funds to family abroad. Stablecoin-powered payments are changing that reality for both sides of the market.

In the consumer remittance market, migrant workers, expats, and their families face the burden of high transfer fees and long wait times. In many corridors, the cost of sending $200-$500 can exceed 7-10% of the amount sent, far above the UN Sustainable Development Goal target of 3%, and settlement can still take days. Stablecoins offer near-instant settlement, predictable costs, and greater transparency, creating tangible benefits for both senders and recipients.

The sections that follow will first explore how stablecoins are transforming consumer remittances, before turning to their impact on cross-border B2B payments.

In comparing traditional remittance channels with stablecoin-powered transfers across some of the major remittance corridors, stablecoins demonstrate clear advantages in reducing costs, and accelerating settlement. Service providers include Money Transfer Operators and Banks. Payment instruments include Debit Cards, Credit Cards, Bank Transfers, and Cash. For like-to-like comparisons, all-in costs for stablecoin-powered transfers are calculated aggregating the cost of on-ramping source currency to stablecoins and off-ramping stablecoins to destination currency.

We combined data from the World Bank's Remittance Prices Worldwide (RPW) database and our research on stablecoin on-ramping and off-ramping costs around the world, to quantify the differences in total end-to-end costs of remittances in major remittance corridors and high-cost origin markets.

Costs shown here include all components of the transaction - payment processing, FX spreads, platform margins, and on/off-ramp fees - to reflect the aggregate cost incurred by both the sender and the recipient. Settlement times are measured from initiation to funds being available to the recipient.

We emphasize that the benefits highlighted in this analysis are based on pricing accessible to end users engaging in on-ramping and off-ramping on their own. We expect that remittance services built on stablecoin-rails should be able to match or beat these costs due to economies of scale.

7.2 Major Remittance Corridors

Corridor	Traditional Channels					Stablecoin Powered	
	Amount	Low Cost[1]	Avg Cost	Max Cost	Time	All-In Cost[2]	Time
US to Mexico	$200	1.9% (Ria)	4.8%	17.5%	3-5 days	1.0-1.1%	<1 hour
	$500	1.0% (Ria)	3.0%	7.0%			
US to India	$200	0.7% (Walmart)	4.5%	17.5%	<1 hour	0.0-0.5%	<1 hour
	$500	0.5% (Ria)	3.0%	7.0%	3-5 days		
US to China	$200	2.4% (Remitly)	8.1%	22.5%	3-5 days	0.3-2.0%	<1 hour
	$500	1.5% (Remitly)	4.8%	13.1%			
US to Philippines	$200	2.4% (Remitly)	4.9%	17.5%	<1 hour	0.3-0.8%	<1 hour
	$500	0.34% (WorldRemit)	3.3%	7.0%			
US to Vietnam	$200	3% (Wise)	6.1%	17.5%	<1 hour	0.4-0.6%	<1 hour
	$500	1.7% (MoneyGram)	3.8%	10.3%			

The World Bank, Remittance Prices Worldwide, available at remittanceprices.worldbank.org, Bluechip Analysis

[1] Exclude quotes that include promotional zero-fee transfers and FX rates.

[2] Represents the lowest, realistic end-to-end remittance cost that is widely accessible to end consumers. On/off-ramping costs are directly sourced from standalone ramps, order books on centralized cryptocurrency exchanges, and P2P marketplaces.

Stablecoins can lower costs in many corridors, including some mature routes.

Across the corridors measured here, all-in stablecoin costs are often 50-90% lower than the average traditional cost. Compared to the lowest-cost traditional provider in each corridor, stablecoin transfers are often 20-70% less expensive in 4 of the 5 high-volume corridors.

The table excludes quotes that include promotional zero-fee transfers and FX-rates. All-in cost represents the lowest, realistic end-to-end remittance cost that is widely accessible to end consumers. On and off-ramping costs are sourced from standalone ramps, orderbooks on centralized cryptocurrency exchanges and P2P marketplaces.

Stablecoin cost benefits scale well to low value transfers.

- US to Vietnam ($200): About 90 percent lower than the average traditional cost, and about 80 percent lower than the cheapest.
- US to Mexico ($200): About 77% lower than the average traditional cost, and about 42% lower than the cheapest.
- US to India ($200): About 89% lower than the average traditional cost, and about 29% lower than the cheapest.
- US to China ($200): About 75% lower than the average traditional cost, and about 15% lower than the cheapest traditional option.

Stablecoins are competitive even where traditional costs are low.

- US to Philippines ($200): About 84%lower than the average traditional cost; at the low end of the stablecoin cost range, results are competitive with the cheapest traditional option for smaller transfers, but outperform on speed.

Gaps between average and lowest traditional costs suggest pricing dispersion.

In many corridors, the average cost of traditional transfers is two to five times higher than the cheapest available provider. This gap represents the edge Money Transfer Operators have over banks. Yet, stablecoin transfers frequently undercut both.

Settlement speed is a consistent advantage.

Despite the poor UX of on-ramping and off-ramping, stablecoin-powered transfers settle in under one hour. Traditional transfer methods range from same-day settlement to T+5, depending on funding instrument, payout type, and corridor.

7.3 Minor Remittance Corridors

While major remittance corridors represent the largest share of global flows, they are not always where the cost savings from stablecoins are most dramatic. Some of the largest differences appear when sending from high-cost origin markets, where traditional fees often exceed 10 percent and in some cases approach 50 percent. These routes typically have limited competition, weaker FX liquidity, and cash-heavy payout networks.

Corridor	RPW Average[3]	MTO Average[4]	All-In Cost (Stablecoin)	Savings vs.	
				RPW Average	MTO Average
Tanzania to Kenya	59.7%	9.2%	5.2-6.2%	90%	33-44%
Tanzania to Rwanda	45.5%	9.1%	8.2-9.2%	81%	1-10%
Tanzania to Uganda	66.3%	9.7%	5.5-6.5%	91%	33-43%
Rwanda to Kenya	15.6%	7.0%	6.5%	58%	11%
Thailand to Indonesia	12.8%	6.7%	1-3%	77-92%	55-85%
Thailand to Vietnam	13.0%	10.0%	1.3-3%	77-90%	70-87%
S. Africa to Botswana	14.7%	10.4%	3.7-6.2%	58-75%	40-64%
S. Africa to China	22.8%	16.7%	1.2-1.5%	94%	92%
S. Africa to India	10.5%	7.4%	1.2-1.5%	87%	82%
S. Africa to Kenya	10.4%	9.1%	3.2-3.5%	67%	63%
S. Africa to Nigeria	13.0%	11.2%	2.1-2.4%	83%	80%
S. Africa to Tanzania	14.0%	11.7%	3.1-4.4%	69-78%	63-74%
S. Africa to Zambia	13.6%	10.6%	3.8-5.1%	63-72%	52-64%

The World Bank, Remittance Prices Worldwide, available at remittanceprices.worldbank.org, Bluechip Analysis

[3] Includes all service providers operating in the corridor, such as banks, Money Transfer Operators (MTOs), and Mobile Operators.

[4] Includes Money Transfer Operators and Mobile Operators.

The table includes all service providers operating in the corridor, like banks, money transfer operators, and mobile operators.

Stablecoins deliver substantial savings vs RPW averages.

- Total gains: In almost every corridor listed, stablecoin-powered transfers offer dramatic cost reductions vs the RPW average, ranging from 59% to 94%.
- Largest gains: South Africa to China (94%), Tanzania to Kenya (90%), and Tanzania to Uganda (91%).
- Average gains: Even mid-range savings (ex. South Africa to Tanzania, 69-78%, and South Africa to Zambia, 63-72%) still represent meaningful cost improvements in high-cost markets.

Savings compared to the lowest-cost MTOs vary widely by corridor.

- Largest gains: Strong advantages in corridors like Thailand to Vietnam (70-87%), Thailand to Indonesia (55-85%), and South Africa to Botswana (40-64%).
- Smallest gains: More modest savings in routes like Tanzania to Rwanda (1-10%) and Rwanda to Kenya (11%), where competitive MTO pricing narrows the gap.

Africa to Africa and Africa to Asia flows benefit the most.

Corridors connecting African countries to each other or to Asia show the most consistent savings vs both benchmarks.

- Tanzania to Kenya: 90% savings vs RPW average and 33-44% vs MTO average.
- South Africa to China: 94% savings vs RPW average and 92% vs MTO average.
- South Africa to India: 87% savings vs RPW average and 82% vs MTO average.

Speed advantage remains clear.

Regardless of cost differences, stablecoin-powered transfers settle in under one hour across all corridors, compared with traditional methods that can take multiple days, especially for cross-currency and cross-border transactions within Africa.

Cross-Border B2B Payments

While the consumer remittance market provides a clear illustration of the cost and time advantages stablecoins can deliver to individuals, especially in Sub-Saharan Africa and East Asia, the non-wholesale B2B payments market is significantly larger than remittances, so the potential impact is broader. Businesses sending and receiving payments across borders still rely heavily on the correspondent banking model and SWIFT network.

While no standard threshold has been established to categorize as wholesale and retail, the payments industry typically uses $500,000 as the cut-off. Unlike the World Bank's Remittance Price Worldwide dataset for remittances, no such comparable is available for B2B payments. However, we provide a few anecdotal examples from companies interviewed as part of this research.

Bluechip Analysis

Corridor	Amount	Traditional Channels		Stablecoin Powered	
		All-In Cost	Time	All-In Cost	Time
Mexico to US	$100K	0.4-0.7%	1-2 Days	0.3-0.5%	<30 mins
S. Africa to Germany	€50K	1.2-1.5%	3-5 Days	0.7-0.9%	<30 mins
Nigeria to China	$50K	2.5-3%	3-5 Days	1.2-2%	<30 mins

Stablecoins settle faster than traditional SWIFT-based payments in nearly all corridors. Outside of a few mature corridors, the difference is significant. In most cases, stablecoins can cut settlement times by 1 to 5 days.

For cost savings, stablecoins are not a universal solution. Certain mature B2B corridors currently operate with tight FX spreads of 1 to 3 bips. Where they really shine is underdeveloped corridors, particularly those originating from Sub-Saharan Africa and Latin America. Here, they win on both cost and speed, cutting costs by up to 50% and settlement times by more than 90%. In other markets where stablecoins match the pricing of traditional payments, their settlement speed still presents a compelling argument for businesses.

It's no surprise, then, that money transfer businesses globally are experimenting with stablecoin integrations. Whether to strengthen competitive positioning, reduce reliance on costly correspondent networks, or open new market segments, these companies are increasingly looking to stablecoins as a way to enhance their offerings and capture more value in cross-border money movement.

08 Barriers To Scale Stablecoin Adoption

Key Insights

- Stablecoin infrastructure is mature, but scaling needs lower friction: simpler user experience, privacy, banking ramps, and smoother onboarding.

- User experience: APIs, smart wallets, and payment orchestrators now allow web2-like interfaces. Apps such as Dolar App hide blockchain steps and offer low costs.

- Privacy: Institutions need confidentiality. Options include blockchain-level privacy (ex. Arc) or smart-contract standards like Zama/OpenZeppelin's ERC-7984 for shielded transfers.

- Banks could cut costs and unify on/off-ramps via bank-issued stablecoins or shared networks like Ubyx, easing access in emerging markets.

- Reusable credentials and interoperable KYC/KYB standards can remove repeated checks and make onboarding seamless.

8.1 Missing Pieces of the Puzzle

To build breakout applications, most of the building blocks are finally in place. What still needs work is turning them into low-friction, everyday products. Simpler UX, institution-grade privacy, bank integrations, and streamlined onboarding could help us get there sooner.

Better User Experience

For years, using stablecoins meant jumping through complex, clunky user journeys involving exchanges, wallets and gas fees. That reality is now changing. New infrastructure, including APIs, smart wallets, and global payment orchestrators, is enabling fintechs to build web2-like user experiences. A notable example is Dolar App, which provides a simple interface for users in Latin America to access stablecoins at rates comparable to centralized exchanges, while hiding the technical steps. Their approach shows that low cost and simple UX can coexist in practice.

A practitioner‘s view echoes this. Bernardo Simonassi, the founder of orchestration platform BlindPay, said “The challenge is not getting global coverage, good pricing or better developer experience. There is too much crypto jargon. We need to abstract the blockchain and make it useful for ordinary people.”

Privacy for Institutions

For institutions to store and move large sums of money on-chain, confidentiality is essential. The transparent nature of public blockchains makes this a challenge.

In this pursuit of confidentiality, two approaches are being considered:

- Blockchain-level privacy: This approach is embodied by upcoming, payments optimized blockchains like Arc which aim to integrate privacy solutions directly into their design, allowing users and institutions to keep financial data confidential.

- Smart Contract-level privacy: This approach brings confidentiality to any existing blockchain. An example of this is cryptography firm Zama’s collaboration with OpenZeppelin to develop ERC-7984, a confidential token standard. This standard will allow stablecoin issuers to issue a confidential variant of their stablecoin, enabling shielded balances and token transfers.

Although consensus has formed among industry practitioners that a privacy layer is non-negotiable, potential institutional adopters are hesitant to pick a winning implementation just yet, and are waiting to see how infrastructure ecosystems build around the competing implementations.

Banks as Ramps

Outside the developed markets of the US and EU, ramps are fragmented and expensive. Multiple layers of intermediaries add to the overall cost. A potential solution to this problem involves making banks the central piece of the ramping process. Banks already possess the necessary licensing, scale, and credibility to become the go-to venues for on-ramping and off-ramping.

Theoretically, costs can be meaningfully lower and users may never have to leave their banking apps to on-ramp or off-ramp.

One way to do this is through Bank-Issued stablecoins. As the stablecoin issuer, liquidity providers and the ramping interface, the bank controls the entire stack and all associated costs from end to end. An alternative approach is being developed by Ubyx. Here, a shared network connects multiple banks and stablecoin issuers, and a central entity, such as Ubyx, acts as a coordination layer to ensure the network operates smoothly.

Either path could reduce friction in emerging markets where ramps are costly and inconsistent.

Streamlined KYC/KYB

Most crypto-native finance apps rely on a small set of KYC/KYB providers for identity verification. Often, a user completes verification with the same provider more than once when signing up on different apps. One simple way to streamline the identity verification process is to use Reusable Credentials, eliminating repetitive data submissions. This was recently implemented by SubSub but should become the industry standard.

However, what is even better is using a globally-compliant, interoperable verification standard. Doing so would ensure interoperability across all providers, creating a universal and secure digital identity credential.

8.2 Conclusion

The evolution of stablecoins into a viable instrument for global commerce is dependent on one critical component: ramping infrastructure. The ecosystem supporting this infrastructure has matured, but cost and access still vary widely.

"Ramps are getting cheaper, but not necessarily easier."

Prices are compressing. In the US, EU and UK, centralized exchanges or direct ramps often price at 0-0.3%. Outside these markets, there is a cost-convenience trade-off. In Latin America and Southeast Asia, all-in costs of about 0.5% are common, but users typically rely on P2P markets or centralized exchanges to reach those prices.

In many Sub-Saharan African countries, the lower band is about 3-6%, and mobile-money rails step in where banking access is limited. Prices are improving, but the cheapest paths still expect users to navigate order books or P2P listing, and that keeps friction high for the mainstream, non-technical users essential for mass adoption.

"Despite these challenges, stablecoins move money better."

Across the five high-volume corridors reviewed, stablecoin transfers were often 50-90 percent cheaper than the average traditional cost and 20-70 percent cheaper than the lowest listed provider.

In 11 of 13 high-cost origin routes, stablecoin transfers cut costs by 30 to 90 percent versus money transfer operators, and by 50-90 percent versus corridor averages. In all measured corridors, settlement can be achieved in minutes, while traditional rails range from same day to T+5.

"The next phase is about building for utility."

While first generation ramps were built for trading, the next set is built around payments, payroll, treasury and other future use cases. As new primitives like stablecoin orchestration and stablecoin-FX stacks get paired with other consumer and enterprise tech products, on-ramping and off-ramping will become background steps.

Ramps are the essential plumbing that will enable this future, creating true fungibility between fiat and stablecoins, and making the process of moving between these two worlds effortless.