DIW Berlin

Deutsches Institut
für Wirtschaftsforschung

The effect of globalization on aggregate labour demand in EU countries

Christian Dreger, Stefan Kooths

Economic integration and labour demand

- Due to higher integration labour markets need to be more flexible to ensure smooth transmission of shocks
- Raise in flexibility leads to shift in labour demand: rise in the output and real wage elasticities indicate stronger response to economic conditions
- Paper explores instability of aggregated labour demand

Principal findings

- Standard labour demand supported for almost all countries
  - Cointegration between employment, output and real wage
  - Long run vector in line with theory and very similar across countries
  - ECMs robust to a wide range of specification tests
- Low skilled labour has been crowded out in high wage countries, but globalization did not affect long run parameters
- Presumption that aggregated labour demand has become more flexible due to globalization is not supported by the data

Specification of labour demand

- Labour demand is short side of the market, determines actual employment
- In a profit maximization framework, optimal labour demand depends on output and real wage
- Higher demand for goods will raise, higher real wages lower labour input
- Due to imperfections, adjustment only partially
- ECM specification of labour demand

Globalization and labour demand elasticities

- Economic integration leads to shifts in labour demand elasticities in absolute value
  - Scale effect due to increased competition
  - Substitution effect due to expanded production possibilities
- Trade integration may have affected long run elasticities of employment to output and real wage

Database

- AMECO (EU commission): Annual data, EU14 countries, 1973-2004 period, Greece and new member states excluded
  - Employment: number of persons employed
  - Output: GDP at 1995 prices
  - Real wages: nominal compensation per employee, deflated by GDP deflator

- Globalization measured by openness to foreign trade
  - share of foreign trade, i.e. ratio of exports plus imports to GDP, variables in real terms

Empirical strategy

- Variables nonstationary, cointegration analysis required
- Order of integration by ADF
- Trace statistic to detect cointegration, long run relation not uniquely identified
- One step estimation of ECMs
  - reveals cointegration parameters
  - tests for misspecification
- Impact of trade integration on recursive long run parameters

ADF: levels & differences

	Employment	Output	Real wage
Austria	-2.95 | -3.23	-2.20 | -3.76	-1.72 | -5.25
Belgium	-1.19 | -4.13	-3.76 | -4.15	-2.65 | -4.04
Denmark	-3.13 | -3.45	-4.22 | -3.42	-1.73 | -4.39
Finland	-3.69 | -3.37	-5.50 | -5.98	-3.16 | -4.57
France	-2.49 | -2.91	-1.17 | -4.46	-1.19 | -4.09
Germany	-2.20 | -3.12	-2.57 | -3.91	-0.87 | -3.57
Ireland	-1.20 | -2.11	-1.70 | -3.58	-4.64 | -3.43
Italy	-2.51 | -3.19	-1.67 | -4.95	-1.91 | -3.83
Luxembourg	-1.61 | -2.26	-3.75 | -3.35	-2.08 | -7.08
Netherlands	-1.67 | -5.02	-1.89 | -3.40	-0.04 | -3.71
Portugal	-2.51 | -3.82	-0.77 | -2.45	-0.77 | -2.00
Spain	-2.09 | -2.16	-1.80 | -5.19	-0.95 | -3.88
Sweden	-2.99 | -2.57	-3.43 | -5.74	-4.51 | -6.44
UK	-3.71 | -4.24	-2.96 | -3.90	-1.99 | -4.16

Trace statistic

	Lag	1973-2004	1973-1990	1973-1995	1973-2000
Austria	2	35.79 (0.009)	39.12 (0.003)	33.62 (0.017)	31.11 (0.035)
Belgium	1	28.69 (0.067)	30.75 (0.039)	33.45 (0.018)	28.41 (0.072)
Denmark	3	30.65 (0.040)	48.15 (0.000)	42.54 (0.001)	33.02 (0.021)
Finland	2	33.04 (0.020)	20.56 (0.386)	54.16 (0.000)	33.75 (0.017)
France	1	59.21 (0.000)	56.63 (0.000)	58.80 (0.000)	64.44 (0.000)
Germany	1	35.21 (0.011)	33.34 (0.019)	36.95 (0.006)	34.82 (0.012)
Ireland	2	31.81 (0.029)	36.77 (0.007)	32.83 (0.022)	29.23 (0.058)
Italy	1	53.91 (0.000)	37.54 (0.005)	34.90 (0.012)	46.17 (0.000)
Luxembourg	1	58.79 (0.000)	41.55 (0.001)	43.79 (0.001)	52.02 (0.000)
Netherlands	3	33.44 (0.018)	45.34 (0.000)	31.57 (0.031)	30.47 (0.042)
Portugal	2	47.38 (0.000)	54.37 (0.000)	64.96 (0.000)	53.50 (0.000)
Spain	1	32.31 (0.025)	37.76 (0.005)	32.76 (0.022)	32.05 (0.027)
Sweden	4	41.76 (0.001)	44.29 (0.001)	52.66 (0.000)	60.75 (0.000)
UK	1	41.69 (0.001)	42.04 (0.001)	38.43 (0.004)	44.82 (0.001)

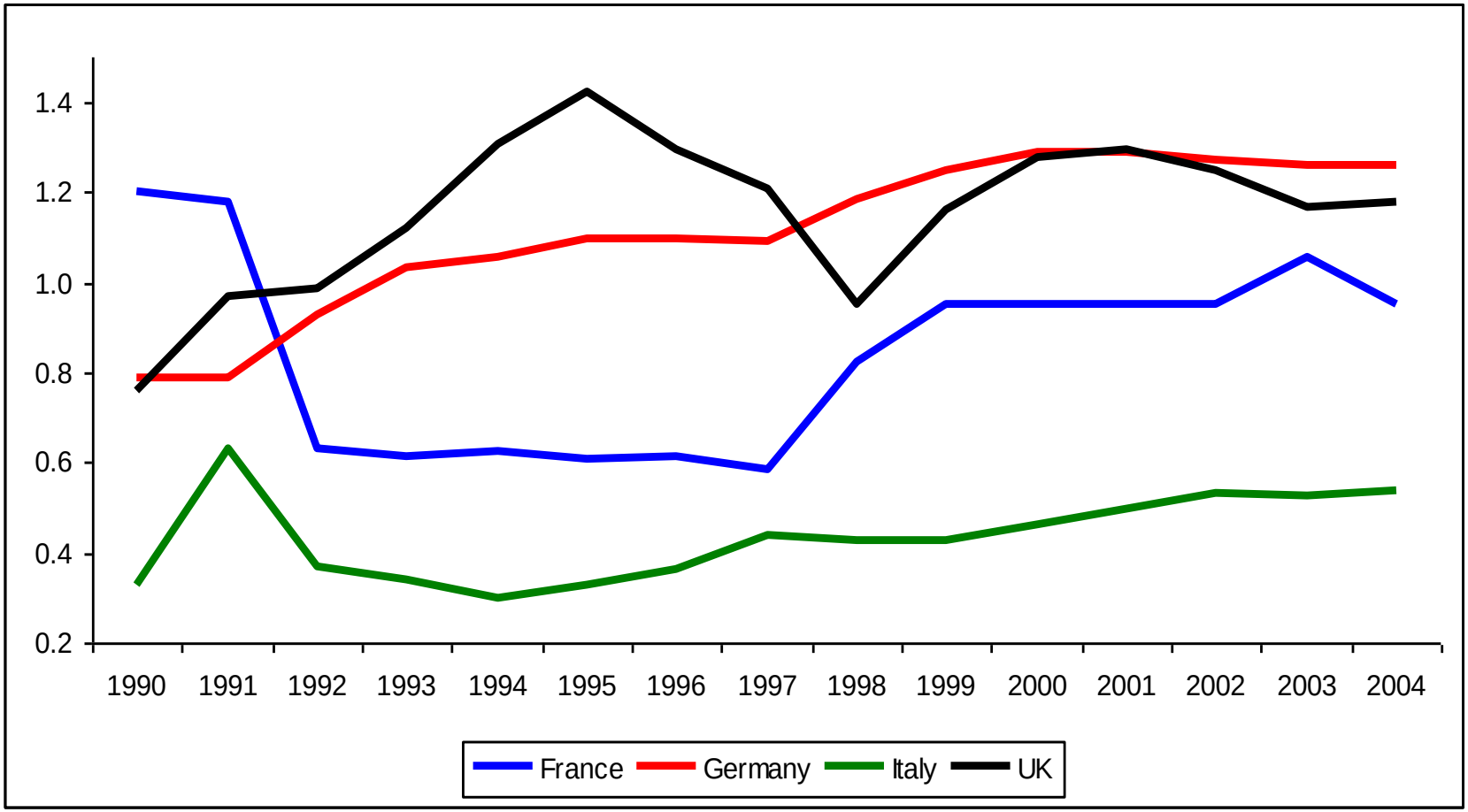
ECMs for EU countries (I)

	Constant	L(-1)	Y(-1)	W(-1)	Δ(Y)	Δ(Y(-j))	Δ(W)	Δ(W(-j))	Δ(L(-j))
Austria	2.93 (0.57)	-0.42 (0.08)	0.17 (0.04)	-0.09 (0.03)	0.18 (0.03)			0.07 (0.03)	0.43 (0.10)
Belgium	1.52 (0.37)	-0.23 (0.06)	0.18 (0.04)	-0.17 (0.03)	0.26 (0.04)	0.04 (0.02)	-0.25 (0.04)		0.29 (0.11)
Denmark	2.11 (0.70)	-0.30 (0.10)	0.15 (0.05)	-0.14 (0.07)	0.36 (0.07)		-0.28 (0.07)		0.46 (0.12)
Finland	2.39 (0.41)	-0.33 (0.06)	0.31 (0.06)	-0.39 (0.07)	0.32 (0.04)		-0.44 (0.05)		0.17 (0.11)
France	1.01 (0.05)	-0.15 (0.05)	0.13 (0.04)	-0.16 (0.04)	0.39 (0.05)		-0.35 (0.08)		0.43 (0.11)
Germany	0.94 (0.29)	-0.23 (0.07)	0.29 (0.10)	-0.20 (0.07)	0.49 (0.08)		-0.33 (0.10)		
Ireland	2.59 (0.89)	-0.38 (0.12)	0.25 (0.08)	-0.28 (0.10)	0.31 (0.09)		-0.33 (0.11)		0.45 (0.14)
Italy	2.35 (0.65)	-0.28 (0.07)	0.15 (0.03)	-0.18 (0.04)			-0.12 (0.04)		
Luxembourg	1.12 (0.21)	-0.19 (0.04)	0.08 (0.01)	-0.10 (0.02)	0.06 (0.02)				
Netherlands	1.76 (0.43)	-0.26 (0.07)	0.23 (0.08)	-0.23 (0.07)	0.27 (0.08)				0.63 (0.10)
Portugal	4.33 (1.37)	-0.54 (0.16)	0.12 (0.09)	-0.19 (0.11)	0.13 (0.09)		-0.24 (0.12)		0.62 (0.22)
Spain	2.77 (0.63)	-0.43 (0.08)	0.40 (0.08)	-0.43 (0.08)	0.51 (0.11)		-0.48 (0.10)		
Sweden	1.93 (0.50)	-0.25 (0.06)	0.08 (0.04)	-0.09 (0.05)	0.32 (0.07)		-0.30 (0.08)	0.06 (0.03)	0.76 (0.12)
UK	1.37 (0.47)	-0.23 (0.06)	0.27 (0.06)	-0.29 (0.06)	0.49 (0.07)	0.04 (0.02)	-0.46 (0.07)		0.30 (0.11)

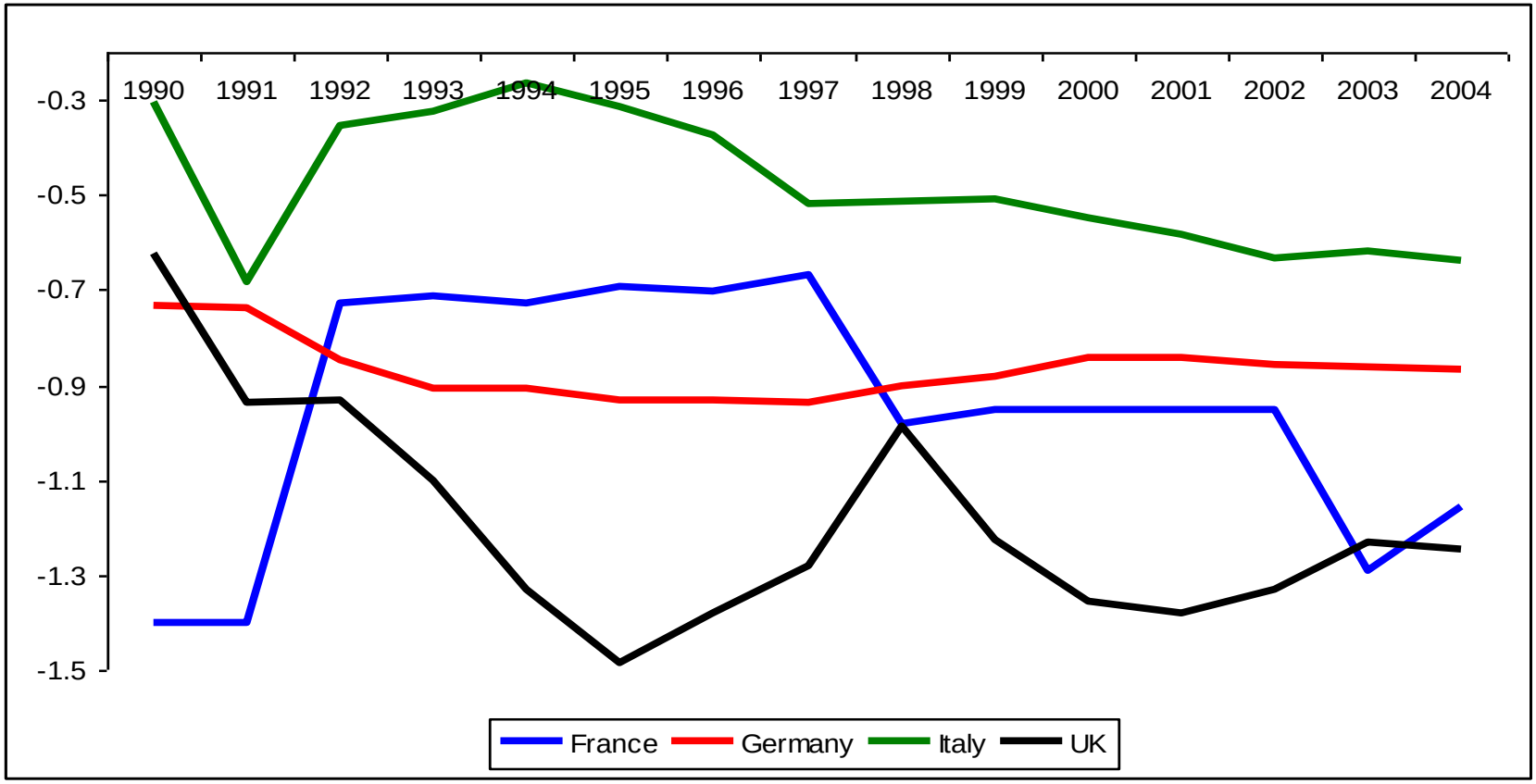
ECMs for EU countries (II)

	R2	LM(1)	LM(2)	ARCH(1)	ARCH(2)	JB	RESET(1)
Austria	0.80	0.02 (0.89)	0.89 (0.43)	0.12 (0.74)	1.37 (0.27)	0.90 (0.64)	0.73 (0.40)
Belgium	0.82	0.02 (0.88)	0.06 (0.94)	0.64 (0.43)	0.61 (0.55)	1.05 (0.55)	1.44 (0.24)
Denmark	0.76	0.53 (0.48)	0.53 (0.48)	0.47 (0.63)	0.00 (0.98)	0.80 (0.67)	2.51 (0.13)
Finland	0.93	2.73 (0.11)	1.40 (0.27)	0.01 (0.93)	0.38 (0.69)	0.79 (0.67)	1.23 (0.28)
France	0.80	3.29 (0.08)	2.36 (0.12)	0.07 (0.25)	0.07 (0.79)	0.87 (0.65)	0.80 (0.38)
Germany	0.98	2.31 (0.14)	1.19 (0.32)	0.41 (0.53)	0.89 (0.42)	1.66 (0.44)	7.47 (0.01)
Ireland	0.74	0.08 (0.78)	0.05 (0.95)	0.46 (0.50)	0.27 (0.77)	0.29 (0.87)	0.11 (0.74)
Italy	0.61	0.32 (0.58)	1.28 (0.30)	1.84 (0.19)	0.75 (0.48)	0.86 (0.65)	5.46 (0.29)
Luxembourg	0.73	2.27 (0.14)	1.16 (0.33)	1.97 (0.17)	5.20 (0.02)	1.22 (0.54)	1.13 (0.30)
Netherlands	0.80	0.02 (0.88)	0.03 (0.97)	0.20 (0.66)	0.41 (0.67)	0.01 (0.99)	7.25 (0.02)
Portugal	0.30	0.63 (0.44)	1.38 (0.28)	2.95 (0.10)	1.50 (0.24)	0.13 (0.94)	0.40 (0.54)
Spain	0.84	2.81 (0.11)	1.36 (0.28)	0.02 (0.90)	0.06 (0.94)	4.83 (0.09)	1.73 (0.20)
Sweden	0.74	0.00 (0.98)	2.35 (0.12)	0.81 (0.38)	1.52 (0.24)	1.37 (0.50)	5.77 (0.03)
UK	0.85	0.31 (0.58)	0.58 (0.57)	0.04 (0.84)	0.12 (0.88)	0.52 (0.77)	0.04 (0.83)

Output elasticity of labour demand



Real wage elasticity of labour demand



Impact on trade openness on labour demand elasticities

	Output		Real wage	
	Levels	FD	Levels	FD
Constant	0.89 (0.06)	0.68 (0.01)	-0.90 (0.08)	-0.69 (0.02)
OP(-1)	-0.23 (0.07)		0.23 (0.09)	
ΔOP		0.35 (0.27)		-0.39 (0.34)
R2	0.83	0.82	0.79	0.79

Conclusions

- Standard labour demand equations confirmed for almost all EU countries
- Elasticities often in line with Cobb-Douglas production technology
- Globalization did not lead to an increase in elasticities so far
- To relieve smooth adjustment to shocks, policies should be directed towards more deregulation of labour markets