



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

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Structure of Presentation



- Introduction
- Literature review
- Data and Descriptive Statistics
- Econometric Specification
- Estimation results
- Conclusion

Introduction



- There have been extensive debates about the effects of globalization (international trade and OFDI) on employment, in particular unskilled workers.
- The concerns stem from the perception that these two international business activities tend to ‘export’ employment abroad, i.e. generate a negative effect on domestic labour demand.
- The present paper will test this for Belgium, using disaggregated firm-level data.

Literature review - Trade and employment

- Standard international trade theory predicts that international trade tends to reduce real income of the production factors with which a country is badly endowed, but raises the real reward of abundant factors of production.
- This implies that internationalization will widen the wage gap between skilled and unskilled labour.
- The widening gap may be attributed to a decline in the relative prices of products involving intensive use of low-skilled workers in the industrialised countries.
- In the EU context where wages are sticky, employment adjustment, rather than wages, will be made.

Literature review - Trade and employment

- Numerous studies on the employment effect of international trade.
- Results are mixed.
 - Some find no relationship between international trade and employment of unskilled workers (Pryor, 1999; Krishna *et al.*, 2001; Fajnzylber and Maloney, 2005; Haouas and Yagoubib, 2008)
 - However, others find that an increase in trade volumes leads to a reduction in labour demand (Greenaway *et al.*, 1999; Biscourp and Kramarz, 2007; Mouelhi, 2007).

Literature review - OFDI and employment

- International production by firms is often opposed as it may replace exports and thus reduce labour demand at home.
- International production may particularly affect low-skilled labour as it concerns relatively more labour-intensive production process.
- Effects of OFDI on employment in the home country are summarized by Van Den Bulcke and Halsberghe (1979), Cuyvers et al. (1999), Lundan (2007) and Dunning and Lundan (2008), among others.
 - Production effect;
 - export-creating effect;
 - home employment effect; and
 - supporting firm employment effect.

Literature review - OFDI and employment

- Empirical findings about the employment effect of outward FDI are also mixed.
 - Some find that foreign labour substitutes one-for-one for parent firm labour (Brainard and Riker, 1997; Riker and Brainard, 1997).
 - Others find that local employment growth is positively associated with higher level of outward FDI.

Data

- Merging of 4 data sources:
 - Central Balance Sheet Office : annual accounts of Belgian firms;
 - Foreign Trade Data : X and M, by products and country of destination/origin;
 - Survey on Foreign Direct Investment : data on FDI by country of destination;
 - Social Security Data Warehouse : average wage and employment by type of workers.
- Sample period : 1997-2007

Data



- Selection
 - Manufacturing sector only
 - "Profit-maximising" firms, observed at least 5 years in a row
 - At least 10 employees (5 blue collars and 5 white collars)
 - Full annual accounts
 - Consistency between annual accounts / social security data / foreign trade data
 - Additional trimming : outliers in output, capital and wage growth rate

Data



- Sample
 - 20,766 observations
 - 2458 firms
 - 2334 Exporters / 2011 Low income countries exporters
 - 2387 Importers / 1841 Low income countries importers
 - 521 FDIers / 204 Low income countries FDIers

Exporters, Importers, and FDIers by type of country

year	# of firms	# of Exporters		# of Importers		# of FDIers	
		To r.o.w. ⁽¹⁾	To l.i.c. ⁽²⁾	From r.o.w. ⁽¹⁾	From l.i.c. ⁽²⁾	In r.o.w. ⁽¹⁾	In l.i.c. ⁽²⁾
1997	1,707	1,589	1,151	1,641	781	218	50
1998	1,922	1,720	1,268	1,799	915	267	70
1999	1,982	1,765	1,283	1,862	975	279	82
2000	2,062	1,825	1,328	1,921	1,002	302	97
2001	2,066	1,841	1,362	1,930	1,046	361	117
2002	2,058	1,819	1,340	1,913	1,052	375	125
2003	2,046	1,815	1,354	1,913	1,116	375	123
2004	1,983	1,754	1,311	1,851	1,112	362	129
2005	1,899	1,677	1,249	1,775	1,110	331	122
2006	1,775	1,516	1,174	1,638	1,030	306	110
2007	1,266	1,099	835	1,181	767	219	79

⁽¹⁾ r.o.w. = rest of the world

⁽²⁾ l.i.c. = low income countries (based on World Bank classification)

Avg. export and import shares, and # of FDI

year	Avg. export share (in %) ⁽¹⁾		Avg. import share (in %) ⁽²⁾		Avg. # of FDI projects ⁽³⁾	
	To r.o.w. ⁽⁴⁾	To l.i.c. ⁽⁵⁾	From r.o.w. ⁽⁴⁾	From l.i.c. ⁽⁵⁾	In r.o.w. ⁽⁴⁾	In l.i.c. ⁽⁵⁾
1997	45.0	4.6	34.2	2.5	3.6	0.5
1998	46.9	4.4	35.6	2.7	3.9	0.7
1999	47.0	4.2	35.0	2.8	4.2	0.8
2000	47.6	4.7	36.3	3.1	4.8	1.0
2001	47.6	4.8	35.4	3.0	5.1	1.0
2002	48.2	5.0	35.1	3.3	5.2	1.0
2003	47.3	5.2	34.4	3.5	5.2	1.1
2004	47.9	5.1	34.9	3.7	4.9	1.1
2005	47.9	5.5	35.4	4.1	5.0	1.1
2006	49.2	5.5	36.3	4.2	5.7	1.2
2007	48.7	5.0	36.5	4.1	6.2	1.4

(1) conditional on being an exporter in period t

(2) conditional on being an importer in period t

(3) conditional on being an FDI in period t

(4) r.o.w. = rest of the world

(5) l.i.c. = low income countries

Econometric Specification

- Different frameworks considered for International Trade and FDI
 - Impact of X, M on Blue and White Collar employment
 - Dynamic cost share equation (extends Ekholm and Hakkala, 2008 or Rosholm et al., 2007)
 - Impact of FDI on Blue and White Collar employment
 - Static cost share equation (FDI : lumpy variable)
 - "Event study" framework to analyse the timing of the effects of FDI on employment

Econometric Specification

- Cost share equation
 - Two variable inputs : Blue and White labour
 - Capital stock pre-determined
 - Baseline specification for cost share equation
 - $s_{it} = \alpha_j + \gamma wrel_{it} + \beta y_{it} + \delta k_{it} + \theta_1 z_{it} + \theta_2 zlow_{it} + D_t + \varepsilon_{it}$
 - Impact of $zlow = \theta_1 + \theta_2$

Econometric Specification

- Cost share equation
 - For FDI (static equation) :
 - zit = number of FDI projects or FDI indicator
 - For international trade (dynamic equation):
 - zit = export share (% of turnover), import share (% of intermediate inputs)
 - Dynamic specification with two lags for all variables (Holly and Smith, 1989, and Kearney, 1997), estimated with GMM-SYS

Econometric Specification

- Cost share equation
 - (Long-run) elasticities of blue and white labour demand with respect to z and z_{low} are derived from estimated coefficients.
 - C.I. for elasticities computed by bootstrap (Elkhom and Hakkala, 2008)
 - C.I. based on empirical percentiles, not on std-errors (due to nonlinearities).

Econometric Specification

- "Event studies" equations
 - How new FDI affects domestic labour demand over time ?
 - Focus on a sub-sample of observations
 - New FDI project in t but not in $t - 1$, $t + 1$ and $t + 2$

Econometric Specification

- "Event studies" equations

- Set of 4 equations

- $(I_{i,t-1} - I_{i,t-2}) = \eta_{1i} + \beta_{11} NFDI_{it} + \beta_{12} NFDIlow_{it} + \text{control variables} + \varepsilon_{1it}$

- $(I_{it} - I_{i,t-1}) = \eta_{2i} + \beta_{21} NFDI_{it} + \beta_{22} NFDIlow_{it} + \text{control variables} + \varepsilon_{2it}$

- $(I_{i,t+1} - I_{i,t}) = \eta_{3i} + \beta_{31} NFDI_{it} + \beta_{32} NFDIlow_{it} + \text{control variables} + \varepsilon_{3it}$

- $(I_{i,t+2} - I_{i,t-1}) = \eta_{4i} + \beta_{41} NFDI_{it} + \beta_{42} NFDIlow_{it} + \text{control variables} + \varepsilon_{4it}$

- Control variables : (accumulated) changes in y , k and $wrel$

- Impact of FDI , FDIlow :

Results - Import shares and export shares

	z = import share		z = export share	
	L^{np}	L^p	L^{np}	L^p
W^{np}	-0.2636*	-	-0.2105*	-
	[-0.5067 ; 0.0017]		[-0.4624 ; 0.0353]	
W^p	-	-0.6294**	-	-0.6654**
		[-0.8122 ; -0.4634]		[-0.8381 ; -0.4917]
y	0.1642**	-0.1114**	0.1756**	-0.1191**
	[0.1036 ; 0.2769]	[-0.1914 ; -0.0706]	[0.1081 ; 0.2867]	[-0.1962 ; -0.0733]
k	-0.0989**	0.0671**	-0.1034**	0.0702**
	[-0.1808 ; -0.0524]	[0.0357 ; 0.1216]	[-0.1837 ; -0.0509]	[0.0349 ; 0.1223]
z	-0.0281	0.0191	-0.2264**	0.1536**
	[-0.3465 ; 0.1610]	[-0.1077 ; 0.2363]	[-0.3892 ; -0.0943]	[0.0636 ; 0.2624]
$zlow$	0.8849**	-0.6000**	1.3557**	-0.9196**
	[0.2952 ; 2.4596]	[-1.6745 ; -0.1996]	[0.7587 ; 2.4284]	[-1.6200 ; -0.5159]

** = significant at the 5% level, using the 95% empirical confidence interval

* = significant at the 10% level, using the 90% empirical confidence interval

C.I. computed using 1,000 GMM-SYS estimation of dynamic cost share eq., which satisfy the standard GMM specification tests

Results - Outward FDI (cost share)

	z = # of Outward FDI links		z = Outward FDI indicator	
	L^{np}	L^p	L^{np}	L^p
W^{np}	-0.1665** [-0.2431 ; -0.0959]	-	-0.1654** [-0.2430 ; -0.0943]	-
W^p	-	-0.6957** [-0.7455 ; -0.6404]	-	-0.6964** [-0.7470 ; -0.6413]
y	0.0223** [0.0024 ; 0.0421]	-0.0152** [-0.0288 ; -0.0017]	0.0222** [0.0027 ; 0.0424]	-0.0151** [-0.0287 ; -0.0018]
k	-0.0157** [-0.0286 ; -0.0052]	0.0107** [0.0034 ; 0.0196]	-0.0157** [-0.0146 ; -0.0240]	0.0107** [0.0034 ; 0.0195]
z	0.0041** [0.0016 ; 0.0070]	-0.0028** [-0.0048 ; -0.0011]	0.0045 [-0.0146 ; 0.0240]	-0.0030 [-0.0163 ; 0.0100]
$zlow$	-0.0052 [-0.0131 ; 0.0018]	0.0035 [-0.0012 ; 0.0089]	0.0226* [-0.0052 ; 0.0498]	-0.0153* [-0.0336 ; 0.0035]

** = significant at the 5% level, using the 95% empirical confidence interval

* = significant at the 10% level, using the 90% empirical confidence interval

C.I. computed using 1,000 GMM-SYS estimation of static cost share eq.

Results - Outward FDI (event study)

	<i>Non-production labour</i>				<i>Production labour</i>			
	(10)	(11)	(12)	(13)	(10)	(11)	(12)	(13)
<i>NFDI</i>	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)
<i>NFDI_{low}</i>	-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)
<i>y</i>	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)
<i>wrel</i>	-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)
<i>k</i>	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)
<i>R</i> ²	0.118	0.111	0.188	0.232	0.181	0.177	0.187	0.285
<i># obs.</i>	8869	11140	11140	1140	8869	11140	11140	11140

** = significant at the 5% level

* = significant at the 10% level

Standard errors in brackets

Conclusions



- Imports from low-income countries positively affect the demand for high-skilled workers.
- However, they reduce domestic demand for low-skilled workers.
- Exports are found to have a negative impact on white-collar workers, but increase demand for blue-collar workers.
- When splitting into destinations, it is found that exports to low-income countries are beneficial for white-collar workers, but hurt blue-collar labour.

Conclusions



- Regarding employment effects of outward FDI, OFDI in low-income countries significantly reduce demand for low-skilled labour, but positively affect skilled-labour demand.
- Results also suggest that setting up of a new project positively affects the demand for non-production workers one period before the investment is made.
- This positive effect is offset in the long-run when investment is made in low-income countries.



Thank you for your attention