



D8.5: The Impact of Offshoring on Labour Markets – Preliminary Results

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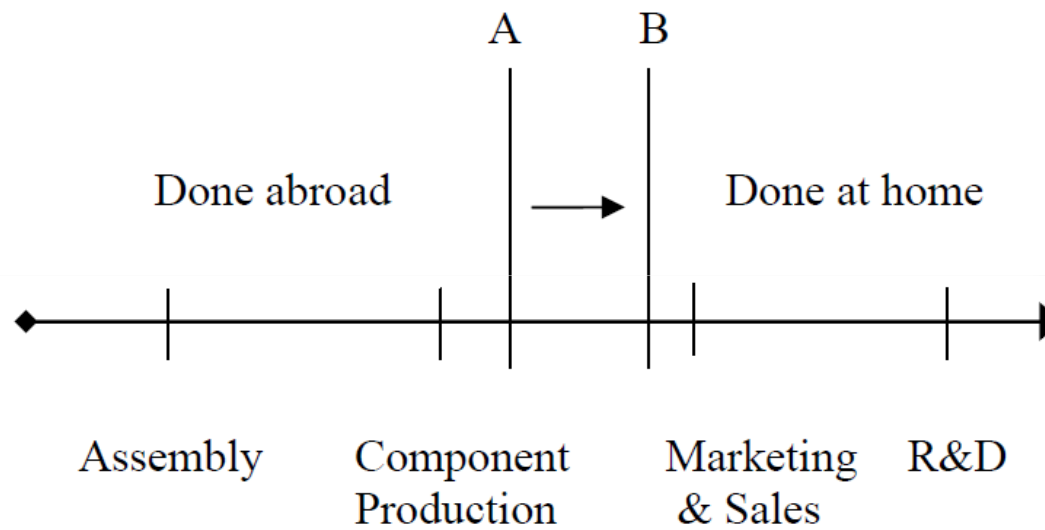
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Offshoring and Labour Markets

- Declines in transport and communication costs have made it possible to break apart the production process, with various stages occurring in different countries
 - Fragmentation, foreign outsourcing, offshoring
- Trade in intermediate inputs dominates trade flows
 - Intermediates represent 56% of goods trade and 73% of services trade in the OECD (OECD, 2010)
 - These shares have been fairly stable since the mid-1990s at least, but the levels of intermediate trade have grown with trade in general
 - Relatively large increases in service trade have resulted in relatively large increases in measured services offshoring
- From the 1980s onwards many countries have seen changes in the relative wage and employment of skilled versus non-skilled workers
 - For many developed (but also developing countries) an increase in relative wages and employment have been observed (Feenstra, 2007)
 - Data – at least for the US – since 2000 are less easy to summarise (Feenstra, 2010)
- Is offshoring a cause of these changes in relative labour demand?
- Alternative explanations: technology, institutions, supply-side

Offshoring and Labour Demand



Source: Feenstra (2007)



- Empirical considers impact of offshoring on:
 - Relative wages
 - Relative employment
 - Employment levels
- Offshoring and Relative Wages
 - Examples include: Feenstra and Hanson (1999), Haskel and Slaughter (1999), Hijzen (2006)

Existing Evidence

- Offshoring and Employment Levels
 - Examples: OECD (2007), Hijzen and Swaim (2007), Falk and Wolfmayr (2005), Schöller (2007), Cadarso et al (2008), Foster et al (2011)
- Offshoring and Relative Employment
 - Examples: Feenstra and Hanson (1996; US), Falk and Koebel (2002; Germany); Strauss-Kahn (2003; France), Hijzen et al (2005; UK)
 - Results tend to suggest that offshoring impacts negatively upon the demand for unskilled labour
 - Crino (2007; US) and Crino (2009; EU) finds similar results when considering service offshoring (though at lower levels)

- Intra-Industry (Narrow) Offshoring

$$S_i^N = \frac{O_{j=i}}{V_i}$$

- Inter-Industry (Broad) Offshoring

$$S_i^B = \frac{\sum_{j=1}^J O_{j \neq i}}{V_i}$$

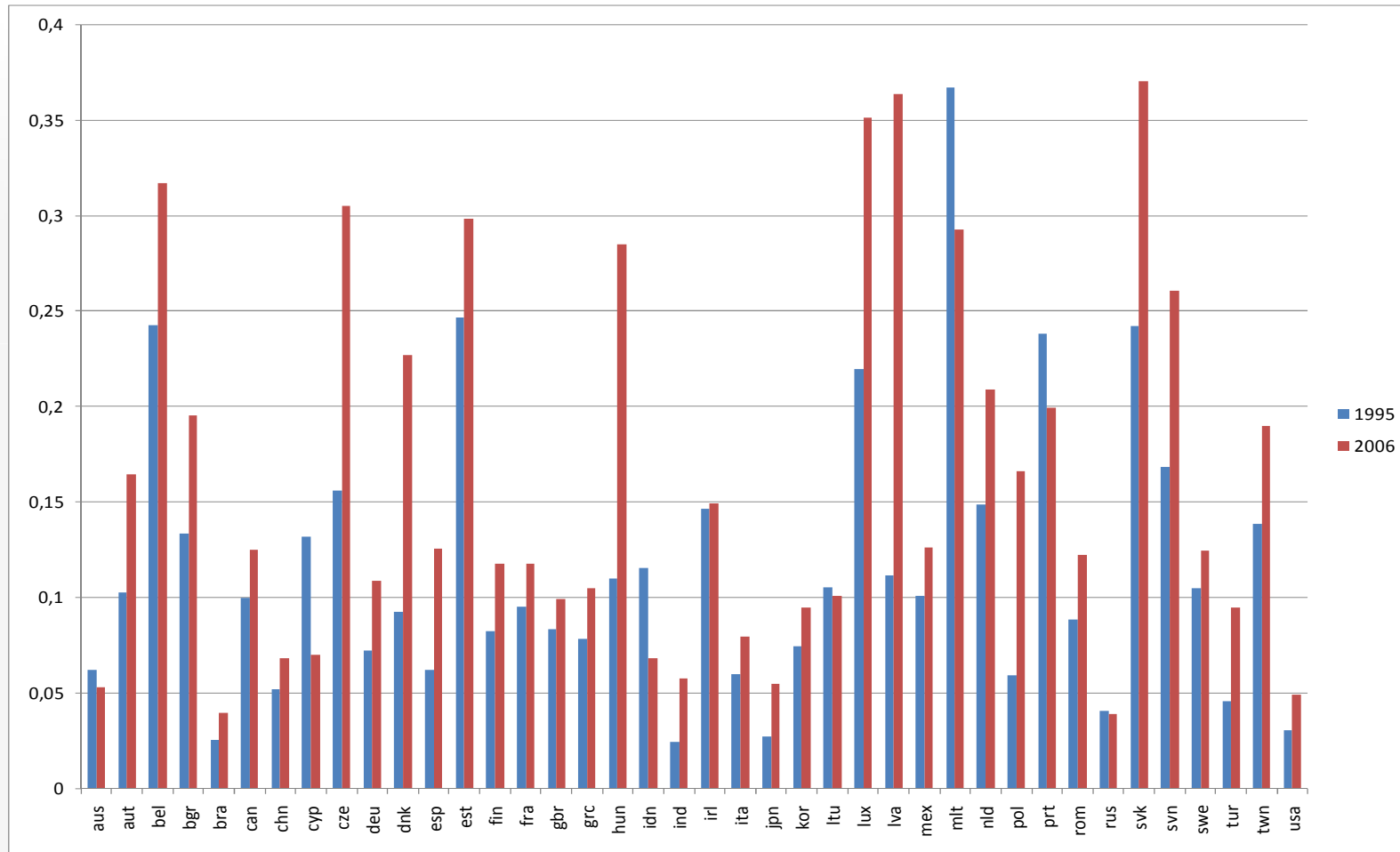
- O – Imported intermediate purchases
- V – Value-added

$$S_i^{MB} = \frac{\sum_{j=1}^J O_{j \neq i}^M}{V_i}$$

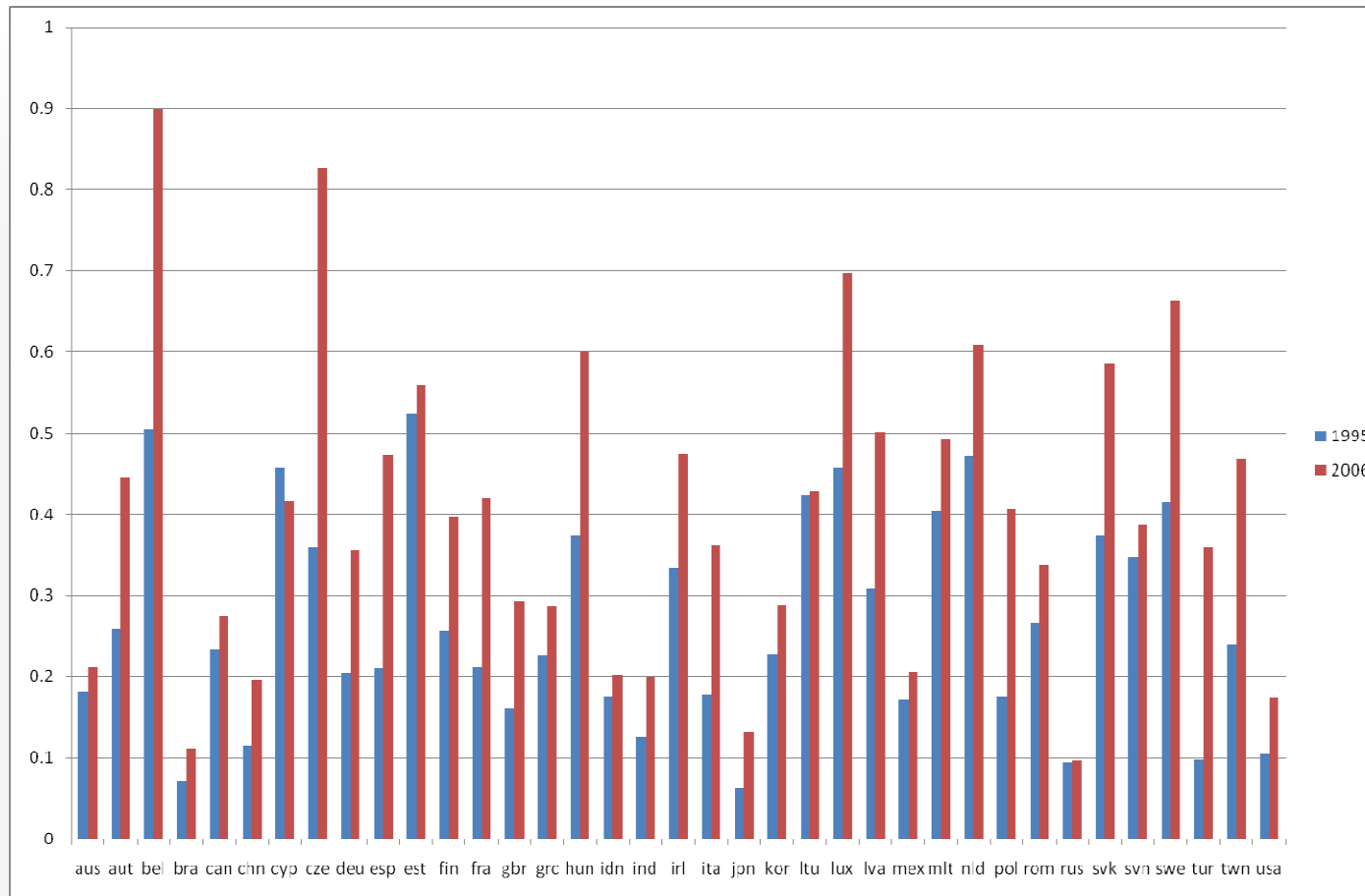
$$S_i^S = \frac{\sum_{j=1}^J O_{j \neq i}^S}{II_i}$$

- II – Intermediate inputs

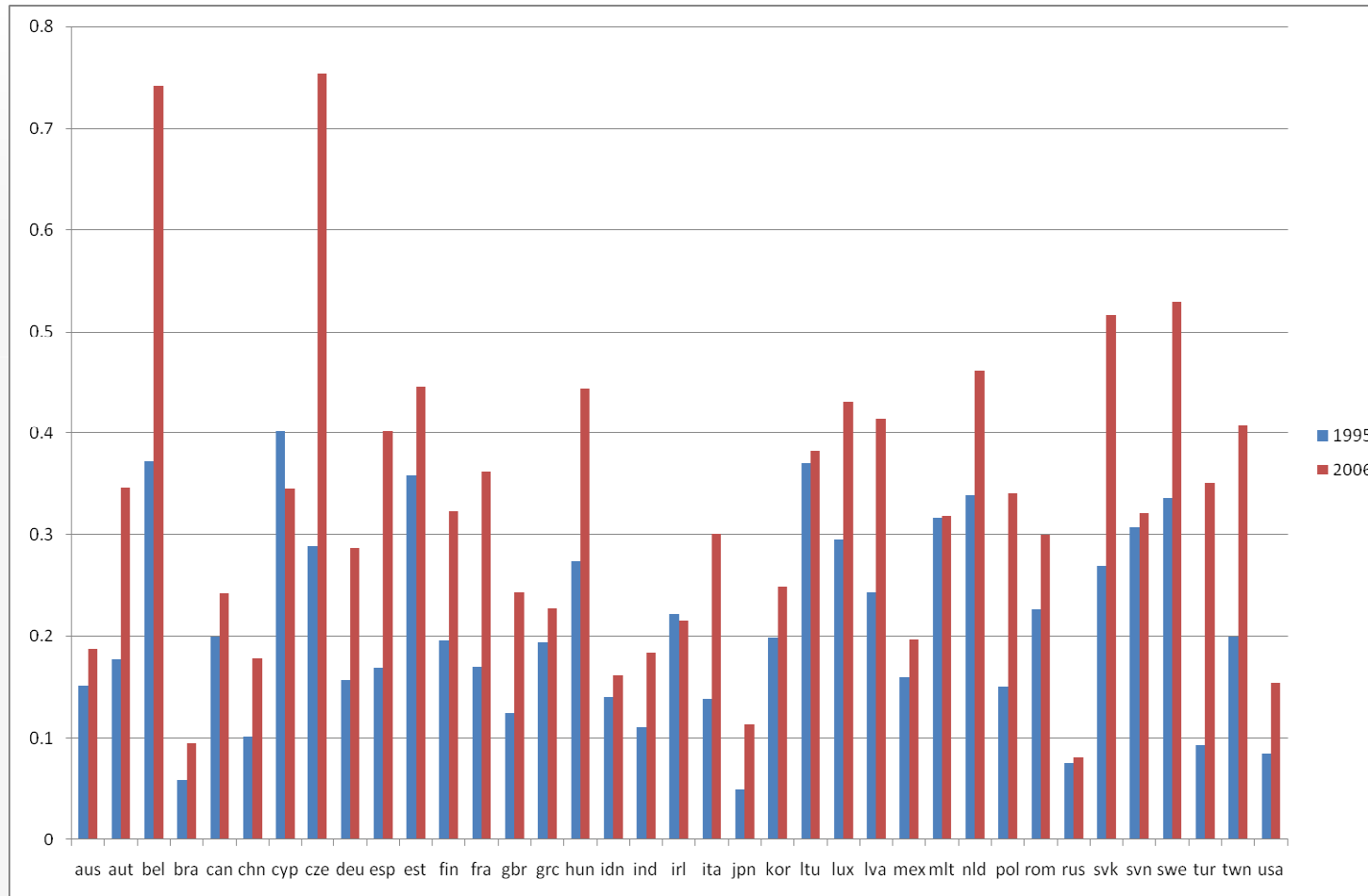
Intra-Industry Offshoring



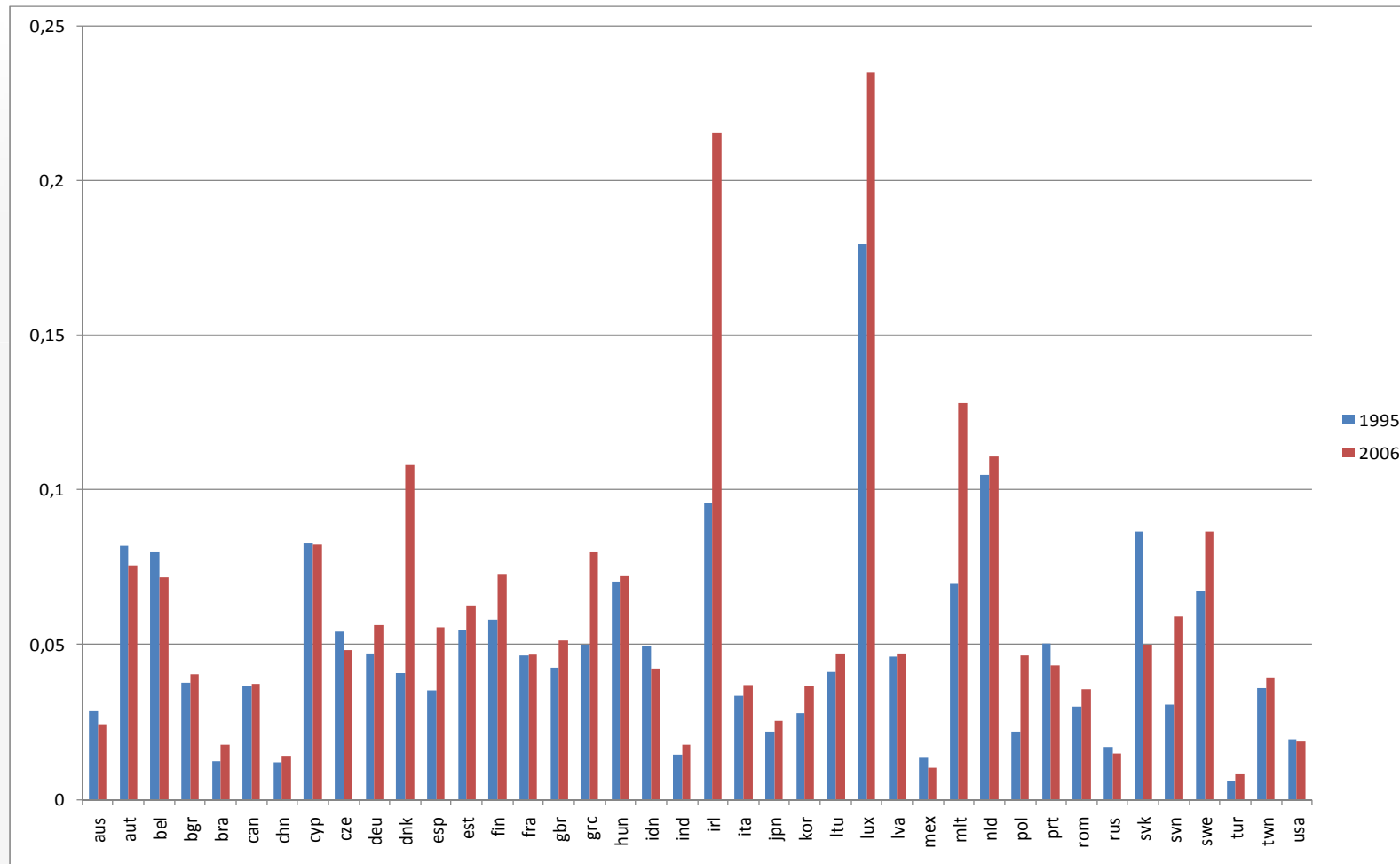
Inter-Industry Offshoring



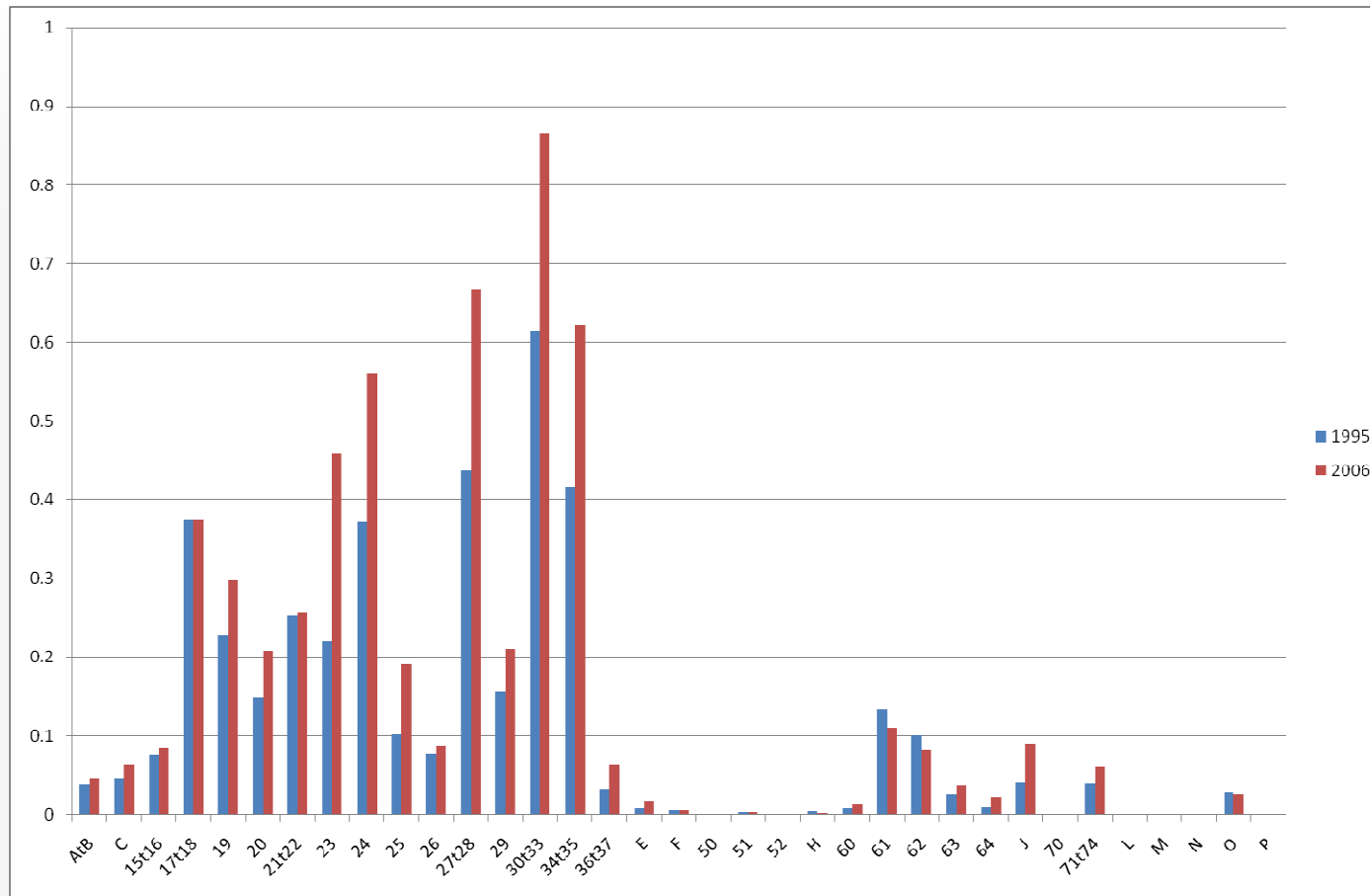
Inter-Industry Offshoring (Manuf.)



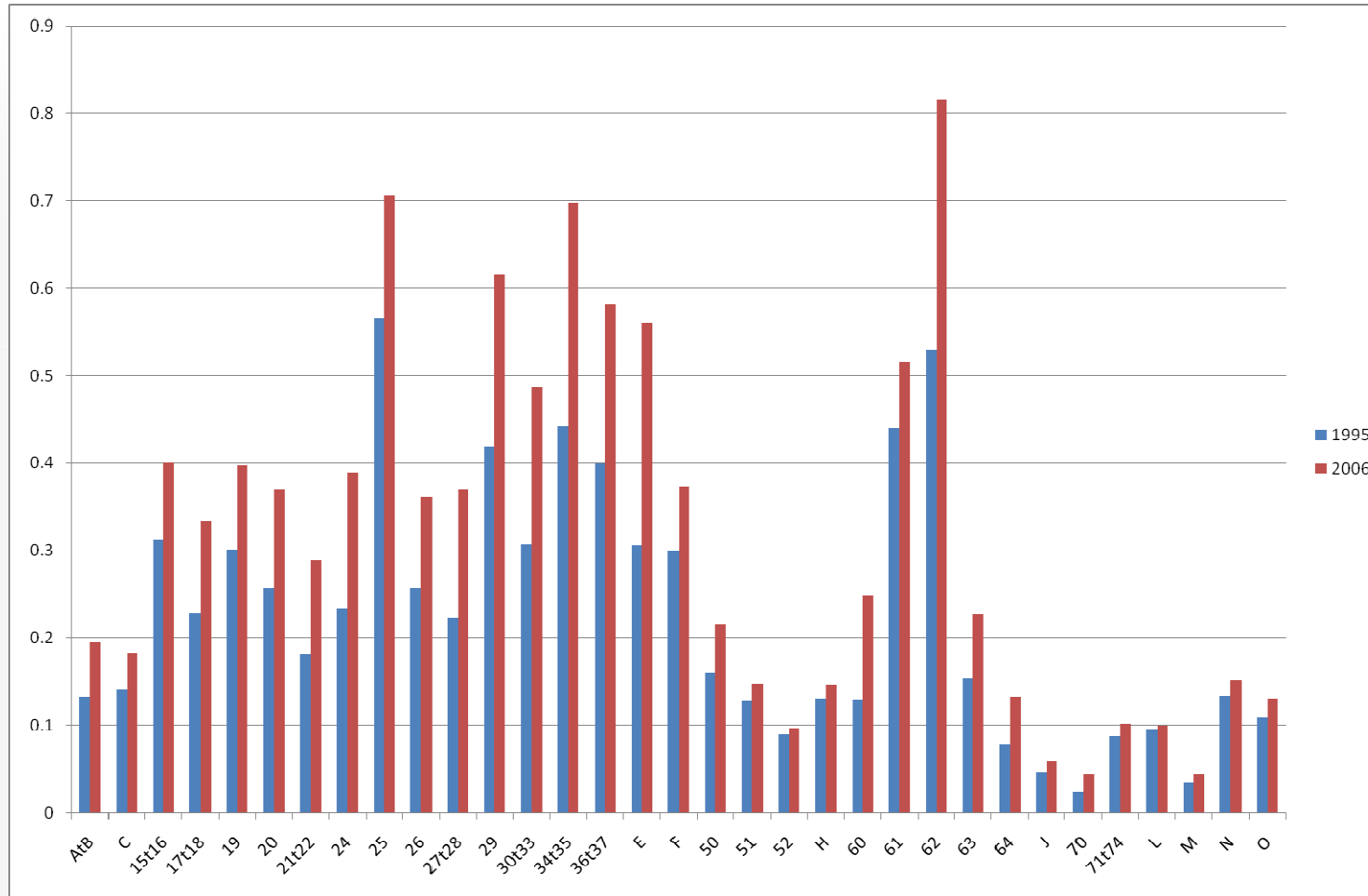
Inter-Industry Offshoring (Serv.)



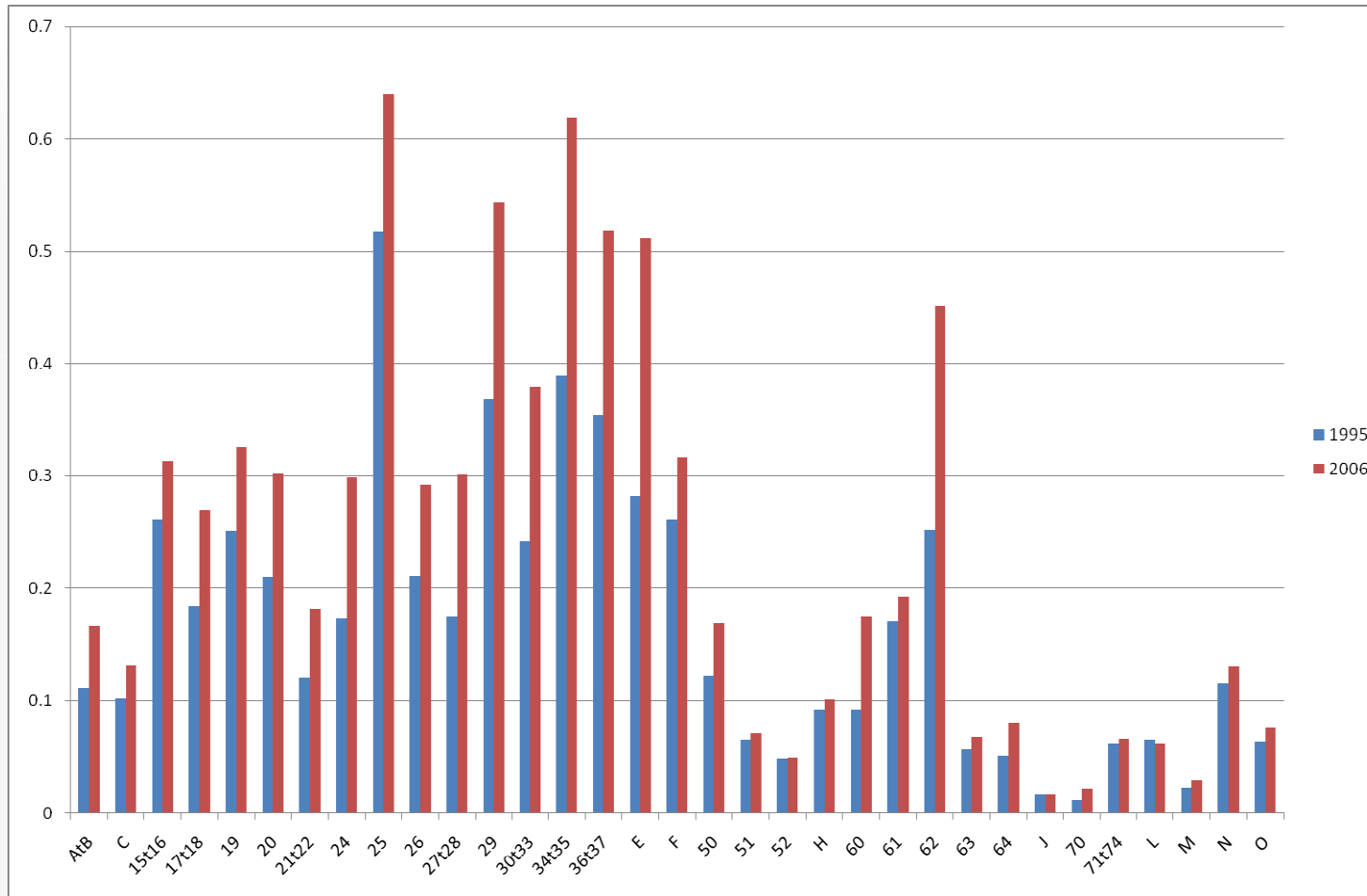
Intra-Industry Offshoring by Industry



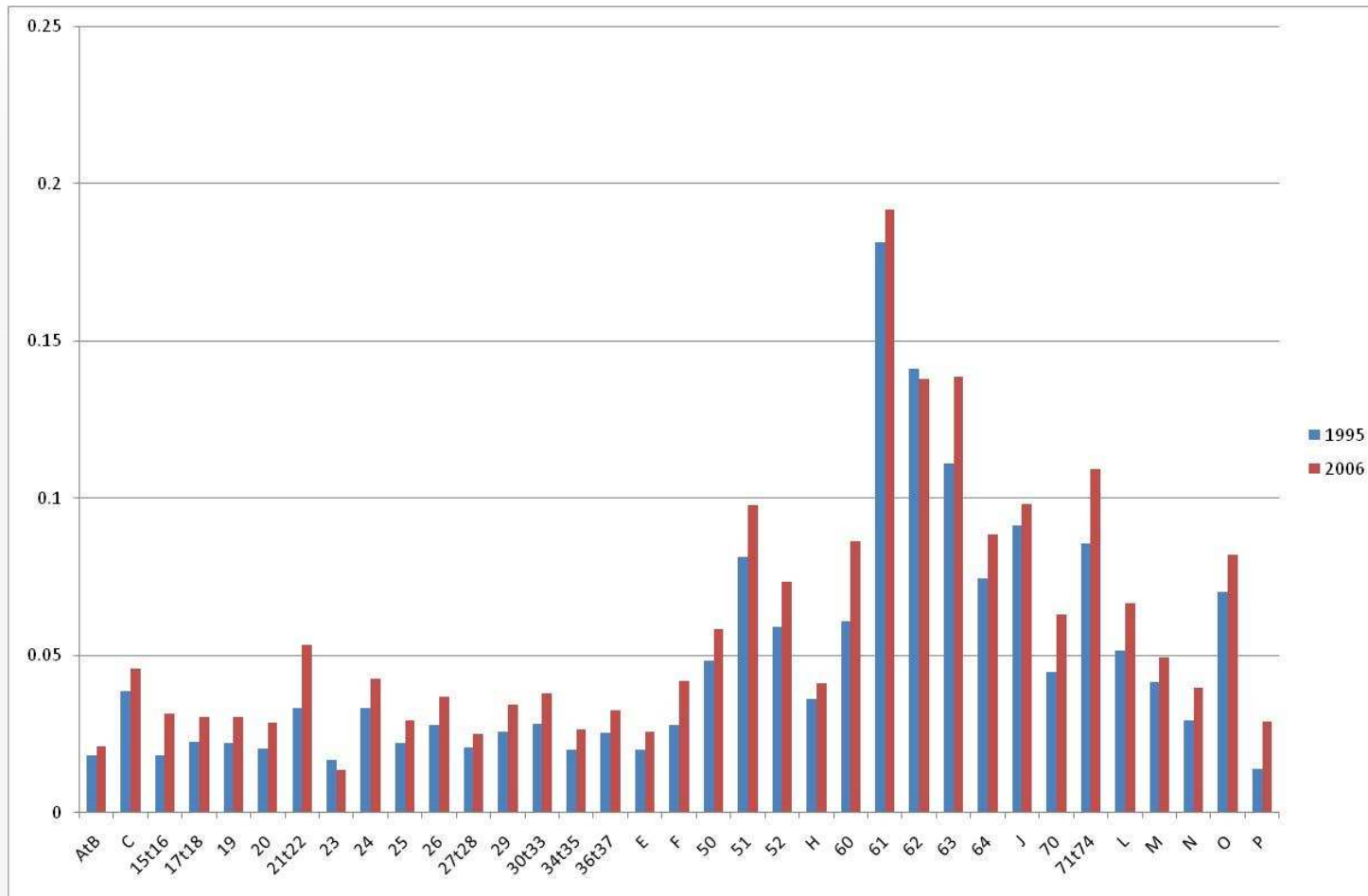
Inter-Industry Offshoring by Industry



Manuf. Offshoring by Industry



Service Offshoring by Industry



Offshoring and Relative Employment



- Estimate a system of demand equations for all variable factors (low, medium, high skilled labour, materials)

$$S_{ij} = \alpha_j + \sum_{s=1}^J \alpha_{is} \ln w_{is} + \sum_{k=1}^K \delta_{jk} \ln x_{ik} + \sum_{r=1}^R \delta_{jr} z_{ir}, \quad j = 1, \dots, S, \dots, J$$

S_{ij} - Share of factor j in industry i in total variable costs

w_{is} - Price of factor j in industry i

x_{ik} - Fixed inputs and outputs (capital stock and output)

z_{ir} - Structural variables that shift costs (offshoring variables and measure of skill-biased technological change)

Table 1: Offshoring and Relative Employment I

	All Industries			Manufacturing Industries			Service Industries		
	Low	Medium	High	Low	Medium	High	Low	Medium	High
ICT Share	-0.0124*** (0.0043)	-0.052*** (0.0097)	-0.0004 (0.0057)	-0.0095* (0.005)	-0.005 (0.012)	0.002 (0.005)	-0.011 (0.007)	-0.09*** (0.015)	-0.017* (0.01)
Narrow	-0.0048*** (0.001)	-0.027*** (0.0026)	-0.005*** (0.0015)	-0.005*** (0.001)	-0.038*** (0.002)	-0.005*** (0.001)	-0.0045 (0.003)	-0.008 (0.006)	-0.007* (0.004)
Broad	-0.003*** (0.0005)	-0.016*** (0.0012)	-0.004*** (0.0007)	-0.001** (0.0005)	-0.007*** (0.001)	-0.002*** (0.0005)	-0.005*** (0.001)	-0.03*** (0.002)	-0.007** (0.001)
R-squared	0.119	0.267	0.113	0.138	0.337	0.161	0.129	0.269	0.136

Table 1: Offshoring and Relative Employment II

	All Industries			Manufacturing Industries			Service Industries		
	Low-skill	Medium-skill	High-skill	Low-skill	Medium-skill	High-skill	Low-skill	Medium-skill	High-skill
ICT Share	-0.016*** (0.004)	-0.05*** (0.01)	0.0001 (0.005)	-0.01* (0.005)	-0.007 (0.01)	0.001 (0.005)	-0.019*** (0.007)	-0.1*** (0.02)	-0.018* (0.0094)
Narrow	-0.005*** (0.001)	-0.03*** (0.003)	-0.005*** (0.001)	-0.005*** (0.001)	-0.04*** (0.002)	-0.006*** (0.001)	-0.0035 (0.003)	-0.0097 (0.006)	-0.002 (0.004)
Broad (Man.)	-0.002*** (0.0006)	-0.01*** (0.001)	-0.003*** (0.0008)	-0.001* (0.0005)	-0.006*** (0.001)	-0.002*** (0.0006)	-0.012*** (0.002)	-0.052*** (0.004)	-0.016*** (0.003)
Broad (Serv.)	0.002 (0.004)	0.01 (0.009)	-0.01** (0.005)	-0.01 (0.01)	-0.08*** (0.02)	-0.04*** (0.01)	-0.003 (0.005)	0.009 (0.01)	-0.02*** (0.008)
R-squared	0.12	0.28	0.12	0.14	0.34	0.16	0.13	0.31	0.15

Table 3: Heterogeneity Across Regions

	Intra-Ind. Offshoring			Inter-Ind. Offshoring		
	Low-Skill	Medium-Skill	High-Skill	Low-Skill	Medium-Skill	High-Skill
EU15	-0.0113*** (0.00285)	-0.0154*** (0.00535)	-0.00694** (0.00328)	-0.0034*** (0.00121)	-0.0120*** (0.00227)	-0.00326** (0.00139)
EU12	-0.0036*** (0.00135)	-0.0371*** (0.00407)	-0.00424* (0.00228)	-0.0032*** (0.000752)	-0.0299*** (0.00227)	-0.0057*** (0.00127)
Asia	-0.00555 (0.00482)	-0.00189 (0.00875)	-0.00173 (0.00734)	0.00194 (0.00222)	-0.00733* (0.00402)	-0.00256 (0.00338)
Americas	0.00368 (0.00351)	-0.0134 (0.0110)	-0.000405 (0.00909)	-0.000724 (0.00105)	0.000439 (0.00329)	0.00392 (0.00274)
Others	-0.103*** (0.0216)	-0.0711*** (0.0164)	-0.00922 (0.0120)	0.0167*** (0.00438)	0.0150*** (0.00332)	0.00639*** (0.00242)

Table 4: Results by Offshoring Destination

	All Industries			Manufacturing Industries			Service Industries		
	Low-skill	Medium-skill	High-skill	Low-skill	Medium-skill	High-skill	Low-skill	Medium-skill	High-skill
Intra-Ind.									
EU15	-0.0101*** (0.00275)	-0.0151** (0.00597)	-0.00124 (0.00357)	-0.0102*** (0.00257)	-0.0142** (0.00584)	0.00158 (0.00269)	-0.00502 (0.00649)	-0.0130 (0.0134)	-0.00417 (0.00886)
EU12	0.00732 (0.00906)	-0.0771*** (0.0197)	-0.00641 (0.0118)	0.00685 (0.00723)	-0.0684*** (0.0164)	-0.00897 (0.00758)	-0.0115 (0.0486)	-0.0217 (0.100)	0.0312 (0.0663)
Asia	-0.00963 (0.00825)	0.00260 (0.0179)	-0.00262 (0.0107)	-0.00702 (0.00684)	-0.0108 (0.0155)	-0.00361 (0.00717)	-0.0233 (0.0373)	0.0629 (0.0771)	0.00489 (0.0510)
Americas	-0.00351 (0.00626)	-0.0321** (0.0136)	-0.0198** (0.00812)	-0.00437 (0.00648)	-0.0488*** (0.0147)	-0.0146** (0.00679)	-0.00194 (0.0121)	-0.0245 (0.0250)	-0.0318* (0.0166)
Other	-0.0187*** (0.00564)	-0.111*** (0.0122)	-0.0181** (0.00731)	-0.0228*** (0.00523)	-0.150*** (0.0119)	-0.0237*** (0.00547)	-0.0218 (0.0135)	-0.00574 (0.0279)	-0.00308 (0.0185)
Inter-Ind.									
EU15	-0.00681*** (0.00120)	-0.0378*** (0.00260)	-0.00796*** (0.00155)	-0.00673*** (0.00149)	-0.0482*** (0.00339)	-0.00833*** (0.00157)	-0.00948*** (0.00201)	-0.0247*** (0.00415)	-0.00931*** (0.00274)
EU12	-0.0143*** (0.00290)	-0.0339*** (0.00629)	-0.00875** (0.00376)	-0.0143*** (0.00269)	-0.0380*** (0.00611)	-0.00527* (0.00282)	-0.0132 (0.00839)	-0.0377** (0.0173)	-0.00834 (0.0115)
Asia	-0.0130** (0.00560)	-0.0371*** (0.0122)	-0.0163** (0.00727)	-0.0119** (0.00508)	-0.0254** (0.0115)	-0.00575 (0.00532)	-0.0200 (0.0134)	-0.0760*** (0.0277)	-0.0399** (0.0183)
Americas	-0.00400* (0.00220)	-0.0322*** (0.00476)	-0.00596** (0.00285)	-0.00336 (0.00219)	-0.0255*** (0.00497)	-0.00631*** (0.00230)	-0.00578 (0.00448)	-0.0297*** (0.00924)	-0.00420 (0.00611)
Other	0.00220* (0.00117)	0.00293 (0.00253)	-0.000237 (0.00151)	0.00182* (0.000980)	0.00768*** (0.00223)	-0.000428 (0.00103)	0.0103** (0.00480)	-0.0335*** (0.00991)	-0.00125 (0.00655)

Standard errors in parentheses
 *** p<0.01, ** p<0.05, * p<0.1

Conclusions and Next Steps

- Offshoring (both intra and inter-industry) has impacted negatively on medium-skilled employment to a greater extent than it has on other skill-types
- Some evidence that service offshoring impacts upon high-skilled (and medium-skilled) to a greater extent than manufacturing offshoring and compared to other skill-types
- Relative Wages
 - Additional data requirements (TFP levels and growth rates, import price index,...)
- Constant price tables
- Use employment shares rather than cost shares
- Offshoring by destination and source country
 - E.g. distinguish between rich versus poor, technologically advanced versus backward, high versus low wage,...