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Research Article

The Role of Initial Financial Resources in Students' Time Allocation – An Empirical Analysis for 25 European Countries

Christoph Gwosć[*]

Department Governance in Higher Education and Science, German Centre for Higher Education Research and Science Studies (DZHW), Hanover, Germany

Abstract

Students in higher education spend their time on a plethora of different activities such as taught studies, self-study, employment, volunteering, caring for relatives or leisure activities. Regarding the determinants of students' time allocation, this analysis investigates the rarely asked question whether students' base income, which is the sum of transfers from the state and the family, has an impact on students' time allocation for studies (taught studies and personal study time) and gainful employment in Europe. In addition, it is examined how satisfied students are with their time allocation. The theory of rational choice serves as a theoretical framework, whereby Becker's time allocation theory is used as a special form to model the behaviour of students. For the empirical analysis, the data set from the sixth round of the EUROSTUDENT project is used that provides data for up to 25 countries of the European Higher Education Area. Apart from all students, three student groups are in the focus that differ by their dominant source of income, i.e. self-earned income, public support, and support from the family/partner – such an analysis has not yet been conducted. As the data set contains only aggregate data, analysis is limited to descriptive statistics using mean values for various uses of time and income variables. It appears, among other things, that students with own earnings as dominant source of income have the lowest base income and they differ significantly from the other groups in their time allocation: In all countries, students depending on self-earned income have the largest total time budget (consisting of study time and employment time) of all student groups considered. They spend the least time on taught studies and personal study time and by far the most time on employment. They are also the group that most frequently wishes to reduce their working hours and to extend their study-related times for courses and self-study. As part of a concluding normative discourse on justice, it can also be stated that these students are at a disadvantage compared to their peers who depend either on public support or familial support.

Keywords

Time Allocation, Taught Studies, Personal Study Time, Employment, Satisfaction

1. Introduction

Students have a limited time budget that they spend on competing purposes. In their capacity as educational partici-

pants, they need time to attend courses and for various forms of self-study. To finance their living and study-related costs,

they are often required to be gainfully employed alongside studies. Finally, there is a plethora of other activities students spend their time on such as childcare, volunteering, caring for relatives, or recreation [1, 30, 35]. Society, which is often funding higher education by means of compulsory levies, may legitimately expect students to complete their studies in an adequate time to keep the financial burden for society low. Most students may also have an interest in graduating without large delays. Studying rapidly, however, requires certain framework conditions – including student financing – that allow students to spend enough time on study-related activities. If such framework conditions are not in place and students have to spend plenty of time e.g. on gainful employment, they not only face the threat of slower academic progress [60], but also possibly poorer grades [15] and, in the worst case, even dropping out of higher education [37]. Against this background, the first research question is how students' base income (i.e. the sum of economic support from the family and the state) influences their time allocation with respect to taught studies, self-study and gainful employment – a question that has received very little attention to date. Previous studies in this area have often examined the *effects* of certain uses of time. This includes, for instance, the effect of employment time on students' success in terms of duration of studies, credit points, grades, or labour market success [8, 9, 11, 15, 20, 43, 61]. Deceptively, there are fewer studies that are dealing with the *determinants* of students' time allocation such as the interplay of students' employment time and study time [3, 31, 40, 57]. The main explanatory variables used by these studies are, inter alia, students' age, sex, number of dependants, form of housing, and educational background. Neill [48] examines the impact of tuition fees on students' employment. Other financial variables such as transfers from the parents and the state to explain the allocation of time are hardly used, not to mention that they would be assigned a central role. An exception is an analysis by Apolinarski & Gwosć [1], who examined the relationship between students' base income (= the sum of support from family and the state) and their time allocation for students in Germany. For the European level, however, comparable analyses are still missing. Accordingly, the role of the base income in students' time allocation is to be examined for the first time in a large international comparison.

The theoretical framework for analysis is based on rational choice theory [6, 12, 17]. According to this approach, students' time allocation depends not only on their preferences for certain activities, but also on restrictions they are subject to, such as direct and indirect costs which are connected to different uses of time and the availability of financial resources. To analyse the determinants of time allocation, a simple model is developed which follows Becker's time allocation theory [7] and that describes the allocation of students' time budget to different purposes such as studies and gainful employment. The model takes into account that students may receive transfers from their family and the state (= base income). From the model's viewpoint, the time allocation of students is the result of an optimisation calculus and ideally matches the students' preferences.

Students' time allocation is analysed empirically both across countries and for different student groups. Student populations of up to 25 countries of the European Higher Education Area (EHEA) are being considered. With respect to the theoretical approach, such an analysis has not yet been carried out. There are two reasons for choosing the EHEA as research object. Firstly, since the formal beginning of the Bologna Process in 1999, higher education policy in Europe is increasingly shaped by the countries forming part of the EHEA [64, 65]: Higher education is offered and demanded under similar organisational frameworks in terms of study structure, mutual recognition of periods of study and degrees, quality standards, and qualification frameworks [28, 29]. This means that the higher education systems of the EHEA countries have achieved a high degree of similarity on the one hand, but still have national characteristics on the other. This makes them an interesting object of research. Secondly, the EUROSTUDENT data set, which is used for the empirical analysis, offers the largest, standardized data set on students in Europe allowing for broad international comparisons for large parts of the EHEA.

As the data set used contains only aggregate data, the possibilities for inferential-statistical analyses are very limited. Therefore, it is not possible to test behavioural hypotheses directly. Instead, this analysis takes a look at a correlation between two macro variables, namely the base income and employment time of students. An empirical test of the macro-hypothesis reveals that there is indeed a correlation between the two variables which can be explained by the proposed macro-micro-approach. The results of the empirical analysis show that the base income has a positive influence on the time students spend studying and a negative impact on the time they spend working. It appears that students for whom earned income is the dominant source of income differ significantly from other student groups. In nearly all countries, these students have the least base income. Furthermore, in all countries, they have the longest working hours, spend the least time on self-study and taught studies but at the same time they have the largest total workload (i.e. the sum of study time and employment time). Rather the opposite holds true for the other two student groups, whose dominant source of income is either transfers from the family or the state.

The second research question is whether students' time allocation, which differs across various groups of students, is simply an expression of their (different) preferences or rather due to restrictions they are facing, especially the income restriction. This is another research question that has not yet been addressed in this context. A satisfaction analysis reveals that the extent of students' (dis)satisfaction with their time allocation varies across student groups. Students with gainful employment as dominant income source are the group that most often desires to reduce their working time in almost all

countries. At the same time, they report most frequently the desire to extend their time for self-study and taught studies. This indicates that students' time allocation is not simply a reflection of their preferences, as should ideally be the case according to the optimization calculus of the theoretical model. Instead, the income restriction appears to be a key determinant of time allocation, especially for intensively employed students. If the results are viewed in the context of a discourse on social justice, it can be stated that students depending on earned income are at a disadvantage with respect to the normative evaluation criteria 'origin of funds' and the 'principle of reciprocity' compared to their fellow students.

2. A Microeconomic Model of Students' Time Allocation

At the micro-level, rational choice theory is used as general action theory. According to this theory, individuals act deliberately and well-planned. They try to achieve the highest possible level of well-being, consider costs and benefits for the achievement of their objectives and take other restrictions they are facing generally into account [6, 18, 23]. As a special manifestation of rational choice theory, Becker's time allocation theory [7] is used to explain the individual optimisation behaviour of students. Becker's approach considers time as a scarce resource that is involved in various human activities. Time is viewed as input factor, which is used to produce market goods, commodities[1], or production factors including, for example, human capital as derivative production factor [5, 55]. Time allocation theory simultaneously determines all supply and demand activities of an economic subject for which time is needed as input factor. As time is a universally applicable resource, there is a broad array of topics to which Becker's approach and its advancements have been applied: It is used, for instance, to evaluate travel time in the transport sector [49], to explain purchase decisions for workwear [41], to analyse the use of time of the middle management of enterprises [63], to model decisions on the use of leisure time [54], to explain the emergence of social relations in private life [34], and to analyse church attendance [2]. In the context of educational research, time allocation theory is often used to examine the effects of time allocation. This includes the relationship between students' use of time and their academic performance [4, 16, 22, 32, 58] or the correlation between students' time allocation and their acquisition of subject-specific and generic skills [45].

Time allocation theory is also used, however, to identify the determinants of students' time allocation. Stevens and Weale [57] examined the economic forces, which determine the allocation of time between study, paid work, and leisure of

students at English universities. In their model they consider, among other things, the influence of current wage, socio-economic background, family support, debt, and a future prospective wage rate on students' time allocation. According to their results, expected high future earnings are associated with lower study time in the present tense, while the opposite is true for prospective lower earnings. With respect to the socio-economic background of students, it shows that students from poorer family backgrounds spend more time studying than their peers from wealthier family backgrounds. The existence of family support has a negative effect on students' study time and a positive effect on their leisure time. Fernex et al. [30] analysed the allocation of time to different university and extra-university activities of students in the Rhône-Alpes region in France. Students' use of time includes attendance to lectures, independent study time (i.e. personal study time), and other academic time (e.g. group work, mentoring). The authors aim to identify factors that explain variability both between and within fields of study. By using a hierarchical linear modelling approach, the authors conclude that expected future benefits of studies (future job expectations and future financial situation after studies) do not influence the allocation of study time. Instead, variables presenting students' *past* experience (e.g. students' academic history, past school orientation, acquired work capacity), and *present* experience (quality of teaching, encountered difficulties within university) seem to have a greater influence. The authors thus conclude that time allocation seems to be rooted in students' past and current experience more than in their anticipations of the future.

Subsequently, a general model on the time allocation of students, which is taking their transfer income into consideration, is developed [7, 62]. Based on Becker's approach, the following model describes the simultaneous planning of students' labour supply (working time) and their demand for higher education (study time), with special consideration of their initial financial resources. Within the framework of the model, a student has a time budget T of 24 hours per day, which he can allocate to various purposes. For the sake of simplicity, it is assumed that time is divided between only three purposes, namely employment T_w, studies T_S, and the category 'remaining time' T_R, which summarises all other uses of time other than working time and study time.

$$T = T_W + T_S + T_R \tag{1}$$

The working time T_W is remunerated with the wage w; in this way the student generates earned income. Furthermore, he receives a base income b, which is composed of support from family and/or the state. The student's income y is then described as

$$y = w \cdot T_W + b \tag{2}$$

It is assumed that the student spends all his income on

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consumer goods c, i.e. he does not accumulate any savings.

$$y = c \tag{3}$$

The student's utility U depends on the quantity of consumer goods q, his study time T_S, and the remaining time T_R. To simplify matters, it is supposed that study time provides an immediate consumer benefit, i.e. unlike with human capital theory [5] time is not an input to an investment function. This represents a certain simplification of reality. In fact, higher education is likely to have a dual economic character for students, namely that of a consumer good *and* an investment good. For example, when students benefit from attending interesting and inspiring courses or reading entertaining and enlightening specialist literature, these aspects of their studies have the character of a consumer good. However, if students participate in higher education to increase their future chances of finding a well-paid high-quality job [47], then higher education has characteristics of an investment good. In this model, the consumer goods character of higher education is placed in the focus of the student's perspective.[2]

$$U = U(q, T_S, T_R) \tag{4}$$

Using the equations (1) and (2), the income function can be written as

$$y = w \cdot (T - T_S - T_R) + b \tag{5}$$

According to equation (3) income is fully spent on consumption. The equation for the use of income is then

$$y = p \cdot q, \tag{6}$$

where p is the price for the consumer good q. By setting (5) and (6) equal and transforming, the following combined constraint for a Lagrange function results:

$$p \cdot q - w \cdot (T - T_S - T_R) - b = 0 \tag{7}$$

The Lagrange function to be maximised is then

$$L = U(q, T_S, T_R) - \lambda(p \cdot q - w \cdot (T - T_S - T_R) - b). \tag{8}$$

The derivation of the function according to the independent variables gives the following results:

$$\lambda = \frac{\frac{\partial U}{\partial q}}{p} \tag{9}$$

$$\lambda = \frac{\frac{\partial U}{\partial T_S}}{w} \tag{10}$$

$$\lambda = \frac{\frac{\partial U}{\partial T_R}}{w} \tag{11}$$

The student thus reaches his utility maximum if Gossen's second law is met, i.e. if the weighted marginal utility of consumption of goods equals the weighted marginal utility of study time and the weighted marginal utility of remaining time.

The price of goods and the wage are important variables for the marginal calculus; however, in the following the focus is on the role of the base income. The base income that the student receives enables him to consume goods without income from gainful employment and thus without spending time on gainful employment. The transfer has yet another effect: The student can substitute part of the time that would be working time in absence of the base income by study time. The transfer thus allows for a higher consumption of goods *and* study time simultaneously. Regarding the choice of working time, it is assumed that it depends very much on the student's base income. The amounts of the actual disposable base income and the student's costs of living and studying then result in the extent of a possible financing gap that would have to be closed by the student's earned income. This need for earned income, in conjunction with the applicable wage, then determines the extent of working time. It is, therefore, generally assumed that students spend the more time on gainful employment, the less economic support they receive from family and the state, i.e. the lower their base income.

In the model, students' time allocation depends, inter alia, on their preferences for consumption of goods, study time, and remaining time. Regarding the consumption of goods, it is assumed that students want to reach a level that ensures at least their physical or socio-cultural subsistence. In this respect, working time has for students priority over other uses of time until this goal is reached. Furthermore, it is assumed that students regard study time as more important than the remaining time. A good indicator supporting this assumption is the direct and indirect costs of studying that students are willing to bear and that are far from being negligible [50]. The following transitive order of preference for the three time uses considered is derived from these assumptions

$$T_W \gtrsim T_S \gtrsim T_R \tag{12}$$

This leads to the conclusion that working time and study time tend to have a negative relationship to each other: The more time students spend on gainful employment, the less time they spend on their studies. This at least applies, whenever the 'remaining time' is no longer sufficiently available for reductions in time use.[3] With respect to the empirical

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2 This view would be in line with the findings of Fernex et al. [30] that (future) benefits do not seem to influence students' present time allocation for studies.

3 Of course, the desire to satisfy a need for a particular use of time is situation-specific and depends, inter alia, on which needs have already been satisfied and which have not. There may certainly be exceptions to the preference order as described by equation 12 in certain situations. However, this order of preference could plausibly be regarded as a student's fundamental *long-term* preference order, at least for the duration of his higher education programme. For explanations and

analysis, the following simple hypotheses are formulated based on this model:

1) H_1: The greater the family support, the more time students spend on their studies.
2) H_2: The greater the public support, the more time students spend on their studies.
3) H_3: The more time students spend on gainful employment, the less time they spend on their studies.
4) H_4: The greater the base income (sum of support from the family and the state), the less time students spend on gainful employment.

It should be noted that due to the use of aggregate data direct hypotheses tests will not be possible. Instead, most hypotheses are examined rather indirectly by the modelling of the focus groups.

The theoretical model that has been developed for explanation is a simple one and, by its very nature, abstracts from many other influences on the time allocation of students that exist in reality. These influencing factors may include, for example, the academic abilities of students. Different levels of these skills can mean that the same amount of knowledge can be acquired in individually different amounts of time. What may be too little study time for one person may be enough time for another [1]. Also, the type of higher education institution (university vs. university of applied sciences), the study programme (Bachelor vs. Master) or the subject group may require students to allocate their time differently. However, this would require a refinement of the model and would go beyond the current scope of analysis (for an in-depth analysis for Germany see [1]).

3. Materials and Methods

The results of the sixth survey of the EUROSTUDENT project serve as data base for analysis. EUROSTUDENT is an international survey project, which aims to determine the social and economic conditions of students in Europe. 28 EHEA countries have participated in the sixth round of the project, which was carried out in the period from 2016 to 2018. The student surveys conducted in the participating countries were based on a jointly developed uniform questionnaire, which was obligatory for all countries. Furthermore, there have been obligatory guidelines for an identical preparation and analysis of the collected data (for further details on the data set see Table 2 and [35]). The data collected were thoroughly checked for plausibility at both national and international level. The data used are based on a self-report by the students surveyed. They are, therefore, subjective impressions which, like all subjective data, may be subject to perceptual distortions. However, no better data sources are available for information on students' time allocation and their satisfaction with it.

To avoid problems of data reliability, which could arise due to small case numbers for the student groups covered in the samples, only those countries were included in the analysis that had unweighted case numbers of at least 30 for all student groups considered. The comparison is thus limited to 25 EHEA countries in total. Owing to reduced data availability, only 23 countries could be considered for the satisfaction analysis. The analyses presented here are exclusively based on aggregate data, which the participating countries provided for the EUROSTUDENT data set.

Within the framework of the international survey on which this analysis is based, students were asked how many hours they spend in a typical week during the lecture period on study-related purposes – separated into courses and self-study – and gainful employment. Other uses of time were not recorded. Although the picture of students' time allocation is incomplete, it is nevertheless meaningful for the analysis presented here. The following data not only include the results for the entire student population in the countries considered, but also for three groups of students which were separated according to their dominant source of income. Students' total income does not only contain monetary income, but also transfers in kind[4] that students receive from their private surrounding. It is distinguished between family-dependent, market-dependent, and state-dependent students. Family-dependent students are characterised by the fact that they receive more than 50 % of their total monthly income from their family, i.e. from their parents, other relatives, or their partner. Market-dependent students generate more than half of their income per month through gainful employment alongside studies. For state-dependent students, it is the public sector that provides more than half of students' monthly income through the payment of scholarships, grants, and loans.

To analyse students' time allocation, the arithmetic mean of the hours spent per week is used. The focus is not so much on differences between countries, although these are described as well, but rather on differences between student groups, neglecting national borders.

4. Students' Time Allocation in 25 EHEA Countries in Comparison

First, the 'entire' time, which includes taught studies, personal study time, and employment time of the various student groups is displayed (Figure 1). Comparing the data for all students shows remarkable differences between countries. Students in Iceland, Malta, Poland, and Estonia spend more than 50 hours per week on study-related activities and employment, while their fellow students in Finland, Sweden, and Turkey do not spend more than 40 hours weekly on these

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justifications of long-term preferences see [6, 46, 59].

4 Transfers in kind are students' living and study-related costs that are not paid by the students themselves, but by their parents, other relatives, or their partner. These payments go directly to the students' creditors, i.e. the respective money is intangible for the students. An example is the rent, which parents bear for their collegiate children who live away from the parental home, and which is paid directly to the children's landlord.
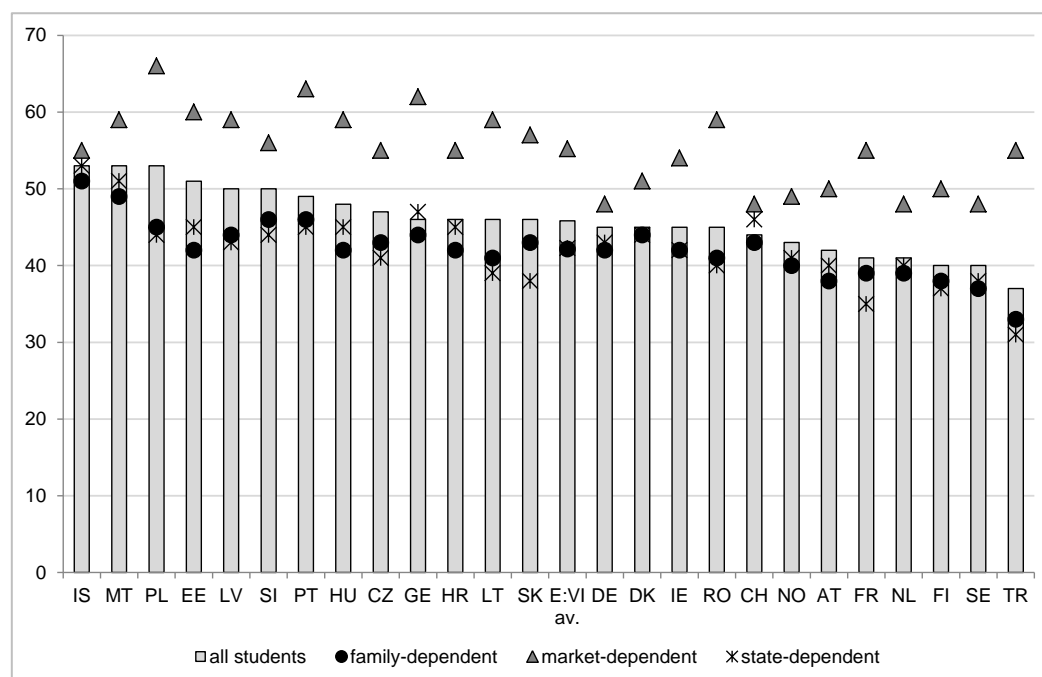
purposes.

Figure 1. Total workload of students, arithm. mean in hours/week, source: [27], topic H.1, own calculation.

Country abbreviations: AT = Austria, CH = Switzerland, CZ = Czech Republic, DE = Germany, DK = Denmark, EE = Estonia, FI = Finland, FR = France, GE = Georgia, HR = Croatia, HU = Hungary, IE = Ireland, IS = Iceland, LT = Lithuania, LV = Latvia, MT = Malta, NL = Netherlands, NO = Norway, PL = Poland, PT = Portugal, RO = Romania, SE = Sweden, SI = Slovenia, SK = Slovakia, TR = Turkey.

When looking at the three focus groups, two peculiarities stand out: Market-dependent students have an above-average workload[5] in all countries. In addition, they have the largest workload out of all student groups in all countries. The country comparison shows that market-dependent student have the largest total workload in Poland, Portugal, and Georgia, with more than 60 hours per week. In Germany, Switzerland, the Netherlands, and Sweden, they show the lowest values with no more than 48 hours weekly; however, their workload in these countries is still well above the average value of a full-time employee in Germany. [6] The total workload of family-dependent students is below average in all countries considered. The same applies to state-dependent students in 88% of countries. In this context, a Kruskal-Wallis test has shown that the total workload of market-dependent students differs significantly from that of family-dependent and state-dependent students. There are no significant differences, however, between family-dependent and state-dependent students. All

these findings on significance hold not only true for students' total workload, but also for the time they spend on taught studies, self-study, and employment.

With respect to study-related activities of students, the time that they spend on self-study is considered below (Figure 2). Self-study includes a variety of activities as, for example, preparing and follow-up teaching content, reading specialist literature, preparing presentations, term papers, degree theses, and examinations. The average time the student population spends on self-study varies noticeably across countries. While students in Malta, Iceland, and Sweden spend more than 20 hours per week on self-study, their counterparts in Romania and Turkey dedicate less than 14 hours weekly to personal study time. Family-dependent students have an above-average expenditure of time for self-study in 88% of countries; in 24% of countries, they are the group spending most time on this purpose. State-dependent students dedicate in 76% of countries a time to self-study, which is above average; and in 44% of countries, they show the greatest time expenditure for this activity compared to all groups. The situation is quite different for market-dependent students: In all countries, the amount of personal study time of these students is not only below average, but they also have the smallest expenditure of time for this activity of all comparison groups. These findings would rather support hypotheses H_1 and H_2.

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5 The term, workload' usually refers to the amount of students' work required in a degree programme and includes the amount of time students spend on taught studies and self-study, represented by ECTS points [33]. In this analysis, a broader approach is used according to which the 'total workload' of students comprises not only the time in hours per week spent on taught studies and self-study, but also on employment.

6 According to the German Federal Statistical Office, the average weekly working time of full-time employees in Germany was 41 hours in 2018 [21].
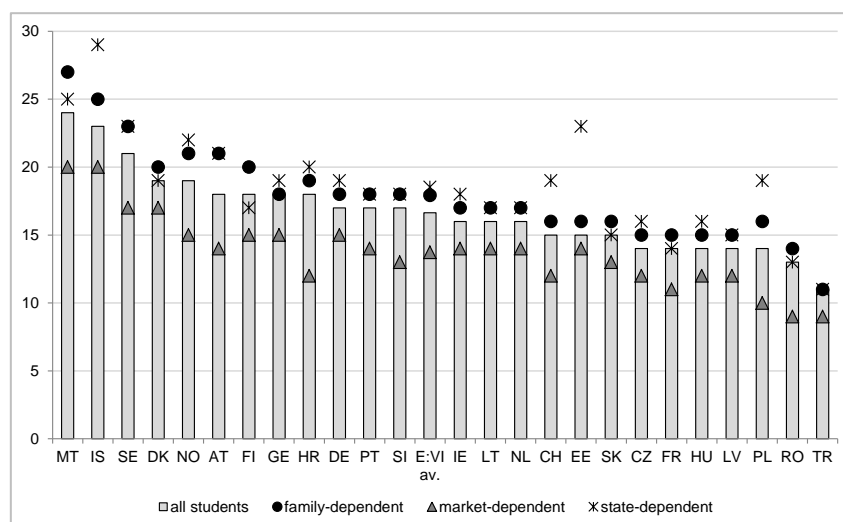
Figure 2. Students' time spent on self-study, arithm. mean in hours/week, source: [27], topic H.7, own calculation.

The data set used also contains information on students' expenditure of time on taught studies. Due to limited space, these data are not being presented graphically here but are shown in the annex (Annex Table 3). The results are, in essence, the same as for the time allocation for self-study: In almost all countries, family- and state-dependent students spend more-than-average time on taught studies. By contrast, the expenditure of time of market-dependent students for this activity is below average in all countries and, in addition, it is least of all groups. These results would also support hypotheses H_1 and H_2.

When looking at students' time allocation for gainful employment (Figure 3), the differences between countries are remarkable as well. In Estonia, students are, on average, 20 hours per week employed; their fellow students in Denmark work only about a third as often (7 hours/week). The unweighted average across all countries is 12 hours weekly. A comparison of the student groups shows, as expected, that market-dependent students have the greatest expenditure of time for gainful employment in all countries. It is greatest in Poland, Hungary, and Romania, with at least 35 hours per week. In Germany, Switzerland, and Denmark, the working time of market-dependent students is lowest with a maximum of 20 hours weekly. Family- and state-dependent students have working hours below average in all countries. In 60% of countries, family-dependent students are employed to a greater extent than their fellow students who depend on public support. In another 28 % of countries, the time spent on employment is the same for both groups. In 12 % of countries, namely Austria, Georgia, and Denmark, state-dependent students spend more time on employment than family-dependent students. These results - in conjunction with the results of the allocation of study time - would be in line with hypothesis H_3.
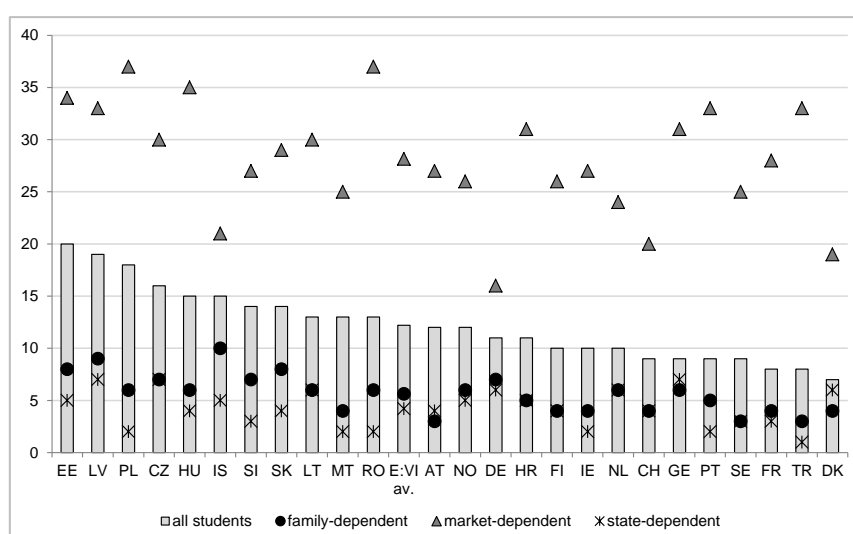

Figure 3. Students' time spent on employment, arithm. mean in hours/week, source: [27], topic H.19, own calculation.

5. Students' Satisfaction with Their Time Allocation

Against the background of the model, the realised time allocation of students could simply be an expression of their preferences. Market-dependent students, on the one hand, would then spend a lot of time on gainful employment, e.g. because they would like to gain work experience or fulfil somewhat more costly consumer wishes. Family- and state-dependent students, on the other hand, would spend more time on study-related purposes, perhaps because they want to learn more about their subject or improve their general level of education. If the allocation of time were to reflect preferences, this should also be mirrored in a corresponding student survey.

As part of the underlying student survey, the interviewees were also asked about their satisfaction with their time allocation. For each of the three time uses – courses, self-study, and employment – students were asked whether they would like to spend more, less, or the same amount of time on these activities as before.
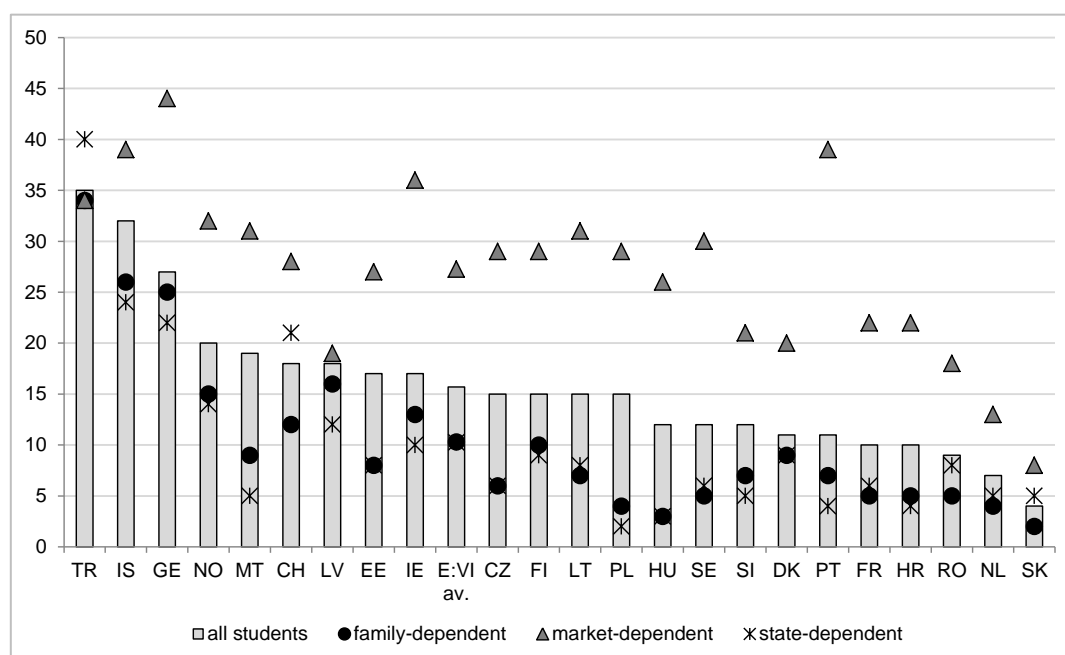

Figure 4. *Students who wish to reduce their working hours, in %, source: [27], topic H.28, own calculation.*

Figure 4 contains data on students' satisfaction with the amount of time they spend at work.[7] It only displays the proportions of students who indicated that they would like to spend less time working, i.e. it does not include the shares of students who would like to spend the same amount or more time on this purpose.

The range for the proportion of students who are dissatisfied is very wide across countries. In Turkey and Iceland, more than 30 % of all students state that they would like to see their time spent working reduced. In Romania, the Netherlands, and Slovakia, by contrast, the share is less than 10 %. If one looks at the three focus groups, it becomes apparent – not entirely surprising – that market-dependent students are those who most frequently wish to reduce their working hours in almost all countries, the only exception being Turkey. State- and family-dependent students show only a low level of dis-satisfaction with the time required for employment. State-dependent students report a lower-than-average frequency of wishing to reduce their working hours compared to all students in 87 % of countries. In 52 % of countries, these students are the least likely to express this wish in a group comparison. Family-dependent students are below average in their desire to reduce their working hours in all countries. In 26 % of countries, namely Switzerland, Lithuania, Sweden, Romania, the Netherlands, and Slovakia, they are even the group that least frequently expresses this wish.

In addition to the above analysis, data on students' satisfaction with the amount of time spent on self-study are presented below (Figure 5). Only the proportions of those who indicated that they would like to spend more time on this purpose are shown.

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7 In contrast to the previous analyses, the data for Germany and Austria are missing.
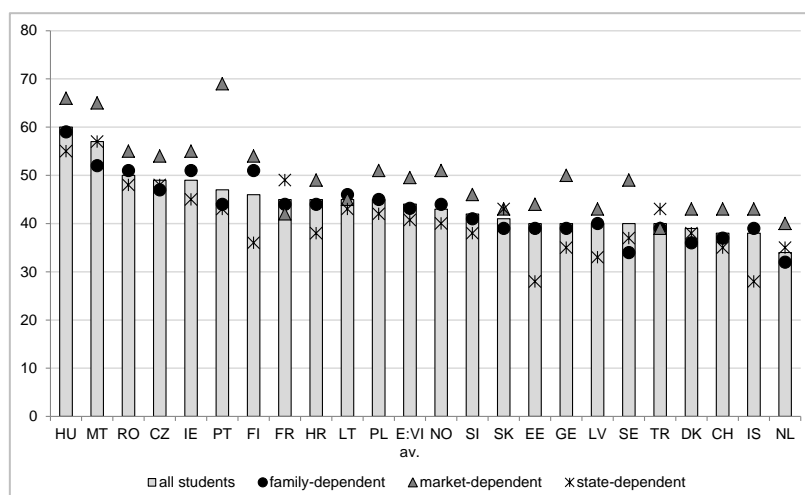
Figure 5. *Students who wish to extend their time for self-study, in %, source: [27], topic H.28, own calculation.*

A large proportion of students would like to extend their self-study time. According to the unweighted international average, 44 % of all students would like to have more personal study time. This desire is particularly pronounced among students in Hungary and Malta, where it applies to (almost) 60 % of all students. In Denmark, Switzerland, Iceland, and the Netherlands, well over 30 % of students still have this concern. A comparison of the focus groups shows that market-dependent students by far the most frequently indicate that they would like to extend their time for self-study. In 87 % of countries, these students have a higher-than-average desire to extend their self-study time, and in 83% of all countries they have the highest proportion of all groups in this respect. By contrast, family-dependent students state only in 22 % of countries more often than average the wish to extend their personal study time. Only in Lithuania, this student group has the highest proportion out of all groups. State-dependent students express only in 17 % of countries to an above-average extent the desire to spend more time on self-study. There are only two countries, France and Turkey, where these students have the highest proportion in comparison of the three focus groups.

If a corresponding analysis is carried out for the students' satisfaction with their time for taught studies, the findings are quite similar to those above, albeit at a lower level (Annex Table 4). Measured by the unweighted international average, 22 % of all students report that they would like to spend more time on taught studies. The respective shares for the three focus groups are 27 % for market-dependent students, 20 % for family-dependent students, and 19 % for state-dependent students.

Based on the analysis above, there is clear indication that students' time allocation as presented in Section 4 does not correspond to their preferences and that students thus have to bear preference costs. This is particularly true for market-dependent students who would like to spend less time

working and more time studying. Against the background of the theoretical model, the preference costs of students, i.e. the lack of enforceability of their preferences, could then arise from restrictions to which they are subject. One of these restrictions, the disposable base income, will be examined below as a determinant of time allocation.

6. The Relationship Between Students' Base Income and Their Working Hours

According to rational choice theory, students' time allocation depends not only on their preferences for certain time uses but also on various restrictions they are subject to. In the following, it is examined whether there is a relationship between students' base income (= sum of support from family and the state) and the extent of their employment time. Regarding the empirical data, the question on the relationship between students' base income and their working hours refers to a correlation between two macro variables. Within the framework of a structural-individualistic research programme, an appropriate explanation of results and relationships at the macro-level requires the use of a macro-micro model [52]. For the macro-level, the hypothesis is formulated that there is a negative relation between students' base income and their employment time (see also hypothesis H_4 in Section 2). In order to explain this, on the one hand, a behavioural model at the micro-level is needed that explains the actions of individual actors. On the other hand, bridge assumptions are required that combine the macro-level with the micro-level. For the subsequent analysis, the empirical bridge assumption is formulated that every country has a socio-political framework, which assigns a certain role in study financing to the state and the students' families. The assignment may involve a legal obligation to provide financial resources for participants in

higher education or the absence of such an obligation. This results in a more or less generous financial support for students.

At the micro-level, the time allocation model as developed in Section 2 is used to explain the individual optimisation behaviour of students. From this model, a negative relation between base income and employment time was derived. The second bridge assumption, which combines the micro-level with the macro-level again, is that the mean values for students' base income and working hours are an adequate aggregation of individual data. By defining the three student groups – family-dependent, market-dependent, and state-dependent students – in Section 3, the base income has been operationalised in relative terms: Family- and state-dependent students receive maintenance from their relatives and the public sector, which makes up more than half of their total income. The base income thus dominates their income structure. The base income of market-dependent students amounts to less than 50% of their total income.

The average monthly base income for the three groups is shown below (Table 1). Amounts are displayed in Purchasing Power Standard (PPS) with the Euro as reference currency to improve international comparability. A comparison of the three student groups shows a quite clear picture: In almost all countries except Lithuania, family-dependent students receive the highest base income, on average. By contrast, market-dependent students have the least base income in nearly all countries, the only exception being Georgia. Accordingly, it is to be expected that market-dependent students are most frequently affected by a financing gap, which forces them to be gainfully employed to generate sufficient self-financing.

Table 1. Monthly base income of students, arithm. mean, Purchasing Power Standard (Euro).

Coun-try	fami-ly-dependent students	mar-ket-dependent students	state-dependent students
AT	698	149	683
CH	1,018	252	971
CZ	602	198	540
DE	762	204	599
DK	1,318	297	671
EE	884	256	467
FI	1,082	248	618
FR	740	196	550
GE	738	290	217
HR	593	139	357
HU	649	178	386
IE	1,151	271	781
IS	1,708	228	871
LT	780	269	1,010
LV	930	270	474
MT	733	296	346
NL	986	251	912
NO	1,308	303	615
PL	706	202	459
PT	1,318	263	576
RO	1,000	264	455
SE	1,026	171	806
SI	563	227	334
SK	556	192	308
TR	892	289	336

Source: [27], topic G.19, own calculation

Is there a correlation between students' base income and the extent of their working hours? Based on the data for the three student groups, Figure 6 shows the cross-national relationship between the two variables. Two groups, which are comparatively homogenous in themselves, can be distinguished: market-dependent students, on the one hand, and state-dependent and family-dependent students on the other hand. Market-dependent students receive a relatively low base income, which is between 139 and 303 PPS per month. Hence, their base income has a rather small spread. The working time of market-dependent students is comparatively high; it varies between 16 and 37 hours weekly and thus shows a considerable range.
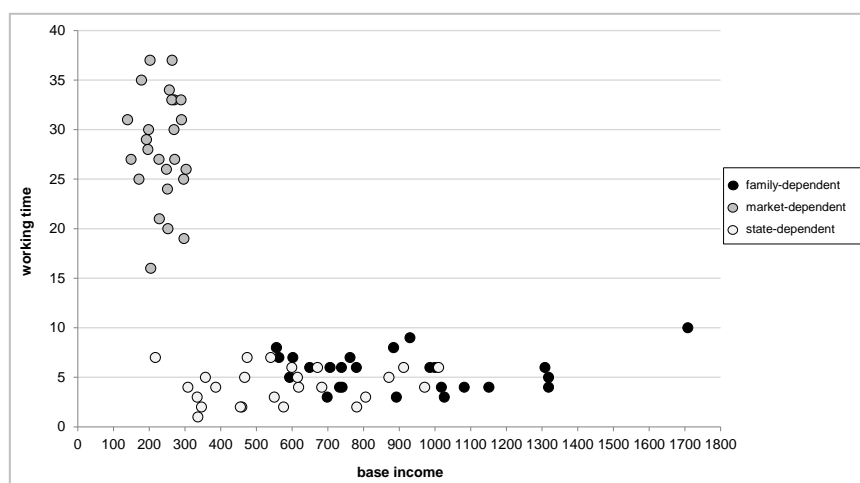
Figure 6. Base income (PPS) and working time (hours/week) of students, source: [27], topic G.19 and H.19, own calculation.

The situation is reversed for state- and family-dependent students. Their base income is higher and also shows a wider range from 217 to 1,708 PPS monthly. By contrast, their working hours are rather short and vary only within narrow limits from 1 to 10 hours per week. Within the second group, state-dependent students have a lower base income, on average, than their family-dependent fellow students. Using a non-linear regression analysis, it appears that the correlation between the two variables is best estimated by a hyperbolic function. The value of the coefficient of determination R^2 is 62.93 %. Even by taking the fact into account that aggregate data, which are used here, generally have higher correlation values than individual data, the R^2 value can be considered high. Although there is no linear relationship between the two variables, it can nevertheless be stated that a low base income is associated with high working hours, while medium and high base incomes are related to rather low working hours. These results would be consistent with hypothesis H_4.

If the empirical results for the time allocation of the three student groups are considered against the background of the theoretical model, the following somewhat simplified picture emerges: Market-dependent students receive the lowest base income. As a result, they need to spend the comparatively greatest amount of time on employment to cover their living and study-related costs by earned income. This also corresponds to the smallest amount of study time. State-dependent students have a higher base income compared to their market-dependent fellow students. Therefore, state-dependent students need to spend only relatively little time on gainful employment, and, at the same time, they have plenty of time for study-related purposes. Family-dependent students usually receive the highest base income. They also need to spend comparatively little time on gainful employment and, therefore, have plenty of time left for their studies. The empirical data reveal that out of the three focus groups, state-dependent students spend on average the least time working and the most time studying. However, according to the theoretical model it could be expected that it is family-dependent students who

have the shortest working hours since they have the highest base income (even if the difference between the two groups is only small, at least when measured against the international average). The fact that state-dependent students have the shortest working hours out of the three student groups although they receive only a medium base income, could have two reasons. Firstly, there is often a legal limit on additional earnings for recipients of public support, which must not be exceeded if state support is not to be cut back.[8] Such limits will have a restrictive effect on working hours of the students concerned. Secondly, students who receive public support are often obliged to regularly provide proof of academic performance in order not to lose their entitlement to public support. This creates a performance pressure for students, which may result in a relatively large study-related time use at the expense of working time.

Another interesting empirical result is that market-dependent students, who receive the lowest base income, still have the highest *total* income in general (see Annex Table 5 for data on students' total income). This means that the market-dependent students' lack of base income is even overcompensated through their extensive working hours; in this way, they generate the highest total income. By contrast, family-dependent students have the highest base income. Their total income reaches only a medium level, however, as they spend comparatively little time on gainful employment. State-dependent students have a medium base income. In combination with the least working hours out of the three groups, they receive the lowest total income.

7. Discussion

At the aggregate level, base income as a determinant of student time allocation provides indication that working time

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8 Legal limits on additional earnings for students who receive public support exist, for instance, in Denmark, Germany, Finland, the Netherlands, Sweden, and Austria [56].

is negatively influenced and study time is positively influenced. In the future, additional in-depth analyses based on microdata would be desirable here, which could provide information on more complex relationships. One such study for Germany has shown, among other things, that family wealth has a strong positive influence on students' base income and significantly reduces their employment time [1], which is consistent with the results for the international level. In addition to this financing effect of family wealth, which has an impact on time allocation, it was also shown for Germany that the wealth of parents has a slightly negative influence on the time students spend studying. In a microdata study for England, which also determined a negative effect of family support on study time, this is explained by the fact that students from wealthy families generally expect a high income for their postgraduate period and, therefore, do not extend their study time as much as poorer students [57]. For the international comparison, this could provide a partial explanation for the fact that family-dependent students, on average, spend slightly less time on self-study and taught studies than their state-dependent fellow students.

In all countries considered here, market-dependent students have the largest total workload (sum of study time and working time) out of all student groups. It appears that their employment time is highest, while their study-related time use is especially low: In all countries, the amount of self-study of these students is not only below average, in addition, market-dependent students have the smallest time use for this activity of all comparison groups. The same result holds true for the time spent on taught studies. Are market-dependent students at a disadvantage compared to their fellow students who have other income sources at their disposal? To answer this question, a normative evaluation criterion would first have to be introduced. Such a criterion could be taken from the concept of social justice and be, for example, the criterion of needs-based justice [25, 26, 38]. However, this would require a comparison with other, equally important and competing criteria of social justice such as performance justice and equality of opportunity [25]. But such a discourse on justice would go beyond the scope of this analysis. If such a conceptually complex derivation of criteria is dispensed with, two simple features, namely the origin of funds and the principle of reciprocity, could be used as normative evaluation criteria. For the group of market-dependent students, the following can then be stated in comparison with the other two student groups: Firstly, market-dependent students predominantly have to spend their *own* financial resources on studies and living, while the other two groups can mainly draw on outside funding from their families and the state. Secondly, in order to generate funds, market-dependent students – unlike the other two groups – need to provide a time-related *service in return*, namely working hours, which is at the expense of their study time [19, 36, 42, 53]. In this respect, market-dependent students would indeed be at a disadvantage compared to their fellow students.

It is difficult to judge whether the market-dependent students' lack of time for studies resulting from time spent working weighs heavier for taught studies or personal study time. In their study on students at the University of Malaga, Dolton et al. [24] conclude that time which is spent on taught studies is more productive than time spent on self-study. Bratti and Staffolani [13] discovered in their study on students at the University of Ancona that the relative meaning of taught studies and personal study time depends on the subject. In quantitative subjects like mathematics and economics, attending courses seems to improve the students' academic performance better, whereas personal study time seems to be more important in non-quantitative subjects like law and economic history. For the present analysis it is particularly important that market-dependent students spend – obviously undesired – the least time on *both* taught studies and personal study time out of all student groups. This could mean that these students are less successful in their studies. Empirical studies indicate that a shortage of study-related time due to large amounts of working hours alongside studies may result in a prolonged duration of studies [11, 20, 60, 61]. Further negative consequences for intensely working students may be worse intermediary grades [39] and final grades [15] or – at worst – a drop-out of higher education [37]. These events, in turn, can negatively affect students' monetary returns after graduation. Finally, 'time-poverty' in general may have a negative effect on the quality of life of the individuals concerned [51, 66]. The disadvantages associated with the type of study financing during studies could, therefore, continue beyond the period of study. They could cause a negative or at least less favourable path dependency, which would be reflected in the fact that market-dependent students were comparatively less successful than their fellow students who have other main sources of funding for their studies.[9]

This raises new research questions that still need to be answered in the future, e.g. based on longitudinal data. In the meantime, policy-makers responsible for higher education in the EHEA may want to critically assess whether the extent of employment alongside studies of parts of the student populations is deemed appropriate and in accordance with the objectives for the Social Dimension set out in the various ministerial declarations and communiqués for the EHEA [10, 14, 44].

8. Conclusions

The analysis focused on the role of students' base income provided by the family and the state for students' time allocation. This influencing factor has so far been neglected in research. What is new in this context is that this correlation was examined for 25 European countries. Even if no in-depth analysis was possible due to the data used (aggregate data),

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9 With respect to a possible compensation for disadvantages by politics, the ethical question would arise whether the objective of performance justice should be restricted in comparison to the objectives of equality of opportunity and justice of needs and, if so, to what extent this would be acceptable [following Ebert 25].

there is indication that the base income has a positive influence on study time (taught studies and self-studies), while self-financing of higher education through employment has a negative influence on study time and also increases the total workload (the sum of time for taught studies, self-studies and employment) of the students concerned. Another new feature of this study is that the analysis of students' time allocation was combined with a satisfaction analysis of their time allocation. In this way, it should be examined whether the allocation of time is simply the desired result of the (different) preferences of the students or whether perhaps restrictions, in particular the restriction of the base income, lead to a rather undesirable allocation of time. The results show that market-dependent students are particularly dissatisfied with their time allocation and would like to reduce their employment time and increase their study time (both for self-study and taught studies). While individual results may not be entirely surprising in their nature, this does not apply to the extent of the differences between market-dependent students and their fellow students. A discussion about possible relief for market-dependent students would therefore be desirable.

Abbreviations

AT	Austria
CH	Switzerland
CZ	Czech Republic
DE	Germany
DK	Denmark
EE	Estonia
EHEA	European Higher Education Area
FI	Finland
FR	France
GE	Georgia
HR	Croatia
HU	Hungary
IE	Ireland
IS	Iceland
LT	Lithuania
LV	Latvia
MT	Malta
NL	The Netherlands
NO	Norway
PL	Poland
PPS	Purchasing Power Standard
PT	Portugal
RO	Romania
SE	Sweden
SI	Slovenia
SK	Slovakia
TR	Turkey

Author Contributions

Christoph Gwość is the sole author. The author read and approved the final manuscript.

Conflicts of Interest

The author declares no conflicts of interest.

Appendix

Table 2. Descriptive statistics for sample, weighted data.

Country	Field phase	Return rate (in %)	Students in sample (n)	Students dependent on family support, share of valid responses (in %)	Students dependent on self-earned income, share of valid responses (in %)	Students dependent on national public student support, share of valid responses (in %)
AT	May-July 2015	15	43,632	41	35	7
CH	24 March-31 May 2016	66.4	15,825	54	35	4
CZ	April 2016	7.3	16,652	60	32	2
DE	May-June 2016	19.6	53,161	52	25	12
DK	27 May-3 July 2016	31	11,826	12	8	67
EE	10 May-17 June 2016	12	2,037	40	43	8
FI	Spring semester 2016	31	7,381	20	27	39
FR	March-May 2016	21	41,896	48	16	28

Country	Field phase	Return rate (in %)	Students in sample (n)	Students dependent on family support, share of valid responses (in %)	Students dependent on self-earned income, share of valid responses (in %)	Students dependent on national public student support, share of valid responses (in %)
GE	May-June 2016	n/a	7,558	85	9	1
HR	June 2016	20.9	4,978	73	16	6
HU	31 May-3 July 2016	4	7,202	52	32	9
IE	April-May 2016	10	20,274	61	21	10
IS	3 May-1 July 2016	12.1	1,978	26	47	15
LT	April-June 2016	2.8	3,363	59	29	4
LV	March-May 2017	n.d.	2,340	49	40	2
MT	May 2016	11	1,423	37	40	10
NL	June-August 2016	11.6	12,092	26	14	30
NO	May 2016	36.7	8,235	7	28	52
PL	June 2016	n.d.	3,098	46	33	11
PT	21 March-11 May 2017	1.5	5,056	72	17	8
RO	May-July 2017	n.d.	4,164	63	21	10
SE	April-May 2016	2.3	8,585	14	22	52
SI	22 April-30 June 2016	6.4	4,968	44	32	11
SK	May 2016	7.4	1,457	61	29	4
TR	May-July 2017	5.9	25,644	49	16	22

Table 3. Students' time spent on taught studies, arithm. mean in hours/week.

Country	All students	family-dependent students	market-dependent students	state-dependent students
AT	12	14	9	15
CH	20	23	16	24
CZ	17	20	13	18
DE	16	17	14	18
DK	19	20	16	20
EE	16	18	13	17
FI	16	17	11	18
FR	19	20	18	19
GE	20	20	16	21
HR	17	18	12	20
HU	19	22	14	24
IE	19	20	15	21
IS	16	16	15	19
LT	18	18	16	18

Country	All students	family-dependent students	market-dependent students	state-dependent students
LV	18	19	15	21
MT	16	19	13	23
NL	15	16	10	17
NO	13	14	10	14
PL	21	23	19	22
PT	21	22	16	24
RO	20	22	12	24
SE	10	11	6	12
SI	20	22	16	23
SK	18	20	14	19
TR	18	19	14	19
E:VI av.	17	19	14	20

Source: [27], topic H.4

Table 4. Students who wish to extend their time for taught studies, in %

Country	All students	family-dependent students	market-dependent students	state-dependent students
CH	20	18	21	21
CZ	23	18	30	18
DK	29	27	32	29
EE	17	15	20	11
FI	39	46	39	33
FR	19	17	21	20
GE	19	19	27	18
HR	11	7	18	7
HU	23	19	31	17
IE	23	21	27	23
IS	27	26	28	21
LT	22	18	31	28
LV	20	18	24	12
MT	12	11	13	5
NL	24	22	24	24
NO	26	26	32	23
PL	10	9	14	7
PT	26	22	49	23
RO	22	19	36	15
SE	30	27	35	29
SI	23	22	26	20

Country	All students	family-dependent students	market-dependent students	state-dependent students
SK	13	12	15	11
TR	27	23	36	29
E:VI av.	22	20	27	19

Source: [27], topic H.28

Table 5. Monthly total income of students, arithm. mean, Purchasing Power Standard (Euro).

Country	family-dependent students	market-dependent students	state-dependent students
AT	869	1,283	876
CH	1,240	1,805	1,144
CZ	728	1,060	594
DE	931	988	747
DK	1,446	1,178	819
EE	1,070	1,481	495
FI	1,259	1,782	723
FR	788	1,073	588
GE	852	959	218
HR	646	779	387
HU	726	1,100	418
IE	1,328	1,424	846
IS	2,117	1,374	1,061
LT	955	1,202	1,144
LV	1,158	1,380	542
MT	858	1,346	378
NL	1,207	1,366	1,145
NO	1,530	1,752	773
PL	821	1,027	500
PT	1,434	1,449	596
RO	1,117	1,192	471
SE	1,173	1,475	920
SI	680	1,121	361
SK	684	974	336
TR	972	1,457	352

Source: [27], topic G.19, own calculation

References

[1] Apolinarski, B., & Gwosć, C. (2020). Studienfinanzierung und studienbegleitende Erwerbstätigkeit als Determinanten des studentischen Workloads: Negative Effekte der Selbstfinanzierung? In D. Großmann, C. Engel, J. Junkermann, & T. Wolbring (Hrsg.), *Studentischer Workload. Definition, Messung und Einflüsse* (S. 119-143). Wiesbaden, Germany: Springer VS. https://doi.org/10.1007/978-3-658-28931-7

[2] Azzi, C., & Ehrenberg, R. (1975). Household allocation of time and Church attendance. *Journal of Political Economy*, 83, 27-56.

[3] Barke, M., Braidford, P., Houston, M., Hunt, A., Lincoln, I., Morphet, C., et al. (2000). *Students in the labour market: Nature, extent and implications of term-time employment among University of Northumbria undergraduates*. Nottingham: Department for Education and Employment.

[4] Bauer, T. K., & Zimmermann, K. F. (1998). *Learning efficiency of economics students*, IZA Discussion Papers, 23. Bonn, Germany: Forschungsinstitut zur Zukunft der Arbeit (IZA).

[5] Becker, G. S. 1993. *Human Capital. A theoretical and empirical analysis, with special reference to education,* 3rd ed. New York, London: Columbia University Press.

[6] Becker, G. S. (1976). *The economic approach to human behavior*. Chicago, London: Chicago UP.

[7] Becker, G. S. (1965). A theory of the allocation of time. *The Economic Journal*, 75(229), 493–517.

[8] Beerkens, M., Maegi, E., & Lill, L. (2011). University studies as a side job: Causes and consequences of massive student employment in Estonia. *Higher Education*, 61(6), 679-692. https://doi.org/10.1007/S10734-010-9356-0

[9] Behr, A., & Theune, K. (2013). The causal effect of off-campus work on time to degree. *Education Economics*, 24(2), 189-209. https://doi.org/10.1080/09645292.2014.974509

[10] Berlin Communiqué (2003). *Realising the European Higher Education Area*. Retrieved from European Higher Education Area website: www.ehea.info. Accessed 05 November 2019.

[11] Body, K. M.-D., Bonnal, L., & Giret, J.-F. (2014). Does student employment really impact academic achievement? The case of France. *Applied Economics*, 46(25), 3061-3073. https://doi.org/10.1080/00036846.2014.920483

[12] Boudon, R. (1977). *Effets pervers et ordre social*. Paris, France: Presses Universitaires de France.

[13] Bratti, M., & Staffolani, S. (2013). Student time allocation and educational production functions. *Annals of Economics and Statistics*, 111/112, 103-140. https://doi.org/10.2307/23646328

[14] Bucharest Communiqué (2012). *Making the most of our potential: Consolidating the European Higher Education Area*. Retrieved from European Higher Education Area website: www.ehea.info. Accessed 05 November 2019.

[15] Callender, C. 2008. The impact of term-time employment on higher education students' academic attainment and achievement. *Journal of Education Policy*, 23(4), 359–377. https://doi.org/10.1080/02680930801924490

[16] Chan, K. C., Shum, C., & Wright, D. J. (1997). Class attendance and student performance in principles of finance. *Financial Practice and Education*, 7(2), 58-65.

[17] Coleman, J. S. (1991). *Grundlagen der Sozialtheorie*, Bände 1-3. Munich, Germany: Oldenbourg.

[18] Coleman, J. S. & Fararo, T. J. (Eds.) (1992). *Rational Choice Theory. Advocacy and Critique*. Newbury Park, CA: Sage.

[19] Creed, P. A., French, J., & Hood, M. (2015). Working while studying at university: The relationship between work benefits and demands and engagement and well-being. *Journal of Vocational Behaviour,* 86, 48-57. https://doi.org/10.1016/j.jvb.2014.11.002

[20] Darolia, R. (2014). Working (and studying) day and night: Heterogeneous effects of working on the academic performance of full-time and part-time students. *Economics of Education Review*, 38, 38-50. https://doi.org/10.1016/j.econedurev.2013.10.004

[21] Destatis (2019). *Vollzeitbeschäftigte arbeiteten 2018 im Durchschnitt 41 Stunden pro Woche*. Pressemitteilung Nr. 18 vom 30. April 2019. Retrieved from https://www.destatis.de/DE/Presse/Pressemitteilungen/Zahl-der-Woche/2019/PD19_18_p002.html. Accessed 10 March 2020.

[22] Devadoss, S., & Foltz, J. (1996). Evaluation of factors influencing student class attendance and performance. *American Journal of Agricultural Economics*, 78(3), 499-507.

[23] Diekmann, A., & Voss, T. (Hrsg.) (2004). *Rational-Choice-Theorie in den Sozialwissenschaften. Anwendungen und Probleme*. Munich, Germany: Oldenbourg.

[24] Dolton, P., Marcenaro, O. D., & Navarro, L. (2003). The effective use of student time: a stochastic frontier production function case study. *Economics of Education Review*, 22, 547-560. https://doi.org/10.1016/S0272-7757(03)00027-X

[25] Ebert, T. (2010). *Soziale Gerechtigkeit – Ideen, Geschichte, Kontroversen*, Bd. 1088. Bonn, Germany: Bundeszentrale für politische Bildung.

[26] Enste, D. H., Haas, H., & Wies, J. (2013). *Internationaler Gerechtigkeitsindex – Analysen und Ergebnisse für 28 Industriestaaten*, IW-Analyse, 91. Cologne, Germany: Institut der deutschen Wirtschaft Koeln.

[27] EUROSTUDENT (2018). *EUROSTUDENT VI database.* Retrieved from http://database.eurostudent.eu/ Accessed 03 December 2019.

[28] European Commission/EACEA/Eurydice (2018). *The European Higher Education Area in 2018: Bologna Process Implementation Report*. Luxembourg: Publications Office of the European Union.

[29] European Commission/EACEA/Eurydice (2015). *The European Higher Education Area in 2015: Bologna Process Implementation Report*. Luxembourg: Publications Office of the European Union.

[30] Fernex, A., Lima, L., & de Vries, E. (2015). Exploring time allocation for academic activities by university students in France. *Higher Education*, 69, 399-420. https://doi.org/10.1007/s10734-014-9782-5

[31] Franzen, A., & Hecken, A. (2002). Studienmotivation, Erwerbspartizipation und der Einstieg in den Arbeitsmarkt. *Koelner Zeitschrift für Soziologie und Sozialpsychologie*, 54(4), 733–752.

[32] Grave, B. S. (2011). The effect of student time allocation on academic achievement. *Education Economics*, 19(3), 291-310. https://doi.org/10.1080/09645292.2011.585794

[33] Großmann, D., Engel, C., Junkermann, J., & Wolbring, T. (2020). Konzeption und Messung studentischen Workloads. Ein Überblick zu Entstehung, Stand und Herausforderungen. In D. Großmann, C. Engel, J. Junkermann, & T. Wolbring (Hrsg.), *Studentischer Workload. Definition, Messung und Einflüsse* (S. 3-30). Wiesbaden, Germany: Springer VS. https://doi.org/10.1007/978-3-658-28931-7

[34] Hartwig, K.-H. (1993). Partnerschaften – Ökonomie zwischenmenschlicher Beziehungen. In B.-T. Ramb, & M. Tietzel (Hrsg.), *Ökonomische Verhaltenstheorie* (S. 33-61). Munich, Germany: Vahlen.

[35] Hauschildt, K., Voegtle, E. M., & Gwosć, C. (2018). *Social and Economic Conditions of Student Life in Europe, Synopsis of Indicators. EUROSTUDENT VI 2016-2018.* Bielefeld, Germany: W. Bertelsmann Verlag. https://doi.org/10.3278/6001920cw

[36] Hauschildt, K., Gwosć, C., Netz, N., & Mishra, S. (2015). *Social and Economic Conditions of Student Life in Europe, Synopsis of Indicators. EUROSTUDENT V 2012-2015.* Bielefeld, Germany: W. Bertelsmann Verlag.

[37] Hovdhaugen, E. (2015). Working while studying: The impact of term-time employment on dropout rates. *Journal of Education and Work*, 28(6), 631-651. https://doi.org/10.1080/13639080.2013.869311

[38] IfD Institut für Demoskopie Allensbach (2013). *Was ist gerecht? Gerechtigkeitsbegriff und –wahrnehmung der Bürger.* Allensbach, Germany: Institut für Demoskopie Allensbach.

[39] Jirjahn, U. (2007). Welche Faktoren beeinflussen den Erfolg im wirtschaftswissenschaftlichen Studium? *Schmalenbachs Zeitschrift für betriebswirtschaftliche Forschung*, 59(3), 286-313. https://doi.org/10.1007/BF03371698

[40] Kalenkoski, C. M., & Pabilonia, S. W. (2009). Does working while in High School reduce U.S. study time? *Social Indicators Research*, 93(1), 117-121. https://doi.org/10.1007/s11205-008-9412-7

[41] Kamm, P. (2008). *Zeitallokationstheoretischer Beitrag zur Erklärung des Kaufentscheides bei Berufsbekleidung.* Munich, Germany: GRIN Verlag.

[42] Keute, A.-L. (2017). *For mye betalt arbeid går på bekostning av studietiden.* Retrieved from Statistics Norway website: http://ssb.no/. Accessed 12 January 2020.

[43] Light, A. (2001). In-school work experience and the returns to schooling. *Journal of Labor Economics*, 19(1), 65–93. http://dx.doi.org/10.1086/209980

[44] London Communiqué (2007). *Towards the European Higher Education Area: responding to challenges in a globalised world.* Retrieved from European Higher Education Area website: www.ehea.info. Accessed 05 December 2019.

[45] Meng, C., & Heijke, H. (2005). *Student time allocation, the learning environment and the acquisition of competencies,* ROA Research Memoranda No. 1E. Maastricht, Netherlands: ROA, Research Centre for Education and the Labour Market. https://doi.org/10.26481/umaror.200501E

[46] Mueller, C., & Tietzel, M. (2002). Merit goods from a constitutional perspective. In G. Brennan, Kliemt, H. & Tollison, R. D. (Eds.), *Method and Morals in Constitutional Economics* (pp. 375-400). Berlin/Heidelberg, Germany: Springer.

[47] Multrus, F., Majer, S., Bargel, T., & Schmidt, M. (2017). *Studiensituation und studentische Orientierungen. 13. Studierendensurvey an Universitäten und Fachhochschulen.* Berlin, Germany: Bundesministerium für Bildung und Forschung (BMBF).

[48] Neill, C. (2013). Rising student employment: the role of tuition fees. *Education Economics*, 23(1), 101-121. https://doi.org/10.1080/09645292.2013.818104

[49] Obermeyer, A., & Evangelinos, C. (2014). Die Theorie der Zeitallokation und die empirische Reisezeitbewertung. *Zeitschrift für Verkehrswissenschaft*, 85(1), 56-81.

[50] OECD (2019). *Education at a Glance 2019. OECD Indicators.* Paris, France: OECD Publishing. https://doi.org/10.1787/f8d7880d-en

[51] OECD (2013). *How's life? 2013: Measuring well-being.* Paris, France: OECD Publishing. https://doi.org/10.1787/9789264201392-en

[52] Opp, K.-D. (2011). Modeling Micro-Macro-Relationships: Problems and solutions. *Journal of Mathematical Sociology*, 35(1-3), 209-234. https://doi.org/10.1080/0022250X.2010.532257

[53] Orr, D., Gwosć, C., & Netz, N. (2011). *Social and Economic Conditions of Student Life in Europe, Synopsis of Indicators, Final Report. EUROSTUDENT IV 2008-2011.* Bielefeld, Germany: W. Bertelsmann Verlag.

[54] Ramb, B.-T. (1993). Die allgemeine Logik des menschlichen Handelns. In B.-T. Ramb, & M. Tietzel (Hrsg.), *Ökonomische Verhaltenstheorie* (S. 1-31). Munich, Germany: Vahlen.

[55] Schultz, T. W. (1961). Investment in human capital. *American Economic Review*, 51(1), 125-142.

[56] Schwarz, S., & Rehburg, M. (2002). *Studienkosten und Studienfinanzierung in Europa.* Frankfurt am Main, Germany: Peter Lang.

[57] Stevens, P., & Weale, M. (2004). *Lazy students? A study of student time use.* London, United Kingdom: National Institute of Economic and Social Research.

[58] Stinebrickner, R., & Stinebrickner, T. R. (2008). The causal effect of studying on academic performance. *The B. E. Journal of Economic Analysis & Policy*, 8(1), 1-53. https://doi.org/10.2202/1935-1682.1868

[59] Thaler, R. H., & Shefrin, H. M. (1981). An economic theory of self-control. *Journal of Political Economy*, 89, 392-406.

[60] Theune, K. (2015). The working status of students and time to degree at German universities. *Higher Education*, 70(4), 725-752. https://doi.org/10.1007/s10734-015-9864-z

[61] Triventi, M. (2014). Does working during higher education affect students' academic progression? *Economics of Education Review*, 41, 1-13. https://doi.org/10.1016/j.econedurev.2014.03.006

[62] Van der Beek, G., & Gwość, C. (2023). Beckers Zeit-Allokationstheorie. *Das Wirtschaftsstudium Wisu*, 10(52), 983-989.

[63] Vedder, G. (2001). *Zeitnutzung und Zeitknappheit im mittleren Management*. Personalwirtschaftliche Schriften, Bd. 18, hrsg. von D. von Eckardstein, & O. Neuberger. Munich, Germany: Rainer Hampp Verlag.

[64] Voegtle, E. M. (2014). *Higher education policy convergence and the Bologna process: A cross-national study. Transformations of the state.* Basingstoke, United Kingdom: Palgrave Macmillan.

[65] Voegtle, E. M., Knill, C., & Dobbins, M. (2011). To what extent does transnational communication drive cross-national policy convergence? The impact of the Bologna-process on domestic higher education policies. *Higher Education*, 61(1), 77-94. https://doi.org/10.1007/s10734-010-9326-6

[66] Williams, J. R., Masuda, Y. J., & Tallis, H. (2016). A measure whose time has come: Formalizing time poverty. *Social Indicators Research*, 128(1), 265-283. https://doi.org/10.1007/s11205-015-1029-z