Globalisation and Labour Productivity in OECD Economies

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Scheme of Presentation

- Objectives of The Study
- Some Stylized Facts on OECD Economy
- Patterns of Labour Productivity
- Determinants of Labour Productivity
- Methodology and Data Sources
- Empirical Analysis
- Conclusion and Policy Implications

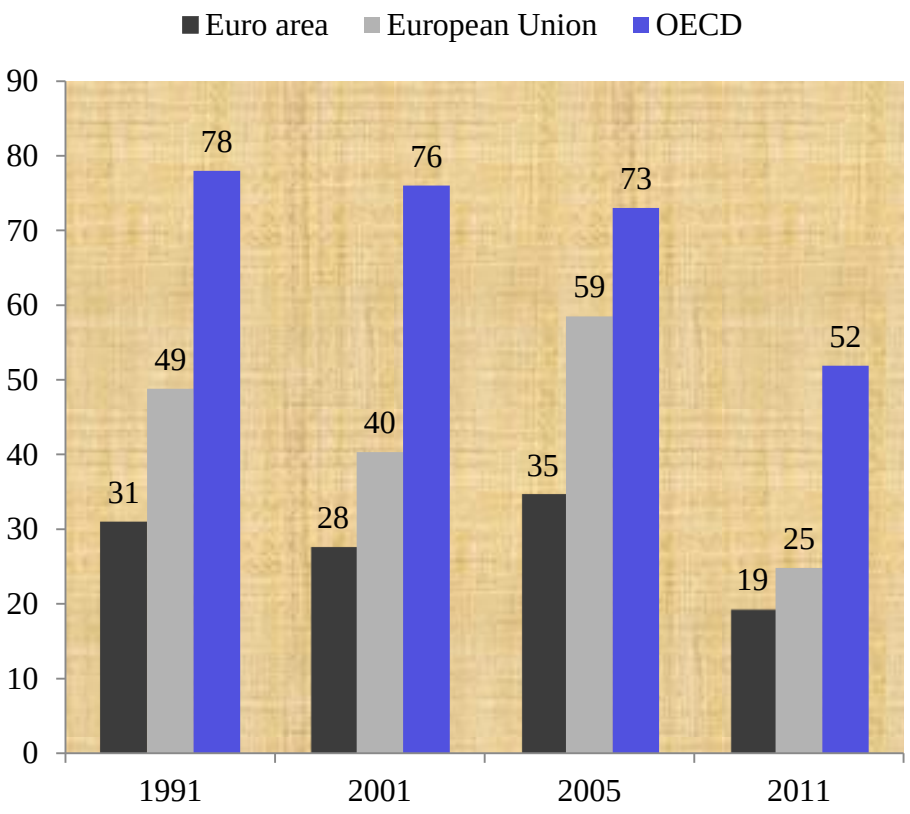
OBJECTIVES OF STUDY

1. **To examine the patterns of labour productivity**

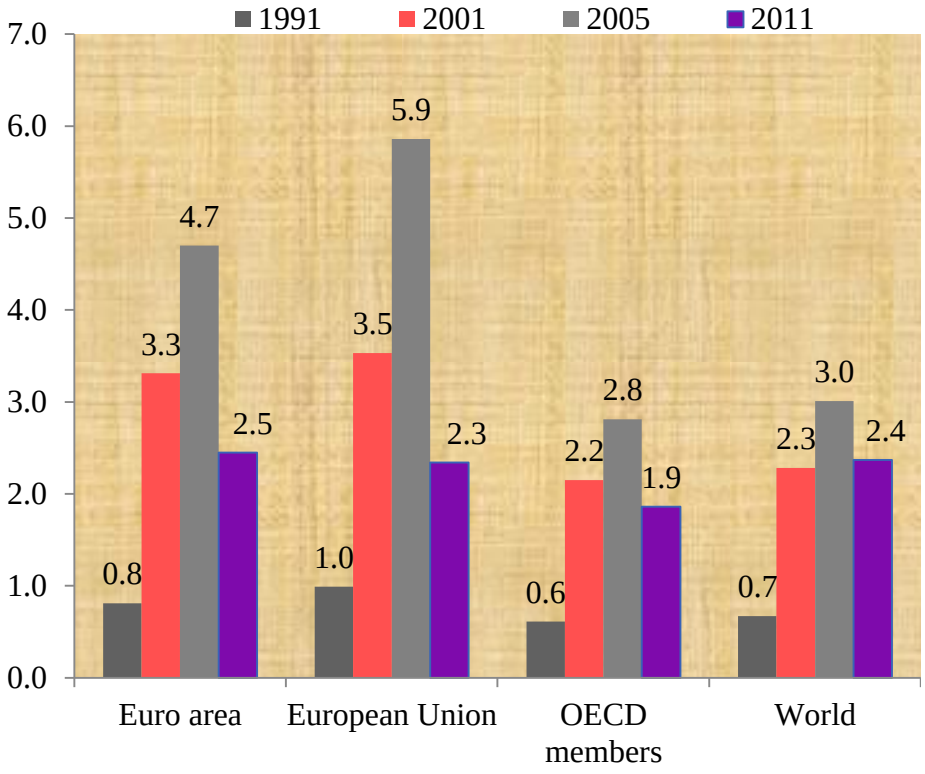
2. **To evaluate the impact of globalisation on labour productivity**

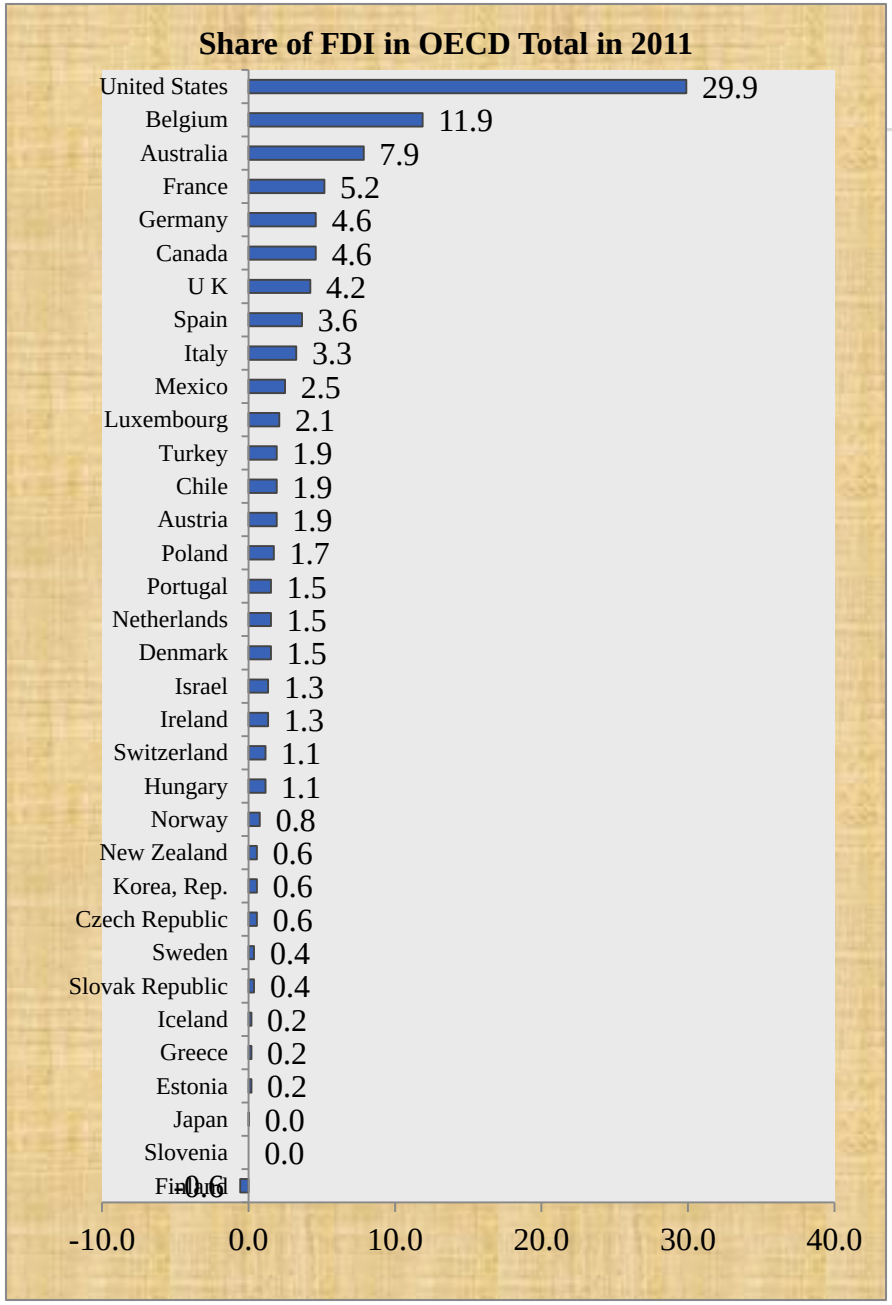
SOME STYLISED FACTOS ON OECD ECONOMY

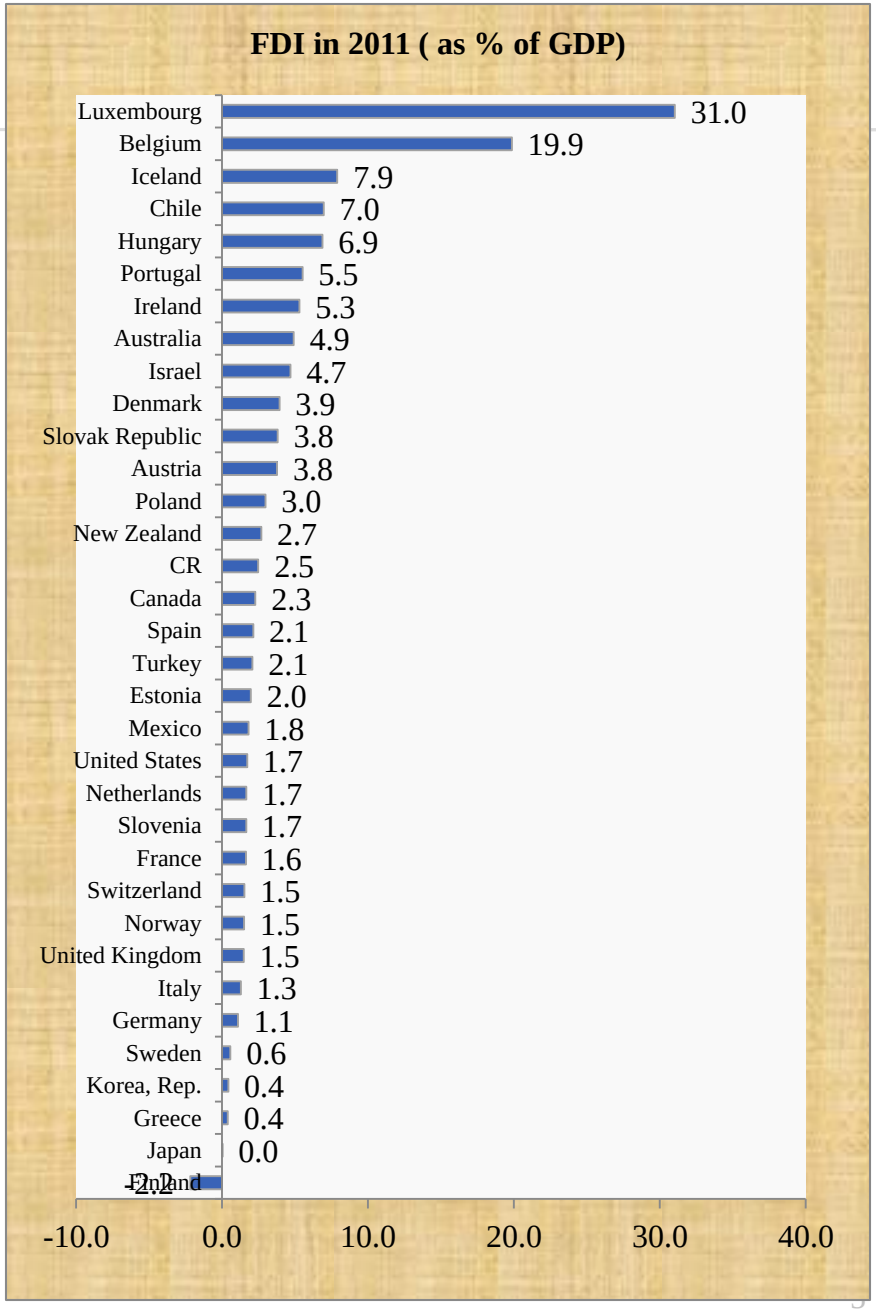
Distribution of FDI inflows (in %)



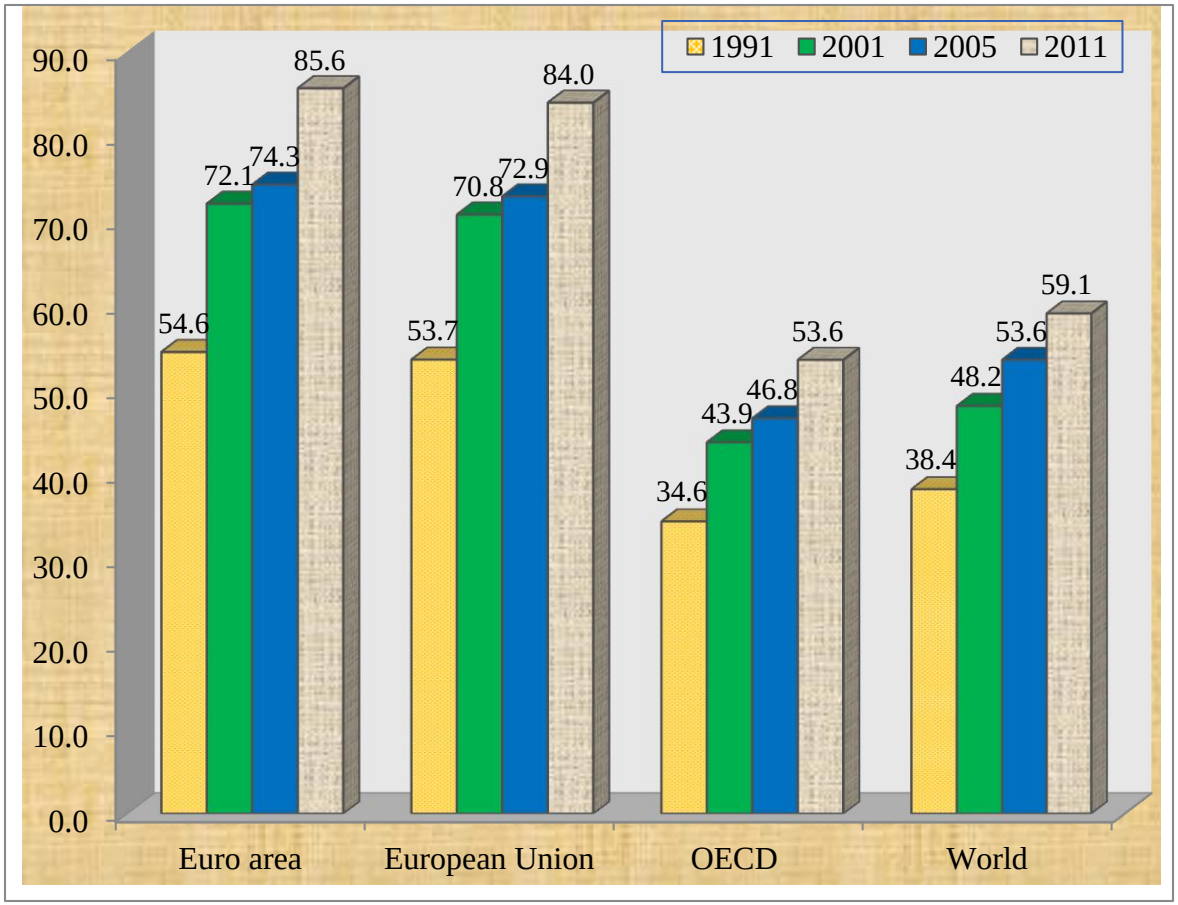
FDI net Inflows in % of GDP

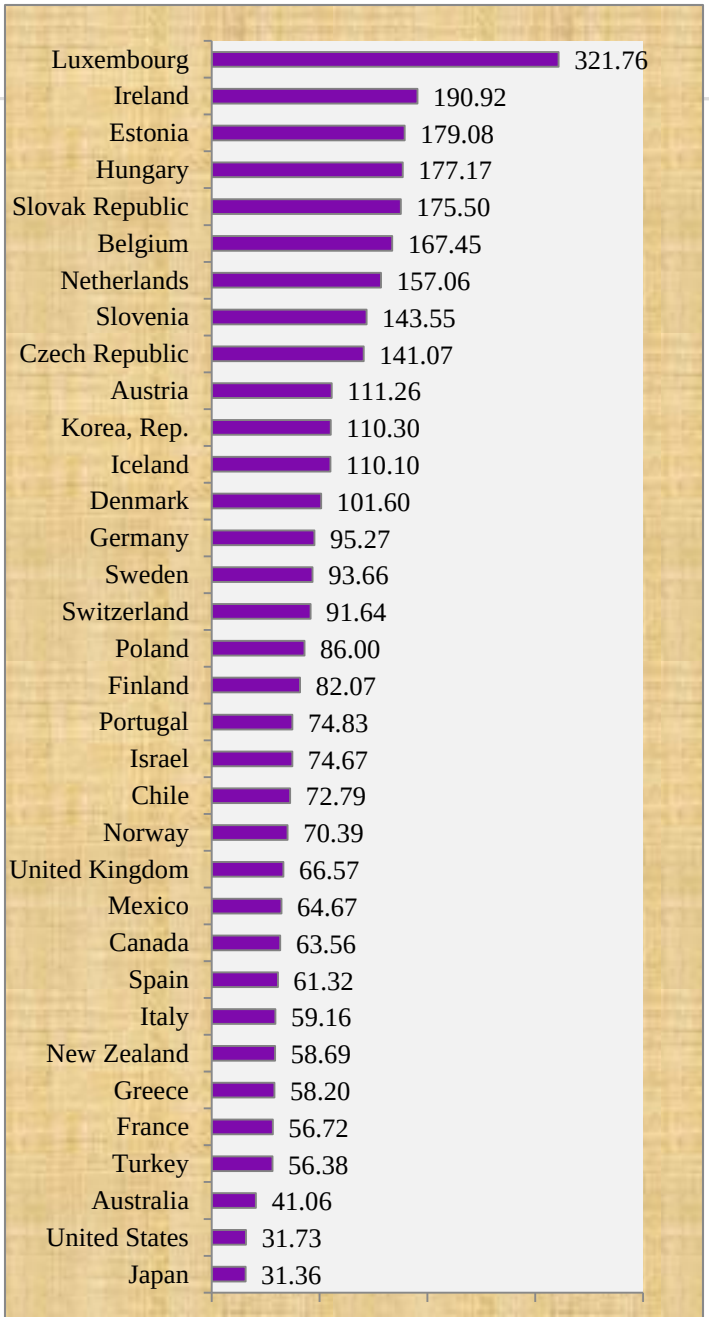



Share of FDI in OECD Total in 2011
United States 29.9
Belgium 11.9
Australia 7.9
France 5.2
Germany 4.6
Canada 4.6
U K 4.2
Spain 3.6
Italy 3.3
Mexico 2.5
Luxembourg 2.1
Turkey 1.9
Chile 1.9
Austria 1.9
Poland 1.7
Portugal 1.5
Netherlands 1.5
Denmark 1.5
Israel 1.3
Ireland 1.3
Switzerland 1.1
Hungary 1.1
Norway 0.8
New Zealand 0.6
Korea, Rep. 0.6
Czech Republic 0.6
Sweden 0.4
Slovak Republic 0.4
Iceland 0.2
Greece 0.2
Estonia 0.2
Japan 0.0
Slovenia 0.0
Finland -0.6
-10.0 0.0 10.0 20.0 30.0 40.0


FDI in 2011 (as % of GDP)
Luxembourg 31.0
Belgium 19.9
Iceland 7.9
Chile 7.0
Hungary 6.9
Portugal 5.5
Ireland 5.3
Australia 4.9
Israel 4.7
Denmark 3.9
Slovak Republic 3.8
Austria 3.8
Poland 3.0
New Zealand 2.7
CR 2.5
Canada 2.3
Spain 2.1
Turkey 2.1
Estonia 2.0
Mexico 1.8
United States 1.7
Netherlands 1.7
Slovenia 1.7
France 1.6
Switzerland 1.5
Norway 1.5
United Kingdom 1.5
Italy 1.3
Germany 1.1
Sweden 0.6
Korea, Rep. 0.4
Greece 0.4
Japan 0.0
Finland -2.2
-10.0 0.0 10.0 20.0 30.0 40.0

Trade in percentage of GDP in OECD and Global Economy





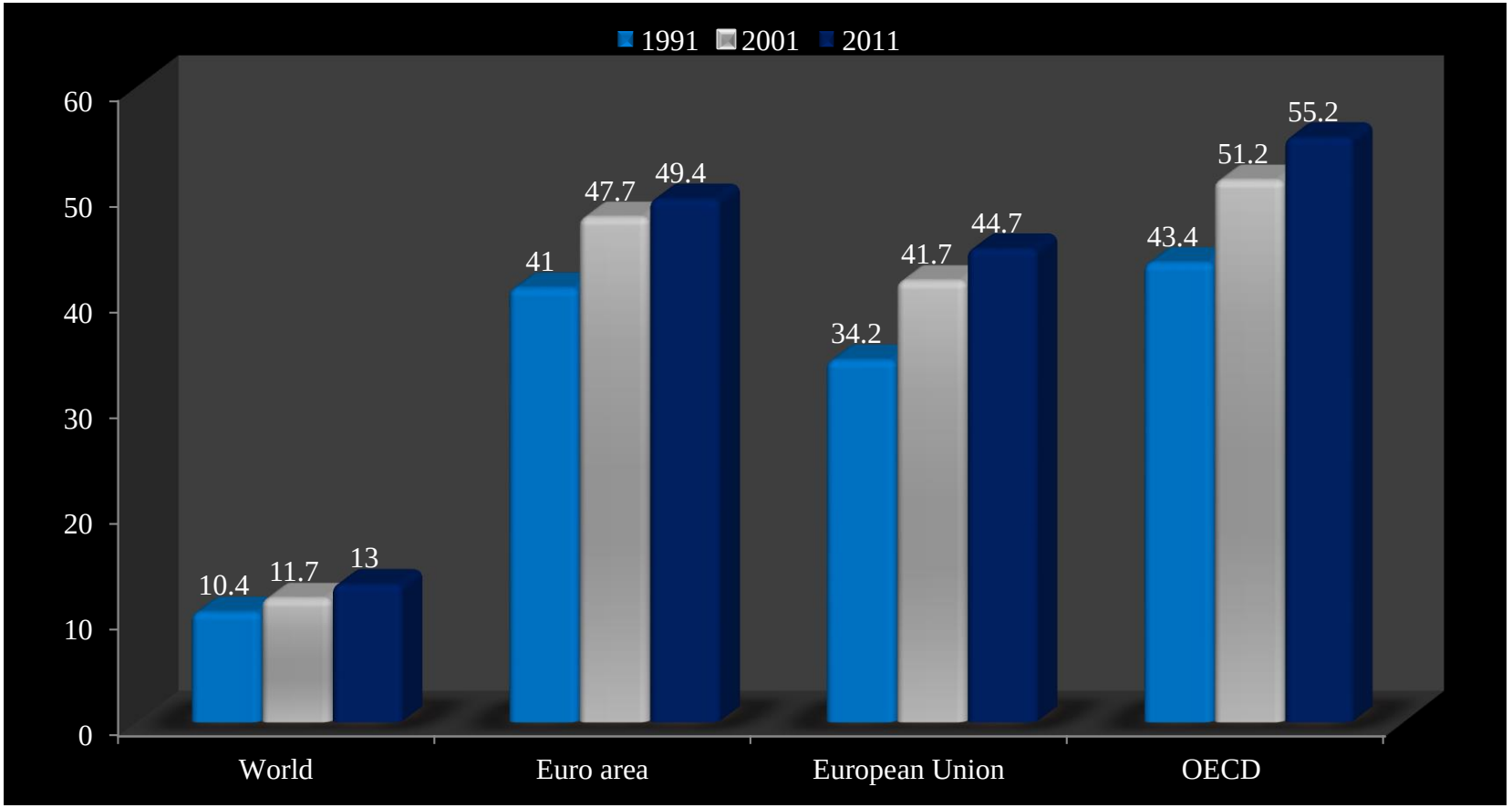
Economic Structure

	Employment share in 1991			Employment share e2011		
	Agriculture	Industry	Service	Agriculture	Industry	Service
Euro area	**7.3**	**33.7**	**59.0**	3.9	**24.6**	**71.5**
EU	**9.5**	**33.8**	**56.4**	3.7	**24.1**	**72.2**
OECD	**9.7**	**29.7**	**60.4**	5.8	**22.4**	**71.8**
World	**40.5**	**22.7**	**36.2**	30.7	**24.4**	**44.9**

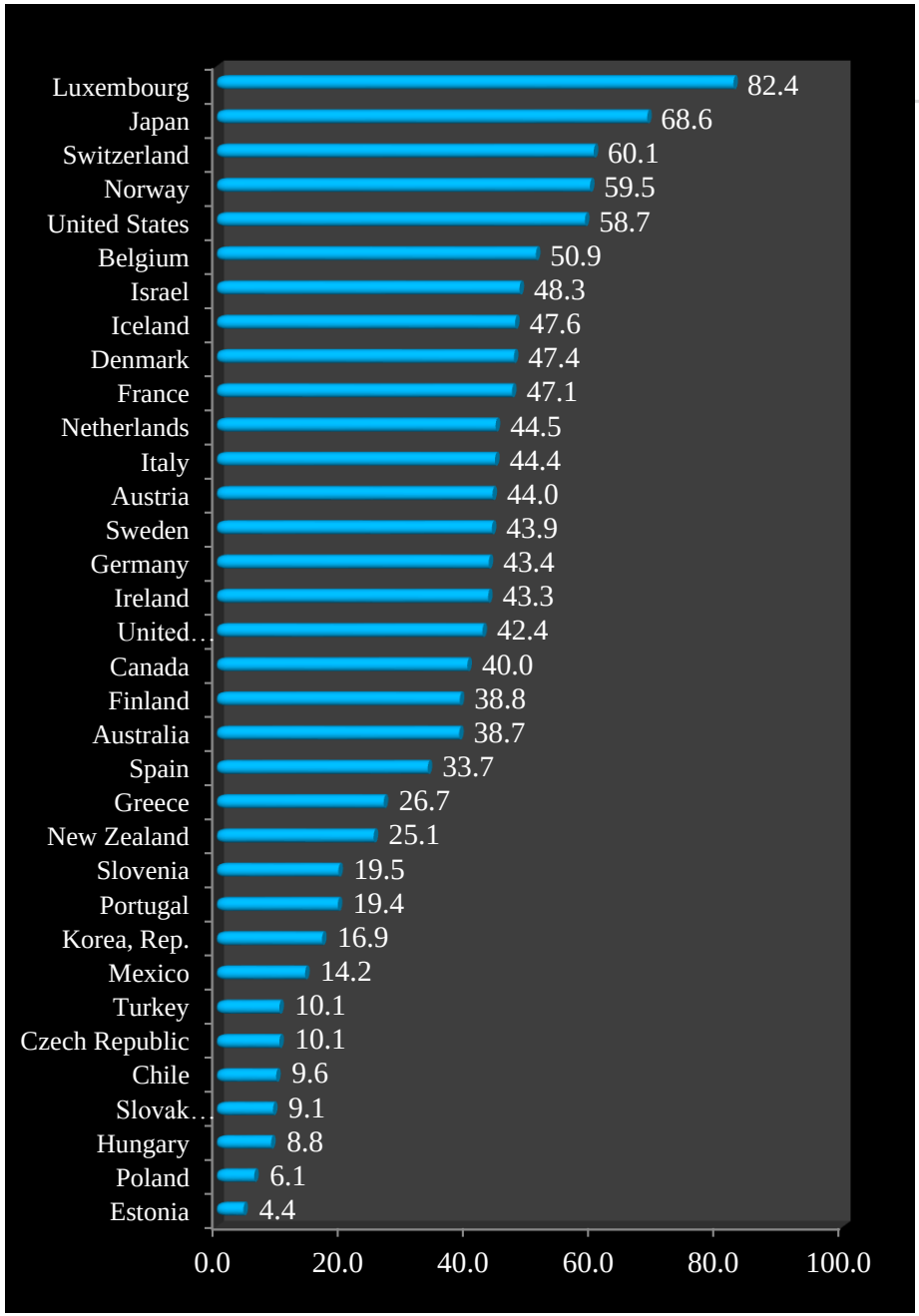
	Employment share in 1991			Employment share in 2011		
	Agriculture	Industry	Service	Agriculture	Industry	Service
Australia	5.5	23.8	70.7	3.9	21.1	75.5
Austria	7.4	36.9	55.2	5.3	26.0	68.7
Belgium	2.6	30.4	66.3	1.3	23.2	75.5
Canada	4.3	22.5	73.2	2.0	21.5	76.5
Chile	19.1	26.3	54.6	10.6	23.0	66.4
Czech Republic	7.7	42.9	49.3	3.0	38.4	58.6
Denmark	5.6	27.3	66.3	2.5	19.9	77.6
Estonia	19.3	37.0	43.7	5.2	31.9	62.9
Finland	8.7	28.4	62.8	4.7	22.9	72.4
France	5.3	29.1	65.5	3.3	22.1	74.6
Germany	4.2	40.3	55.5	1.6	28.3	70.1
Greece	22.2	27.5	50.3	12.5	17.8	69.7
Hungary	16.1	36.1	47.8	5.0	30.7	64.3
Iceland	10.2	25.9	63.9	6.7	18.1	75.2
Ireland	12.0	28.2	59.4	4.9	18.9	76.2
Israel	3.5	28.6	67.2	2.5	20.4	77.1
Italy	8.4	32.0	59.5	3.7	28.5	67.8
Japan	6.7	34.4	58.4	5.0	25.3	69.7
Korea, Rep.	16.4	36.0	47.7	6.6	17.0	76.4
Luxembourg	6.3	28.6	64.9	4.6	12.7	82.7
Mexico	26.8	23.1	50.0	13.9	25.5	60.6
Netherlands	4.5	25.2	69.6	13.2	15.3	71.5
New Zealand	10.7	23.7	65.3	6.6	20.9	72.5
Norway	5.8	23.2	70.7	2.9	20.2	76.9
Poland	25.4	36.0	38.0	13.3	31.1	55.6
Portugal	17.5	33.5	49.0	11.2	28.2	60.6
Slovak Republic	10.2	39.7	50.1	3.7	37.9	58.4
Slovenia	10.7	44.1	45.1	9.6	33.0	57.4
Spain	10.7	33.0	56.3	4.2	21.8	74.0
Sweden	3.3	28.3	68.3	2.4	19.9	77.7
Switzerland	4.2	30.2	65.5	7.7	21.1	71.2
Turkey	47.8	20.2	32.0	24.1	26.5	49.4
U K	2.2	31.1	65.7	1.9	19.1	79.0
US	2.9	25.5	71.6	2.1	16.7	81.2

PATTERNS OF LABOUR PRODUCTIVITY

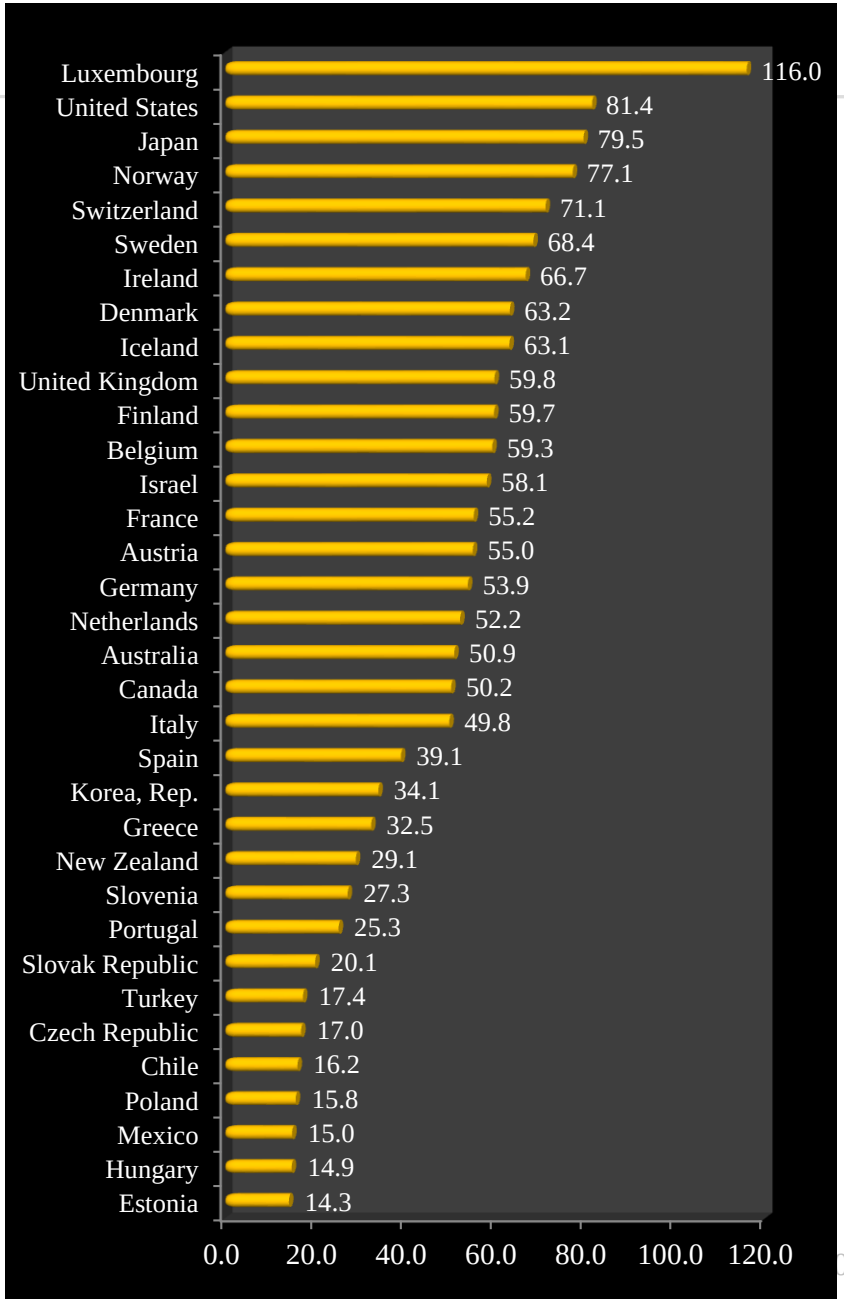
Labour productivity



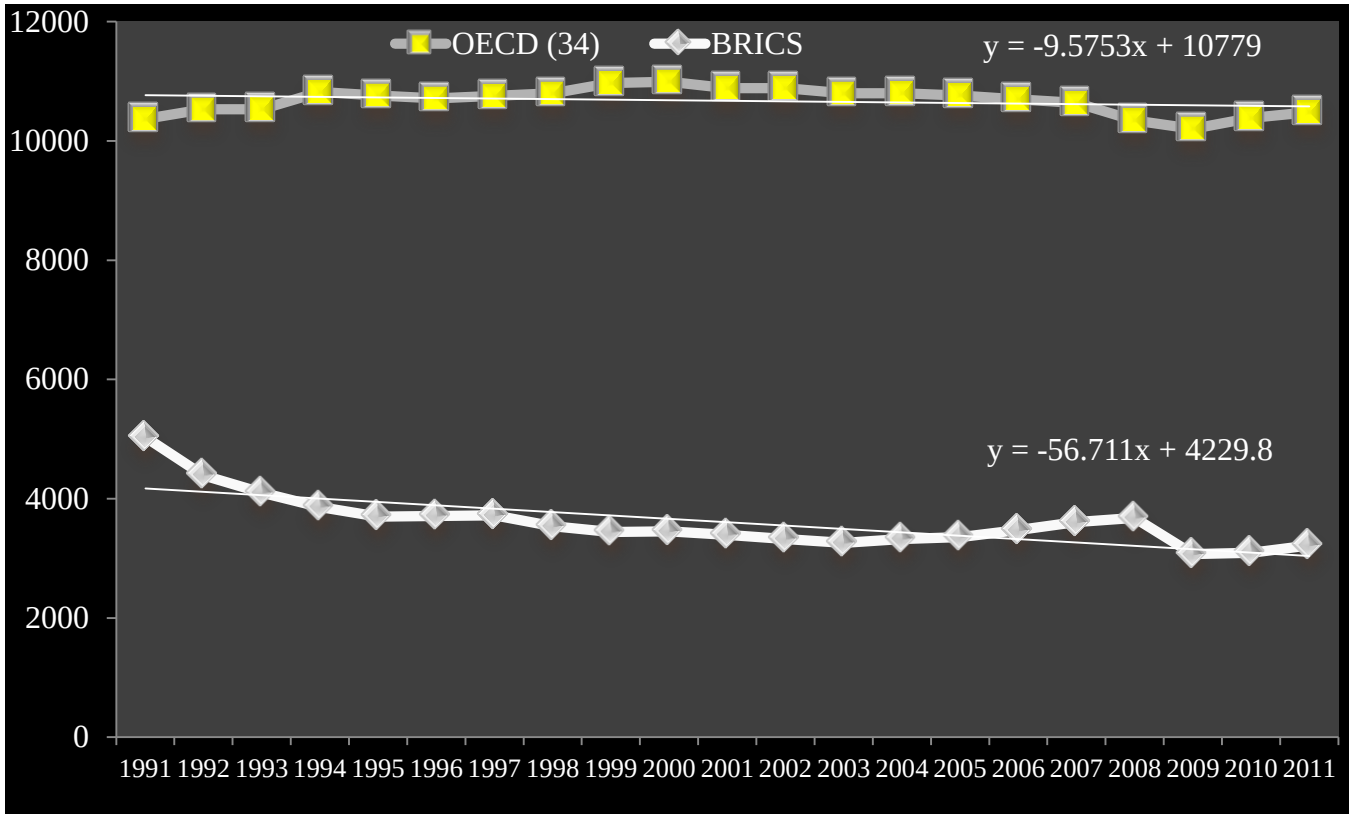
Labour Productivity in 1991-92



Labour Productivity in 2011-12



Patterns of Inequality in Labour productivity



DETERMINANTS OF LABOUR PRODUCTIVITY

Factors	Remarks	Studies
FDI	Not only bring physical capital into a host economy, but also they transfer the technology and managerial skills, as they want to maximize profits	Solow (1956), Frankel (1962) and Romer (1986), (Aghion & Howitt, 2009), Yir-Hueih (2000), Liu et al. (2001), Vather (2004), Koirala and Koshal (1999), Thoburn (2004), Rasiah and Gachino (2005) and Ramstetter (2004). Chin Chen and Yir-Hueih (2000)
Trade	Countries that are more open have a greater ability to benefit from technology diffusion and its boosting effect on productivity growth	Grossman and Helpman (1991) and Barro, Sala-i-Martin (1995), and Edwards (1997) Dollar and Kraay (2004), (Chang, Kaltani, and Loayza, 2005). (Muendler, 2004).
Control Variables	Investment, Economic structure, Education Expenditure Education Level of Employment, Female labour force participation, Wage rate	

METHODOLOGY

- The empirical analysis includes 34 countries over the period 1990–91 to 2011–12.
- In the recent economic development literatures, panel data analysis has been widely used in estimating productivity across regions and countries (Islam, 1995; Griffith, Redding and Reenen, 2004; and Heshmati and Shiu, 2006), as it controls the individual heterogeneity of the countries, has more degree of freedom and efficiency (Baltagi, 2001).

$$Y_{it} = \alpha + \beta X_{it} + \theta Z_{it} + \mu_i + \varepsilon_{it} \qquad (1)$$

Where;

i=1, ……, 34 and t = 1990-91, 1991-92 ……., 2011 - 12.

Y_{it} is labour productivity of region, X_{it} is the vector of globalization variables, Z_{it} is the vector of other explanatory variables. And α, β and θ are the parameters of the model.

- a) pooled regression model (PRM), (b) fixed effects model (FEM) and (c) Random effects model (REM). Diagnostic tests such as Breusch and Pagan Lagrange Multiplier (LM) Test (the null hypothesis of the non-random individual effect) favours the fixed effect model or random effect model over the pooled regression
- Hausman (H) Specification Test. is used to test null hypothesis of zero correlation between State-specific effects and the explanatory variables. Statistical significance of H test suggests preference for FEM rather than REM.

Data Sources

Variables	Indicator	Measurement	Data Sources
productivity	Labour Productivity	(1) The ratio of GDP to the number of engaged person (2) The ratio of GDP to the number of hours worked	GDP (constant in 2000 usd) and employment are sourced form WDI, World Bank The average number of hours per person is from OECD, Statistics
Globalisation	FDI	FDI net inflows in percentage of GDP	WDI, World Bank
	Trade	Export and Import in GDP	WDI, World Bank
Economic Factors	Investment (INV)	Gross fixed capital formation in GDP	WDI, World Bank
	Education Expenditure (EDUE)	Expenditure in education in percentage of GDP	WDI, World Bank
	Economic Structure	Service sector share in GDP	WDI, World Bank
Labour Factors	Female labour participation (FLFP)	Share of female labour force in total employment	WDI, World Bank
	Education level of employment	Employment with secondary and tertiary education in total employment	WDI, World Bank
	Wage rate	Annual average wage	OECD Statistics

EMPIRICAL ANALYSIS

Impact of Globalisation on Labour Productivity

Independent Variables	LP	LPH
Globalisation		
FDI	0.02 * (3.1)	0.03*(4.07)
Trade	0.04* (7.07)	0.03*(6.26)
Economic Factors		
INV	1.08 *(14.09)	0.65*(11.27)
SSERV	0.04** (2.03)	0.01**(2.02)
EDUE	3.0 *(8.96)	2.23*(8.39)
Labour Factors		
Wage	4.45 *(11.54)	0.31*(9.62)
FLFP	0.13 *(4.46)	0.20*(8.71)
LFTED	0.07 *(3.35)	0.05*(3.12)
F-test	408.85 *	331.05
R^2	0.85	0.82
LM-test	1522*	2389*
h-test	473*	225**
State specific Factor (H0: All $u_{i=0}$	80.53*	77.28
n	638	638

Globalisation and Labour Productivity

High Labour Productivity Regions	LP	LPH	Low Labour Productivity Regions	LP	LPH
Austria	0.66	0.49	Australia	0.65	0.68
Belgium	0.51	0.37	Canada	0.53	0.66
Denmark	0.80	0.49	Chile	0.34	0.54
Finland	1.06	0.69	Czech	0.37	0.60
France	0.41	0.46	Estonia	0.54	0.52
Germany	0.54	0.56	Greece	0.51	0.55
Iceland	1.05	0.68	Hungary	0.31	0.49
Ireland	1.29	1.13	Italy	0.23	0.57
Israel	0.50	0.36	Korea	0.87	0.54
Japan	0.69	0.64	Mexico	0.07	0.46
Luxembourg	2.29	1.73	Newzland	0.22	0.63
Norway	1.02	0.88	Poland	0.47	0.52
Sweden	1.20	0.72	Portugal	0.29	0.76
Switzerland	0.58	0.45	Slovak	0.53	0.59
UK	0.96	0.67	Slovenia	0.52	0.63
US	1.19	0.72	Spain	0.13	0.67

Relationship of Globalisation and Labour Productivity

High Labour Productivity Regions	FDI	Trade	Low Labour Productivity Regions	FDI	Trade
Austria	0.34	0.97	Australia	0.34	0.81
Belgium	0.76	0.88	Canada	0.44	0.43
Denmark	0.07	0.90	Chile	0.68	0.65
Finland	0.34	0.94	Czech	0.16	0.85
France	0.62	0.92	Estonia	0.72	0.76
Germany	0.21	0.88	Greece	0.09	0.69
Iceland	0.64	0.79	Hungary	0.33	0.90
Ireland	0.56	0.79	Italy	0.31	0.74
Israel	0.68	0.14	Korea	-0.03	0.89
Japan	0.42	0.93	Mexico	0.15	0.30
Luxembourg	0.29	0.94	Newzland	-0.45	0.29
Norway	0.58	0.06	Poland	0.66	0.49
Sweden	0.18	0.96	Portugal	0.37	0.72
Switzerland	0.47	0.98	Slovak	0.41	0.78
UK	0.44	0.77	Slovenia	0.39	0.30
US	0.45	0.87	Spain	0.04	0.64

Impact of Globalisation on Labour Productivity

Independent	High Labour Productivity Countries		Low Labour Productivity Countries	
Variables	**LP**	**LPH**	**LP**	**LPH**
Globalisation				
FDI	0.03** (3.5)	0.03* (4.64)	0.03** (1.21)	0.02** (1.5)
Trade	0.1*(8.62)	0.07* (7.48)	0.01** (2.08)	0.01*(4.91)
Economic Factors				
INV	1.12* (12.27)	0.67 * (9.51)	1.8 *(19.71)	0.84*(16)
SSERV	0.31* (4.59)	0.16*(3.08)	0.06* (1.45)	0.04**(2.3)
EDUE	1.26 * (3.13)	0.88* (2.84)	7.37 *(12.87)	2.17*(6.33)
Labour Factors				
Wage	34.78*(4.82)	22.3* (6.23)	0.0000 (1.4)	0.000(0.05)
FLFP	0.05** (2.02)	0.12* (3.28)	0.07 (2.08)	0.08(4.1)
LFTED	0.22* (4.79)	0.22* (6.23)	0.005 (0.23)	0.006(0.56)
F-test	349.31*	329.25*	134*	137*
R^2	0.90	0.89	0.81	0.80
LM-test	728*	1619*	346.24*	524*
h-test	10.74	16.19**	204*	223.48*
State specific Factor (H0: All $u_{i=0}$	82.16*	96.39	53*	65.18*
n	352	352	286	286

CONCLUSIONS AND POLICY IMPLICATIONS

- There exists the variation of labour productivity within the OECD. The globalization factors are significant for the labour productivity as a whole, high labour productivity regions and low productivity regions in OECD. FDI inflow brings technology and expertise from the country of origin is successful in enhancing labour productivity.
- Economic factors (i.e., INV, SSERV and EDUE) are significantly influence labour productivity. Whereas, the share of industry does not exert any significant influence on productivity, as the OECD economy is in the post-industrialisation state where the service sector is the dominating factor of income and growth.
- Labour factors (annual average wage, the labour force with tertiary education and female participation) influence the labour productivity significantly as a whole, for high labour productivity regions, but not for the low productivity regions of OECD.
- To ensure and encourage the high labour productivity achievement, relevant policies related to knowledge must be formulated an incentive to encourage investment in human capital, technology and innovation. Hence, to reduce the differences in productivity among the OECD economies, it is crucial to deal with female labour force participation, wage and education level of employment.

THANK YOU FOR YOUR ATTENTION