

**Between brain drain and brain gain  
– post-2004 Polish migration  
experience**

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**Main questions / issues**

- The term / notion of „brain drain” – how useful?
- Polish post-accession migration experience – lessons to be drawn?
- Brain drain / gain and Polish-German perspective

## Notion of brain drain

- ❑ Definitional issues – highly skilled:
  - ❑ what does it mean: highly skilled? → controversies
  - ❑ definition typically applied - based on the years of formal education (5-6 level in ISCED classification)
- ❑ Notion of 'brain drain'
  - selective outflow of highly skilled persons
  - assessment of the impacts → theoretical approaches

## Theoretical approaches

- ❑ Two distinctive parts of the literature on consequences of highly skilled mobility:
  - ❑ 'traditional approach' - Grubel and Scott (1966), Bhagwati and Hamada (1974): a pessimistic view, emphasis on costs and losses, i.e. fiscal effects, impact on factors' productivity → **brain drain**;
  - ❑ 'modern approach' - Stark *et al.* (1997), Mountford (1997), Beine *et al.* (2001) → *new economics of brain drain*: migration as a probabilistic event, i.e. the outcome of a lottery where the would-be migrant has a positive probability  $p$  of actually migrating, where  $p < 1$  → the decision to invest in education is driven by the expected return to human capital → a positive probability  $p$  of migrating increases the expected return to investment in human capital compared to the no-migration situation → an increase in the optimal level of human capital possible → **brain gain** (?).

## Theoretical background

- ❑ Additional effects:
    - ❑ brain waste - Mattoo *et al.* (2005) → rate of return to human capital (?)
    - ❑ brain drain or brain overflow – Kaczmarczyk and Okólski (2008)
    - ❑ the scope for a *beneficial brain drain* should be substantially reduced - Egger and Felbermayr (2007), Brücker *et al.* (2007)
- A dynamic approach: Beine *et al.* (2001)

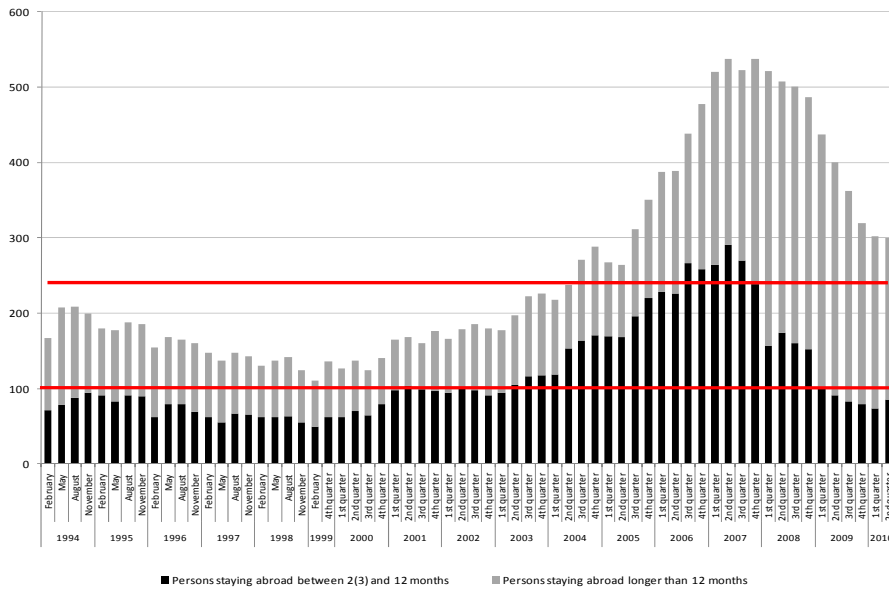
### Brain drain model with "brain effect" and "drain effect" – selected conclusions

- ❑ Important assumptions:
  - ❑ Human capital is transferable
  - ❑ Higher returns to education abroad
- ❑ From the theoretical analysis it follows that:
  - ❑ Share of well educated depends on migration prospects
  - ❑ Economic growth depends on the share of well educated (in a positive way) and migration (negatively) – outcome?
- ❑ Important:
  - ❑ Static effect – drain effect (ex post)
  - ❑ Dynamic effect – brain effect (ex ante)
  - ❑ **Beneficial Brain Drain (BBD) emerges when the brain effect dominates → empirical issue**

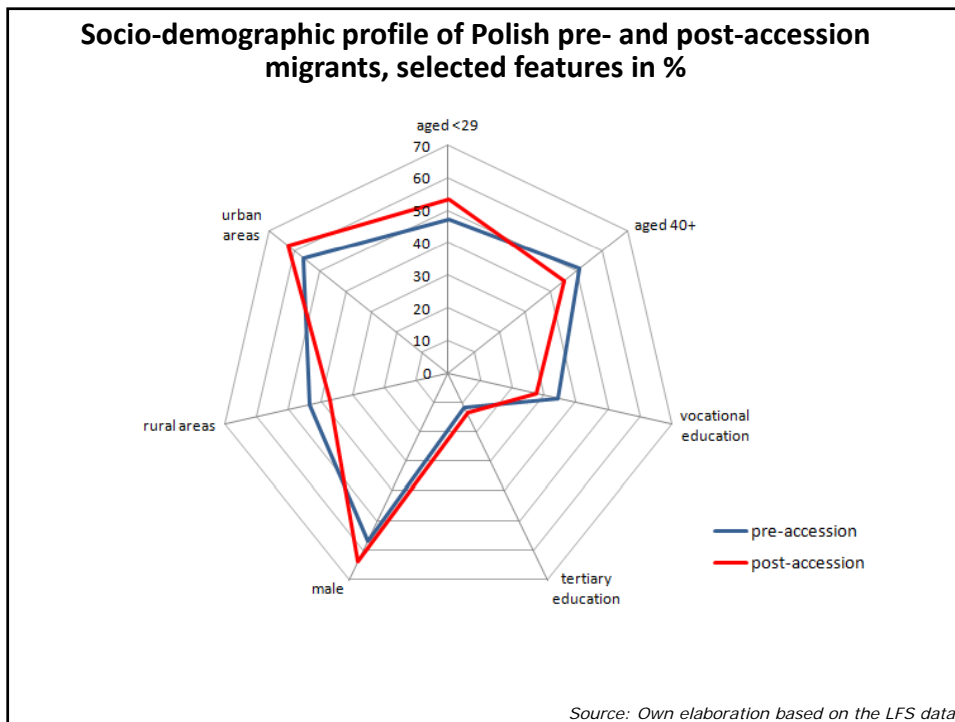
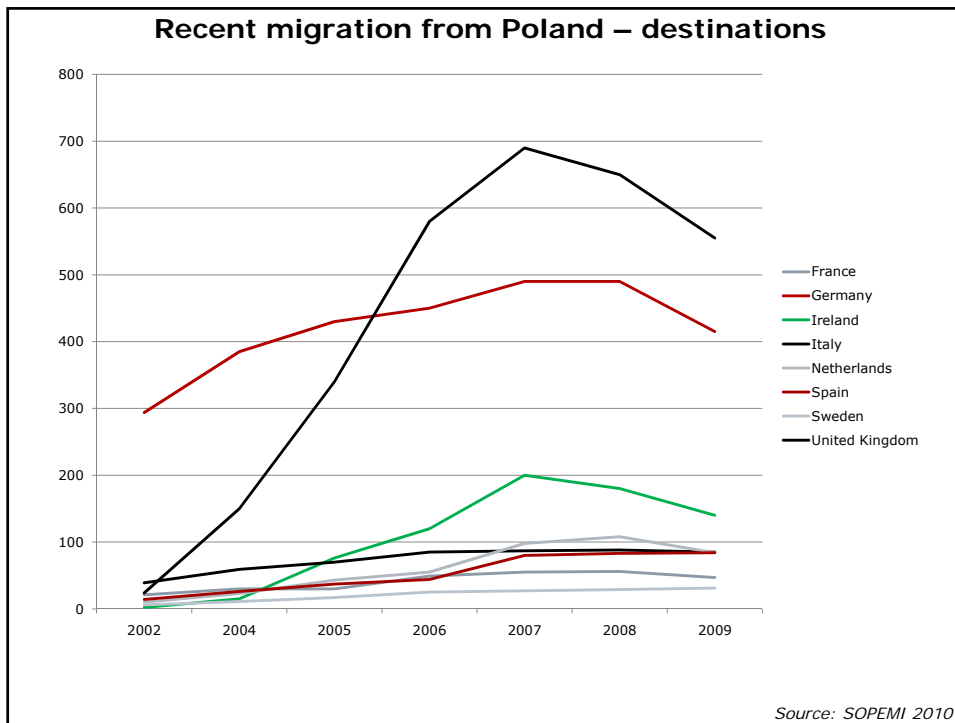
## Post-2004 migration experience

Country	2002 (May) – National Census	2004*	2005*	2006*	2007*	2008*	2009*
<i>In thousand</i>							
<b>Total</b>	<b>786</b>	<b>1 000</b>	<b>1 450</b>	<b>1 950</b>	<b>2 270</b>	<b>2 210</b>	<b>1 870</b>
<b>Including:</b>							
EU27	451	750	1 170	1 550	1 860	1 820	1 570
Austria	11	15	25	34	39	40	38
Belgium	14	13	21	28	31	33	34
France	21	30	30	49	55	56	47
Germany	294	385	430	450	490	490	415
Ireland	2	15	76	120	200	180	140
Italy	39	59	70	85	87	88	85
Netherlands	10	23	43	55	98	108	84
Norway	.	.	.	.	36	38	45
Spain	14	26	37	44	80	83	84
Sweden	6	11	17	25	27	29	31
United Kingdom	24	150	340	580	690	650	555
<i>Percentage change as compared with previous year**</i>							
<b>Total</b>	.	.	<b>45,0</b>	<b>34,5</b>	<b>16,4</b>	<b>-2,6</b>	<b>-15,4</b>
EU27	.	.	56,0	32,5	20,0	-2,2	-13,7
Austria	.	.	66,7	36,0	14,7	2,6	-5,0
Belgium	.	.	61,5	33,3	10,7	6,5	3,0
France	.	.	0,0	63,3	12,2	1,8	-16,1
Germany	.	.	11,7	4,7	8,9	0,0	-15,3
Ireland	.	.	406,7	57,9	66,7	-10,0	-22,2
Italy	.	.	18,6	21,4	2,4	1,1	-3,4
Netherlands	.	.	87,0	27,9	78,2	10,2	-22,2
Norway	.	.	.	.	.	5,6	18,4
Spain	.	.	42,3	18,9	81,8	3,8	1,2
Sweden	.	.	54,5	47,1	8,0	7,4	6,9
United Kingdom	.	.	126,7	70,6	19,0	-5,8	-14,6

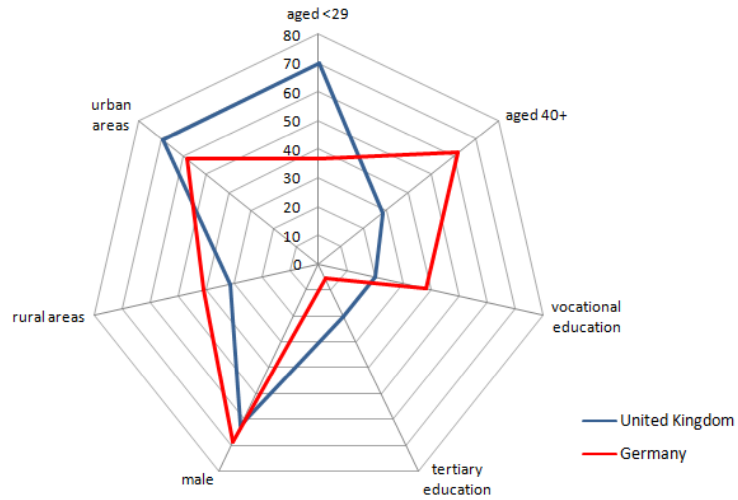
## Stock of Polish migrants staying temporarily abroad according to the Labour Force Survey, 1994-2010 (2<sup>nd</sup> quarter)



Source: SOPEMI 2010

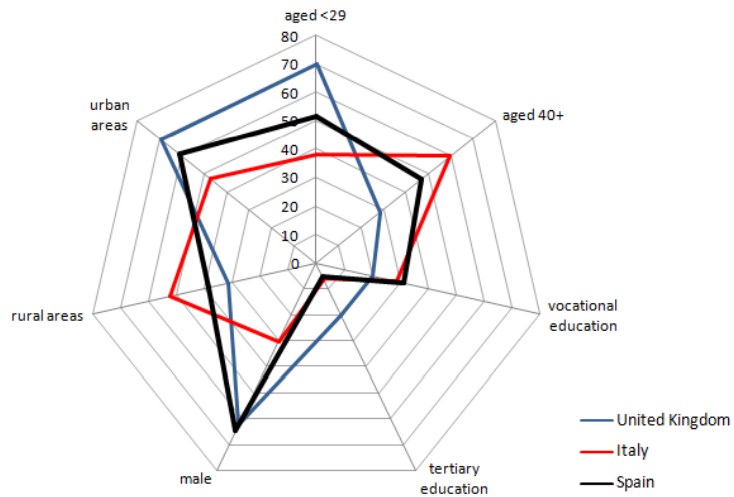


**Socio-demographic profile of Polish post-accession migrants in the UK and Germany, selected features in %**



Source: Own elaboration based on the LFS data

**Socio-demographic profile of Polish post-accession migrants in the UK, Italy and Spain, selected features in %**



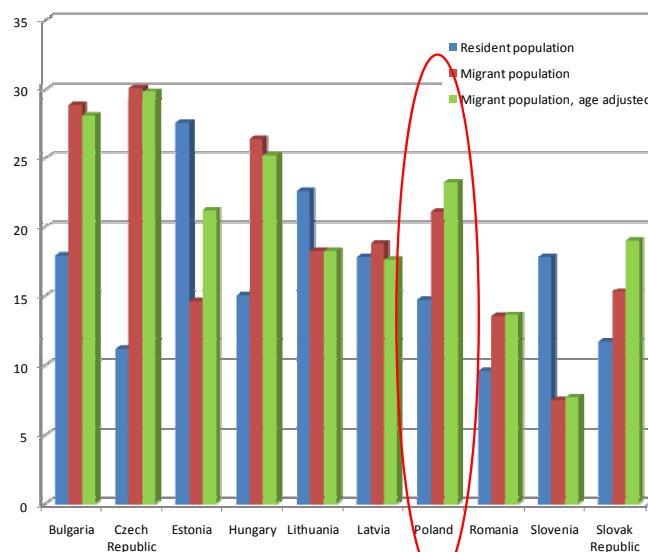
Source: Own elaboration based on the LFS data

## Selectivity patterns – explanatory factors

- ❑ Migratory regime → UK vs. Germany
- ❑ Socio-cultural factors, e.g. language → UK / Ireland vs. Sweden
- ❑ Structure of the receiving labour markets → UK vs. Italy
- ❑ Institutions of the labour market → UK vs. Sweden
- ❑ Role of migrant networks → UK / Ireland vs. Germany / Italy / Spain

## Is there a brain drain?

Percentage of persons with tertiary education in the native and migrant population in the NMS, 2006



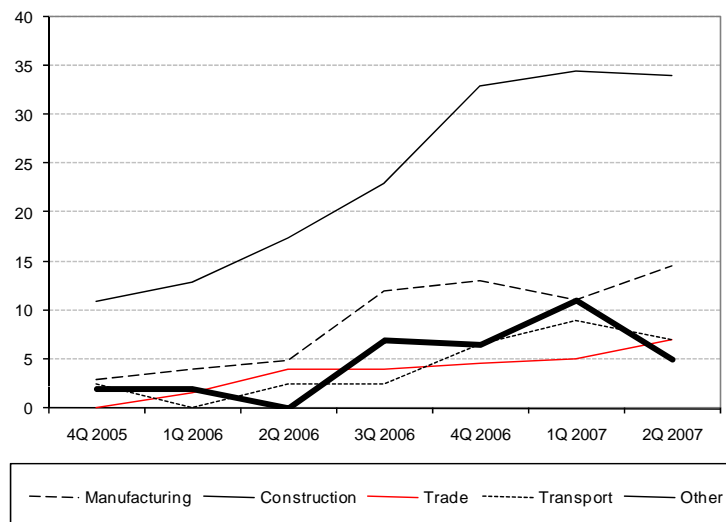
Source: Bruecker et al. 2010

## Drain effect?

### Unemployment and labour shortages – stylized facts:

- 2002: unemployment rate approx. 20%
- 2007: unemployment rate below 10%
  
- Number of unemployed:  
2004 (2nd quarter) – 3.1 million  
2007 (2nd quarter) – 1.5 million
  
- Percentage of companies reporting hiring difficulties:  
2005 (4th quarter) – 1.8%  
2007 (2nd quarter) – 12.7%

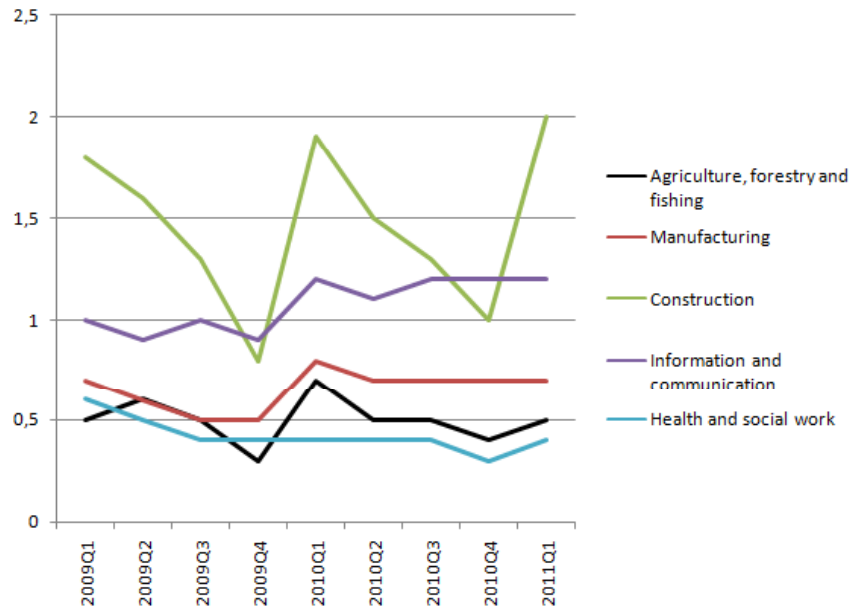
## Labour shortages in Poland (by sector)



Source: WB 2006



### Job vacancy rates in Poland, 2009-2011 (by sector)



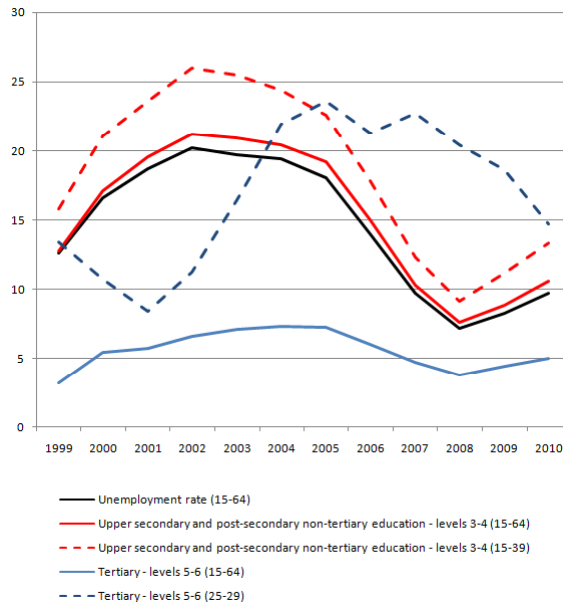
Source: Eurostat

### Decline in unemployment and labour shortages – main reasons

- ❑ Economic growth → process of job creation
- ❑ Changes in educational system (vocational education)
- ❑ Low rates of internal mobility
- ❑ Low level of occupational mobility
- ❑ Long-term developments (demographic change, technological change, education)
- ...
- ❑ Post-accession migration

## Brain overflow?

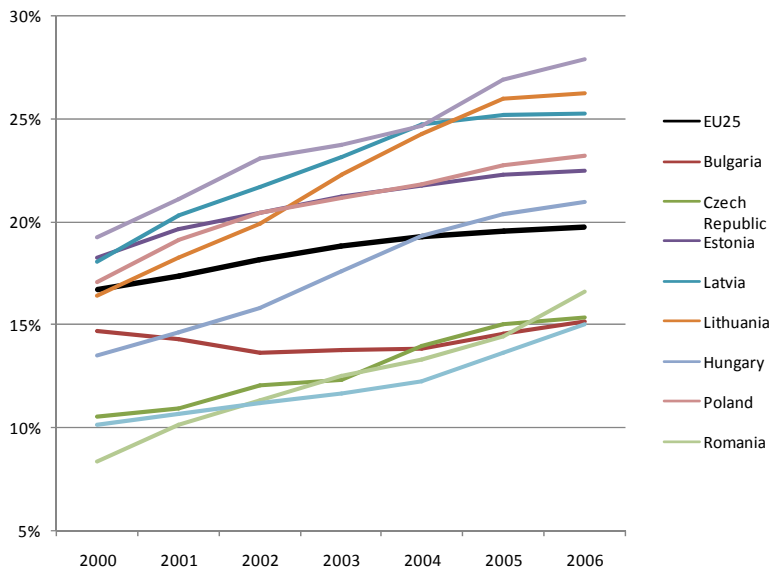
Unemployment rate in Poland, 1999-2010, in %



Source: Eurostat

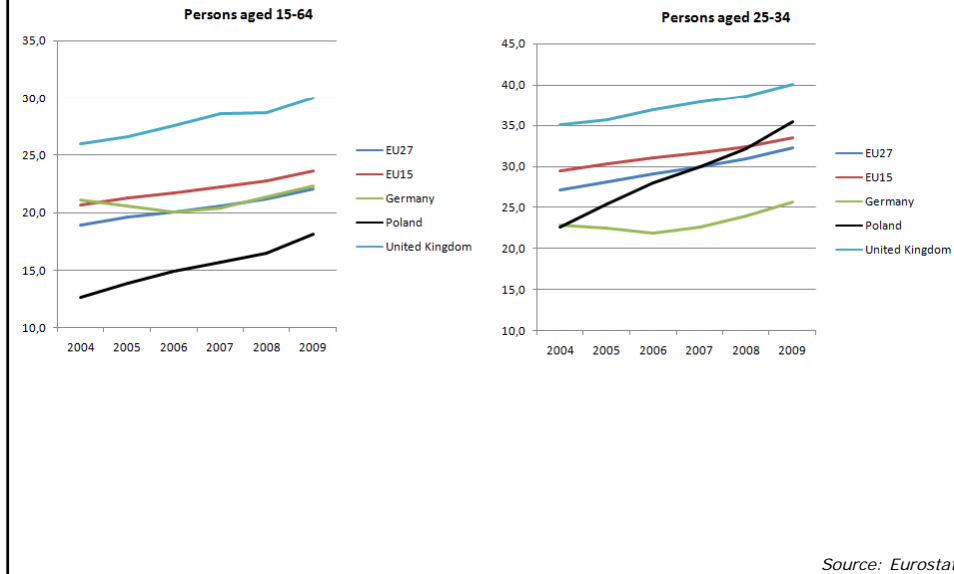
## Brain effect? → accumulation of human capital

Percentages of students in the population aged 15-29, EU25 and NMS10, 2000-2007



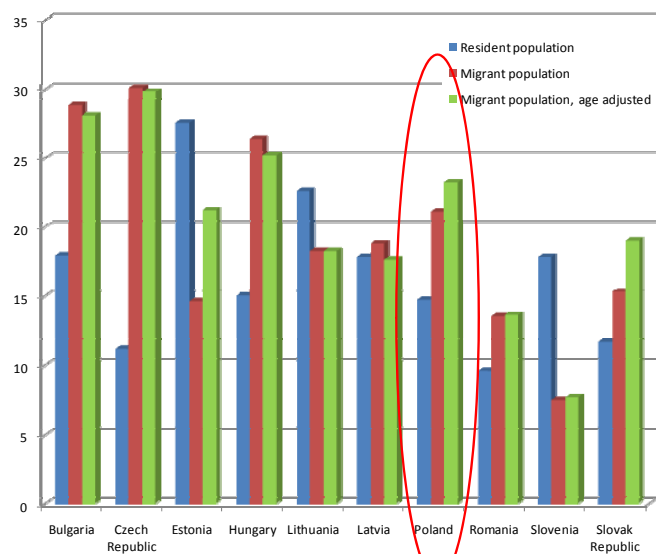
Source: Eurostat

## Accumulation of human capital – share of persons with tertiary education



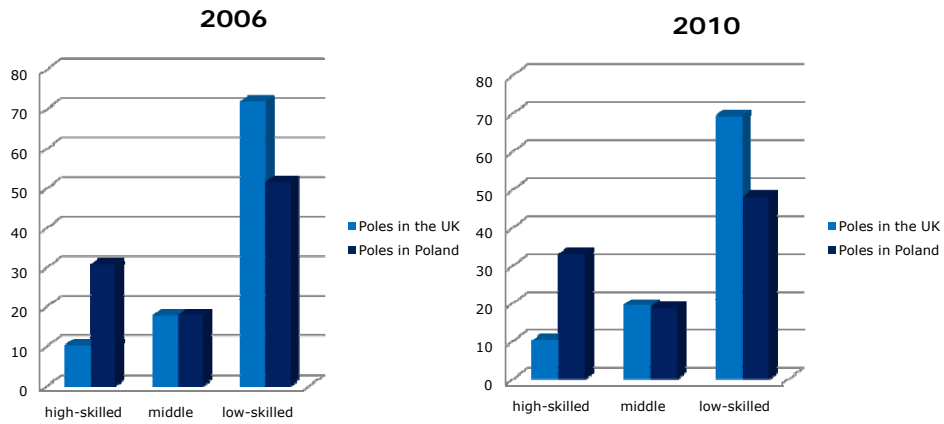
## Selective outflow of the highly skilled

Percentage of persons with tertiary education in the native and migrant population in the NMS, 2006



## Integration on the labour market abroad – UK experience

Distribution of the Polish population in Poland and in the UK by occupation (%), 2006 and 2010



Source: Olszewska 2011

## Brain waste?

Net weekly pay of full-time workers from Poland in the UK nominal and relative to the average (as per cent, in bold)

Age left full-time education	Pre-accession migrants					Post-accession migrants				
	15-20	21-29	31-45	45+	Total	15-20	21-29	31-45	45+	Total
Less than 15	-	231.00	174.00	181.50	192.00	-	266.75	176.00	219.50	226.00
16 to 17	120.00	200.00	242.33	257.17	243.12	145.67	190.50	226.10	195.08	197.24
18 to 20	62.50	234.35	279.94	261.55	250.89	207.22	202.81	220.47	236.42	217.65
More than 21	-	274.83	394.57	393.38	<b>354.54</b>	-	223.97	306.04	255.99	<b>244.67</b>
Students	38.4	-	-	-	38.4	228.1	-	-	-	228.1
<b>Total</b>	<b>29.2</b>	<b>83.3</b>	<b>112.8</b>	<b>106.9</b>	<b>100.0</b>	<b>93.8</b>	<b>93.5</b>	<b>110.1</b>	<b>105.8</b>	<b>100.0</b>

Source: own elaboration based on the LFS data

Net weekly pay of full-time workers from EU14 in the UK nominal and relative to the average (as per cent, in bold)

Age left full-time education	EU15 immigrants				Total
	15-20	21-29	31-45	45+	
Less than 15	172.13	242.40	249.44	256.05	250.82
16 to 17	55.4	78.1	80.3	82.5	80.8
18 to 20	165.62	275.65	314.53	303.23	294.95
More than 21	53.3	88.8	101.3	97.6	95.0
Students	176.14	253.78	360.63	372.94	324.36
<b>Total</b>	<b>56.7</b>	<b>81.7</b>	<b>116.1</b>	<b>120.1</b>	<b>104.5</b>
		348.29	523.33	519.99	464.66
		112.2	168.5	167.5	149.6
	224.00	220.28	385.00	342.67	240.07
	72.1	70.9	124.0	110.3	77.3
<b>Total</b>	<b>114.40</b>	<b>270.01</b>	<b>359.05</b>	<b>306.48</b>	<b>310.53</b>
	<b>36.8</b>	<b>87.0</b>	<b>115.6</b>	<b>98.7</b>	<b>100.0</b>

Source: own elaboration based on the LFS data

## Brain waste?

Net weekly pay of full-time native workers in the UK nominal and relative to the average (as per cent, in bold), 2002 and 2006

Age left full-time education	2002, 2nd quarter					2006, 2nd quarter				
	Age groups				Total	Age groups				Total
	15-20	21-29	31-45	45+		15-20	21-29	31-45	45+	
Less than 15	150.00	246.14	256.29	254.61	253.00	143.08	281.14	303.28	294.49	293.48
	<b>47.9</b>	<b>78.6</b>	<b>81.9</b>	<b>81.3</b>	<b>80.8</b>	<b>40.4</b>	<b>79.3</b>	<b>85.5</b>	<b>83.1</b>	<b>82.8</b>
16 to 17	158.53	245.59	297.77	310.96	283.04	166.50	269.44	330.91	335.33	314.90
	<b>50.6</b>	<b>78.4</b>	<b>95.1</b>	<b>99.3</b>	<b>90.4</b>	<b>47.0</b>	<b>76.0</b>	<b>93.3</b>	<b>94.6</b>	<b>88.8</b>
18 to 20	166.72	257.02	356.45	369.97	316.42	187.90	272.45	392.81	414.18	354.21
	<b>53.3</b>	<b>82.1</b>	<b>113.9</b>	<b>118.2</b>	<b>104.1</b>	<b>53.0</b>	<b>76.8</b>	<b>110.8</b>	<b>116.8</b>	<b>99.9</b>
More than 21	158.53	245.59	297.77	310.96	283.04	166.50	269.44	330.91	335.33	314.90
	<b>50.6</b>	<b>78.4</b>	<b>95.1</b>	<b>99.3</b>	<b>90.4</b>	<b>47.0</b>	<b>76.0</b>	<b>93.3</b>	<b>94.6</b>	<b>88.8</b>
Students	154.00	188.14	-	-	176.76	187.30	226.13	300.00	-	209.58
	<b>49.2</b>	<b>60.1</b>	-	-	<b>56.5</b>	<b>52.8</b>	<b>63.8</b>	<b>84.6</b>	-	<b>59.1</b>
Total	159.91	271.48	343.04	321.44	313.07	171.26	304.20	383.30	367.79	354.54
	<b>51.1</b>	<b>86.7</b>	<b>109.6</b>	<b>102.7</b>	<b>100.0</b>	<b>48.3</b>	<b>85.8</b>	<b>108.1</b>	<b>103.7</b>	<b>100.0</b>

Source: own elaboration based on the LFS data

→ Econometrics

## Brain waste?

Estimated returns to education

Model	PL 02	PL 06	PL <04 in UK	PL >04 in UK	NMS7 <04 UK	NMS7 >04 UK	EU15 in UK	NMS2 in UK
Education (years)	.0282 (26.48)	.0248 (24.75)	<b>.0433</b> (5.94)	<b>-.0200</b> (3.04)	.0459 (4.94)	.0486 (3.33)	.0485 (23.01)	.0185 (1.76)
Experience (months)	.0005 (10.76)	.0006 (14.30)	.0014 (2.35)	.0052 (2.58)	.0009 (1.55)	.0057 (1.15)	.0010 (10.15)	.0002 (0.17)
Sex (female)	-1.784 (-20.97)	-2.065 (-23.05)	-3.352 (-6.49)	-1.701 (-4.74)	-2.297 (-3.06)	-2.138 (-2.72)	-1.710 (-11.73)	-2.180 (-2.65)
Age	.0019 (3.72)	.0011 (2.04)	-.0032 (-1.05)	-.0042 (1.44)	-.0001 (-0.04)	.0020 (0.43)	.0030 (3.85)	-.0095 (-1.87)
Marital status (partner)	.0918 (9.95)	.0930 (9.64)	.0488 (0.85)	.0366 (1.09)	.3790 (0.51)	-.0042 (-0.04)	.1172 (7.37)	.2335 (1.93)
UK citizenship	-	-	-.0572 (-0.53)	.1035 (3.76)	.0368 (2.10)	-	.1664 (4.32)	.2301 (1.33)
Full time work	.7305 (33.01)	.7533 (31.16)	.9701 (14.70)	.6425 (7.58)	.7632 (8.74)	.7546 (4.92)	.8855 (40.87)	.8250 (7.33)
Student	-.2451 (-10.41)	-.0938 (-4.50)	-.5190 (-3.56)	-.5119 (2.29)	-.7677 (-2.97)	-.4744 (-1.00)	-.4885 (-9.96)	-.4871 (-2.90)
Private sector	-.0681 (-6.66)	-.0810 (-6.61)	-.1735 (-1.73)	-.0383 (-1.88)	.0820 (0.86)	-.2811 (-1.30)	-.0305 (-2.13)	-.4190 (-3.14)
CDE sector	.0866 (3.54)	.1185 (4.14)	-.5337 (-1.74)	-.0309 (0.36)	.2059 (1.67)	-.0760 (-0.51)	.0110 (0.15)	.3264 (1.86)
F sector	.0896 (3.16)	-.1146 (3.45)	-.5374 (-1.74)	-.1702 (1.66)	.1805 (1.22)	-	-.0002 (-0.00)	.5694 (3.03)
GHI sector	.0551 (2.20)	.0896 (3.07)	-.6651 (-2.23)	.0156 (0.19)	-.0212 (-0.17)	-.0527 (-0.33)	-.1166 (-1.60)	.3247 (2.06)
JK sector	.1592 (5.34)	.1833 (5.51)	-.3925 (-1.29)	-.0112 (-0.12)	.2260 (1.41)	.1763 (0.84)	.1216 (1.65)	.7306 (3.70)
LMNO sector	.0193 (0.75)	-.1183 (3.90)	-.6031 (-2.01)	-.0388 (-0.42)	.0984 (0.71)	-.4563 (-1.42)	-.0610 (-0.84)	.2864 (1.87)
P sector	-.2992 (-1.87)	-.0278 (-0.17)	-.9346 (-2.57)	-.4722 (-4.16)	-.4313 (-2.41)	-.2181 (-0.86)	-.3983 (-3.15)	-
London/ Warsaw	1.540 (16.79)	1.670 (16.31)	2.128 (3.93)	1.135 (1.53)	1.711 (2.48)	-.3221 (-2.15)	1.809 (10.31)	.7259 (1.59)
Constant	4.21 (98.33)	4.3079 (95.40)	4.8638 (13.74)	4.3305 (23.59)	3.9722 (14.56)	4.3145 (9.84)	4.0468 (47.05)	4.6650 (21.26)
R <sup>2</sup>	<b>0.3724</b>	<b>0.3990</b>	<b>0.6774</b>	<b>0.4023</b>	<b>0.5820</b>	<b>0.6774</b>	<b>0.5486</b>	<b>0.6596</b>
Sample size	10177	9600	281	388	275	281	5408	127

1) In parentheses t-statistics calculated for robust standard errors  
2) The reference groups for the respective variables are: male, without partner, non-UK citizen, working part-time, not a student, employed in the AB, public sectors, and working outside of the capital city. Data between the Polish LFS and UK LFS is not fully comparable.

Source: Own evaluation based on UK LFS (2000-2007) and Polish LFS (second quarters 2002 and 2006)

### **Instead of conclusions**

- Consequences of highly skilled mobility – unambiguous...
- Is brain waste an inescapable phenomenon?
  - Transferability of skills
  - Recognition of credentials
  - Skills mismatch...
- But:**
  - Migrants' strategies
  - Structure of demand → secondary sectors, 3D jobs
- Lessons for migration policy:
  - Areas of public intervention (???)
  - Are we able to utilize skills? Do we really need highly skilled?
  - New model of skilled mobility → brain circulation?