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# India at the global forefront in digital payments

Digital payments have grown exponentially in India in recent years, thanks notably to the real-time payment system, Unified Payments Interface (UPI). The rise has largely been driven by the Reserve Bank of India (RBI) and the National Payments Corporation of India (NPCI), supported by commercial banks and India's rich fintech ecosystem.

The growth in digital payments in India dovetails with the country's goal to enhance financial inclusion, in an economy with a sizeable unbanked population and large informal sector, and where cash use remains all-pervasive. The local success of UPI could also serve as a catalyst for the creation of a central bank digital currency, and foster efficiency gains in cross-border payments, which remain costly and complex, as in all emerging economies.

**David Revelin**
**Banque de France Asia-Pacific Office, Singapore**

**Paul Salez**
**Banque de France Seconded Official to the Reserve Bank of India, Mumbai**

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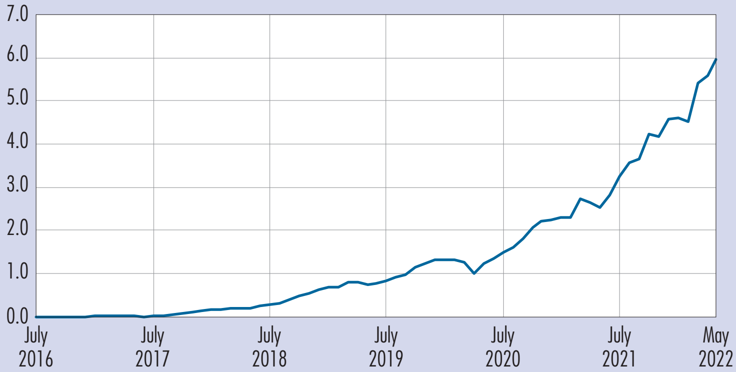
200 million
number of transactions per day recorded on India's real-time payment system, UPI, in May 2022

USD 940 billion
value of transactions carried out on UPI in 2021, i.e. 31% of India's GDP

USD 83 billion
value of remittances by Indian migrant workers in 2020

Volume of transactions carried out on UPI since its launch
(billions)




Source: National Payments Corporation of India.
Note: UPI stands for Unified Payments Interface

## 1 Digital payments are expanding strongly in India, as symbolised by the rise of the real-time payment system, UPI

### Digitalisation, a major challenge for an economy with a sizeable informal sector and unbanked population

In recent years, India has experienced a revolution in retail digital payments. Thanks to the wide array of solutions on offer backed by public authorities, the country now ranks first worldwide for real-time, account-to-account digital transactions, with a share of over 40% of all such payments made throughout the world in 2021, well ahead of China.[1]

As in other emerging countries, the rise of digital payments in India has been fuelled by increased internet penetration, notably via smartphones (54.2% of the population owned a smartphone in 2020, up from 4.7% in 2011),[2] in an economy that remains predominantly informal – the informal sector accounts for at least 80% of jobs (Ramana Murthy, 2019) – and where a sizeable share of the population remains unbanked. The shift towards digitalisation was facilitated by the launch in 2009 of the national electronic and biometric identity scheme, Aadhaar,[3] and the provision of a digital foundational infrastructure as a public good within the *India Stack* (D'Silva et al., 2019). It subsequently intensified with the demonetisation of the INR 500 and INR 1,000 banknotes in 2016, and then the Covid-19 crisis in 2020-21. The trend therefore serves a twofold objective: the modernisation of the economy[4] and the expansion of financial inclusion, which is understood as ensuring the broadest and cheapest possible access to financial products and services for both individuals and firms.

### UPI, a flexible and easy-to-use system that is growing exponentially

The rise of digital payments in India can be symbolised by Unified Payments Interface (UPI), a real-time payment system launched in 2016 and available via smartphone app,[5] where users identify themselves with a telephone number, a virtual payment address (VPA) of their choice or a QR code. The application requires users to have a bank account, connected either directly or via a bank card. Since March 2022, UPI has also been made available to users of non-smart mobile phones (i.e. with no internet connection), which still account for more than half of all mobile phones in use in India.

UPI is a person-to-merchant (P2M) as well as a person-to-person (P2P) system. The maximum daily transaction limit varies from bank to bank, but is generally set at INR 100,000 (around EUR 1,200). UPI also allows users to link their different bank accounts with the same virtual address and carry out other banking transactions such as checking their account balances, etc. They can also carry out financial transactions such as stock market investments, which are becoming increasingly popular among Indian retail customers: in December 2021, the Reserve Bank of India (RBI) increased the limit on select stock market transactions to INR 500,000 or around EUR 6,000. One of the major advantages of UPI is its interoperability and open architecture which allows banks, payment service providers or third parties to develop application programming interfaces (APIs).

UPI has grown exponentially since it was created. It now has 323 participating banks and recorded over 39 billion transactions in 2021 with a total value of over USD 940 billion (equivalent to around 31% of

1 48.6 billion real-time, account-to-account transactions were carried out in India in 2021, compared with 18.5 billion in China (ACI Worldwide, 2022).

2 Source: Statista.

3 Aadhaar provides nearly the entire Indian population with a unique administrative identifier that can also be linked to a bank account or personal tax number. The identifier simplifies access to welfare benefits (in-kind benefits and cash transfers) and public services. It also makes it easier to buy a mobile telephone connection or open an online bank account as it automates know-your-customer (KYC) procedures, which were previously complex and time-consuming.

4 Rooj and Sengupta (2020) established a causal link between digital payments and growth in India.

5 UPI can be accessed via various types of app: UPI's own app (BHIM), or those of banks or other non-bank service providers.

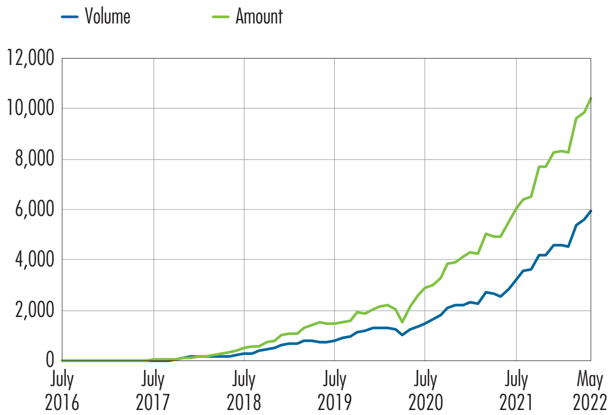
India's GDP).[6] Use of the system is continuing to expand, with almost 6 billion transactions amounting to more than INR 10 trillion (over EUR 120 billion) recorded in May 2022 alone, double the number seen a year earlier (see Chart 1). The total value of UPI transactions now outstrips that of bank card transactions by three to one.[7]

Besides UPI, India's retail payment system consists of a host of services (or payment interfaces), which offer a bouquet of systems capable of supporting various types and values of transactions. Among this ecosystem, UPI remains the dominant mode, accounting for more than half of total transaction volumes.

However, the preferred means of payment in India is still cash, especially among poor, rural populations and in the informal sector. In a pilot survey conducted by the RBI (Bhuyan et al., 2021), half of respondents said they preferred using cash for payments and receiving money. Above all, the ratio of cash in circulation to GDP remains high, at 14.4%. It did fall sharply in 2016 following the demonetisation (to 8.7%), but has since risen again to exceed its pre-2016 level.[8] Moreover, the RBI has said its goal in developing digital payments is "less cash but not cashless".

### C1 Transactions carried out on UPI since its launch

(volume in millions; amount in INR billions)




Source: National Payments Corporation of India.

## 2 The active role of public authorities and contribution of the fintech ecosystem

### Payment digitalisation is a priority for Indian authorities

India's payment system relies on two main pillars: the country's central bank (RBI) and the National Payments Corporation of India (NPCI). The RBI is responsible for regulating and supervising the payments and settlement system, and in 2008 set up the NPCI, in conjunction with the Indian Banks' Association, to organise and manage it (excluding large-value payments). It was the NPCI that created and operates UPI.

The RBI's strategy focuses on improving access to digital tools, raising public awareness of digital payments and introducing innovative solutions (including offline payments for use in areas where internet access is limited). Two recent initiatives have helped towards these goals:

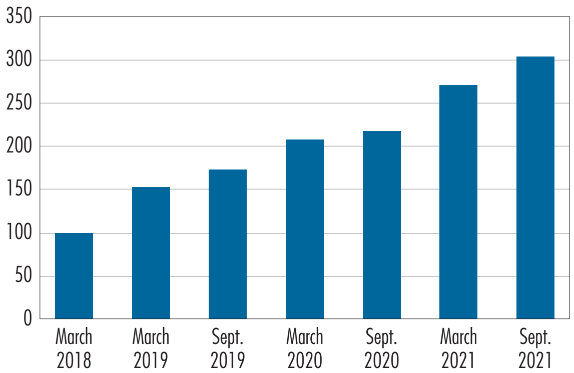
- the setting up in 2019 of a regulatory sandbox,[9] the first two cohorts of which were on the themes of "retail payments" and "cross-border payments";

- the creation in August 2020 of the Reserve Bank Innovation Hub (RBIH) located in Bengaluru, which aims to develop external partnerships to foster financial sector innovation.

The RBI has also developed a digital payments index, a weighted composite index comprised of five main parameters, each broken down into a broad range of indicators. The parameters are Payment Enablers (25%), Payment Infrastructure – Demand-side factors (10%), Payment Infrastructure – Supply-side factors (15%),

6 Source: NPCI
7 For fiscal year 2020-21, UPI transfers represented INR 41 trillion, whereas card payments represented INR 13 trillion (Source: RBI Annual Report).
8 Source: Bank for International Settlements. Only Hong Kong (21.3% of GDP) and Japan (22.9%) had higher ratios than India in 2020, whereas China and Indonesia had much lower ratios (8.8% and 5.8% respectively). The ratio for the euro area was 12.9%.
9 A regulatory sandbox refers to an approach allowing for the development of innovations under a relaxed legal framework for the purposes of testing, under the control of regulators.

### C2 Reserve Bank of India's Digital Payments Index
(March 2018 = 100)




Source: Reserve Bank of India.

Payment Performance (45%) and Consumer Centricity (5%). The index has been calculated retrospectively since 2019 and shows a sharp rise in recent years (see Chart 2). The RBI has also conducted an international comparison with several emerging and advanced economies (RBI, 2021; see also Box 1). The results show that India is a leader in areas such as government e-payments and the regulation of payment system costs, but still lags behind in the digital payment of utility bills and the availability of channels for cross-border personal remittances.

## A dynamic fintech ecosystem that is also supported by conventional banks

The rise in digital payments in India is also being driven by a rapidly expanding fintech ecosystem, comprised of local players as well as foreign Big Techs. Fintechs in India have the advantage of being able to leverage the country's established expertise in IT services and its significant capital inflows: the digital sector today accounts for 50% of India's inward foreign direct investment (FDI) compared with 20% a decade ago (HSBC, 2021).

However, conventional banks are still closely involved in financial digital innovation. The major banking networks, including those that are publicly owned (and which have the largest market share), have their own digital banking subsidiaries. They are contributing to the expansion of UPI and offer a broad range of online loans. By allowing third-party fintechs to offer new interfaces connected to banking platforms, UPI has expanded the range of payment solutions on offer to better meet the needs of customers.

Ultimately, the fact that public authorities in India played a key role very early on in the development of digital payment infrastructures has meant that the process has been coordinated efficiently, with the successful integration of both public and private commercial banks. India's approach differs from that of China where digital

BOX 1

### The situation differs in the euro area and France

Unlike in India, the retail payments landscape in France and the euro area is characterised by high rates of access to banking services and the widespread use of credit and debit cards. In the euro area, card payments account for the majority of non-cash payments (in volume terms) and half of all online payments (ECB, 2020). In France, the number of card payments doubled between 2010 and 2020 to a total of 14 billion per year, whereas cheque usage has declined and cash remains marginal (BDF, 2021). Existing electronic payment instruments are already widely used, meaning there is a less pressing need for digital payment systems.

In addition, the euro area does not yet have a shared instant payment system comparable to India's UPI. At the end of 2018, the Eurosystem launched TARGET Instant Payment Settlement (TIPS), a market infrastructure service for the real-time transfer of funds in the euro area.[1] However, for the time being, the only instant payment solutions on offer for retail customers are national ones such as Paylib in France (created under the impetus of France's CB Bank Card Group), Bizum in Spain and Jiffy in Italy. A consortium of banks has also decided to launch the European Payments Initiative (EPI) which will offer a pan-European digital payment solution for retail use. The Banque de France and the European Central Bank both support this initiative.

1 TIPS will soon be extended to Sweden and then Denmark, allowing it to connect with other currencies.

payments were initially driven by private fintechs, and public authorities have only taken back control in recent years with a tightening of regulations.

The way forward for UPI and digital payments in India now involves two major steps: the development of cross-border usage (see Box 2) and the forthcoming introduction of a retail central bank digital currency (CBDC). In its Budget on 1 February 2022, the Government of India announced that a retail CBDC would be launched in the fiscal year 2022-23,[10] and this was recently confirmed by the RBI, which emphasised a "gradual" introduction using "various technologies".[11]

The already successful model of UPI in India will certainly prove to be a useful template for a CBDC. However, the integration between a retail CBDC and a real-time payment system such as UPI, as and when CBDC is launched, needs to take into account that they share common characteristics (digitalisation, cost reduction, instantaneity). In any case, a retail CBDC will most certainly contribute to the growing use of digital payments in India[12] and can also facilitate cross-border usage, for instance by leveraging on multi-CBDC platform projects such as the project Dunbar carried out by the BIS Innovation Hub in Singapore, and for which the Banque de France is an observer.

BOX 2

### Numerous potential benefits for cross-border payments

The development of cross-border digital payments could significantly increase the efficiency and lower the cost of international payments, especially for emerging economies such as India, be these overseas remittances,[1] global trade payments or payments by tourists. Procedures for remittances, for example, are currently complex (customer identification), slow (receipt of funds can take up to seven days) and costly (operating and currency conversion costs).

Capitalising on the local success of UPI, the Reserve Bank of India (RBI) and National Payments Corporation of India (NPCI) have therefore launched several international projects, including:

- the linkage of UPI to Singapore's real-time payment system, PayNow, scheduled for July 2022;
- the participation of the NPCI in the first phase of the Nexus project to create a blueprint for instant cross-border payments, which is being driven by the Bank for International Settlements (BIS) Innovation Hub and the Monetary Authority of Singapore (BIS-MAS-NPCI, 2021);
- the signing in March 2022 of a Memorandum of Understanding with the Arab Monetary Fund (AMF) to facilitate interoperability between UPI and the AMF cross-border real time payment system, Buna;
- the adoption of UPI in Nepal, announced in February 2022;
- the signature by the NPCI in June 2022 of an agreement with the French fintech Lyra to enable Indian tourists to use UPI in France.

1 India is the leading recipient of remittances in the world, with inflows of USD 83 billion in 2020 (Asian Development Bank, 2021).

10 An Inter-Ministerial Committee in 2019 had earlier recommended the launch of a CBDC in the future, when needed.
11 Deputy Governor T. Rabi Shankar, RBI's Monetary Policy Press Conference, 8 June 2022, *Reserve Bank of India – Speeches (rbi.org.in)*
12 In the case of India, the development of a retail CBDC can also be seen as a proposed alternative to crypto-currencies, on which the RBI has taken a very critical stance (Shankar, 2022).

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