The Impact of mobile financial services:
The work and the output

CPRsouth 2016 Conference
Zanzibar

LIRNEasia
Pro-poor. Pro-market.

IDRC CRDI
Canada

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UKaid
from the British people

Systematic Review Team

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What has been mobile financial services' impact in low and lower-middle income countries?

Synopsis

- The main question: ***What is the empirical impact of mobile financial services on the poor?***
- What we found:
  - m-money as an intervention leads to ***greater savings***, although the difference overall is not statistically significant
  - m-financial services causes an ***increase in consumption*** to user households compared to non-users, statistically significant
  - that mobile money services causes ***increase in household income*** as well as ***increase in the percentage of farm yield sold***. However this effect is not statistically significant.

Previews reviews

- PRE-CURSOR REVIEWS:

- Duncombe & Boateng (2009) Mobile Phones and Financial Services in Developing Countries: a review of concepts, methods, issues, evidence and future research directions Third World Quarterly Volume 30, Issue 7, 2009)

- Diniz, Albuquerque and Cernev (2011) Mob
  Payment: a literature based review on acad
  oriented publications (2001-2011)

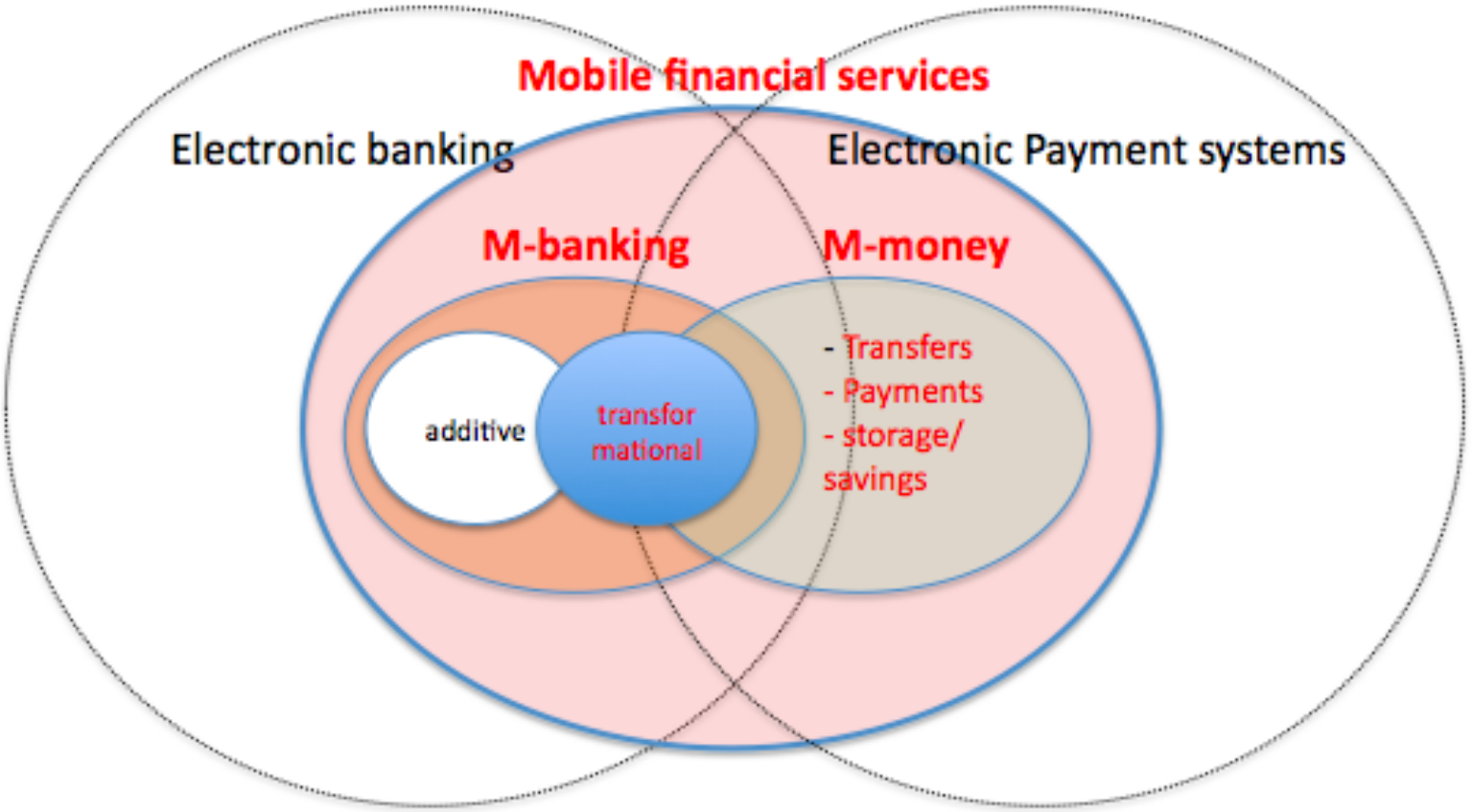
Papers Themes:
Consumer adoption
Market analysis
MM for the BoP
Technical Frameworks
Merchant adoption
Analysis for Failures
Technological Factors

The SR questions

The systematic review provides answers to the following research questions:

- *What is the impact of **mobile financial services** on the **volume** and **frequency of remittances**?*
- *What is the impact of **mobile financial service** use on the **poor's consumption**?*
- *What is the impact of **mobile financial service** use on **livelihoods in terms of increased productivity and income**?*

Locating m-Financial Services



Theoretical Framework

CONTEXT

Low to low-middle income countries

INTERVENTION

M-financial services

Knowledge of services

INTERMEDIATE OUTCOMES

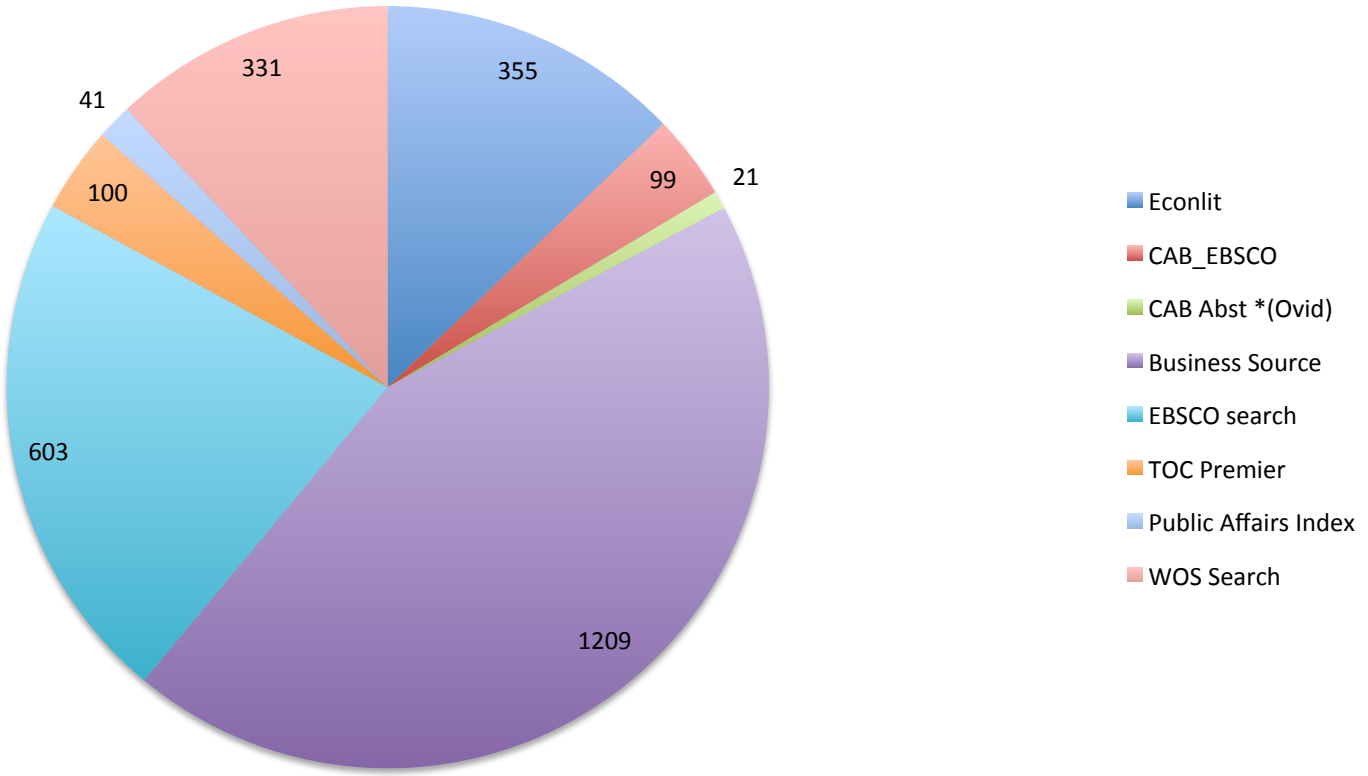
ADOPTION /USE

Efficiencies

DEVELOPMENT IMPACT

Financial Inclusion/Increased access to funds
Savings Patterns/Behavior
Consumption patterns
Social capital/Power relation
Livelihoods
- Investments
- Inclusion in Markets
- Income

Search Results= 2759



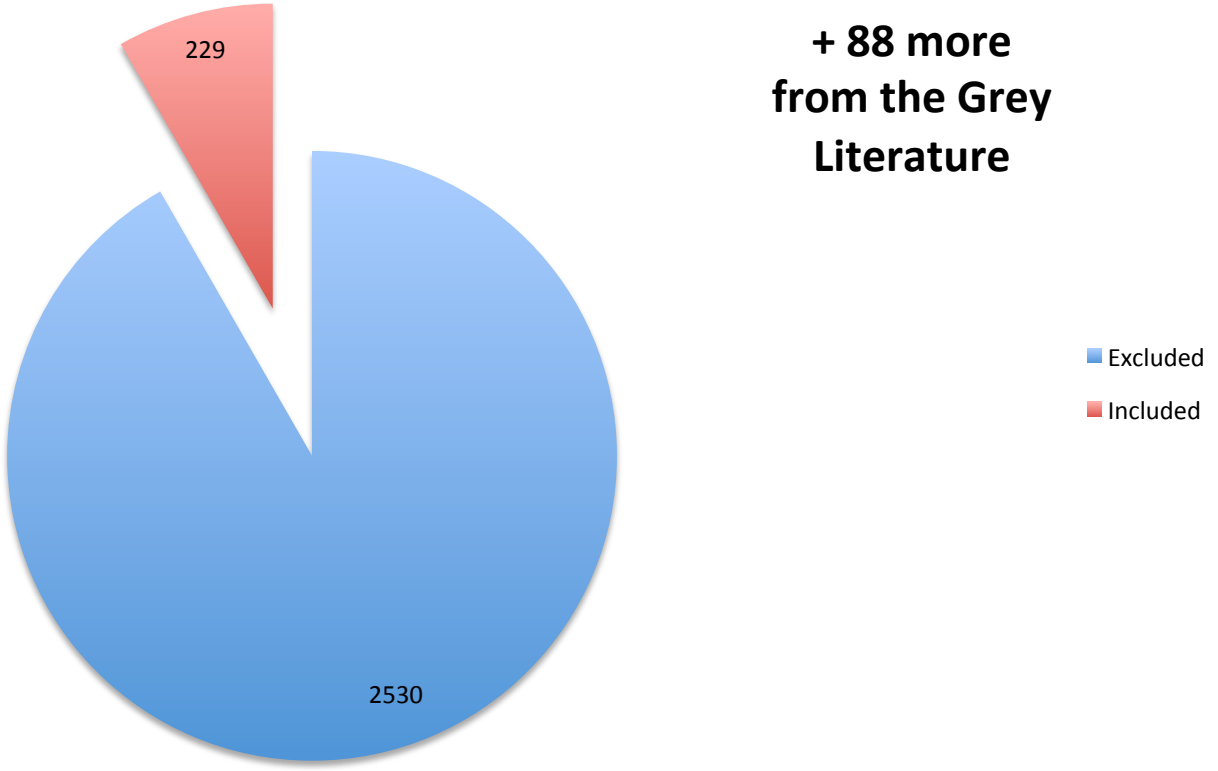
Exclusion criteria

Exclude

- before 2000 publications
- hi-income and upper middle income
- not using mobile phones
- not on mobile money
- not on impact (e.g. only adoption, feasibility)
- Theoretical only
- qualitative only
- policy paper only

FIRST SCREENING

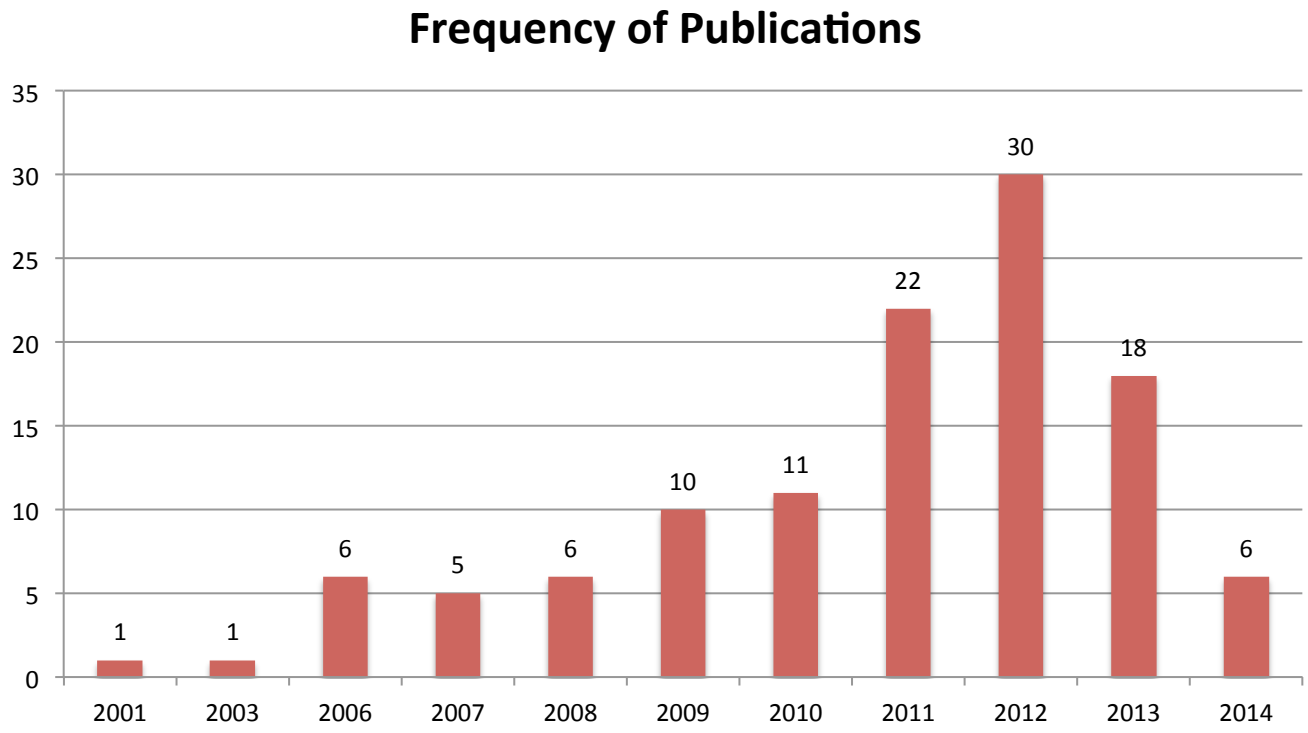
We used double screening and conflicts was resolved by a third screener (622 cases)



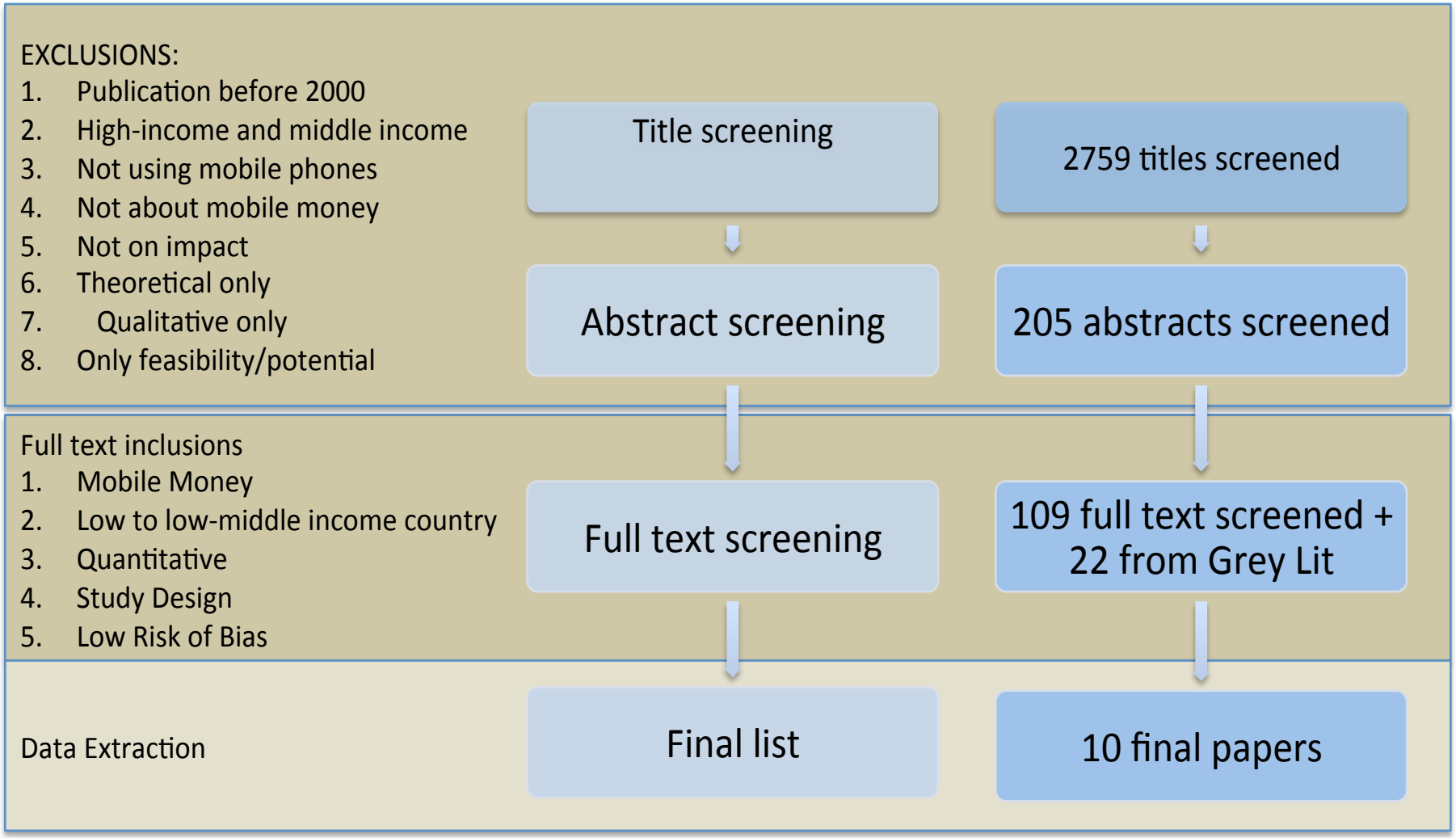
+ 88 more from the Grey Literature

Quick scan of final 229

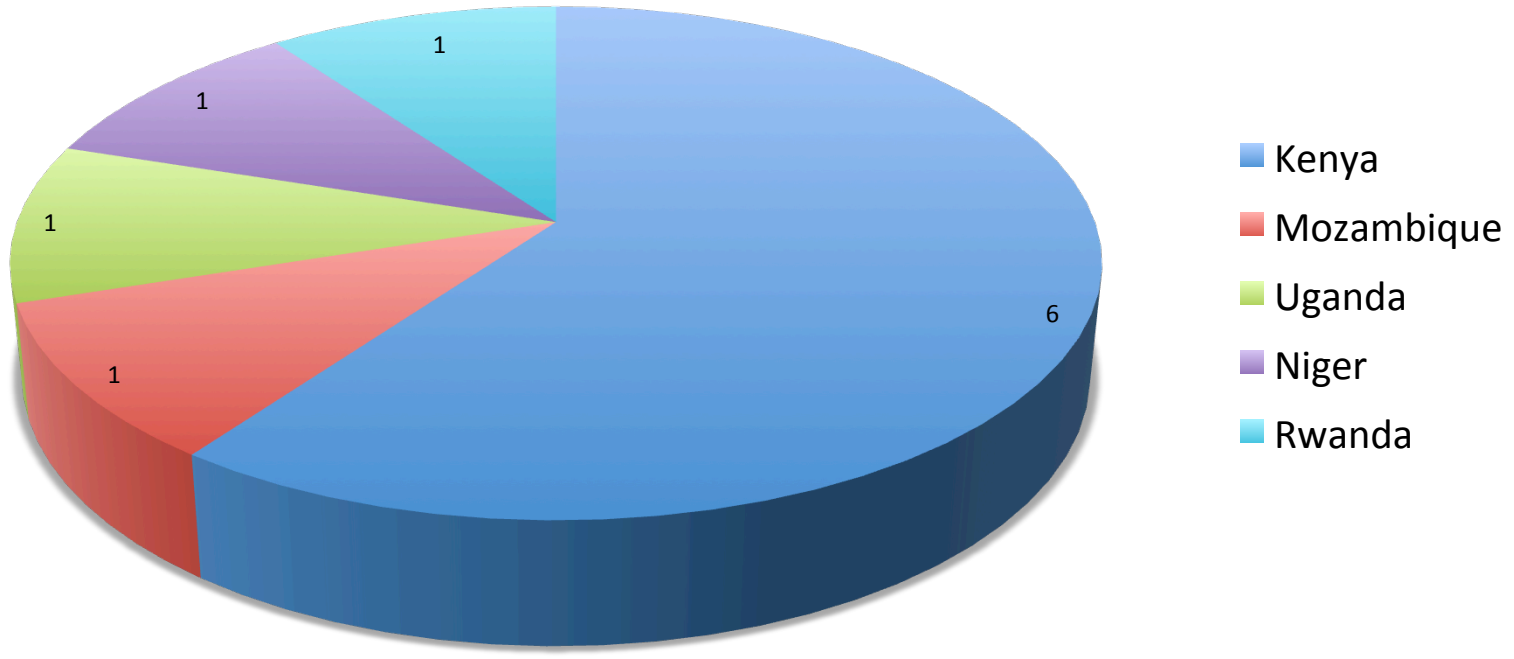
- 24 repeats ---- 205 final list



A: Results of the screening



Geographical dispersion of final list of papers



Final list

Paper title	Author	YEAR
Transaction Networks: Evidence from Mobile Money in Kenya	Jack, W., Ray, A. and Suri, T	2013
Mobile Banking: The Impact of M-Pesa in Kenya	Mbiti, I. and Weil, D	2011
Risk Sharing and Transaction Costs: Evidence from Kenya's Mobile Money Revolution	Jack, W., and Suri, T	2014
Risk sharing and mobile phones: evidence in the aftermath of natural disasters)	Blumenstock, Eagle and Fafchamps	**2014 (new version)**
Zap It to Me: The Short-Term Impacts of a Mobile Cash Transfer Program	Aker, J. et. al.	2011
Introducing Mobile Money in Rural Mozambique: Evidence from a Field Experiment	Batista, C. and Vicente, P.	2013

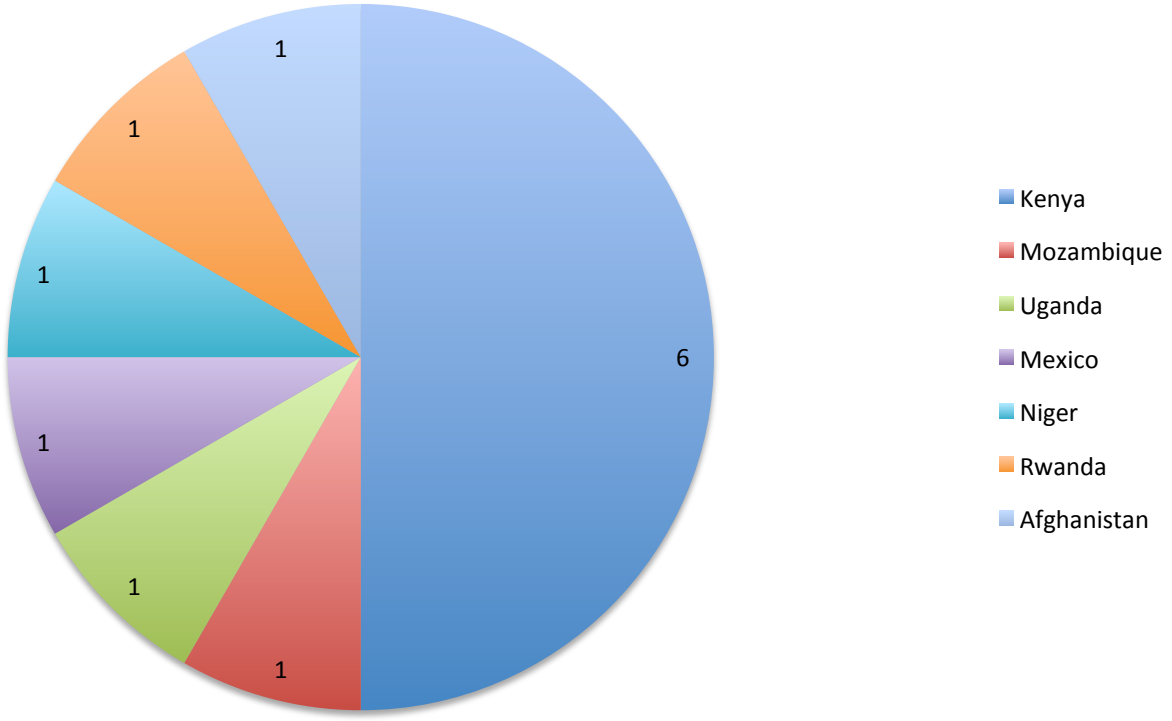
Final list

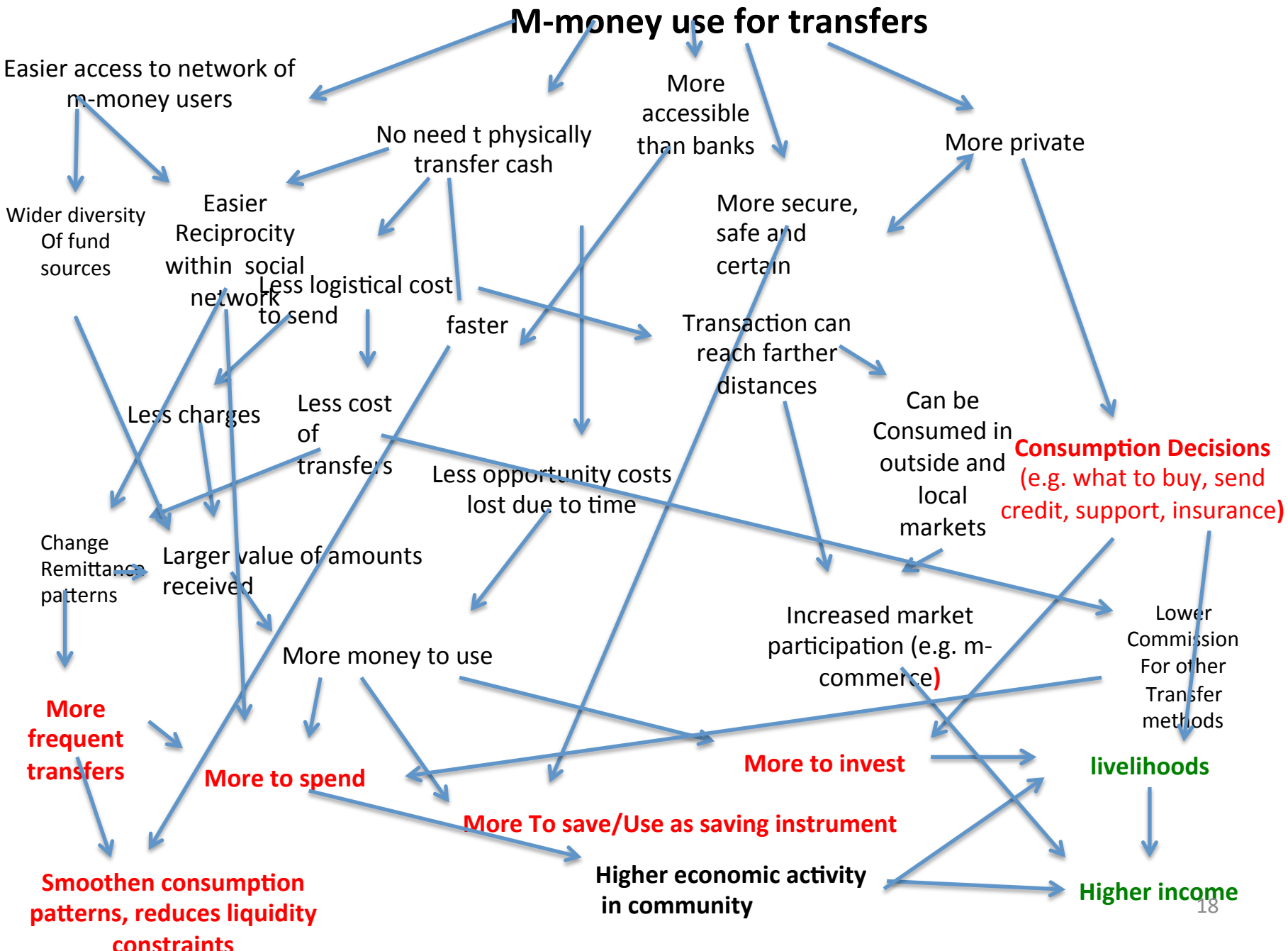
Paper title	Author	YEAR
Impact of Mobile Phone-Based Money Transfer Services in Agriculture: Evidence from Kenya	Kirui, O., et. al.	2013
Mobile Money, Remittances and Rural Household Welfare: Panel Evidence from Uganda	Munyegera & Matsumoto	2014
Mobile Money, Smallholder Farmers, and Household Welfare in Kenya	Kikulwe, E., et. al.	2014
Kenya's Mobile Revolution and the Promise of Mobile Savings	Demombynes & Thegeya	2012
How transformational mobile banking optimize household expenditure. Case study from rural communities in Mexico	Renteria	2015 (forthcoming)

DESIGNS

Author(s), Year	Design, Methodology
Jack, W., Ray, A. and Suri, T. 2013	2 period panel ; OLS
Mbiti, I. and Weil, D. 2011	2-period panel; DiD
Jack, W. and Suri, T. 2014	2-period panel;DiD
Aker, J., Boumnijel, R., McClelland, A. and Tierney, N. 2011	RCT; simple difference
Batista, C. and Vicente, P. 2013	RCT; OLS
Kirui, O., Okello, J., Nyikal, R. and Nyiraini, G. 2013	Cross-sectional; PSM
Munyegera, G and Matsumoto, T. 2014	2-period panel; DiD
Kikulwe, E., Fischer, E., and Qaim, M. 2014	2-period panel; Fixed effect regression
Bemombyne, G. and Thegeya, A. 2012	Cross-section; OLS, Probit and IV
Blumenstock, etc. al (2015)	RCT

Breakdown of papers by country




M-money use for transfers
Easier access to network of m-money users
More accessible than banks
No need t physically transfer cash
More private
Wider diversity Of fund sources
Easier Reciprocity within social network
More secure, safe and certain
Less logistical cost to send
faster
Transaction can reach farther distances
Less charges
Less cost of transfers
Can be Consumed in outside and local markets
Consumption Decisions (e.g. what to buy, send credit, support, insurance)
Less opportunity costs lost due to time
Change Remittance patterns
Larger value of amounts received
Increased market participation (e.g. m-commerce)
Lower Commission For other Transfer methods
More money to use
More frequent transfers
More to spend
More to invest
livelihoods
More To save/Use as saving instrument
Higher economic activity in community
Smoothen consumption patterns, reduces liquidity constraints
Higher income

RESULTS

B: Synthesis of the results

Primary results

- Mobile-money have increased the ***frequency of receiving remittance*** for users than non-users in Kenya (Jack and Suri, 2013; Mbiti and Weil, 2011), Uganda (Munyegera et al. 2014) and Sierra Lione (Aker, et al. 2011).
- Mobile money remittances ***travelled longer geographical distances during shocks***, flowing from non-affected to affected regions (Jack and Suri, 2013).
- ***Remittances exhibited diverse source/ destination relationship***, with less than a fifth exhibiting reciprocal aspects.

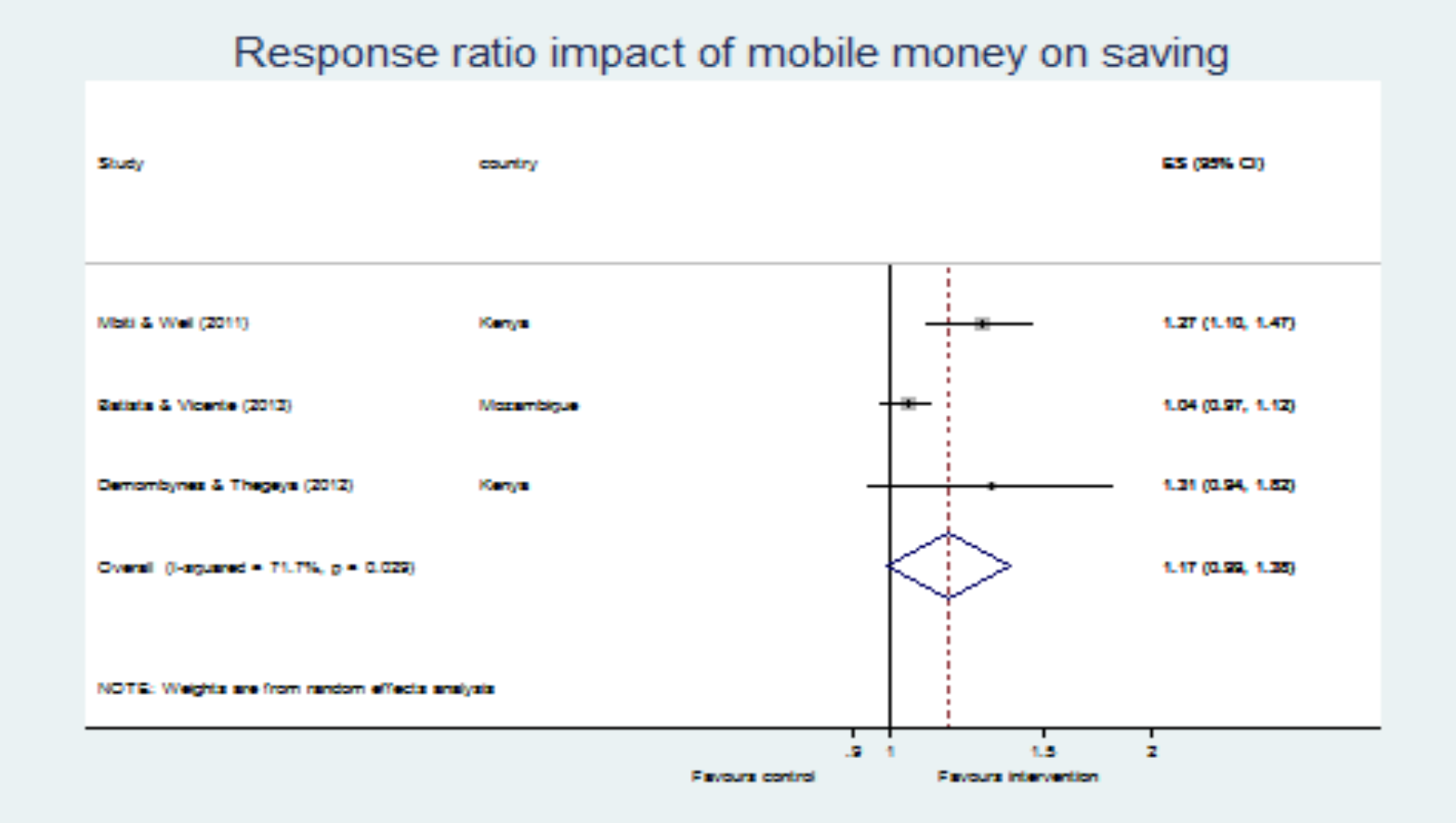
Efficiency Gains

Primary results

- Not necessarily a development impact, and many other studies in the literature estimate this.
- Problem also of separating the gain from just having a mobile phone (e.g. Renteria 2015)
- Among the final list only Aker, et.al. and Blumenstock et.al (2015) provides an estimate. Aker, estimate that manual distribution of cash transfers are 30% more expensive than using thru m-Zap. Blumenstock et. al (2015) estimates approx. 50% cost per employee savings per month if using m-money.
- Not in the final list, Hope, Foster Krolikowski and Cohen (2011) documented effect in time and cost for paying water bills.

B: Meta-analysis results

Secondary results: Savings



The results show that overall, m-money as an intervention leads to greater savings, although the difference overall is not statistically significant at a level of 5 percent (Z=1.81, p=0.071).

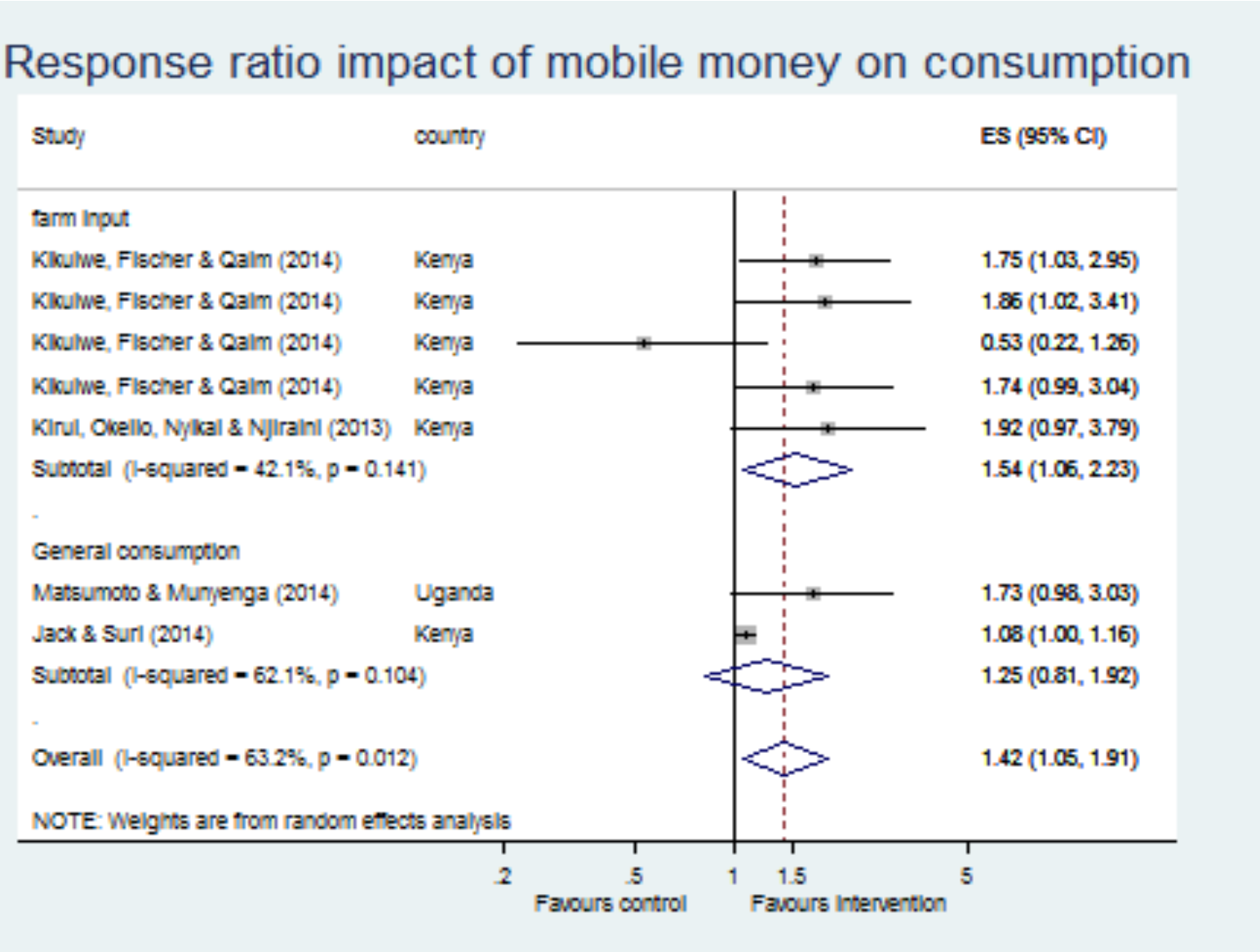
B: Meta-analysis results

Secondary results: Consumption

- The results show that the use of mobile financial services ***increased a combined consumption of farm inputs*** such as organic fertilizer, hired labor and peptides in the order of 54%, statistically significant.
- Other typed of consumption such as health expenditures increases without decreasing expenditure for other non-health needs (Jack and Suri, 2014), and unspecified expenditures.
- Combining the effects of all kinds of consumption – specified for farm input and those unspecified - meta-analysis results show that **m-financial services causes an increase of 42 percent to user households compared to non-users**, statistically significant at 5 percent level.

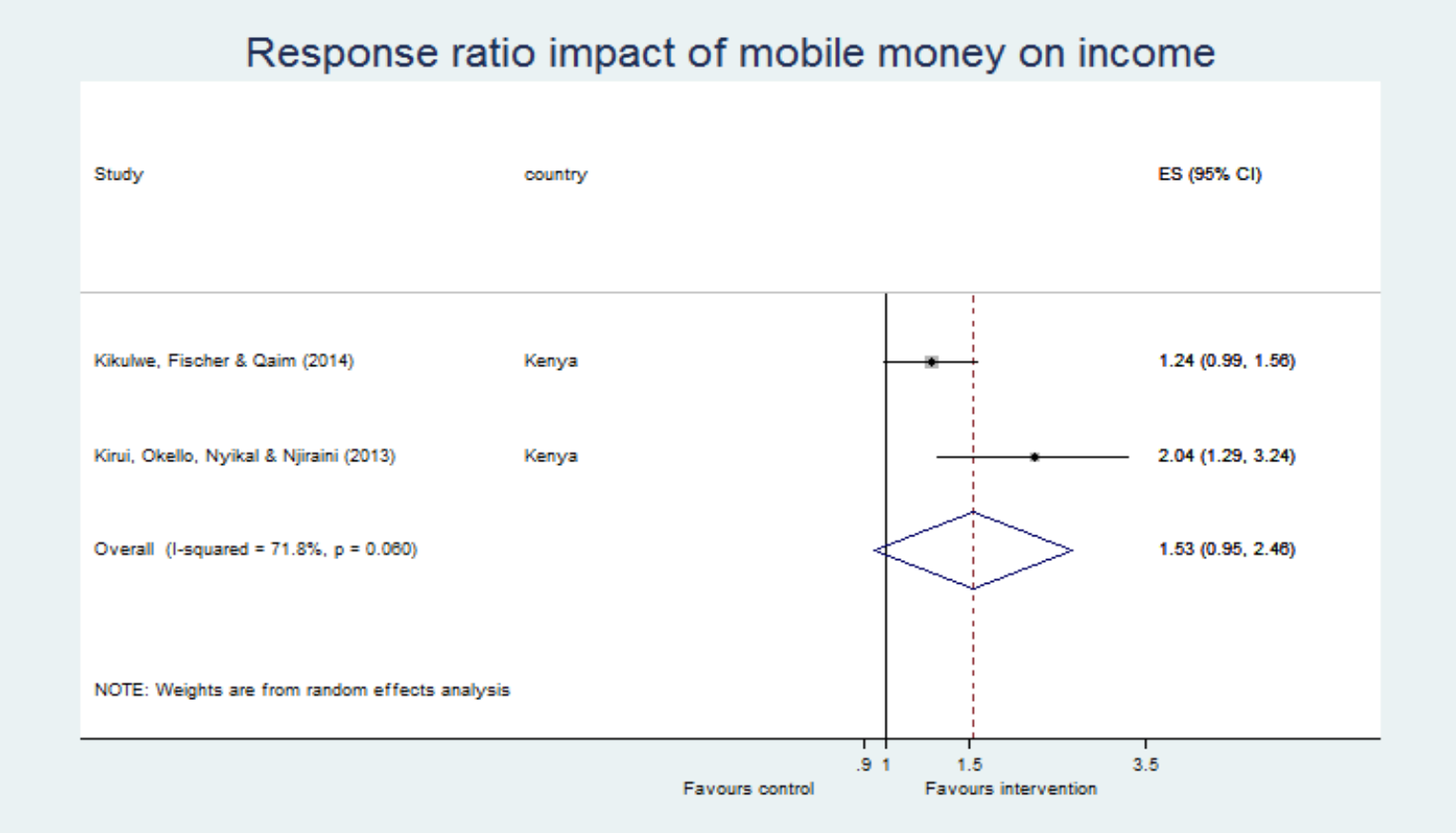
B: Meta-analysis results

Secondary results: Consumption forest plot



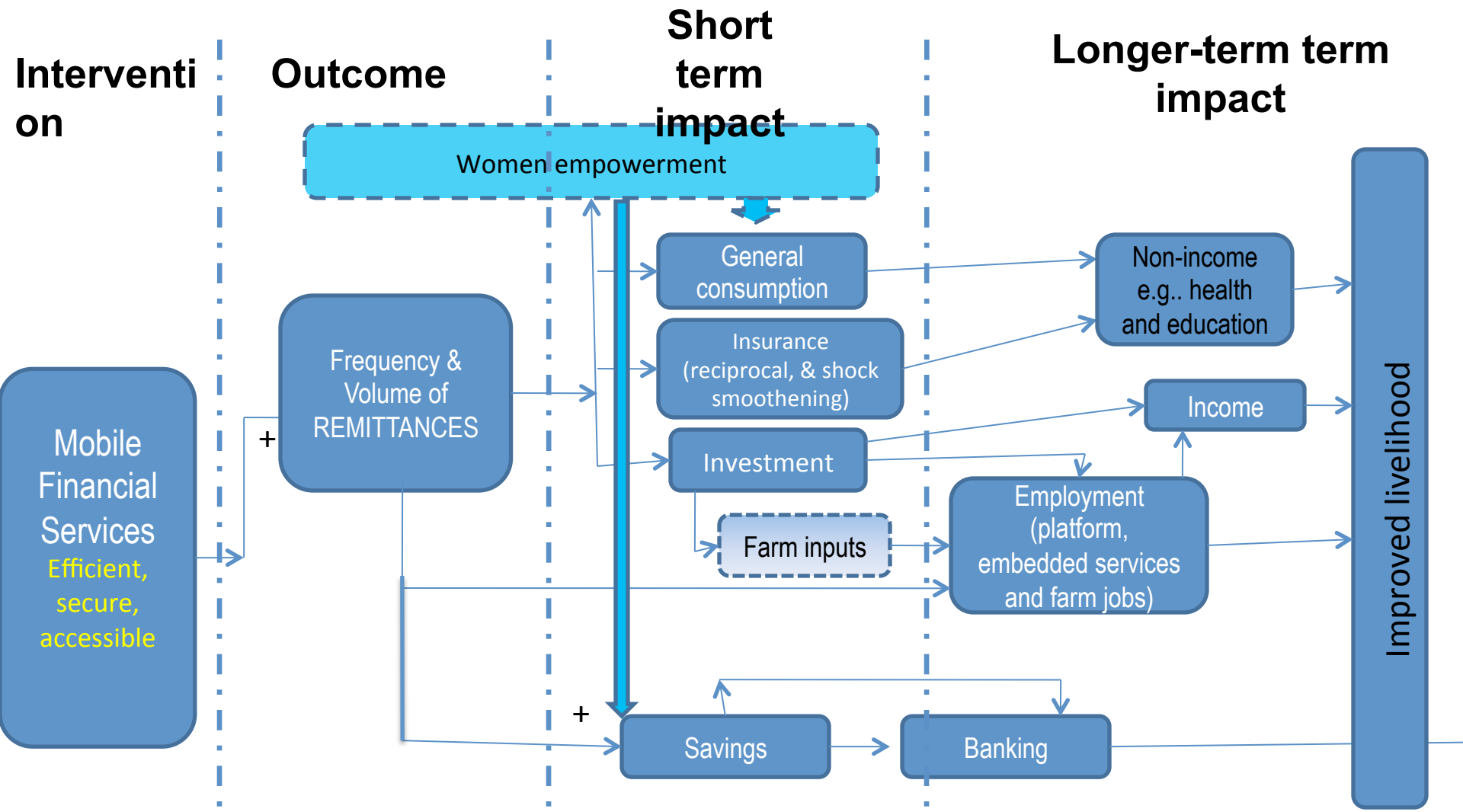
B: Meta-analysis results

Secondary results: Income



The results show that overall, m-money as an intervention leads to increase of farm income in terms of proportions of outputs and profits, although the difference was not significant ($p<0.05$).

Theory of Change



IMPLICATIONS

IMPLICATIONS FOR POLICY

- In general, the emerging evidence is promising. In places, where the m-money ecosystem is well developed, as evidence suggests that it leads to more savings, although not conclusive.
- Also, the use of mobile money leads to smoothening of cash flows and more stable consumption patterns, especially in times of calamities (e.g. drought, earthquakes, disasters).

IMPLICATIONS FOR RESEARCH

- As mobile financial services continue to grow such as purchases transactions, savings, loans and insurance, there is a need to carry out more empirical studies focusing on measuring its impacts. Particularly in Asia, and other countries in Africa, as more studies are concentrated in Kenya.

Constraints to Meta Analysis

- A lot of missing data, and statistics not reported in detail
- Large variety of outcomes which makes it difficult to combine them together (e.g. savings, insurance, consumption (food; health

Need for more empirical impact studies in Asia and Latin America

AHSANTE

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This work was carried out with the aid of a grant from the International Development Research Centre, Canada and the Department for International Development UK..

IMPACT ON REMITTANCE TRANSFERS

Frequency

- In Kenya, it increases likelihood of receiving and sending remittances by 37.4% and 34.3% (Jack, & Suri, 2013). Mbiti & Weil (2011:16) also report the positive relationship in its (MPESA) adoption and frequency of sending and receiving transfers (only) sending transfers was statistically signficiant.
- In Uganda were they reported a 56% difference between users and non-users in terms of frequency of remittances received (Munyegera et. al. 2014).
- In Niger, Aker, et. al. (2012) also reported that the frequency and amount of remittances by people with mobile phones with Zap were higher than those without the service (but not significant)

SMOOTHENS FINANCIAL FLOWS

MORE RECIPROCITY IN SHORT TERM

IMPACT ON REMITTANCE TRANSFERS

Volume of remittances/transfers

- Kenya: 33.1 and 32.6 KsH higher amounts of remittance sent and received by households with MPESA in ($p<0.01$ for both) (Jack & Suri 2013). Also rural households users received KSh. 12,697 more than non user HH's (equivalent to 66%, $p<0.05$) (Kikulwe,et. al. 2014)
- Uganda: a 43% higher total value of remittance received ($p<0.01$) (Munyegera &Matsumota 2014).
- Rwanda: airtime transfers also increase during shocks Blumenstock, et.al. (2011)
- Afghanistan : no evidence of increase in receiving or sending for mPaisa users (Blumenstock et. al 2015).

IMPACT ON SAVINGS

However, it is difficult to determine where the savings are reapprpriated, especially when not all studies try to measure the same possible options/uses.

- Kenya:
  - + association between MPESA adc … employmant (Mbiti and Weil 2011:16)
  - Reduces informal savings **(-38.3%,p<0.05), the practice of** hiding money for saving **(-77.2%, p<0.01), but interestingly, it also translates to a positive increase in** formal saving **(+27.3"%, p<0.01)**
  - Amount of monthly saving **(OLS: +11.8%, p<0.05 | | IV: +31%, NS) (**Demombynes and Thegaya 2012)

- **Mozambique:** General saving **(+4.3%, NS);** mKesh saving **(+24.9%, p<0.01)**
- **Afghanistan: users ore likely to save on MPAisa, but total savings did not significanty differ with non-users (Blumenstock, et. al 2015)**

IMPACT ON CONSUMPTION OF GOODS

- + Per capita consumption increases Munyegera & Matsumoto (2014) ↑ USD 29 to USD 47 (13% increase in per capita consumption for users
- + $42 difference for consumption of agricultural inputs Kirui, et. al (2012)
- Niger: ↑in the types of food and non-food items they consumed (+20.1%, $p<0.01$) (AKER et. al).
  - More diverse diet; higher non staple grains, more fats
- HOWEVER: Renteria (2015-forthcoming) saw no change in homecare, education, fuel and energy consumption even with an m-money intervention.
- Blumenstock et.al.(2015) – larger and more frequent airtime purchases

INSURANCE: CONSUMPTION DURING SHOCKS

- For non-user, in case of a general shock **(-7.37%,p<0.1)**
- For users, in case of an illness shock **(+7.81%, p<0.1)**
- Non-health consumption in case of an illness shock, for nonuser **(-8.68%,p<0.1)**
- For the poor in case of a general shock, for users **(+12.7%,p<0.01)**

Jack and Suri, 2014

IMPACT ON LIVELIHOODS

- Diversity in the basket of crops production **(+8.1%, p<0.1) (Aker)**
- Commercialization is 37% higher (p < 5%), input use higher by USD 42 (p<10%) leading a HH income increase by $224 m-money HH users, **income rose** by USD 224 (p<1%) (Kirui, et. al 2012)

OTHER IMPACT

- Impact on other remittance channels: greater usage reduced use of other channels (formal/ informal)
- ⬇ commission fees: from 7% in 2003 to 3% in 2010 (Mbiti & Weil 2011:12)
- Impact on women empowerment was indicated in one study but not quantified

SUMMARY OUTCOMES

Author(s), Year	Outcomes (direction, raw effects of the intervention on the treatment group, statistical significance) *Note: NS – not significant*
Jack, W., Ray, A. and Suri, T. 2013	• Regular support remittance **(+24.2%, p<0.01)** • Credit remittance (informal loans) **(+15.1%,p<0.01** • Emergency remittance **(+13.2%, p<0.01)**
Mbiti, I. and Weil, D. 2011	• Saving ✓ Informal saving **(-38.3%,p<0.05)** ✓ Hide money for saving **(-77.2%, p<0.01)** ✓ Formal saving **(+27.3"%, p<0.01)** • Loans ✓ Formal **(+0.3%, NS)** ✓ Informal **(+4.6%, NS)** • Employment ✓ General employment **(+30.8%, p<0.01)** ✓ Employed in non-farm jobs **(+9.4%,NS)** • Banking **(+27.9%, p<0.01)**
Kirui, O., Okello, J., Nyikal, R. and Nyiraini, G. 2013	• Income **(+Ksh 17,757,p<0.01)** • Input use (consumption) **(+Ksh 3079, p<0.1)** • Commercialization (financial inclusion) **(+37%, p<0.05)**

SUMMARY OUTCOMES

Jack, W. and Suri, T. 2014	● **Consumption** ✓ **For non-user, in case of a general shock (-7.37%,p<0.1)** ✓ **For users, in case of an illness shock (+7.81%, p<0.1)** ✓ **Non-health consumption in case of an illness shock, for nonuser (-8.68%,p<0.1)** ✓ **For the poor in case of a general shock, for users (+12.7%,p<0.01)**
Aker, J., Boumnijel, R., McClelland, A. and Tierney, N. 2011	● Types of food and non good items consumed **(+20.1%, p<0.01)** ● Diet diversity **(+14%, p<0.05)** ● Depletion of non-durable assets *(measured as non-durable assets owned)***(+20.3%, p<0.01)** ● Diversity in the basket of crops production **(+8.1%, p<0.1)** Note: 1. *The results have been changed to percentage change* 2. *ZAP group over placebo results have been reported, since they decouple effects of mobile phone service on the intervention*
Batista, C. and Vicente, P. 2013	● Saving ✓ General saving **(+4.3%, NS)** ✓ mKesh saving **(+24.9%, p<0.01)**

Munyegera, G and Matsumoto, T. 2014	• **Consumption (+72.7%, p<0.1)**
Kikulwe, E., Fischer, E., and Qaim, M. 2014	• Income **(+KSh. 61,470, p<0.1)** • Farm inputs use (cash used for) ✓ Hired labor **(+KSh. 4,122, p<0.05)** ✓ Organic fertilizer **(+KSh. 2,502, p<0.05)** ✓ Mineral fertilizer **(-KSh. 1,640, NS)** ✓ Pesticides **(+KSh. 1,212, p<0.1)** • Farm income ✓ Proportional of output sold **(+10.4%p<0.1)** ✓ Profits **(+KSh. 30,112, p<0.1)** *note: all values per acre
Bemombyne, G. and Thegeya, A. 2012	• Saving ✓ Amount of monthly saving **(OLS: +11.8%, p<0.05 || IV: +31%, NS)** ✓ Likelihood of saving**(+19%, p<0.01)**
Renteria, C.2015 *forthcoming*	• Consumption ✓ Homecare **(+USD 0.54, NS)** ✓ Education **(+USD 5.65, NS)** ✓ Communication (with telecom subscription) **(+USD2.63, NS)** ✓ Communication (w/out telecom subscription) (**-USD10.15, p=0.023)** ✓ Fuel **(-USD1.08, NS)** ✓ Energy **(-USD18, NS)** ✓ Public Transportation**(-USD10.54, p=0.005)**