

# Discussion of “Agricultural Productivity Differences Across Countries” by Gollin, Lagakos, and Waugh

Diego Restuccia  
University of Toronto

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## What GLW Do

- ▶ FAO data on agricultural labor productivity ( $Y_a/N_a$ ): 45-fold difference top/bottom 10% countries
- ▶ Decompose  $Y_a/N_a$  as

$$\frac{Y_a}{N_a} = \frac{Y_a}{L} \times \frac{L}{N_a}$$

- ▶ Use independent micro data on  $Y_a/L$  (yields or real land productivity) and  $L/N_a$  (land per worker or farm size) to assess validity of macro data
- ▶ Bottom line:
  - ▶ Micro data supports macro facts – agricultural productivity gaps across countries are enormous
  - ▶ Most of the differences in land per worker (farm size) not yields (output per unit of land)

# Comments

## 1. Motivation – too much credence to skeptics...

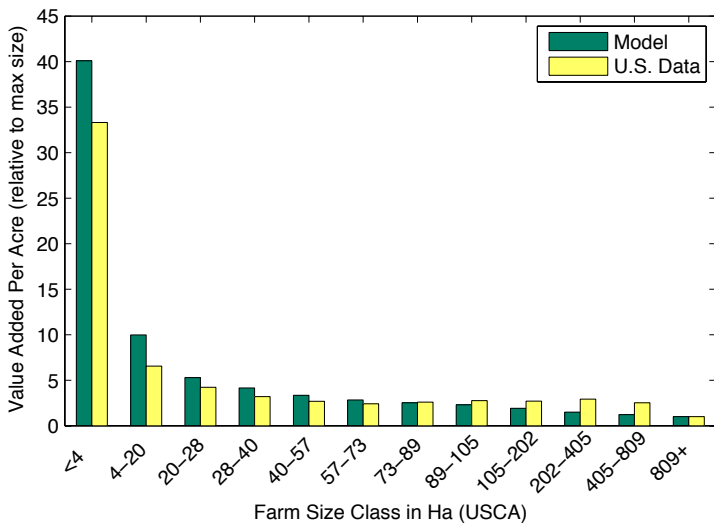
- ▶ Not needed to motivate independent and micro founded evidence on an interesting and important macro fact
- ▶ Most issues relate to a lack of understanding of how the cross country data is constructed so good place to devote space to explain the quality of macro facts
- ▶ Relevant issues involve real vs nominal issues, coverage (whether informal, subsistence and home production included), etc.
- ▶ Some skeptics would argue that better quality data is needed (hard to refute), but my view is that what is critically needed is better guidance on what the best available evidence says about development and policy
- ▶ Quantitative theory is needed to better guide interpreting observations on agriculture and development and assess alternative policy options

# Comments

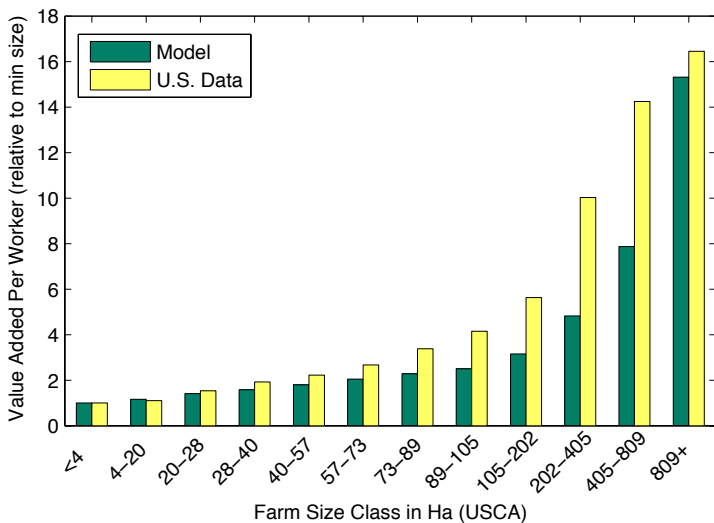
## 2. Results

- ▶ Micro facts confirm macro observations very useful, helps focus on explanations of the large agricultural productivity gaps across countries
- ▶ Less useful are the accounting results in guiding for explanations of the productivity gaps
- ▶ Need more structure to interpret these observations
- ▶ Example in Adamopoulos and Restuccia (forthcoming) – model consistent with results of accounting (most differences from farm size not yields) but in that framework the differences can be explained by many factors including those not specific to agriculture
- ▶ Small differences in  $Y_a/L$  may be due to composition:
  - ▶ In US agriculture (presumably subject to less frictions/distortions), yields are much higher in small than in large farms (small farms have a much higher capital to land ratio) yet labor productivity is higher in larger farms
  - ▶ Farm size differs greatly across countries, with the unit of production being much smaller in poor countries

# Value Added per Hectare by Farm Size US Agriculture

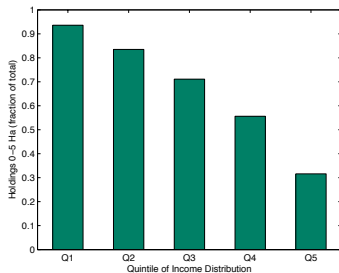


# Value Added per Worker by Farm Size US Agriculture

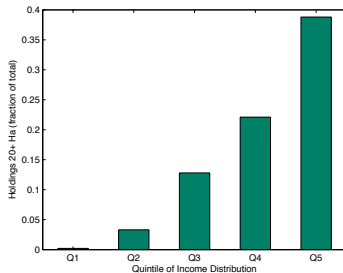


# Share of Small and Large Farms across Countries

## Small Farms (<5 Ha)



## Large Farms (>20 Ha)



# Comments

## 3. Farm Size from World Census of Agriculture

Average Farm Size across Countries (Table 1 in AR)

| Quintile    | Average Farm Size (Ha) |       |      |       |
|-------------|------------------------|-------|------|-------|
|             | Total                  | Wheat | Rice | Maize |
| Q1          | 1.6                    | 3.0   | 1.1  | 0.9   |
| Q2          | 5.4                    | 1.6   | 1.2  | 0.8   |
| Q3          | 51.7                   | 43.8  | 2.3  | 4.9   |
| Q4          | 296.1                  | 70.2  | 37.9 | 11.5  |
| Q5          | 54.1                   | 27.9  | 41.3 | 33.0  |
| Ratio Q5/Q1 | 34                     | 9     | 38   | 37    |



# Comments

## 4. Gross Output vs. GDP in Agriculture

- ▶ RYZ (2008) document facts on Final Output and GDP per worker in agriculture across countries
- ▶ Final output per worker differences larger than GDP per worker in ag. because large differences in intermediate input use.
- ▶ Importantly, RYZ show intermediate inputs cannot explain the bulk of productivity and employment allocation in ag. in poor countries. This result is not obvious from the accounting...

# Macro Development with Micro Data

- ▶ Useful and exciting direction in the literature
- ▶ Key question: what explains agricultural productivity differences across countries?
- ▶ One potentially useful perspective is the role of misallocation in agriculture, e.g. Adamopoulos and Restuccia (forthcoming)
- ▶ Micro data can help make substantial progress in this perspective
- ▶ Two examples:
  - ▶ Adamopoulos and Restuccia (2013) study land reform in Philippines using micro panel data of farmers
  - ▶ Restuccia and Santaaulalia-Llopis (2013) study land misallocation in Malawi using detailed household data