Discussion

by

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of

**The Effects of Internationalisation on Domestic Labour Demand by Skills: Firm-Level Evidence for Belgium**

by

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# 1) Contents

- Does „globalization" change the composition of labor demand in ICs?

- Recovering (short- and long-run) labor demand elasticities of production/non-production workers from wage cost share estimations in dependence of

  – Export share

  – Import share

  – New FDI

  – Distinction by link-partner type: LDC/IC

# 1) Contents cont.

- Belgium manufacturing firms from 1997-2007
- Estimation method (bootstrapped s.e.)
  - Static wage cost share estimation
  - Dynamic panel wage cost share estimation
  - Difference-in-differences
- Large literature; few firm studies, few regards to type of link-partner, few long-run demand elasticities by labor types, some studies on Belgium data; new: FDI to LDCs.

# 2) Results

| Long run labor demand elasticity of … in… | Production workers | Non-production workers |
|---|---|---|
| Export share | rises | falls |
| Share of exports from LDCs | falls | rises |
| Import share | - | - |
| Import share from LDCs | falls | rises |
| New FDI | falls | rises |
| New FDI from LDCs | - | - |
| „In anticipation of new FDI" | - | rises |
| „In anticipation of new FDI from LDCs" | - | Falls |

# 3) Comments

- 3.1) Microfoundation
- 3.2) Measures
- 3.3) Specification
- 3.4) Bootstrap
- 3.5) „Announcement-Effect"
- 3.6) References

# 3.1) Theoretical Microfoundation

- Simple offshoring model

$$Y = M_1^{\delta} M_2^{1-\delta}$$

- Where production step 1 given by

$$M_1 = \left( \alpha U_1^{\frac{1-\sigma}{\sigma}} + (1-\alpha) S_1^{\frac{1-\sigma}{\sigma}} \right)^{\frac{\sigma}{1-\sigma}}$$

- And production step 2 given by

$$M_2 = \left( \beta U_2^{\frac{1-\sigma}{\sigma}} + (1-\beta) S_2^{\frac{1-\sigma}{\sigma}} \right)^{\frac{\sigma}{1-\sigma}}$$

- Step 1 intensive in low-skilled labor U: α>β

# 3.1) Theoretical Microfoundation cont.

- S-Wage cost share - **both steps at home** - (log-linearized)

$$\frac{w_{np}\left(S_1 + S_2\right)}{w_{np}\left(S_1 + S_2\right) + w_P\left(U_1 + U_2\right)} = a_{no\_off} \ln\left(\frac{w_{np}}{w_p}\right) + \dots$$

where

$$a_{no\_off} = \delta\left(\frac{(\sigma-1)\left(\frac{\alpha}{1-\alpha}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma}}{\left[\left(\frac{\alpha}{1-\alpha}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma}+1\right]^2}\right) + (1-\delta)\left(\frac{(\sigma-1)\left(\frac{\beta}{1-\beta}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma}}{\left[\left(\frac{\beta}{1-\beta}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma}+1\right]^2}\right)$$

- S-Wage cost share – **1st step offshored** - (log-linearized)

$$\frac{w_{np}S_2}{w_{np}S_2 + w_P U_2} = a_{off} \ln\left(\frac{w_{np}}{w_p}\right) + \ldots$$

where

$$a_{off} = \frac{(\sigma-1)\left(\frac{\beta}{1-\beta}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma}}{\left[\left(\frac{\beta}{1-\beta}\right)^{\sigma}\left(\frac{w_p}{w_{np}}\right)^{1-\sigma} + 1\right]^2}$$
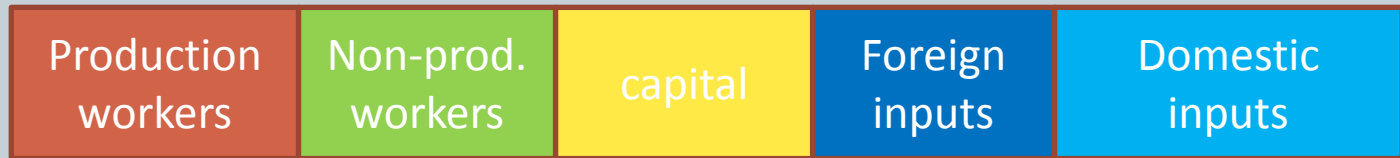
- thus   $a_{off} < a_{no\_off}$

# 3.2) Measures

- ## Import share

$$= \frac{Imported\ Inputs}{Intermediate\ goods}$$

➔ But **input type substitution**!
(Moser, Urban, Weder, CEPR DP 7455)

**Factor intensities before substitution:**

| Production workers | Non-prod. workers | capital | Foreign inputs | Domestic inputs |
|---|---|---|---|---|

**Factor intensities after substitution:**

| Production workers | Non-prod. workers | capital | Foreign inputs | Domestic inputs |
|---|---|---|---|---|
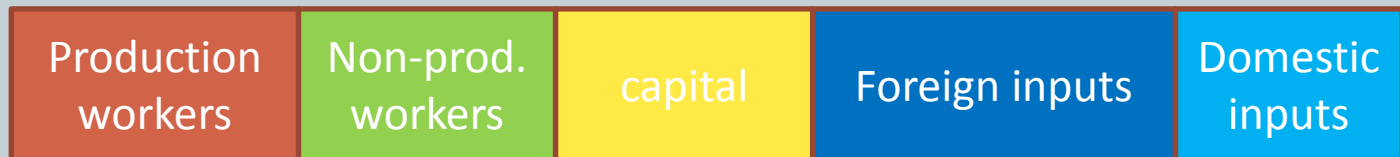
# 3.2) Measures cont.

- Production/non-production workers:
  ➔ dividing line finer?

  Routine vs. Non-routine tasks; social-interactive vs. Non-interactive workers; codifiable knowledge vs. Non-codifiable knowledge (Autor, Levy, Murnane, QJE, 2003; Becker and Muendler, AER, forthc.; By occupation: Crino, 2009, Klein, Moser, Urban, 2010)

- FDI from LDCs: nice!
  - But most FDI to China is horizontal FDI, which is not expected to change factor intensities much (except in KCM); remains **noisy measure** of **vertical FDI**

- Explanatory variable: relative wage ➔ meaning?

$$\frac{avg.wage_{np} \cdot labor_{np}}{total\_wage\_bill}$$

  - What is source of variation in $avg.wage_{np}$ across firms?
    Collective bargaining = same wage for the same worker type ➔ variation through differences in intra-group skills? Still labor demand elasticity estimates?
  - Endogeneity?

# 3.3) Specification

- Control for all types of global activities at the same time!
  (Otherwise omitted variable bias!)

- You can have dynamic specification for FDI, even if FDI does not vary much over time
  (Wage share is dynamic, not FDI!)

- Interact „relative wage" control var. with industry?
  (Factor intensities vary by industries if not by plants)

# 3.3) Specification cont.

- Control for high-skilled labor augmenting technical progress?
  (e.g. export-expanders are in industries with large technological change? Split sample by low vs.high tech industries; control for R&D expenditure, random linear firm time trend, etc.)

- Endogeneity of export share/import share/FDI?
  Firms invent new patent ➔ change technology ➔ become exporters or expand export product range = control for technology level? Exogenous trade shock? E.g. entry of Eastern European countries into EU? Or introduction of Euro? Compare GB, DK, SE with Euroland

# 3.4) Bootstrap

- Useful, because l.r. demand elasticities are non-linear functions of estimated parameters

- Clustered? (Bertrand, et al. QJE, 2004)
  - stack estimated error term $e_{it}$ in vectors $e_i$
  - Randomize $e_i$ rather than $e_{it}$ ➔ preserves correlation structure of error term of observations belonging to same firm

- Do not eliminate bootstrap steps, when Hansen or AR2-test fail! Type I error!

- Alternative to bootstrap is delta-method (e.g. Woodridge, 2002)

# 3.5) „Announcement-Effect"

| | Non-production labour | | | | Production labour | | | |
|---|---|---|---|---|---|---|---|---|
| | Eq. (10) | Eq. (11) | Eq. (12) | Eq. (13) | Eq. (10) | Eq. (11) | Eq. (12) | Eq. (13) |
| $NFDI$ | 0.025** | 0.014* | 0.014 | 0.021 | 0.003 | 0.008 | 0.010 | 0.013 |
| | (0.010) | (0.008) | (0.011) | (0.013) | (0.009) | (0.008) | (0.013) | (0.016) |
| $NFDIlow$ | -0.046** | -0.004 | -0.025 | -0.065** | -0.021 | -0.033** | -0.061** | -0.073** |
| | (0.023) | (0.012) | (0.019) | (0.027) | (0.016) | (0.016) | (0.028) | (0.033) |
| $y$ | 0.271** | 0.258** | 0.341** | 0.394** | 0.328** | 0.323** | 0.381** | 0.426** |
| | (0.021) | (0.019) | (0.016) | (0.014) | (0.017) | (0.016) | (0.014) | (0.013) |
| $wrel$ | -0.027 | -0.025 | -0.078** | -0.062** | -0.014 | -0.018 | -0.030 | -0.031 |
| | (0.023) | (0.020) | (0.024) | (0.027) | (0.021) | (0.018) | (0.022) | (0.033) |
| $k$ | 0.052** | 0.047** | 0.058** | 0.064** | 0.054** | 0.050** | 0.069** | 0.073** |
| | (0.008) | (0.006) | (0.005) | (0.005) | (0.007) | (0.006) | (0.006) | (0.006) |
| $R^2$ | 0.118 | 0.111 | 0.188 | 0.232 | 0.181 | 0.177 | 0.187 | 0.285 |
| # obs. | 8869 | 11140 | 11140 | 11140 | 8869 | 11140 | 11140 | 11140 |

Notes: ** indicates significance at the 5% level, * indicates significance at the 10% level.

# 3.6) References

- HO-Theory with firm data (Bernard, Redding, Schott, RevStud, 2007)

- Static labor demand & globalization (Hijzen, Görg, and Hine, 2005; Epifani and Gancia, 2008; Crino, RevStud 2010)

- Dynamic labor demand & globalization (Bruno and Falzoni, 2005)

- Offshoring theory (e.g. Sanyal and Jones, 1982, and Venables, 1999)

- Intermediate goods trade between ICs Ethier (1982)