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Elitism in Higher Education and Inequality: Why are the Nordic countries so special?

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Abstract

This paper shows that countries with high levels of 'elitism' in higher-education are the countries displaying high levels of inequality. In other words, a higher level of 'elitism', i.e., large gap in quality of universities, and tight selection in top universities leads to a wider gap in wages between the tradable and service sectors, which leads also to a higher Gini index.

This paper shows that the Nordic countries display lower elitism in higher education as well as lower inequality than most of the other OECD countries.

Keywords: ability, elitism, inequality, Gini index, higher education, human capital, wage differential.
JEL classification: F12, F16, F66, I26, J24, O14.

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I. Introduction

For decades, the prime goal of macroeconomic policy was mainly to increase economic growth and the GDP per capita of countries. On this matter, when one compares the Nordic countries with the other countries in Europe, we perceive main differences. For instance, in 2017, while average GDP per capita for Sweden, Denmark, Finland, and Norway was $53,000, for countries in the South as Spain, Portugal, and Italy it is $32,500.

Then, in the last years, the focus of macroeconomists as well as the media has changed. The focus is not anymore on output and income only, but a mix of, on one hand, economic growth and, on the other hand, issues of inequality and social mobility. The World Economic Forum has elaborated an index emphasizing all these elements in the 'Inclusive Development Index' (IDI).[1] Of the 29 OECD countries in the sample, Norway is ranked first (score of 6.08), Denmark is fifth (5.81), Sweden is sixth (5.76) and Finland 11th (5.33). (See Table 1, column 2).

If one wants to focus more specifically only on inequality, the Gini index clearly shows that again, Sweden, Norway, Denmark, and Finland display Gini index lower than most countries, and the picture is very similar for social mobility. (See Table 1, column 3, and Figure 1).

In summary, the data on OECD countries display a clear message: the Nordic countries have higher inclusive growth, lower inequality and higher social mobility. What type of policy could then give a clue to the fact that in the Nordic countries, inequality and social immobility is small, while in other countries it is much higher?

This paper claims that policies related to education, and more specifically the 'elitism in higher education', are main factors explaining these facts. This paper shows that differences in 'elitism in higher education' can explain the differences in mobility and inequality among countries. And indeed, the Nordic countries have on average a lower level of elitism than most countries in the OECD.

What is elitism in higher education? It is the gap between the elite universities and the standard ones, since in most countries, there is not one channel of higher education, but two: graduating from a prestigious university, or graduating from a standard university or local college.

This gap between these two channels of education was not always prevalent, but in the last decade, there was a huge increase in the intake of tertiary education in most countries, denoted as 'the massification'. And, with this massification came also the heterogeneity in higher education. While the old installed universities kept their standard level, new universities have been formed to admit the new mass of students, and they are usually of a lower academic level, so that the increase in the enrolment of students led to a rise in enrolment rates in standard universities, and not in elite universities.[2]

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[1] The Inclusive Development Index (IDI) is an annual assessment of countries' economic performance that measures how countries perform. It has three main pillars: growth and development; inclusion: and intergenerational equity.

[2] Brezis, E.S. and J. Hellier. 2018.

We define ‘elitism in higher education’ as the gap between the elite universities and the standard ones. There are two main differences between these two types of universities. The first is the quality of education. There is a huge difference in the budget per student of elite universities vs. the standard ones, and this difference leads to difference in quality of education (see Figures 2 and 3). In consequence, the students graduating from an elite university get a better education -- leading to higher productivity.

The second main difference between elite and standard universities is the tightness of selection. While one needs a very high grade on entry exams to enter elite universities, one needs only a high school diploma to enter a college. So the two elements that define ‘elitism of higher education’ are (i) the ratio of quality between elite and standard universities, and (ii) the degree of tightness of selection.

This research shows that countries with higher elitism in higher education are the countries with higher inequality and higher social immobility. In other words, a higher level of ‘elitism’, i.e., higher gap in quality of universities, and stronger selection is leading to a larger gap in wages, to a higher Gini index, and to a lower inclusive index. Although to shorten the paper, this version will only focus on inequality.

The intuition underlying the relationship between elitism and inequality lies in the fact that duality in higher education permits to separate the individuals according to their ability. Indeed, since, universities are divided into elite and standard universities, we can get a signalling equilibrium so that high ability individuals are graduating from elite universities, and low ability individuals from standard ones. This separating equilibrium explains some of the difference in labor productivity leading to wage inequality.

Moreover, the production of output can be divided into two main sectors: manufacturing, which are tradable goods, and services, which are non-tradable goods, and which display lower productivity. In light of these assumptions, our main proposition stresses that countries with a large index of elitism, will be the ones with high inequality in wages between workers in the tradables and workers in the non-tradables. Moreover, countries with high elitism will have a separating equilibrium, which means that the level of ability will be higher in the tradables than in services, while countries with no elitism will not display main differences between the ability of workers in the tradables versus the services.

Do the empirical regularities support these relationships? The first empirical fact is that in countries with high elitism, the ability and skills of workers in both sectors are not similar: high-ability workers tend to work in tradable goods industries, while low ability workers tend to work in the service sector. But in the Nordic countries, the difference is almost inexistent.

The second fact we present is that countries with higher elitism indeed display a higher wage gap and higher skill differential, and a higher Gini index. The Nordic countries display lower level of elitism and lower level of inequality.

The paper is divided into five sections. In the next section, we present empirical facts on elitism of higher education, and inequality. The model is presented in section III, and in section IV the empirical analysis is discussed. Section V concludes.

II. Empirical Facts

What do we know on elitism, heterogeneity of ability, and inequality?

2.1 Elitism of higher education in OECD countries.

The democratization of tertiary education, led to a huge increase in the number of students in universities, coined as the massification. However, in many advanced countries, this democratization has come with the development of a two-tier system characterised by the concomitance of standard and elite universities. This differentiation between two types of universities has widened over time since the huge increase in the number of students has primarily concerned standard universities, the selection remaining narrow in elite establishments.

In the US, Su et al. (2012) note that, between 1959 and 2008, the non-elitist public post-secondary colleges have increased their enrolment by 525% against 250% in elite colleges.[3] In France, elite universities are represented by the *Grandes écoles* that recruit less than 4% of a generation. Over time, there was almost no change in the recruitment of the top *Grandes écoles*, while at the same time the share of a generation completing tertiary education was multiplied by more than 3.5. In contrast, some of the Nordic countries do not exhibit such differences in the selection processes across universities.

The second key fact is that standard and elite universities differ in their budgets, which to a large extent determine their quality. The expenditures per student are substantially higher in elite universities than in standard ones, and this gap has increased in the last decades in a number of advanced countries. In the US, expenditures per student in elite universities (Ivy League) are more than three times higher than in other universities (Desrochers and Wellman, 2011).[4] In France in 2002, the spending per student is on average 3.5 times higher in the top *grandes ecoles* than in standard universities.

Brezis and Rubin (2018) have developed an index of elitism based on the differences in budgets. The index is presented in Table 1, column 1.[5] The way it is calculated is the following. For each country, they gather data on total number of students, and budget per student for higher education from the OECD statistics. They then check which are the top universities, given by the Shanghai ranking (ARWU) for 2015, and calculate the budget per student for these top universities. The elite index is the ratio of the budget per student for top universities divided by the average budget per student.

[3] Su, X., M. Kaganovich and I. Schiopu. 2012.
[4] Desrochers, D. and J. Wellman. 2011.
[5] Brezis, E.S. and A. Rubin. 2018.

The index presented in Table 1, col. 1 shows that Finland, Norway and Sweden are on the lower level side of the range, and Denmark is lower than average. The countries with a high elitism index are the US, France, the UK, as well as Israel and Japan.[6]

It is therefore clear that in some countries, elitism and the gap between elite universities and the standard ones is much bigger than for other countries. And again, the Nordic countries are in the lower bound of the index.

2.2 Heterogeneity of ability and skills of workers.

Individuals are not equal in their inner ability, and there are indices which tries to measure this heterogeneity. The heterogeneity of ability and skills can be measured in two different ways: either through SAT scores (or some similar measures which test the ability of students), or PIAAC.

The "Published International Assessment of Adult Competencies" (PIAAC) is performed while the individual is already working, while SAT scores measure the ability of individuals prior to their academic studies.[7] PIAAC enables to examine the distribution of workers' cognitive skills across the various segments of the labor market.

This paper focuses on the differences of skills between workers working in tradable sectors vs. workers working in services. The literature on the heterogeneity of workers between industries shows that tradable industries are characterized by a more skilled workforce.[8]

Figure 4 presents the distribution of skills in an average of 23 OECD countries for workers with tertiary education. On average, college graduates with higher abilities tend to find employment in the tradable industries in higher rates. This is also the case for the US as shown in Figure 5.

But again, the Nordic countries display a different perspective. Figures 6-8 show that for Norway, Denmark and Sweden there are almost no differences in the distribution of skills between tradable and non-tradable sectors.

2.3 Inequality in wages and income inequality

Inequality has many facets. The most obvious one is the inequality in income between all workers. The Gini index is presented in Figure 1, and Table 1, column 3. It clearly shows that

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[6] Let us give some concrete example. For England, while the budget per student of Cambridge is of 123.2 thousand $ for 2015, the average expenditure per student in the UK is 25.77K$: So some four times the average budget. For the US, Standford has a budget per student of 299.9K$, while the average budget is of 28.3K$, so some 10 times the average budget. For Sweden, Uppsala University has a budget per student of 28K$ compared to 23.3 of average budget. So it is only 1.2 times the average budget. And to give one more example, for Finland, University of Helsinki has a budget of 30.96K$, compared to 17.92 average budget, so that we have an elitism index of 1.73.

[7] The PIAAC survey, conducted during 2012-2014, measures adults' proficiency in three key information: literacy, numeracy and problem solving.

[8] See Macis, M. and F. Schivardi. 2016.

the four Nordic countries have a Gini score lower than average OECD countries. Another index is the inclusive growth index, which display a very similar story (see Table 1, col. 2).

I want to present another index for inequality: It is the ratio between wages of workers in the tradable sector relative to workers in the non-tradable industries. The data for OECD countries are presented in Table 1, column 4, and they confirm a gap between wages in the tradable and non-tradable industries, in most OECD countries. They also show that again the Nordic countries are on the lower side of the OECD countries.

Why is this index important to analyse inequality? Because it is one of the reasons of the persistence of inequality: In some sectors, workers are paid more than in others. And in the world, the sectors which pay less are services.

The literature on wage gap is based on heterogeneity of firms which lead to a wage gap between sectors open to trade and non-tradables.[9] In consequence, trade plays a crucial role in reallocation of skills to the exporting firms that tend to be more productive and pay higher wages.

How are these two indices for inequality related to the elitism in higher education? In the next section, I present a small framework explaining intuitively the relationship between higher education and inequality, and in section IV, I present the correlation between them.

III. Elitism and Inequality

The relationship between elitism and inequality has been presented in a model of international trade in Brezis and Brand (2018).[10] Based on this model, I will describe the effects of elitism on inequality in an intuitive and succinct way.

3.1 Elitism

In the previous section, I have described the elitism index. In this part, elitism will be denoted as EL; a higher EL means that in the country the gap between top university and the standard university is higher. Recall that the index takes the value of 3.9 for the US; 1.2 for Sweden and 1.7 for Finland.

In the previous section, I also emphasized that individuals are not equal in their own ability. The distribution of ability in all countries is more or less a Bell curve,[11] and I denote the ratio of the high ability of individuals over the lower level to be δ (greater than 1). So δ described the gap in ability.

This difference in ability of individuals affects the economy through two channels. First, smarter people learn more rapidly, so that they get higher grades on the SAT exams. The

[9] See Melitz, M. J. 2003., and Helpman, E., Itskhoki, O. and S. Redding. 2010.
[10] Brezis, E.S. and G. Brand. 2018.
[11] See for instance Figure 4.

second channel is through the labor market: Individuals with high ability will have a higher productivity at work, but not necessarily in all sectors, as explained below.

3.2. Elitism: Tightness of recruitment.

There are elite universities, in which when graduating, the student acquires a human capital of type H_E; and there are standard universities, in which the student acquires human capital of type H_{NE}. Moreover, it is common information whether a student graduates from an elite university, or from a standard university.

There are entry exams for all universities. The grades on the entry exam (SAT) to gain access to the elite universities, are much higher than the grades to enter standard universities.[12] Given that σ is the 'tightness ratio', and we assume all elite universities behave in a similar way, therefore the ratio of students graduating from elite universities over standard one is:

$$\frac{H_E}{H_{NE}} = \sigma \qquad (2)$$

σ is one of the elements of elitism in the higher education of a country.

3.3 Elitism: Budgets and Quality of Higher Education.

Standard and elite universities differ in their budgets, which to a large extent determine their quality. Expenditures per student are substantially higher in elite universities than in standard ones. This ratio is our main index for elitism. We define the ratio of budget as λ:

$$\lambda = \frac{B_E}{B_{NE}} \qquad (3)$$

So the elitism of higher education, EL is identified by two variables: σ and λ. But our empirical index, presented in Table 1, is only identified by λ, since we have only calculated ratio of budgets for the various countries.

3.4 Relationship between ability and types of universities.

Given the tightness of recruitment, students with a high grades in the entry exam will get access to elite universities and acquire human capital of type H_E. Students with lower grades (but with a high school diploma) will register at a standard university, and will acquire human capital of type H_{NE}. Finally, individuals who did not graduate from high school will stay unskilled.

[12] In the various countries, the exam is slightly different.

In consequence, we get a separating equilibrium in which individuals whose ability is low will have low grades and enter standard universities, whereas individuals whose ability is high will enter elite universities.

3.5 The Production functions: tradable and non-tradable goods.

The economy of developed countries are mainly divided in two groups: goods and services which are traded internationally –the tradable goods, and goods or services, which are not imported or exported – the non-tradable goods.

We should emphasize that the tradable as well as the non-tradable sectors use three factors of production: unskilled labor, skilled labor (who have acquired education either in elite or standard universities), and capital.

The difference between the production functions of these two sectors is that since the tradable sector is open to competition from the outside world, it is more productive, and especially more productive in the way the human capital acquired in elite universities is used.

Note that human capital is not homogenous: we have in fact two different types of human capital, H_E and H_{NE} (workers graduating from elite and standard universities respectively).

It seems natural to assume that the quality of education affects productivity but not in a neutral way. We assume that there is a better match between the needs of the high-tech industry and the knowledge acquired in top schools, and this 'productivity enhancement' is a function of the relative budget, λ, since better labs permit to the students with already higher ability to learn more and be more efficient.

This small framework allows us to easily show the following results:

Proposition 1: *In countries where there is a high level of elitism, individuals with high ability learn in top universities and go and work in the tradable sector, while individuals with low ability learn in standard universities and work in the non-tradable sector.*

Proposition 2

Countries with higher parameters of elitism display higher wage gaps between the tradable and service sectors, leading to higher inequality in the country.

The two parameters of elitism are: higher tightness of recruitment, σ and higher gap in budgets for universities λ as given in equation (4). The third parameter affecting inequality is the gap in ability, δ.

$$\omega_3 = \frac{W_S^h}{W_S^l} = \left(\frac{\lambda a^h}{a^l}\right)^{\alpha} \left(\frac{H_E}{H_{NE}}\right)^{\alpha-1} = \lambda^{\alpha}\delta^{\alpha}\sigma^{\alpha-1} > 1 \qquad (4)$$

Intuitive explanations of Propositions 1 and 2:

Countries in which there are two channels of education can have a separating equilibrium in which high-ability individuals learn in elite universities, while low ability learn in standard ones. Elite universities have higher budgets, better scholars, better labs and networking of good students. In consequence, the human capital of these students has a higher productivity in the tradable sector which is more competitive.

In consequence, high ability workers who have graduated from elite universities will go and work in the tradable sector, since they have higher productivity in this sector. In the non-tradable one, productivity is lower, so low-ability workers will work in this sector.

This separating equilibrium permits us to calculate the wage premium, as presented in equation (4), because workers with different abilities work in different sectors.

In the next section, we empirically check these results.

IV. Empirical Regularities

We examine the two propositions. First, we should find that countries with a higher degree of elitism should lead to a higher skill differential for college graduates in tradable vs non-tradable industries. This is shown in figure 9. Sweden and Denmark are with lower skills differential than the regression line.

Secondly, we should have a positive correlation between the various indices of inequality and the elitism index. Figure 10 shows that elitism in higher education is positively related to a higher wage gap between the two industry groups. Moreover, the correlation between the Gini index and the elitism index is presented in Figure 11 It is quite interesting to note that indeed the Nordic countries are in the left hand side of the figure, and below the regression line.

The underlying conclusion of these findings is that a more elitist higher education regime leads to a more segmented labor market: college graduates in tradable industries tend to have higher cognitive abilities in comparison to the non-tradable industries. Accordingly, higher abilities lead to higher wages indicating that an elitist higher education regime may be an indispensable tool for firms to single out the more capable workers.

V. Conclusion and Policy Implications

This paper focuses on a new explanation for inequality, and also new data: It focuses on the segmentation and elitism of the higher education system. This element is particularly interesting for Nordic countries, because they display low elitism level.

This paper emphasizes that a channel leading to inequality and inequality in wages comes from the higher-education sector. I show that the main elements affecting inequality and the wage gap between the service and trade goods sectors are the two elements affecting elitism in higher education—the tightness of selection, and the gap in budgets.

The underlying relationship between elitism and inequality comes from the fact that segmentation of higher education leads to a separating equilibrium, through signalling, and therefore we get that high ability individuals who received a better education in top universities work in the high-tech and tradable good sectors, and receive high salaries. While individuals with low ability, who have graduated from a standard university, work in the services industry and get lower wages. This explains the wage gap.

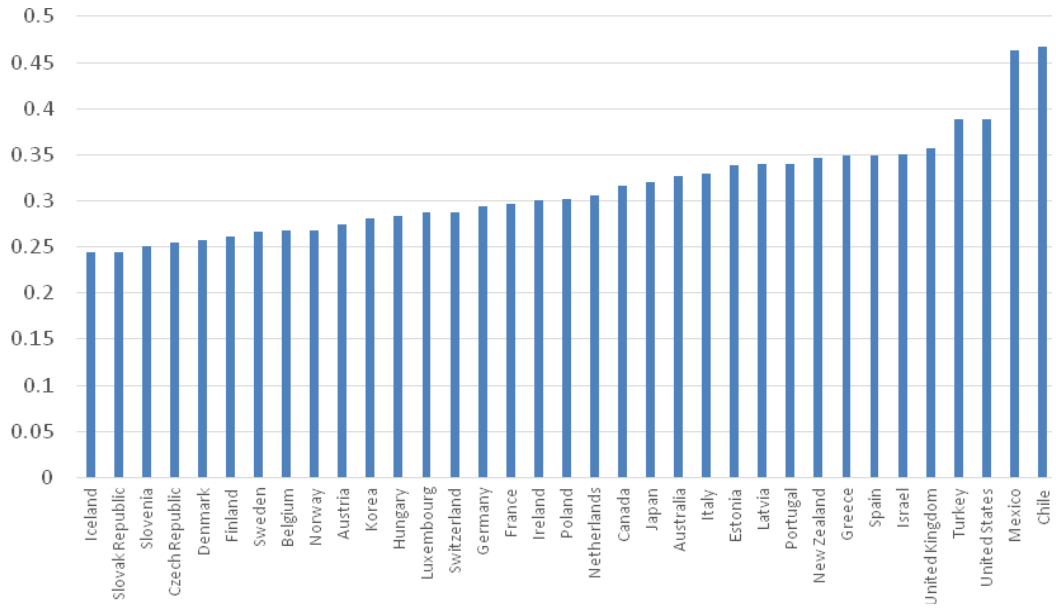
In the Nordic countries in which duality in higher education is almost inexistent, separating equilibrium does not take place, and therefore, we get a lower level of inequality.[13]

In conclusion, should the other countries follow the policies undertaken by the Nordic countries, reduce elitism, and reduce the gap in budget between universities in order to reduce inequality? This question is beyond the scope of this paper, but certainly a question policy makers should take the challenge of answering.

[13] In this paper, I refrain from presenting data on social mobility and elitism. But, Brezis and Rubin (2018) show that as for inequality, countries with a higher elitism index have higher social immobility. The Nordic countries have higher social mobility than other OECD countries. The intuition underlying these results is that since there is a strong impact of parent's education on children's ability, then it is the children of the elite who enter the elite universities, and this is the way to enter the elites. Therefore, the higher the elitism of higher education, the stronger social stratification.

Tables and Figures

Figure 1: Gini (disposable income, post taxes and transfers), ages 18-65



Source: The World Bank.

Figure 2: Per-student operating expenditures, academic year 2009

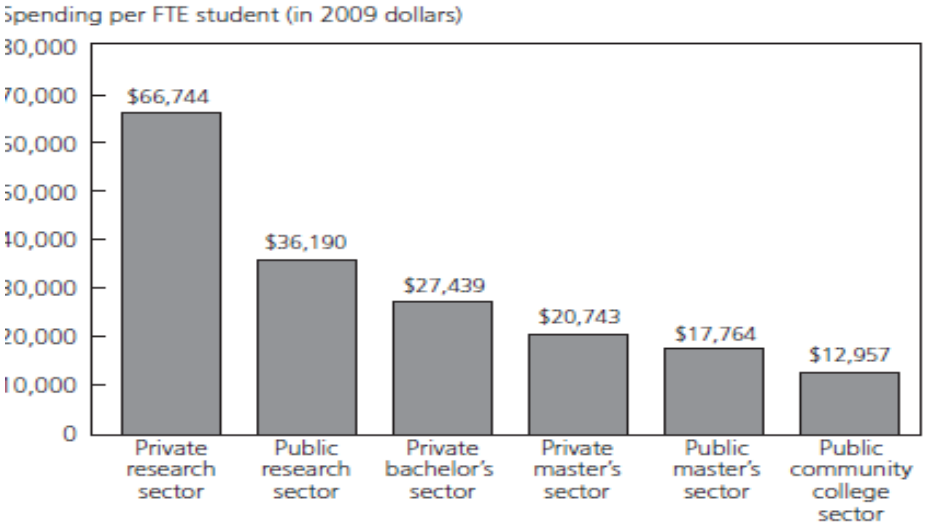


Figure 3: Change in per-student total operating expenditures, academic year1999- 2009

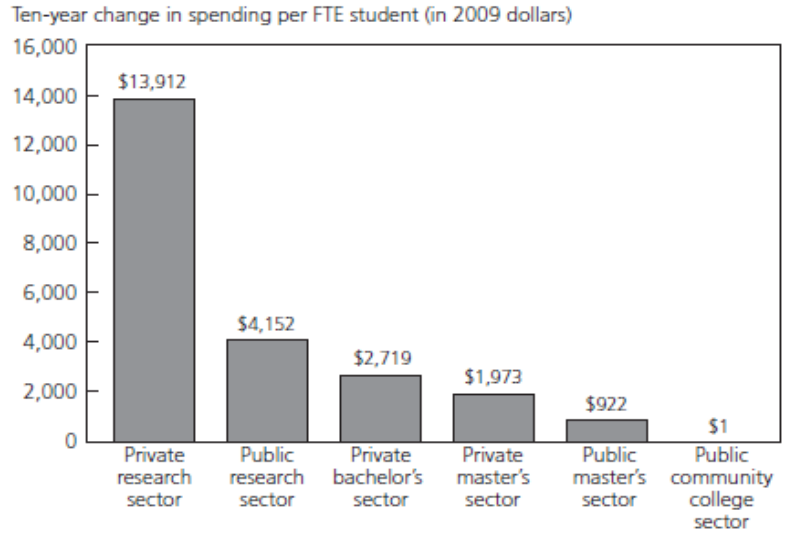
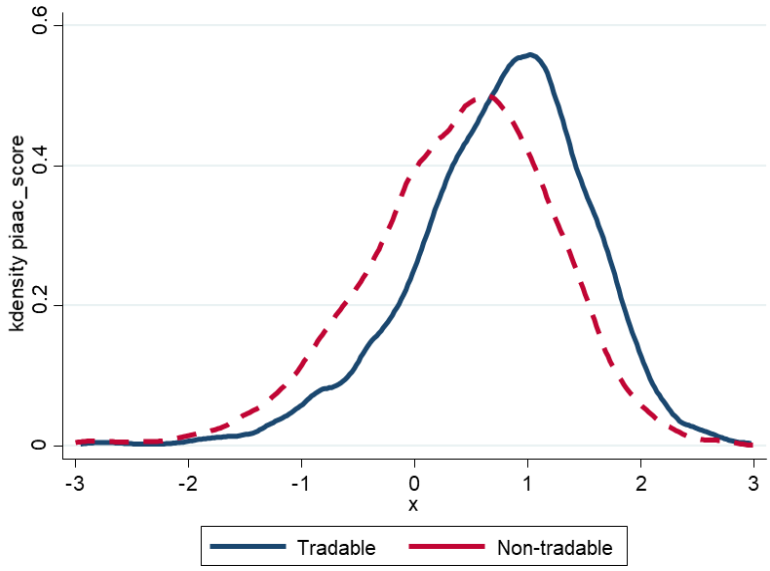


Figure 4: The distribution of the workers cognitive scores (PIAAC exam) for workers in 23 OECD countries



Note: Average Z-score for 23 OECD countries.
Source: OECD PIAAC.

Figure 5: The distribution of the workers cognitive scores (PIAAC exam) in USA

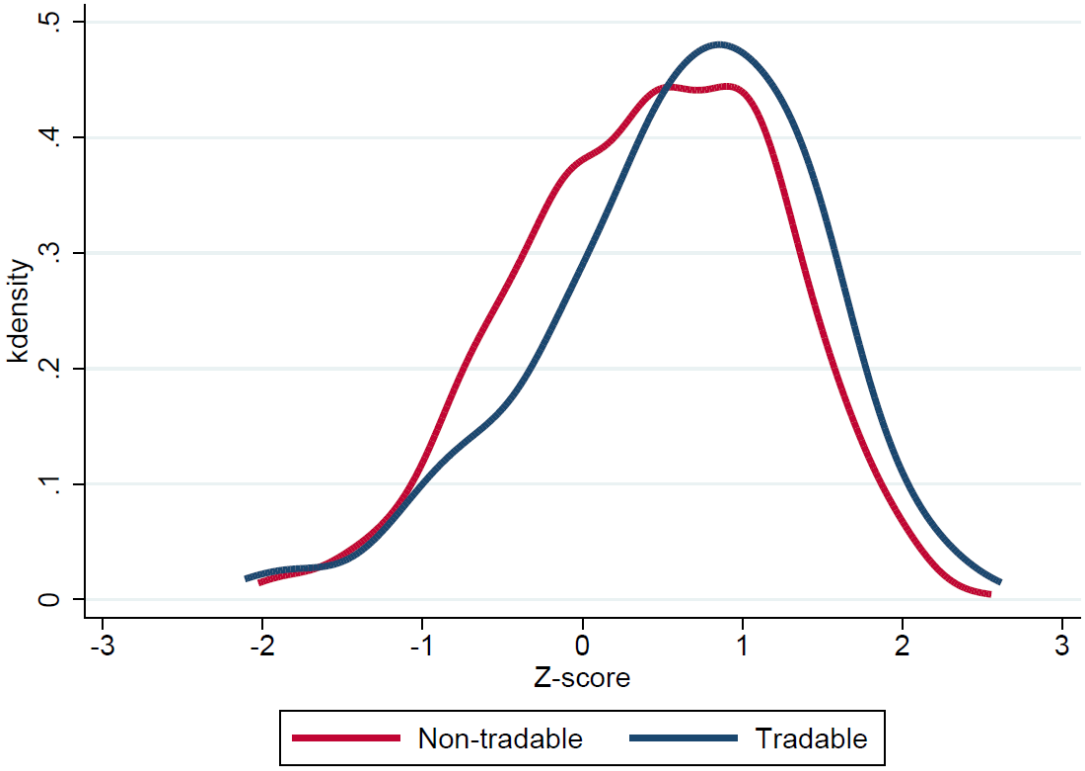


Figure 6: The distribution of the workers cognitive scores (PIAAC exam) in Denmark

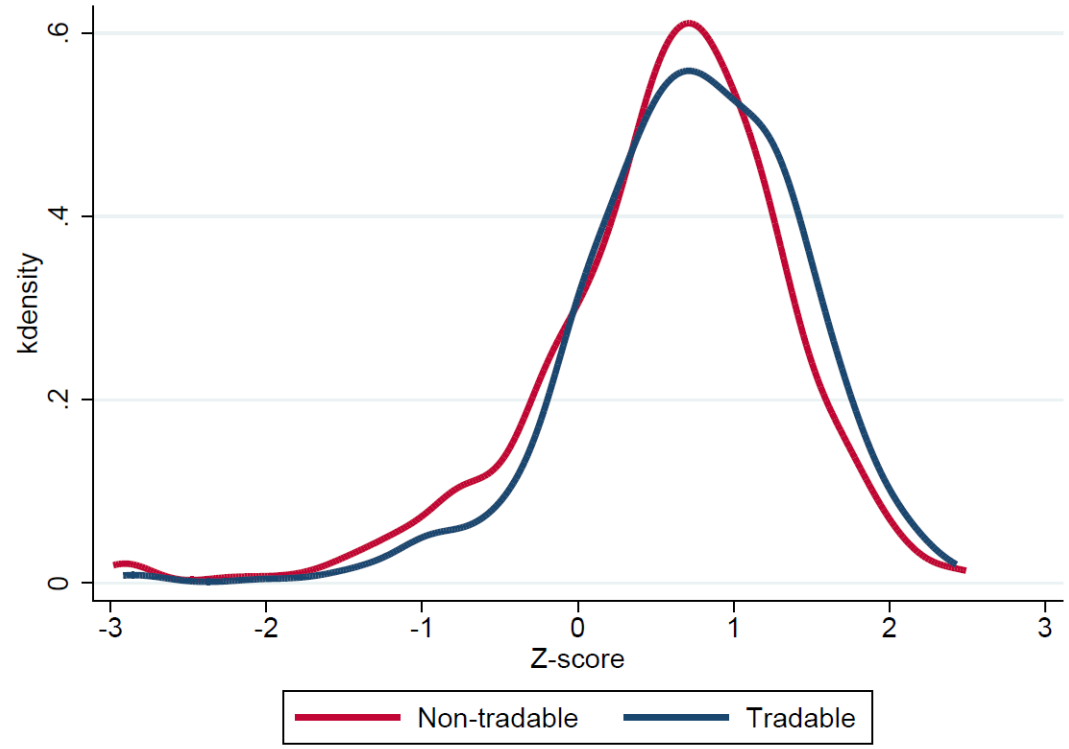


Figure 7: The distribution of the workers cognitive scores (PIAAC exam) in Norway

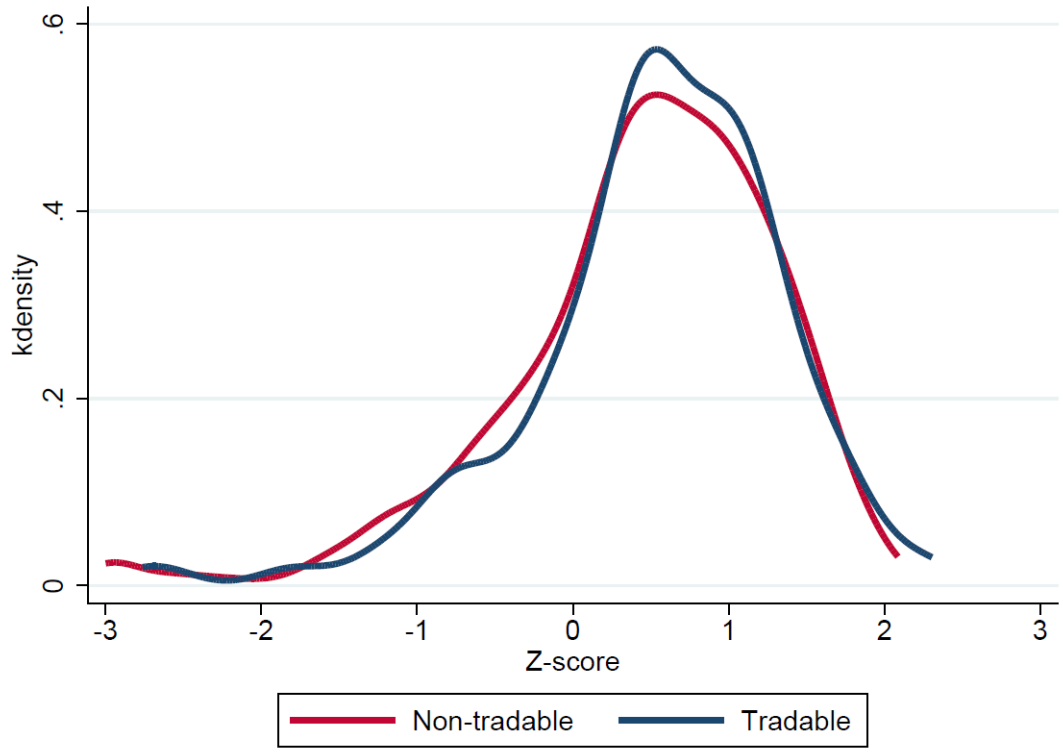


Figure 8: The distribution of the workers cognitive scores (PIAAC exam) in Sweden

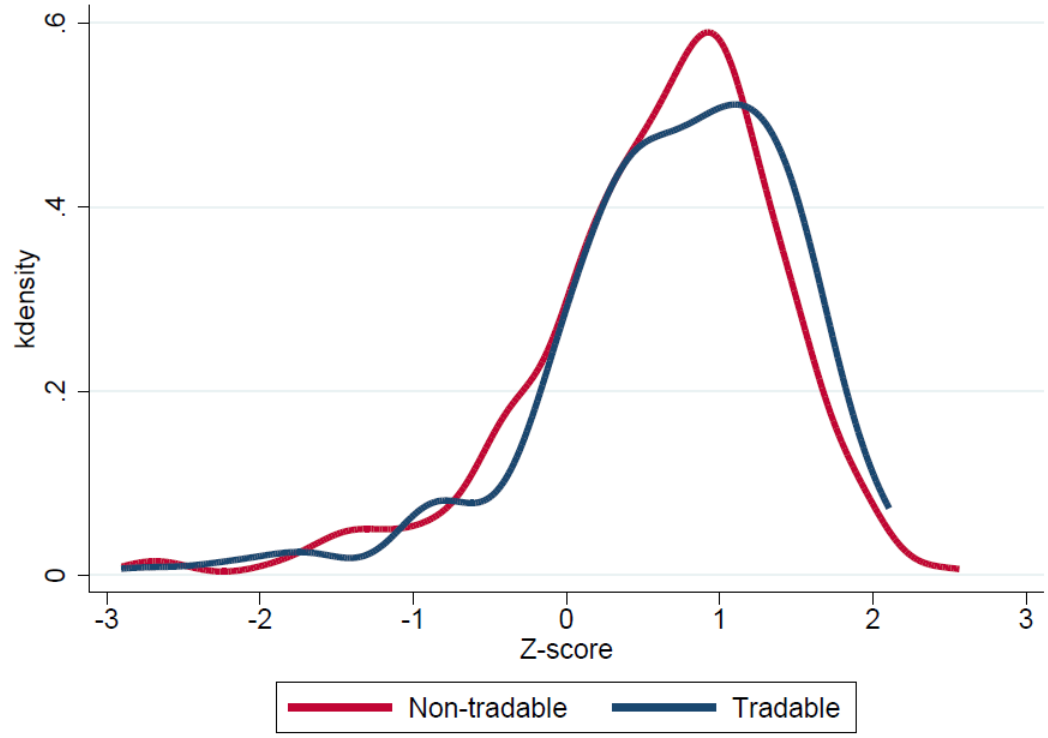
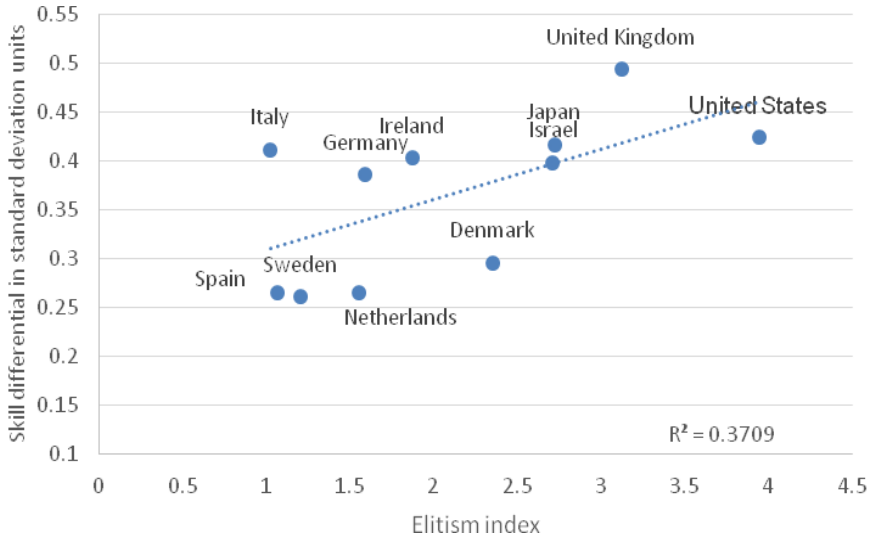
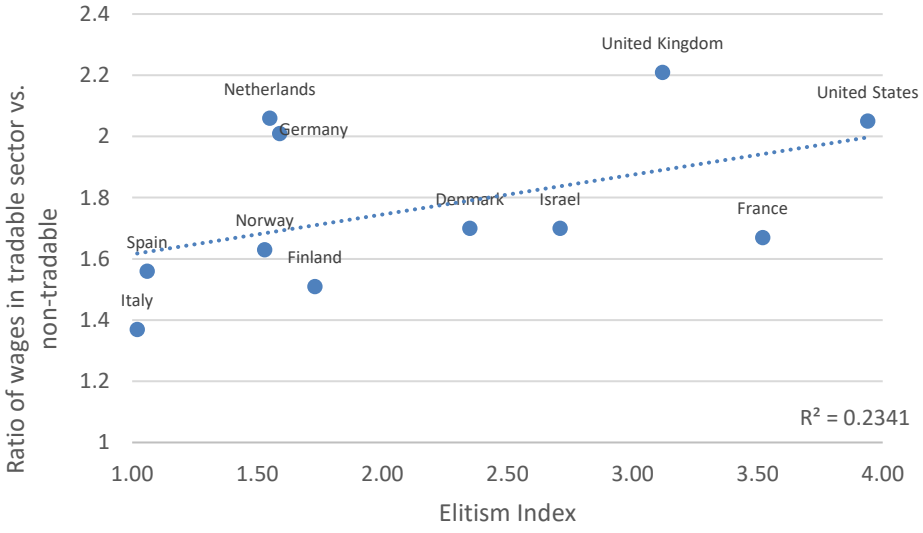


Figure 9: Skill differential and the elitism index for higher education



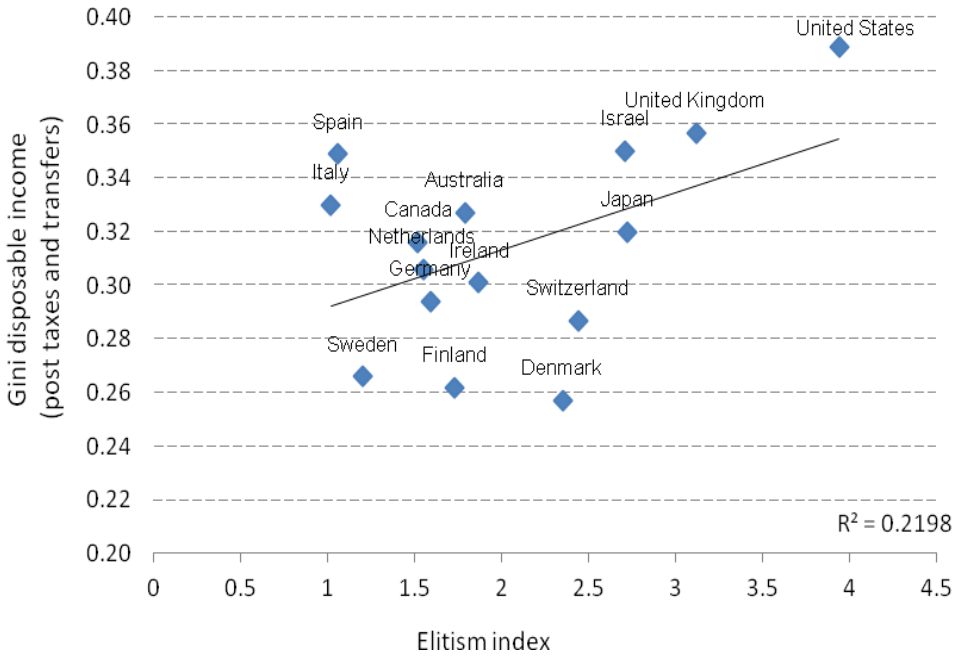
* The gap in skills between workers with a college education in the tradable vs. non-tradable industries.
Sources: OECD PIAAC.

Figure 10 Wage differential and the elitism index for higher education



* The wage gap between workers with a college education in the tradable vs. the non-tradable industries.
Source: : Brezis and Rubin (2018) and OECD STAN.

Figure 11: Gini index and the elitism index for higher education



Source: Brezis and Rubin (2018) and The world bank

Table 1: Indices of inequality and the Elitism index.

	Elitism index (1)	Inclusion Index (2)	Gini disposable income (post taxes) (3)	Ratio of wages in tradable sector vs. non-tradable (4)
Australia	1.79	5.36	0.327	--
Canada	1.52	5.06	0.316	--
Denmark	2.35	5.81	0.257	1.70
Finland	1.73	5.33	0.262	1.51
France	3.52	5.05	0.297	1.67
Germany	1.59	5.27	0.294	2.01
Ireland	1.87	5.44	0.301	--
Israel	2.71	4.51	0.350	1.70
Italy	1.02	4.31	0.330	1.37
Japan	2.72	4.53	0.320	--
Netherlands	1.55	5.61	0.306	2.06
Norway	1.53	6.08	0.268	1.63
Spain	1.06	4.40	0.349	1.56
Sweden	1.2	5.76	0.266	--
Switzerland	2.44	6.05	0.287	--
United Kingdom	3.12	4.89	0.357	2.21
United States	3.94	4.60	0.389	2.05

Sources: World Bank, World Forum, and own calculations.

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