

Discussion of
“The Missing Swedish Skill Premium:
Sweden versus the United States 1970-2002”
by David Domeij and Lars Ljungqvist

Thijs van Rens
CREI and Universitat Pompeu Fabra

The Macroeconomics of Labor Markets in Europe and the US

Madrid, May 9, 2008

The Missing Swedish Skill Premium

- An interesting new fact
 - Swedish skill premium fell dramatically 1970-1990
- A plausible explanation
 - Expanding public sector demanded more unskilled labor
 - Competitive labor markets in the private sector
- A calibration to show the explanation works quantitatively

- Production function with K-S complementarity (KORV 2000)

$$y_t = Ak_{s,t}^\alpha \left\{ \theta_u h_{u,t}^\sigma + (k_{e,t}^\rho + \theta_s h_{s,t}^\rho) \right\}^{\frac{1-\alpha}{\rho}}$$

- Perfectly competitive labor markets

$$\frac{w_{s,t}}{w_{u,t}} = \frac{\text{MPS}(k_{s,t}, k_{e,t}, h_{s,t}, h_{u,t}; \theta)}{\text{MPU}(k_{s,t}, k_{e,t}, h_{s,t}, h_{u,t}; \theta)}$$

- Investment-specific technological progress

$$k_{e,t+1} = (1 - \delta_e) k_{e,t} + p_{e,t} (y_t - c_t - i_{s,t})$$

- Calibration

- $k_s(r_{s,t}, h_{s,t}, h_{u,t}; \theta)$ and $k_u(r_{s,t}, h_{s,t}, h_{u,t}; \theta)$ from FOCs capital
- r , $\delta_{s,t}$, $\delta_{e,t}$ and $p_{e,t}$ from literature (same both countries)
- $\theta = (\theta_u, \theta_s, \alpha, \rho, \sigma)$ calibrated/estimated for each country

Calibration exercise: assumptions

- Interest rate and depreciation rates same in both countries
 - Rental rates same in both countries
- Production function different between countries
 - Capital inputs different between countries
- Fall relative price equipment (5%/year) same in both countries
 - Capital equipment tradable
 - Technological progress same in both countries
- Capital-skill complementarity
 - Skill-biased technological progress same in both countries

Capital-skill complementarity

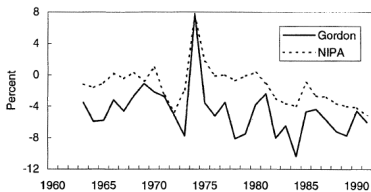


Figure 1. Two measures of changes in capital equipment prices: Gordon's vs. The NIPA's (%).

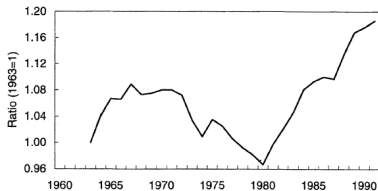
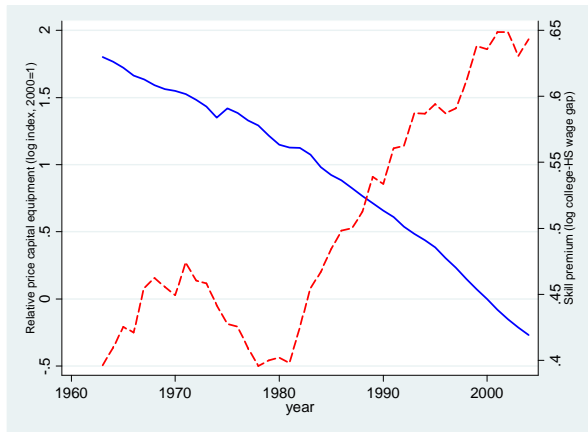


Figure 3. The skill premium: Skilled vs. unskilled wages per hour (normalized with 1963=1).

Krusell, Ohanian, Rios-Rull and Violante (2000)

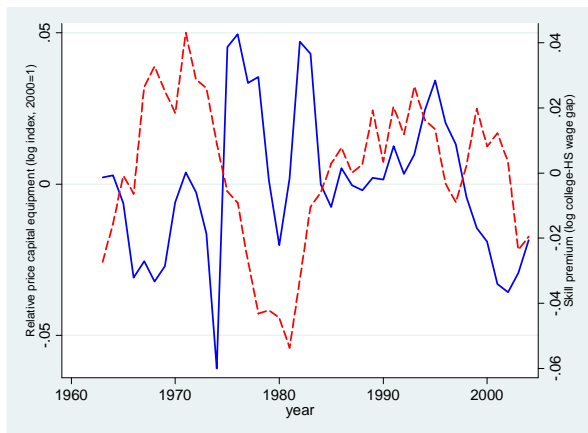
Capital-skill complementarity



Skill premium: Autor, Katz and Kearney (2005)

Relative price: DiCecio (2005); Cummins and Violante (2002)

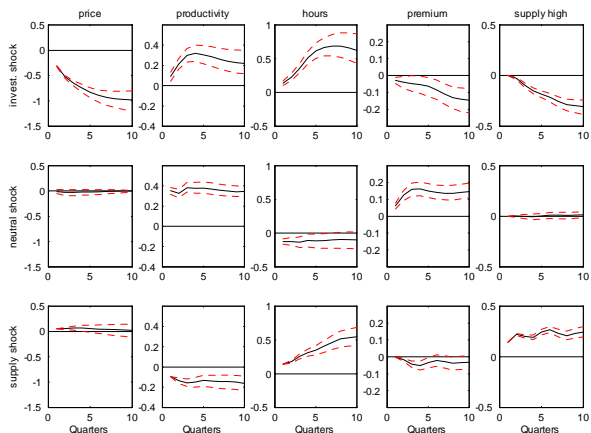
Capital-skill complementarity



HP filtered (smoothing parameter 1000, annual data)

Capital-skill complementarity?

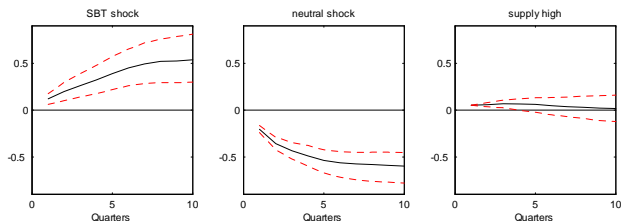
Response skill premium to investment-specific shock



Balleer and van Rens 2008

Capital-skill complementarity?

Response relative price to skill-biased technology shock



- Capital and skill appear to be substitutes (1979-2000)
 - Skill-biased technology shocks *increase* relative price
 - Investment-specific shocks *decrease* the skill premium

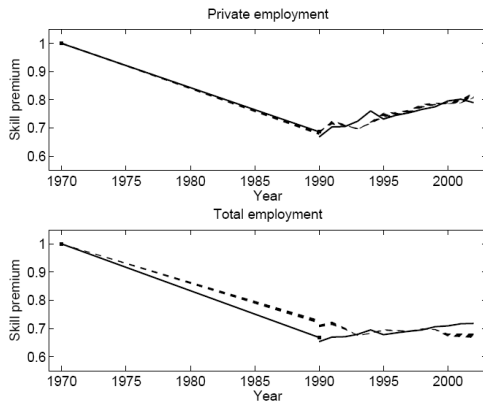
Calibration exercise: results

United States: model predicts evolution skill premium well
(Krusell, Ohanian, Rios-Rull and Violante 2000)



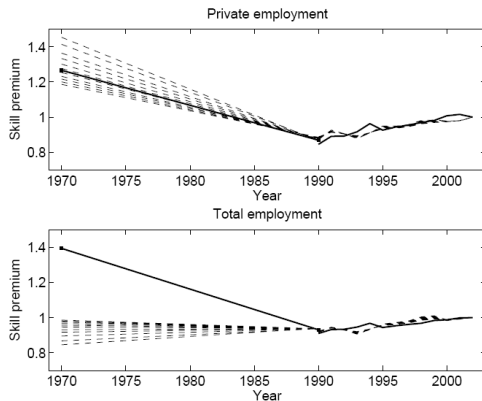
Calibration exercise: results

Sweden: model predicts premium in *private* employment well, but does not match the dramatic decrease in total employment



Calibration exercise: results

Sweden: model predicts premium in *private* employment well, but does not match the dramatic decrease in total employment

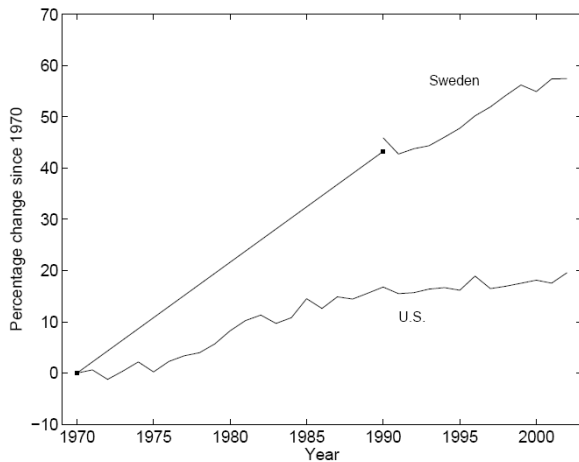


Interpretation of the results

- If public sector were the same as the private sector
 - Skill premium would have remained constant 1970-1990
 - Increase supply of skill = increase demand (SBTC)
- But skill premium fell dramatically
 - Supply of skill same for both sectors
 - \Rightarrow Public sector demand unskilled labor increased
- Parameters aggregate production function changed!

Public sector demand for unskilled labor increased

Relative demand for skill, private sector / total employment



- Suppose wages equal marginal products also in the public sector
 - Production function requires more unskilled labor &
 - Public sector expanded
 - Public employment increased by 15% of the labor force
 - Expansion was 100% unskilled (day care)
- Suppose the public sector labor market is not competitive
 - Skill premium lower in public sector
 - Excess supply of low skilled workers, excess demand high skill
 - Search frictions → unemployment rate increased for low skilled workers
 - Gomes 2008