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Higher Education Expenditure in Europe. Exploring Evidence of Inequality and Free-Rider Problem

Alicia Villar-Aguilés, Francesc J. Hernández i Dobon

Abstract: The study of inequality in higher education is a consolidated topic that includes important contributions from various approaches and fields. In the European context, it is a relevant issue when analysing the impacts of the economic crisis, especially in the countries of Southern Europe. In this article, we present a study of higher education expenditure in Europe, proposing an approach that adapts the Gini coefficient. The most relevant result is that educational inequality is distributed inversely with respect to the distribution of economic inequality, which highlights a case of free-rider behaviour, according to The Logic of Collective Action (Olson, 1965), whereby social groups with higher incomes benefit from the public good. This result can contribute to the debate on how public goods are distributed in an unequal society.

Keywords: Social inequality, Free-rider, Gini coefficient, Expenditure, European Higher Education Area

1. Introduction

This article is situated in the study of inequality in higher education, a frequent and interdisciplinary line of research that has made outstanding contributions (Lynch, 1995) on a global scale over the last twenty years (Schugurensky, 2016). Researchers have analysed the social composition of French students (Gruel, Galland & Houzel, 2009), the access to Portuguese universities based on various differences (Santos & Almeida, 2001; Vieira, 2007), the decision-making processes in attending higher education and the role of family and friends therein (Brooks, 2010), the link between the application process and structural inequalities (Houghton, 2019), aspiration as a central tenet in discussing higher education inequalities (Bowers-Brown et al., 2019), the access of students from different social classes to Spanish universities (Langa, 2003; Villar-Aguilés, 2011; Daza & Elías, 2013), the social dimension of the university in the European context (Ariño, 2014; Egido et al., 2014), the process of commercialization of higher education (Sanz, 2006; Wee & Monarca, 2019), the tension that exists in the discourse between neo-liberal tenets and the idea of a Social Europe (Mayo, 2009) or the inequality of opportunities at university (Benadusi, 2009; Vergolini, 2018), to cite some works from an extensive and specialized field.

However, although there is consolidated research on inequality in higher education, this does not mean that there is scientific consensus on the quantitative measurement of such inequality, which is lacking for two main reasons: the first refers to the discrepancies in the composition of this phenomenon, that is, the variables that would have to be considered in its estimation; the second refers to the precision of its nature. In this sense, in a report on the gap between rich and poor in the OECD, Keeley (2015) states that “inequality can be explored in several ways, all of which give a different idea of how economic resources are distributed throughout society and even in the world [...], finding a way to represent inequality using a single number is a challenge, and many approaches have been taken over the years. But the one that is best known today is the Gini coefficient” (p. 24).

Educational inequality can be observed as a simple or compound variable. In the field of economics, simple variables are used to represent economic inequality, such as the comparison between incomes or income quartiles or the aforementioned Gini coefficient. In this way, social inequality can be defined as a proportion between quintiles. Thus, for example, Eurostat provides the 80/20 share, where a relationship is established between the 20% of the population with the highest income and the 20% with the lowest income. We also have the 90/10 share, which usually ap-

pears in OECD reports on the state of education. On the other hand, the calculation of these proportions offers advantages and disadvantages; the greatest advantage is that they allow us to compare countries without having to consider the wealth or poverty of each of them because one factor is the amount of income and another its distribution, and, on the other hand, among its disadvantages, it has been pointed out that such measures do not allow us to capture phenomena involving, for example, the extremely wealthy (an important characteristic of the contemporary world) because to do so we would need to further reduce the sample and calculate the comparison of even smaller sample sizes or percentiles (Piketty, 2013).

The Gini index (which takes values from 0 to 1, or Gini coefficient, if expressed as a value from 0 to 100) allows us to overcome this disadvantage because it refers not to the comparison of two fragments of the sample but the entirety of it. The Gini index is an index of the concentration of distributions and is often used to measure economic inequality. It is also commonly employed in works on social problems, such as in the study of occupational segregation. Aldaz & Eguia (2016) use a new version of the classical Gini index as a measure of local segregation, adopting it from previous work by other authors on occupational segregation (Río & Alonso-Villar, 2012). It is clear that the Gini index is one of the most widely used inequality coefficients in the scientific literature, as has also been stated in other works (Giorgi, 2005; Basulto & Busto, 2010; Larraz, 2016). In our case, we adapt the Gini index to measure educational inequality, specifically in relation to higher education, as we have already presented in a recent article (Hernández, Castelo Branco & Nakamura, 2020).

This study belongs to a line of research that we have developed in previous works in which analysed data from European countries, obtaining results that show a class strategy in the behaviour of private spending on higher education (Villar-Aguilés & Hernández, 2015a) and that for higher income families, higher education is relatively cheaper (Villar-Aguilés & Hernández, 2015b).

This article is structured as follows: first, we will locate this analysis in a theoretical framework dedicated to investigating inequality in higher education in European educational systems and to the application of the theory of collective action; the following section is devoted to describing the sources and method used; next, the results obtained are presented; then, a discussion section is included; finally, the article ends with a presentation of our conclusions.

2. Theoretical framework

2.1. Higher education and inequality in the European Union

As is well known, the concept of inequality is part of a long tradition of studies dedicated to analysing the different distributions of resources and goods in the educational system and the population. Inequality is considered in various works in the context we address in this article, namely, Europe, studies that have been devoted to analysing, using both theoretical and empirical approaches, the scope of the unequal distribution of educational resources among the population. Specifically, we have studies dedicated to analysing inequality in relation to the social composition of students that demonstrate a very clear association between social class and the level of private spending on education (Calero & Escardíbul, 2005): the highest social classes participate more in private educational spending (Calero et al. 2008).

We have recent research that provides evidence on how, in the Spanish case, public spending on public higher education institutions has been reduced, while in private institutions public spending has increased (Andrés-Candelas & Rogero-García, 2019). This factor linked to educational expenditure can also be studied in relation to the social composition of the university student body: in the Spanish case, the upper class student body accesses in a greater proportion than those from the lower class: 54.7% compared to a 10.6% in the case of undergraduate studies (Ariño et al., 2019).

The cost of higher education in Europe exhibits considerable heterogeneity, since there are European countries where university degree studies are practically free (in a total of 11 countries), while in others, the maximum prices of different degrees vary substantially (Sacristán, 2014). The heterogeneity in the cost of higher education in Europe is notably observed in the data from the *National Student Fee and Support Systems in European Higher Education* report published by the European Commission. According to its edition for the 2017-2018 academic year, 28% of Spanish students receive a scholarship, compared to 33% in France, 12% in Italy or 24% in Portugal, to name a few of the countries of Southern Europe. In addition to scholarships and grants as direct financial support for higher education, there are other options throughout Europe to financially support families, such as the tax benefits that exist in 22 educational systems. These tax deductions take different forms: as a yearly lump sum per child, as a tax-free income, or as a percentage of study expenses that can be deducted from family income taxes (for example, 30% in Portugal or 19% in Italy). None of these financial support options are available in Spain, so its educational system is characterized by the combination of a high percentage of the population that assumes the cost of higher education through the payment of tuition and other expenses and a low percentage of the population that receives a scholarship. Spain

stands out for being one of the countries in Western Europe (EU-15) with the least public expenditure relative to GDP and per capita, while the direct tax level that citizens bear is one of the highest in Europe, while total public income is one of the lowest in the EU-15 (Grau Vidal, 2018).

For the reasons stated above, we do not consider it methodologically appropriate to make an estimate based on the price per credit (ECTS) or the rates or fees announced by the institutions because there is a high probability that such an approach would be complicated by differences in scholarship policies, increases in rates on second and subsequent registrations, etc. Therefore, an approximation based on family spending is more pertinent since the aforementioned factors are already considered in their estimation.

2.2. The logic of collective action in an application to the study of expenditure in higher education

Given that university education is financed in part or in full by the states, we ask the question of whether certain social classes, specifically the upper classes, adopt strategies that we can call free-riding. A specialized literature has demonstrated the possibility of a scenario in which a part of the population behaves according to a logic of collective action, according to the work originally published by Mancur Olson in 1965: *The Logic of Collective Action*.

In his later book, *The Rise and Decline of Nations* (1982), Olson provides the fundamental arguments that he initially developed in *The Logic of Collective Action*. One of the best-known hypotheses in this work is that of exploitation (the exploitation hypothesis), in which the rich bear the burden of providing public goods for the poor. As other more contemporary authors have contended, this hypothesis must be reconsidered, since the exploitation hypothesis can occur in ways other than that originally cautioned about by Olson. Therefore, an “expanded exploitation analysis provides a more complete picture of the determinants of burden sharing with respect to the voluntary provision of public goods” (Buchholz & Sandler, 2016). Some studies have shown that the poorest classes contribute to pay for the students of the richer social classes, as at the Italian higher education system, which “has not yet fully adapted to the notion of a mass university” (Giarda, 2006).

Thus, Olson’s original hypothesis can be reconsidered and, precisely, is one of the conclusions of the article that we present here. Another consideration that will also lead to a conclusion of our work, as will be noted below, is that the reconsideration of this hypothesis of Olsonian exploitation is so-called free-rider problem.

A basic argument captured by Olson affirms that “the individuals and firms they serve have in general no incentive voluntarily to contribute to this support” (1982:19). Thus, in the data that we will present, it is clear not only that the exploitation hypothesis, as formulated by Olson, is not fulfilled,

since it is not the rich who emerge exploited by the poor, but also the former develop free-rider behaviour when benefiting from public expenditure.

An individual will not be involved in collective action if, despite this lack of participation, they can access its benefits, maximizing their reward (García Ojeda, 2016). This individual will engage in free-rider behaviour, an English expression, that is, the behaviour of “opportunist” or “stowaway” whereby the person takes advantage of what has been achieved at the organizational or group level (for an example referring to union organizations, see García Calavia, 2008), without contributing individual effort.

We will briefly describe what this behaviour refers to, since we will use it later as a hypothesis for our analytical procedure. It is very important to point out that it is not a question here of establishing the relative weight of the contributions of a certain social class (in, for example, fiscal terms) and the benefits obtained from a good financed wholly or in part by state budgets because this question would lead to endless debates, such as whether equality in access to higher education is fulfilled, as already proclaimed by the Universal Declaration of Human Rights of 1948. Rather, we will follow another argument, namely, comparing the distribution of social inequality in general with the inequality in expenditure in higher education between the different classes, regardless of state participation. In this way, free-riding can be detected, as we will see, without having to depend on the results of the various financing scenarios for higher education, which is very heterogeneous. Therefore, it allows us to identify free-riding without having to enter into the debate on what type of market higher education constitutes, which is also divided between public and private institutions. The characterization of markets is an economic issue (cf. Pusser, 2005), but the investigation of the strategies of social groups is a highly social issue.

3. Method

To address the research question that guides this article, that is, the study of the behaviour of higher education expenditure in Europe, we propose an adaptation of the Gini coefficient to analyse the distribution of that expenditure. Specifically, we consider the following hypothesis: the families best positioned on the economic ladder engage in free-riding regarding their expenditure in or spending on higher education in the European Union. This hypothesis requires us to prove two facts: a) that public expenditure is greater than private expenditure and b) that private expenditure maximizes social inequality.

We consider free-riding behaviour not only as a situation in which there is no contribution, but also in a situation in which the private contribution of families is relatively low.

Assuming that there is a certain relationship between the private expenditures of the various social classes and their acquisition of higher or tertiary education, if both facts (a and b) occur, then public expenditure will represent a transfer of public resources to the upper classes and free-riding among them. To demonstrate the first fact (public expenditure is greater than private expenditure), we will compare private and public expenditures using two Eurostat data sources, that is, we will use data on public spending on education by educational level, in this case in tertiary education (public educational expenditure), and private spending on tertiary education.

The concept of social class that we use here refers to the level of income without considering other components due to the impossibility of having these data from Eurostat, as the

source used in this work. Even so, we understand that the complex and controversial concept of social class, essential for understanding inequalities in the sociology of education, may contain other components referring to the level of education, occupation and another types of goods. In addition, the notion of upper class is usually determined by a combination of economic variables (income level) and axiological variables. However, we have explored the relationship between income level and spending strategies and the relationship with education in a context of crisis.

A few conceptual clarifications should be made. The first is that there are two data sources that identify the payments made in higher education, regardless of whether they are understood as an expenditure, since they eventually have a subsequent associated benefit, or as an expense, which will be how they will be considered here. On the one hand, we have family budget surveys, which determine what portion of the income of the family unit is destined for such consumption (expense), and on the other, we have records related to tuition payments or other expenses collected at the same academic or educational institutions. We choose the first methodology because it is equivalent throughout the area of analysis and allows us to dispense with specific cases. The second clarification is that, in the European context, higher education must be understood not only as university education but also as other instruction carried out in schools or non-university higher education institutions (which is all the more reason to focus on household consumption and not institutional data, which vary greatly). The concept that Eurostat offers us is that of tertiary education. Thus, in this article, we will not distinguish between the two possible higher education pathways, according to educational contexts and systems, and we will adopt the concept used by Eurostat as tertiary education or higher education, which is the most frequent conceptualization used in the specialized literature.

The data sources used for this study and the proposed adaptation of the Gini index to the case of education, specifically consumption in higher edu-

cation, are specified below. In this case, Eurostat formats these data in terms of consumption expenditure. In this study, we specifically use the following data sources: the “Structure of consumption expenditure by income quintile” and the “Mean consumption expenditure by income quintile”. We also use data from the World Bank regarding the Gini index by country. The data refer to the year 2015 and are published by Eurostat, which provides information on consumption in higher education.

4. Results

First, we will show the data for the member countries of the European Union for the year 2015 on the variables studied (Table 1). With this first approximation, we can identify the general trend in the concentration of inequality in expenditure in higher education.

We will clarify first that when we refer to spending on higher education, public and private, these values are variables are called by Eurostat as expenditure on educational institutions from public sources and expenditure on educational institutions from private sources. The first variable is the expenditure on educational institutions from public sources and it corresponds to direct expenditure on educational institutions from public sources. The second variable means expenditure on educational institutions from private sources (comprises tuition fees, materials such as textbooks and teaching equipment and others).

The table shows, on the one hand, the absolute values of spending on higher education, both public and private, in millions of euros and, on the other hand, the percentages allocated to both sectors, public and private.

Source: Eurostat. Public educational expenditure by education level, programme orientation, type of source and expenditure category [educ_uae_fine02]; Private educational expenditure by education level, programme orientation, type of source and expenditure category [educ_uae_fine03]

We do not have data on enrolment by social class from source used (Eurostat), but we do have the cost of enrolment by quintiles. We consider that enrolment by social class is a dependent variable of expenditure per quintiles.

As seen in the table above, there is significant heterogeneity in the distribution of public and private spending, as observed in the percentage data. The largest private contributions correspond to poorer countries (e.g., Bulgaria), to countries with heavily privatized education (e.g., the United Kingdom), or to countries that, hit by the economic crisis of 2007/2008, had been forced to introduce cuts to social spending (e.g., Spain or Portugal). The Cypriot case is anomalous, since a part of its territory is under Turkish military rule, and in this area, there are private universities that benefit from being

located in the territory of the European Union, which increases the average private spending.

Table 1. Public and Private Investment in Higher Education 2015 (in millions of euros and percentages)

Country	Public	Private	% Public	% Private
Belgium	5,949.0	518.6	91.98	8.02
Bulgaria	292.3	265.9	52.36	47.64
Czechia	1,299.8	158.7	89.12	10.88
Denmark	n.a.	n.a.	n.a.	n.a.
Germany	38,016.2	n.a.	n.a.	n.a.
Estonia	287.0	23.5	92.43	7.57
Ireland	2,306.1	462.1	83.31	16.69
Greece	1,282.3	201.4	86.43	13.57
Spain	10,327.5	3,980.5	72.18	27.82
France	27,377.9	3,439.5	88.84	11.16
Croatia	n.a.	n.a.	n.a.	n.a.
Italy	12,542.0	4,308.6	74.43	25.57
Cyprus	234.2	126.0	65.02	34.98
Latvia	286.8	78.8	78.45	21.55
Lithuania	439.8	101.5	81.25	18.75
Luxembourg	267.3	6.6	97.59	2.41
Hungary	726.7	n.a.	n.a.	n.a.
Malta	127.2	9.2	93.26	6.74
Netherlands	11,117.3	1,902.2	85.39	14.61
Austria	6,130.3	185.1	97.07	2.93
Poland	5,234.9	829.9	86.32	13.68
Portugal	1,607.1	603.8	72.69	27.31
Romania	1,054.0	6.8	99.36	0.64
Slovenia	379.0	42.9	89.83	10.17
Slovakia	1,097.2	130.0	89.41	10.59
Finland	3,968.3	0.0	100.00	0.0
Sweden	8,447.3	58.6	99.31	0.69
United Kingdom	34,870.3	23,563.5	59.67	40.33
Total	175,667.8	41,003.7	81.08	18.92

Note: data processing by the authors; n.a. means data not available.

Table 2. Structure of tertiary education spending by income quintile 2015 (%)

Country	1Q	2Q	3Q	4Q	5Q
Belgium	0.0	0.0	0.0	0.0	0.0
Bulgaria	0.0	0.0	0.1	0.3	0.3
Czechia	0.0	0.1	0.0	0.1	0.2
Denmark	n.a.	n.a.	n.a.	n.a.	n.a.
Germany	0.0	0.0	0.0	0.0	0.0
Estonia	0.0	0.0	0.2	0.2	0.1
Ireland	2.7	1.4	1.1	1.4	1.8
Greece	0.1	0.2	0.1	0.2	0.5
Spain	0.2	0.3	0.4	0.4	1.0
France	n.a.	n.a.	n.a.	n.a.	n.a.
Croatia	0.1	0.2	0.3	0.4	0.7
Italy	n.a.	n.a.	n.a.	n.a.	n.a.
Cyprus	0.7	0.7	1.4	2.8	2.8
Latvia	0.0	0.6	0.5	0.7	0.9
Lithuania	0.1	0.2	0.3	0.4	0.5
Luxembourg	0.1	0.1	0.0	0.0	0.0
Hungary	0.2	0.2	0.2	0.3	0.4
Malta	0.1	0.3	0.5	0.7	1.2
Netherlands	2.1	0.6	0.6	0.8	0.9
Austria	0.6	0.2	0.1	0.1	0.2
Poland	0.1	0.1	0.1	0.2	0.3
Portugal	0.3	0.7	0.8	1.1	1.1
Romania	0.0	0.0	0.1	0.1	0.2
Slovenia	0.1	0.3	0.2	0.3	0.3
Slovakia	0.0	0.2	0.2	0.4	0.5
Finland	0.1	0.1	0.0	0.0	0.0
Sweden	0.0	0.0	0.0	0.0	0.0
United Kingdom	0.9	0.3	0.7	0.6	1.1
Total	0.0	0.0	0.0	0.0	0.0

Note: data processing by the authors; n.a. means data not available. The following calculations cannot be performed for countries with “n.a.”, such as Italy.

Source: Eurostat. Structure of consumption expenditure by income quintile and COICOP consumption purpose [hbs_str_t223]. Mean consumption expenditure by income quintile [hbs_exp_t133]

Next, we will proceed to demonstrate the second fact (namely, that private expenditure maximizes social inequality), which requires a specific procedure to be able to compare expenditure in tertiary education with the income distribution. Such a procedure entails reducing both variables by calculating the Gini coefficient. To do this, we will use Eurostat data, specifically, the structure of expenditure by income quintile in tertiary education (structure of consumption expenditure by income quintile). The classification is made according to individual consumption by purpose (COICOP). In this case, the purpose or consumption is tertiary education.

They may seem low but recall that only a portion of the population invests in education, in contrast to other items in family budgets that are general. Recall further that the percentages per thousand that are presented are percentages with respect to the average income of each quintile, which means that a higher percentage per thousand of a lower quintile may represent a smaller amount in absolute terms than a somewhat per thousand less than a higher quintile. This can clearly be seen for the Irish or British case. The Scandinavian countries present practically zero expenditure per thousand. Next, we will show the adaptation of the Gini coefficient for the educational field and the study of spending on higher education (which we will abbreviate as GC-HE) to compare this coefficient with the classic variant of the Gini coefficient that measures economic inequality and that can be understood extensively as a measure of social inequality, as established by the World Bank (GC-WB).

We explain the calculation procedure below. First, the real amount of private expenditure in each quintile and in each country is obtained as a simple product of the figure per thousand in Table 2 for the private expenditure corresponding to each country in Table 1. These data, following the Gini index, are formulated as accumulated percentages: the total in each country is summed, and the accumulated percentages are easily obtained (another possibility is to add up so many per thousand accumulated and multiply them by the amounts in Table 1). Once the accumulated percentages are obtained, the surface under the Lorenz curve (here, a broken line) is calculated from the class marks (half the sum of the lower and upper values of each quintile) by the width of the segment of the quintile (logically, 20%). The surface under the Lorenz curve is subtracted from $1/2$, and its proportion is obtained over the same quantity and multiplied by 100 to obtain the coefficient. As shown (Figure I), these are simple arithmetic operations, allowing the procedure to be easily repeated in other contexts.

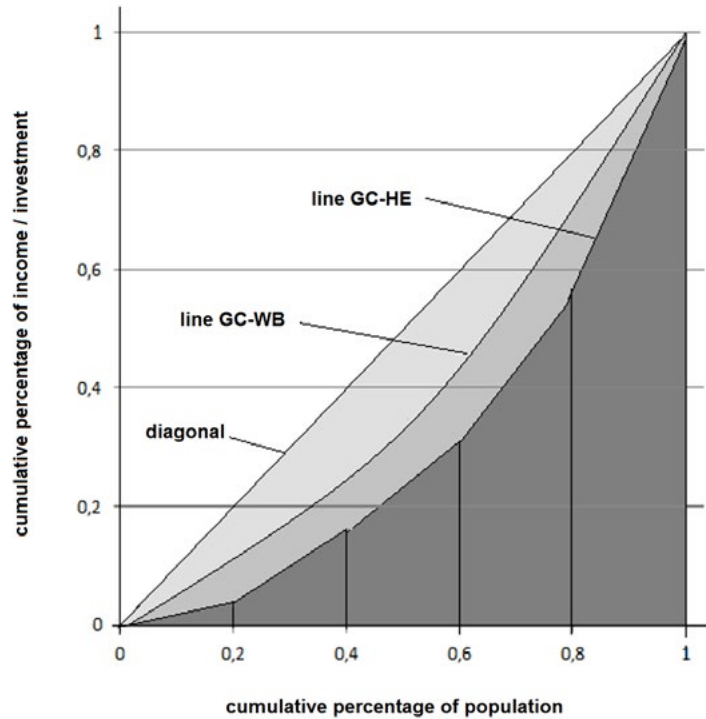


Figure 1. Plot of Gini-coefficient Higher Education and Gini-Coefficient World Bank

We present the following formula with the intention of expressing it mathematically. If public expenditure is relatively higher than private expenditure and it is given that, if $F(x)$ which is the function of the expenditure curve in HE and $G(x)$ is the function of the curve of measures socioeconomic inequality, and if:

$$\int_0^1 F(x) dx < \int_0^1 G(x) dx$$

So, a free-rider behaviour can be confirmed.

In the case of the calculation using quantiles (c), which in our case we have used quintiles ($C = 5$) and considering their class marks (m), the formula would be the following:

$$\sum_{i=1}^c m_i F_i < \sum_{i=1}^{c'} m'_i G_i$$

For the Gini coefficient of economic inequality, we will use the World Bank data corresponding to the year 2015 to make them converge with the data from Eurostat sources. Table 3 shows the GC-HE and GC-WB values for the countries that belong to the European Union. Those for which GC-HE values cannot be calculated because they have null numerator or denominator ratios have been eliminated.

Table 3. Estimation of the Gini coefficient for investment in higher education (GC-HE) and Gini coefficient for society in general (GC-WB)

Country	GC-HE	GC-WB
Bulgaria	71.0	37.4
Czechia	72.4	25.9
Estonia	66.1	32.7
Ireland	67.4	31.8
Greece	72.7	36.0
Spain	72.0	36.2
Croatia	70.9	31.1
Cyprus	71.1	34.0
Latvia	70.3	34.2
Lithuania	69.8	37.4
Hungary	69.3	30.4
Malta	71.0	29.4
Netherlands	66.3	28.2
Austria	66.4	30.5
Poland	70.6	31.8
Portugal	68.6	35.5
Romania	72.3	35.9
Slovenia	67.3	25.4
Slovakia	69.6	26.5
Finland	60.0	27.1
United Kingdom	69.6	33.2

Note: data processing by the authors.

The value of the GC-HE column is higher in all cases than that of the GC-WB column (table 3). Next, the Pearson correlation coefficient (R) is calculated between the Gini coefficient relative to spending on higher education (GC-HE) and the socioeconomic Gini coefficient (GC-WB). The result obtained is $R = 0.433$, which indicates an important correlation between the two data series.

As shown, using the same calculation procedure (the Gini coefficient), the values related to spending on higher education present much higher values, which means that inequality is greater. This suggests free-rider behaviour by the upper classes because the lower classes spend proportionally less than they generally do, and conversely, the upper classes spend proportionally more. However, since higher education is a good heavily subsidized by the state (as can be deduced from Table 1, where the values of public spending are considerably higher than those of private spending), we have to conclude that the upper classes take greater “advantage” of this public expenditure. Furthermore, the inclusion of the countries in Table 2 that are not in Table 3 would further increase this free-rider trend, as private expenditure is minimized. That is, the upper classes function in the way Olson described the pressure by groups of the privileged.

If we consider the distribution of the private educational expenditure on higher education and the socio-economic Gini coefficient by World Bank (table 4), the correlation between these variables is significant (0.486), which denies the possibility that a given distribution of public and private spending can neutralize the free-rider effect.

Table 4. Gini coefficient World Bank and % private educational expenditure

Country	GC-WB	Education Expenditure Private (%)
Belgium	27.7	15.52
Bulgaria	38.6	54.06
Czechia	25.9	13.74
Estonia	32.7	7.57
Ireland	31.8	0.0
Greece	36.0	20.69
Spain	36.2	28.92
France	32.7	15.05
Italy	35.4	26.83
Cyprus	34.0	39.56
Latvia	34.2	27.65
Lithuania	37.4	19.61
Luxemburg	32.9	2.48
Malta	29.4	7.22
Netherlands	28.2	17.71
Austria	30.5	3.24

Note: data processing by the authors.

5. Discussion

In line with the main result of this work, an interesting question for discussion and continuation of this line of research is whether this free-riding could indicate a class strategy on the part of the population better situated in terms of income and power and to establish quantitatively what proportion of the expenditure they would save. It also raises the question, furthermore, of whether this economic and social situation could lead to a rethinking of the scenario, especially in the Spanish context. In which, as we have detailed, there is a complete absence of direct fiscal support for family spending on higher education. However, our work affirms that there is indirect or tax credit support for families that are better positioned economically.

Results show there is a correlation between the inequality coefficient and the percentage of private expenditure. Therefore, different countries tend to be grouped in quadrants I and III. Quadrant II is virtually empty. In the case of quadrant IV, we find poorer countries, such as Romania or Bulgaria. However, this classification does not inform us about the use of the upper classes in each of the countries. To find out this issue (and the free-rider effect) we need to go into the stratification of each country.

Some peculiarities are detected through the results, for example regarding Eastern Europe with a possible coexistence of three models: what we might call the East-North model (with high inequality and high private expenditure), such as Latvia and Lithuania; an East-South model (with low inequality and low private expenditure), such as Slovenia and Slovakia, and an East-East model (with high inequality and low private expenditure), such as Bulgaria and Romania.

In another sense, the main result presented here is a relevant conclusion that is linked to one of the strategic objectives of the Education and Training Strategy 2020 (ET 2020) within the framework of the European Union, which has been replaced in 2021 for a new frame. The European Council of May 12, 2009, established the Strategic Framework for European cooperation in the field of education and training, one of whose benchmarks states that “The percentage of people aged between 30 and 34 years that they have successfully completed the level of Tertiary Education should be at least 40%”, an objective to have been met, because the last figure provided (2019), is 40.7% for the whole of the European Union (EU-28). In the Spanish case, the corresponding figure would be 42.4%. European countries range from a maximum of 57.6% (Lithuania) to a minimum of 24.6% (Romania, one of the reasons for the divergence in Pearson can be found in this low percentage).

Recently, a new European education framework has been approved that continues and extends the common objectives worked out until 2020: the strategic framework for European cooperation in the field of education and

training with a view to the European Education Area and beyond (2021-2030). By 2030, the following target is proposed: “the percentage of people between the ages of 25 and 34 who have completed higher education must be at least 45%”. As we can see, the minimum age has been reduced and the percentage increased to the previous framework.

This leads us to ask whether it is enough to establish objectives in terms of the percentage of a certain age cohort graduating from higher education, or does progress in equality and social cohesion also require considering other variables? In this case, the distribution of expenditure inequality with respect to social inequality provides, as we have seen, relevant information.

Thus, this conclusion raises a debate linked to educational policies in higher education and the relevance of how an educational policy that disregards these effects, in short, what we could call the free-rider problem applied to education, can enter into contradiction with the main value of equality proclaimed by our legal system.

In addition, as detailed, this work uses 2015 data, both the World Bank and Eurostat data, because it is the last year with published data. In this sense, the calculations for the future may be repeated in 2020 when updated data are, and it is also possible to carry out the calculations for other regions where data on higher education expenditure are available for quartiles or delve into the situations of certain European regions.

Finally, the application of the methodology of the Gini coefficient to the educational field seems very promising to us, since it does not always require highly involved calculation (as the subject studied here accredits) and would allow a certain comparison between educational analyses and other social and economic considerations.

6. Conclusions

This work shows that economic inequality and educational inequality, understood here as the unequal distribution of higher education expenditure according to income, follow a statistically significant relationship. This fact has led us to link this unequal distribution with the theoretical proposal of the logic of collective action, originally developed by Mancur Olson (1965), which highlights the behaviour or problem of free-rider as a type of action that has an individualistic rather than cooperative nature. Specifically, this free-rider behaviour appears to occur in that social class located in the highest income position in the population, and thus this population would benefit from public expenditure in higher education.

Based on the methodological procedure followed and the results obtained here, our initial hypothesis can be verified, that is, that there is a notable correlation between social inequality (measured with the Gini coefficient of

economic inequality) and inequality in educational expenditure (measured with an adaptation of the Gini coefficient, based on quintiles of family consumption).

This result can be considered relevant and forces us to rethink the proposals to promote greater equity in higher education according to the approaches of the educational policy of the European Union and specifically within the framework of the so-called social dimension of higher education, which was introduced at the 2001 Prague summit and subsequently appeared at subsequent summits to monitor the construction of the European Higher Education Area.

The results obtained in that study suggest a line of work that must focus on guiding educational policies based on accredited indicators of educational equality and analysing in each specific case its impact on social equality. The application of the Gini coefficient allows the use of a universally accepted instrument in order to move towards greater equity.

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