



Task Force 05

INCLUSIVE DIGITAL TRANSFORMATION

Standardized payment interfaces as Digital Public Infrastructure: learning from the experience in India and Brazil

Bruna Cataldo, Researcher, Center for Studies on Inequality and Development (Brazil);

Larissa Galdino, Researcher, United Nations University (Portugal);

Nicolo Zingales, Researcher, FGV Law School (Brazil);

Smriti Parsheera, Research Ambassador, Interledger Foundation (India)



Abstract

In a world transformed by digitalization, the adoption of digital payments centric digital public infrastructure (DPI) has become a key public policy topic. This policy brief reviews the payments DPI approach in two leading jurisdictions – Brazil and India – to study the evolution of these systems and the lessons that can be learned from their experiences. Based on this analysis, we offer five guiding rails that can guide the move towards adoption of standardized payment interfaces among G20 nations and in other parts of the world and to improve the outcomes of existing systems. The recommendations focus on a) building robust metrics for measuring the successes and failures of DPI interventions, b) careful and holistic assessment of competitive effects, c) collaborative governance structures instead of a top-down approach, d) user-centric approach to data management and multiple channels for assistance to users, and e) mechanisms for ensuring the system’s accountability to an independent regulator, system participants, and end users.

Keywords: Digital Finance, Digital Public Infrastructure, Governance, Data, Capabilities

Introduction - and Short Diagnosis of the Problem

In a world transformed by digitalization, Digital Public Infrastructure (DPI) has become a key public policy topic. DPI refers to the infrastructure needed to sustain digital ecosystems: DPIs are the digital equivalent of railways and roads responsible for powering the functioning of a digital world. To do so, however, DPIs must hold specific characteristics. Notably, they must (i) enable innovation stemming from multiple agents; (ii) be interoperable, to maintain the building blocks, and (iii) be public/consumer-oriented to achieve digital human rights.¹ To illustrate these dynamics, we take the example of standardized digital payment interfaces, which enable the creation of an open and inclusive ecosystem for value creation.

The rise of DPI based on the standardization of digital payment interfaces is a recent phenomenon. However, their emergence as building blocks for the digital economy draws upon innovative approaches taken by regulators in pursuing a more pluralistic and inclusive financial system. The challenge of non-standardized application program interfaces (APIs) for payments means a steep learning curve for providers of new payment mechanisms and other financial technology that depend on an adequate connection to bank accounts to bring their product to market. This typically involves bilateral agreements and continuous coordination to enable a smooth interconnection, which puts the incumbent in a privileged position as the holder of the keys to their own disruption. As a result, the number of payment instruments and of payment data-enabled innovations remains limited. While significant banks may be forced to facilitate access to such

¹Digital Impact Alliance. 2023. What Is Good Digital Public Infrastructure?

<<https://dial.global/good-dpi/>>

interfaces by antitrust regulators, whenever the refusal constitutes an abuse of dominant position or is the result of an anticompetitive agreement, the remit of antitrust action is limited in the case of smaller players. For this reason, a broader, sector-wide intervention is needed to create a level-playing field and solve the coordination problems affecting the industry. At the same time, numerous aspects of the development of DPI deserve critical attention for governments to implement this policy successfully. To guide other jurisdictions towards the building of standardized payment interfaces as DPI, in this policy brief, we review the key features of this approach in two leading jurisdictions (Brazil and India), the premises upon their systems were established, and lessons learned throughout this process.

Comparative Overview: The Rise of Payment DPIs in Brazil and India

In Brazil, the development of DPI for the financial system began in the context of antitrust enforcement, with the Brazilian Competition Authority (CADE) taking action to stop discrimination, exclusivity, and lack of interoperability in payments.² After acting alongside CADE to open up the payment system through interoperability, diversity, and non-discrimination,³ the country's Central Bank (BCB) decided to focus their regulatory strategy on promoting innovation and financial inclusion. Competitiveness, inclusion, transparency, and education were the four pillars of the Agenda BC#, an agenda launched in 2019 to improve the financial system. This generated Brazil's DPI tripod consisting of (i) Open Finance, an ecosystem for standardized data sharing between financial

²CADE, *Caderno de Mercados de Instrumentos de Pagamentos* (2010).

³L 12.865/2013 and Resolution CMN no 4.282/2013.

institutions; (ii) Pix, an instant payment system; and (iii) DREX, a Central Bank Digital Currency (CBDC).

Open Finance is the DPI responsible for circulating standardized data necessary for sharing intelligence among players, enabling greater market entry, and the development of products that better suit the population's needs. The regulation includes both mandatory participation for key financial institutions and the possible participation of other players, who can join on a reciprocity basis (meaning, they can benefit from the system if they also subject themselves to the same requirements). In addition, the regulation establishes a forum for private market agents to participate in the decision-making process to ensure representativity, non-discrimination, conflict mitigation, and sustainability. However, certain aspects of governance are decided centrally by the BCB, including specific rules on the validity of user consent to data sharing.

Pix – the second pillar of the DPI tripod aimed at improving competition and financial inclusion through innovation – is an instant payment solution developed by the BCB. In addition to creating the settlement system, the BCB defined the criteria for participation, operational rules, brand, consumer adhesion strategy, and functionalities' evolution over time. This coordinated effort to develop the project, from offering the infrastructure for private entities to “plug into”, to encouraging people to join, and creating the platform's standards – especially mandating largest institutions to participate – proved to be a success: in less than two years of operation, Pix became one of the most popular instant payment systems in the world, second only to India.

DREX is the third piece of the BCB's DPI tripod. It focuses on programmability, meaning the platform will rely on smart contracts to allow for the insertion of conditions that automate operations. For example, the settlement of a transaction will become

conditional and simultaneous with the change of ownership, reproducing the experience of using cash in a digital environment.

These three DPIs feedback onto each other in the sense that information sharing via Open Finance is needed to develop better, more personalized products; an instant payment system is needed to stimulate ample and equitable participation and expanding the reach of these new products; and a CBDC is needed to automate transactions in a way that makes the system more efficient. This means that these DPIs, all built, owned, and operated by BCB, act together to create a standard for the development of all financial innovation. They provide an accessible, interoperable, and standardized platform where the private sector can develop products that better suit the needs of citizens, fulfilling all three conditions for a “good” DPI.

We now turn to India, which, like Brazil, has historically been a cash-centric economy with a bank-dominated payment system. While these features may still hold true, the character of the Indian market has changed in many ways. The push for financial inclusion in the last decade, under programs like the JanDhan scheme, has led to a surge in the number of bank accounts. As per the Global Findex Index, the percentage of population with bank accounts in India went up from 35 percent in 2011 to 77.5 percent by 2021.⁴

The Unified Payments Interface (UPI), India’s instant payment system for inter-bank transfers, is a product of this process. Launched in 2016, UPI supports person-to-person payments as well as merchant transactions using standardized APIs as the key to unlock interoperability across bank accounts. UPI has witnessed a massive growth in scale and

⁴The World Bank, The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19
<<https://doi.org/10.1016/j.clsr.2024.105947>>.

scope over the years – it currently reports over 12 billion transactions every month.⁵ As per a study by ACI Worldwide, propelled by UPI, India accounted for 46 percent of worldwide real-time payment transactions in 2022.⁶

As to ownership and governance, the UPI represents a model of government endorsement combined with industry ownership. UPI is owned and operated by a not-for-profit corporation called the National Payments Corporation of India (NPCI). The NPCI is described as an initiative of the Reserve Bank of India (RBI), the country’s banking and payments regulator, and the Indian Banks’ Association, a banking industry body. However, the Indian government or the RBI do not hold any shares in NPCI, which is controlled by some of India’s largest banks with smaller stakes by some payment services.⁷ Yet, indirect government control flows from the fact that at least 51 percent of NPCI’s shareholding has to be held by public sector banks.

In terms of ecosystem participants, in addition to participating banks, the UPI system creates a role for third-party payment apps that facilitate the transaction at the end of customers and merchants. The emergence of these apps and competition among them has played an important role in deepening the adoption of digital payments. There are now

⁵National Payments Corporation of India, UPI Product Statistics,

<<https://www.npci.org.in/what-we-do/upi/product-statistics>>.

⁶ACI Worldwide, Its Prime-Time for Real-Time 2023

<<https://go.aciworldwide.com/rs/030-R0K-804/images/2023-Prime-Time-for-Real-Time-Report.pdf>>.

⁷National Payments Corporation of India, Equity shareholding pattern as of 1st March

2024, <<https://www.npci.org.in/PDF/npci/corporate-governance/shareholding-pattern.pdf>>.

over 300 million individuals and 50 million merchants on the UPI system served by 560 banks and payment services providers.⁸ Yet, the UPI system is also grappling with questions of concentration of power on two fronts. At one end, there is the growing concentration of market power among payment apps – two of the apps, Walmart-owned PhonePe and Google Pay, controlled 82 percent of this market in December 2023.⁹ The NCPI had planned to address this issue by imposing a 30 percent market share cap on participants, but this rule has not been implemented. The second issue relates to the UPI’s own market power, which is linked to the preferential status of UPI and lack of authorization for any other payment system providers that can compete with the NPCI.¹⁰ In a bid to promote digital payments, the government has maintained a policy of zero merchant discount rates for UPI transactions. This has helped to promote greater adoption of UPI, but that may be at the cost of other payment mechanisms, like card payments. In

⁸Press Information Bureau, Government of India, From Local to Global: How India’s Digital Payment Revolution is Inspiring the World (!9 March 2023)

<<https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151350&ModuleId%20=%2020>>.

⁹Digbijay Mishra and Pranav Mukul, Paytm crisis brings 30% market share cap plan back in focus, The Economic Times 25 February 2024

<<https://economictimes.indiatimes.com/tech/technology/paytm-crisis-upi-market-share-cap-rule-in-focus-leaders-may-corner-a-bigger-pie/articleshow/107406233.cms?from=mdr>>.

¹⁰Smriti Parsheera, India’s policy responses to big tech: And an eye on the rise of ‘alt big tech’, Indian Journal of Law and Technology, Volume 18, Issue 1, 2022

<<https://www.ijlt.in/journal/india%E2%80%99s-policy-responses-to-big-tech%3A-and-an-eye-on-the-rise-of-%E2%80%98alt-big-tech%E2%80%99>>.

addition, India is actively linking UPI with instant payment systems in other parts of the world.¹¹

Open Questions

Brazil offers essential insights and reflections for future DPI implementation. The approach taken by the BCB has been a key factor for the success of digital payment DPI, by putting innovation, interoperability and the user at the center of the digital revolution. One may argue, however, that pursuing this vision needs to sufficiently ponder concerns of exploitation that can plague the markets for financial transactions, particularly in light of the circulation of user data. For instance, multiple studies have shown that there may be better mechanisms than user consent and other privacy self-management tools to protect the interest of individuals, particularly when they do not fully appreciate the consequences. On that note, it is worth recalling that important data breaches affected both the PIX account information of over 247 thousand users¹² and the personal information of over 200 million Brazilian consumers that had been collected by the credit

¹¹This includes the UPI-PayNow linkage between India and Singapore, and with United Arab Emirates' AANI payments platform. It has also entered into arrangements with private entities, such as a recent collaboration with Google Pay to support the internationalization of UPI.

¹²Victoria Abel, BC communicates leakage of registration data of 87 thousand Pix keys; there was no disclosure of passwords, O Globo, 22 March 2024,

<https://oglobo.globo.com/economia/noticia/2024/03/22/bc-comunica-vazamento-de-dados-cadastrais-de-87-mil-chaves-pix-nao-houve-divulgacao-de-senhas.ghtml>.

scoring firm Serasa,¹³ a joint venture created by the federation of Brazilian banks. Furthermore, although the BCB has been innovative in proposing a mixed governance model for its own DPI, it needs to be clarified to what extent this model is adequate and effective in fulfilling the values that underpin the creation of DPIs.

India is often described as an exemplar for digital transformation using DPIs, and the UPI system has been a significant contributor to this journey.¹⁴ The country's experience with fast payments can indeed serve as a useful example in terms of the pace and scale of growth, reliance on public-private collaboration, and the use of standardization and APIs in facilitating interoperability. At the same time, the country's experience also poses some questions, which are of broader relevance to the G20 members as they chart out the path toward using DPI in financial payments¹⁵: for instance, how is success measured? What is the competitive impact of these policies on the plurality of actors that are affected by its functioning? How to design mechanisms of accountability for their performance?

¹³The Sigilo Team, Case of SERASA data leakage is in the production phase of evidence, 20 February 2024, <<https://sigilo.org.br/caso-do-vazamento-de-dados-do-serasa-esta-em-fase-de-producao-de-provas/>>.

¹⁴Cristian Alonso, Tanuj Bhojwani, Emine Hanedar, Dinar Prihardini, Gerardo Uña and Kateryna Zhabska, Stacking up the Benefits: Lessons from India's Digital Journey, International Monetary Fund, Working Paper No. 2023/078, March 31, 2023 <<https://www.imf.org/en/Publications/WP/Issues/2023/03/31/Stacking-up-the-Benefits-Lessons-from-Indias-Digital-Journey-531692>>.

¹⁵Smriti Parsheera, Stack is the New Black?: Evolution and Outcomes of the 'India-Stackification' Process, Computer Law & Security Review, Volume 52, April 2024 <<https://doi.org/10.1016/j.clsr.2024.105947>>

Recommendations and Outcomes

The recommendations in this policy brief are anchored in the Principles for Digital Development¹⁶ so that digital solutions based on standardized payment interfaces can accelerate progress towards the SDGs and drive digital transformation and its benefits.

First, there is the crucial question of the metrics for measuring the success of DPIs. While metrics such as the number of users, market participants, and transaction volumes remain relevant, there is a role for considering the diversity of payment penetration, technical performance indicators and consumer-centric outcomes, such as solutions for consumer frauds and effectiveness of grievance redress. Thus, it is important that regulators determine with clarity and transparency the goals that the DPI aims to pursue, and periodic evaluation in fulfilling these aspirations should be undertaken with review against concrete benchmarks.

Second, the creation of digital payment infrastructures must be accompanied by carefully assessing their competitive effects. This may be in terms of regulating competitive conditions among players in the ecosystem or accompanying the development of the DPI itself through competition policy measures aimed to constrain the emergence and use of natural monopoly characteristics. To promote a level playing field, it is desirable to enlist the most important financial institutions into the adoption of the DPI. Furthermore, the ecosystem can be enriched by allowing voluntary participants to join under reciprocity conditions, which create the ripple effect of expanding the scope

¹⁶Digital Impact Alliance (DIAL). Updating the Principles for Digital Development for the next decade. 2023. <<https://digitalprinciples.org/event/how-to-update-the-principles-of-digital-development-for-the-next-decade/>>.

of interoperability and portability through a larger value network. The design of the ecosystem should be planned from the outset and subject to an impact assessment exercise in order to identify bottlenecks and minimize the risk of anticompetitive behavior. To that end, factors like culture, social norms, gender, political environment, and economy must be addressed to modulate internal dynamics, processes, and engagement measures with users.

Third, the legitimacy of DPIs is facilitated when they are designed with a collaborative governance structure instead of a top-down approach. Following a model that has been prominent in the regulation of Internet services, the Brazilian solution has been to create a governance committee that ensures diversity and representativity in defining some of the most crucial policy issues. The operation of this committee could work under a model of negotiated regulation, where the adopted measures result from consensus¹⁷. Establishing grievance and conflict mitigation mechanisms ombudspersons is also key to maintaining balance and robustness in the governance of the ecosystem. The principle of collaboration is essential to encourage the sharing of information, insights, strategies, and resources between organizations, across areas, and multiple actors. It also requires organized and accessible documentation to facilitate the adoption of "open" standards.

¹⁷See Lubbers, Jeffrey S., *Achieving Policymaking Consensus: The (Unfortunate) Waning of Negotiated Rulemaking* (September 26, 2008). *South Texas Law Review*, Vol. 49, No. 4, 2008, American University, WCL Research Paper No. 2008-62, <<https://ssrn.com/abstract=1274403>>; Schuck, Peter H. and Kochevar, Steven, *Reg Neg Redux: The Career of a Procedural Reform* (2013). *15 Theoretical Inquiries in Law* 417-446 (2014), Yale Law School, Public Law Working Paper No. 308, Yale Law & Economics Research Paper No. 478, <<https://ssrn.com/abstract=2330357>>.

Fourth, creating an institutional agenda bolstered by educational programs and the availability of multiple channels for assistance to users is critical to boosting the adoption of innovative solutions. In doing so, regulators can mobilize the capabilities of dynamic and complex systems and create value by shaping governance frameworks in fast-changing environments as in the digital economy. Design principles for inclusion and people-first data practices prioritize data collection that can create value and, therefore, follow relevant standards and guidelines.

Fifth and finally, the governance and accountability structure of DPIs should be appropriately designed to ensure accountability to the regulator, to system participants, and to consumers. This becomes particularly relevant in the case of public-private partnerships, where the ownership structure may not support the same level of public accountability without specific mechanisms being built into the legal framework. A vital issue to be dealt with from this standpoint is the data protection and privacy of ecosystem users, both about the accumulation of history of transactions in a centralized repository and the sharing of consumer profiles across industry participants. On this front, we recommend that standard technical and governance measures be implemented by participants under the guidance of data protection and cybersecurity authorities, who must be involved from the conception of the project and periodically informed about the implementation of those measures. This is different from feeding data protection principles into financial regulation, as done by the BCB when defining its own rules about the validity of consent. The G20 could also play a catalyst and stewardship role for the development of such guidance.

G20 governments should reflect on the above-mentioned experiences and implement a guiding framework for implementing DPI in digital payments based on Principles for Digital Development. When doing this, paying attention to the competition framework is

also essential. In other words, understanding the impact not only on services that directly compete with financial DPI but also on the universe of potential products and services that can be made viable by introducing such systems. Therefore, a competitive impact analysis that identifies a net positive result for the entire ecosystem can justify the introduction of a DPI.

References

Abel, Victoria. BC communicates leakage of registration data of 87 thousand Pix keys; there was no disclosure of passwords, O Globo (22 March 2024). Available at <https://oglobo.globo.com/economia/noticia/2024/03/22/bc-comunica-vazamento-de-dados-cadastrais-de-87-mil-chaves-pix-nao-houve-divulgacao-de-senhas.ghtml>.

ACI Worldwide, Its Prime-Time for Real-Time 2023. Available at <https://go.aciworldwide.com/rs/030-ROK-804/images/2023-Prime-Time-for-Real-Time-Report.pdf>

Alonso, Cristian; Bhojwani, Tanuj; Hanedar, Emine; Prihardini, Dinar; Unã, Gerardo; and Zhabska, Kateryna. Stacking up the Benefits: Lessons from India's Digital Journey, International Monetary Fund, Working Paper No. 2023/078, March 31, 2023. Available at <https://www.imf.org/en/Publications/WP/Issues/2023/03/31/Stacking-up-the-Benefits-Lessons-from-Indias-Digital-Journey-531692>.

Banco Central do Brasil (2012). Educação Financeira para um Brasil Sustentável Evidências da necessidade de atuação do Banco Central do Brasil em educação financeira para o cumprimento de sua missão. Trabalhos para Discussão, Brasília, n° 280, p. 1-52.

Banco Central do Brasil (2013). Caderno de Educação Financeira Gestão de Finanças Pessoais. Cidadania Financeira. Available at: https://www.bcb.gov.br/content/cidadaniafinanceira/documentos_cidadania/Cuidando_o_seu_dinheiro_Gestao_de_Financas_Pessoais/caderno_cidadania_financeira.pdf

Banco Central do Brasil (2015). Relatório de Inclusão Financeira. N. 3 –. Brasília : Banco Central do Brasil. Available at: <https://www.bcb.gov.br/Nor/reincfin/RIF2015.pdf>.

Banco Central do Brasil (2016). Agenda BC +. Apresentação. Presidente do Banco Central do Brasil. Available at <https://www.bcb.gov.br/conteudo/home->

[ptbr/TextosApresentacoes/Apresenta%C3%A7%C3%A3o_Presidente_Ilan_Goldfajn_Agenda_BC_Mais_20122016.pdf](https://www.bcb.gov.br/TextosApresentacoes/Apresenta%C3%A7%C3%A3o_Presidente_Ilan_Goldfajn_Agenda_BC_Mais_20122016.pdf)

Banco Central do Brasil (2018a). O que é cidadania financeira? Definição, papel dos atores e possíveis ações. Available at

https://www.bcb.gov.br/Nor/reincfin/conceito_cidadania_financeira.pdf.

Banco Central do Brasil (2018b). Relatório de cidadania financeira. Available at

https://www.bcb.gov.br/Nor/relcidfin/docs/Relatorio_Cidadania_Financeira.pdf

Baptista, Pedro Antônio de Jesus Nome. Agenda BC+ e Agenda BC#: Apontamentos para controle externo da política pública de redução do spread bancário no Brasil. 2022.

Monografia (Especialização em Avaliação de Políticas Públicas) – Instituto Serzedello Corrêa, Escola Superior do Tribunal de Contas da União, Brasília DF. 441 fl.

Banco Central do Brasil (2021), Relatório de Cidadania Financeira. Available at

https://www.bcb.gov.br/content/cidadaniafinanceira/documentos_cidadania/RIF/Relatorio_de_Cidadania_Financeira_2021.pdf

Banco Central do Brasil (2022). Relatório de Economia Bancária. Real Digital: uma plataforma para as finanças “tokenizadas”. Available at

https://www.bcb.gov.br/content/publicacoes/boxe_relatorio_de_economia_bancaria/reb2022b9p.pdf

Banco Central do Brasil (2023). Relatório de Gestão Pix (2021-2022). Available at

https://www.bcb.gov.br/content/estabilidadefinanceira/pix/relatorio_de_gestao_pix/relatorio_gestao_pix_2023.pdf

Carneiro Neves, Rubia (org.). Novas Fronteiras Do Sistema Financeiro Nacional V. 1 (Editora Expert, 2022). Available at <https://experteditora.com.br/novas-fronteiras-do-sistema-financeiro-nacional-v-1/>

Conselho Administrativo de Defesa Econômica (2010). Mercados de Instrumentos de Pagamentos (Cadernos do CADE). Available at <https://cdn.cade.gov.br/Portal/centrais-de-conteudo/publicacoes/estudos-economicos/cadernos-do-cade/mercado-de-instrumentos-de-pagamento-2019.pdf>

Digital Impact Alliance (2023). What Is Good Digital Public Infrastructure?. Available at <https://dial.global/good-dpi/>.

Digital Impact Alliance (2023), Updating the Principles for Digital Development for the next decade. Available at <https://digitalprinciples.org/event/how-to-update-the-principles-of-digital-development-for-the-next-decade/>.

Fernandes Paixão, Ricardo; Aguiar, João Benício; Ragazzo, Carlos (org.) O Regulador Inovador: Banco Central e a agenda de incentivo à inovação (Instituto ProPague, 2023). Available at <https://institutopropague.org/pagamentos/ebook-o-regulador-inovador-banco-central-e-a-agenda-de-incentivo-a-inovacao/>

Ghallager, Therence (2023). Os pagamentos digitais como forma de impulsionar a inclusão financeira, IADB Blog (31/01/2023). Available at <https://blogs.iadb.org/brasil/pt-br/os-pagamentos-digitais-como-forma-de-impulsionar-a-inclusao-financieira/>

Lubbers, Jeffrey S., Achieving Policymaking Consensus: The (Unfortunate) Waning of Negotiated Rulemaking (September 26, 2008). South Texas Law Review, Vol. 49, No. 4, 2008, American University, WCL Research Paper No. 2008-62. Available at <https://ssrn.com/abstract=1274403>.

Ministério do Meio Ambiente e Mudança do Clima, Interoperabilidade (18 November 2020). Available at <https://www.gov.br/mma/pt-br/aceso-a-informacao/acoes-e-programas/geoprocessamento-1/interoperabilidade>.

Mishra, Digbijay Mukul, Pranav. Paytm crisis brings 30% market share cap plan back in focus, The Economic Times (25 February 2024). Available at <https://economictimes.indiatimes.com/tech/technology/paytm-crisis-upi-market-share-cap-rule-in-focus-leaders-may-corner-a-bigger-pie/articleshow/107406233.cms?from=mdr>.

National Payments Corporation of India, UPI Product Statistics Available at <https://www.npci.org.in/what-we-do/upi/product-statistics>.

National Payments Corporation of India, Equity shareholding pattern as of 1st March 2024. Available at <https://www.npci.org.in/PDF/npci/corporate-governance/shareholding-pattern.pdf>

Press Information Bureau, Government of India, From Local to Global: How India's Digital Payment Revolution is Inspiring the World (!9 March 2023). Available at <https://pib.gov.in/FeaturesDeatils.aspx?NoteId=151350&ModuleId%20=%202>.

Ragazzo, Carlos and Tolentino, Morgana and Cataldo, Bruna. Do Open Banking ao Open Finance: entenda o sistema financeiro aberto (From Open Banking to Open Finance: Understanding an Open Financial System) (March 9, 2022). White Paper March 2022, Available at SSRN: <https://ssrn.com/abstract=4460772>.

Ragazzo, Carlos (org.), Regulação de Meios de Pagamento (Juruá, 2023, 2nd. Ed.). Available at https://www.jurua.com.br/shop_item.asp?id=30746

Sahamati, Ecosystem Dashboard. Available at <https://sahamati.org.in/aa-dashboard/>.

Schuck, Peter H. and Kochevar, Steven. Reg Neg Redux: The Career of a Procedural Reform (2013). 15 Theoretical Inquiries in Law 417-446 (2014), Yale Law School, Public Law Working Paper No. 308, Yale Law & Economics Research Paper No. 478, <https://ssrn.com/abstract=2330357>.

Parsheera, Smriti. India's policy responses to big tech: And an eye on the rise of 'alt big tech', Indian Journal of Law and Technology, Volume 18, Issue 1, 2022. Available at <https://www.ijlt.in/journal/india%E2%80%99s-policy-responses-to-big-tech%3A-and-an-eye-on-the-rise-of-%E2%80%98alt-big-tech%E2%80%99> .

The Sigilo Team, Case of SERASA data leakage is in the production phase of evidence , Sigilo (20 February 2024). Available at <<https://sigilo.org.br/caso-do-vazamento-de-dados-do-.serasa-esta-em-fase-de-producao-de-provas/>>.

The World Bank, The Global Findex Database 2021: Financial Inclusion, Digital Payments, and Resilience in the Age of COVID-19. Available at <https://doi.org/10.1016/j.clsr.2024.105947>>.



Let's **rethink** the world

