Discussion of

“Directed Technology Adoption and Productivity Differences”

by Gino Gancia, Andreas Müller, and Fabrizio Zilibotti

Antonio Ciccone (UPF-ICREA)
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Main conclusion of empirics in GMZ

Cross-country productivity differences captured well by a CES model

$$Y = \left(\left(A_L L \right)^{\frac{\varepsilon-1}{\varepsilon}} + \left(A_H H \right)^{\frac{\varepsilon-1}{\varepsilon}} \right)^{\frac{\varepsilon}{\varepsilon-1}}$$

with factor specific efficiencies (technology) a function of factor endowments

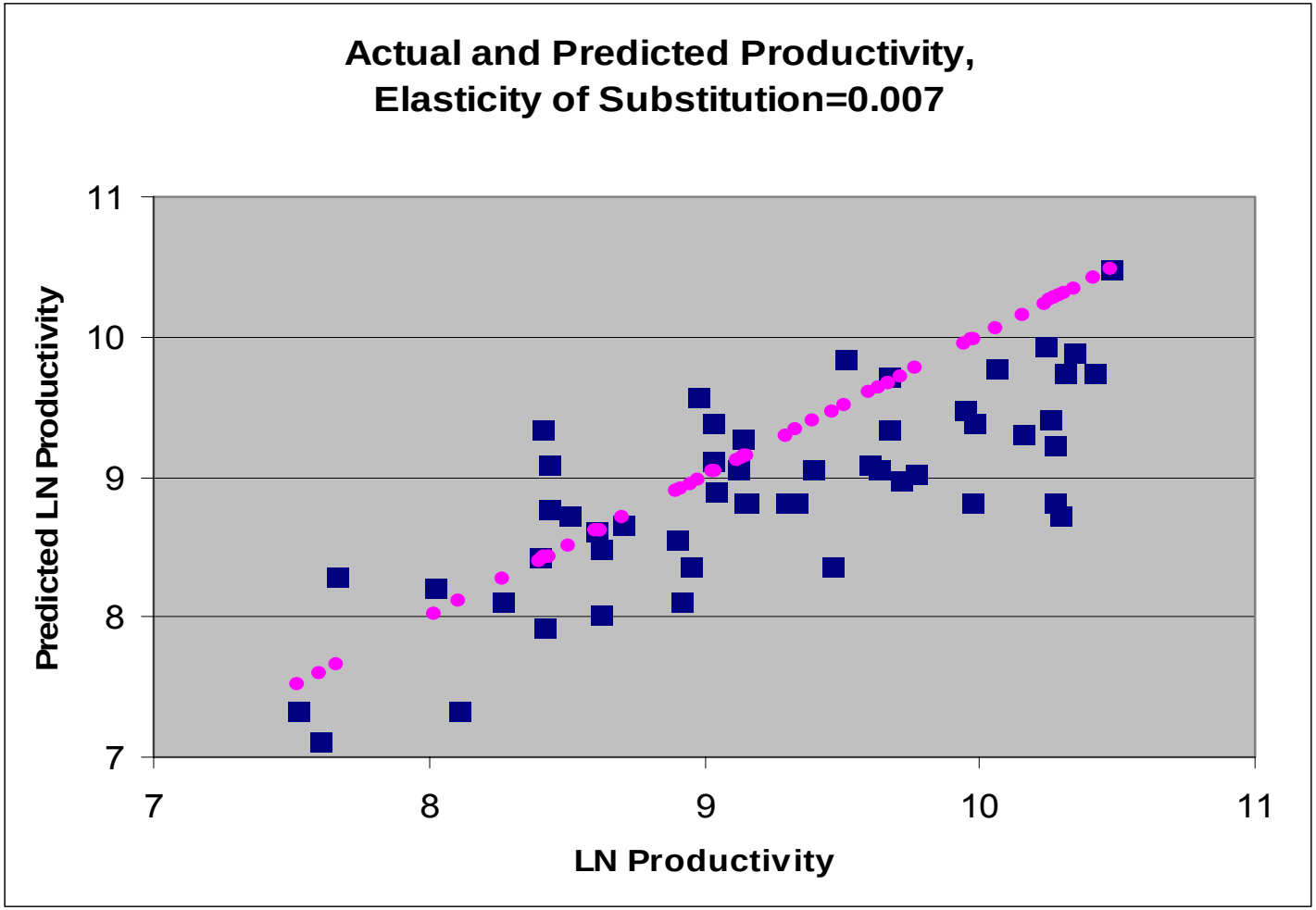
$$A_L = g(\underset{+}{L}) \qquad A_H = g(\underset{+}{H})$$

Why Endogenous Technology?

- The common technology CES model can do very well in explaining cross-country productivity differences.

- But only when it has implications for human capital wage premia that are wildly out of line with the data.

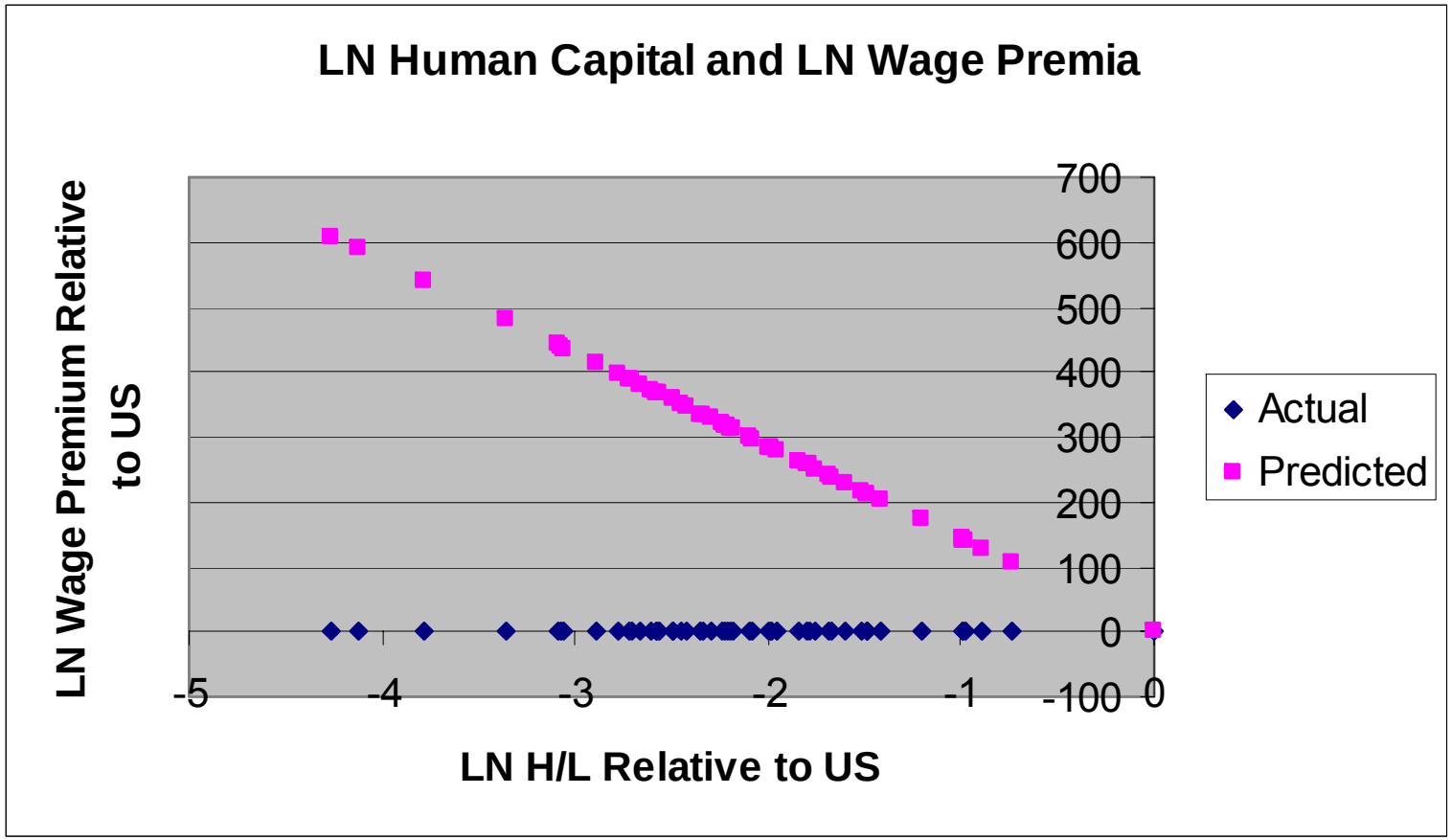
Common Technology CES Model: Predictions for Productivity Levels



Note: Data from Caselli and Coleman's "World Technology Frontier" AER 2006

Common Technology CES Model: Predictions for Wage Premia

$$\ln \frac{w_H}{w_L} = \frac{\varepsilon - 1}{\varepsilon} \ln \frac{A_H}{A_L} - \frac{1}{\varepsilon} \ln \frac{H}{L}$$



Note: Data from Caselli and Coleman's "World Technology Frontier" AER 2006

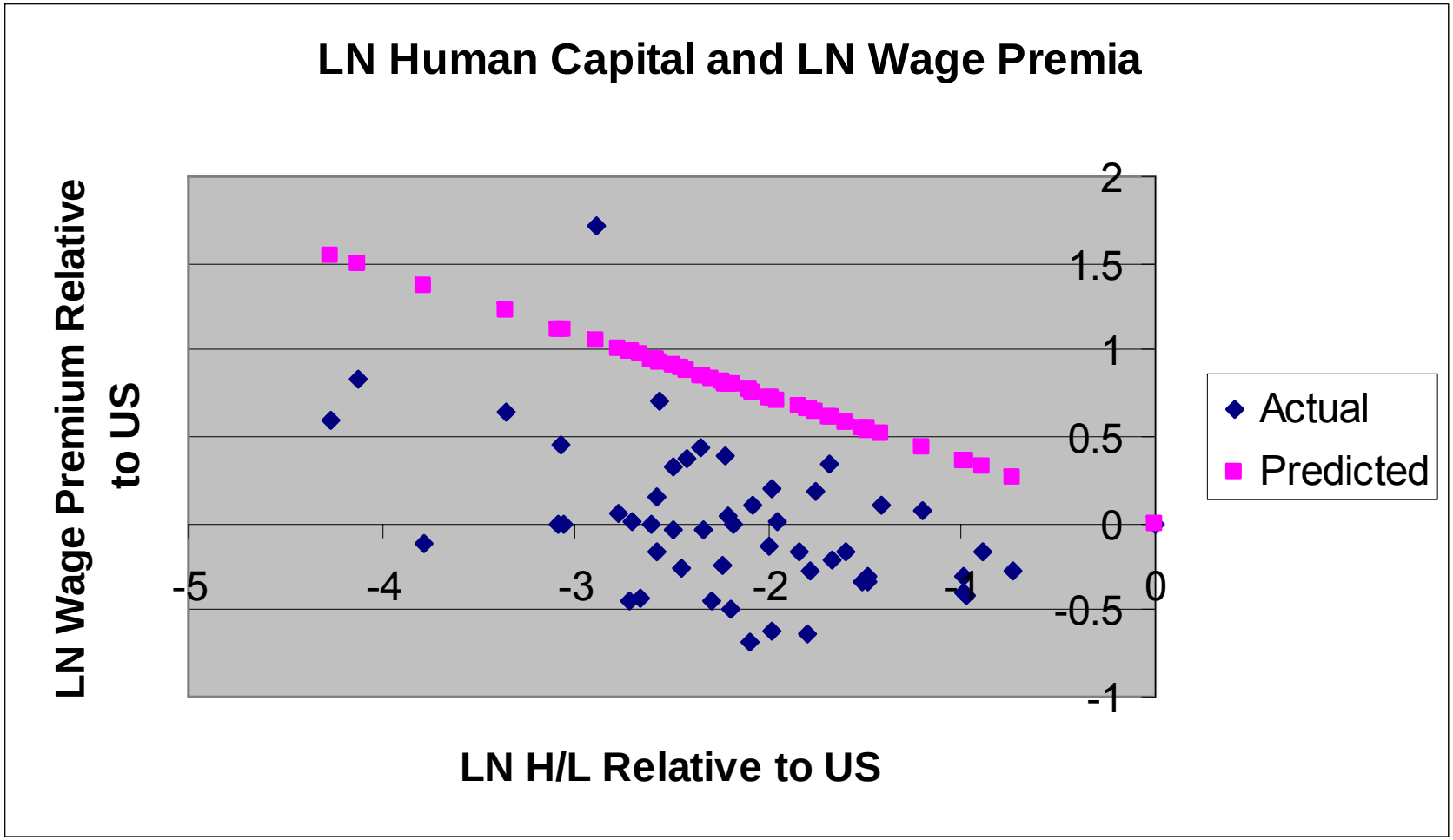
Empirical Contribution of Endogenous Technology in GMZ

- Explains productivity differences partly with a scale effect on technology. This yields a very good overall fit.

- The scale effect also goes in the right direction for explaining the wage premia because:

  low H/L → low H-technology → low wage premia.

Endogenous Technology and Wage Premia in GMZ



→ Stronger scale effect would be required to explain international wage premia

2 Suggestions

(1) Estimate scale effect targeting both productivity differences and differences in wage premia. May turn out that the stronger scale effect required for explaining wage premia does not worsen the fit for productivity differences much.

(2) Modify the model of technology barriers…

Model of Technology Barriers in GMZ

$$c_i = \mu \left(\frac{A_i}{A_{US}} \right)^{\xi}$$

- Cost of technology adoption depends on technology level only.

- ξ determines:

-- Cross-country differences in cost of technology adoption at a point in time.

-- How the cost of technology adoption varies in a country as its technology catches up.

Models of Technology Barriers

$$c_i = \mu_i \left(\frac{A_i}{A_{US}} \right)^{\xi}$$

- μ_i captures cross-country differences in technology barriers and hence ultimately the technology level of countries.

- ξ captures how technology barriers vary with technology catch-up.

→ Less parsimonious but reduces misspecification issues.

Thanks!