DOI: 10.1007/s10272-018-0750-7

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Elitism in Higher Education and Inequality: Why Are the Nordic Countries So Special?

For decades, the primary goal of macroeconomic policy was to increase a country's economic growth and GDP per capita. With regards to this goal, there are many notable difference between the Nordic countries and other European countries. In 2017, for example, while average GDP per capita in Spain, Portugal and Italy was $32,500, it was significantly higher in Sweden, Denmark, Finland and Norway, where the average was $53,000.

In the last few years, however, macroeconomists as well as the media have shifted their focus away from income and economic output towards a combination of economic growth and issues surrounding inequality and social mobility. The World Economic Forum has elaborated an index emphasising all these elements called the "Inclusive Development Index" (IDI).[1] Of the 29 OECD countries in the sample, Norway is first (score of 6.08), Denmark is fifth (5.81), Sweden is sixth (5.76) and Finland is ranked 11 (5.33). (See Table 1, column 2).

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* I wish to thank Nathalie Chusseau and Joel Hellier as well as seminar participants at the AMCB forum and NTNU workshop for their helpful comments. I thank Gilad Brand for providing the data on PIAAC and for great research assistance.

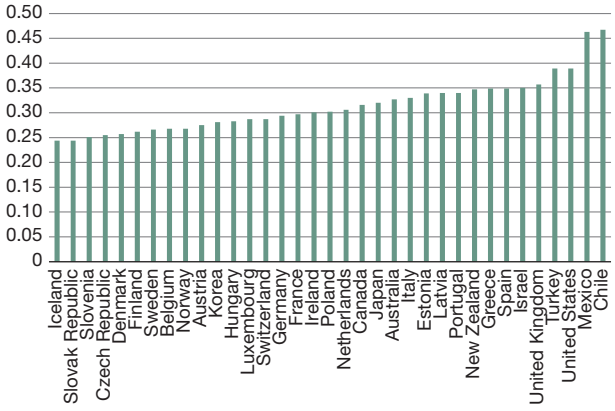
1 The Inclusive Development Index is an annual assessment of countries' economic performance that measures how countries perform. It has three main pillars: growth and development, inclusion, and intergenerational equity.

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 vs. non-tradable sectors (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; own calculations.

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



Source: World Bank.

To narrow the focus more specifically on inequality, Sweden, Norway, Denmark and Finland display a lower Gini index than most countries. The results are very similar for social mobility. (See Table 1, column 3, and Figure 1).

The data sends a clear message: the Nordic countries have higher inclusive growth, lower inequality and higher social mobility. What type of policy provides a clue to explain why inequality and social immobility are so low in Nordic countries, while they are much higher in other countries?

This paper claims that policies related to education, and more specifically to "elitism in higher education", are the main factors explaining this finding. This paper demonstrates that differences with regard to 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 elite universities and standard ones. 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.

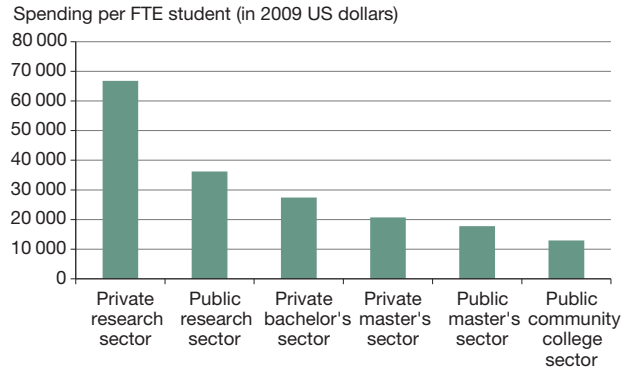
The gap between these two educational options was not always pronounced, but in the last decade, there has been a huge increase in the intake of tertiary education in most countries, referred to as "massification". With this came an increase in heterogeneity in higher education. While the old established universities maintained their standard level, new universities formed to take in the new mass of students. These new universities are usually of a lower academic level. The overall increase in tertiary enrolment led to a rise in enrolment rates in standard universities, not in elite universities.[2]

We define "elitism in higher education" as the gap between the elite universities and the standard ones. There are two main differences between these 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 a difference in the quality of education (see Figures 2 and 3). The result is that 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 former's higher admission standards. Students need very high scores on entry exams to enter

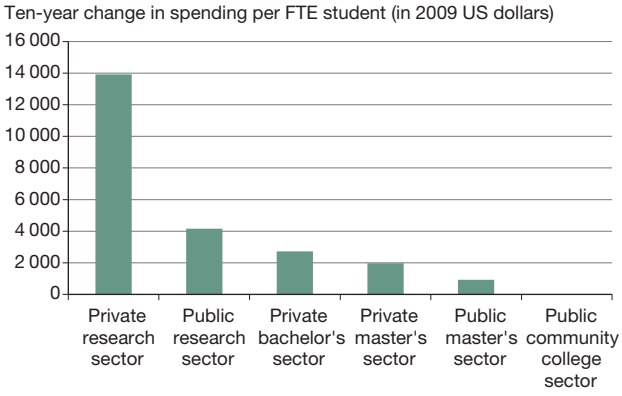
2 E.S. Brezis, J. Hellier: Social Mobility at the Top and the Higher Education System, in: European Journal of Political Economy, Vol. 52, No. C, 2018.

Figure 2
Per-student operating expenditures, academic year 2009



Source: D. Desrochers, J. Wellman: Trends in College Spending 1999-2009, 2011, available at http://www.deltacostproject.org/.

Figure 3
Change in per-student total operating expenditures, academic year 1999-2009



Source: D. Desrochers, J. Wellman: Trends in College Spending 1999-2009, 2011, available at http://www.deltacostproject.org/.

elite universities, but need only a high school diploma to enter a standard 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 competitiveness of the selection process.

Our 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. a larger gap in the quality of universities and a more competitive selection process, leads to a larger gap in wages, to a higher Gini index and to a lower inclusive index. In this paper, we will focus on inequality.

The theory underlying the relationship between elitism and inequality is based on the fact that duality in higher education permits the separation of individuals according to their abilities. Since universities can also be divided into elite and standard ones, we can obtain a signalling equilibrium such that high-ability individuals graduate from elite universities and low-ability individuals graduate from standard ones. This separating equilibrium explains some of the difference in labour productivity, ultimately leading to wage inequality. Indeed, in a separate equilibrium, individuals whose ability is low will have low grades, thus will enter standard universities and later on work in the non-tradable sector, whereas individuals whose ability is high will enter elite universities and then work in the tradable sector.

Moreover, the production of output can be divided into two main sectors: manufacturing, which consists of 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 high elitism index, will be the ones with high wage inequality 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 lower levels of elitism will not display major differences between the abilities of workers in the tradables versus those in 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 nonexistent.

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

In the next section, we present empirical facts on elitism of higher education and inequality. We then present our model and subsequently our empirical analysis.

Empirical facts

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

Elitism of higher education in OECD countries

As mentioned above, the democratisation of tertiary education led to a huge increase in the number of students in universities. However, in many advanced countries, this democratisation has come with the development of a two-tier university system. This differentiation between elite and standard universities has widened over time.

Su et al. note that between 1959 and 2008, the non-elite public post-secondary colleges in the US increased their enrolment by 525%, compared to only 250% at elite colleges.[3] In France, elite universities are represented by the *grandes écoles* that admit less than four per cent of a generation. Over time, there has been almost no change in the recruitment at the top *grandes écoles*, while during the same period the share of French students completing tertiary education grew by more than 3.5 times. In contrast, the Nordic countries generally 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 at elite universities than at standard ones, and this gap has increased in the last few decades in a number of advanced countries. In the US, expenditures per student in the elite universities of the Ivy League are more than three times higher than in other universities.[4] In France in 2002, the spending per student was on average 3.5 times higher in the top *grandes écoles* than in standard universities.

Brezis and Rubin have developed an index of elitism based on the differences in budgets (see Table 1, column 1).[5] For each country, the data represents the total number of students as well as the budget per student for higher education, according to OECD statistics. Top universities are identified using the Shanghai ranking (ARWU) for 2015 and their budget per student is calculated. The elite index is the ratio of the budget per student for top universities divided by the average budget per student.

This index shows that Finland, Norway, Denmark and Sweden are on the lower side of the range. The countries with a high elitism index are the US, France, the UK, 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.

Heterogeneity of ability and skills of workers

Individuals are not equal in their innate abilities, and there are indices that try to measure this heterogeneity. The heterogeneity of ability and skills can be measured in two different ways: either through an entry exam, such as the Scholastic Assessment Test (SAT), or through the Published International Assessment of Adult Competencies (PIAAC). The PIAAC is performed while the individual is already working, while SAT scores measure the ability of individuals prior to their academic studies.[7] The PIAAC examines the distribution of workers' cognitive skills across the various segments of the labour market. The literature on the heterogeneity of workers between industries shows that tradable industries are characterised by a more skilled workforce than the non-tradable sector.[8]

Figure 4a 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 at higher rates. This is also the case for the US, as shown in Figure 4b.

Once again, the Nordic countries display a different approach. Figures 4c, 4d and 4e show that for Norway, Denmark and Sweden there are almost no differences in the distribution of skills between tradable and non-tradable sectors.

Inequality in wages and income inequality

Inequality has many facets. The most obvious one is the inequality in incomes among all workers. The Gini index, presented in Figure 1 and Table 1, column 3, clearly

3 X. Su, M. Kaganovich, I. Schiopu: College expansion and curriculum choice, University of Alberta Working Paper No. 2012-25, 2012.

4 D. Desrochers, J. Wellman: Trends in College Spending 1999-2009, 2011, available at http://www.deltacostproject.org/.

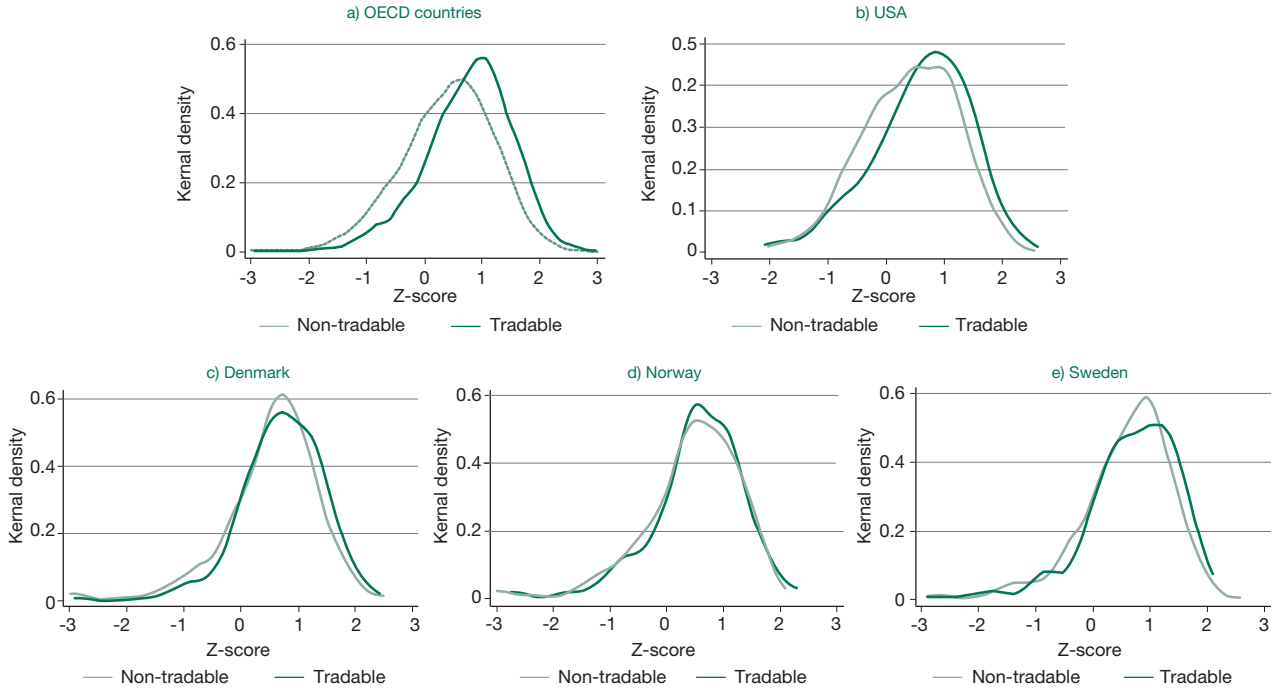
5 E.S. Brezis, A. Rubin: Elitism of Higher Education and Social Mobility, mimeo, 2018.

6 Let us give some concrete examples. In the UK, the budget per student of Cambridge in 2015 was $123200, while the average expenditure per student in the UK is $25770, i.e. only a quarter of the Cambridge budget. For the US, Stanford has a budget per student of $299900, about ten times the average American university budget of $28300. For Sweden, Uppsala University has a budget per student of $28000 compared to an average budget of $23300. 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 $30960, about 17.3 times the average Finnish university budget of $17920.

7 The PIAAC survey, a project of the OECD conducted during 2012-2014, measures adults' proficiency in three key areas: literacy, numeracy and problem solving.

8 See M. Macis, F. Schivardi: Exports and Wages: Rent Sharing, Workforce Composition, or Returns to Skills?, in: Journal of Labor Economics, Vol. 34, No. 4, 2016, pp. 945-978.

Figure 4
Distribution of workers' cognitive scores



Note: Scores are based on the results of the PIAAC test.

Source: OECD PIAAC.

shows that the four Nordic countries have Gini scores that are lower than the OECD average. The inclusive development index indicates a very similar story (see Table 1, column 2).

I would like to present another index for measuring inequality: the ratio between the 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 the Nordic countries are again on the lower side of the OECD average. This index is important for analysing inequality because it depicts one of the reasons for the persistence of inequality: In some sectors, workers are paid more than others. And globally, the sectors which pay less are services.

The literature on the wage gap is based on the heterogeneity of firms, which leads to a wage gap between sectors open to trade and non-tradables.[9] In consequence, trade plays a crucial role in the 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 following section, I present a small framework explaining the relationship between higher education and inequality. I subsequently present the correlation between them.

Elitism and inequality

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

Elitism

Based on the scores from the previously described elitism index, I will now use EL to denote elitism; a higher EL means that the gap between a top university and a stand-

9 See M.J. Melitz: The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity, in: Econometrica, Vol. 71, No. 6, 2003, pp. 1695-1725; and E. Helpman, O. Itskhoki, S. Redding: Labour market rigidities, trade and un-employment, in: Econometrica, Vol. 78, No. 4, 2010, pp. 1239-1283.

10 E.S. Brezis, G. Brand: Productivity Levels between Sectors and Double Duality in Labor Markets, in: Open Economies Review, online, 2018.

ard university is larger. Recall that the index indicates values of 3.9 for the US, 1.2 for Sweden and 1.7 for Finland.

As mentioned above, individuals are not equal in their abilities. The distribution of ability in all countries is more or less a Bell curve,[11] and the ratio of the high ability of individuals over lower ability levels is denoted as δ (greater than 1). So δ describes the gap in ability.

This difference in ability of individuals affects the economy in two ways. First, smarter people learn faster, so that they score higher on the SAT exam and are therefore more likely to gain access to top universities. Secondly, individuals with high ability will have higher productivity at work, but not necessarily in all sectors, as explained below.

Competitive selection process

There are elite universities, in which 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 openly known whether a student graduates from an elite university or from a standard one.

There are entrance exams for all universities. A student must have a higher score on an entrance exam to get into an elite university.[12] Given that σ is the "competitive ratio", that is the ratio of students accepted in the elite universities and assuming all elite universities behave similarly, the ratio of students graduating from elite universities to standard universities is:

$$\frac{H_E}{H_{NE}} = \sigma \tag{2}$$

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

Budgets and quality of higher education

Standard and elite universities also 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 the budgets as λ:

$$\lambda = \frac{B_E}{B_{NE}} \tag{3}$$

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 the ratio of budgets for the various countries.

Production functions: tradable and non-tradable goods

Output can be divided into two main sectors: goods and services which are traded internationally, i.e. the tradable goods, and goods or services which are not imported or exported, i.e. the non-tradable goods.

We should emphasise that the tradable as well as the non-tradable sectors use three factors of production: unskilled labour, skilled labour (from either 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, especially with regards to 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 students with higher ability to learn more and be more efficient.

This small framework produces the following results:

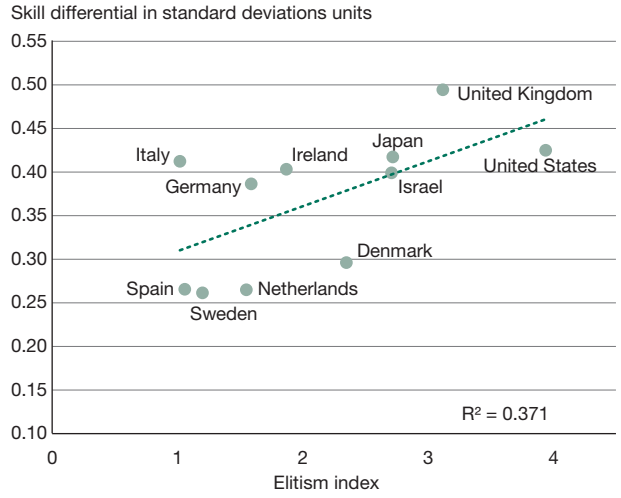
Proposition 1: In countries where there is a high level of elitism, individuals with high ability learn in top universities and go and work in the tradable sector, while individuals with low ability learn in standard universities and work in the non-tradable sector.

Proposition 2: Countries with higher parameters of elitism display higher wage gaps between the tradable and service sectors, leading to higher inequality in those countries. The two parameters of elitism are a more competitive recruitment process, σ, and a higher gap in budgets for universities, λ, as given in equation (4). The third parameter affecting inequality is the gap in ability, δ.

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

11 See for instance Figure 4.
12 In the various countries, the exam is slightly different.

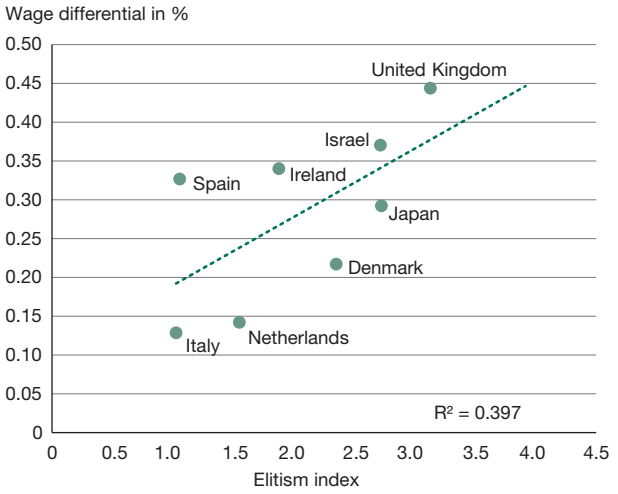
Figure 5
Skill differential and the elitism index for higher education



Note: Skill differential represents the gap in skills between workers with a college education in the tradable vs. non-tradable industries.

Source: OECD PIAAC.

Figure 6
Wage differential and the elitism index for higher education



Note: Wage differential represents the wage gap between workers with a college education in the tradable vs. the non-tradable industries.

Source: E.S. Brezis, A. Rubin: Elitism of Higher Education and Social Mobility, mimeo, 2018; and OECD.

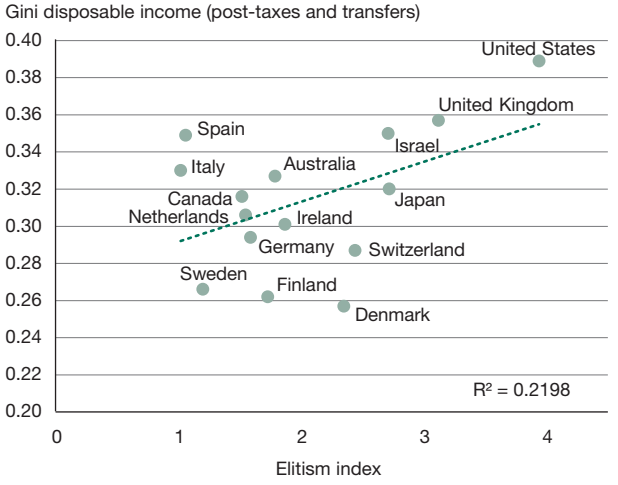
Countries in which there are two channels of education may have a separating equilibrium in which individuals with high abilities learn in elite universities and individuals with low ability learn in standard ones. Elite universities have higher budgets, better scholars, better labs and a better student network, resulting in the human capital of these students having a higher productivity in the more competitive tradable sector. Correspondingly, workers with low abilities will have lower productivity, and will work in the non-tradable 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.

Empirical regularities

We have examined two propositions. First, we should find that countries with a higher degree of elitism should lead to a higher skill differential between college graduates in tradable vs. non-tradable industries. This is shown in Figure 5. Sweden and Denmark show lower skills differentials than the regression line.

Secondly, we should have a positive correlation between the various indices of inequality and the elitism index. Figure 6 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 7.

Figure 7
Gini index and the elitism index for higher education



Sources: E.S. Brezis, A. Rubin: Elitism of Higher Education and Social Mobility, mimeo, 2018; World Bank.

It is quite interesting to note that the Nordic countries are indeed 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 segment-

ed labour market: college graduates in tradable industries tend to have higher cognitive abilities compared to those in 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.

Conclusion and policy implications

This paper focuses on the segmentation and elitism of the higher education system and how this can increase inequality. This element is particularly interesting for Nordic countries, because they display a low level of elitism.

This paper emphasises that the higher education sector is a channel leading to income inequality. I show that the main elements affecting inequality and the wage gap between the service and traded goods sectors are the two elements affecting elitism in higher education – the high competitiveness in the selection process and the gap in budgets.

The underlying relationship between elitism and inequality comes from the fact that the segmentation of higher education leads to a separating equilibrium. Consequently, high-ability individuals receive a better education in top universities and go on to work in the high-tech and tradable good sectors and receive high salaries. Meanwhile, individuals with lower abilities, who have graduated from a standard university, work in the service industry and receive lower wages. This explains the wage gap.

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

These findings raise the question of whether other countries should follow the policies undertaken by the Nordic countries, reduce elitism, and reduce the funding gap between universities in order to reduce inequality. This is a question policymakers should urgently try to answer.

13 In this paper, I refrain from presenting data on social mobility and elitism. But generally, countries with a higher elitism index have higher social immobility.