The Story of Pix.

A Glimpse Into The Future
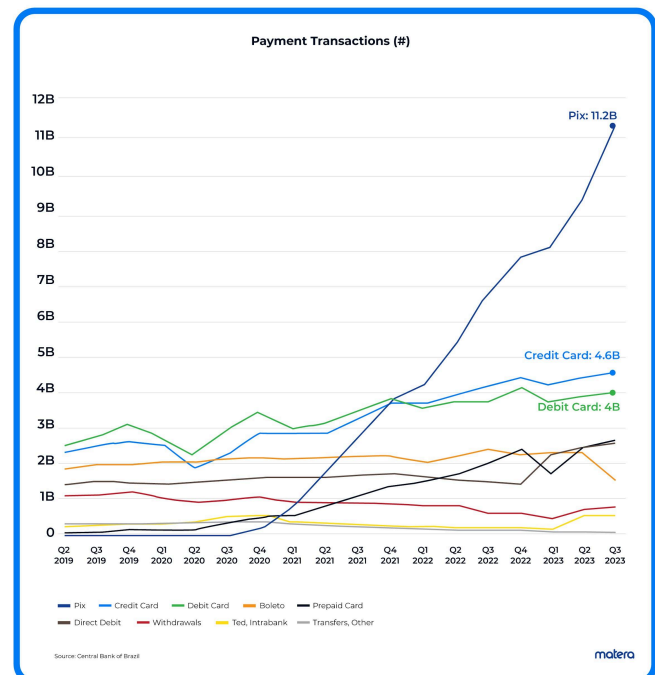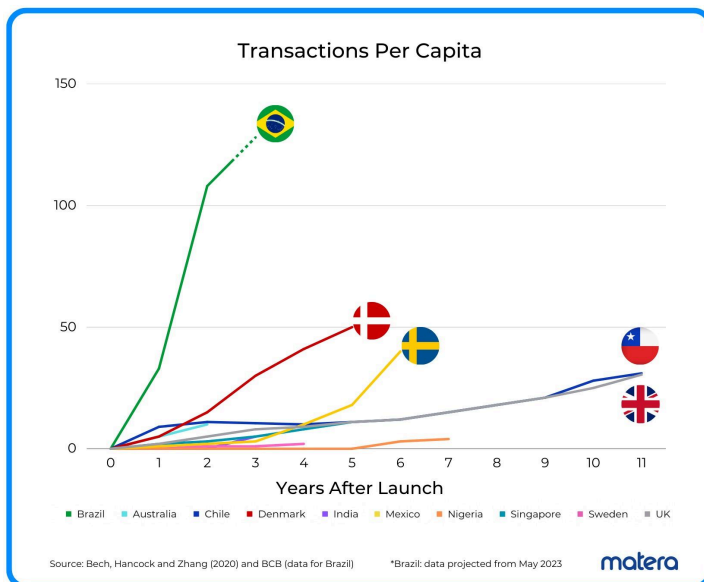Of Instant Payments In The US.

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INTRODUCTION

Imagine getting a utility bill emailed to your inbox and being able to pay it instantly by putting your phone to your computer screen and scanning a QR code. Or getting $100 sent to your bank account by a friend using their mobile phone and having access to the funds immediately to pay for dinner that night. Brazilians don't have to imagine these things. They've been living like this for the past 3 years thanks to Pix.
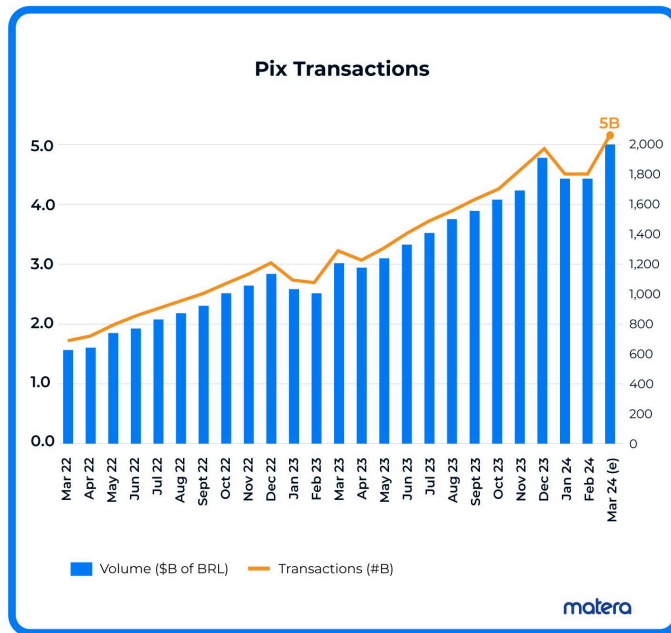
Pix is an instant payment scheme developed, managed, operated and owned by the Central Bank of Brazil. In 2018, they mandated that all banks be able to offer instant payments - why? In short, to modernize their economy. In 2019, 77% of retail transactions in Brazil were cash. Merchant fees for debit and credit were high, and, for credit, the funds weren't available for up to 30 days. So, there was a big opportunity to design a new payment scheme from scratch. Nearly 30% of consumers in Brazil were unbanked - the Central Bank of Brazil also saw this as a way to include them.

Pix launched in Nov 2020 to instant success.

Over 40 countries have some form of instant payments. None achieved the quick adoption of Pix. 25 months after launch over 130 million consumers, 70% of the Brazilian adult population, had either made or received a Pix transaction, and over 12 million businesses were using Pix. Within one year, the number of Pix transactions exceeded debit and credit transactions.

There are now over 5 billion Pix transactions every month.

Transactions Per Capita

Brazil ■ Australia ■ Chile ■ Denmark ■ India ■ Mexico ■ Nigeria ■ Singapore ■ Sweden ■ UK

Source: Bech, Hancock and Zhang (2020) and BCB (data for Brazil)   *Brazil: data projected from May 2023

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Payment Transactions (#)

Pix: 11.2B
Credit Card: 4.6B
Debit Card: 4B

Pix — Credit Card — Debit Card — Boleto — Prepaid Card
Direct Debit — Withdrawals — Ted, Intrabank — Transfers, Other

Source: Central Bank of Brazil

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Pix Transactions
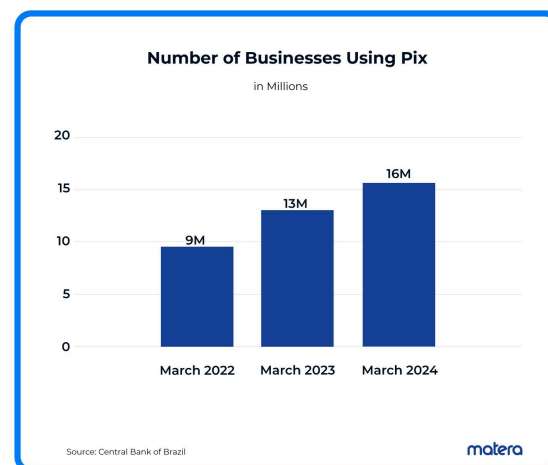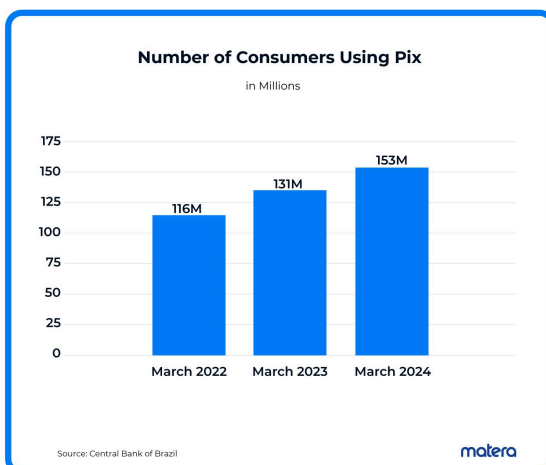

Volume ($B of BRL)   — Transactions (#B)

How did Pix become such a success? This white paper explains the main drivers, use cases, the future of Pix, how banks in Brazil make money with Pix and implications for the U.S.

PIX SUCCESS FACTORS

1. **Network Effect**

   The Pix network in Brazil was virtually guaranteed because the Central Bank mandated participation in Pix by banks and other payment institutions with more than 500,000 transaction accounts. This created a critical mass of users and kick-started the network effects so that the open-loop payment platform could gain traction.

   In 3 and 1/2 years after launch, 153 million consumers and 16 million businesses are using Pix.

Number of Consumers Using Pix
in Millions

Source: Central Bank of Brazil

Number of Businesses Using Pix
in Millions

Source: Central Bank of Brazil

The Central Bank of Brazil amplified this mandate by facilitating community among the financial institutions participating in Pix. Prior to launch, they organized in-person meetings periodically to update everyone on key milestones and future plans. They solicited input to key decisions and created working groups to tackle specific issues (e.g. fraud, QR codes etc.).

2. **Open Participation**
Pix is available to more than just banks. Any financial and payment institutions licensed by the Central Bank that offers transaction accounts[1] can participate. There are approximately 150 banks in Brazil, but there are over 700 FI's participating in Pix. Consumers can use Pix even if they only have a payment account (e.g. Paypal in the U.S.). Within one year Pix was used by over 45M Brazilians who had never had a bank account.

Open participation was further fostered by allowing an indirect model of integration. 85% of Pix participants are indirect which leads to higher participation as it significantly reduces the cost. Indirect participants aren't saddled with the technical connectivity costs associated with a direct integration. It also reduces the burden on the Central Bank of integrating every participant. Companies like PayPal in Brazil are indirect participants in Pix.

3. **User Experience**
A user experience that was consistent, simple and quick helped to drive adoption of Pix. The Central Bank of Brazil had more than 15 rules specifying the user experience. Below are two examples. The one on the left shows how Pix has to be accessed within a mobile banking app. It has to be either at the login or the screen immediately after login with no less prominence than any other function in the app. The example on the right is around messaging. The types of data included in the message is mandated - you can see payer's name, amount, hashed key for example. Just like a credit or debit transaction the swipe experience is consistent across issuers, the Pix experience is consistent across participants.
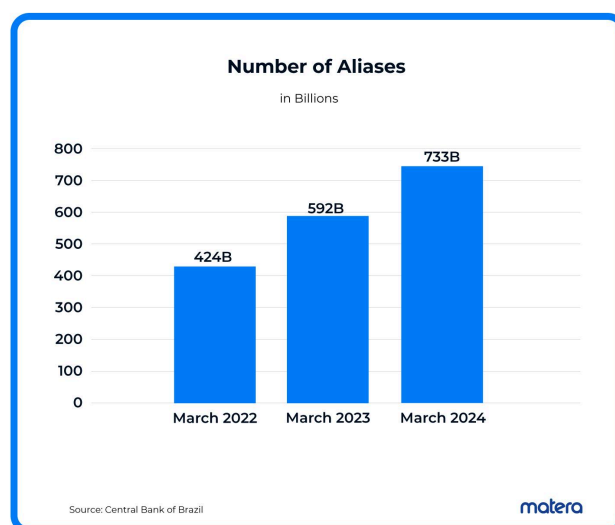

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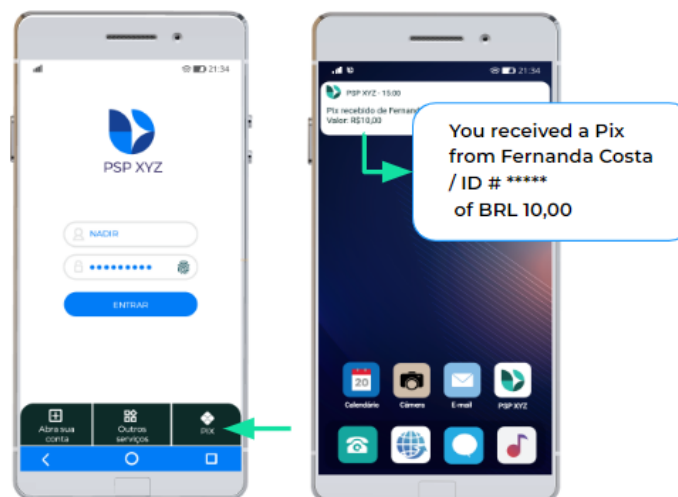
[1] Transaction accounts can be bank, savings or payment accounts

4. **Easy To Pay**

    Pix is also easy to pay - largely due to the alias database (e.g. directory). An alias is something associated with a financial account. It could be a phone number, email address or randomly generated string of characters. Paying with Pix is as easy as asking a friend for a Pix key which is often a phone number.

    Today, there are more 733 million aliases across 169 million users in Brazil.

Number of Aliases

in Billions

Month	Value
March 2022	424B
March 2023	592B
March 2024	733B

Source: Central Bank of Brazil

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5. **Easy to Charge**

    The Central Bank standardized API and QR code technology to make it easy to charge. Banks and payment institutions must provide standardized APIs to connect to POS software or online payment gateways. This makes it easy to change from one payment provider to another because the API integration is the same, and also encourages competition. Likewise all payment schemes in Brazil that use QR codes for payment initiation must use the standard for QR codes outlined by the Central Bank (based on EMV). This allows interoperability between different participants. For example, if this same standard existed in the U.S., a Wells Fargo customer could use their mobile phone to scan and pay a QR code created by Bank of America or vice-versa.

6. **Use Cases**

    When Pix launched, all use cases were supported including person-to-person, business-to-business, person-to-business, business-to-person, government-to-person etc.

    What use cases are most popular? That's been changing over time. In the beginning it was used mostly for people paying other people. 72% of Pix transactions in March 2022 were P2P. Only 18% were business-related. Over time, P2P as a percent of Pix transactions fell from to 50% today. And, business-related transactions increased to 39%.

Pix Transactions by Type (%)

Average Value Per Transaction
in U.S. Dollars
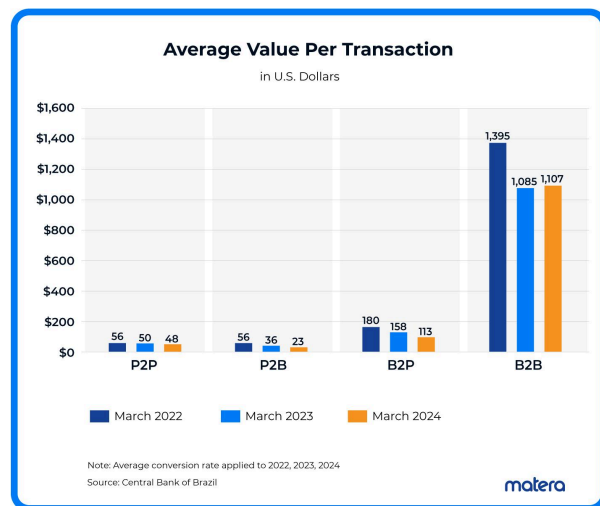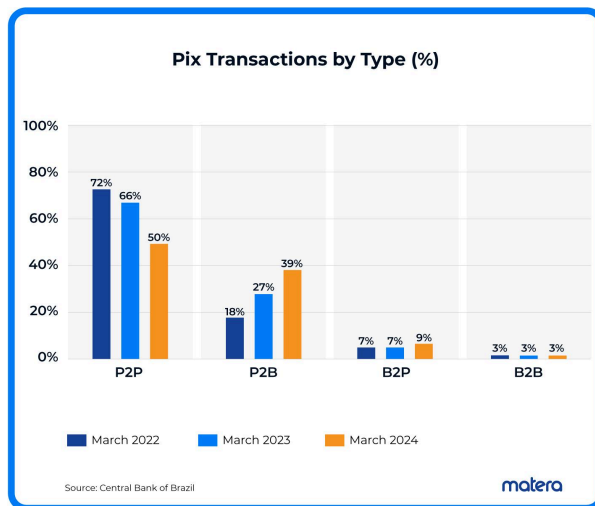
The biggest driver of that increase in business-related transactions was people paying businesses.

Merchants love Pix. It's significantly less expensive, faster and simpler. In Brazil, debit card transactions cost about 1-2% of a retail transaction, credit cards are 3-4%. Pix costs about a quarter of 1% or about 10X less than debit or credit. And, in the case of credit, a merchant might not get their money for up to 30 days so they often have to get a cash advance to manage cash flow which can cost them 5% of the value of the money they're borrowing. With Pix, they get their money instantly. It's common to see merchants in Brazil offer as much as 15% off when consumers pay with Pix.
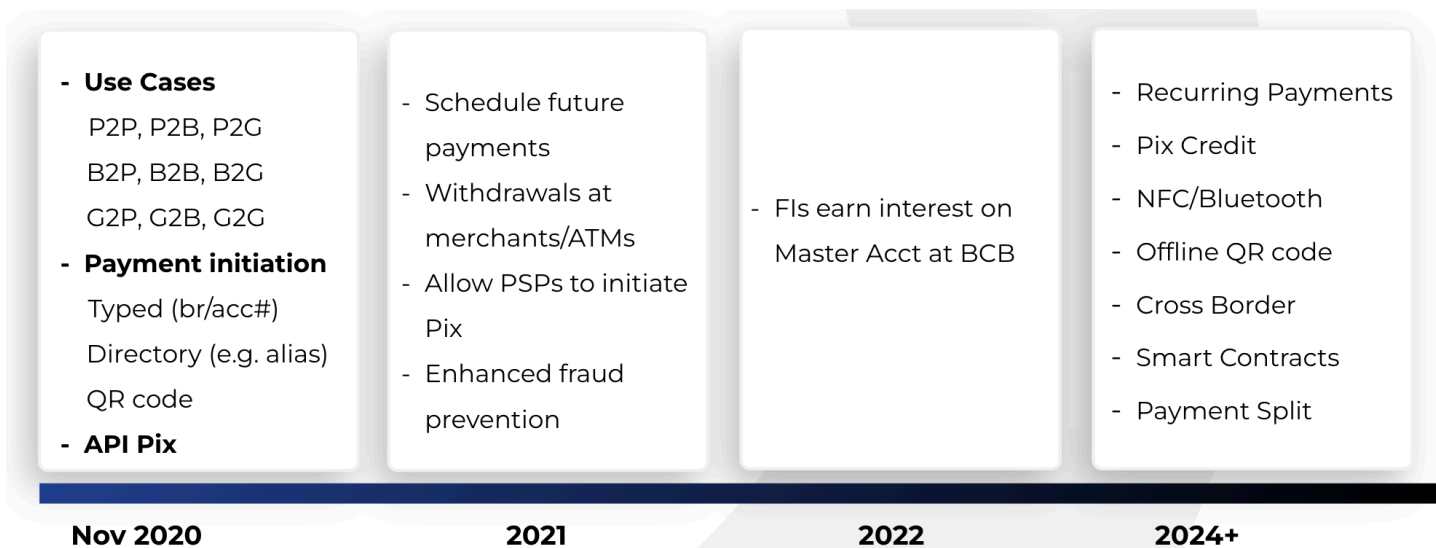
FUTURE OF PIX

While Pix is already a success story in instant payments, the Central Bank of Brazil has actively improved Pix over time, added new features and has innovative plans for the future.

When Pix launched, every use case was supported, and there were several ways to initiate a Pix transaction - by typing a branch and account number into a mobile phone, using an alias or by QR code. API Pix wasn't ready at launch, but within a month after.

In 2021, Pix was enhanced to be able to schedule future payments, make withdrawals at merchants and ATMs, to allow PSPs to initiate Pix and enhanced fraud prevention was introduced. In 2022 FIs even started earning interest on their money held in the Master Account with the Central Bank that funds Pix transactions.

For 2024 and beyond, the Central Bank is planning to enable recurring payments, Pix credit, cross border payments, offline QR code payments, payment within Smart Contracts, and split payments.

Nov 2020	2021	2022	2024+

- **Use Cases**
  P2P, P2B, P2G
  B2P, B2B, B2G
  G2P, G2B, G2G
- **Payment initiation**
  Typed (br/acc#)
  Directory (e.g. alias)
  QR code
- **API Pix**
	- Schedule future payments
	- Withdrawals at merchants/ATMs
	- Allow PSPs to initiate Pix
	- Enhanced fraud prevention
		- FIs earn interest on Master Acct at BCB	- Recurring Payments
			- Pix Credit
			- NFC/Bluetooth
			- Offline QR code
			- Cross Border
			- Smart Contracts
			- Payment Split

PIX MONETIZATION MODEL

The impact to FIs of the transition to Pix varied by use case and market position.

There's no revenue to be made in P2P, but, across the board, Pix is less expensive to process than other methods so everyone is winning in terms of cost savings.

For P2B, smaller banks and fintechs were the big winners as they've enjoyed a new source of significant revenue in swipe fees never available to them before. Large issuers do enjoy these same swipe revenues, but it doesn't make up for the loss in interchange.

While this is scary news to large U.S. issuers, debit revenues have been under attack for a while as insufficient funds and overdraft fees are going away and debit interchange is always being challenged.

Instant payments offer the potential for new sources of revenue and material cost savings. Not to mention incremental benefits in terms of acquiring and retaining customers.

And, if interchange fees can be charged in the U.S. on instant payments, this could significantly drive adoption among the large credit and debit issuing banks. The Central Bank of Brazil didn't plan for this in Pix, and the large credit and debit issuing banks lost material revenue as a result.

In the U.S., if merchants can get their money instantly, that's still a huge benefit compared with credit so they may be willing to pay the same in interchange with instant payments as with cards. With instant payments, merchants also face less counter- party risk as the settlement is final.

IMPLICATIONS FOR THE US

While Pix is a success story, there were many challenges in the beginning. Banks, payment institutions and solution providers supporting Pix had to adapt quickly. Below are three examples of lessons learned.

- Fraud - Fraud was a big issue especially in P2P transactions. Criminals were tricking consumers into sending them money and unlocked phones were being stolen. The solution was largely consumer education, but the Central Bank also imposed limits on how much could be sent via Pix by time of day, and they created a special refund mechanism so a consumer could claim fraud. They also introduced a mechanism to block suspicious transactions including messaging between banks to seize and return funds.

- Mistakes - With over 700 participants, inevitably there were going to be bugs. And, some FIs sent money to other FIs by mistake or sent the wrong amount and there was no recourse. The Central Bank stepped in and created legislation that mandated that when a mistake is made, a bank can ask another bank for the money back and they have to give it back.

- POS solution providers (e.g. NCR) were slow to integrate Pix which lead to merchant confusion and fraud. For merchants, they didn't know how to confirm payment of a QR code when Pix launched because their POS systems weren't integrated with Pix. Over time, POS providers integrated with Pix so merchants could confirm Pix transactions. Early on, fraudsters caught on to this and would generate a fake mobile receipt to trick merchants into making it look like they had paid. Over time, merchants learned to make sure their POS confirmed that the payment had been made.

THE BOTTOM LINE

Waiting to develop a strategy on faster payments in the U.S. is risky. In Brazil, large FIs who postponed offering Pix because they didn't think it would catch on lost top commercial clients as a result. Smaller players who bet on Pix were rewarded with new business, an associated jump in revenues and enterprise valuation.

Once instant payments achieves mass adoption, it leads to further innovation and additional revenue generating opportunities. Pix is a window into the future of how instant payments will evolve in the U.S.

Are you ready?

Get in touch: contact@matera.com