

# Financial Inclusion and Access

Theme IV: Policy and Future

**Research Question:** Can digital finance expand access to financial services for underserved populations, and what are the trade-offs?

PhD Seminar in Digital Finance

## Global Statistics (World Bank 2024)

Metric	Value
Unbanked adults	1.4 billion
Account ownership	76% global
Sub-Saharan Africa	55%
South Asia	68%
High income	97%

## Barriers to Access

- 1 Documentation (ID, address)
- 2 Distance (no branches)
- 3 Cost (minimum balance, fees)
- 4 Trust (informal preference)

## Why Inclusion Matters

### Economic Effects

- Savings accumulation
- Investment in education
- Business formation
- Risk management

### Theoretical Framework

Financial access as reduction in transaction costs:

$$U(\text{formal}) - U(\text{informal}) > TC_{\text{access}}$$

Digital finance lowers  $TC_{\text{access}}$ .

## M-Pesa Facts

Launched: 2007 (Kenya)

Metric (2024)	Value
Active users	50M+
Countries	7
Transaction volume	\$300B/year
GDP share (Kenya)	50%+

## Innovation

- Agent network (not branches)
- Phone-based (no smartphone)
- Person-to-person transfers
- Bill payments, savings

## Jack & Suri (2014) – AER

### Identification

M-Pesa rollout correlated with cell tower coverage (exogenous).

### Key Findings

- 2% reduction in poverty
- Risk-sharing improved 30%+
- Women disproportionately benefited
- Migration patterns changed

### Mechanism

Remittances enable consumption smoothing:

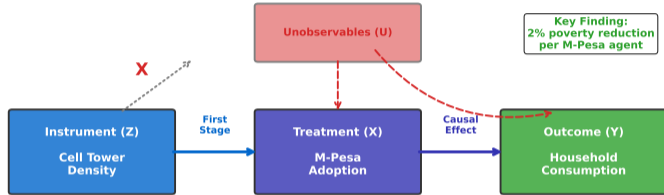
$$C_{shock} \approx C_{normal}$$

with M-Pesa access.

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Jack & Suri (2014), "Risk Sharing and Transactions Costs: M-Pesa in Kenya," AER

## Instrumental Variables: M-Pesa Causal Identification



IV Assumptions (Jack & Suri, 2014):  
1. Relevance: Cell towers → M-Pesa access  
2. Exclusion: Towers affect outcomes only via M-Pesa  
3. Independence: Tower placement exogenous

[Based on Jack & Suri (2014) AER]

Cell tower rollout provides exogenous variation for M-Pesa adoption; IV first-stage F-stat  $\geq 10$ .

## Global Adoption (GSMA 2024)

Region	Accounts (M)
Sub-Saharan Africa	800+
South Asia	400+
East Asia	300+
MENA	50+
<b>Global</b>	<b>1.6B+</b>

## Success Factors

- Interoperability
- Agent density
- Regulatory support
- Use-case ecosystem

## Cross-Country Evidence (2024)

ScienceDirect meta-analysis:

### Positive Effects

- Account ownership: +20-40%
- Savings: +15-25%
- Consumption smoothing: +10-20%

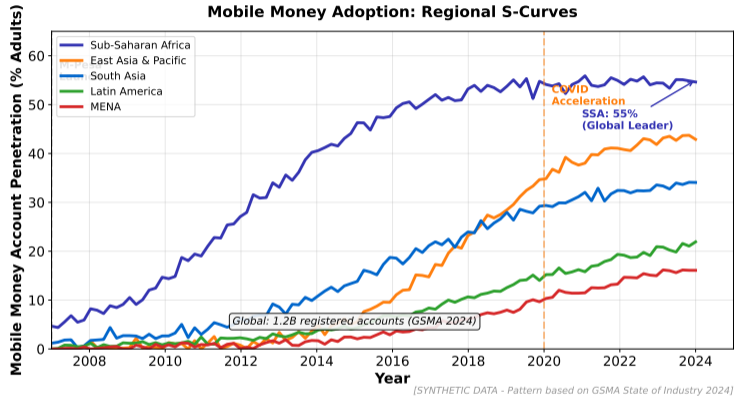
### Heterogeneity

- Rural  $\hat{}$  urban impact
- Women  $\hat{}$  men gains
- Poor  $\hat{}$  middle class

### Caveats

Self-selection, endogenous rollout.

# Mobile Money: Regional Adoption S-Curves



Sub-Saharan Africa leads adoption; South and East Asia follow similar S-curve trajectories.

## Alternative Data Types

- Utility payments (rent, phone)
- Transaction history (mobile money)
- Social connections (network)
- Device/behavioral (app usage)
- Psychometric testing

## Promise for Thin-File

No traditional credit history:

$$\text{FICO} = \emptyset$$

Alternative data enables scoring.

## Empirical Evidence

### Positive

- 15-20% more approvals (Berg et al., 2020)
- Lower default rates for included
- Faster decision times

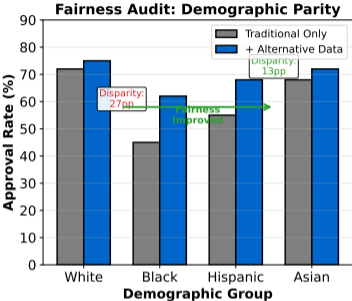
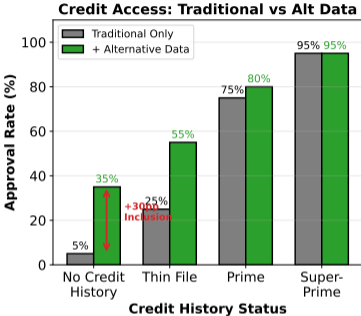
### Concerns

- Privacy violations
- Fairness issues (proxy discrimination)
- “Digital redlining”
- Predatory targeting

## Org. Science (2024)

Mobile money as “stepping stone” to formal credit.

# Alternative Data: Fairness Audit Results



[SYNTHETIC DATA - Illustrative fairness audit]

Alternative data can reduce or widen disparities depending on data type and model design.

# The Digital Divide: Inclusion Paradox

## Digital Prerequisites

Financial inclusion via digital requires:

- 1 Device access (phone/smartphone)
- 2 Connectivity (network coverage)
- 3 Digital literacy
- 4 Trust in digital systems

## Exclusion Risk

Those most financially excluded may also be digitally excluded.

Digital exclusion  $\cap$  Financial exclusion

## Empirical Patterns

	Urban	Rural
Smartphone	80%	45%
Internet	75%	40%
Digital literacy	High	Low

## Policy Implications

- USSD (not just apps)
- Agent networks (human interface)
- Digital literacy programs
- Offline functionality

UNDP (Oct 2024), "The Role of Digital Mobile Money in Catalyzing Financial Inclusion"

## Enabling Regulation

- Tiered KYC (simplified for low-value)
- E-money licensing (non-bank)
- Agent banking permission
- Interoperability mandates

## Kenya Example

Central Bank of Kenya:

- 2007: Allowed M-Pesa pilot
- No bank license required
- “Test and learn” approach
- Consumer protection focus

## Protective Regulation

- Price transparency
- Fraud protection
- Data privacy
- Dispute resolution

## Balance Challenge

Too loose	Too strict
Consumer harm	Innovation blocked
Fraud risk	Exclusion continues
Instability	Higher costs

## AFI Principles

Alliance for Financial Inclusion: Proportionate regulation.

Kenya's regulatory approach widely cited as best practice for inclusion

## Publishable Research Directions

### 1 Long-Run Effects of Mobile Money

- RQ: Do short-run inclusion gains persist? What are decade-level effects?
- Method: Panel data, 10+ years post-introduction
- Gap: Most studies 2-3 year horizon

### 2 Digital Financial Literacy

- RQ: What interventions improve digital financial capability?
- Method: RCT on literacy programs
- Gap: Digital literacy less studied than financial literacy

### 3 Alternative Data Fairness

- RQ: Does alternative data reduce or increase disparities?
- Method: Audit study or natural experiment
- Gap: Marketing claims vs. rigorous evidence on fairness

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Financial inclusion offers clean development economics research opportunities

## Mathematical

Model mobile money adoption as network game.

Agent  $i$  adopts if:

$$u_i = \alpha n - c > 0$$

Derive:

- Multiple equilibria
- Tipping point
- Subsidy to reach adoption

**Due:** Week 12 – Jack-Suri replication is instructive for identification

## Empirical

Replicate Jack & Suri (2014):

- 1 Use Global Findex data
- 2 Compare mobile money users vs. non-users
- 3 Control for selection
- 4 Interpret causally?

Data: World Bank Findex

## Research Proposal

Draft 1-page proposal:

- “Alternative Data and Inclusion”
- Fintech credit in emerging market
- Fairness dimension
- Data access strategy

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Development economics methods (RCT, IV) apply well to inclusion research

### Core Papers (Read Before Class)

- ① **Jack & Suri** (2014). “Risk Sharing and Transactions Costs: Evidence from Kenya’s Mobile Money Revolution.” *AER*, 104(1), 183-223.
  - Focus: Identification strategy, Tables 3-5
- ② **UNDP** (Oct 2024). “The Role of Digital Mobile Money in Catalyzing Financial Inclusion.”
  - Focus: Policy recommendations, case studies

### Supplementary

- Suri & Jack (2016): Long-run M-Pesa effects – Science
- Berg et al. (2020): Digital footprint in credit – RFS
- Tech. Forecast. & Soc. Change (2024): Mobile money in Africa

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Jack-Suri is definitive mobile money paper; UNDP provides recent policy context