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# The Economics of Instant Payments: A Structured, Evidence-Graded Review of Financial Inclusion, Welfare, and Macro-Financial Effects across Global Fast-Payment Systems

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## Abstract

**Purpose:** This article examines the economic consequences of instant payment systems (financial inclusion, welfare, growth and macro-financial stability) and seeks to separate the well-established effects from the projections and correlations that form the basis of much of the practitioner discussion.

**Methodology:** This is a structured narrative review. The evidence is synthesized under an explicit four-tier scheme that gives primacy to peer-reviewed causal studies and central bank research over industry reports, separates out the observed from the forecasted, and places causal identification at the heart of the analysis. The review draws on 22 sources published between 2014 and 2026. The four systems under review are Brazil's Pix, India's UPI, the US FedNow and RTP and the EU's SEPA Instant. These are compared on design features.

**Findings:** The best-evidenced finding is microeconomic: mobile-money access is estimated to have lifted around 2% of Kenyan households out of poverty and there are quasi-experimental findings on the impact of adoption in Mexico and India. The aggregate GDP and consumer savings data are all based on industry estimates and should be treated as indicative only. Differences in outcomes across the four systems are associated with system design (operator model, pricing, mandate and interoperability) rather than with the technology itself, although with four systems and no causal design this is a pattern, not an identified effect. The macro-financial risks are material, notably deposit-funding pressure and authorized-push-payment fraud (£450.7 million in the United Kingdom in 2024).

**Unique Contribution to Theory, Practice and Policy:** The paper offers a five-channel transmission framework, an evidence-graded synthesis that distinguishes causal effects from projections, and a design-feature comparison that explains cross-country heterogeneity. It directs researchers toward credible identification and policymakers toward public, low-cost, interoperable and well-supervised designs on which inclusive outcomes depend.

**Keywords:** *Instant Payments, Financial Inclusion, Causal Identification, Pix, UPI*

**JEL Codes:** *E42, G21, G28, O16, O33*

## 1. INTRODUCTION

For most of modern economic history moving money between strangers was either slow, expensive or both. Cash was immediate but local and insecure; electronic transfers were safe but very slow (they cleared in batches over days). Instant payment systems remove that trade-off completely: they move money between any two accounts in seconds, at near zero marginal cost, at any time of day. In a number of large economies these systems have now become a fundamental part of the economy. Brazil's Pix which launched in November 2020, moved over R$26 trillion in some 63 billion transactions in 2024 (Banco Central do Brasil, 2024); India's UPI which launched in 2016 processed somewhere in the region of 18 to 20 billion transactions per month by mid-2025 (Reserve Bank of India & NPCI, 2025). At that scale the systems are likely to have a profound effect on who is in the financial system, how cheaply value can move and how economic activity is recorded.

A large and rapidly expanding literature addresses these changes, but it is uneven in quality and often read uncritically. The headline figures (aggregate GDP contributions and economy-wide consumer savings) circulate widely, although they rest largely on industry projections and simple correlations. The more rigorous evidence is of a much more narrow and microeconomic nature and is considerably more cautious. The real problem for the reader is therefore not a lack of claims but a lack of discipline in assessing them. You have to be able to tell the difference between a causal effect that has been identified and an association, between an observed outcome and a forecast, and between settings which are in fact very different and so would not be appropriate to pool.

This article responds to that problem rather than adding further claims to the literature. It makes three contributions. Firstly it presents the economic effects of instant payments in a five channel transmission framework (section 4). Second and most importantly it brings the evidence together in an explicit source tiering framework (section 2) which gives primacy to peer reviewed causal work and central bank research over industry reports, separates the observed from the projected and puts in the foreground a proper assessment of causal identification and its limitations (section 7). Thirdly it looks at the design features of Pix, UPI, FedNow and RTP and SEPA Instant in order to explain the cross country variation in the outcomes which unstructured syntheses fail to account for (section 8).

## 2. SCOPE AND METHOD

This is a narrative review (structured) rather than a systematic review in the PRISMA sense. A formal meta-analysis is not possible as the individual studies are too disparate in terms of intervention (mobile money, card rails, account to account instant), identification strategy, outcome (poverty, consumption, deposits, GDP) and setting. Pooling such different estimates into a single effect size would be misleading. What is both possible and in our view more useful is a

transparent synthesis which rates the evidence in the individual studies and is explicit about what each can and cannot support.

We searched the economics and central bank literature for studies published from 2014 onward, up to the time of writing in 2026. The searches combined general terms (instant payments, fast payment systems, real-time payments, mobile money and financial inclusion) with the names of the systems studied (Pix, UPI, FedNow, RTP and SEPA Instant). Because this is a structured narrative review rather than a systematic one, we did not log the exact search dates or strings, and we screened the titles, abstracts and full texts ourselves. The account ownership baselines against which the inclusion gains are measured are taken from the Global Findex database (Demirgüç-Kunt et al., 2022).

Studies were included if they (i) were about instant/fast/real time payments, mobile money or account to account digital payments; (ii) reported at least one economic outcome (financial inclusion, consumption, welfare, growth, bank funding or fraud); (iii) were published between 2014 and 2026; and (iv) were in English. We excluded purely technical/engineering papers with no economic outcome, opinion pieces without data, work on card interchange unrelated to instant rails and non-retrievable sources. The four systems compared are Pix, UPI, FedNow and RTP, and SEPA Instant. We chose them because they are among the largest and most studied fast-payment systems, and because they differ clearly in who runs them, how they are priced, whether they are mandated and how well they interoperate. As this is a narrative rather than a logged systematic review the figures below are approximate and reconstructed. Keyword searching brought back in the region of 180 candidate records; de-duplication left around 150; title and abstract screening against the inclusion criteria (i) to (iv) removed the clearly technical, non-empirical or off-topic papers, leaving around 90; and full-text assessment and tiering (supplemented by backward citation chasing from the top-tier papers) resulted in the 22 sources cited here. Figure 1 shows the flow.

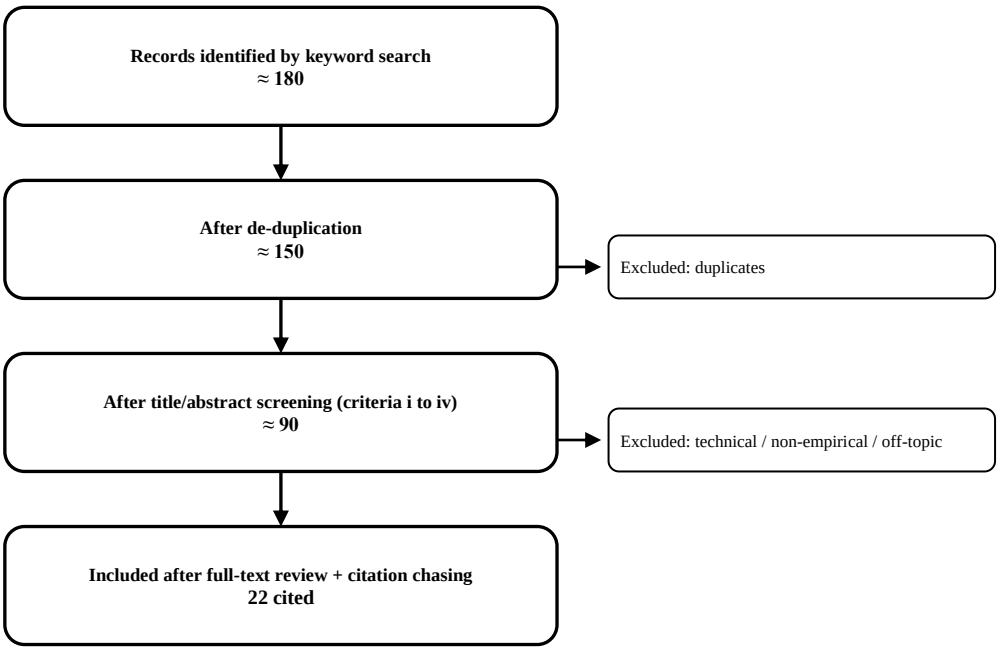



**Figure 1:** Screening flow. *Approximate screening flow for this structured narrative review. The counts are reconstructed rather than logged prospectively and are reported for transparency rather than as part of a PRISMA audit trail.*

We divided the evidence into four tiers according to its strength. Tier A comprises published, peer-reviewed studies that use a credible strategy for identifying causal effects, such as quasi-experiments, structural models and natural experiments. Tier B comprises research from central banks, the IMF, the BIS, the World Bank and the NBER, as well as working papers and review articles. A working paper stays in Tier B until it is published. Tier C comprises official statistics, survey data and administrative data. Tier D comprises industry, vendor and consultancy reports and projections. We used Tier D only for background and never to support a causal claim. We applied these rules to each source, and every empirical claim in the paper is labeled with its tier so that readers can judge how much weight to give it. Table 1 sets out the assignments.

**Table 1: Evidence-tiering scheme used in this review**

| Tier | Description | Examples in this review |
|---|---|---|
| A | Peer-reviewed studies with a credible identification strategy (quasi-experiment, structural, natural experiment) | Suri & Jack (2016); Jack & Suri (2014); Higgins (2024) |
| B | Central-bank, IMF, World Bank, BIS, and NBER research and working papers | Crouzet et al. (2023); Dubey & Purnanandam (2023); Frost et al. (2024); Sarkisyan (2024); Banco Central do Brasil (2025); IDB (2025); IMF (2025); Duarte et al. (2022); CPMI & World Bank (2016); NBER (2025); Wang & Phan (2026); Parlour & Rajan (2025) |
| C | Official regulator statistics and administrative data | Banco Central do Brasil (2024); RBI & NPCI (2025); ECB & EU (2024); Federal Reserve & TCH (2023); UK Finance (2025); Demirgüç-Kunt et al. (2022) |
| D | Industry, vendor, and consultancy reports and projections | ACI Worldwide & Cebr (2023); World Bank (2025) |

*World Bank (2025) is a practitioner note rather than research and is therefore kept in Tier D. Crouzet et al. and Dubey & Purnanandam are working papers and are placed in Tier B until published.*

*Claims from Tier D are reported as indicative context and are always cross-checked against higher tiers where possible; they are never presented as established causal effects.*

## 3. BACKGROUND: INSTANT PAYMENTS AND THE ECONOMICS OF MONEY MOVEMENT

An instant payment settles irrevocably in seconds and is always on. It contrasts with the batch-processed ACH transfers and the business hours wires that came before it. Its importance is entirely derived from the economics of the alternatives it replaces. Cash has real costs (in terms of handling, insecurity and the exclusion of those without access to physical infrastructure) while card and the old electronic rails all have fees and delays which hit small and frequent transactions and low income users particularly hard. Instant payments reduce the frictions that previously kept so many people and so many transactions outside the formal financial system by driving the marginal cost and time of a payment toward zero (while still being account based and traceable). There is a considerable body of central bank and international organization literature which treats these systems as potential development tools rather than just a matter of convenience (Frost et al., 2024; Duarte et al., 2022; Parlour & Rajan, 2025; CPMI & World Bank, 2016) and this review assesses that hypothesis against the evidence.

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## 4. CONCEPTUAL FRAMEWORK: TRANSMISSION CHANNELS

Instant payments can have an effect on an economy via a number of distinct but reinforcing channels (see Figure 2). The framework is essentially an organizational one: it structures the evidence that follows and makes it clear as to which outcome each body of work actually refers to so that evidence on one channel isn't just silently read as evidence for another.

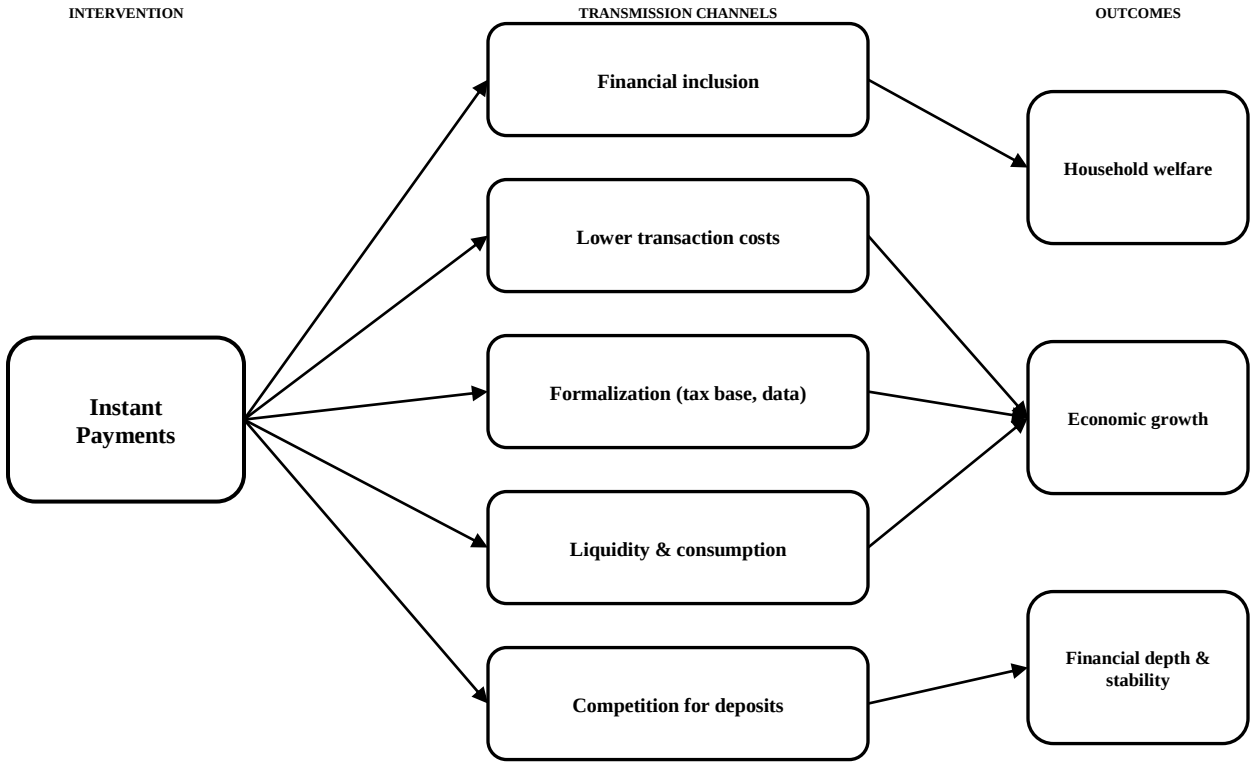



**Figure 2:** Transmission channels. *Five channels (financial inclusion, lower transaction costs,* formalization, *liquidity and consumption, and competition for deposits) lead to improvements in household welfare, economic growth and financial depth and stability. The strength of the evidence supporting each channel varies (Sections 5 to 7).*

The channels are: **(i) financial inclusion**, lowering the cost and raising the convenience of an account draws unbanked and underbanked people into the formal system; **(ii) transaction-cost reduction**, near-zero-cost, instant settlement reduces the deadweight cost of moving money, especially for small, frequent payments; **(iii) formalization**, digital payment trails record previously invisible cash activity, widening the tax base and improving economic data; **(iv) liquidity and consumption**, immediate access to funds raises effective household liquidity and can smooth or stimulate consumption; and **(v) competition for deposits**, mobile balances intensify competition among banks for funding, with consequences for the financial system that are not

uniformly benign (Sarkisyan, 2024; Banco Central do Brasil, 2025). These channels feed into three outcomes: household welfare, economic growth, and financial depth and stability. As the following sections show, the evidence is strong for some channels and thin for others.

## 5. EVIDENCE ON FINANCIAL INCLUSION

The inclusion channel has the most robust causal evidence and is microeconomic rather than aggregate. The anchor study is Suri and Jack's work on M-Pesa in Kenya which exploits the staggered rollout of the mobile money agent network and finds that access lifted roughly 2% of Kenyan households out of poverty, with effects concentrated among female-headed households and operating in part via improved risk sharing and savings (Suri & Jack, 2016; Jack & Suri, 2014) (Tier A). M-Pesa is a mobile-money system, not an account-to-account instant payment system, so this evidence is adjacent to our subject rather than direct. Quasi-experimental work on cashless payment adoption in Mexico (Higgins, 2024) (Tier A) and on the diffusion of payment technology following India's 2016 demonetization (Crouzet et al., 2023) (Tier B) also finds real adoption effects. More recent NBER work on breaking down the barriers to financial access is consistent with these findings (NBER, 2025). For instant account to account systems specifically the central bank and development bank work is growing but remains largely descriptive: an IDB analysis documents the link between Pix and rapid first time account use and merchant onboarding in Brazil (IDB, 2025) (Tier B).

The national statistics are in line with the work described above but cannot, by themselves, establish causality. The RBI's Financial Inclusion Index went from 53.9 in March 2021 to 64.2 in March 2024 as UPI scaled up, with a very large increase in the number of rural digital payment accounts (RBI & NPCI, 2025) (Tier C). Pix reached around 75% of the adult population in Brazil by 2024 having been launched in November 2020 (Banco Central do Brasil, 2024) (Tier C). The source does not distinguish clearly between users and accounts, so the figure should be read as an approximate measure of reach. These are real and substantial shifts. Both UPI and Pix were launched during a period of rising smartphone penetration and active policy support and, in India, demonetization. The simple correlation between the uptake of the system and the inclusion index is not an established effect. Section 7 comes back to that point. Table 2 summarizes the inclusion evidence and the tier.

**Table 2: Evidence on financial inclusion, with evidence type and tier**

| System / region | Finding | Type | Tier | Source |
|---|---|---|---|---|
| M-Pesa (Kenya) | ~2% of households lifted out of poverty; gains concentrated among women | Causal estimate | A | Suri & Jack, 2016; Jack & Suri, 2014 |
| Cashless payments (Mexico) | Adoption driven by network externalities; identified diffusion effects | Quasi-experiment | A | Higgins, 2024 |
| Electronic payments (India) | Demonetization shock accelerated durable payment-tech adoption | Natural experiment | B | Crouzet et al., 2023 |
| Pix (Brazil) | Association with first-time account use and merchant onboarding | Descriptive / central-bank | B | IDB, 2025 |
| UPI (India) | RBI Financial Inclusion Index 53.9 (2021) → 64.2 (2024) | Official statistic (association) | C | Reserve Bank of India & NPCI, 2025 |

*The index movement in the last row is a correlation over a period of multiple concurrent changes, not an effect of UPI per se.*

## 6. EVIDENCE ON WELFARE AND GROWTH

The evidence on welfare and growth is more mixed and in this case the difference between identified estimates and projections is the crucial one. On the credible side we have Dubey and Purnanandam who use variation in exposure to India's UPI to look at whether cashless payments lead to increased real economic activity and improved access to credit, and they do find significant effects via the formalization and lending channels (Dubey & Purnanandam, 2023) (Tier B). We place this study in Tier B because it is a working paper and its cross-sectional exposure design is weaker than the other identified studies. Sarkisyan's structural analysis of the Pix data finds a consumer welfare gain from the increased competition in deposits of the order of a few hundred dollars per household per year (Sarkisyan, 2024) (Tier B). Higgins looks at Mexico's 2009-2012 program of issuing approximately one million debit cards to recipients of cash transfers and finds that the adoption of payment technology has a spillover effect through the local economy via network externalities (POS terminal adoption at small retailers rose by about 18% two years later in the treated localities) and leads to a reallocation of consumption towards small stores rather than a net gain to the retailers (Higgins, 2024) (Tier A). These are specific, identified and bounded claims, and none of them is an economy-wide GDP effect.

In contrast the numbers that are most frequently cited in the practitioner space are projections or aggregate correlations. The oft quoted figure of "$164bn of GDP" and "$116.9bn of consumer savings" across 40 markets is from a study commissioned by a vendor (ACI Worldwide & Cebr,

2023) (Tier D) and is a modeled forecast rather than a realized, identifiable impact. The claim that Pix will "add roughly $50bn to Brazil's GDP by 2028" is also a projection (World Bank, 2025) as are the various single digit % "contributions to GDP" ascribed to UPI and PromptPay. They may be broadly in the right direction but they are all based on assumed elasticities and on correlations between adoption and growth which are susceptible to reverse causality. The sources do not fully report the assumptions behind these figures, so they cannot be independently checked. We present them in Table 3 *as projections, distinctly separated from actual outcomes* and we do not treat them as established causal effects.

**Table 3: Evidence on welfare and growth, separating identified estimates from projections**

| System / region | Effect | Type | Tier | Source |
|---|---|---|---|---|
| UPI (India) | Cashless payments raise real activity and credit access | Identified estimate | B | Dubey & Purnanandam, 2023 |
| Pix (Brazil) | Consumer-welfare gain from deposit competition (hundreds of $/household/yr) | Structural estimate | B | Sarkisyan, 2024 |
| Cashless payments (Mexico) | Network externalities: ~18% rise in small-retailer POS adoption; consumption reallocated | Identified estimate | A | Higgins, 2024 |
| Real-time payments (40 markets) | $164.0B GDP; $116.9B consumer savings (2023) | Projection (modeled) | D | ACI Worldwide & Cebr, 2023 |
| Pix (Brazil) | ~R$280B (~$50B) added GDP by 2028 | Projection (forecast) | D | World Bank, 2025 |
| UPI / PromptPay | ~1.4 to 2% of GDP contribution | Projection / association | D | World Bank, 2025 |

*Rows tagged "projection" are forecasts or modeled estimates, not realized, identified effects; they should be read as indicative only.*

## 7. EVIDENCE QUALITY AND CAUSAL IDENTIFICATION

The fundamental methodological issue in this literature is that the adoption of instant payment systems is far from random. Countries and individuals that adopt these systems earlier or more extensively are systematically different from those that don't (in terms of smartphone penetration, income, level of urbanization, regulatory capacity and exposure to other policy shocks). Hence a correlation between adoption and a positive outcome cannot be read as evidence of the payment system's effect. The three main threats are: (i) reverse causality (economic growth and financial deepening are the drivers of payment system adoption, so any link between UPI volume and GDP or Pix and account growth is likely to be at least in part or wholly in the reverse direction); (ii)

confounding (UPI and Pix both scaled during a period of increasing connectivity and in the Indian case during the 2016 demonetization and the subsequent shift to contactless payments in response to the pandemic which each of those events in turn had an impact on inclusion and activity); and (iii) selection (cross-country studies that pool early adopters will overstate the average effect).

The studies we put in Tier A, together with the identified working papers in Tier B, use research designs that address these threats. Suri and Jack use the staggered geographic expansion of the M-Pesa agent network and the household panel data to isolate the effect of access from the characteristics of the adopters (Suri & Jack, 2016; Jack & Suri, 2014). Higgins makes use of the staggered rollout of debit cards to cash transfer recipients in Mexico and the network externalities that this generated to identify diffusion effects rather than selection (Higgins, 2024). Crouzet, Gupta and Mezzanotti use demonetization as a shock to payment technology adoption (Crouzet et al., 2023). Dubey and Purnanandam use cross-sectional variation in UPI exposure (Dubey & Purnanandam, 2023). All of these designs have their limitations (external validity across countries, general equilibrium effects and the difficulty of measuring the informal) but they do allow for causal language in a way that an index-versus-volume correlation does not.

Two implications follow for how the evidence should be interpreted. Firstly, the strength of the claims varies dramatically by outcome: the poverty and risk sharing effects of mobile money are well established (Suri & Jack, 2016; Jack & Suri, 2014) whereas the economy wide GDP effects are at present *not* established by any credible causal work and are essentially all projection (ACI Worldwide & Cebr, 2023; World Bank, 2025). Secondly, Pix and UPI are not equivalent evidence for one another. They are different in operator (a central bank versus a bank owned utility), different in country, different in the instruments they replaced and different in their regulatory regimes so a result for one is not evidence for the other. A genuine synthesis therefore reports a *range* of effect sizes by channel and by setting rather than a single headline figure which is the approach this review takes.

## 8. CROSS-COUNTRY HETEROGENEITY: DESIGN FEATURES AND OUTCOMES

The real question of interest is not whether instant payments "work" (the outcome is so different across countries) but rather which design features drive adoption and, through it, downstream effects. The comparison between rapidly adopting public systems and slower markets is instructive. Pix is operated by the Banco Central do Brasil with effectively mandatory participation by large institutions and no fees to individuals. UPI is operated by the bank owned National Payments Corporation of India (NPCI) as an interoperable layer and has zero or very low merchant fees (Banco Central do Brasil, 2024; Reserve Bank of India & NPCI, 2025; Duarte et al., 2022). Both achieved rapid adoption, although Pix participation was effectively mandatory for large institutions while UPI grew through bank-owned interoperability. The US story is very different in that RTP (a private Clearing House system) was launched in 2017 and FedNow by the Federal Reserve in 2023. They are not mandated and are not fully interoperable with each other. The adoption gap is substantial: in 2024–25 monthly fast-payment transactions per capita were around

27 in Brazil (Pix) and 11 in India (UPI), against around 0.12 in the US (RTP and FedNow combined, Q1 2026). (Frost et al., 2024; Federal Reserve & The Clearing House, 2023; Wang & Phan, 2026). The EU, having seen that voluntary adoption of SEPA Instant Credit Transfer had come to a standstill, chose to use regulation. The 2024 Instant Payments Regulation requires all euro area payment service providers to be able to receive instant payments from January 2025 and to be able to send them from October 2025 and caps the price at the level of an ordinary transfer (ECB & EU, 2024).

The pattern is that operator model, pricing, mandate and interoperability, rather than the instant settlement technology itself, are associated with the cross-country variation in adoption, and so with the inclusion and welfare effects that follow. With only four systems and no causal design, this is an association, not an identified effect. Brazil and India also differ from the US and EU in digital ID, bank penetration and smartphone access, which may explain part of the gap. Table 4 looks at the four systems on these characteristics. The takeaway for the welfare debate is that the large effects seen in Brazil and India are in part a consequence of a public, low cost, mandated and interoperable design and should not be extrapolated uncritically to markets with a different institutional arrangement.

The four systems studied here are mostly in large or high-income markets. African fast-payment systems, including Kenya's PesaLink, Nigeria's NIP, Tanzania's TIPS and the pan-African PAPSS, have so far been documented mostly in descriptive and policy reports, and we did not rate them against the tiers. Whether the design associations above hold in lower-income, mobile-money-led markets is an open question.

**Table 4: Design features of four instant-payment systems and their association with adoption**

| System | Operator model | End-user pricing | Mandate / interoperability | Adoption |
|---|---|---|---|---|
| Pix (Brazil) | Central bank operated | Free for individuals | Mandatory for large banks; fully interoperable | Very high, rapid |
| UPI (India) | Bank-owned utility (NPCI) | Zero / minimal | Interoperable by design | Very high, rapid |
| FedNow / RTP (US) | Fed + private (TCH) | Bank-set fees | No mandate; limited interoperability | Low, slow |
| SEPA Instant (EU) | Private ACHs under EU rules | Capped at normal transfer | Mandated reach by 2025 (IPR) | Rising under mandate |

*Adoption is measured as monthly fast-payment transactions per capita, 2024–25 (US: Q1 2026) (Frost et al., 2024; Federal Reserve & The Clearing House, 2023; Wang & Phan, 2026).*

## 9. MACRO-FINANCIAL EFFECTS AND RISKS

The enthusiastic literature tends to understate the macro-financial costs of instant payments, which this section treats as first-order and supports with evidence. The most extensively studied is competition for deposits. Instant payments reduce the stickiness of bank funding by making balances instantly mobile. Sarkisyan's structural work on Pix shows that the system increases the deposit rates that banks have to offer and reduces their funding advantage (Sarkisyan, 2024) and the Banco Central do Brasil's own analysis of instant payments and the banking system comes to broadly similar conclusions on the issue of funding and competition (Banco Central do Brasil, 2025). This is good for the consumer but it does make bank funding more difficult and in a stressed environment could lead to faster outflows. The wider implications for bank business models are the subject of ongoing research (Parlour & Rajan, 2025).

A second effect runs through the monetary and financial statistics and transmission channel: as digital, account-based payments get deeper the demand for cash, the behavior of the monetary aggregates and indeed the pass through of policy rates will change (IMF, 2025; Duarte et al., 2022). A third and increasingly important cost is fraud and consumer protection. The irrevocable, real time settlement that is the very essence of instant payments leaves no opportunity to recall a payment and this has made authorized push payment (APP) fraud (where the victim is tricked into sending the money themselves) a major issue. In the UK in 2024 APP fraud losses were £450.7m of the total fraud losses of £1.17bn and banks reimbursed approximately 59% of the APP losses (UK Finance, 2025). The very thing that makes instant payments so efficient (irrevocability) is what makes this form of fraud difficult to remedy and new reimbursement rules shift the cost rather than eliminate it. The fraud evidence cited here comes from the UK only. Comparable evidence for markets such as India, Brazil and Africa was not systematically reviewed, so these figures should not be read as representative of other markets. Table 5 sets out the risks, the mechanisms and the evidence.

**Table 5: Macro-financial and consumer risks of instant payments, with evidence**

| Risk | Mechanism | Evidence | Source |
|---|---|---|---|
| Deposit competition | Mobile balances raise deposit rates, erode bank funding advantage | Structural & central-bank analysis of Pix | Sarkisyan, 2024; Banco Central do Brasil, 2025 |
| Bank-funding stress | Weaker deposit stickiness; faster outflows under stress | Emerging banking research | Banco Central do Brasil, 2025; Parlour & Rajan, 2025 |
| Monetary transmission | Shifts in cash demand and monetary aggregates | Central-bank / IMF research | IMF, 2025; Duarte et al., 2022 |
| APP fraud (irrevocability) | Victims deceived into irreversible transfers | £450.7M UK APP losses, 2024; ~59% reimbursed | UK Finance, 2025 |

*None of these risks negates the benefits of instant payments, but each is a real cost that design and supervision must internalize.*

## 10. POLICY IMPLICATIONS

Read against the evidence instant payments can advance inclusion and welfare, though the magnitude of that impact appears to be associated with institutional design rather than with the technology alone. Four implications emerge. **(i) Public or low cost rails.** The systems which have shown the strongest evidence of adoption and inclusion (Pix and UPI) are public or quasi-public, low cost or zero cost infrastructure; the importance of this design choice rather than instant settlement per se is clear (IDB 2025; Banco Central do Brasil 2024; Reserve Bank of India & NPCI 2025). **(ii) Mandate and interoperability.** The US experience of very slow, voluntary adoption in contrast to the EU's experience of rapid adoption via a regulatory mandate is a case in point as far as the need for mandate and interoperability is concerned (ECB & EU 2024; Federal Reserve & The Clearing House 2023). **(iii) Data governance.** Payment data can be used to power inclusive credit scoring but only if there are appropriate consent and data privacy frameworks in place (CPMI & World Bank 2016). **(iv) Consumer protection as a first order design parameter. Given that** settlement is irrevocable, confirmation of payee, fraud liability and reimbursement are all essential complements, otherwise the fraud costs described above will erode the gains (UK Finance 2025). The qualified conclusion is that it is design which will determine whether instant payments deliver inclusive growth or just faster payments and whether or not some of the claimed macro benefits will in fact be realized.

## 11. LIMITATIONS

This is a review with its own limitations. As a narrative review rather than a systematic review with a pre-registered protocol the selection of studies is transparent but not exhaustive and the evidence tiering is clearly laid out but involves a degree of judgment. The causal literature on account-to-account instant systems per se (as opposed to mobile money and card rails) remains young so a number of the strongest Tier A findings are in fact adjacent rather than exact and more robust conclusions will require further quasi-experimental work on Pix, UPI and their successors. The field is also evolving rapidly with the reimbursement regimes, the EU mandate and the macro-finance response of the banks all in flux so the risk assessment in particular will need to be re-evaluated as the evidence base develops. The review rests on a small source base of 22 studies, and it does not include some relevant evidence on debit cards and savings or the latest Global Findex edition (2025). Its fraud evidence comes from a single region, and it does not cover African fast-payment systems. The tiering also involves our own judgment, which we did not test for reliability, for example by independent second coding.

## 12. CONCLUSION

Instant payments have become an economic phenomenon, not only a technical one, and the task for research is to weigh their effects honestly rather than to celebrate them. The best-identified

evidence is microeconomic and encouraging: access to digital payments has measurably reduced poverty and raised formal-sector activity in specific settings. The aggregate claims that dominate practitioner debate (tens of billions in GDP and consumer savings) are, by contrast, projections and correlations that credible causal work has not yet established, and they are entangled with concurrent shocks and with reverse causality. Outcomes differ across countries, and the differences are associated with system design, although the evidence cannot show that design is the cause, and the macro-financial costs (deposit-funding pressure and, above all, the fraud that irrevocable settlement enables) are real and must be set against the benefits. The disciplined conclusion is neither dismissive nor triumphalist: instant payments are a promising instrument whose realized economic value depends on public-minded design, sound supervision, and a willingness to read the evidence for what it is.

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