Discussion of "Rising Skill Premium: The Roles of Capital-Skill Complementarity and Sectoral Shifts in a Two-Sector Economy" by Naoko Hara, Munechika Katayama, Ryo Kato

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Background

- The paper documents three observations on the Japanese labor market

Stylized facts - I

- A decline in the skill premium

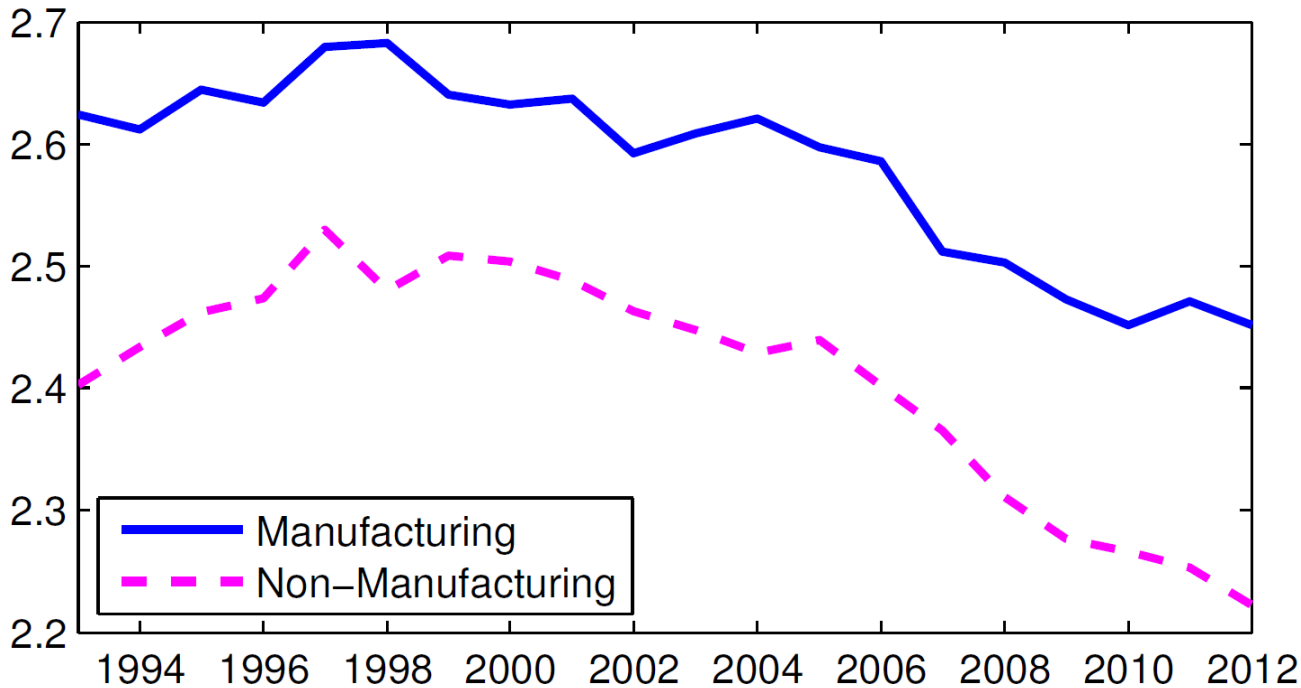
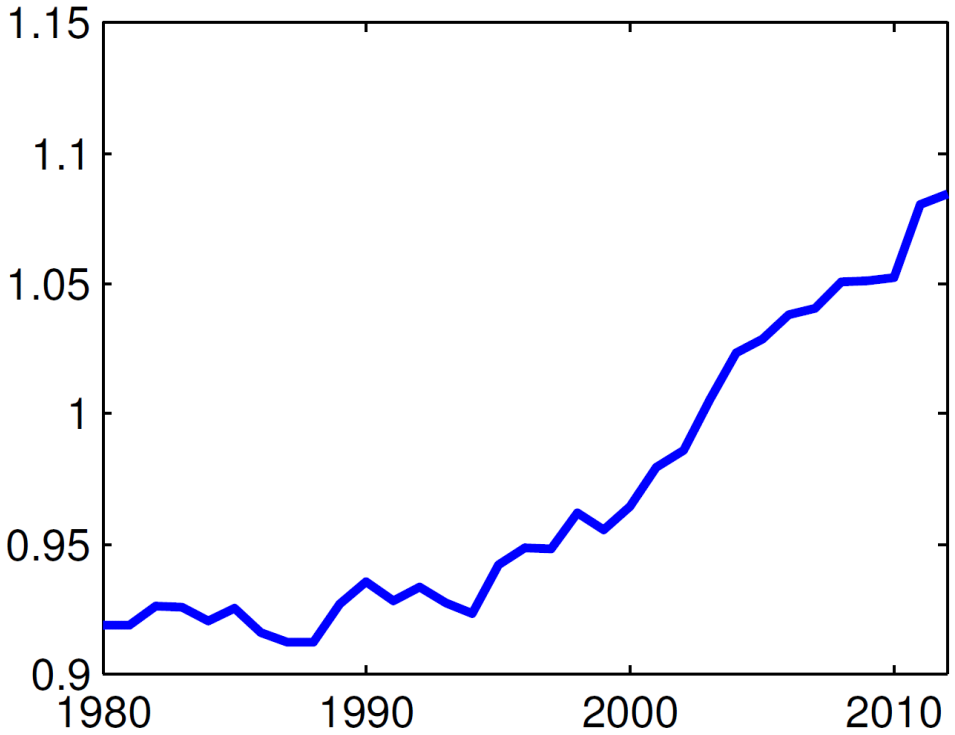


Figure 1: Skill Premium

Stylized facts - II

- Rising sectoral wage gap (manufacturing wages $\uparrow$ and non-manufacturing wages $\downarrow$)



(b) Manufacturing to Non-Manufacturing Wage Ratio

Stylized facts - III

- An increase in the unskilled labor share in the non-manufacturing sector

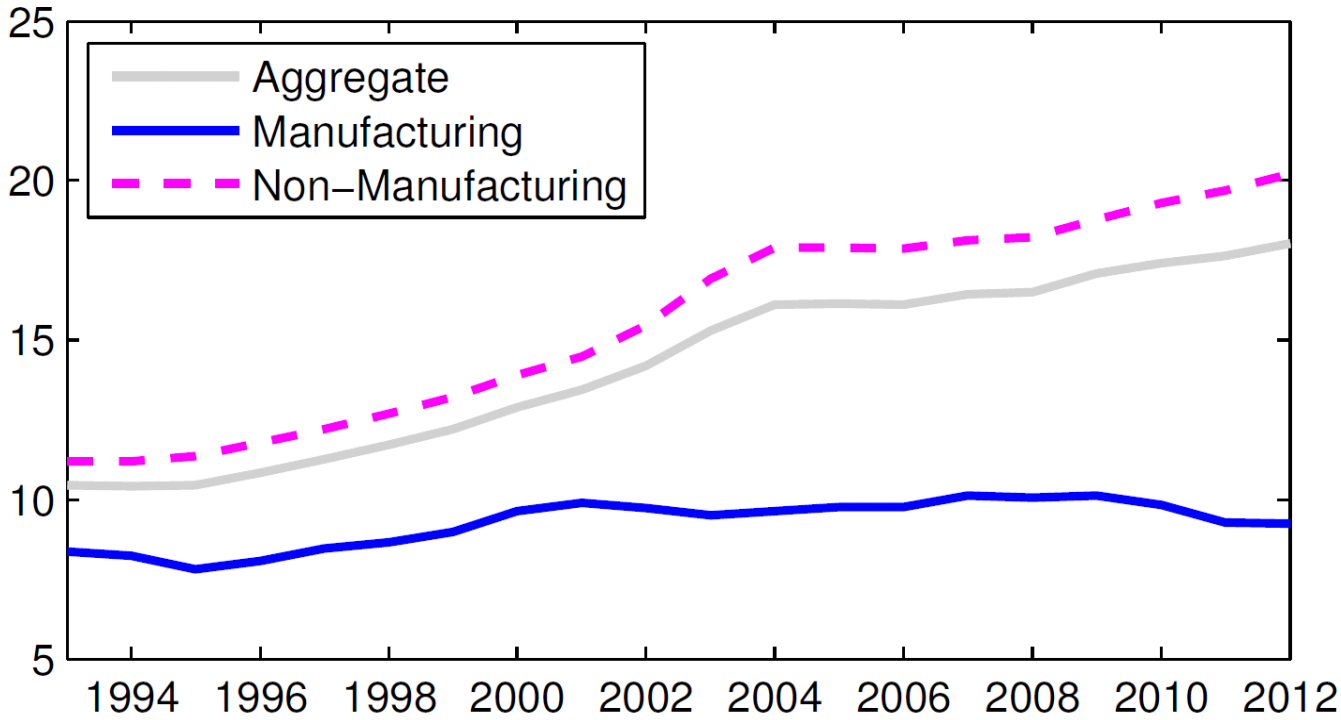


Figure 4: Fraction of Total Hours Worked by Part-time Workers (%)

This paper

- The paper finds an explanation for all three observations: a decline in the capital-skill complementarity in non-manufacturing sector
- Framework: Two-sector DSGE model with skilled and unskilled labor
- Considers a Bayesian approach to estimate the model, investigates the impact of possible mechanisms at play
- Focusing on the non-manufacturing sector, finds further support based on industry-level data

This paper

- The pattern is different for many countries: the skill premium has increased
- This pattern in the US can be explained by the increase in capital-skill complementarity –Krusell, Ohanian, Rios-Rull and Violante (2000)

Capital-skill complementarity

Sectoral production function (2-level CES)

$$Y_t = A_t[\mu(\psi_{u,t}U_t)^\sigma + (1-\mu)\{\lambda(K_t)^\rho + (1-\lambda)(\psi_{s,t}S_t)^\rho\}^{\sigma/\rho}]^{1/\sigma}$$

- Krusell et al. (2000)
- A_t : sectoral productivity, $\psi_{s,t}$, $\psi_{u,t}$: skilled and unskilled labor efficiency, respectively, μ, λ: parameters capturing factor shares of unskilled labor and capital, respectively
- $\frac{1}{1-\sigma}$: elasticity of substitution between unskilled labor and capital
- $\frac{1}{1-\rho}$: elasticity of substitution between skilled labor and capital
- $\frac{1}{1-\sigma} > \frac{1}{1-\rho}$ (hence, $\sigma > \rho$) "capital-skill complementarity" $\Longrightarrow$capital is more substitutable with unskilled labor than skilled labor

Capital-skill complementarity and skill premium

- If the degree of capital-skill complementarity, $\sigma - \rho$ declines,
  - capital becomes less complementary with skilled labor
  - firms demand skilled labor by less, creating excess supply of skilled labor
  - wages of skilled labor go down until market clears
  - skill premium, w_s/w_u, declines
- HKK's quantitative analysis shows that the changes in σ_n is consistent with the changes in skill premium (Stylized fact 1), the wages in the non-manufacturing sector (Stylized fact 2) and changes in the unskilled labor share in the non-manufacturing sector (Stylized fact 3)

Comments

- HKK use data on temporary/part-time employment for unskilled employment, limitations with schooling data
- Further striking features about the Japanese labor market:
- More college graduates picking temporary/part-time jobs
- High-skilled women are employed in part-time/temporary jobs in Japan at a high rate
    - 58% of women in workforce was part-time in 2014Q1 vs. 22% of male workers (Bloomberg)
- Are these college graduates mostly women?

Comments

- Why is Japan different compared to other countries?
- Any policy implications on
  - the dual market structure, gender wage gap, and more college graduates going into temporary/part-time jobs?
    - Might be an inefficient allocation of resources
    - High gender wage gap prevails in Korea as well as Japan (Bloomberg, 2014)–potentially cultural explanations

Comments

Estimation of the model

- HKK estimate the model for the pre-1995 period, to capture the initial steady state before the labor market patterns start changing
- Conduct counterfactuals to explain changes in the post-1995 period
- Alternatives: estimate the model with all available data and see how time-varying parameter estimates evolve

Comments

Potential research avenues

- The paper provides a framework to estimate capital-skill complementarity
- Might have an interesting application in the cross-country capital-skill complementarity hypothesis literature
- Papageorgiou and Chmelarova (2004) has a survey of possible specifications
    - Estimation of a CES production function (Sato, 1967)
    - A two-step procedure on estimating factor demand and production function (Fallon and Layard, 1975)
    - Relative demand for skilled workers based on cost minimization under CRTS production function (Brown and Christensen, 1981)

Conclusion

- The paper provides a clean analysis of the stylized facts of the Japanese labor market and suggests a mechanism to shed light on them
- A thought-provoking paper suggesting future questions to work on
  - Cross-country comparisons
  - Worker characteristics: gender, age and education level

Thank you!