

Summer School – Higher School of Economics - June 2018

# Human Capital and Individual Returns to Higher Education – Trends and Variations

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# Income and the Role of Education - Historical Overview

## **Debates in the XIX<sup>th</sup> Century – Overview:**

- **Classical Political Economy – Functional vs. Personal Distribution;**
- **Industrialization and the Social Question;**
- **Development of National Statistics;**
- **The new devices of Graphical Representation**
  - **Pareto – 1895; Lorenz – 1905**

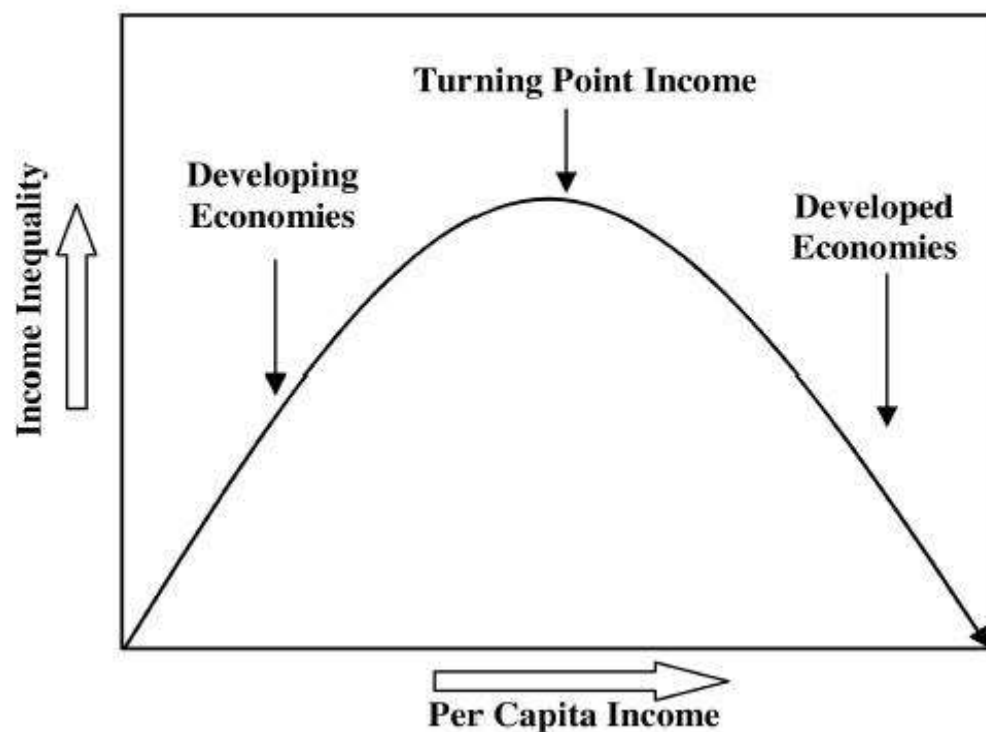
## **New possibilities, new agenda – 1900s-1950s:**

- The creation of the NBER (1920) and the Conference of Research on Income and Wealth (1936 -...);**
- The improvement of national income statistics;**
- The emphasis on explanatory research:**
  - Statistical vs. Causal approaches;**
  - Micro vs. Macro perspectives;**
- The Kuznets' Curve – 1955;**

# Simon Kuznets (1901 – 1985) – Nobel (1971)



The Kuznets Curve



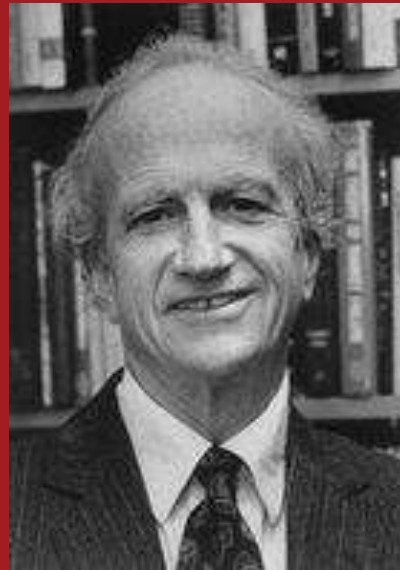
## **Income Distribution in the Mid-XXth Century:**

- Growth vs. Distribution;**
- Exogenous and Structural Forces;**
- Property and Transmission of Wealth;**
- Chance and the limited effects of Redistribution;**
- Individual Choices and Characteristics;**

## **Education and Income in mid-XXth Century:**

- **Cause or Consequence?**
- **Friedman and Kuznets (1945) – Study on Professional Income;**
- **Jacob Mincer PhD Dissertation (1957) - Human Capital and the Personal Distribution of Income;**
- **The expansion of schooling and the availability of data.**

# Human Capital Theory



**Jacob Mincer (1922-2006) – Gary Becker (1930-2014) – T. W. Schultz (1902-98)**



# Human capital - stock of skills, knowledge, and expertise accumulated by a worker

## Activities that increase Human Capital:

- **Schooling**
- **On-the-job training**
- **Healthcare**
- **Migration**
- **Home activities**

## Human Capital:

- **Develops skills;**
- **Raises productivity in market & non-market activities;**
- **Increases potential earnings and economic growth**
- **Individuals and societies spend resources in HC due to consumption and investment motivations**
- **Education becomes an individual and social Investment**

# Multiple Benefits of Education

# HC Individual Benefits

## Monetary:

- Higher earnings (wage rates/hours of work)
- Lower unemployment
- Longer professional activity

## Non- Monetary:

- Non-market productivity
- Health
- Family welfare

# HC Social Benefits

## Monetary:

- More productive labour force
- Technological progress
- Income inequality
- Labour market efficiency

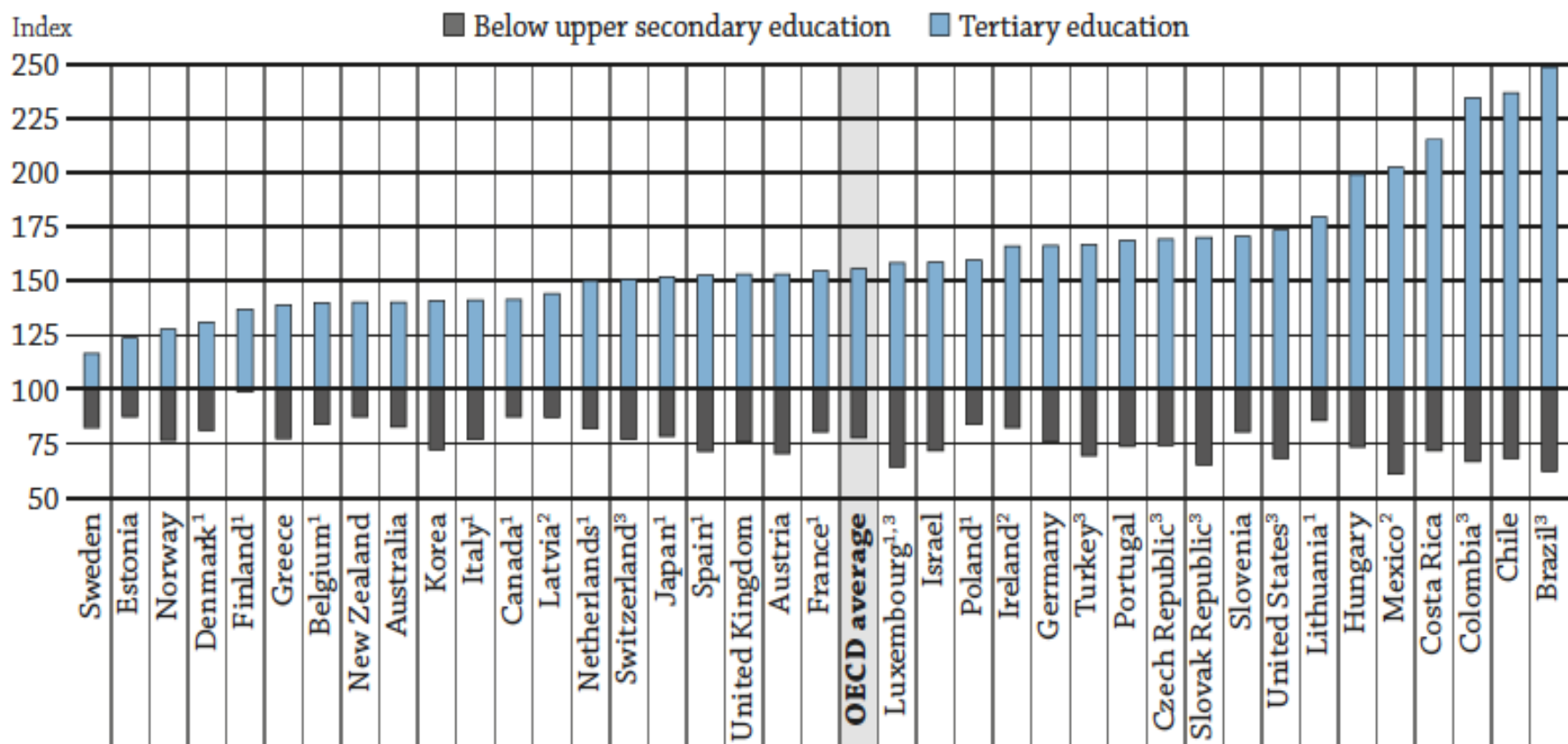
## Non-Monetary:

- Crime reduction
- Social mobility
- Social cohesion
- Health

## Returns to Investment in Education Regional Averages (%)

Region	Social			Private		
	Primary	Sec.	HE	Prim.	Sec.	HE
Asia	16.2	11.1	11.0	20.0	15.8	18.2
Europe/Middle East/ North Africa	15.6	9.7	9.9	13.8	13.6	18.8
Latin America/ Caribbean	17.4	12.9	12.3	26.6	17.0	19.5
OECD	8.5	9.4	8.5	13.4	11.3	11.6
Sub-Saharan Africa	25.4	18.4	11.3	37.6	24.6	27.8
World	18.9	13.1	10.8	26.6	17.0	19.0

**Figure A6.1. Relative earnings of adults, by educational attainment (2015)**  
*25-64 year-olds with income from employment; upper secondary education = 100*



Note: Tertiary education includes short-cycle tertiary, bachelor's, master's, doctoral or equivalent degrees.

**Figure A5.3. Employment rates of 25-34 year-olds, by educational attainment and programme orientation (2016)**

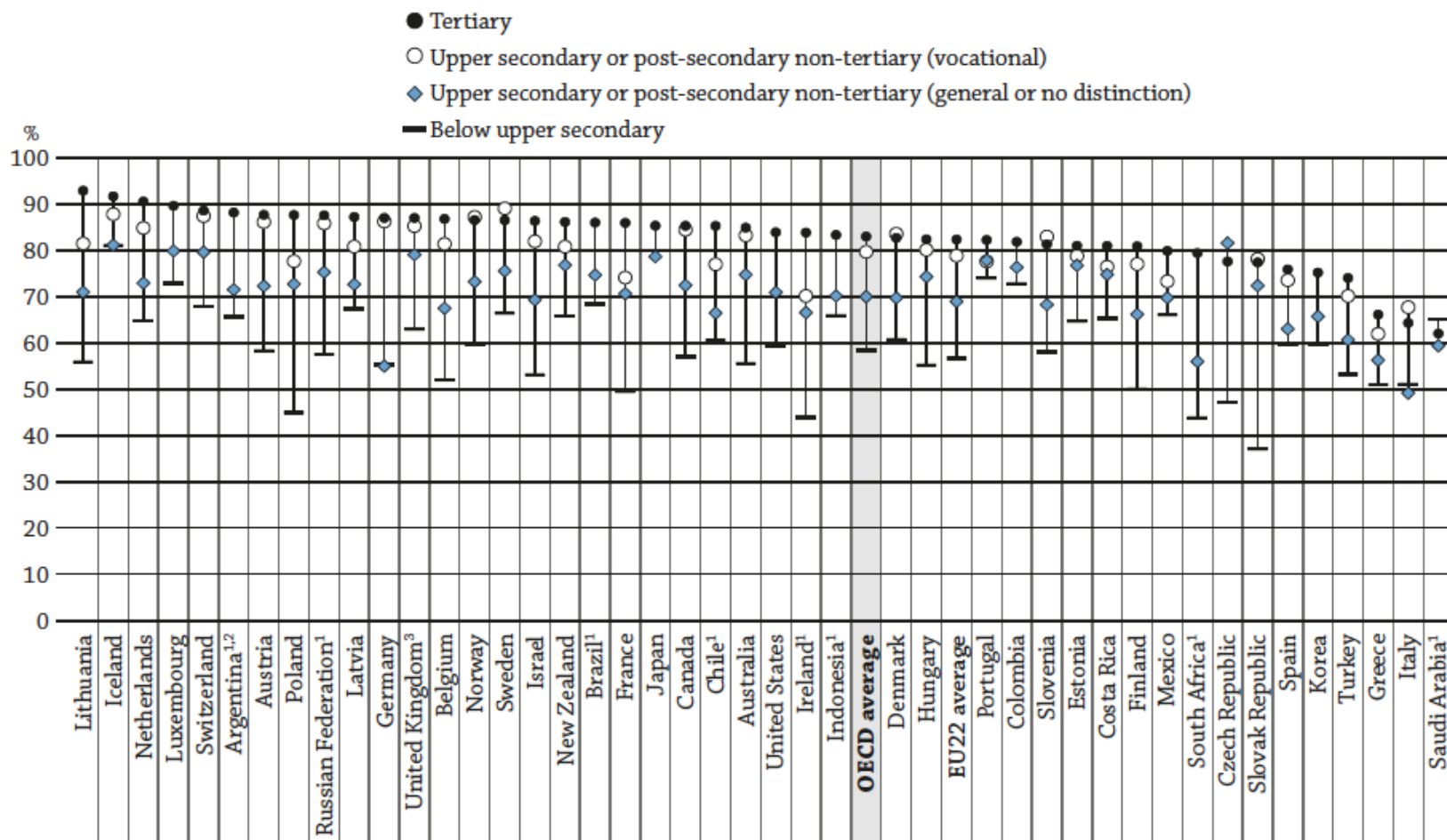
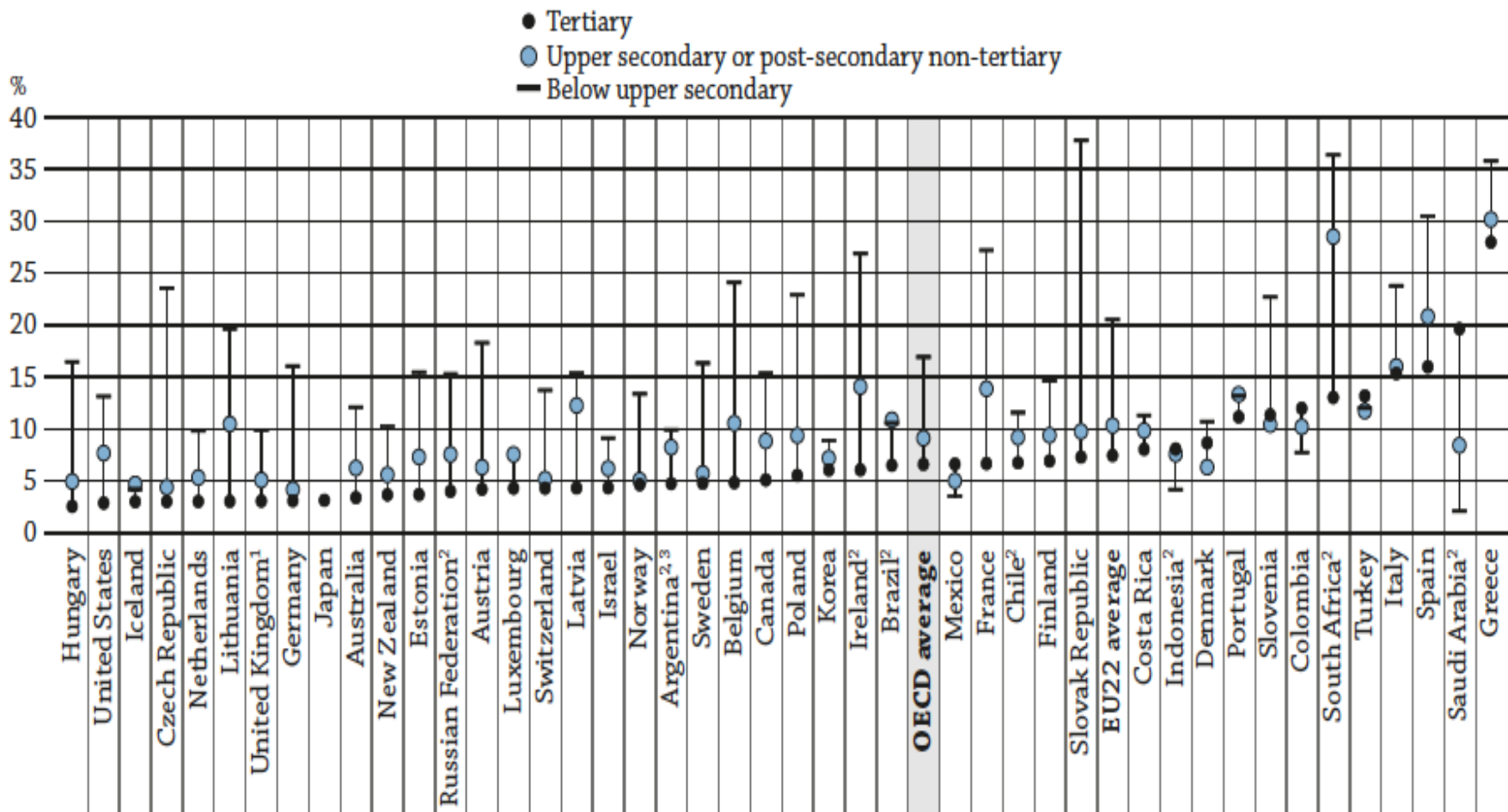


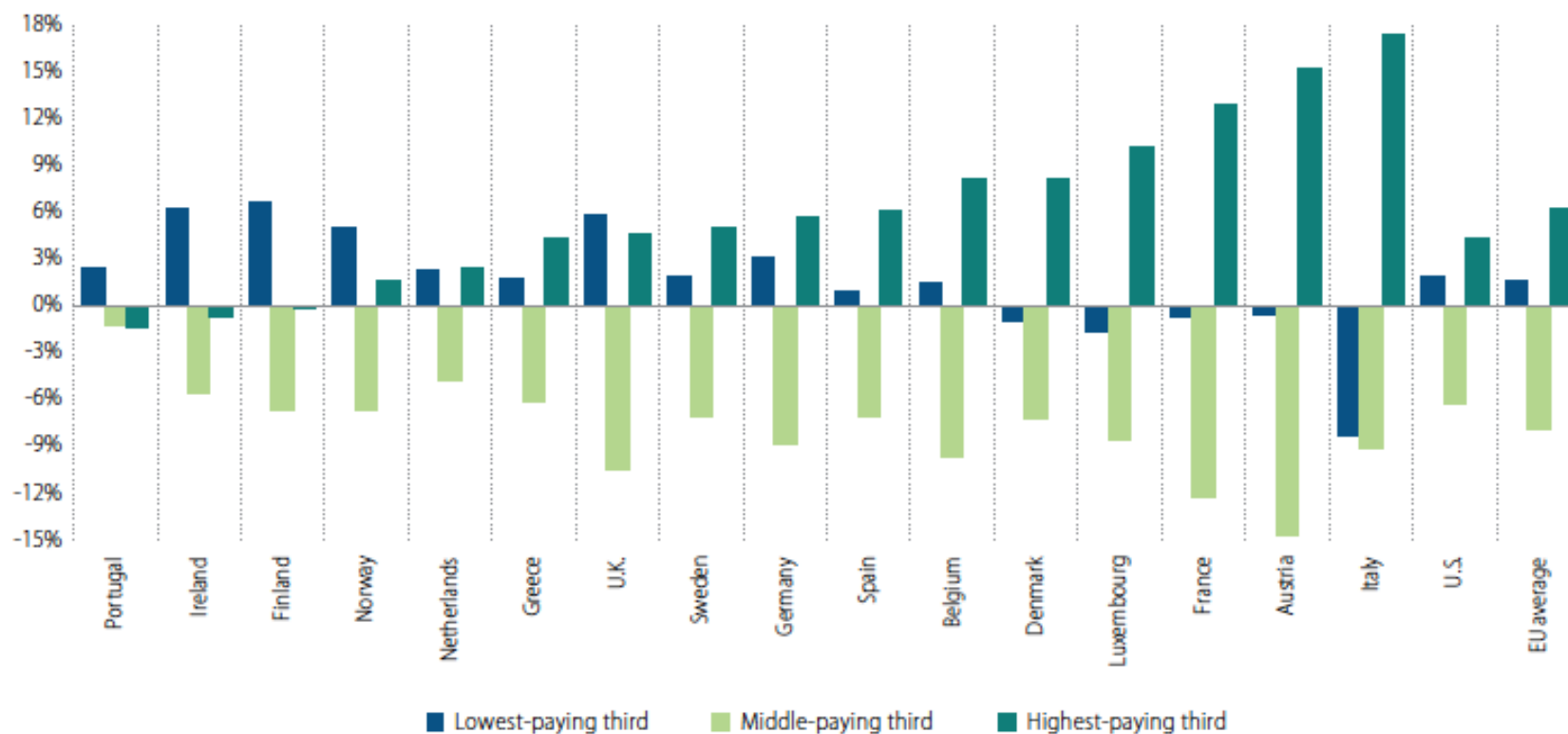


Figure A5.4. Unemployment rates of 25-34 year-olds, by educational attainment (2016)



## Change in employment shares by occupation in 16 European countries Occupations grouped by wage tertile: Low, middle, high, 1993–2006

Percentage change in employment shares

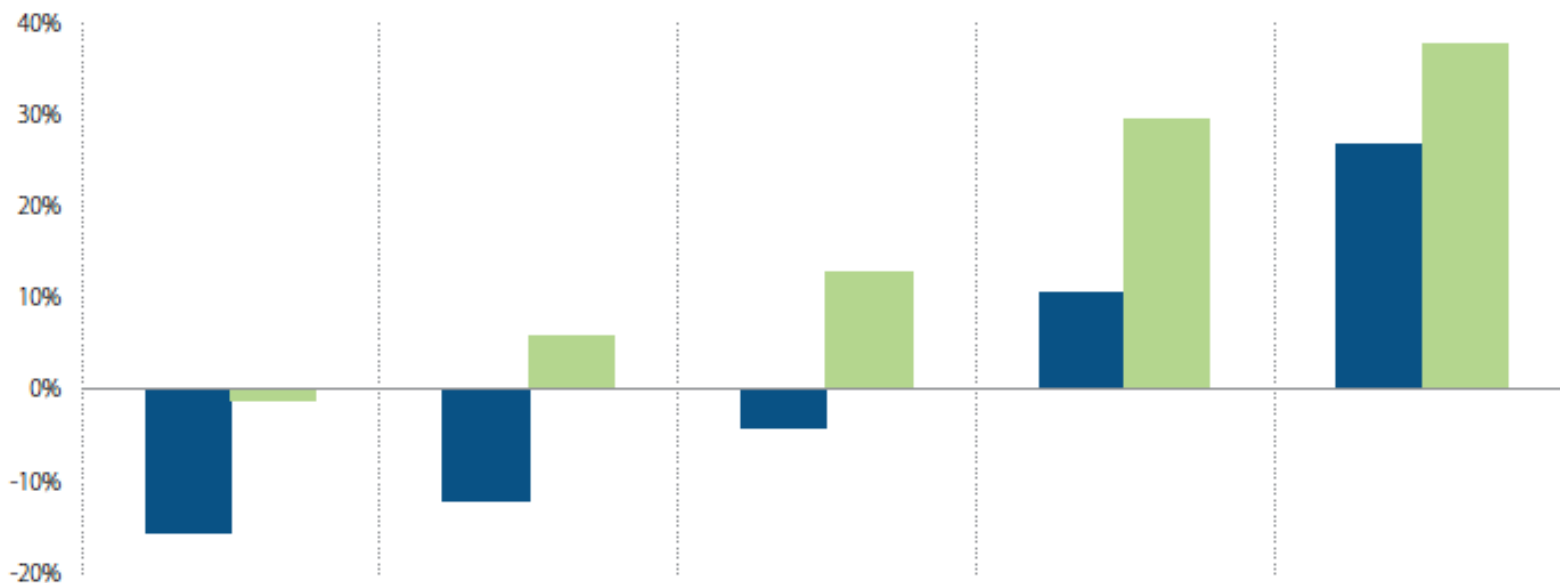


Source: Data on EU employment are from from Goos, Manning and Salomons, 2009a.

FIGURE 13

Percent changes in real hourly earnings by education, 1979–2007

Percentage change in real hourly earnings

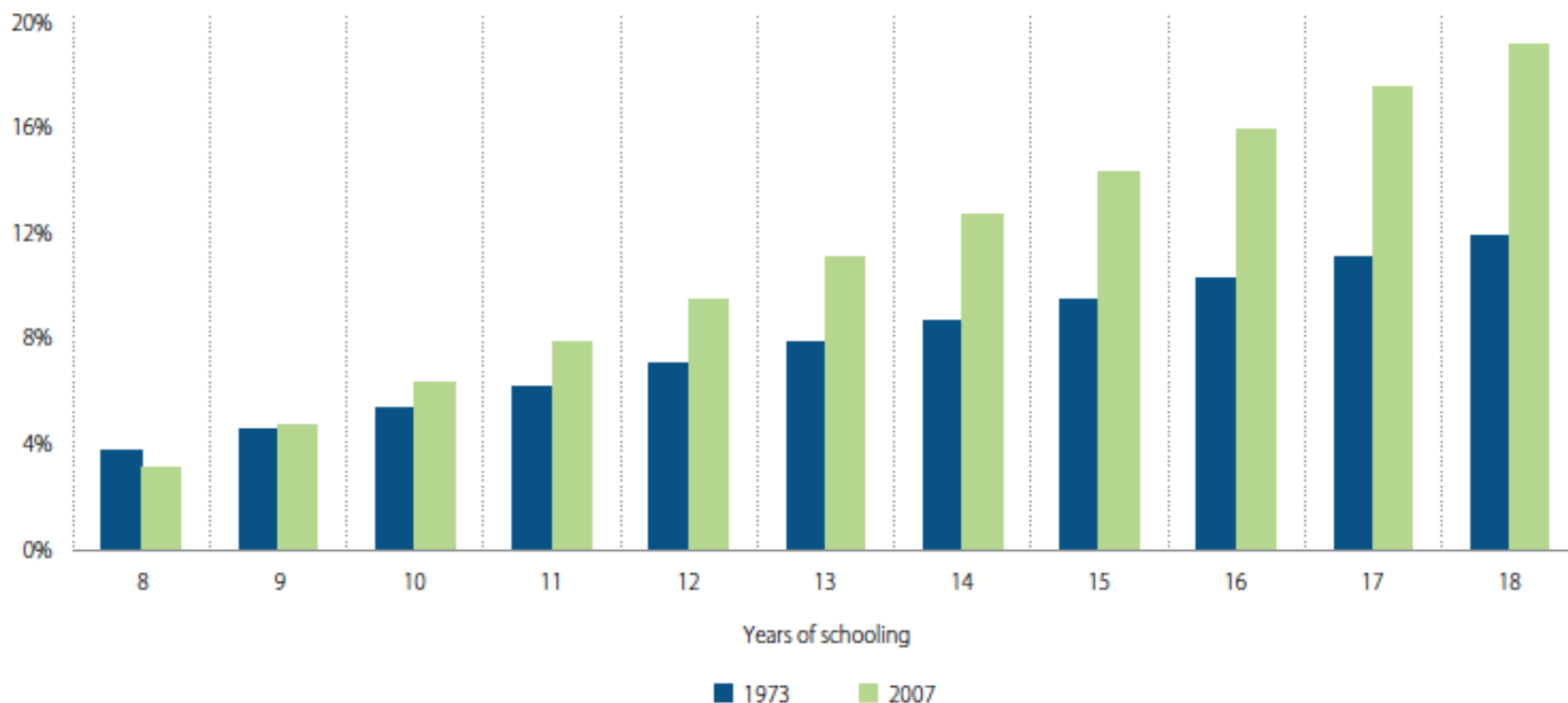


	High school dropout	High school graduate	Some college	College graduate	Postcollege education
■ Males	-0.16	-0.12	-0.04	0.10	0.26
■ Females	-0.01	-0.06	-0.12	0.29	0.37

FIGURE 14

## Median hourly wage gain by years of schooling, 1973 and 2007

Percentage wage gain



Source: Autor (2010)

## Private Non-Monetary Benefits - Beyond Earnings (McMahon, 2018)

		Associate Degree	Bachelor Degree	
	1 Yr	2 Yrs*	4 Yrs*	
<b>Own Health</b>	0.187	3.7%	7.5%	Units of health, 1-10
<b>Better Child Health</b>	0.195	3.9%	7.8%	Units of child health, 1-10
<b>Better Spousal Health</b>	0.180	3.6%	7.2%	Units, spousal health, 1-10
<b>Greater Longevity</b>	0.117	-0.234	-0.468	Lower Mortality Rate;BA increases lifespan 4.8 yrs
<b>Child Educ., Cog. Dev.</b>	0.180	0.354	0.708	Reading and Math Scores
<b>Less Poverty; Smaller Families</b>	-	-0.360	-0.720	Fewer live births/woman
<b>Increased Happiness</b>	-	+	+	Up to \$80,000 HH income
<b>More Efficient Household Consumption</b>	-	+	+	BA worth \$4,016, Michael
<b>More Saving and Better Asset Mgt.</b>	-	+	+	BA worth \$3,939, Solomon
<b>Lifelong Learning</b>	-	-	+	No Coefficients Available

# Private Non-Monetary Benefits - Beyond Earnings (McMahon, 2018)

**Table 2**

**Value of Non-Monetary Benefits of US Bachelors and Associate Degrees**  
**Benefits are for each year after graduation, beyond earnings, and in 2016 dollars\***

Non-Monetary Benefits College over those from High School	Estimated Value		
	Bachelor's	Associate	
<b>Private Non-Monetary Benefits</b>			
Better Own Health	\$13,890	\$4,102	
Better Child Health	\$6,887	\$2,021	
Better Spousal Health	\$2,141	\$628	
Greater Longevity	\$4,845	\$1,421	
Child Education & Cognitive Development	\$8,634	\$2,533	
Poverty Reduction due to Smaller Families	\$1,732	\$508	
Usable Evidence for Increased Happiness, beyond \$80,000 Family Income	0	0	
More Efficient Consumption & Asset Management	\$3,550	\$1,042	
Job and Location Amenities	+\$	+\$	
Lifelong Learning	+\$	+\$	
<b>Total Private Non-Market Benefits</b>	<b>\$41,679</b>	<b>\$12,255</b>	Total Pvt. Benefits = 152% of Earnings Increment
<b>Total Direct Social Non-Monetary Benefits</b>	<b>\$26,821</b>	<b>\$7,868</b>	
<b>TOTAL PRIVATE &amp; SOCIAL NON-MON. BENEFITS</b>	<b>\$68,500</b>	<b>\$20,123</b>	
<b>Average Earnings Increment over HS, M&amp;F</b>	<b>\$27,423</b>	<b>\$7,394</b>	

All values above are averages over the life cycle and therefore future values that are not discounted. This is because it is the ratios that are used to convert the monetary rate of return to an estimated total return which is discounted.

\*Source: McMahon (2017, Table 4.3 and Appendix C) with minor refinements due to updating in McMahon (2018, forthcoming), and “Rate of Return Calculations for 2015” at <https://publish.illinois.edu/wcmcmahon/>.



# Growing Interest on Social Benefits of Education

**Table A8.a. Thematic framework for the indicator on education and social outcomes in *Education at a Glance***

Dimension	Topic
1. Health status	Self-reported health, disability, depression
2. Work-life balance	Balance between work and family
3. Social connections	Trust in others, volunteering, cultural participation
4. Civic engagement and governance	Trust in authorities, voting
5. Environment	Air and water quality, attitude and behaviour towards environmental matters
6. Personal safety	Safe walking alone, victim of crime
7. Subjective well-being	Life satisfaction, happiness

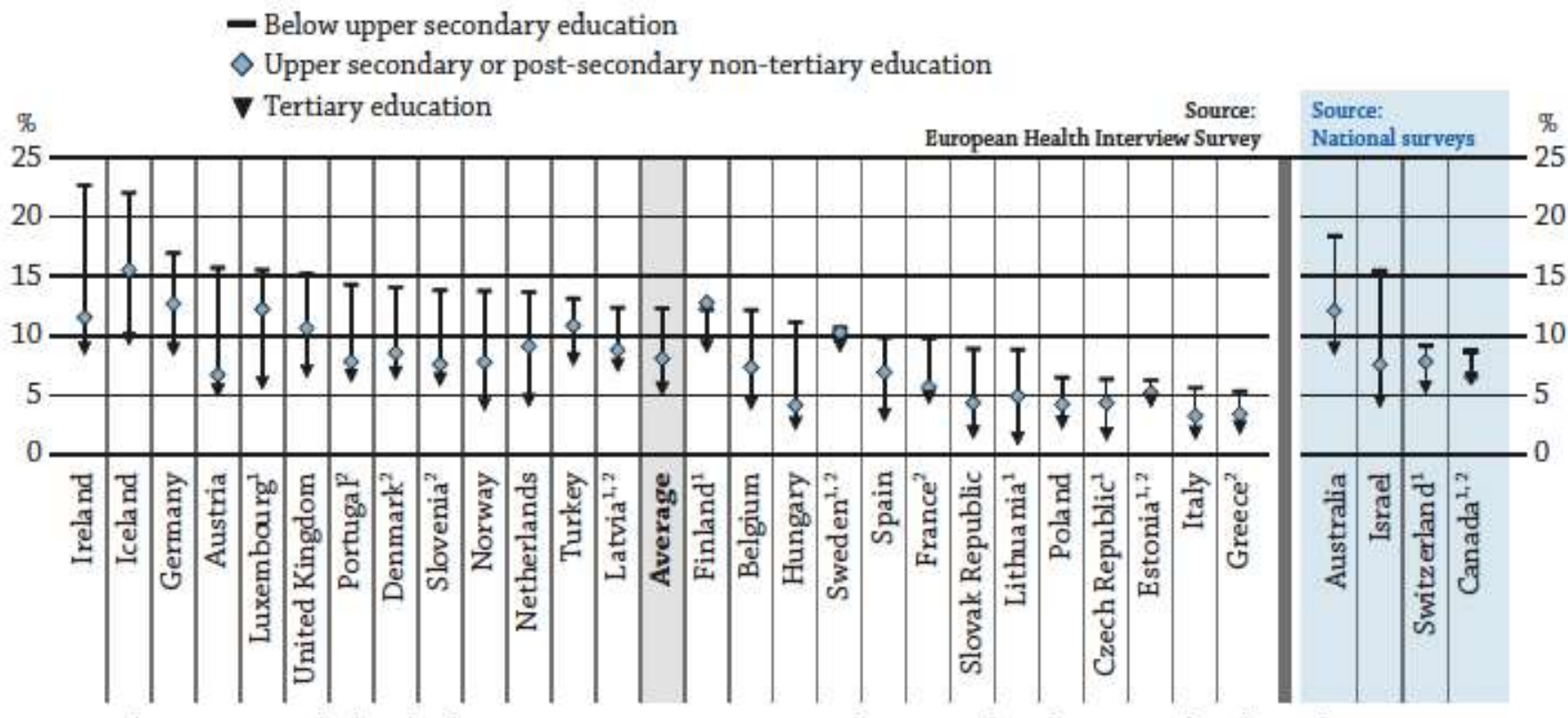
The framework foresees that the seven dimensions will be covered over a four-year publication cycle, starting with *Education at a Glance 2018*, with one or two dimensions covered each year (Table A8.b).

**Table A8.b. Summary of the dimensions foreseen in future editions of *Education at a Glance***

Dimension	2018	2019	2020	2021	2022	2023	2024	2025
Environment	✓				✓			
Work-life balance		✓				✓		
Social connections		✓				✓		
Civic engagement and governance			✓				✓	
Personal safety			✓				✓	
Health status				✓				✓
Subjective well-being				✓				✓

**Figure A8.1. Percentage of adults who report having depression, by educational attainment (2014)**

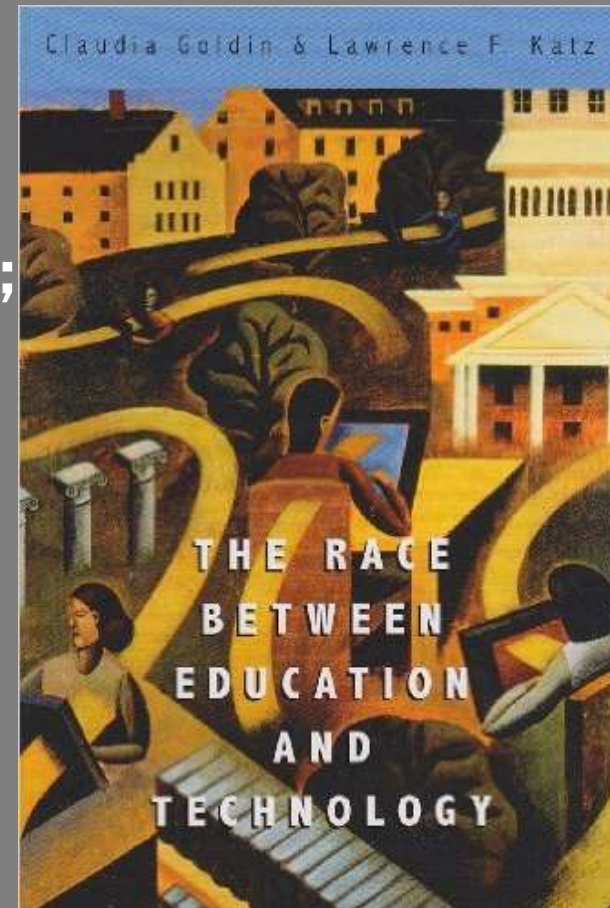
*European Health Interview Survey and national surveys, 25-64 year-olds*





## HC and Income Inequality:

- Expansion of Education & Wage Premium;
- S vs. Demand – Scarcity and Abundance;
- S/D curves shift over time;
- Temporary disequilibria - Overeducation;
- Skill-Biased Technological Progress;
- Quality & Skills vs. Diploma & Credentials;



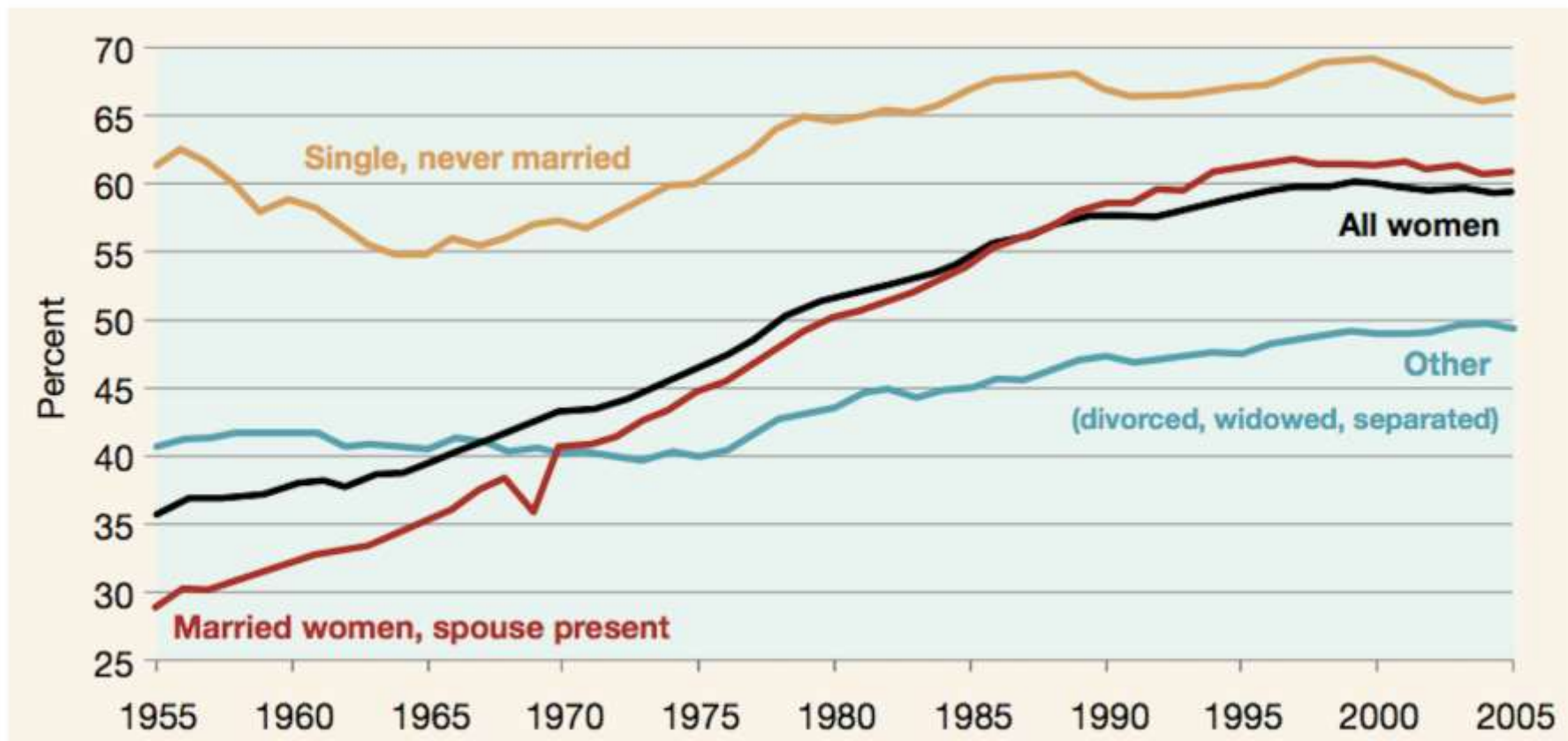
# Individual Returns and Gender

## Rates of Return by Gender

<b>Level of Education</b>	<b>Men</b>	<b>Women</b>
<b>Primary</b>	<b>20,1</b>	<b>12,8</b>
<b>Secondary</b>	<b>13,9</b>	<b>18,4</b>
<b>Tertiary</b>	<b>11,0</b>	<b>10,8</b>

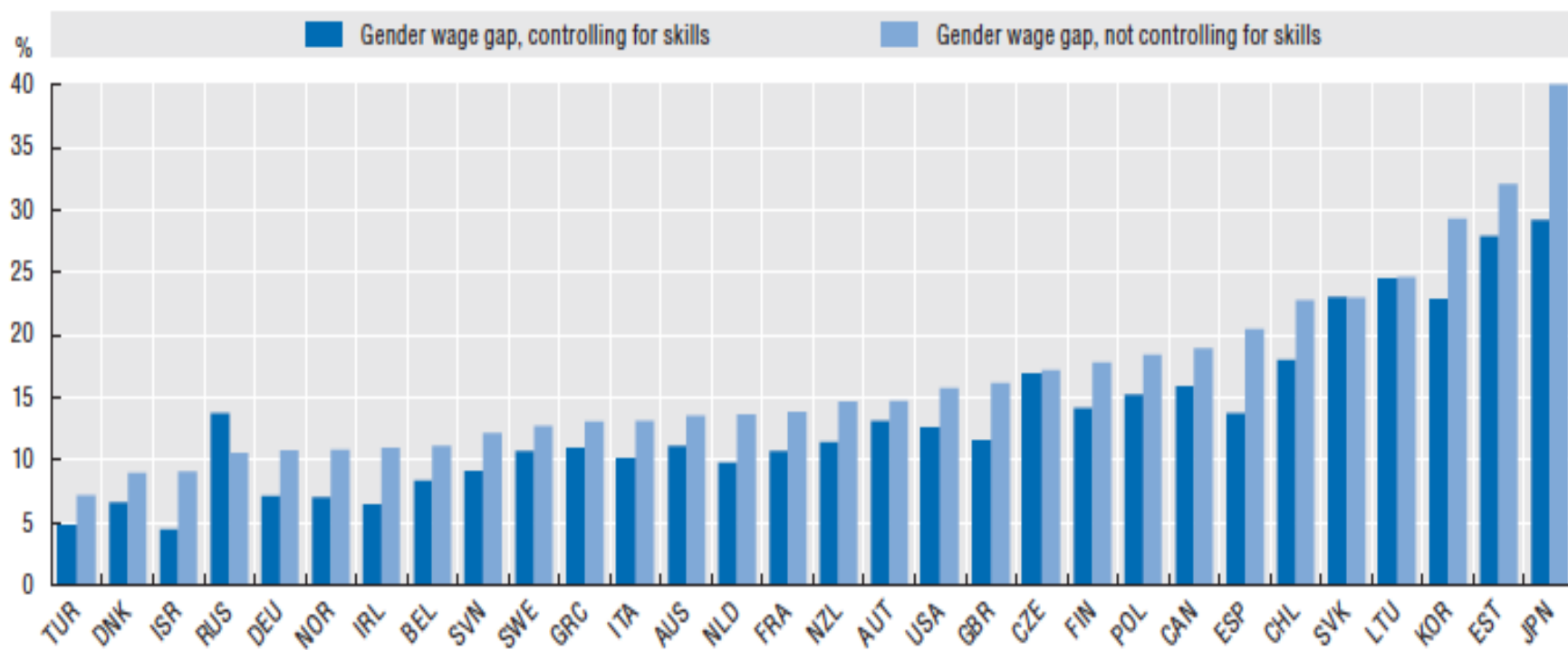
Psacharopoulos e Patrinos (2002)

# Labor Force Participation of Women in the USA, 1955-2005



### 41. Gender wage gap by country, 2012 or 2015

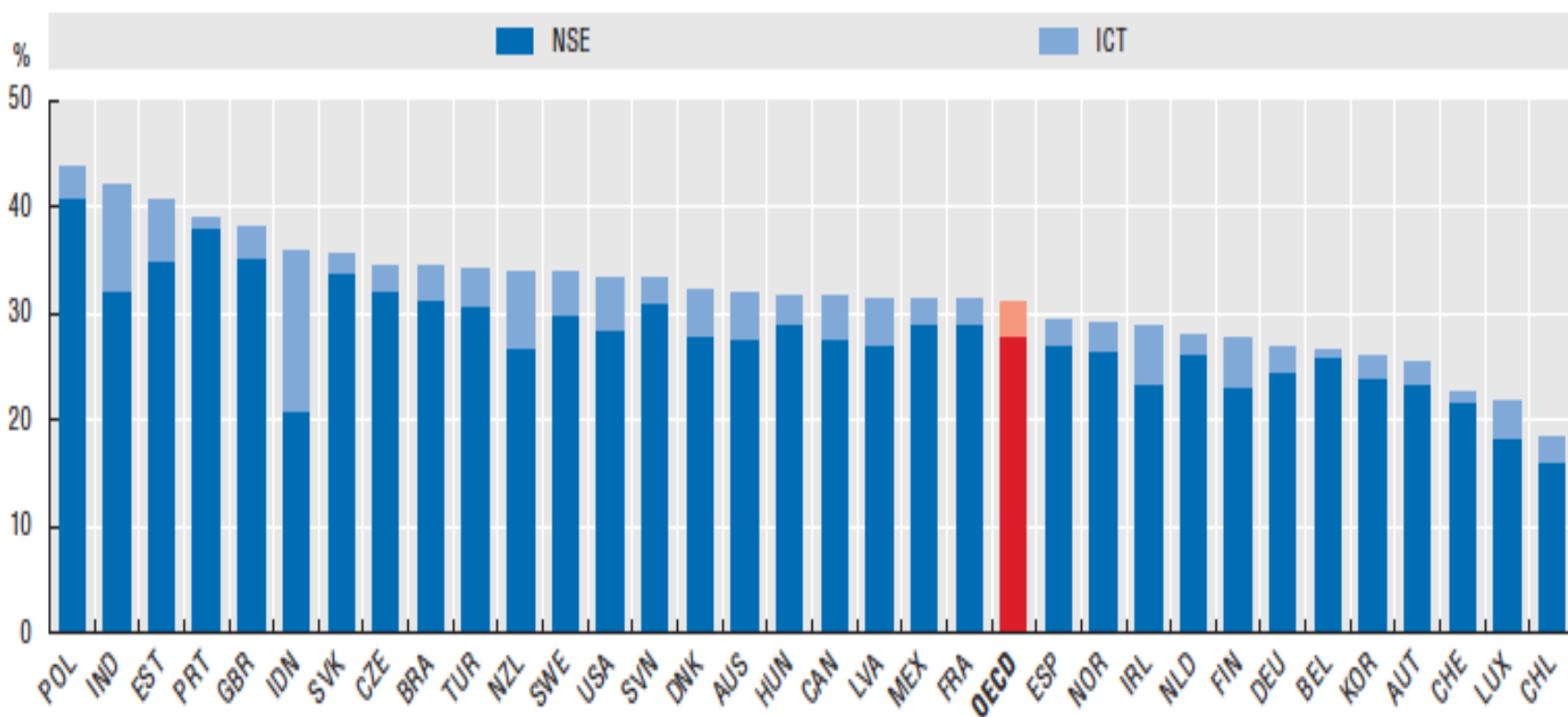
Differences in hourly wages, in percentages (controlling vs. not controlling for various types of skills)



Source: OECD calculations based on the OECD Programme for International Assessment of Adult Competencies (PIAAC) Database, September 2017. See chapter notes.

### 59. Women tertiary graduates in natural sciences, engineering and ICTs (NSE & ICT), 2015

*As a percentage of all tertiary graduates in NSE & ICT*



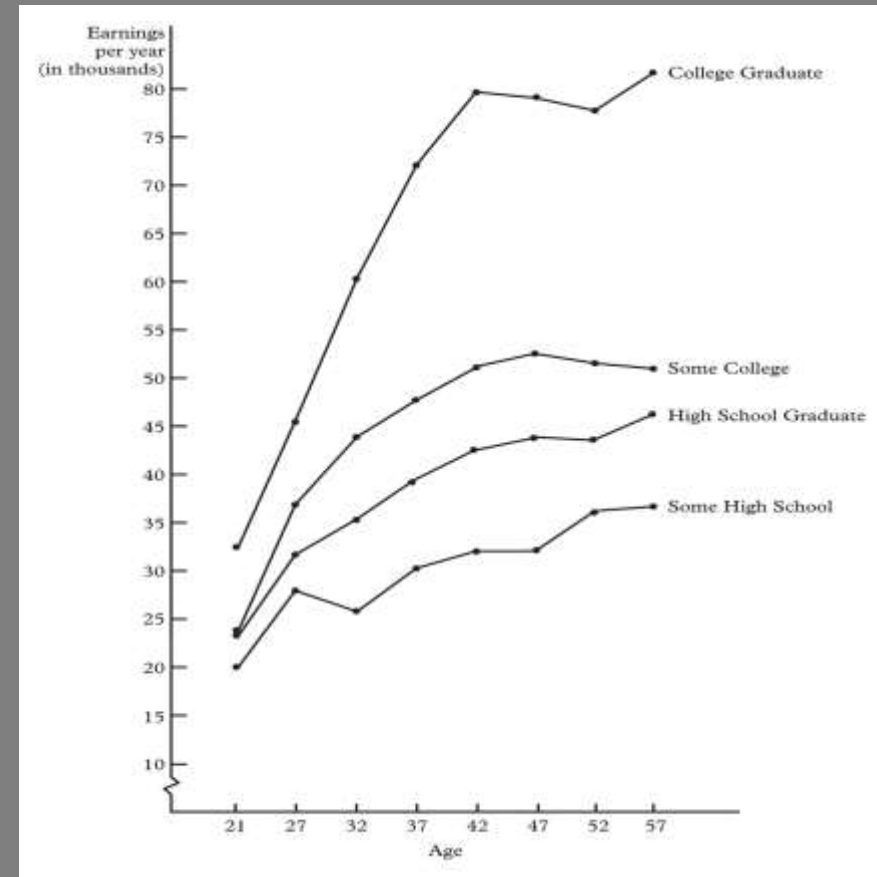
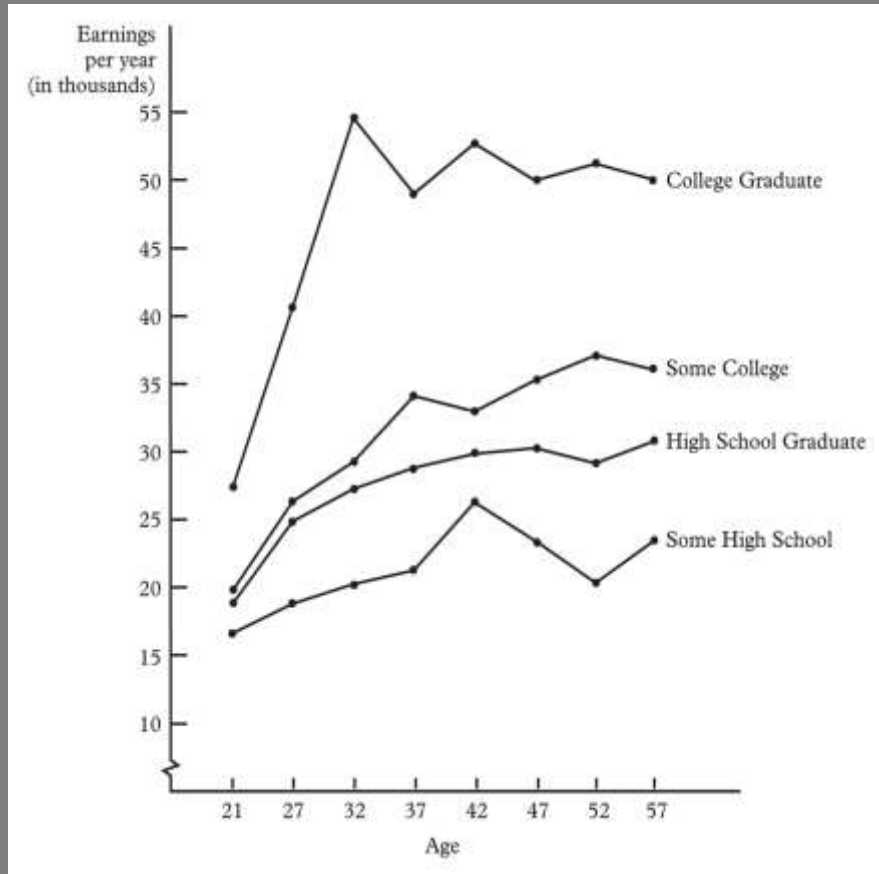
Source: OECD calculations based on OECD, Education Database, September 2017. StatLink contains more data. See chapter notes.

## **Age-earnings profiles:**

- **Show how typical earnings vary with age and educational qualifications**
- **Education induces a differential**
- **Differential tends to increase with age**

# Monetary Earnings (Mean) for Full-Time Workers

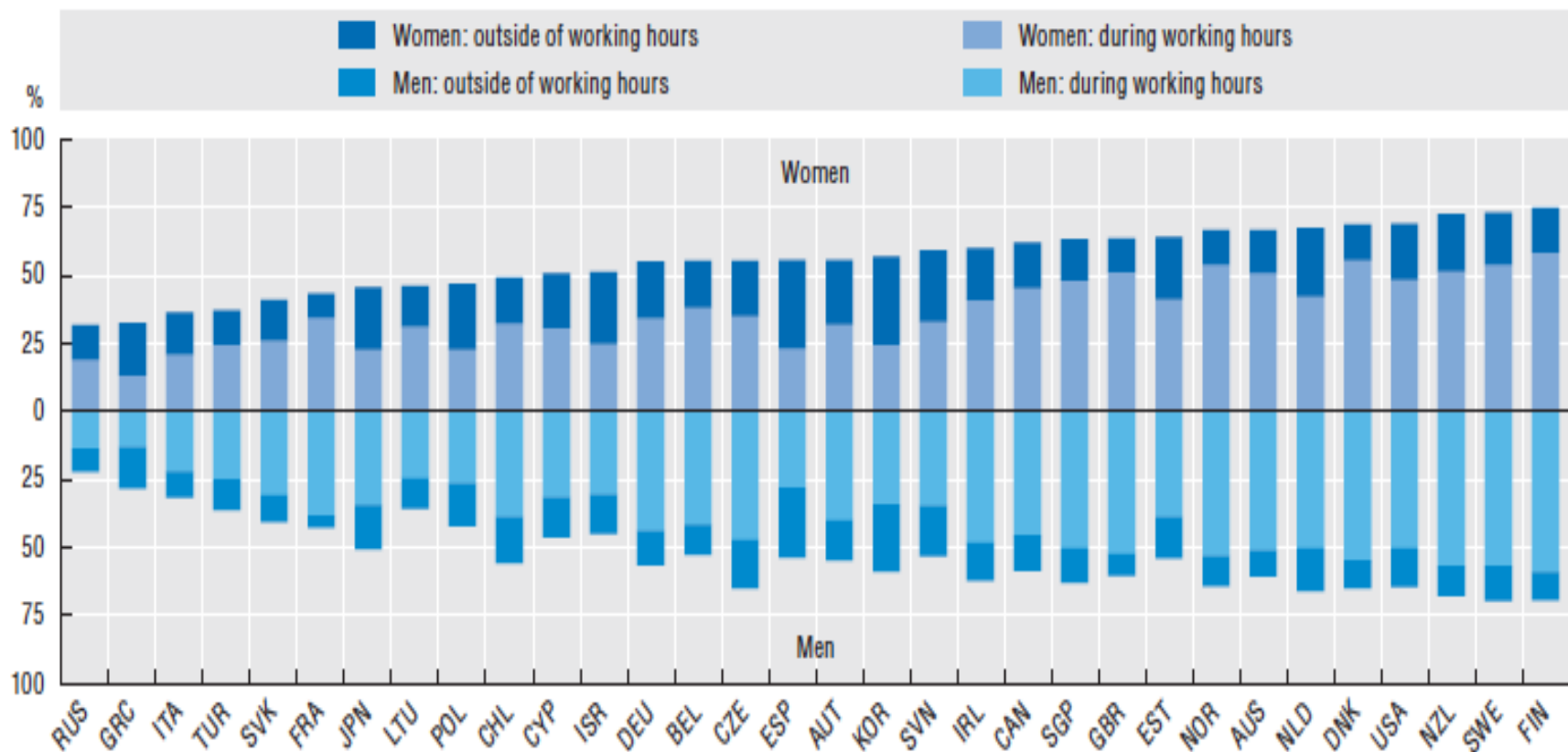
## F and M





### 43. Employees participating in on-the-job training, by gender, 2012 or 2015

As a percentage of total employees of a given gender in the economy



Source: OECD calculations based on the OECD Programme for International Assessment of Adult Competencies (PIAAC) Database, September 2017. See chapter notes.

## Returns to HE and Gender:

- **Amount and Profile of Investments in HC (Field, Generic vs. Specific HC);**
- **Labour market issues – Participation and continuity, Sector of Employment, Type/Size of firm, skill match/mismatch;**
- **Investments in additional HC by Employers/Individuals;**
- **Family and Social Norms (segregation & gendered choices);**
- **Discrimination in the Labour market;**

# Growing Inequality among Graduates

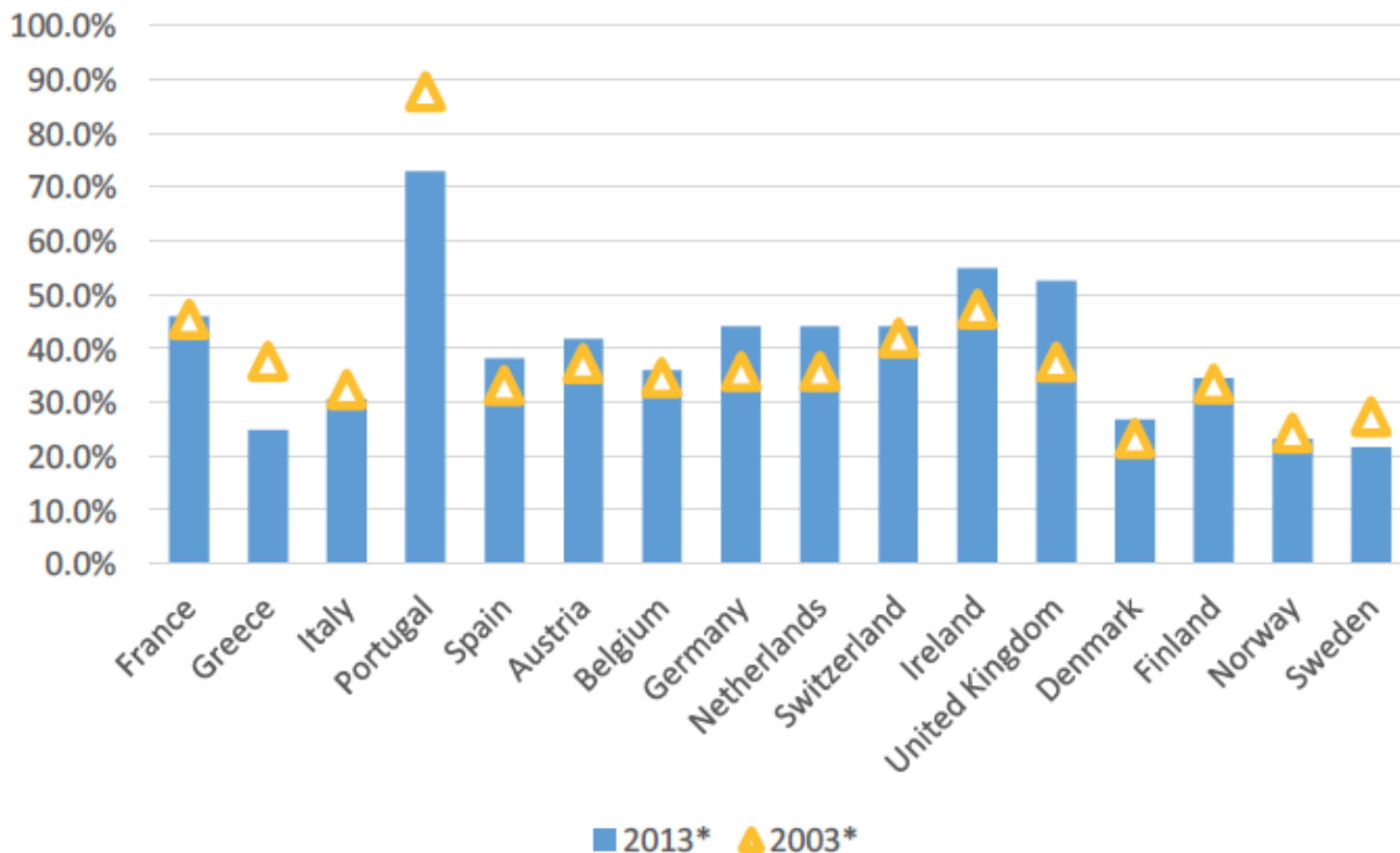
**Figure 1 Level of tertiary educational attainment 2004 & 2015 (30-34 years)**



Source: EU-LFS. Eurostat figures.

Source: Green and Hansoko (2017)

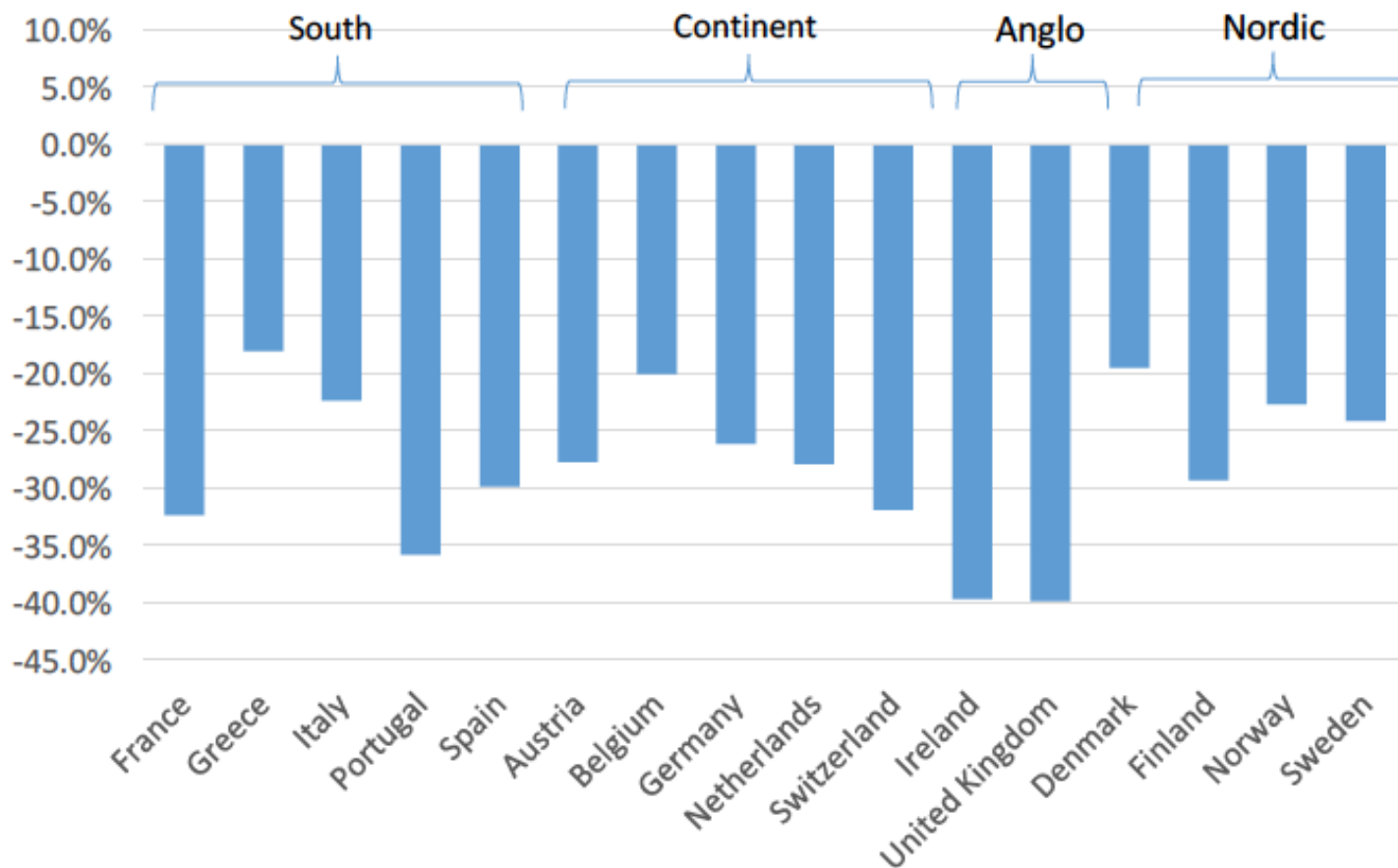
**Figure 14 The wage differential between tertiary and (upper-) secondary education, 2003 and 2013**



Source: EU-SILC. Own Estimates

Source: Green and Hansoko (2017)

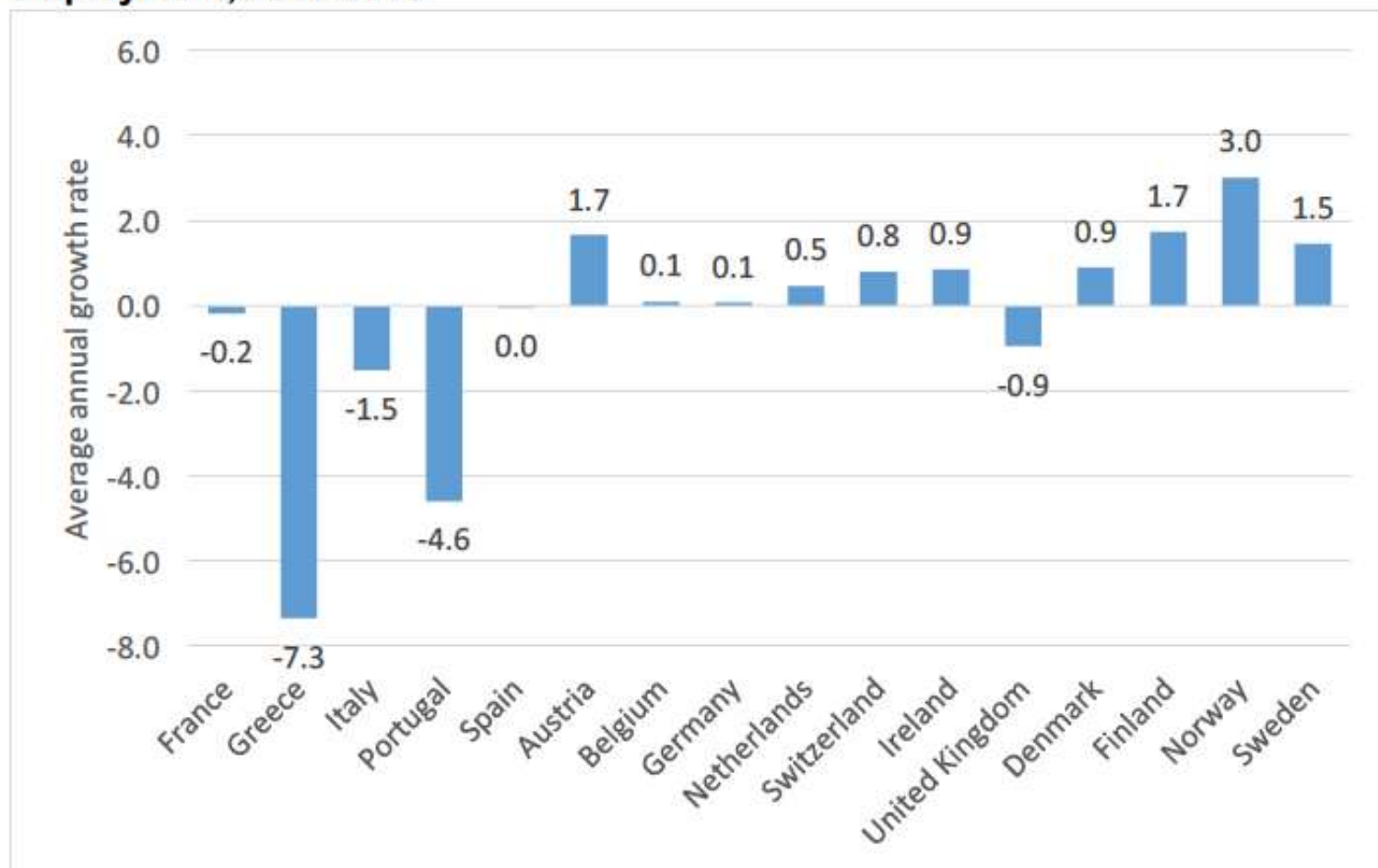
**Figure 15 The wage gap between matched and underemployed graduates, 2013**



Source: EU-SILC. Own Estimates

Source: Green and Hansoko (2017)

**Figure 16 The change in real gross earnings of graduates in high-skills employment, 2003-2013**



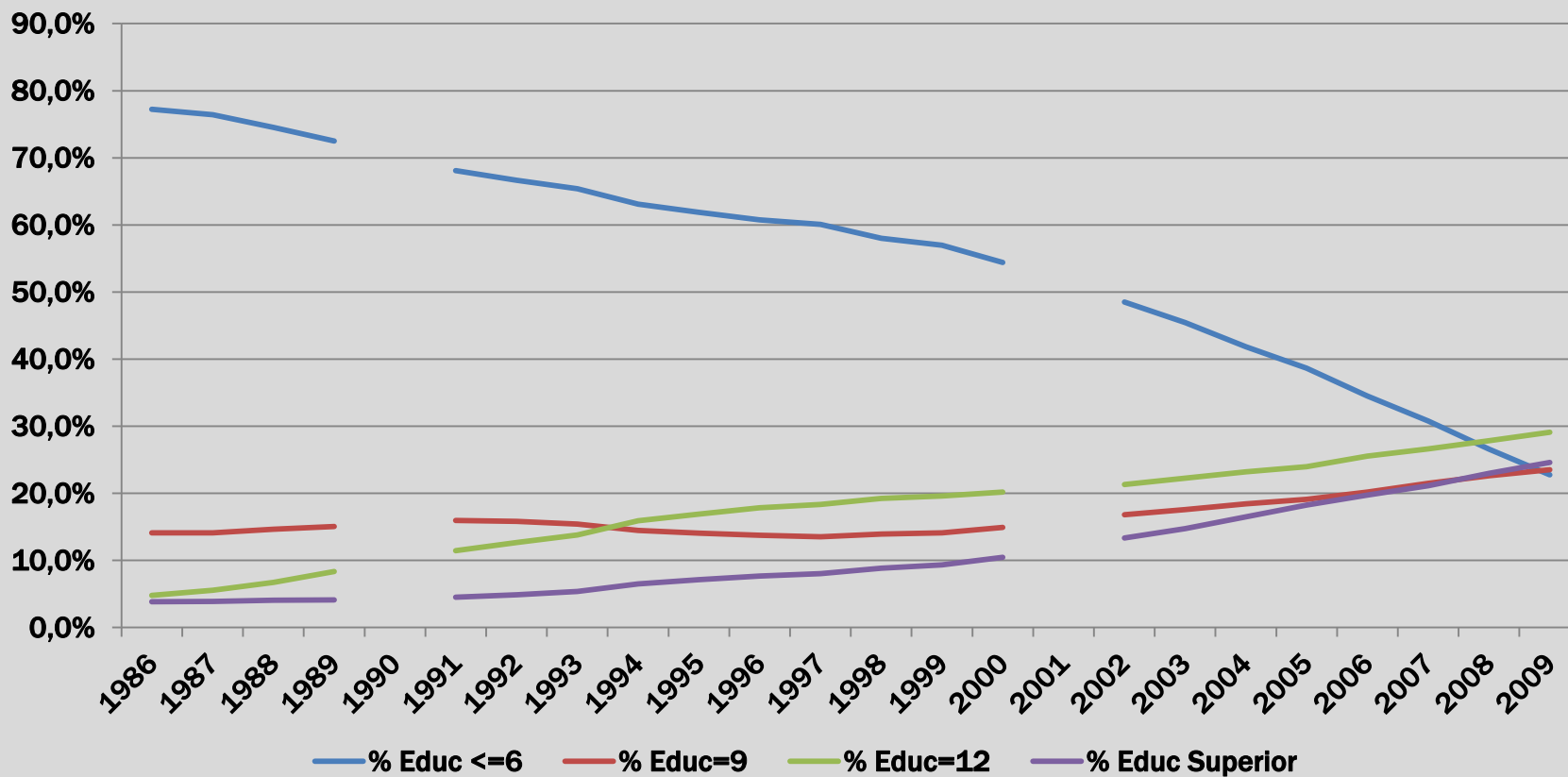
Source: EU-SILC. Own Estimates

Source: Green and Hansoko (2017)

# Qualification of the Portuguese Labour Force

(Source: Quadros de Pessoal - Teixeira, Portela, Cerejeira, Simões e Sá)

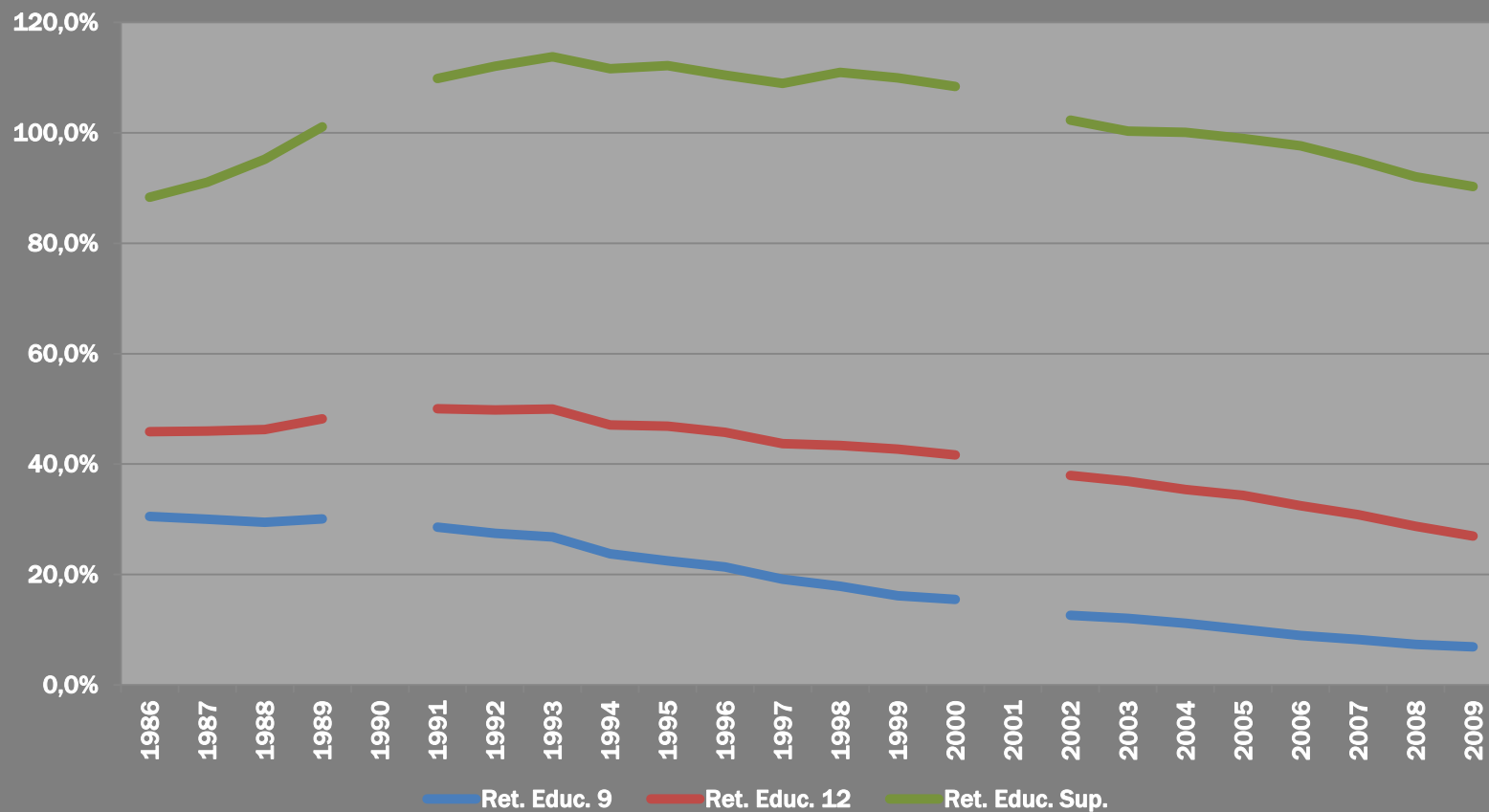
**% of workers aged 30-35 by their level of schooling**





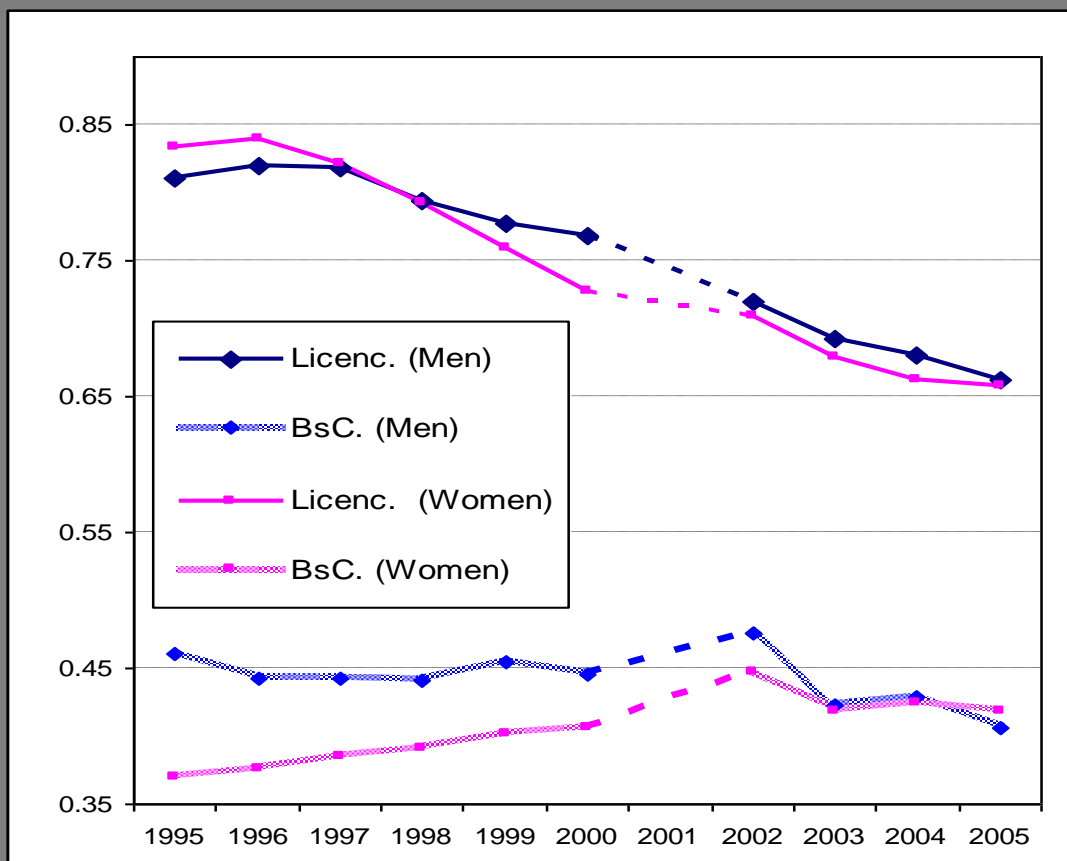
## Wage Premium regarding those Workers with 6 years of schooling for workers aged 30-35 years

Fonte: Teixeira, Portela, Cerejeira, Simões e Sá



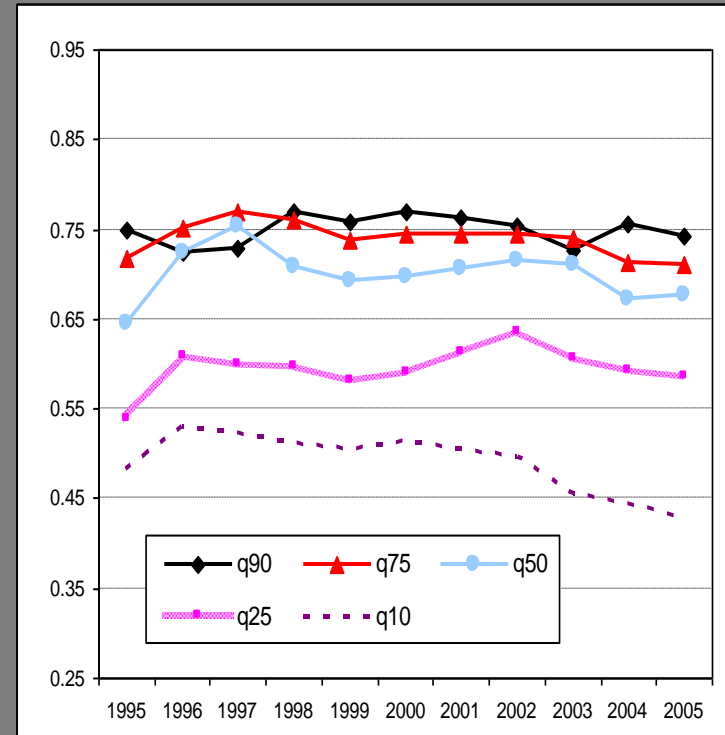
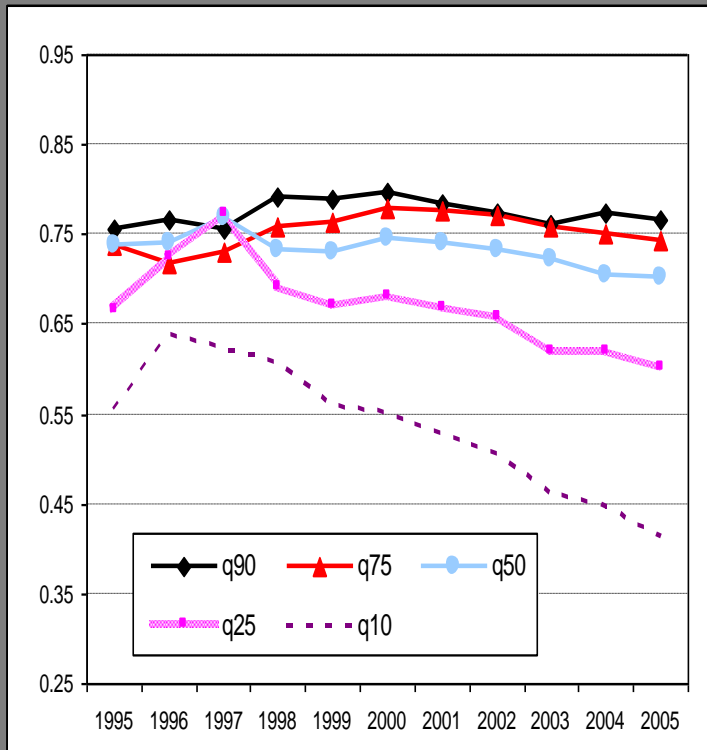
# Wage Premium for Young Graduates by Type of Degree – University vs. Vocational (1995 – 2005)

(Figueiredo, Teixeira & Rubbery, 2013)



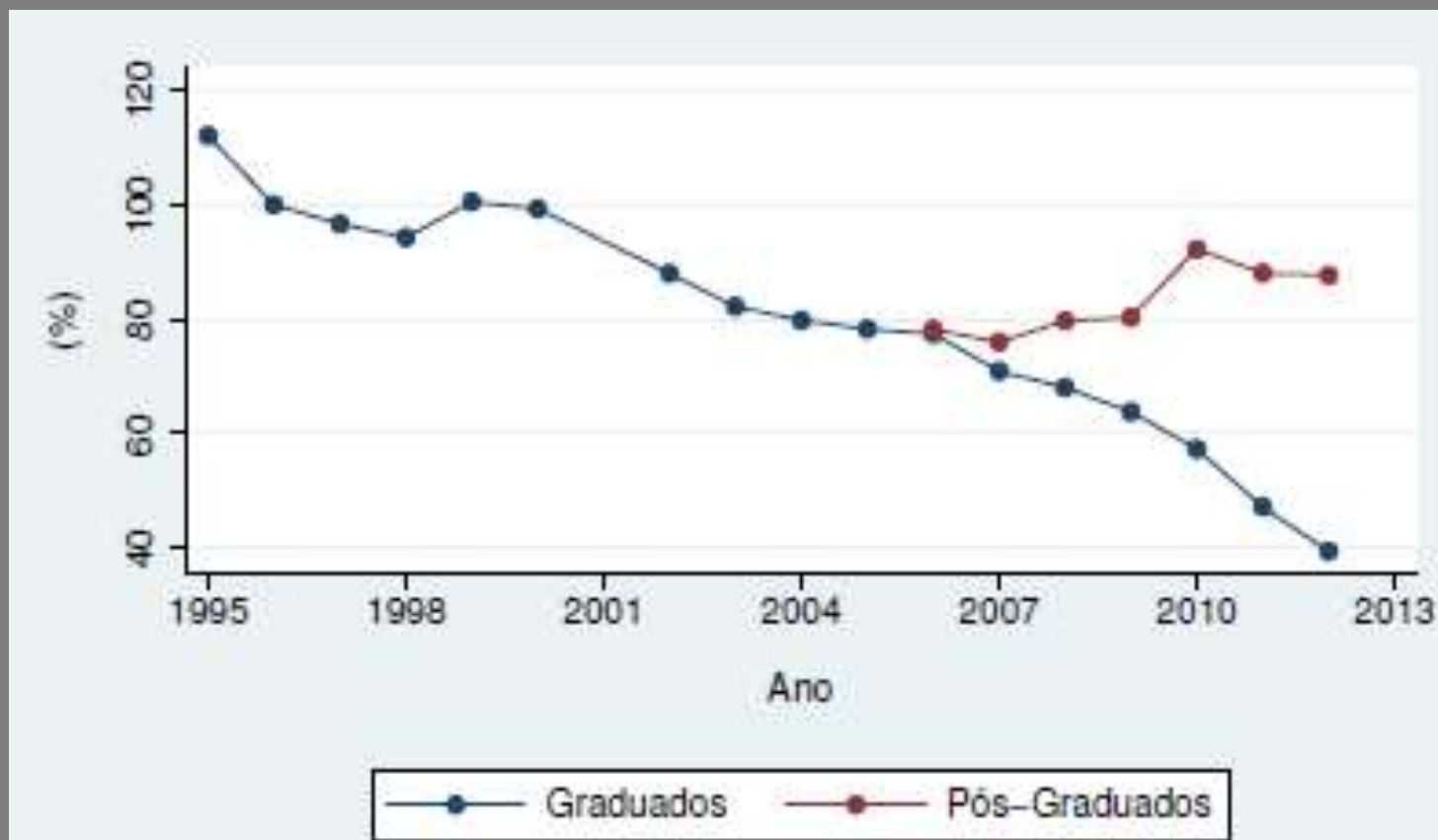
# Wage Premium for Young Graduates by Level of Income (1995 – 2005) – M and F

(Figueiredo, Teixeira & Rubbery, 2013)



## Wage Premium for Young Graduates by Type of Degree – UG vs. PG (1995 – 2013)

(Fonte: Almeida et al, 2017)



# Final Remarks

# Higher education and the Labour Market:

- **Education became a central issue in debates about Inequality;**
- **Large and Diverse Benefits associated with more qualification;**
- **Growing diversity - by gender, type and level of degree, field of study, income, ...**
- **Social and Political expectations**
- **Complex relationships between Education, Income, and the L Market**