

# Human capital, “within-inequality” and overeducation

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# Aims

- Human capital is usually considered the main driver of (level and growth) of wage inequality => the main focus is on inequality between differently educated workers (“between- inequality”).
- Inequality “within” similarly educated workers is usually neglected
- My aims are:
  - To show how important “within-inequality” in EU countries is and how it has evolved in recent years (in Italy)
  - Suggest which could be the determinants of “within-inequality” and its consequences also for policy making
  - Speculate on the relationship between education mismatches and “within-inequality”.

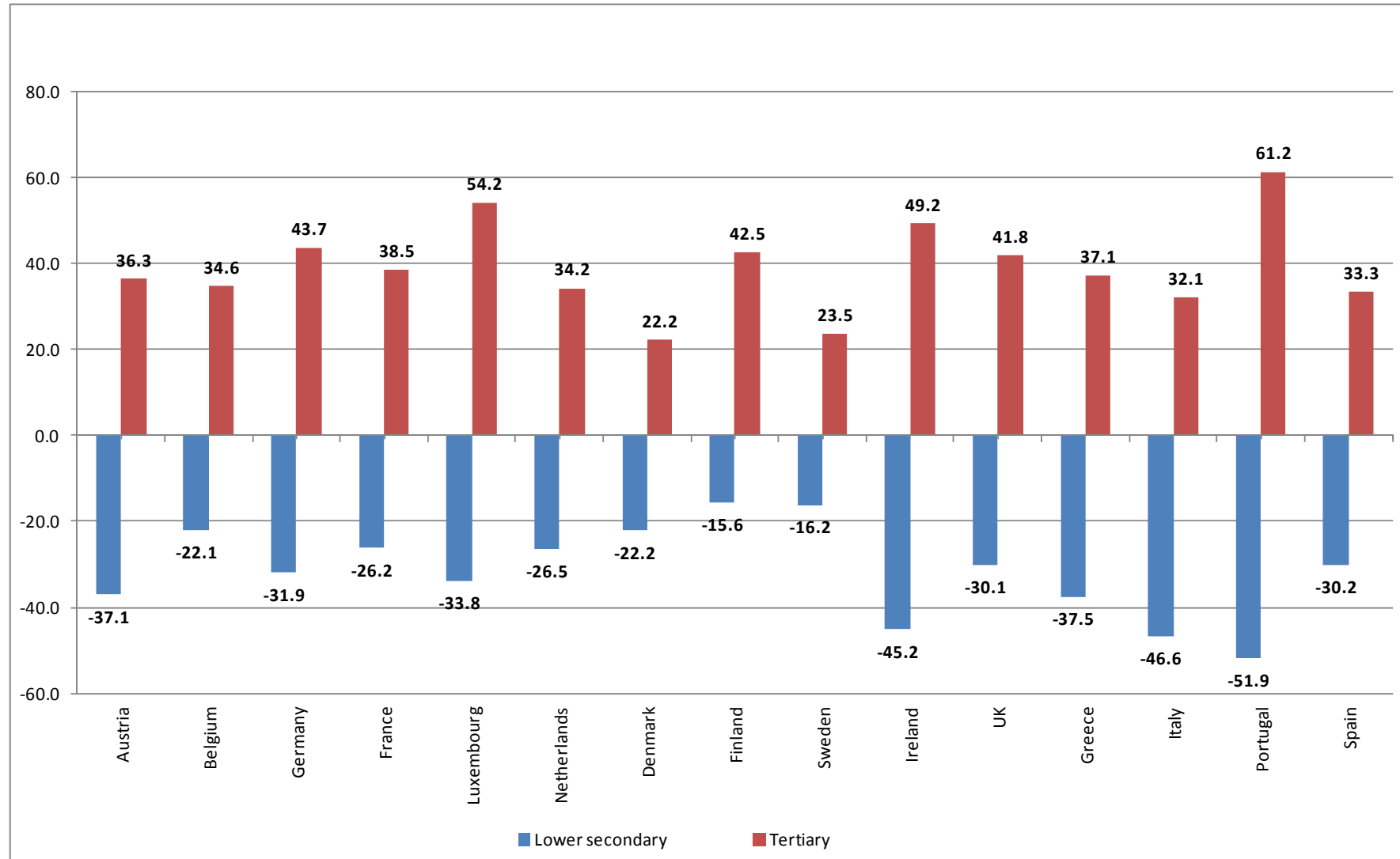
# Theoretical background

- Main explanations of wage inequality usually link levels and trend of wage inequality to drivers of labour demand and supply related to individual skills: SBTC; globalization; LM institutions; routinization.
- An implicit focus only on returns of human capital investment not on their dispersion.
- What matters is “between-skills” inequality.
- Usually, in theoretical and empirical models education is considered a very good proxy of skills.

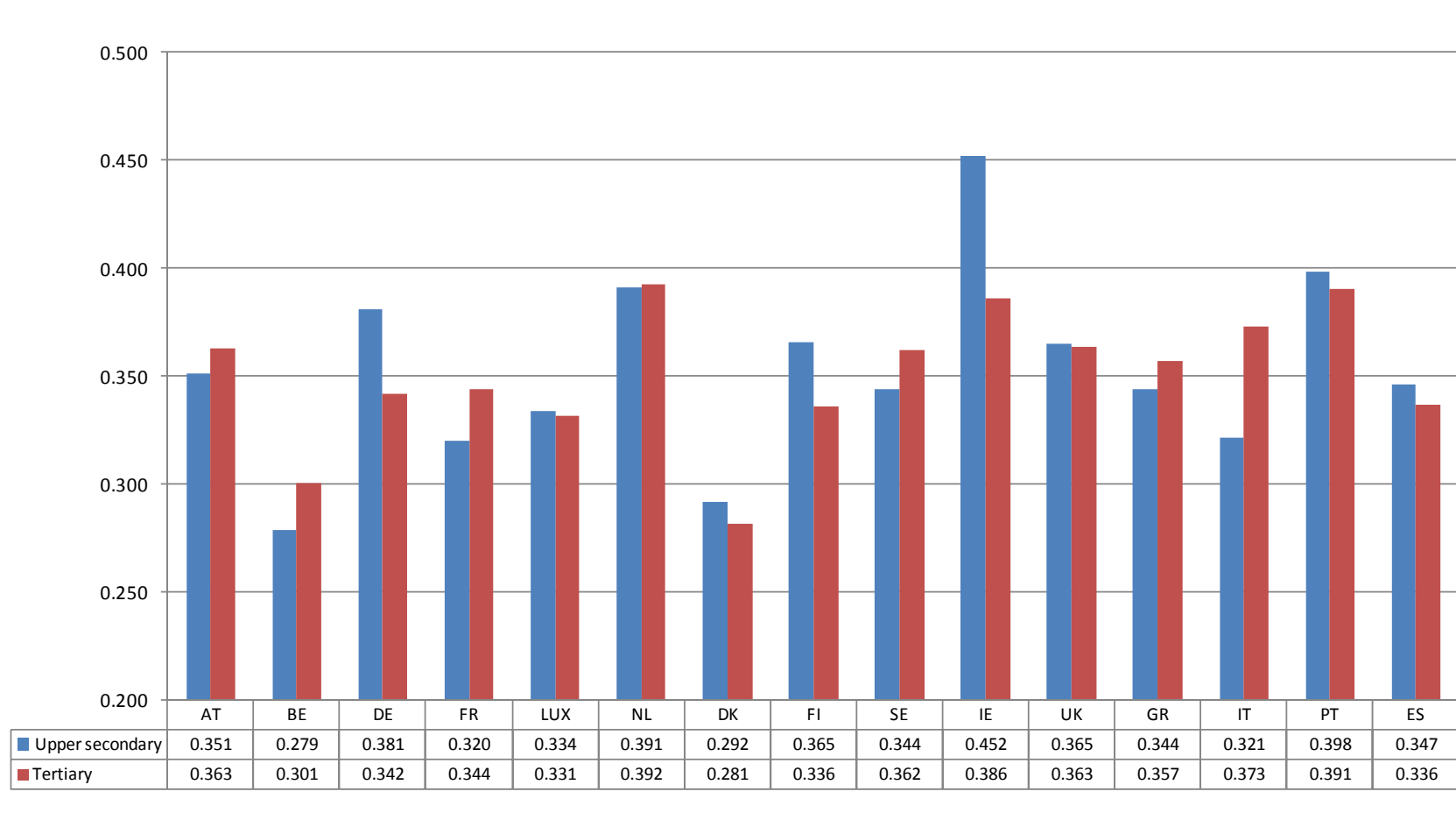
# Between and within-inequality in EU15

- Data based on EU-SILC 2007 (i.e. earnings in 2006).
- Focus on annual gross employees earnings.
- Individuals aged 15-64.
- Between/within inequality assessed through Mean Log Deviation decomposition.
- Decomposition by 3 levels of education as proxies of skills decomposition)
- Also decomposition by education and occupations (5 macro-ISCO groups) => 15 sub-groups.

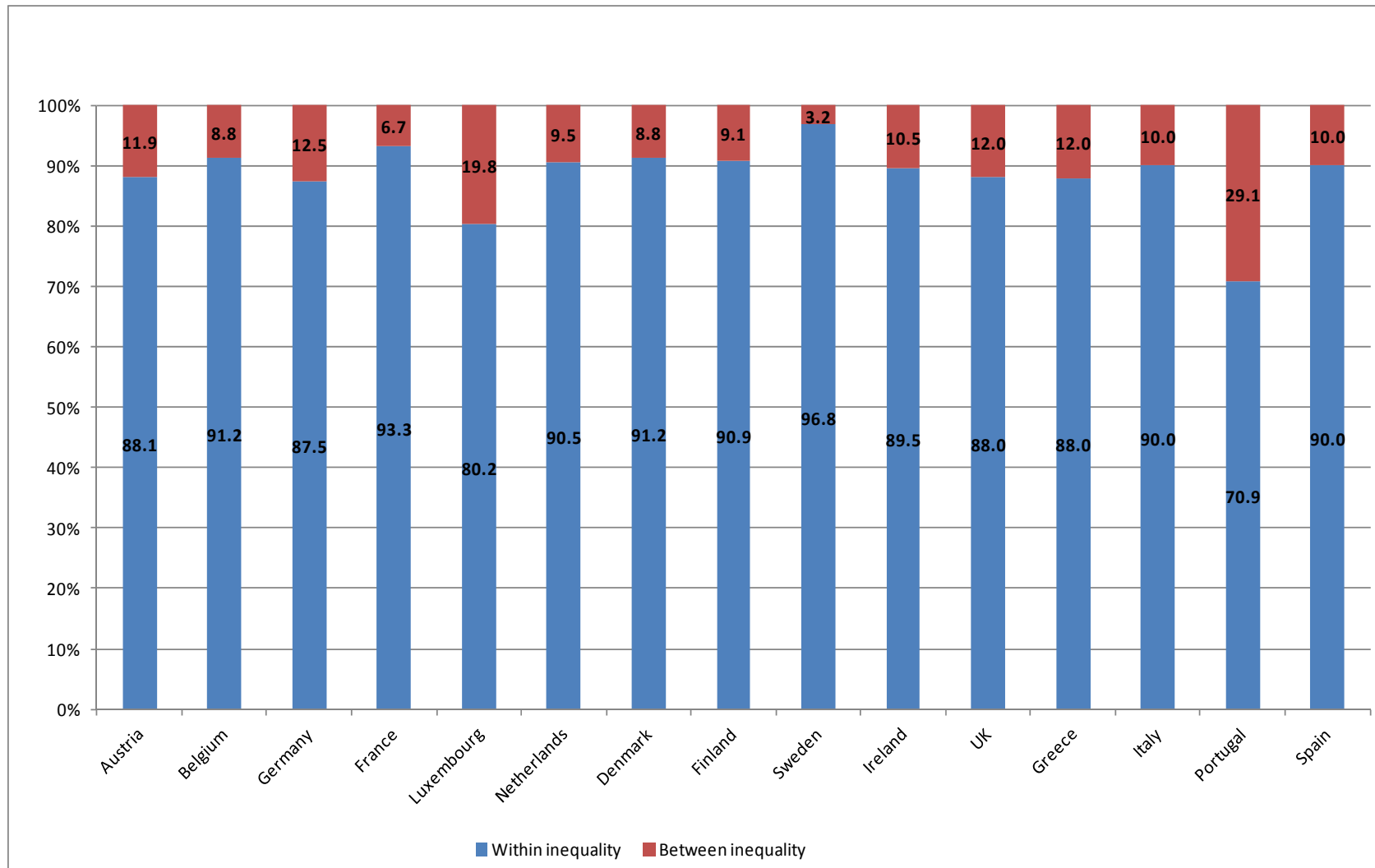
# Human capital returns in EU15 in 2006



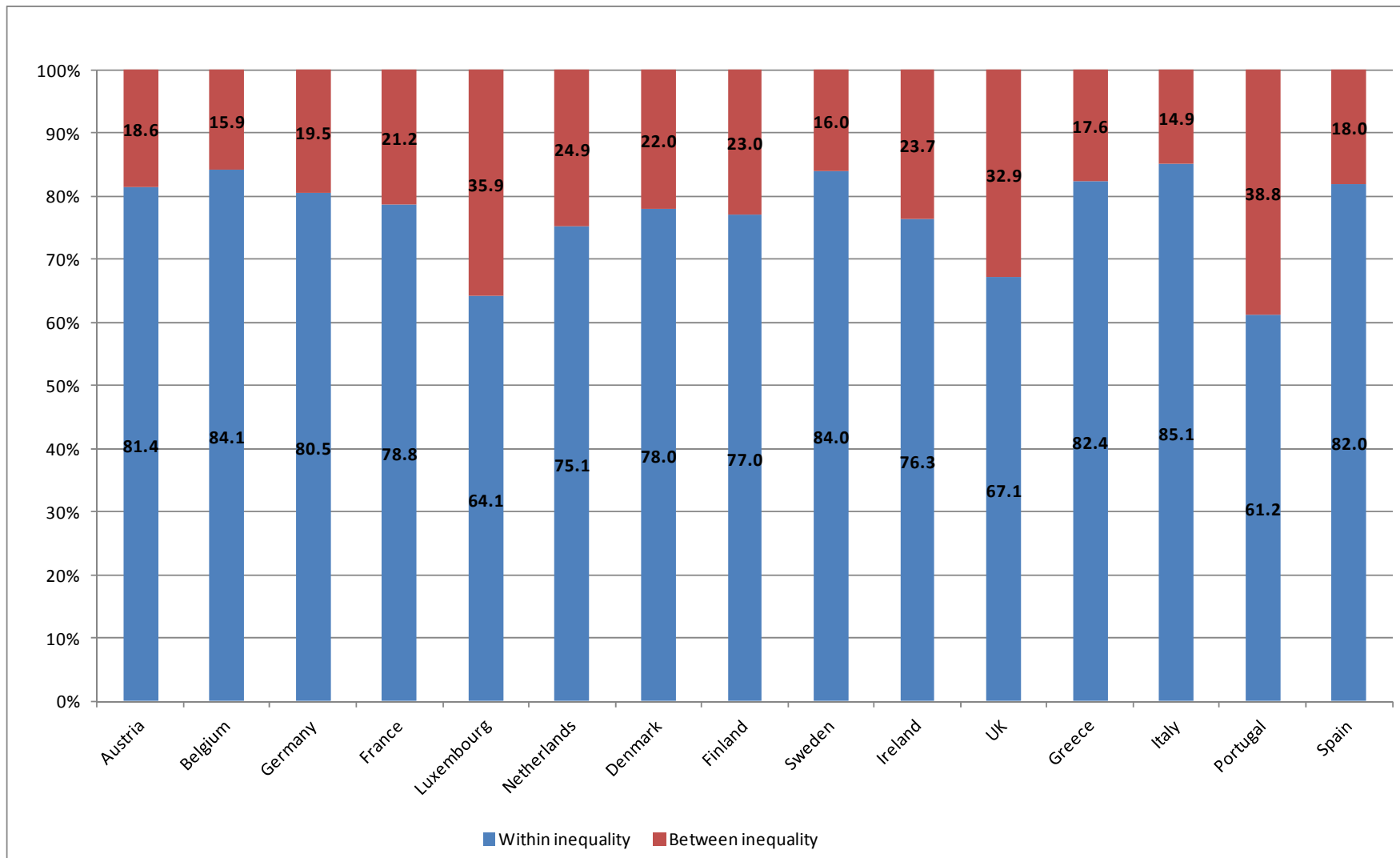
# Gini index of annual gross earnings by educational attainments in EU15 countries in 2006



# MLD decomposition of annual gross earnings inequality by education



# MLD decomposition of annual gross earnings inequality by education and occupation





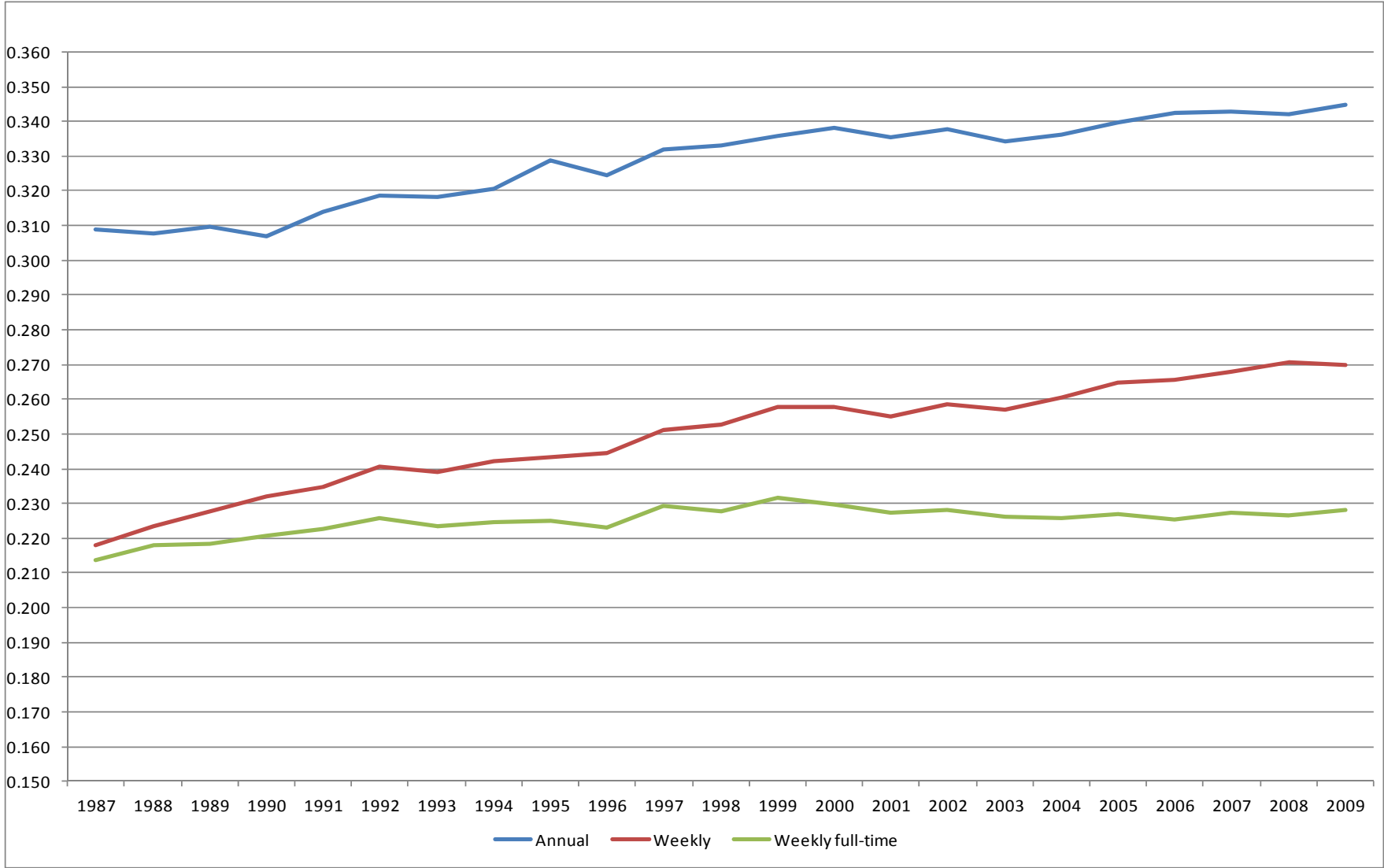
# Remarks - 1

- Human capital yields positive returns everywhere, though of variable magnitude. This is conventional wisdom
- However, inequality within equally educated people is sizeable everywhere, as shown by the Gini index
- As a consequence, “within-inequality” is responsible of a much much larger share of inequality than “between-inequality”.

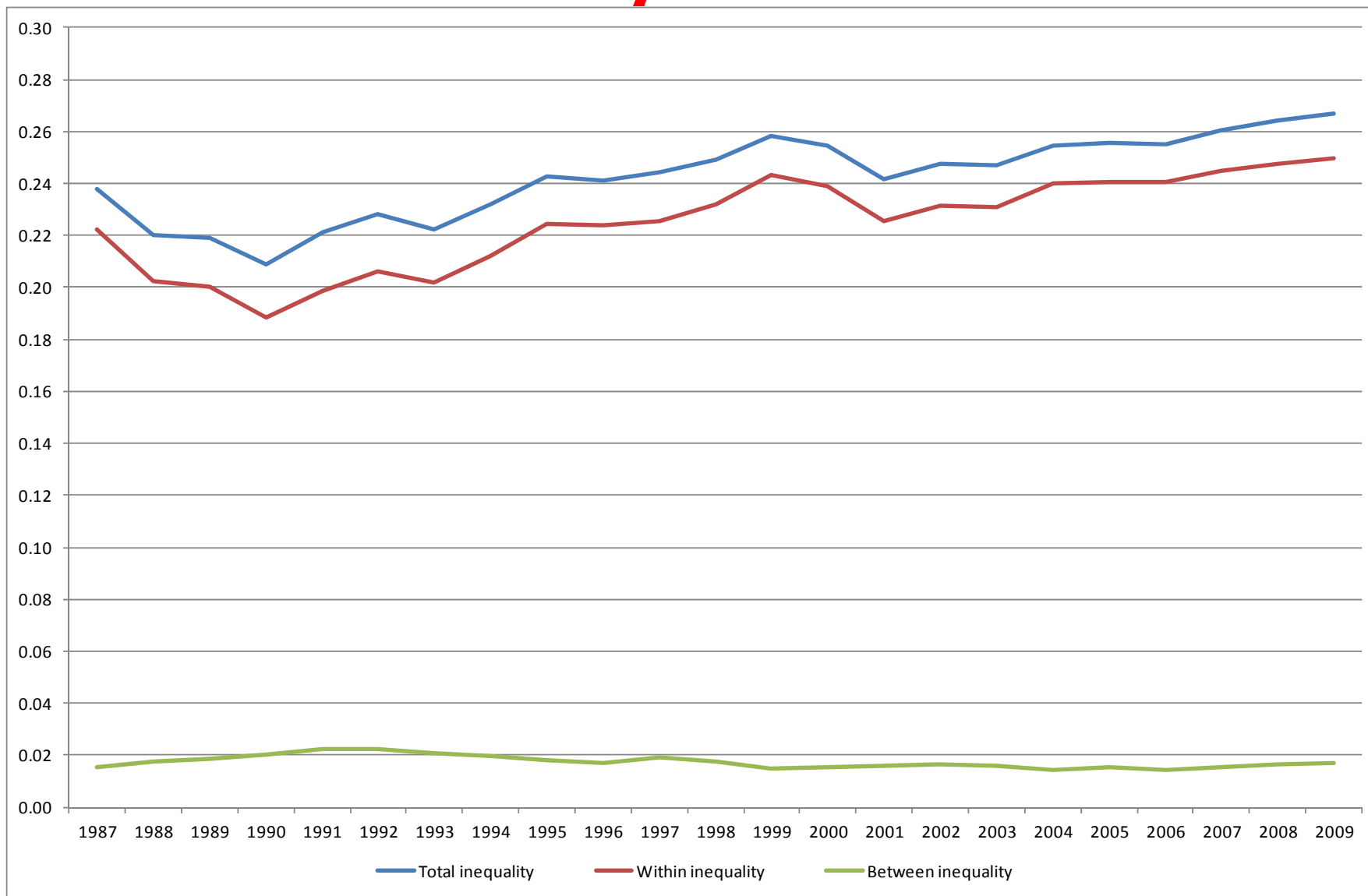
# “Within- inequality” in Italy

- AD-SILC dataset adding from administrative archives working histories of individuals sampled in IT-SILC2005 from the beginning of the activity up to 2009 => focus on the period 1987-2009.
- Focus on private employees aged 25-54, excluding immigrants.
- No information on the temporary-permanent employment arrangement and on the detailed individual occupation. But we can include detailed controls on firm’s sector and size.
- No hourly wages, but three kinds of earnings for inferring the effect of unemployment and working hours: annual, weekly and weekly for full-time earnings.
- Four educational levels (primary educated too).
- Decomposition of inequality shown by MLD (controlling for fixed weights), residual inequality (i.e. Variance of estimated residuals) and  $R^2$  of wage equations.

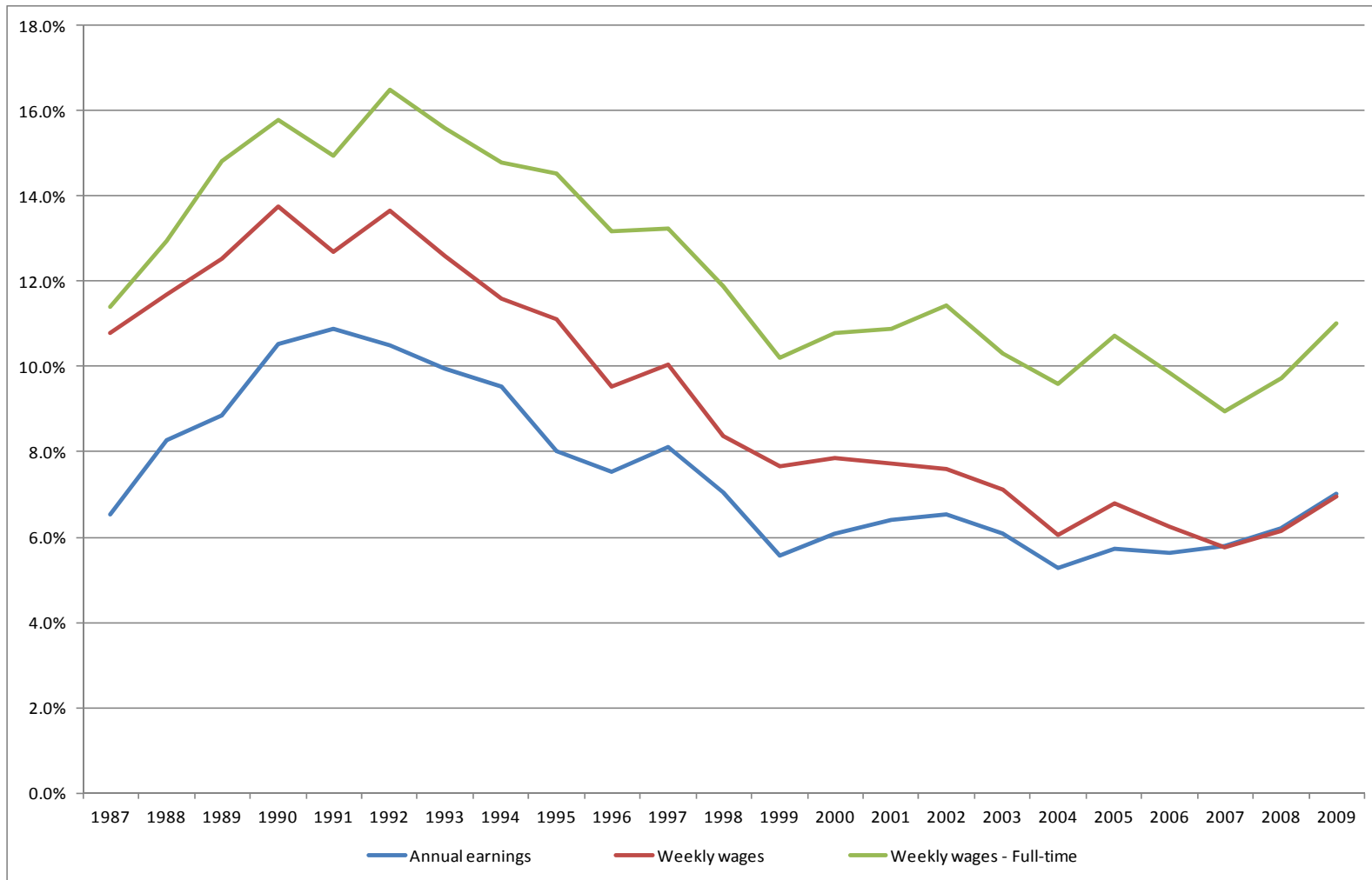
# The trend of Gini of earnings in Italy



# Decomposition of annual earnings in Italy: trend



# “Between-inequality” in Italy: trend



## REMARKS - 2

- “Within-inequality” is largely predominant
- At least in Italy the trend is not to the decline of its importance (contrary to SBTC and other explanations of growing earnings inequality).
- How can we explain “within-inequality”?
  - We lack a convincing theoretical framework and empirical analyses face many obstacles
  - Several possible divers.

# “Within-inequality”: in search of an explanation

A tentative “enlarged” wage equation:

$$W=f(HK, Q, EM, OCA, NCA, FS, NW)$$

- *HK= formal human capital*
- *Q = “quality” of HK (innate abilities, field of study, quality of education....)*
- *EM= Education Mismatch (over-, under-education)*
- *OCA = Other cognitive abilities*
- *NCA = Non cognitive abilities (i.e. soft skills)*
- *FS= Employing firm’s specificities*
- *NW= Network effects (family and social ties)*

# How to know more...

- Empirical analyses extremely difficult. We did some...
- PIAAC data allow to control for educational details and proxies of individual skills, recorded by individual test scores in literacy and numeracy.



# Individual skills and within inequality in Italy from PIAAC data

OLS regressions on log of hourly wages in Italy  
(employees aged 15-65).

ADJUSTED R<sup>2</sup>

M1	Mincerian controls	0,1733
M2	M1+ field of study, ICT and firm change	0,2135
M3	M2 + occupation, contracts and firm's characteristics	<b>0,353</b>
M4	M3+literacy and numeracy scores	0,3573

**Distribution of workers according to two different definition of skill mismatch  
in 11 EU countries and in Italy (*test performed by D. Dankova*)**

<i>Average 11 EU countries</i>	<i>mismatch in literacy</i>			
<b>EM</b>	<i>matched</i>	<i>over-literacy</i>	<i>under-literacy</i>	<b>total</b>
<i>matched</i>	<b>79.7</b>	10.4	9.9	100
<i>overeducated</i>	65.5	<b>30.6</b>	3.9	100
<i>undereducated</i>	71.1	3.5	<b>25.5</b>	100
<b>total</b>	75.4	13.5	11.1	100

<i>Italy</i>	<i>mismatch in literacy</i>			
<b>EM</b>	<i>matched</i>	<i>over-literacy</i>	<i>under-literacy</i>	<b>total</b>
<i>matched</i>	<b>80.5</b>	9.5	10.0	100
<i>overeducated</i>	69.6	<b>23.6</b>	6.8	100
<i>undereducated</i>	70.9	2.9	<b>26.2</b>	100
<b>total</b>	76.9	9.9	13.3	100

## REMARKS - 3

- Residual inequality in Italy seems to shrink the most when when occupation and other firms' characteristics are added while individual competences tested in PIAAC seem to have only a minor influence
- Moreover, over-education and under-education are weekly related to over- and under-literacy (which correspond to scores above or below the average – properly defined)
- From other studies we know that in some countries (including Italy) family background exerts a “direct” effect on wages (Franzini,Raitano,Vona 2013). Family background can influence a large number of variables in our “wage equation”.

# Conclusions

- “Within-inequality” is high but neglected
- Convincing explanations are not available.
- We know that literacy and numeracy skills seem not so important while firms’ characteristics play a significant role
- More should be learnt about the links between “within-inequality” and Education Mismatches
- However the results on the intergenerational transmission of earnings inequality suggest that family background (working through various channels) may be an important “structural” cause

# Conclusions ctd.

Understanding “within-inequality” can be important in several respects:

- i) better knowledge of the working of labour markets;
- ii) better assessment of what policy for sustaining human capital accumulation can actually achieve, especially against inequality
- iii) possible better explanations of the education mismatch and its consequences.

**Thank you!**

Also to my coauthor Michele Raitano