

“Business Cycle during Structural Change: Arthur Lewis’ Theory from a Neoclassical Perspective”

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What SZZ Do

- ▶ Two related literature: structural change and business cycle
- ▶ Key stylized facts:
 - ▶ structural change is accompanied with agricultural modernization
 - ▶ $corr(n, y)$ increases along with structural change
- ▶ Build a unified theory that explains these facts
 - ▶ Two agricultural technologies: traditional and modern
 - ▶ Traditional agr is key: constant MPL (“surplus labor”) \Rightarrow stabilize n
 - ▶ Structural change accelerates in booms and slows down in recessions
 - ▶ Structural change \Rightarrow traditional agr $\downarrow \Rightarrow n$ more volatile
- ▶ The model accounts well for the structural change and business cycle fluctuations of China.

Comment 1: the Share of Traditional Vs. Modern Agr

- ▶ In the data, one does not directly observe the traditional versus modern agricultural technology (v).
- ▶ The paper relies on the following strategy:

$$APG_t = \underbrace{\frac{1 - v_t(1 - \beta)}{\alpha}}_{\text{relative labor income share}} \cdot \underbrace{\frac{1}{1 - \tau}}_{\text{labor mobility barrier}}.$$

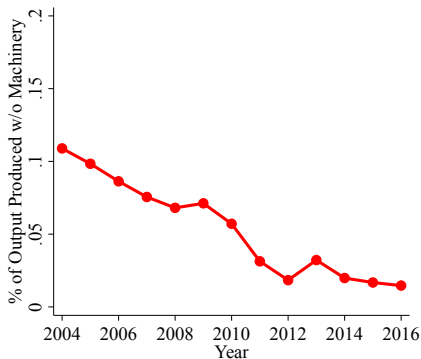
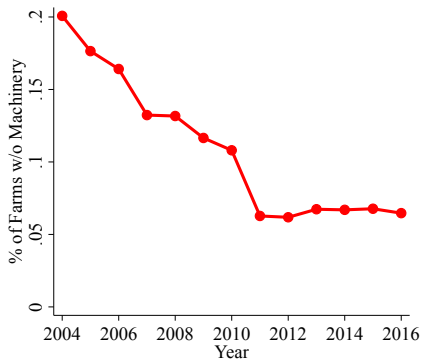
- ▶ Assume τ to be constant over time, then the changes in APG imply the change in the composition of two technologies.
- ▶ τ may well change over time given the specific history of institutions in China.
- ▶ We may want to seek for alternative way to characterize the evolution of v , and then use the residual to determine the evolution of τ .

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- ▶ For example, we can calculate the percentage of farms without modern machinery inputs as shown below.



Comment 2: Preferences and Productivity Growth

- ▶ Under CES utility and linear technology, the value-added share is

$$\frac{p_G Y_G}{p_M Y_M} = \frac{\gamma}{1 - \gamma} \left(\frac{Z_G}{Z_M} \right)^{\varepsilon - 1}.$$

- ▶ To get structural transformation right, we need
 1. $\varepsilon < 1$ AND Z_G grows faster than Z_M , OR
 2. $\varepsilon > 1$ AND Z_G grows slower than Z_M
- ▶ Most papers choose (1), while this paper chooses (2).
- ▶ $\varepsilon > 1$ is almost necessary for the main result:
 - ▶ Recession \Rightarrow labor moves to agr $\Rightarrow Y_G \uparrow$, but needs substitutability
 - ▶ Then also needs Z_G (Z_{AM}) to grow slower than Z_M .

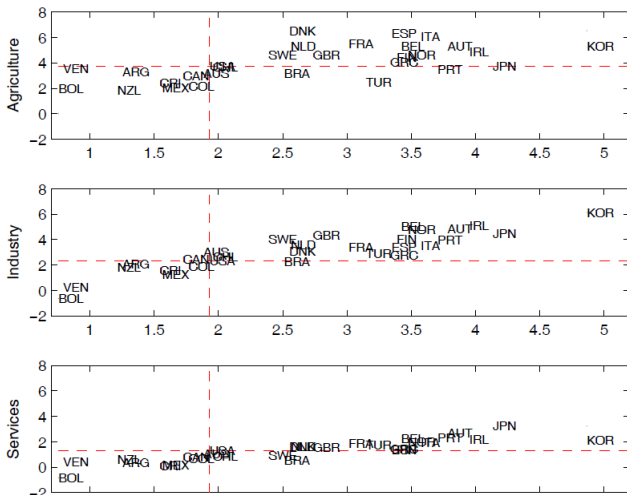
Comment 2: Preferences and Productivity Growth

Two cheap ways to reconcile $\varepsilon > 1$ and the main mechanism:

- ▶ open economy setup:
 - ▶ imports agricultural goods \Rightarrow increases the elasticity of substitution
- ▶ national system of purchasing agricultural goods:
 - ▶ guaranteed purchasing price \bar{p}_G for hoarding
- ▶ Agricultural goods market does not have to clear in every period.

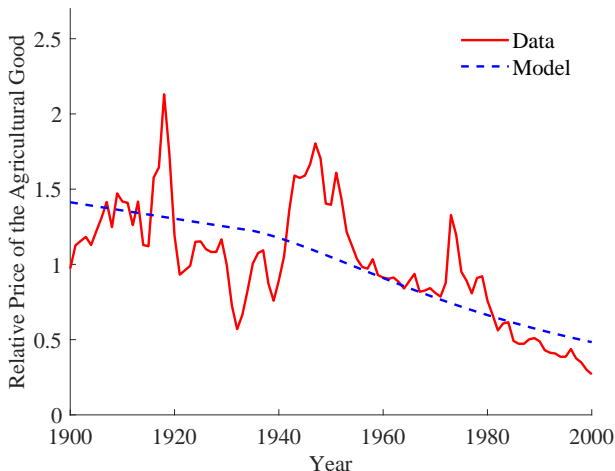
Comment 2: Preferences and Productivity Growth

- ▶ Many studies find that Z_{AM} grows faster than Z_M .
- ▶ In fact, in the estimation of this paper, g_M and g_{AM} are similar.



Comment 3: Relative Price

- ▶ In U.S. as well as in many countries, the relative price of agricultural good declines over time due to strong labor productivity growth in agriculture.

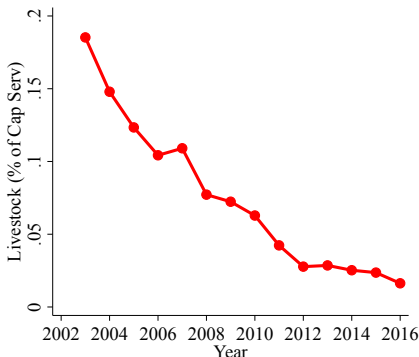


Comment 3: Relative Price

- ▶ This relative price is informative on the relative productivity growth (Alvarez-Cuadrado and Poschke 2011).
- ▶ How does the relative price evolve over time in China?
- ▶ Is the model able to match this trend?
- ▶ Especially important as it is related to the previous point.

One Minor Point

- ▶ Traditional technology uses labor only: no capital/land input
 - ▶ Is this necessary or for simplification?
 - ▶ Quantitatively relevant as the model overpredicts 1985 agricultural employment share but underpredicts capital share.
 - ▶ Traditional technology has some capital input, such as livestock etc



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 - ▶ How about service ↑ and business cycle?