

What is an Inclusive Instant Payment System? And how do we measure its impact?

Phil Roessler

Associate Professor

Co-Director, Digital Inclusion and Governance Lab (DIGLab)

William & Mary

proessler@wm.edu





Inclusive Instant Payment Systems

■ An Evidence-based Approach from Design to Impact **AUGUST 2022**

Hussam Razi
Innovations for Poverty Action

Philip Roessler
William & Mary

Russell Toth
University of Sydney

Hsin-Tien Tsai
National University of Singapore

An applied economist's toolkit to the analysis and evaluation of IIPS:

- Tracing out a theory of change capturing the mechanisms of socio-economic impacts
- Discussing what existing theoretical and empirical literature tells us about these mechanisms
- Highlighting points of interface between academic research and policymaker priorities
- Providing structured content on the empirical evaluation, and M&E, of these systems

Inclusive Instant Payment Systems: From Theory to Measuring Impact



- What are inclusive instant payment systems—and why they matter
- History: Cash as an interoperable payments' technology—and benchmark
- Theorizing and measuring the impacts of IPS
- Why this is important to Mojaloop: RCTs and systematic data as diagnostic tools
- What is the business impact? Credible evidence for improving and scaling



What are inclusive instant payment systems?

- Financial systems that enable low-cost real-time payments between end-users irrespective of their financial service provider
- In theory, IIPS are defined by following mutually reinforcing features—as laid out by L1P project:
 - Open—connect all registered FSPs
 - Accessible—low barriers to entry for any user
 - Affordable—enormous volume of low value transactions drive down fees while cover operating costs
 - Real-time—near-instant push payments that recipient can immediately use



Why inclusive instant payment systems matter?

- They improve societal welfare and productivity by expanding the scope of economic exchange while reducing the enormous transaction and coordination costs that come with it.
- Consider money—itself an effective interoperable technology.
- It solved “the double coincidence of wants” problem that plagued barter economies, transforming the speed and scope of trade (Jevons 1876)



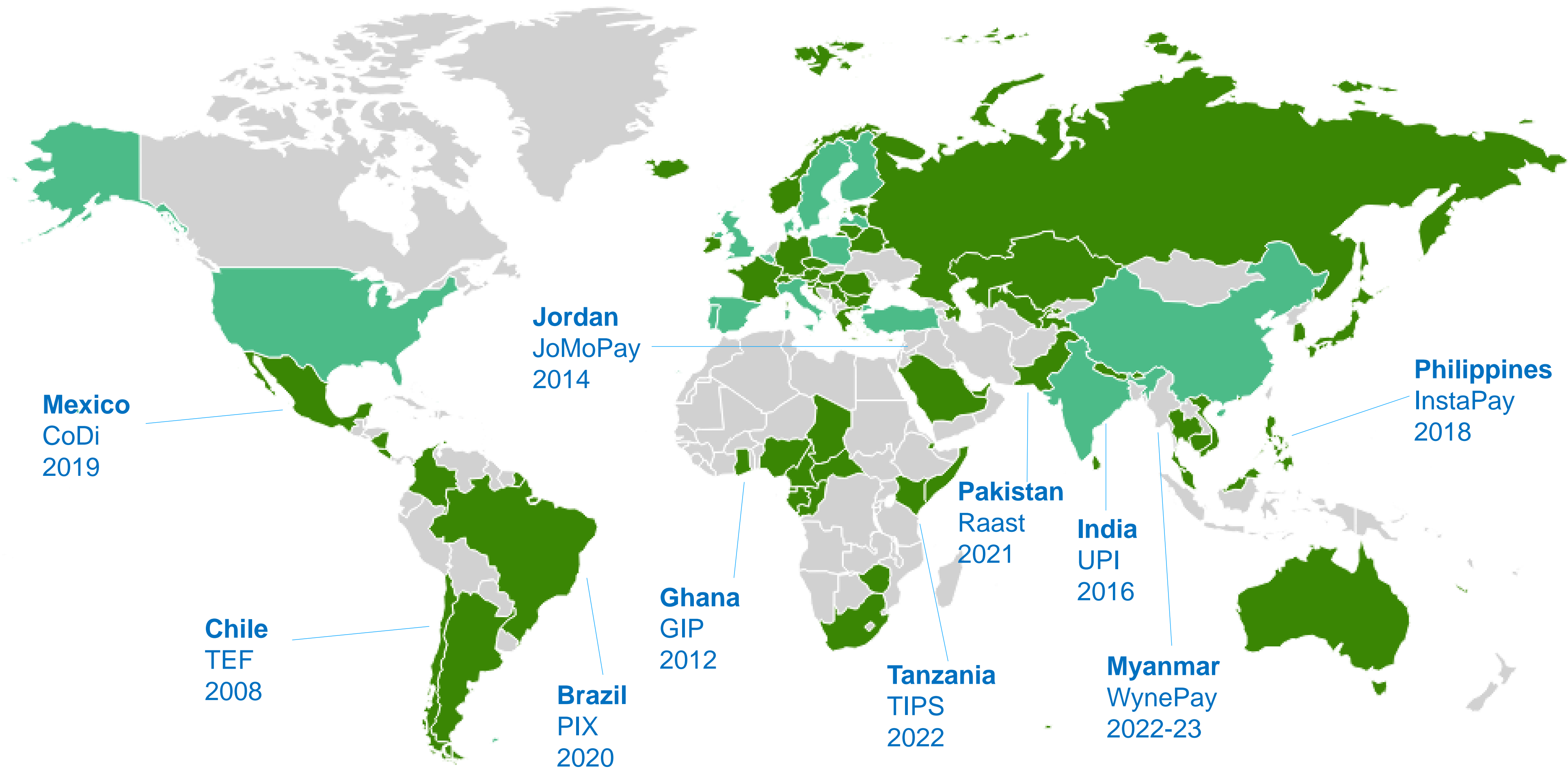
The Staying Power of Cash...and a Critical Benchmark

- ☐ **Interoperable:** universally accepted and requires no prior relationship between buyer and seller.
- ☐ **Instant, or real-time:** once money changes hands the recipient can reuse it immediately.
- ☐ **Irrevocable:** once one makes a cash payment to someone else (“push” payment), it is difficult to reverse.
- ☐ **Low-cost:** no direct transaction fees.
- ☐ **Accessible:** requires no additional technological prerequisites.
- ☐ These characteristics are critical to underpin any new payment system to rival cash and serve all users—including low-income ones.

Costs of Cash Drive Financial Innovation

- ☐ Risky, clunky and slow for long-distance commerce
- ☐ Risky and inefficient for payments at scale
- ☐ Risky and costly way to save
- ☐ No paper trail—good for criminals; bad for upstanding citizens
- ☐ Rise of banks; savings and credit institutions; settlement banks and clearing houses; checks, credit cards, debit cards, and online banking
- ☐ Modern financial system massively expands scope of exchange over long distances and incredible volumes but on the backs of an elaborate, costly, and bureaucratically-intensive infrastructure → reducing accessibility, affordability, speed, and interoperability
- ☐ Gives rise to dual economy—some operating in formal financial sector and some only in cash

Instant, Interoperable Payment Switches are rapidly rolling out in many emerging markets. Are they bridging the dual economy?



Lighter green coloring on the map indicates jurisdictions that have access to more than one fast payment systems.

Our research program aims to quantify the impacts of IPS



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- ❑ System-level change is dynamic and complex with many interconnected and moving parts.

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- ❑ But we can't learn if we don't measure system-level effects. **Need better and more granular data.**

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- ❑ But we can't learn if we don't measure system-level effects. **Need better and more granular data.**
 - ❑ Number and type of FSPs integrated in switch—and systematic assessment of who is included and excluded
 - ❑ Number of on-net and off-net transactions with geocoded information on type of sending and receiving FSP to better understand patterns of use
 - ❑ Even better would be to study this **before** and **after** launch of switch to measure the degree to which IPS is facilitating open loop and national economic integration

Our research program aims to quantify the impacts of IPS—Theory of Change



- ❑ System-level data helps monitor important trends in financial integration but to measure impact—such as welfare effects—we need to go deeper.
- ❑ To make tractable, we divide system into four constituent actors:
 - ❑ **Financial service providers (FSPs)** – institutions that manage money and offer financial services, such as savings accounts, credit, and payments
 - ❑ **Merchants** – individuals or businesses who buy and sell goods
 - ❑ **Households/consumers** – individuals who purchase goods and end-users of financial services
 - ❑ **Government** – centralized authority that enforces property rights and regulates economy to increase social welfare

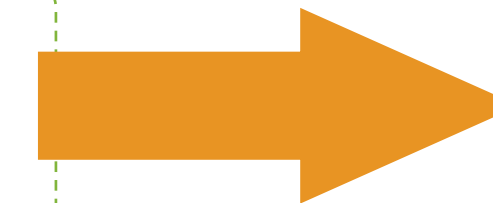
Interoperable Payments Systems: Four Phases of Implementation

Onboarding—backend integration to the switch by FSPs.

User integration and adoption: — consumers, merchants and government start to use switch to transact across FSP networks. Impacts structured by use case

Behavioral and organizational change—switch from cash to digital payments; merchant formalization; governments and FSPs increase digital services and products; upstream digitization of supply chains and procurement.

Dynamic market changes—↑ competition reduces payment costs, leads to innovation in products and services, new market entrants, and potential consolidation.



1. P2P use case: off-net transfer capabilities negate need for multi-homing; alias-based payments increase speed of transactions
1. P2M, M2P or M2M: merchants can transact with consumers irrespective of FSP networks; supports QR code payments
2. G2P, P2G: and M2G: facilitates government disbursements across the universe of unique FSPs in economy; facilitates household and merchant payments to government

Hypothesized Impacts of Interoperable Payment Systems: Reducing Coordination and Transaction Costs

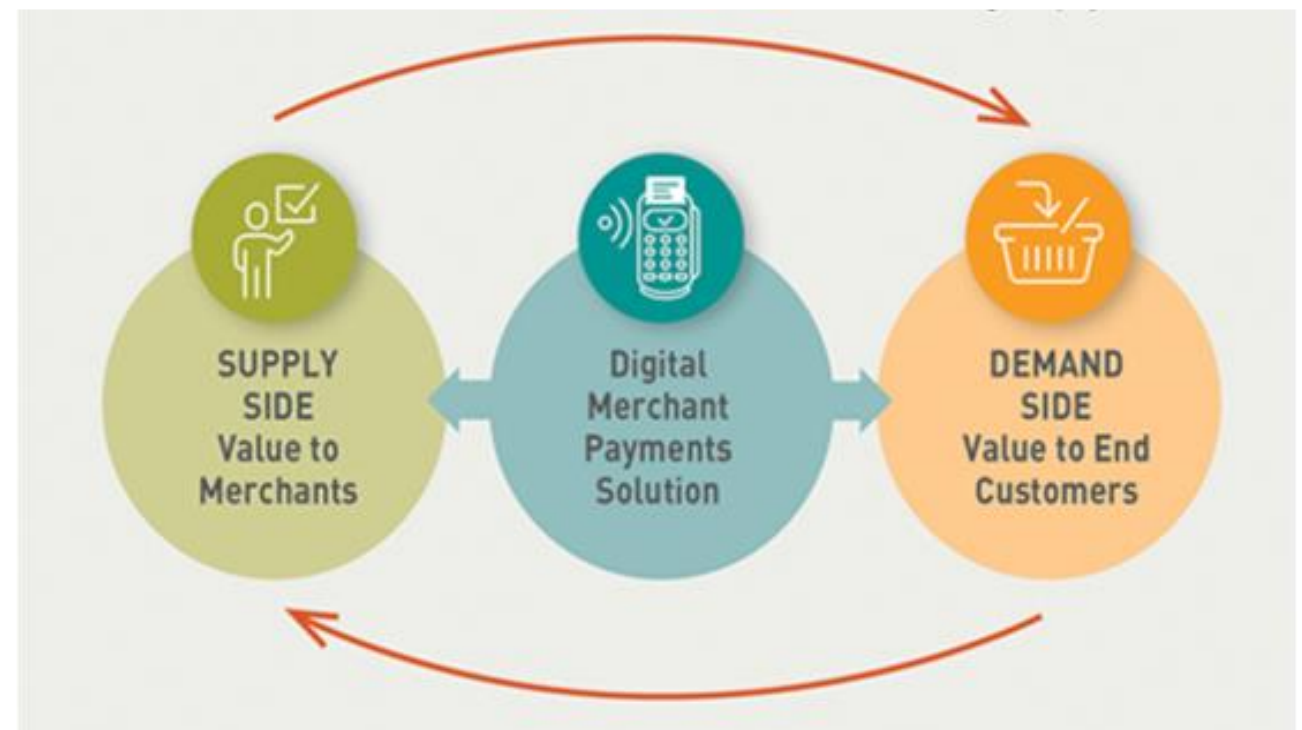


- ❑ Some of the biggest gains hypothesized to come from reducing coordination and transaction costs in making payments no matter FSP network → accelerate movement away from cash in retail payments



Jaquiline,
CRDB

Value for customers depends on the number of merchants who accept digital payments



Value for merchants depends on the number of customers who use digital payments

Source: CGAP, "The Challenge of Two-Sided Markets in Merchant Payments"

Network effects work against uptake of digital payments!

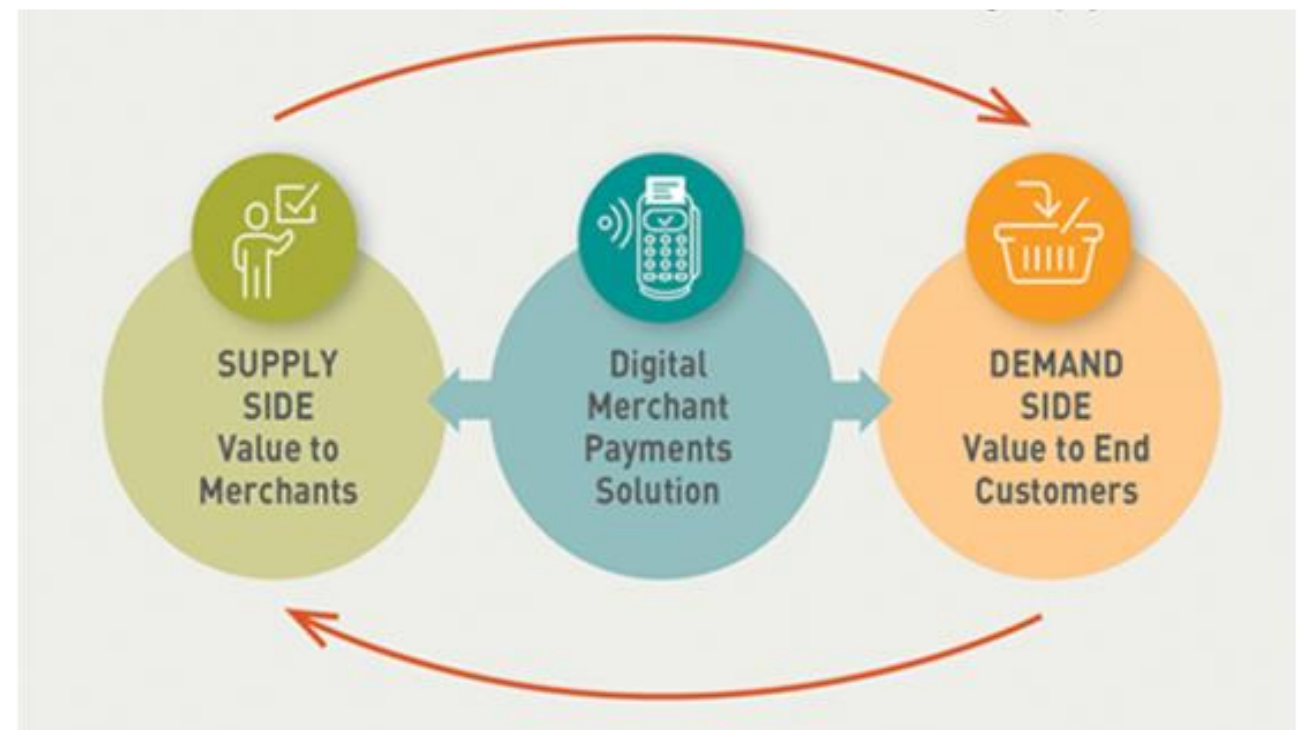
Hypothesized Impacts of Interoperable Payment Systems: Reducing Coordination and Transaction Costs



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- ❑ India's UPI paradigmatic example
 - ❑ Since launch of UPI, digital merchant payments have skyrocketed from virtually 0 in 2016 to 6.56 billion transactions in August 2022 with 20% P2M.



Value for customers depends on the number of merchants who accept digital payments



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Source: CGAP, "The Challenge of Two-Sided Markets in Merchant Payments"

Network effects work in favor of uptake of digital payments!

Hypothesized Impacts of Interoperable Payment Systems: Competition and Innovation

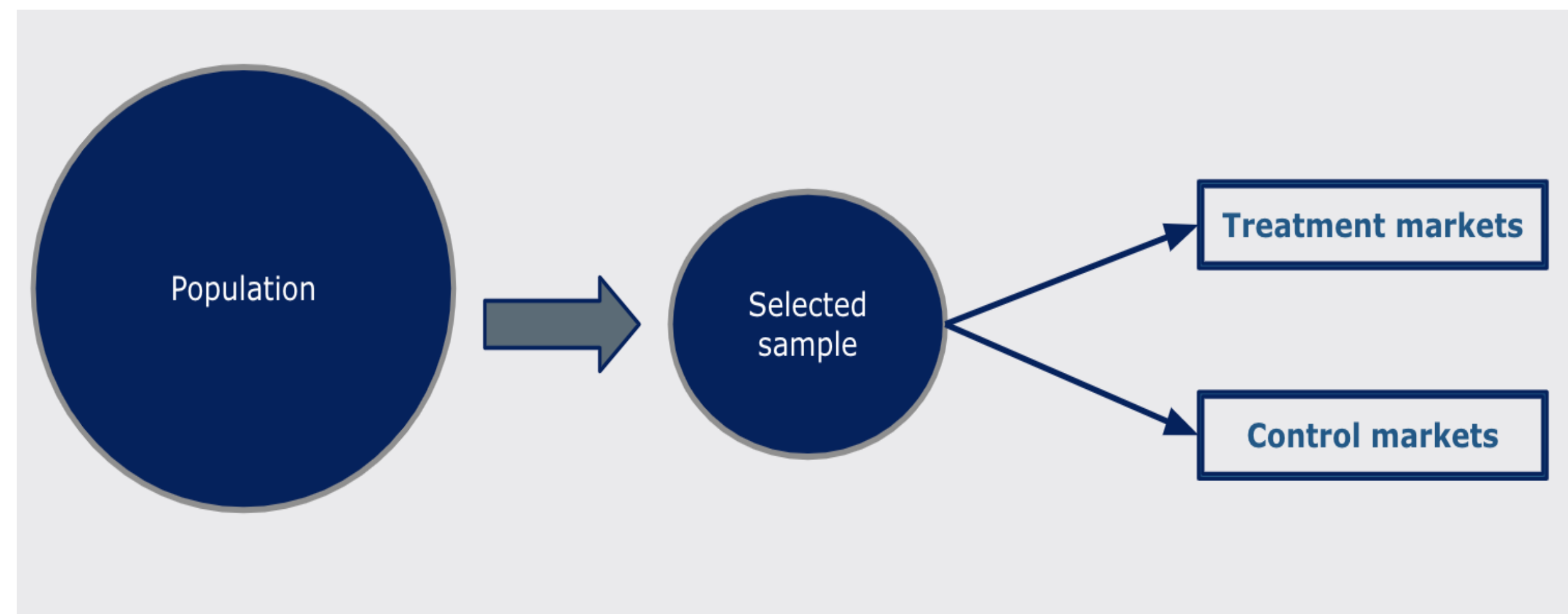


- ❑ Interoperability empowers consumers—not locked in to transacting only with others on their FSP network
- ❑ FSPs with large networks can't simply exploit incumbency advantage to maintain market share
- ❑ Enables FSPs with small networks to expand customer base by offering innovative, high-value services
- ❑ Our research team is studying this in India: We anticipate interoperability to stimulate innovation (e.g., in terms of new savings, credit, insurance, or payment products) since it allows FSPs to reach a large consumer base rapidly.

The Value of RCTs as Diagnostic, Learning and Measurement Tool

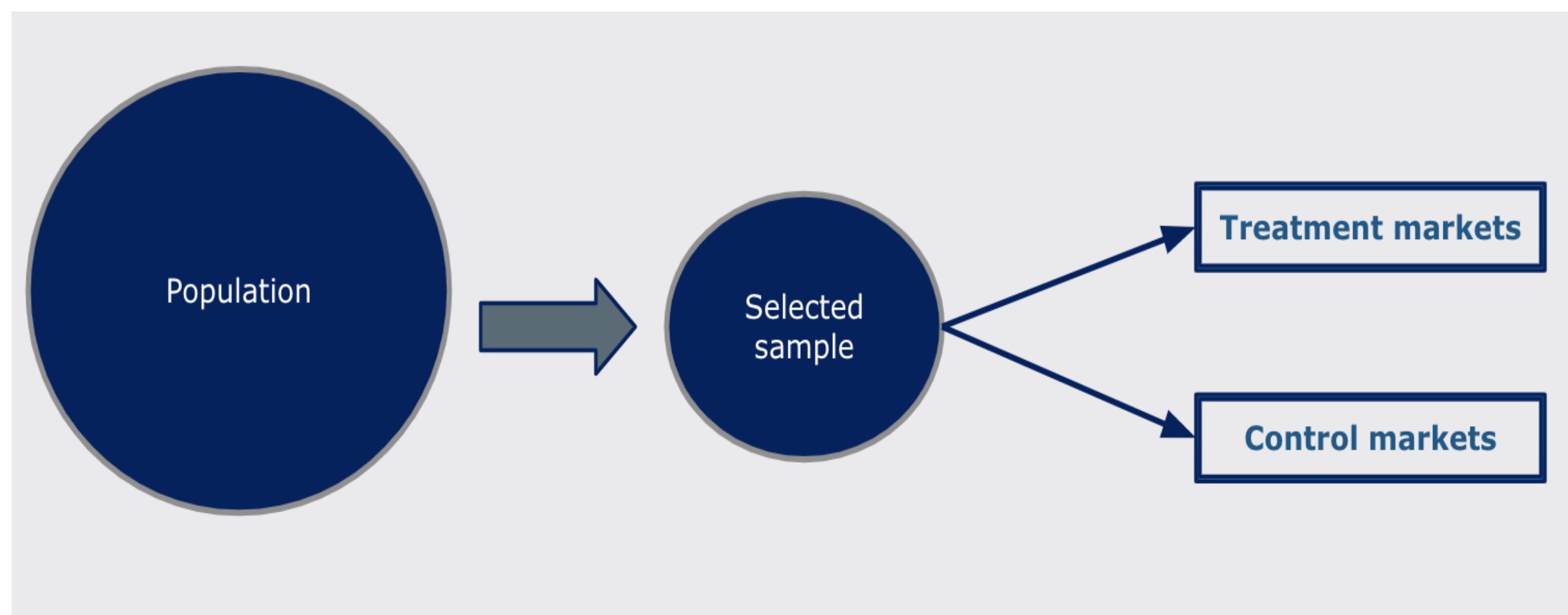


- ❑ In markets with new deployment of IPS could use randomized controlled trial to test its direct impacts
- ❑ Employ random assignment to select treatment and control group
- ❑ On average identical, except treatment group receives intervention.



The Value of RCTs as Diagnostic and Learning Tool

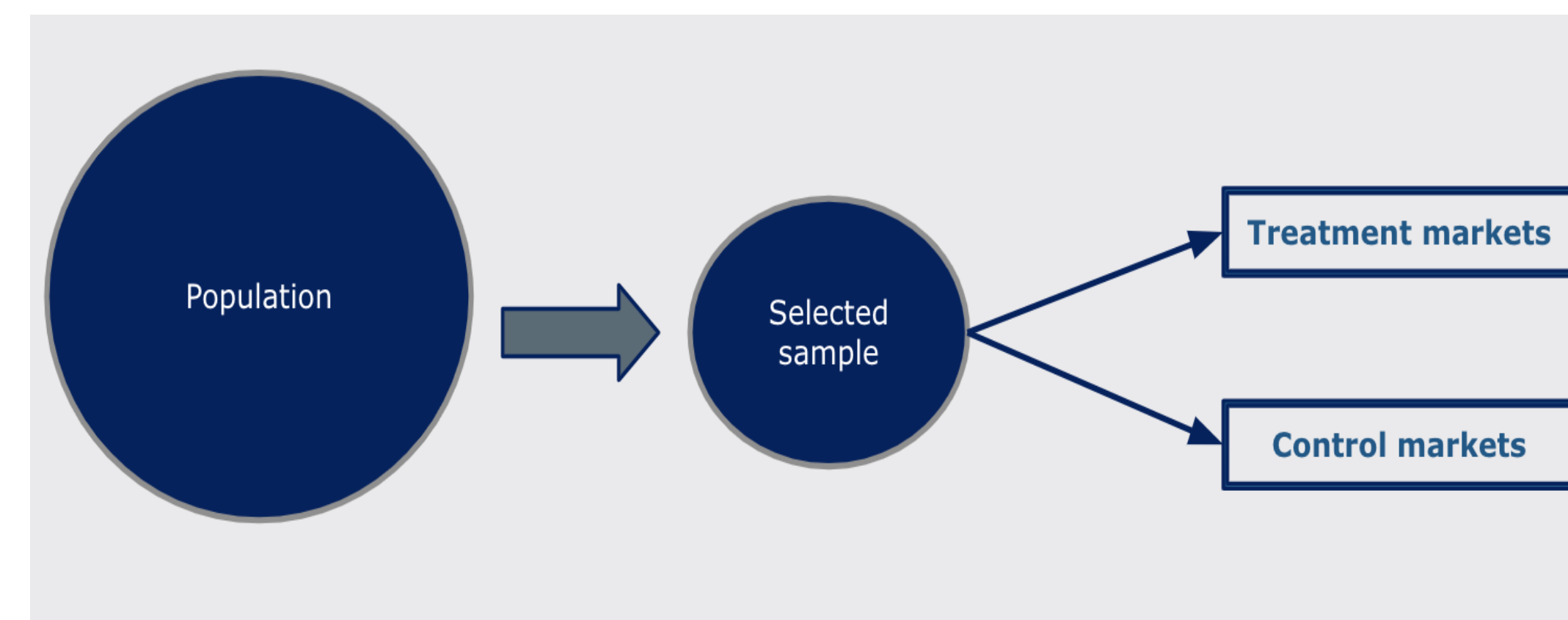
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- ❑ Treatment markets: Receive marketing campaign on IPS and onboarding merchants in how to use IPS
- ❑ Control markets: Receive no intervention

The Value of RCTs as Diagnostic and Learning Tool

- ❑ RCT invaluable diagnostic and causal analysis tool
 - ❑ What do we learn about marketing IPS? Merchant responsiveness? Onboarding? Compliance? Consumer responsiveness?
 - ❑ What are effects on on-net and off-net P2P and P2M transactions?
 - ❑ Measure using **surveys and administrative data**
 - ❑ What are impacts on merchant profitability, consumer welfare, and market-level impact?
 - ❑ What are mechanisms? How much is driven by reducing coordination and transaction costs? Do we observe cross-side and same-side spillovers?





Asante sana!

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William & Mary
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