

# Educational Equity Account in Nordic countries: PISA 2006 data

Jarkko Hautamäki, Airi Hautamäki &  
Sirkku Kupiainen  
University of Helsinki  
17.8.2009

## Educational Equity Account

Educational equity refers to the impact of contextual factors on educational outcome<sup>[1]</sup>. Ideally it should be non-existent. Educational equity is seen to be in balance or to show an educationally relevant positive outcome or 'profit' when relevant contextual factors do not explain any of the variation in students' school attainment, that is, the only source of variation in scholastic attainment would stem from students' individual characteristics.

<sup>[1]</sup> The concept of (total) equity is not unproblematic. If education is expected to have a lasting impact on an individual's life it is difficult to see why these should or would not pay dividends in children's lives and future success.

## Educational Equity Account

The most essential educational equity factors or factors that have been shown to impede educational equity or the equal realisation of individual educability are **gender, parents' socio-economic or educational status, immigration status and, of course, the quality of schools.**

There are also other factors that could be taken into account in estimating national educational equity account in Nordic countries, e.g., ethnic groups or regional differences.

But, in this presentation, only between-country differences, between-school differences and the impact of gender, family's socio-economic status, as well as immigration status in each of the Nordic countries are considered.

## PISA level and PISA balance

For testing educational equity with the PISA data, two new variables have been constructed to summarise PISA outcomes for a general analysis, *PISA level* and *PISA balance*. To calculate these, principal component analysis was applied to condense the plausible values for science, math and reading for the three PISA domains for each student into two variables<sup>[1]</sup>. The correlation of level and balance is by definition zero (principal component analyses without rotation gives uncorrelating components).

[1] The PISA data file ([www.pisa.oecd.org](http://www.pisa.oecd.org),) contains five plausible values for each student's science, mathematics and reading competence to allow for a more reliable assessment of standard errors. See [www.acer.au](http://www.acer.au) and the technical manual of PISA 2006 (OECD, 2009).

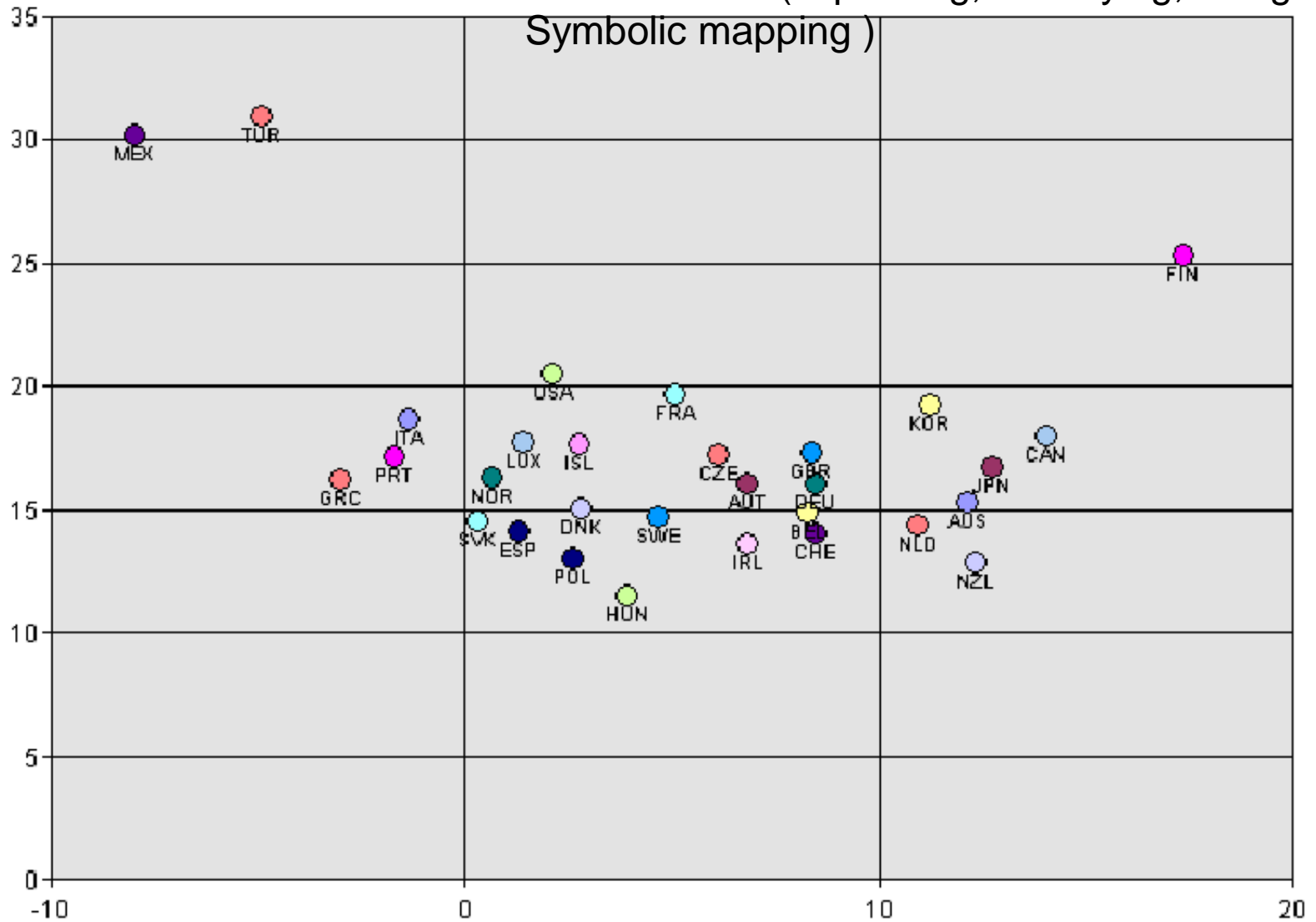
## PISA level and PISA balance

The first principal component, indicating student's general level of attainment, was named *level*, following Hunt & Wittmann (2008; Wittmann 2004).

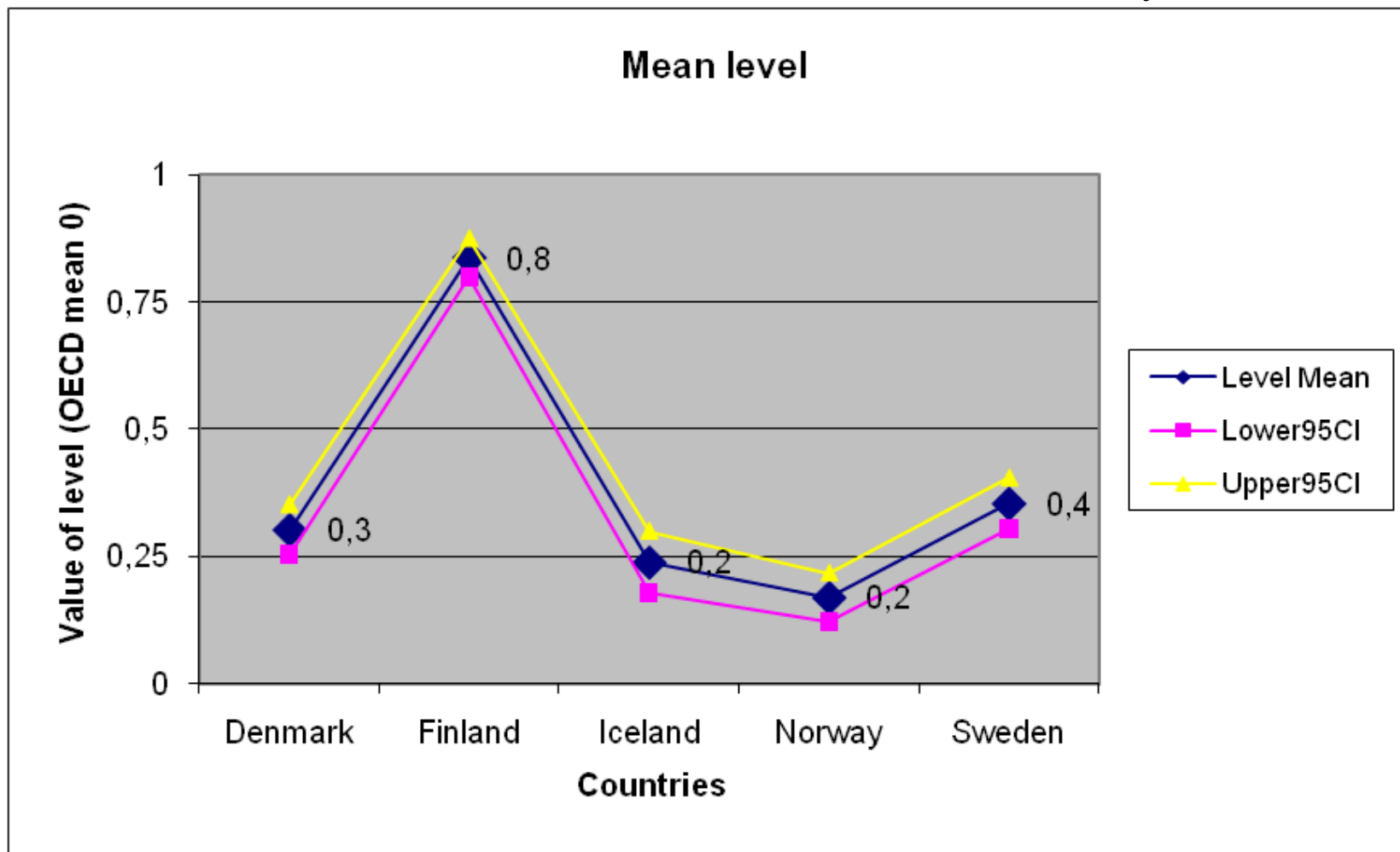
The second component, indicating the profile or the relative role of the three different literacies in students' attainment was named *balance*. **Positive values** in balance indicate a performance where reading is relatively stronger in relation to math and science, and **negative values** indicate a performance where math is relatively stronger in relation to reading. Balance is, accordingly, an index for student's competence profile.

The estimates for level and balance are based on the PISA data (OECD 2007) as a whole, that is the means for level and balance for the whole student population of PISA 2006 were zero.

Science 2006 (explaining, identifying, using:  
Symbolic mapping )



Values of level for the Nordic countries (95% confidence intervals, CI estimated) (World mean of all PISA 2006 countries = 0, SD=1).



Values of balance for the Nordic countries (95% confidence intervals, CI estimated) (World mean of all PISA 2006 countries = 0, SD=1).

