

VoxDev Lit: MOBILE MONEY

THANKS TO AMAZING CO-EDITORS



INTRODUCTION

Mobile phones are changing finance in the developing world

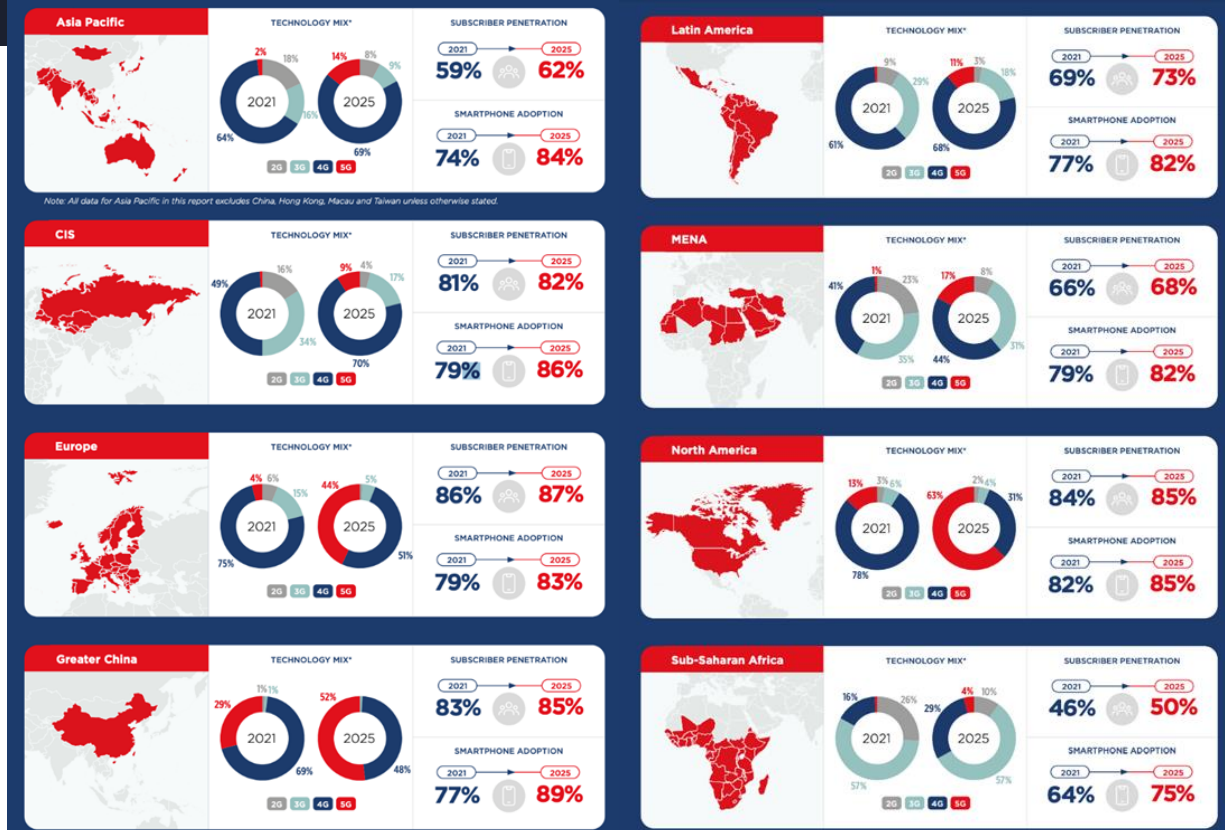
Mobile money in 96 countries (310 deployments), >1.3b accounts, >\$2.5b worth of transactions/day, >5.2m agent outlets

What are the impacts of this?

What are fintech proliferations from this and their impacts?



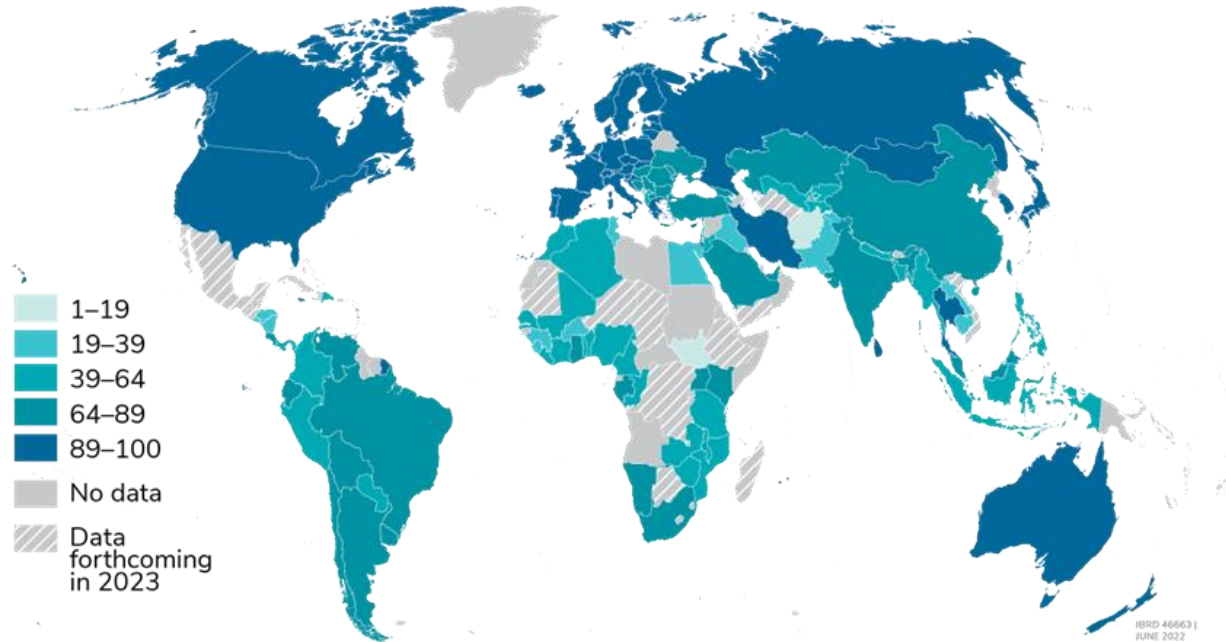
MOBILE PHONES



MOBILE MONEY ACCOUNTS

Account ownership rates vary across the world

Adults with an account (%), 2021

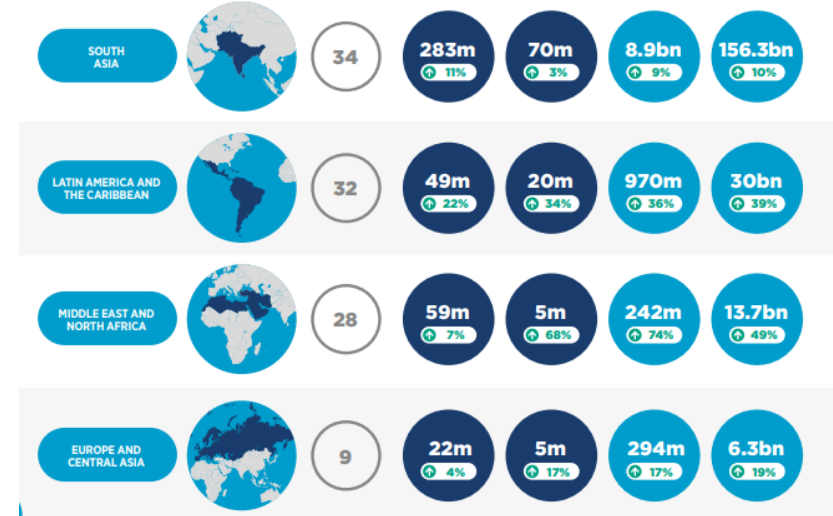
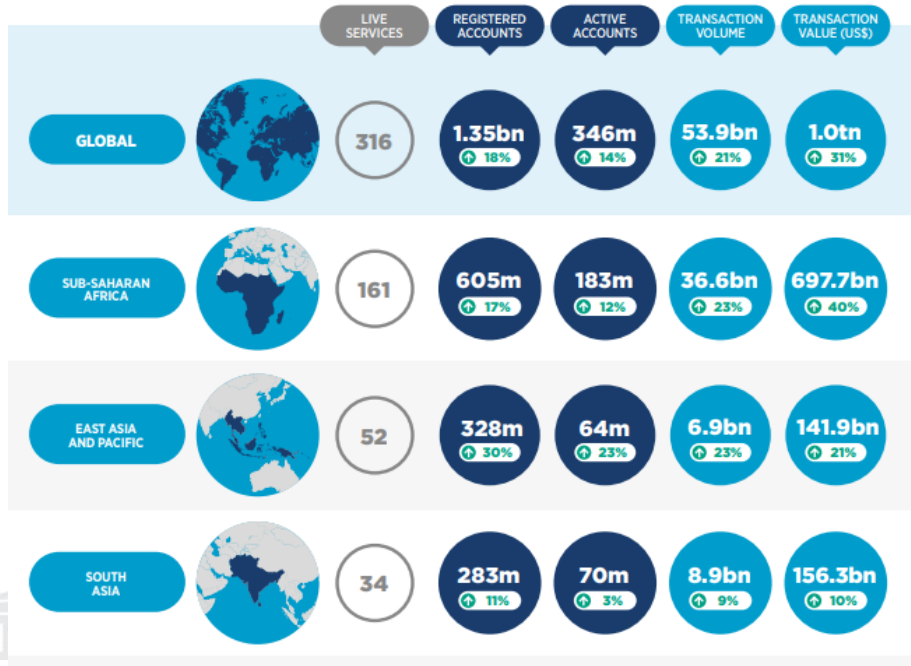


Source: Global Findex Database 2021.



MOBILE MONEY

REGIONAL GROWTH IN 2021



OUTLINE

- What is mobile money
- Regulation
- Impacts of basic mobile money
- Added-value services
- Macroeconomic impacts
- Where to next?





WHAT IS MOBILE MONEY

OPERATIONS OF M-PESA



TRANSACTION COSTS: KENYA

Kenyans faced large costs of transacting with the financial system

- 32% of households lived more than 10 km from a bank branch
- 19% of households lived more than 20 km from a bank branch

M-PESA lowered transaction costs dramatically

- Costs: for average distance of 200 km, KShs 35 vs. a KShs 460 bus

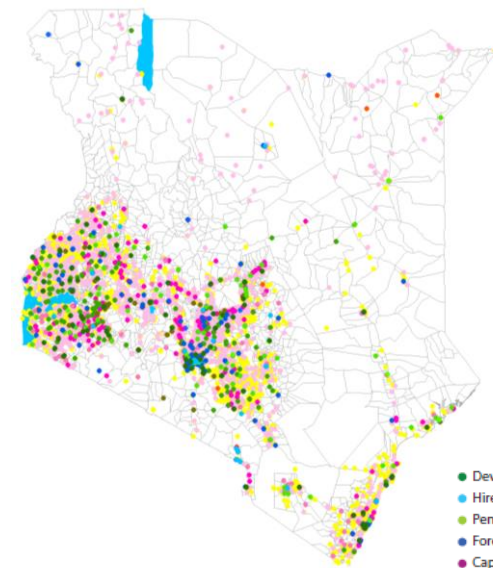
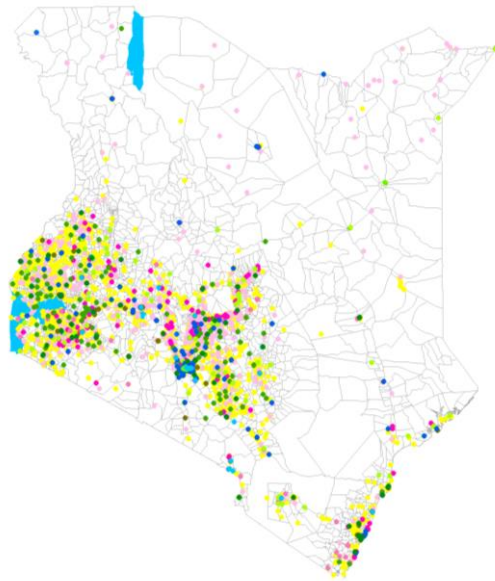
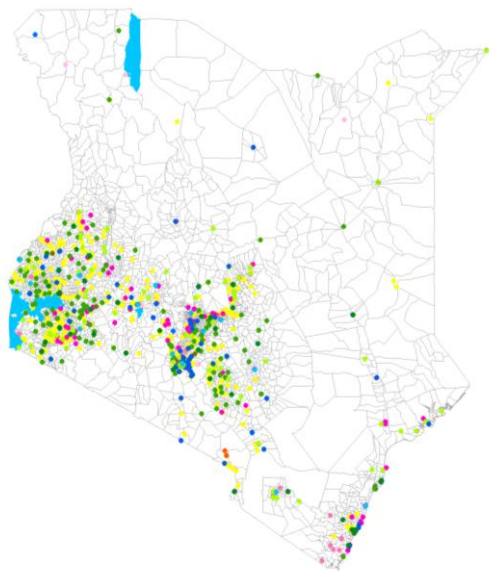


ACCESS IN KENYA: 2007-2015

		Bank Branches	Bank Agents	Mobile Money Agents
2007	Distance	9.2 km	NA	4.9 km
	HHs within 1km	28%	NA	46%
2011	Distance	7.0 km	5.2 km	1.9 km
	HHs within 1km	33%	36%	57%
2015	Distance	6.0 km	1.9 km	1.4 km
	HHs within 1km	39%	56%	68%



FINANCIAL SERVICES: 2007/11/15



- Development finance service provider
- Hire purchase/leasing/factoring
- Pension provider
- Forex bureau
- Capital markets service provider
- Money transfer service
- Post office
- ATM
- Microfinance institution
- Savings and credit cooperative
- Insurance service provider
- Commercial bank and mortgage finance
- Bank agent
- Mobile money agent



TRANSACTION COSTS

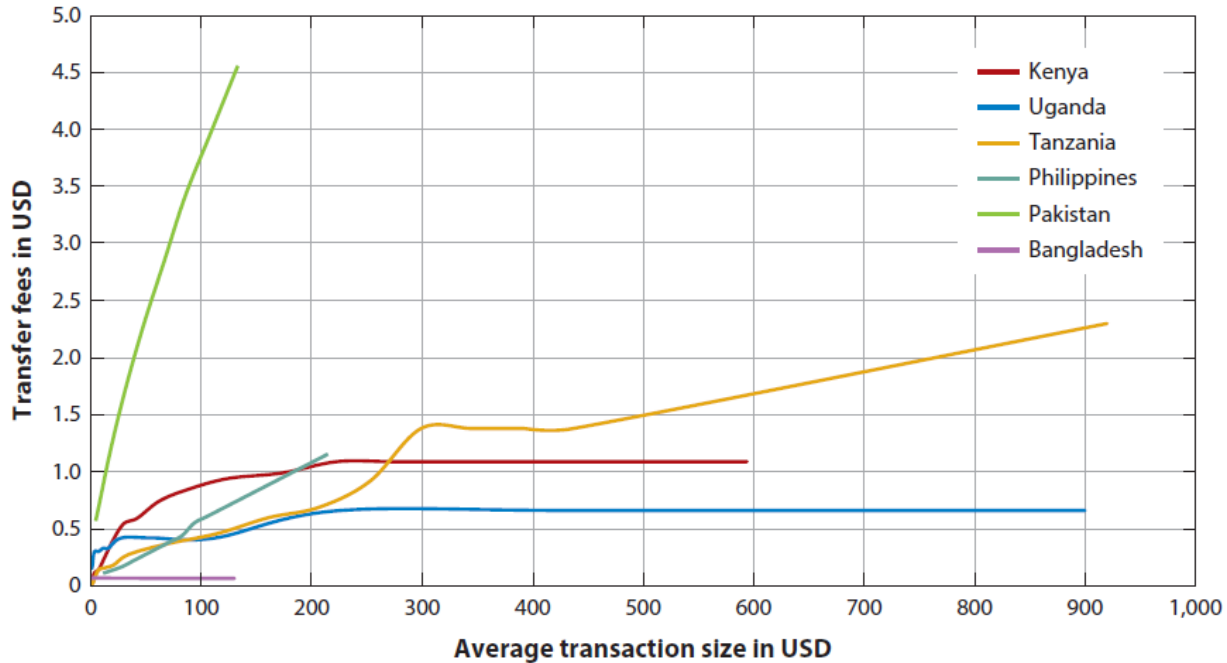


Figure 4

Transaction fees for Kenya, Uganda, Tanzania, the Philippines, Pakistan, and Bangladesh.





REGULATORY ENVIRONMENT

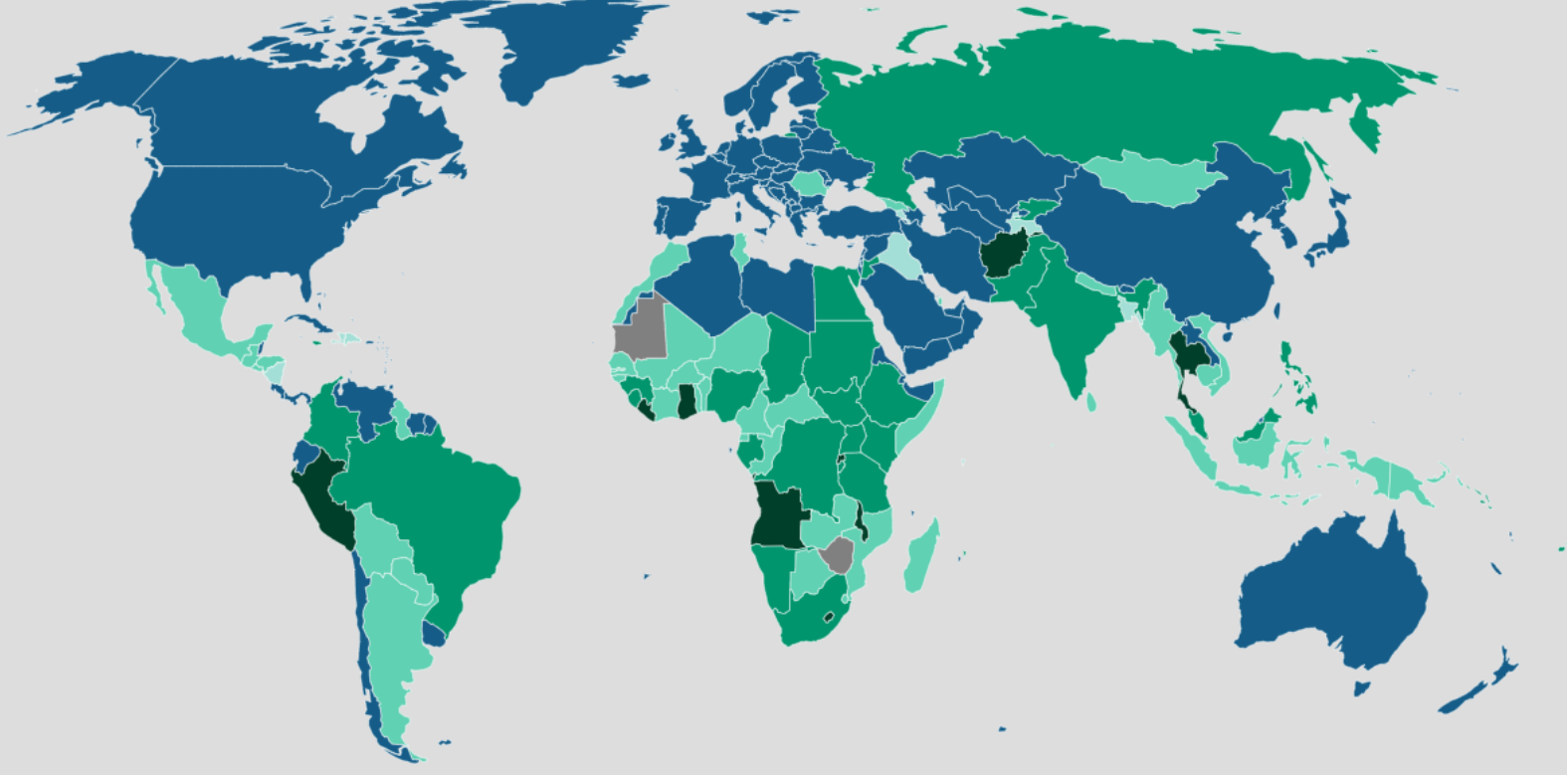
REGULATION

- Customer registration
- Exchange and storage of e-money: trust accounts or bank accounts that hold the float
- Interest on mobile money accounts; on float accounts
- Reporting requirements (aggregate transactions, sometimes high-value individual transactions)
- Limits on transaction sizes, and maximum holdings in accounts
- Foreign transfers
- Interoperability (see Camner 2013, Davidson and Leishman 2016)
- India and payment banks
- Agent banking

Aron (2017): excellent review



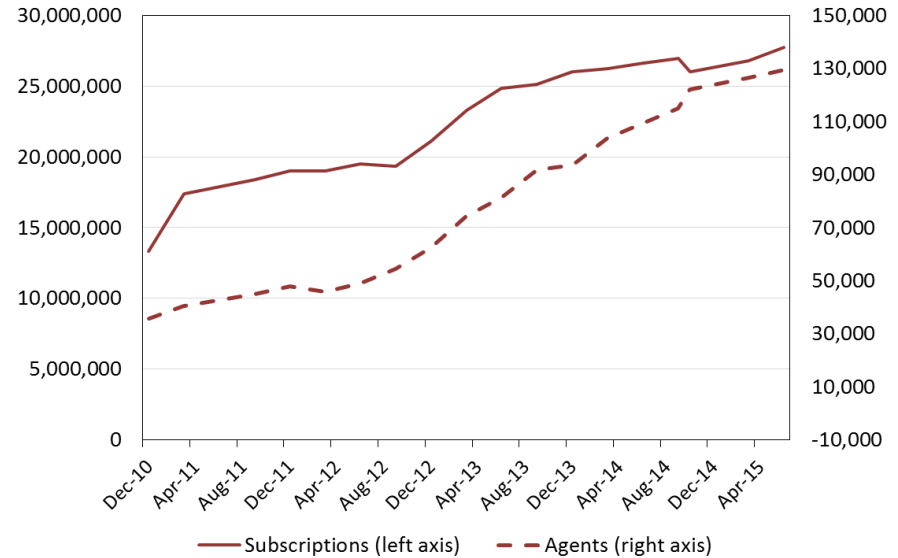
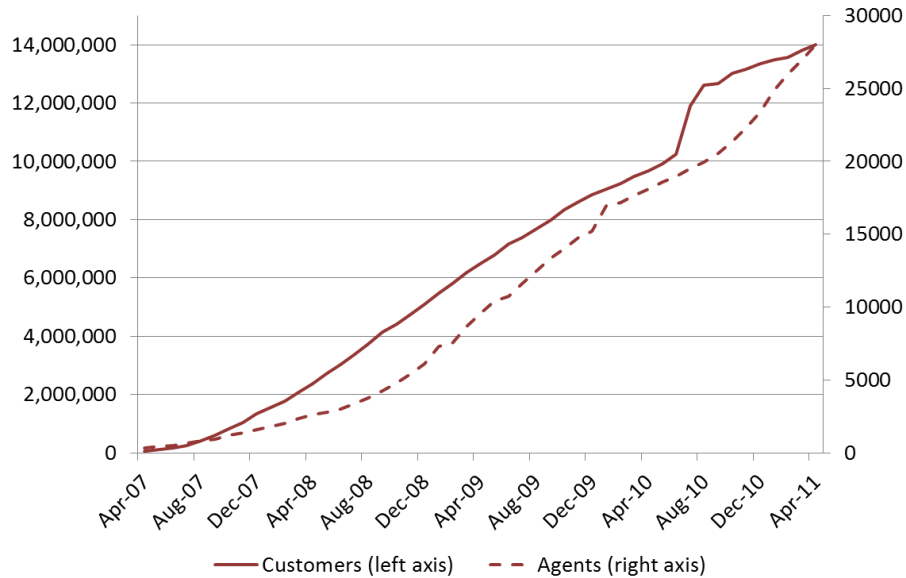
REGULATORY INDEX



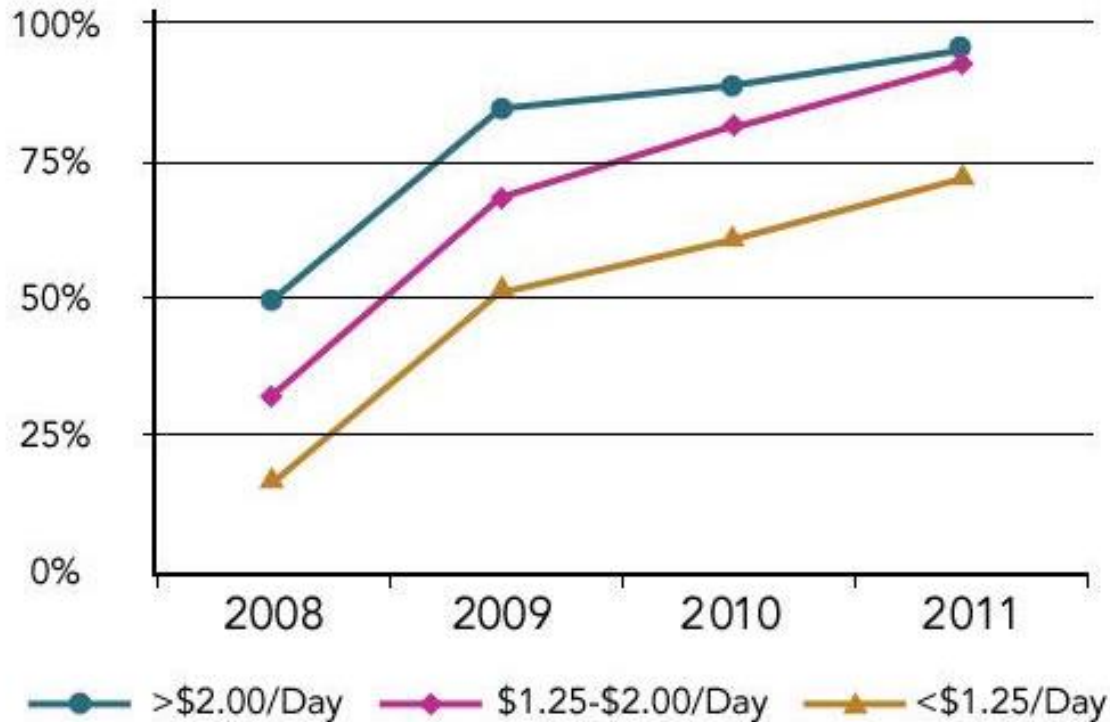


MOBILE MONEY: ADOPTION

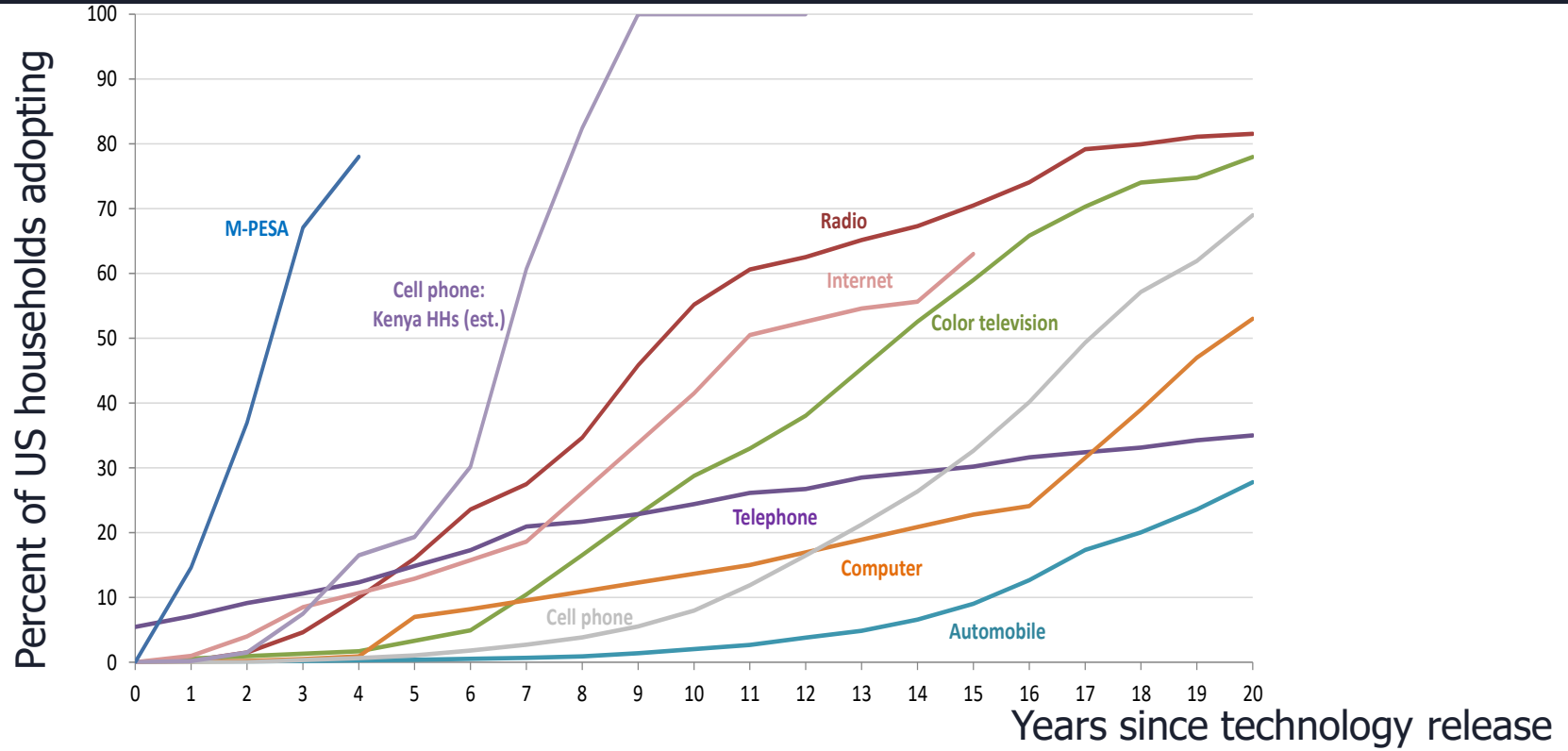
M-PESA: THE FIRST EIGHT YEARS



M-PESA ADOPTION BY POVERTY



LIGHTNING SPEED



FACTORS IN SUCCESS I

Jack and Suri (2014): agent network (extent & geographic spread)

Eijkman et al. (2010): efficient management of e-money & cash inventories

Balasubramanian & Drake (2015): agent quality & competition (pricing transparency and expertise)

Heyer & Mas (2009): regulatory environment, quality of retail infrastructure, telecom penetration

Lal & Sachdev (2015): reliable mobile network with a successful, trusted brand & business

Cruces et al. (2020): RCT to show cost barriers in Gambia

Karra et al (2022): in Mozambique, gender of the telephonic sales representatives matters for take up (intensive and extensive margin)

Annan (2022a, b): over charging



FACTORS IN SUCCESS II

Mas & Morawczynski (2009): strong branding, an easy-to-use product, simple & transparent retail pricing, free deposit & no minimum balance features, ability to send money to nonusers, ability to perform ATM withdrawals

Mas & Ng'weno (2010): brand management, channel management & pricing

Mas & Radcliffe (2010): clever and easy-to-use design, business model

Mas & Radcliffe (2011): network effects & trust

Ortigao et al. (2015): financial illiteracy, lack of trust & knowledge, technological issues a constraint

Khan & Blumenstock (2016): across countries, unlikely that any single set of characteristics will consistently predict mobile money adoption and use (use ML)





MOBILE MONEY: BASIC IMPACTS

IMPACTS OF MOBILE MONEY?

All mobile money systems have transaction fees

Does not encourage cashless retail transactions like credit/debit cards in the US
[this has come much later, still not common]

Initially largely used to make two types of transactions:

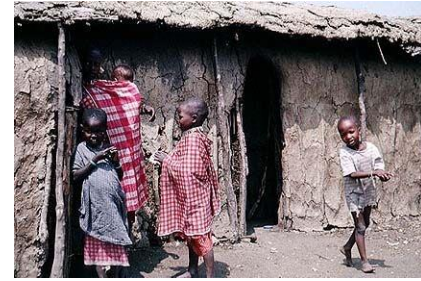
1. Geographically disparate transactions, i.e. transactions across space
2. If opportunity cost of holding cash is high, eg high-crime cities (Economides & Jeziorski 2015)

For these types of transactions, mobile money provides:

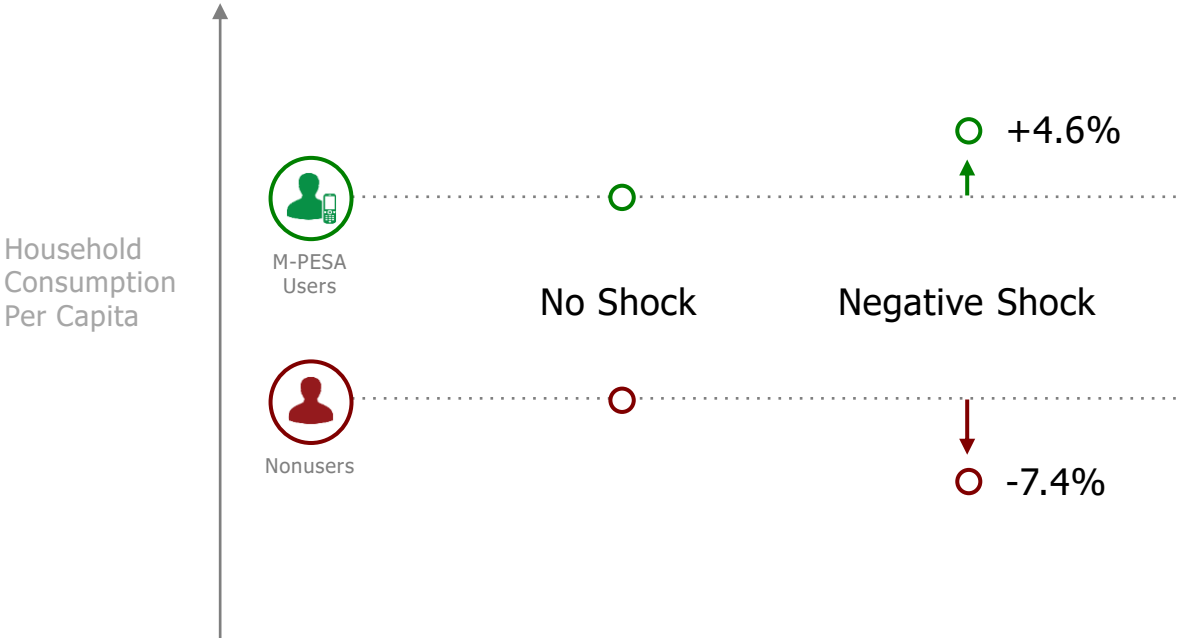
1. Dramatic reduction in transaction costs
2. Improvements in convenience, security, and time taken for the transaction



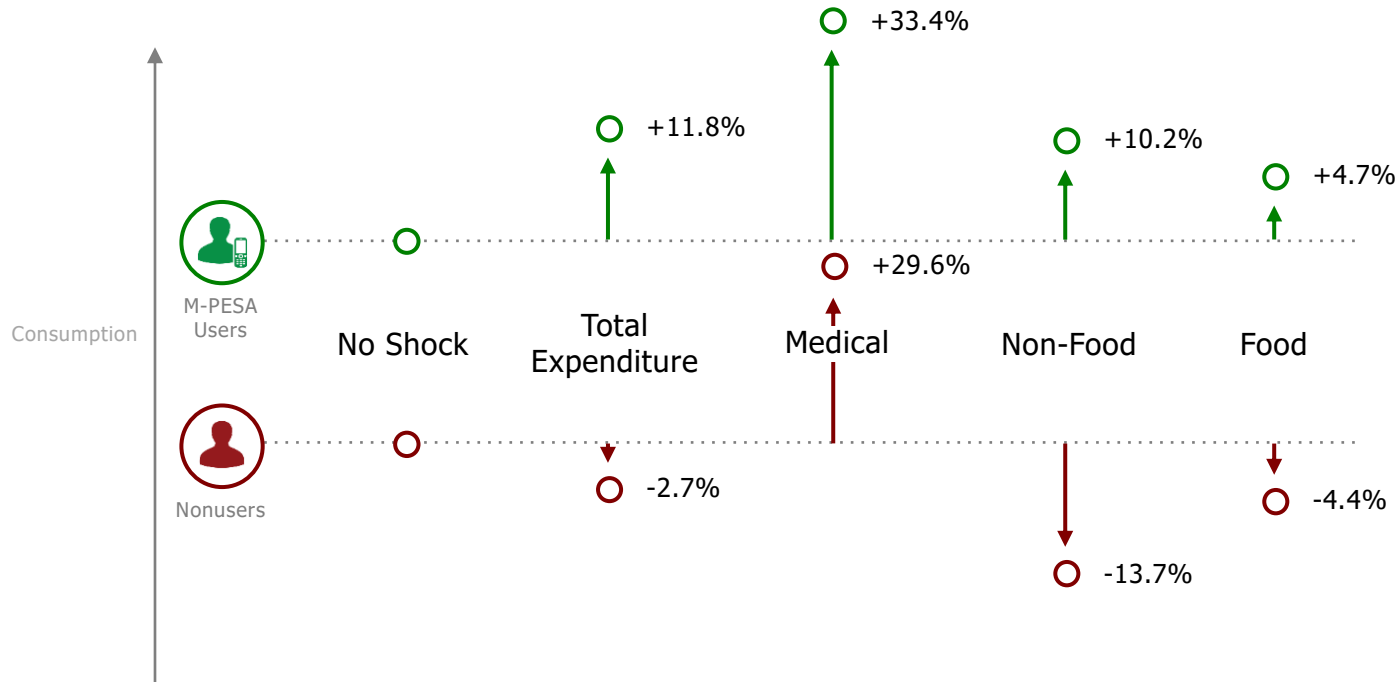
IMPACTS: FINANCIAL RESILIENCE



RESILIENCE: Jack and Suri (2014)



HEALTH EVENTS: Jack et al (2012)



SIMILAR RESULTS IN...

- Tanzania (DiD): Riley (2018)
- Mozambique (RCT): Batista and Vicente (2022) [consumption smoothing, agricultural disinvestment & migration]
- Uganda (RCT): Wieser et al (2019) [food security]
- Large sample of developing economies: Apeti (2023) [reduction in consumption volatility]
- Tanzania: Abiona and Foureaux Koppensteiner (2018) [poverty smoothing, investments in human capital]
- Kenya: Ahmed and Cowan (2021) [spend more on health care, increased access and use of informal loans]
- Bangladesh (RCT): Lee et al. (2021) [-ve physical & mental health effects on migrants in Dhaka; +ve effects on rural families]
- Afghanistan: Blumenstock et al. (2022) [increase cash holdings, use less mobile money when exposed to violence]



OTHER OUTCOMES

- Kenya (IV): Gürbüz (2017) [increased savings]
- Uganda: Egami and Matsumoto (2020) [antenatal care take-up]
- Bangladesh: Pople et al. (2021) [food security]
- Uganda: Munyegera & Matsumoto (2014) [increased consumption]
- Kenya: Morawczynski & Pickens (2009) [women's empowerment]
- Kenya: Plyler et al. (2010) [community-level effects: money circulation, local employment, improvement in the business environment]
- Kenya: Kipchumba and Sulaiman (2021) [increases control over personal finances for both men and women, effects are larger for women]



LONGER TERM EFFECTS

Suri and Jack (2016):

- A reduction in poverty of 2 percentage points, approx. 196,000 households move out of extreme poverty
- Approx. 186,000 women switched their main occupation from farming to being in a business or in retail





MICROENTERPRISES

MICROENTERPRISES

- Maputo, Mozambique: Batista et al. (2022): mobile money accounts + limited time interest and/or financial management training
 - Positive impacts on female-owned business performance, none on male-owned businesses
- Uganda: Riley (2022): mobile money account + mobile money disbursement of loan (control is a cash loan)
 - Loan disbursement increases value of business capital, business profits
 - Mechanism: an improved ability to resist sharing pressure from the woman's spouse
- Malawi: Aggarwal et al. (2020): RCT with 3 treatments that vary cost of using mobile money
 - Find that the treated opened accounts and used
 - Treatment entrepreneurs shift some of their labor from their business to agriculture
 - Not using mobile money accounts for transfers, but instead to save





MOBILE MONEY AS RAILS

MOBILE MONEY AS RAILS

- Niger: Aker et al. (2014) cash transfers on mobile money
 - Better nutrition from reduced time costs for the recipients
 - Possible increasing bargaining power for women from the increase in privacy
- Afghanistan: Blumenstock et al. (2015b) mobile salary payments
 - Significant cost reductions for operating agency, no significant impacts of mobile money use
- Afghanistan: Blumenstock et al. (2018) savings products (with defaults) on mobile money
 - Employees enrolled in the 5% deduction rate 40 ppt more likely to save
 - A 50% matching rate had comparable results to the 5% deduction for saving
 - Present-bias preferences
- Bangladesh: Breza et al. (2020) move from cash to digital wage payments
 - Find evidence of 'learning-by-doing'
 - Audit study finds agents in factories less likely to take advantage of women (eg via extra fees)



MOBILE MONEY AS RAILS

- Kenya: Dizon et al. (2017): RCT on a mobile money account labelled for saving to women
 - Increased savings
 - Reduced risk sharing but this was more than compensated for by increased savings
 - Overall improvement in women's ability to manage shocks
- Mozambique: Batista and Vicente (2020): incentivized savings (via interest on balances) on mobile money between harvest and planting
 - Significantly higher savings
 - More likely to use fertilizer and other agricultural inputs
- Large sample of developing economies: Apeti and Edoh (2023)
 - Mobile money increases tax revenues (indirect & direct, latter is larger)





VALUE ADD SERVICES

THE PROMISE OF MOBILE

Fully digital banking

Account opened on mobile phone, uses rails of mobile money

Credit and savings over mobile phones

No brick and mortar bank branches, no tellers, no loan officers

Potentially lowers costs dramatically for both customers and lenders

Most popular of these is M-Shwari: over 15m accounts (75% of adults), 1 in 5 Kenyan adults (4.5 million) have an active loan on M-Shwari



DIGITAL BANKING/CREDIT KENYA

Over 15 lenders. Major ones:

Bank led: M-Shwari, KCB, Equity [dumb phone]

Non-Bank led: Branch, Tala [smart phone]

All offer a monthly loan at 6-12% interest



DIGITAL BANKING/CREDIT

- Tanzania: Bastian et al. (2018): mobile saving accounts on M-Pawa with/without business training
 - Treated women save more in the mobile saving account, save less elsewhere
 - Obtaining more micro-loans
 - Increase in women's reported control over how their business money is spent
- Kenya: Habyarimana & Jack (2016): M-Shwari as a savings account vs a commitment savings account in schools
 - Increase in savings
 - Increase in secondary school enrollments
- Ghana: Riley and Shonchoy (2022) on the adoption of mobile banking services using IVR
 - More bank transactions conducted through mobile money
 - Reduction in visits to bank branches



DIGITAL CREDIT

- Kenya: Suri et al. 2021 study digital loans on M-Shwari
 - Large take up rates of M-Shwari, but does not substitute for other sources of credit
 - Helps smooth health shocks, improves resilience, increases the propensity to spend on education
- Nigeria: Bjorkegren et al. (2022) use an RCT to study a digital loan product
 - Increases measures of subjective well-being
 - Larger loans (conditional on approval) do not have any impacts
- Malawi: Brailovskaya et al (2021) RDD and RCT on digital credit & financial literacy
 - Credit harms consumers' own perceived well-being
 - Financial literacy increased knowledge & loan demand, not timely repayment -> more default



RETAIL PAYMENTS: LIPA NA MPESA

- Kenya: Dalton et al. (2022): adoption and impacts of an e-payment technology
 - Increases the access to digital credit by 50%
 - Reduces the volatility in sales (more so for smaller firms)
 - Does not change revenues or profits directly





MACROECONOMIC IMPACTS

MACROECONOMIC IMPACTS

- Kenya/Tanzania/Uganda: Weil et al. (2012)
 - Find structural breaks in monetary aggregates
 - But velocity of M-PESA no higher than that of cash or other monetary aggregates
- Kenya: Mbiti & Weil (2011)
 - Transaction velocity of M-PESA = 4 transactions/ month in 2008, not higher than velocity of cash
 - Reductions in prices of competitors to M-PESA (such as Moneygram and Western Union)
- Kenya: Mas & Klein (2012)
 - Velocity of money increases
 - But this does not affect money supply base when e-money is based on a safe-deposit-box model
- Uganda: Aron et al. (2015)
 - Little evidence of link between mobile money and inflation using inflation forecasting models

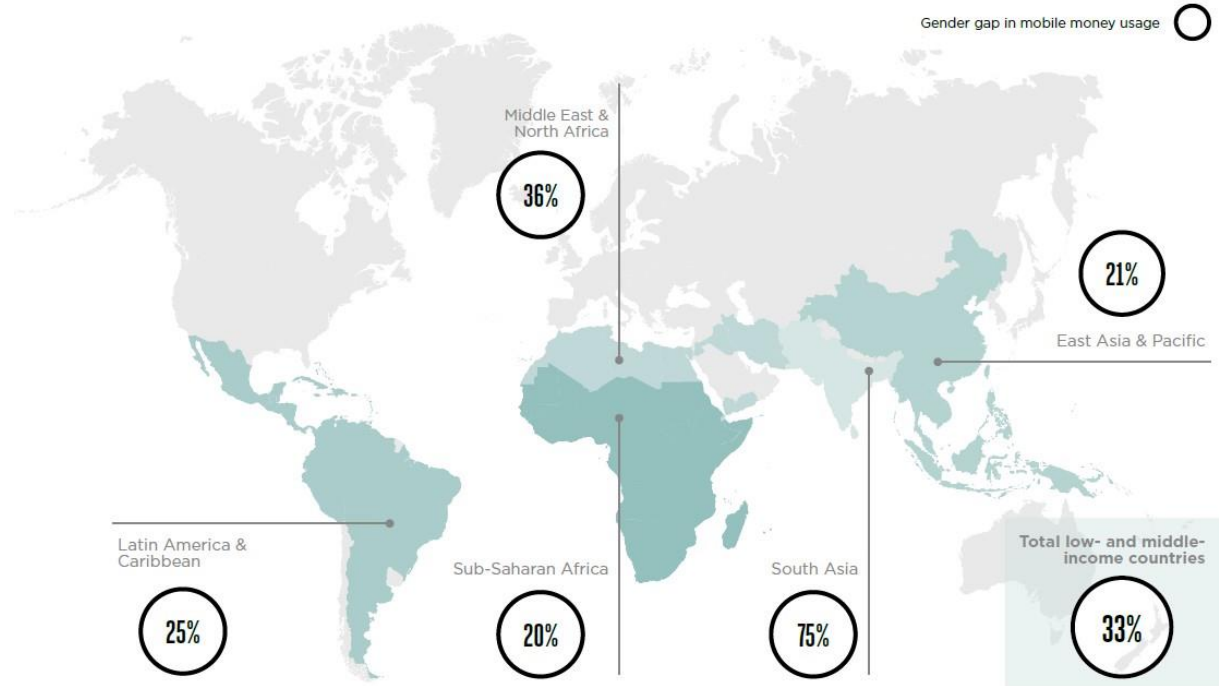




WHERE TO NEXT?

STILL A LONG WAY TO GO...

Gender gap in mobile money usage in low- and middle-income countries



Source: 2017 Global Findex database, ages 15+. The gender gap refers to how less likely a woman is to report using mobile money than a man.



WHAT NEXT?

Despite all these gains from technology, there is still a long way to go

Less use of digital payments for P2B, B2B, G2P

Though covid is starting to change that...

Further liberalization and democratization of payments, financial services and identity: APIs

We can build platforms but still playing “blind man's bluff” on new product design. That is where prospective welfare and profit gains are





THANK YOU