

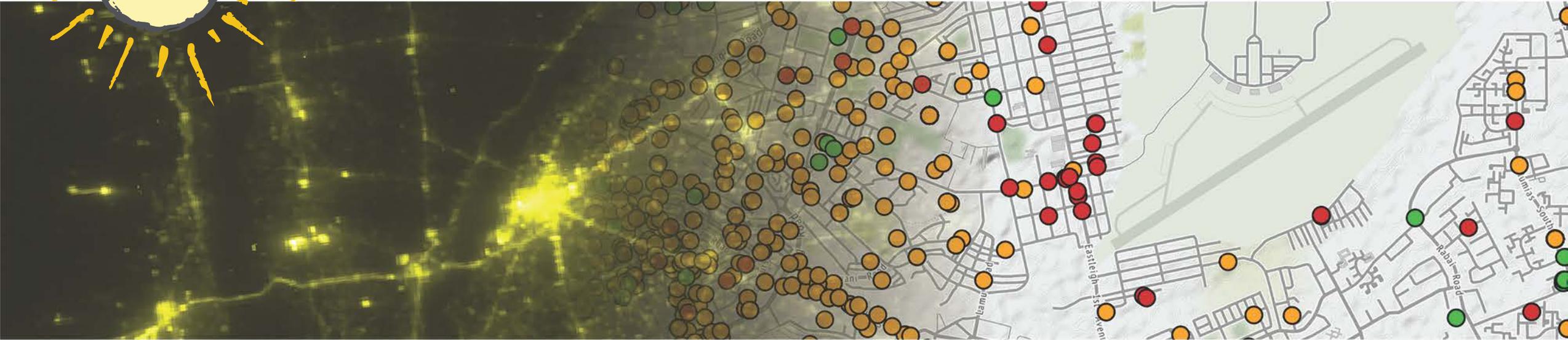


# IE CONNECT FOR IMPACT

Transforming the Growth Potential  
of Transport Investments

Trade, Farmer's Heterogeneity and  
Agricultural Productivity: Evidence  
from Colombia

Margarita Gafaro and Heitor Pellegrina



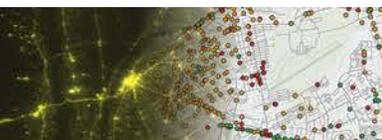
# Access to urban centers (UC) and Agricultural Productivity

## • Motivation

- There are large differences in agricultural labor productivity between developed and developing countries
- Within countries, there are also large differences between regions
  - Some farmers have low productivity and produce for local markets
  - Some farmers have high productivity and access high-value markets

## • Questions

- Does access to UC explain part of these regional differences?
- What is the effect of improving farmers' access to UC on agricultural productivity?



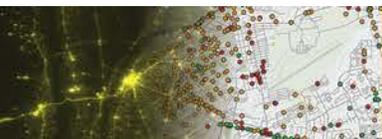
# Summary

- **Hypothesis**

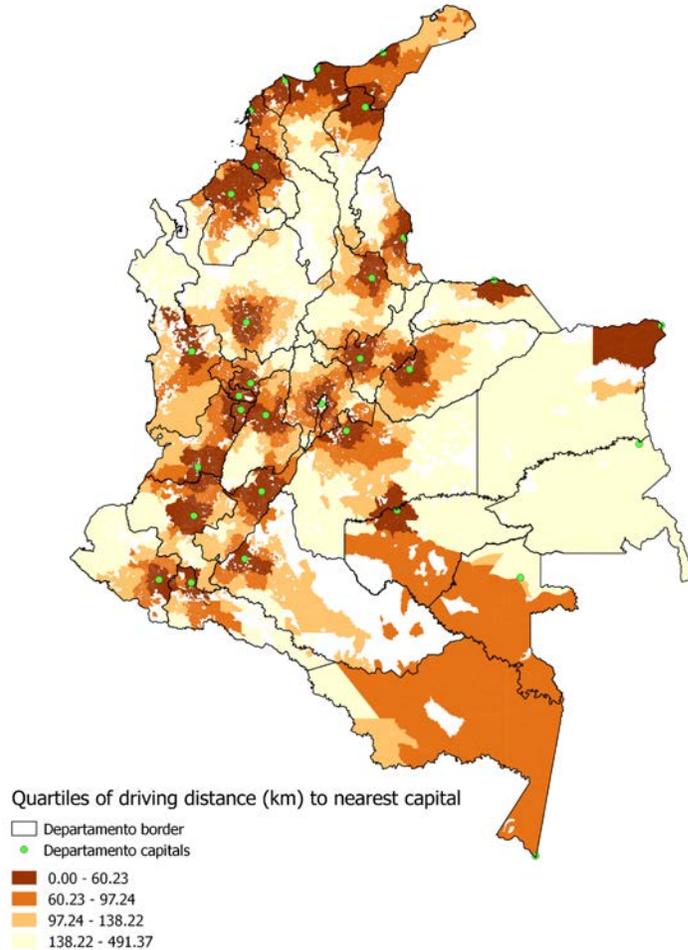
- Better access to urban centers generate the following outcomes:
  1. Farmers' sales to high-value markets increase (e.g., international customers)
  2. Farmers upgrade their production methods (↑ investments in land)
  3. Farmers hire more workers (↑ ratio of workers to managers)

- **Empirical analysis**

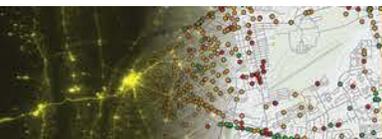
- Rich data from Colombian agricultural census
- Historical data on the formation of urban centers (to construct evaluation method)
- Instrumental variables approach



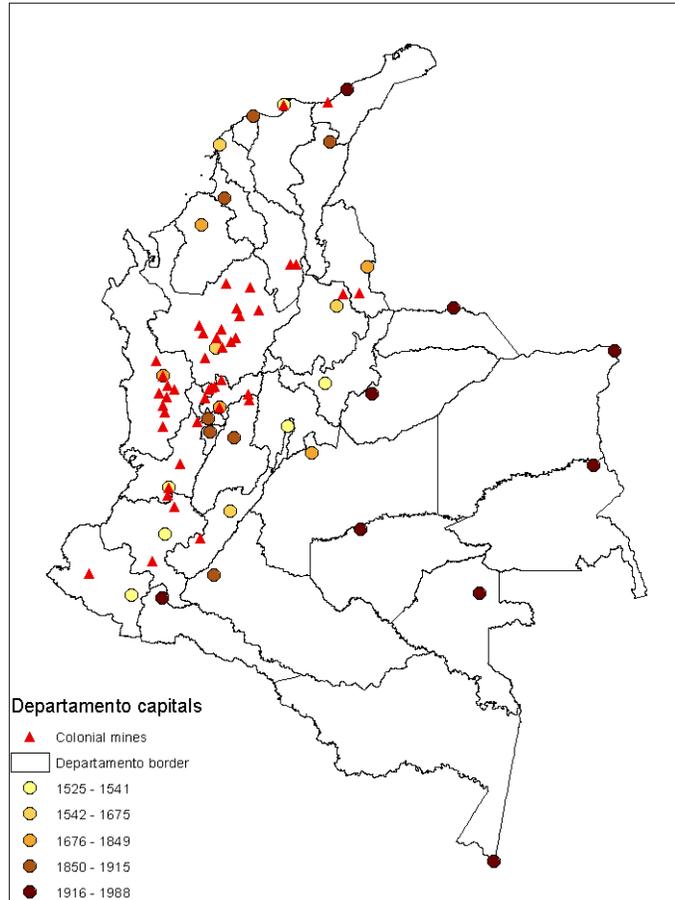
# Data from Colombia



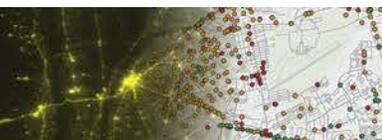
- Agricultural census from 2014
  - (1) Sales destinations (trading firms, local market,...)
  - (2) Investments in land
  - (3) Share of farm managers
- 840 thousand farmers in 1200 municipios
- We selected 33 *departamentos* capitals
  - Coincide with major urban centers
- Computed travel distance to every urban center using Google maps API (access to UC)



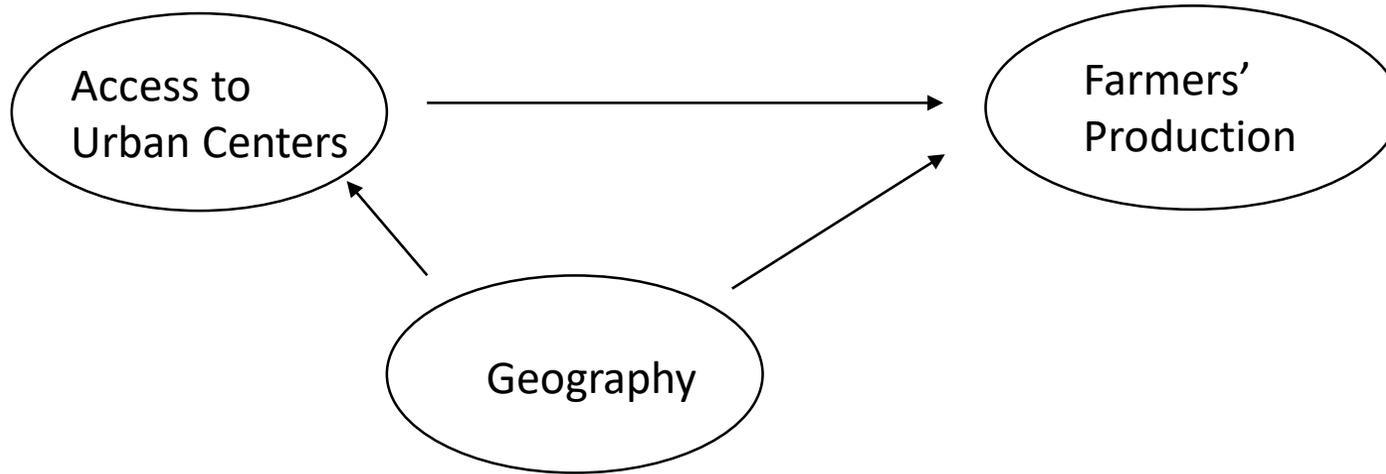
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- **840 thousand farmers in 1200 municipios**
- **We selected 33 *departamentos* capitals**
  - Coincide with major urban centers
- **Computed travel distance to every urban center using Google maps API (access to UC)**
- **Data on historical location of mines**
- **Data on historical location of cities**

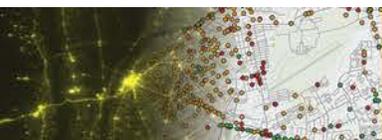


# Identification Strategy (1 out of 2)

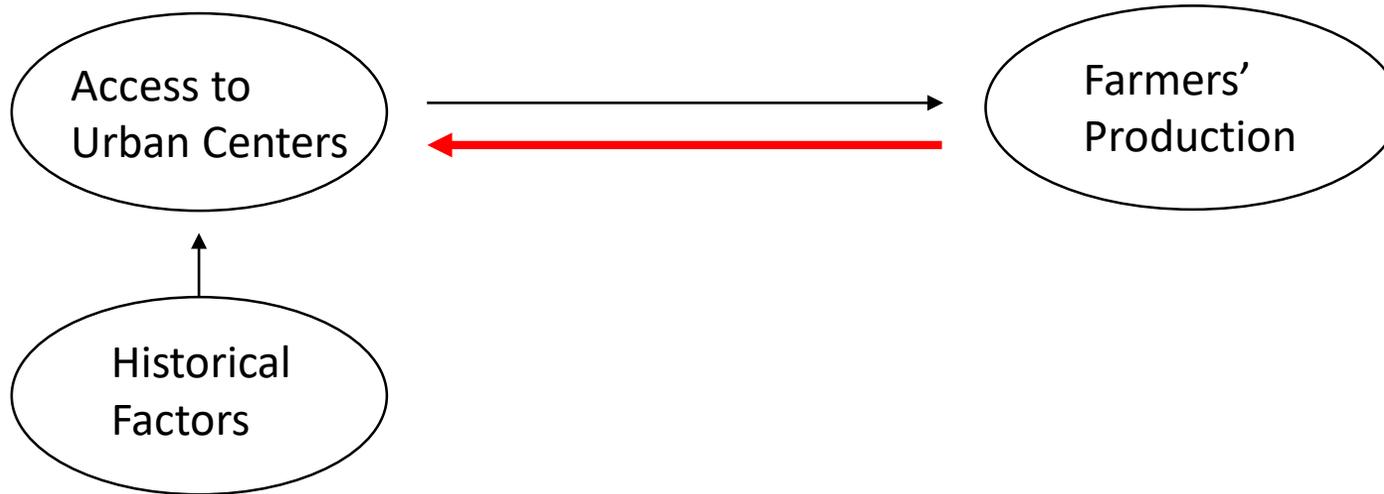


- **Geography or access to urban centers?**

- Regions that are comparable in terms of a rich set of observable characteristics (rainfall, biome, temperature, slope, measures of agricultural suitability)



# Identification Strategy (2 out of 2)

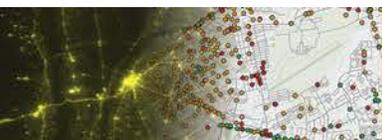


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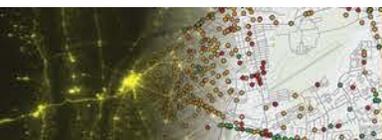
- **Access to UC causes Ag productivity or Ag productivity causes access to UC?**

- Exploit historical factors that affected the location of urban centers that are not directly related to modern agricultural production in Colombia



# Going back to our 2 questions

- **Does access to urban centers explain part of the regional differences in agricultural production?**
  - ↑ 1% the travel distance to UC ↓ 0.2% the share of farmers selling to high value markets
  - ↑ 1% the travel distance to UC ↓ 0.1% the ratio of agricultural workers to farm managers
  - ↑ 1% the travel distance to UC ↓ 0.2% the ratio of farmers making investments in land



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- **What is the effect of improving farmers' access to UC on agricultural productivity?**
  - Combine our empirical results with new theory of farming production
  - Economic mechanism explain one third of the regional differences in output per worker
  - ↓ 50% the cost of travel distance to UC ↑ 6% the output per worker

# Conclusion

- We show that access to UC have a strong relationship with farmers' choice
  - Sales destination
  - Investments in land
  - Workers employed
- Future work: Why does access to urban centers matter?
  - Better output prices?
  - Better access to information and assistance?
  - Lower input costs?
  - Change relationship between traders and farmers?
- Improving our understanding of these can help us design more effective policies.

