# Credit Markets in Africa

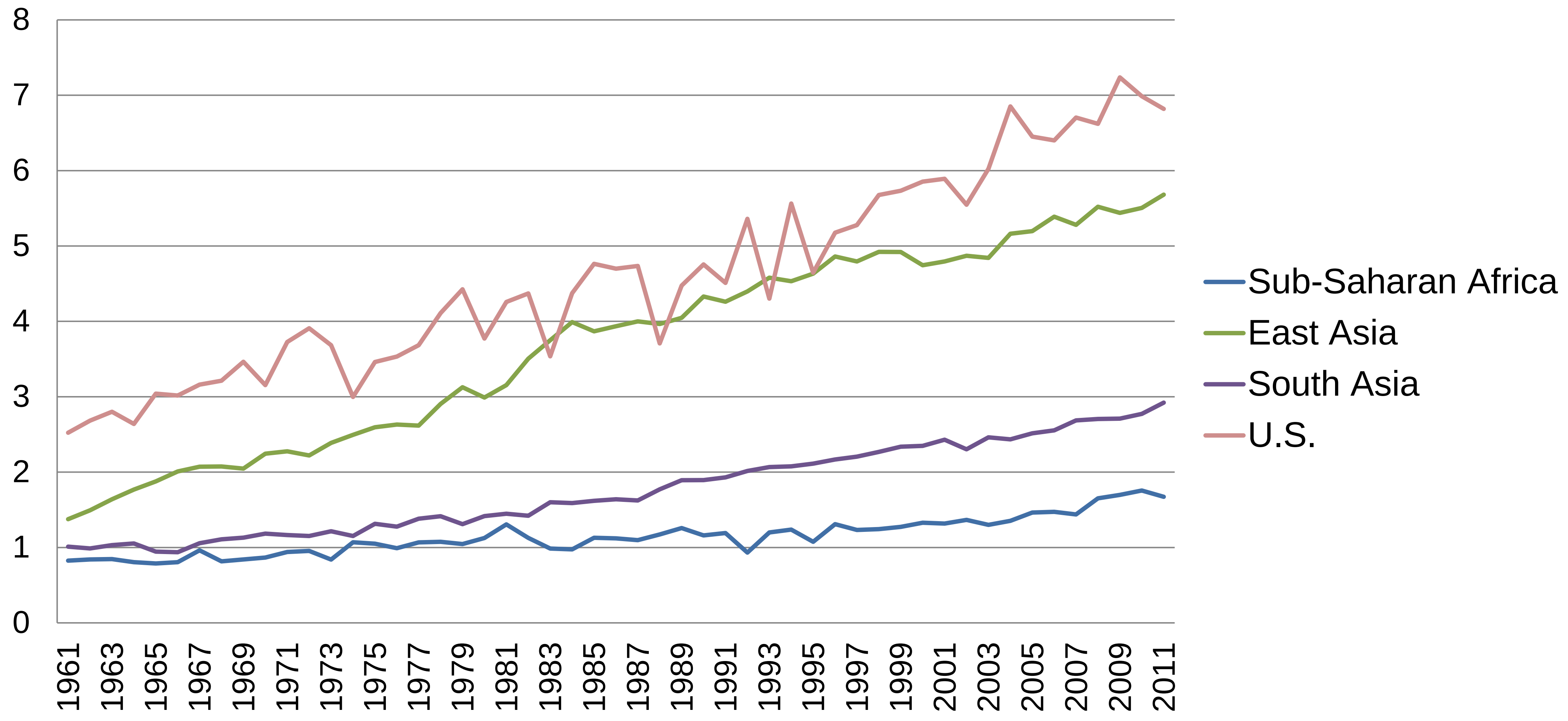
Craig McIntosh, UCSD

# African Credit Markets

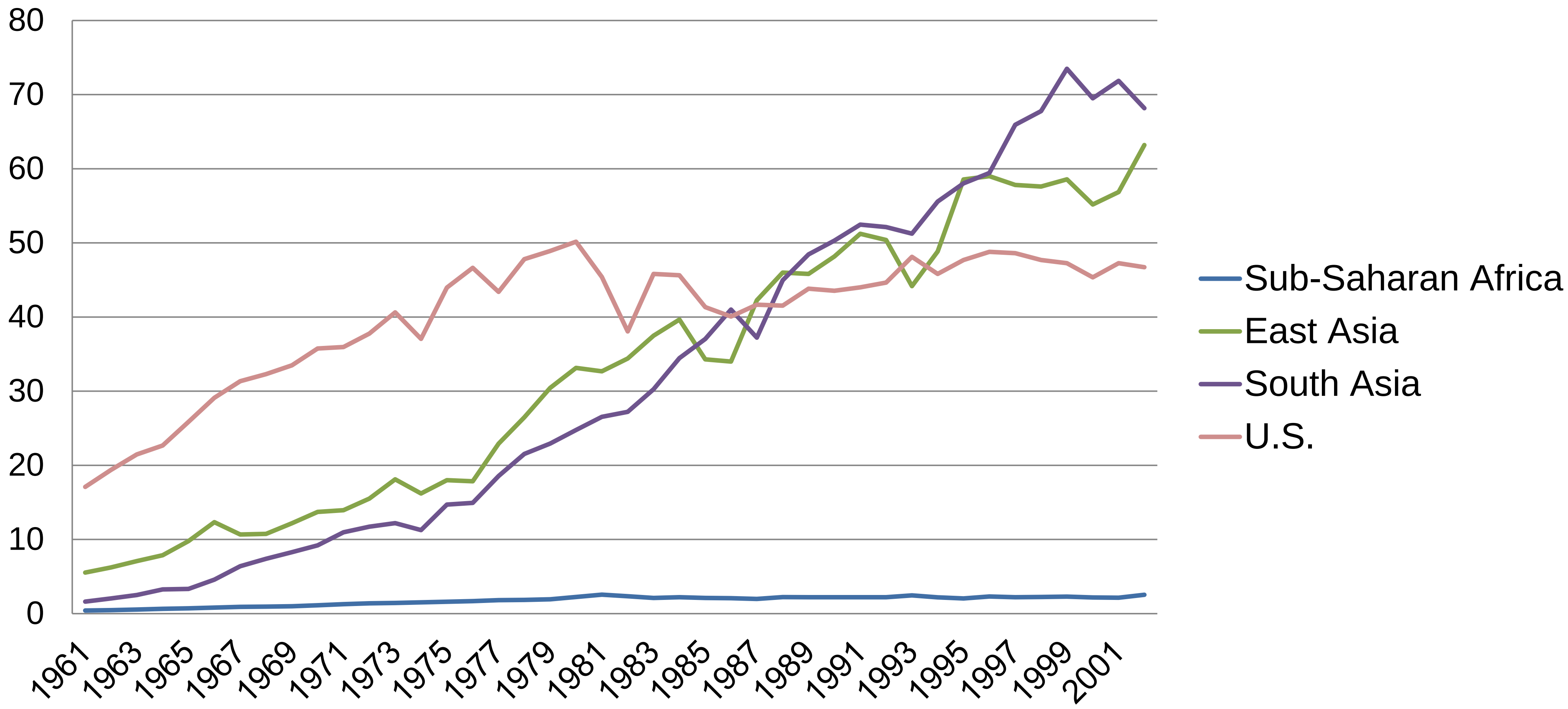
- Are highly segmented
- Often feature vibrant competitive microfinance markets for urban small-trading.
  - However, MF loans often structured explicitly to prevent them being used for planting.
- Have struggled to provide durable commercial sources of input financing for long-cycle agricultural investment.

Why? What are the implications?

# Cereal yields (metric tons/hectare)



# Fertilizer use (metric tons/hectare)



# Critical Role of Agricultural Lending

- ~80% of the population of SSA are farmers.
- Poverty, food insecurity concentrated in agriculture.
- Few viable export markets for manufactured goods.

- Lack of access to credit is a core barrier to the technology adoption needed to bring the Green Revolution to Africa (Otsuka and Larson 2013)

# Yet, it is hard to push financing to agriculture

- Lenders dislike agricultural loans because
  - Risks are high because of correlated weather shocks
  - Costs of servicing clients are high, particularly for smallholders
  - Smallholder farmers have no credit histories; hard to get started
  - Land as collateral challenging in smallholder/informal environments

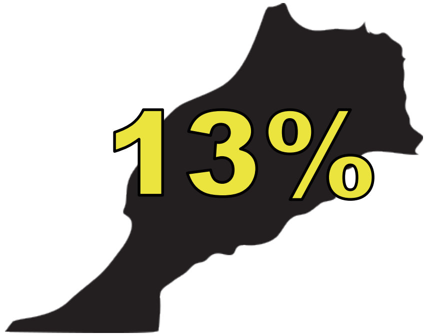
# Yet, it is hard to push financing to agriculture

- Borrowers appear to have low demand for ag loans also:
  - Profits in farming are low absent complementary investments
  - Risks of unavoidable default are high
  - Timing of standard ag loans poorly timed to price fluctuations
  - In shallow markets, concerted efforts to increase production result in lower prices and disadoption

# What is special about smallholder credit?

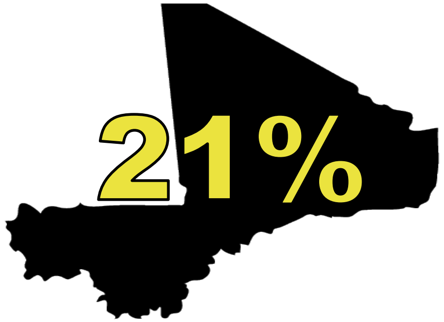
- Must think about risk aversion of borrowers
  - Loss averse
  - Deep fear of losing collateral even if available (Boucher et al 2008)
  - Behavioral issues in consumption, timing, use of credit (Duflo et al 2009)
- Credit is not the only failing market!
  - Returns to investment may simply be lower than interest rate.
  - Little evidence that credit to invest in ‘business as usual’ in ag increases profits (Maitra et al. 2014).
  - Borrowing to invest in new technology almost always increases *income* risk even if technology is risk-reducing.

# Take-up is low




Morocco: 13%, with no other lenders in the area

Sierra Leone: 25%, 50% lower than bank needed to break even


Mali: 21%, compared to full take-up of cash grants

Beaman et al. 2014; Casaburi et al 2014; Crepon et al 2015;

# Policy lessons preview

- Farmers’ credit needs are **different**
- Take-up of traditional credit products is often **low**
- Promising interventions
  - **Flexible collateral** arrangements
  - **Improved information** about borrowers
  - Account for **seasonal distribution** of income
  - Lending products with interlinked **risk protection**.

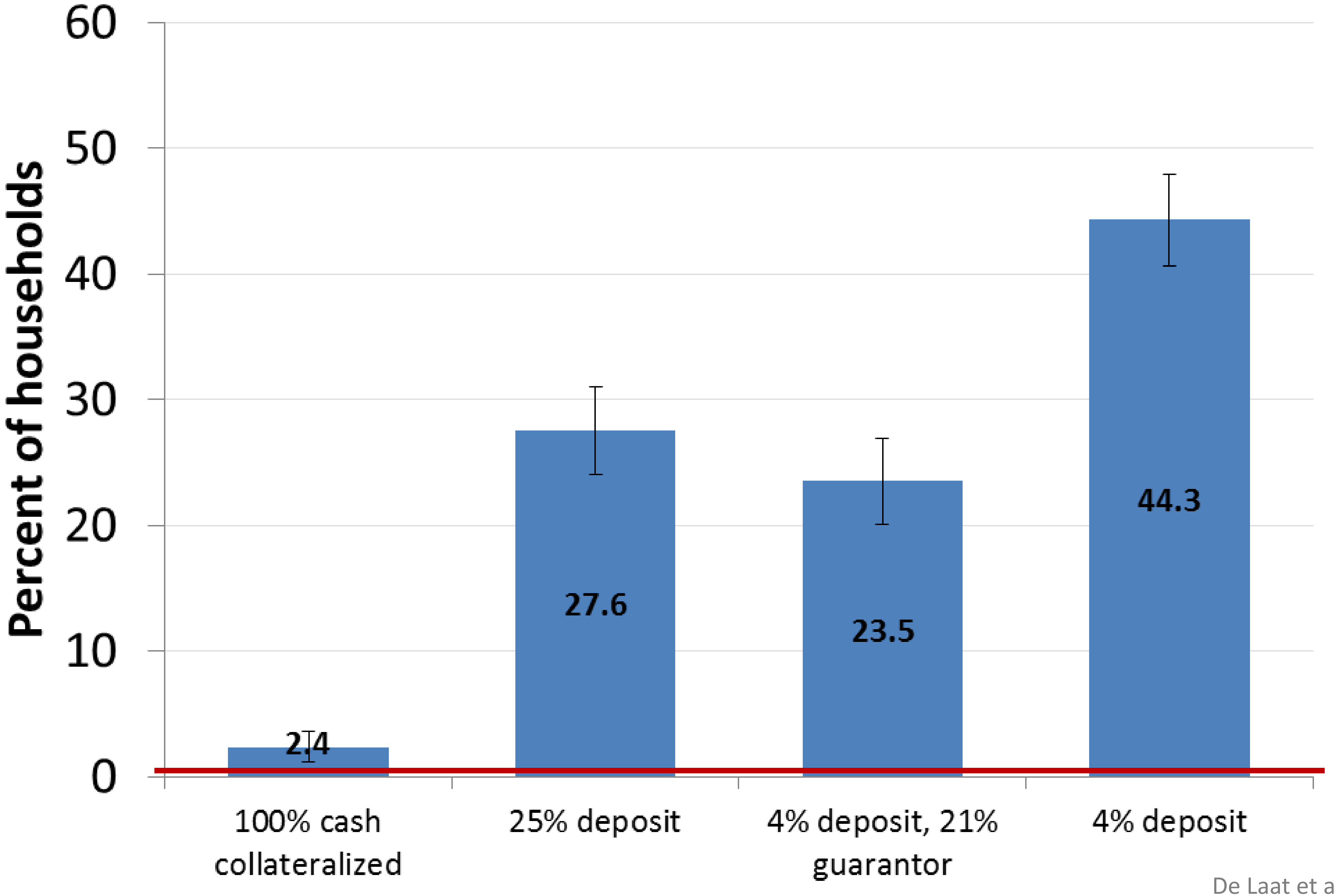
# 1. Flexible Collateral

- Land may be an unacceptable form of collateral in smallholder agriculture
  - Banks: titles unclear, seizure under default costly & difficult.
  - Farmers: ‘risk rationing’ may prohibit farmers from being willing even if expected profits positive.
- However, many large ag investments can be self-collateralizing (leasing).
- Important role for Asset Registries that support leasing
- ‘Inventory as collateral’; crops can be used to collateralize harvest-time loans (Pender 2008, Basu and Wong 2012; Burke 2014; Casaburi et al. 2014); Warehouse Receipts

# Rainwater harvesting tanks in Kenya

- Variation in loan offers
  - Standard: 100% secured
  - 25% deposit, tank as collateral
  - 4% deposit, 21% pledge from guarantor, tank as collateral
  - 4% deposit, tank as collateral

De Laat et al. forthcoming




No default in all groups

De Laat et al. forthcoming

# 2. Improving Information

- Credit bureaus are the transformative institution when lender info is poor, competition high (McIntosh & Wydick 2006).
- Functioning credit bureaus allow borrowers to substitute ‘reputational collateral’ for physical collateral (de Janvry et al. 2010)
- Mobile phone records highly effective at predicting loan repayment (Bjorkegren & Grissen 2015)
- Alternate technologies such as fingerprinting borrowers (Gine et al. 2011).

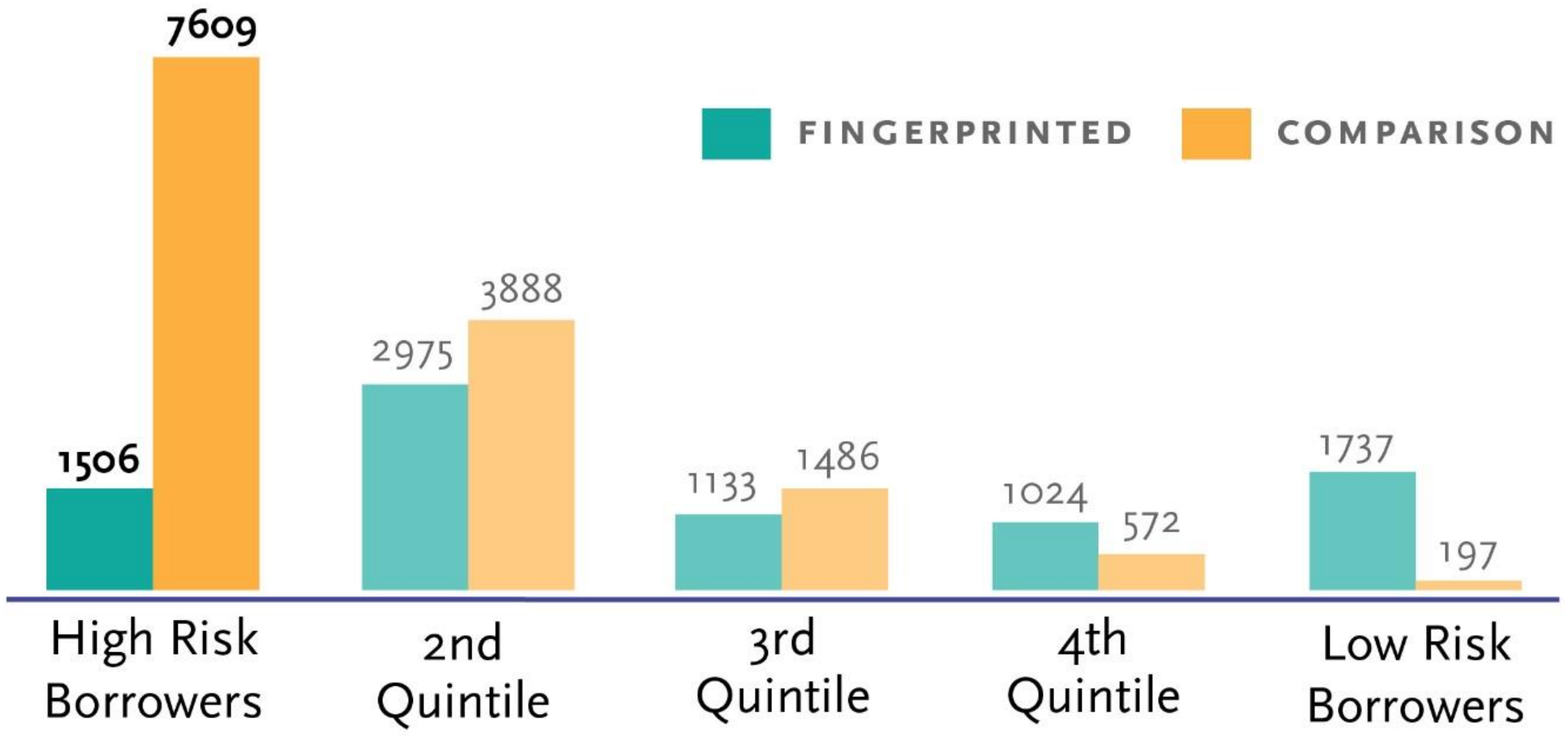
# Fingerprinting borrowers in Malawi

- Lack of information makes banks unwilling to lend
  - Cannot credibly threaten to cut off future credit
- Treatment group **fingerprinted** during application process
  - Biometric identification cannot be lost, forgotten, stolen

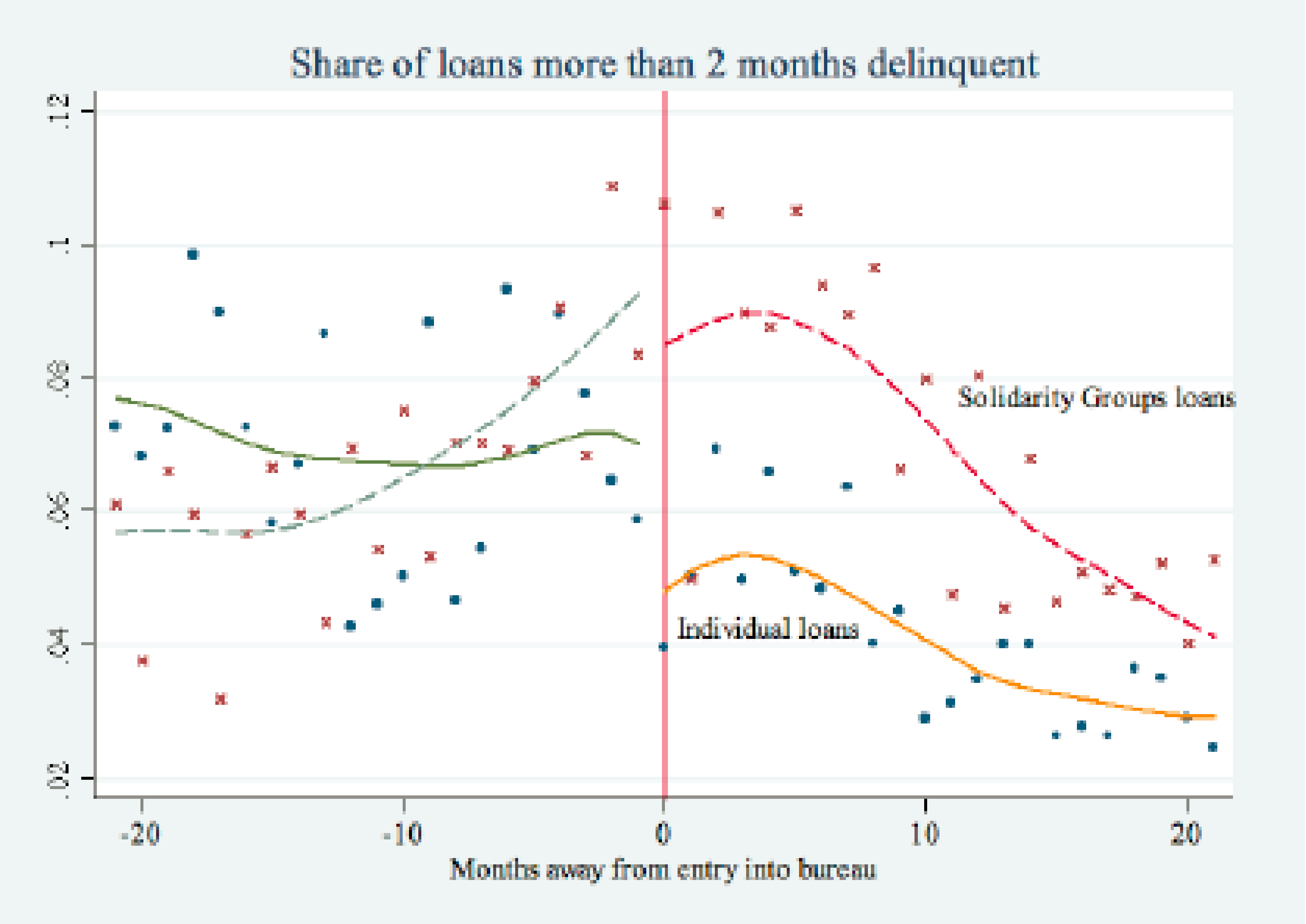
Gine, Goldberg, and Yang 2011

UNPAID BALANCE (MWK) 2 MONTHS AFTER LOAN WAS DUE

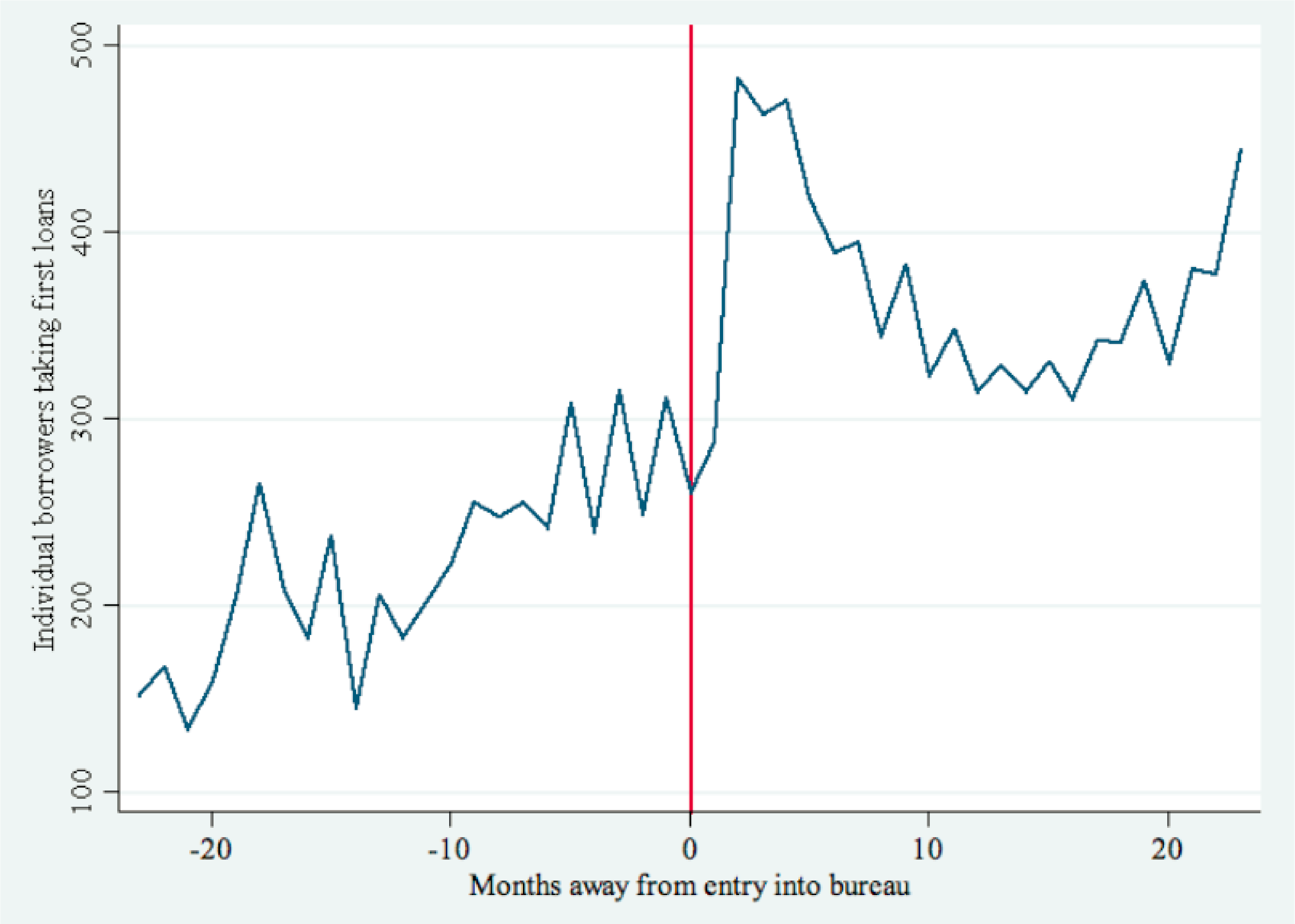
*STATISTICALLY SIGNIFICANT DIFFERENCES ARE BOLD*




Gine, Goldberg, and Yang 2011



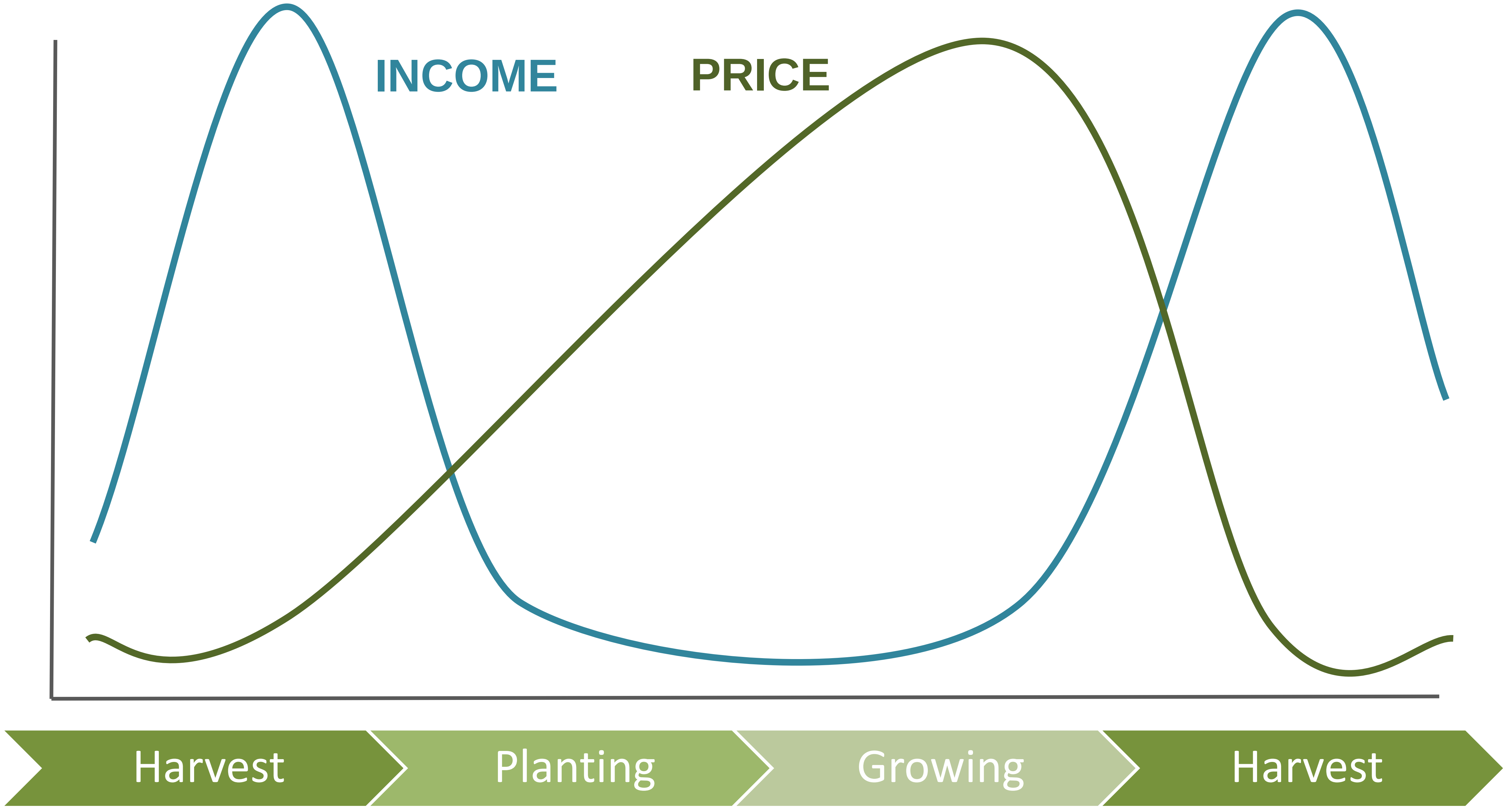

De Janvry, McIntosh, and Sadoulet (2010)

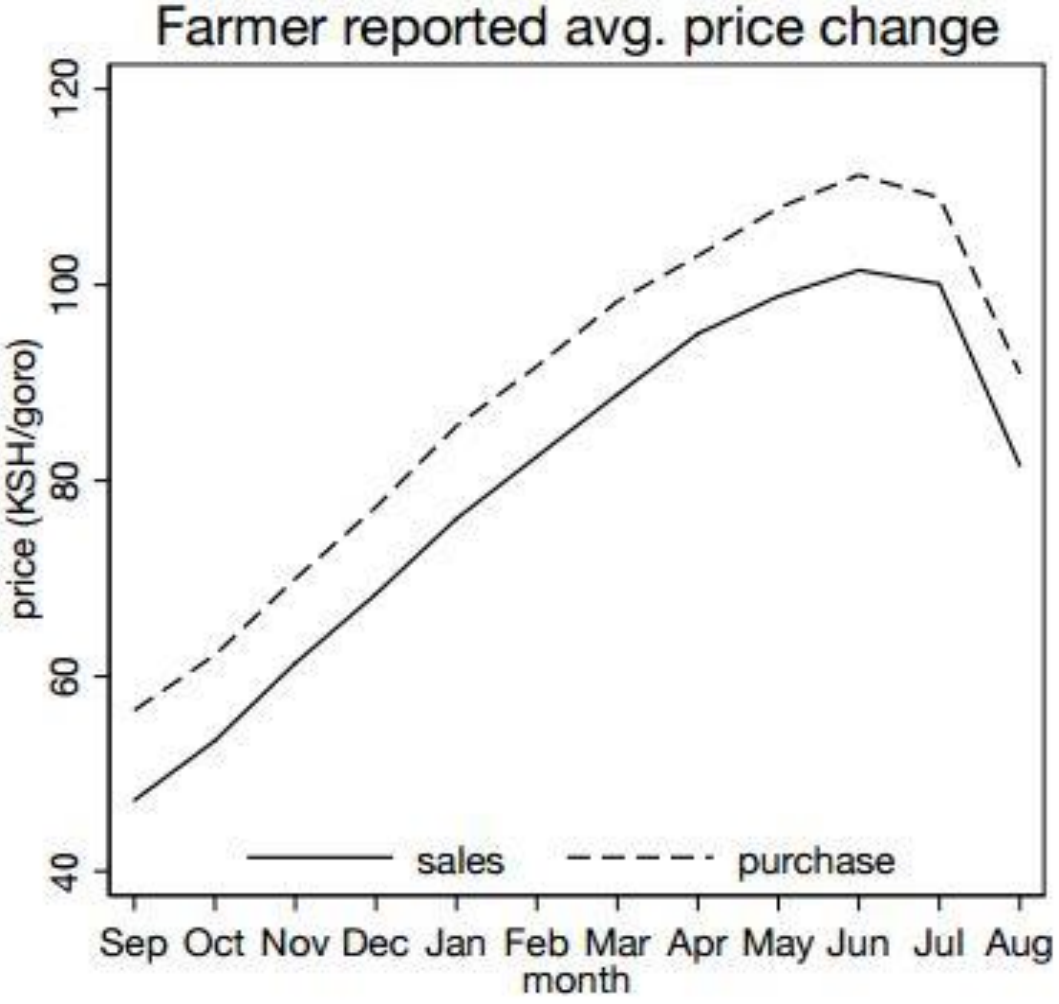



De Janvry, McIntosh, and Sadoulet (2010)

# 3. Accounting for Seasonal Variation in Income

- Intra-seasonal price fluctuations in many African grain markets over 100%.
- Long-cycle ag lending is risky and often forces farmers to sell at the worst time to repay loans.
- Why not make short-term loans to allow farmers to store & sell when prices are higher?
  - Short-term loans feature less interest, (maybe) less risk.
  - General equilibrium benefits: flatten price contours even for those who don’t use.
  - Arbitrage rule: price shouldn’t change faster than interest rate + wastage rate.
- Complementary intervention to post-harvest storage improvements.


INCOME
PRICE
Harvest
Planting
Growing
Harvest




Source: Burke 2014, from western Kenya

# Harvest-time loans in Kenya

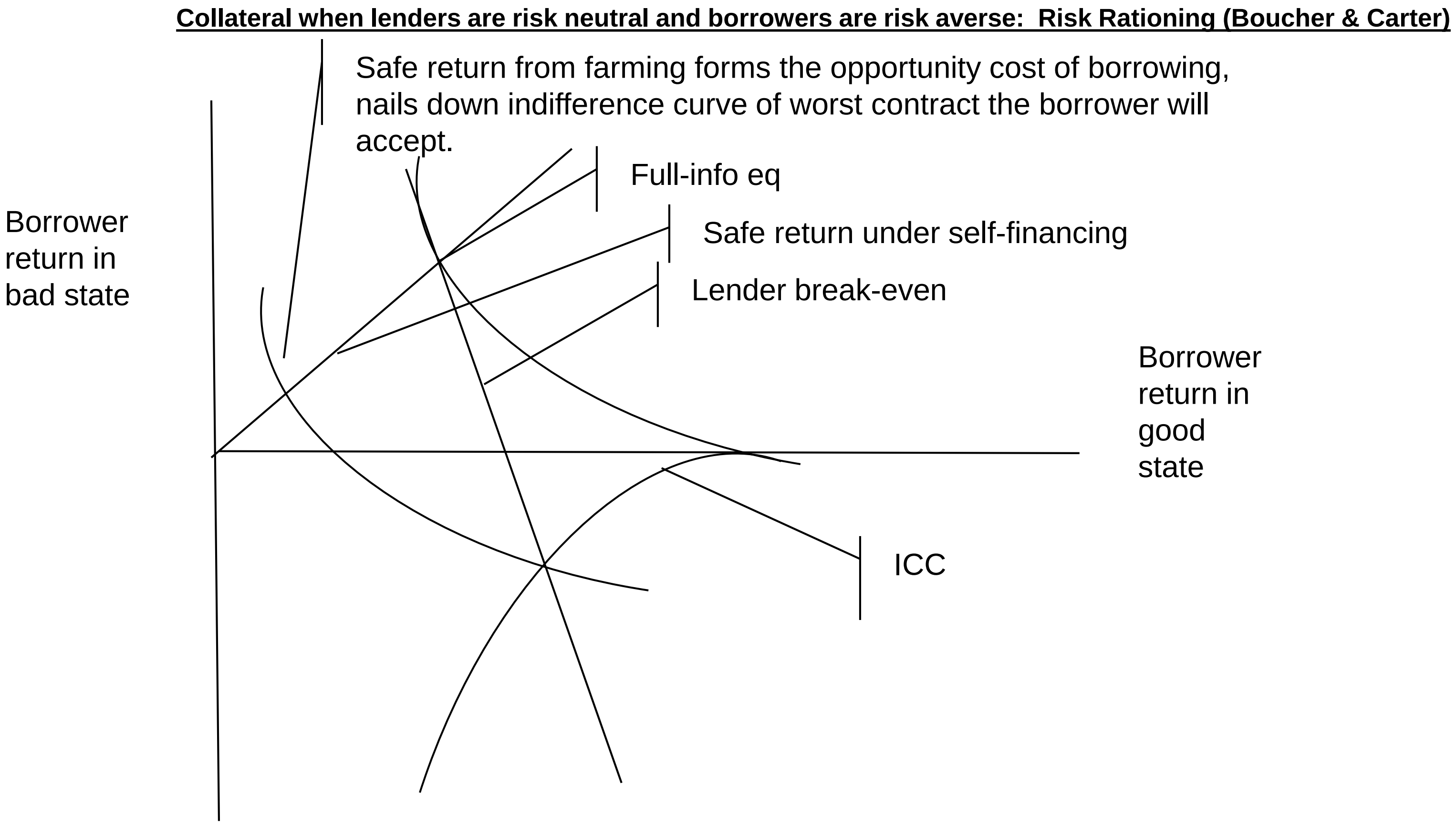
- Loans allowed farmers to:
  - Buy/keep maize at low prices
  - Store while prices rose
  - Sell later at higher prices
- Temporal arbitrage increased profits
  - Concentrated in areas where fewer farmers offered loans (sign of spillover effects)

Burke 2014

# 4. Sharing Risk in Agricultural Lending

- Ag default is composed of both avoidable risks (MH) and unavoidable risks (weather).
- Lenders must be protected against correlated risk in portfolio
- Borrowers must be protected against a sufficient share of unavoidable risk to make them willing to use collateral

# Key challenge of ag financing:  sharing risk



# Is Weather Index Insurance the Solution?

- Appears to be the ideal solution (no MH, removing only unavoidable risks from lender & borrower), but . . .
  - Unsubsidized uptake on WII has been very low almost everywhere in the world; from 1-18%, not enough to sustain private market.
  - NO examples of commercial WII going to scale without heavy government subsidy (contrast to microcredit).
- Efforts to interlink credit and insurance explicitly have also been problematic
  - Demand is low:  Gine and Yang find that demand for interlinked loans in Malawi is LOWER than demand for standalone loans.
  - Ahmed et al:  uptake of interlinked loans in Ethiopia ~ 2%
  - Conditionality undermines ‘culture of repayment’?

# Can we insure the lenders instead?

- Meso-level products can be offered to ag lenders
    - India’s National Agricultural Insurance Scheme
  - Client is sophisticated
  - Don’t need to insure entire portfolio, lowers costs.
  - Can be effective if credit markets are supply constrained.
  - Should borrowers be informed of nature of insurance? Should lenders attempt to collect loans even if paid out by insurance?
    - Lender-driven solutions not effective if risk rationing is main constraint in market.

# What is the effect on ag system risk?

- WII, when successful, induces an increase in variability of ag output. This can make ag wages more volatile (Mobarak & Rosenzweig 2013).
- Credit used to invest in superior seed technology has similar effect of decreasing income risk but decreases output variability, hence insuring laborers.
  - Also provides most protection to the most vulnerable farmers (de Janvry et al. 2014)

# Conclusions:

- Credit is key to ag investment, but many African markets are too risky and too low-return to be viable without additional investment (infrastructure, information systems)
- Microfinance is a viable pathway to income diversification, facilitates ‘moving out’ of ag.
- Complementary institutions critical for ‘moving up’ w ag credit: credit bureaus, credit registries, weather monitoring systems.
- Some promising ways of using information, timing, and new types of collateral to unlock credit; ‘move around’ risk.
- **Risk is a dominant issue for credit**; insurance and credit likely to need to be grown hand-in-hand.