Effects of the Dutch Student Loan System: an analysis of its primary and secondary effects on study progress

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1. Introduction

In 2021, several Dutch student associations celebrated the accepted motion by Dutch Second Chamber member Dassen, stating that the Student Loan System (SLS) should be abolished and a basic grant introduced (Dassen, 2021; NOS, 2021). This might have felt like a victory for students as, in 2020, this same motion had been rejected by a majority in the Dutch Second Chamber (Kuzu, 2020). But now it looks like the several demonstrations by Dutch students throughout the last years are resulting in favourable political responses. Yet, an agreement in the Dutch Chambers does not guarantee an immediate implementation of a new student financing system. According to Dutch Prime Minister Rutte, the abolishment of the SLS brings along quite some financial implications (ScienceGuide, 2022; NOS, 2021; Eerste Kamer, 2022). To start with, it is still unknown how the state will pay for the abolishment. Secondly, the compensation for students who studied during the SLS – and, thus, had to borrow – is roughly estimated at more than one and a half billion euros (NOS, 2021). Lastly, for implementing the base grant another couple of billion euros needs to be available (NOS, 2021). In short, despite a passed motion, it is uncertain when the SLS will be replaced by the Dutch Cabinet and so meanwhile its existence proceeds.

Governments want to assure access to Higher Education (HE) but this can be done in different ways. The most common government interventions are need-based help, loans, and grants. In 2015, the Netherlands implemented the Student Loan System (SLS) (LSVb, n.d.). The monthly base grant provided by the Dutch State that Dutch University students would receive was removed. Before 2015, the Dutch government provided subsidies which Dutch students could receive monthly when studying: the base grant and the additional grant[1]. The amount of the additional grant, as well as whether you are entitled to receive it, is determined by the income and work type of the students' parents. (DUO, n.d.; LSVb, sd). The base grant, on the other hand, was a subsidy for all students, regardless of the income of a students' parents (LSVb, sd). Starting from 2015, the base grant was replaced by the SLS. Dutch students no longer received free financing but had the opportunity to borrow. As with most loans, recipients would have to return the provider the borrowed loan back, including a rent. Despite the implementation of the SLS, Dutch University students still could acquire a monthly amount in euros similar

[1] These terms are used within this research. The official terms within The Netherlands are basis beurs (= base grant), and aanvullende beurs (additional grant).

to their previous situation. Yet, now, these students would have to deal with consequences such as a debt. This potential debt and the rising tuition fee costs in The Netherlands resulted in a higher total cost of studying – to study becomes more expensive (Vossensteyn & Jong, 2008). To give an indication about the increase of the total study costs, between 2005 and 2014 the minimal base grant was on average 90 euros per month (Agterberg, 2014). If a student would graduate within the nominal study time which usually is four years, it would imply that 4320 euros would be received per student minimally over this period. That said, based on the quickest graduating lowest-earning student, the implementation of the SLS meant at least a loss of 4320 euros over this period.

These rising costs of studying are likely to change student behaviour. For instance, the Dutch Central Bureau for Statistics (CBS) concluded that since the implementation of the SLS fewer bachelor students' progress towards a master's degree (CBS, 2021). Other HE scholars argue that students shift their time allocation towards studying when receiving grants and when not (Bachmann & Boes, 2014). What the effects are of a student loan system on study progress, frequently conceptualized as the performance in grades, collected study credits, and the rate of degree attainment, stays rather ambiguous. Although grants seem to affect study progress positively, the effect of student loans seem to have divergent findings (Graziosi, Sneyers, Agasisti, & De Witte, 2020). Hence, it is relevant to study the effects of this particular Dutch case. In this study, we hold the following research question:

How has the implementation of the SLS affected study progress?

The essence of this research is in the first place to give 1) a broader understanding of the effects of the SLS by informing the policy debate. Secondly, by 2) contributing to the scientific research regarding effects of the SLS as currently this is an open topic within The Netherlands. Thirdly, this research aims on 3) offering an image of additional evidence for other countries, universities or institutes who are considering the implementation of a similar system as the SLS. Yet however, the dynamics of this particular case and its characteristics must not be ignored.

In the remainder of this study, you will, respectively, find the content, study financing systems, theory, research design, results, robustness checks, discussion, conclusion, references, and the attachments. In the chapter 'Study Financing Systems', the different study financing systems will be explained using Esping-Andersen's welfare typology to

explain why HE financing systems can differ per country. Secondly, in this chapter, the changes in the Dutch study financing system will be discussed to provide insights about its history in The Netherlands.

2. Student Financing Systems

2.1 Study financing and different welfare regimes

Over the last two decades, the Dutch government's spending on education as a percentage of the total GDP increased (CBS, 2021; OECD, 2022). It is not only the Netherlands' spending on education; countries such as Norway, Finland, and Denmark are going through or have been through the same trend (OECD, 2022). According to sociologist Esping-Andersen's typology, these countries can be considered Social-Democratic welfare states – countries with relatively a high level of financial provision by the state (Arts & Gelissen, 2002).

As stated before, countries want to assure access to HE which can be realized in several ways. The different student financing systems and the extent to which governments want to assure access to HE can be explained by the corresponding welfare regime of a country.

Esping-Andersen (2002), distinguishes three types of welfare regimes – the liberal regime, the conservative regime, and the socio-democratic regime. This typology explains to what category of welfare state countries belong, what the identification of the type means in terms of government interaction, and what the causal forces are that explain the development of the corresponding type (Arts & Gelissen, 2002; Beer & Willemse, 2012; Frel, 2009). In this typology there are two important indicators: 1) the level of decommodification, and 2) the level of stratification. The level of decommodification refers to the extent to which someone in a country can live without having to work on the labour market. For instance, countries without a social welfare system tend to have low levels of decommodification as citizens need to work to earn an income. The level of stratification refers to the divide of citizens based on wealth and status. Countries such as the United States tend to have a high level of stratification. The incomes of its citizens, arguably due to the regressive tax system, vary greatly. Arguably as a consequence, citizens are divided based on wealth and status (Arts & Gelissen, 2002; Beer & Willemse, 2012)

The United States is an example of the liberal configuration. The liberal configuration has a low level of decommodification and a high level of stratification. The Liberal type characterizes itself by minimal welfare state provision, modest benefits, and hard entitlement criteria for benefits. The State will assist its citizens in means-tested basic needs. The reliance on the market could be the reason that liberal countries often offer

students a wide range of private universities. Hence, studying in states with a liberal welfare state regime tends to be more expensive compared to the other two types (Frel, 2009; Arts & Gelissen, 2002; Beer & Willemse, 2012). Apart from the reliance on the market, it often is the freedom of the market: "In the US, not only private schools can set their own tuition fees, but also public schools often have some freedom in their pricing policies" (Canton & Vossensteyn, 2001, p. 75)". However, depending on the political structure and its path dependency, this freedom can vary. In the U.K. for instance, a policy to set the price ceiling per university higher had been implemented under a new coalition government (Bolton & Hubble, 2018). Due to the previous high tuition fee costs, less citizens enrolled in HE at that time. The loan policies for students in the UK recently have changed: The repayment threshold is lowered and the payback term has been increased from 30 to 40 years (Petrescu, 2022; GOV UK, n.d.). This last intervention guarantees ten extra years of alumni paying back loans. If an alumni was not able to repay the debt in 30 years, the remainder of the student debt would be written off. Hence, this increase might guarantee more income for the loan providing institutes. Governments take the responsibility for offering equal opportunities to get access to education, but considering later private benefits as well – people have to pay back. Yet, as it appears, this is not exclusively realizable by setting higher tuition fees; the key idea here is a loan.

The Social-Democratic configuration, on the other hand, characterizes itself by the contrary: a high level of decommodification and a low level of stratification. There is a short extent to non-existent of hierarchy based on wealth and status. The high level of decommodification is visible in the provision of social services. Countries who belong to the socio-democratic type – such as Sweden, Finland, and, Denmark – tend to provide a high standard of social services – meaning that the State prioritizes the accessibility and affordability of social services, such as education, for its inhabitants (Arts & Gelissen, 2002; Beer & Willemse, 2012). Hence, more services are in these countries seen as a public good. Consequently, education in these countries is often accessible and cheap or even free.

The Conservative configuration holds a moderate level of decommodification and a moderate level of stratification (Frel, 2009; Arts & Gelissen, 2002). To explain the moderate level of stratification, a classification has to be made: 1) inclusion, 2) exclusion, and 3) segmentation. Liberal welfare types its stratification level fall under exclusion – social divide based on wealth and status. Social-democratic types their stratification

level can be placed under inclusion – rather little divide due to social coherence in society. The Conservative regime, on the other hand, its stratification level falls under segmentation – the access to certain groups, benefits depends rather on your ethnic or social group status than on your wealth, which points out the difference in stratification level compared to the Liberal configuration. The Conservative type is arguably a result of catholic influenced laws and, therefore, characterizes itself by policies based on traditional family norms and values (Frel, 2009; Arts & Gelissen, 2002). An example is that a family takes care of all members and there is less emphasis on individualism. That said, not everyone in a family is able to study if the family is not able to provide financial help for all, which can be the case as Conservative regimes characterize themselves with a moderate level of economic inequality (Beer & Willemse, 2012). As a consequence, it is likely that not all citizens are able to participate in higher education.

Where The Netherlands finds itself on the typology will remain up for discussion. Some scholars argue that it is a hybrid as some welfare state characteristics of The Netherlands can be considered as liberal while other as social-democratic (Vis & Kersbergen, 2008). For instance, all though a minimal level of economic inequality is realized and many social services are being provided, in terms of education The Netherlands still lacks behind Social-Democratic states as Sweden and Denmark where education is close to free. In The Netherlands, Dutch and EU-students approximatively pay 2000,- as a yearly tuition-fee on a public university (Canton & Vossensteyn, 2001). Important to understand is that unlike Liberal welfare states, tuition fee and grant policies fall often in Social-Democratic welfare states, including in The Netherlands, under the jurisdiction of the governments as state intervention regarding education can be seen as a normality in these regimes. The implementation of the SLS could therefore be little to not directly influenced by educational institutions. Yet however, governments can influence study financing and The Netherlands has a rich history of variance in its study financing system.

2.2 Changes in the Dutch study financing system

In 1924, students could borrow money for the first time (SUSA, 2021). Studying was more and more seen as your responsibility as it was an investment in yourself; and the economic crisis in The Netherlands at that time might have forced savings measures (ANS, 2015; SUSA, 2021). This student loan, however, was interest free (SUSA, 2021). Tuition fees were not implemented at this time.

In 1972, the costs for HE in The Netherlands rose after the Second World war, arguably due to the influence of the baby boom generation (Brinkhuis, 2018). This influence mainly affected the tuition fees. The tuition fees in 1972 were five times as high compared to 1968. The total cost of studying in this period raised significantly. This striking increase is visible in figure 1 below.

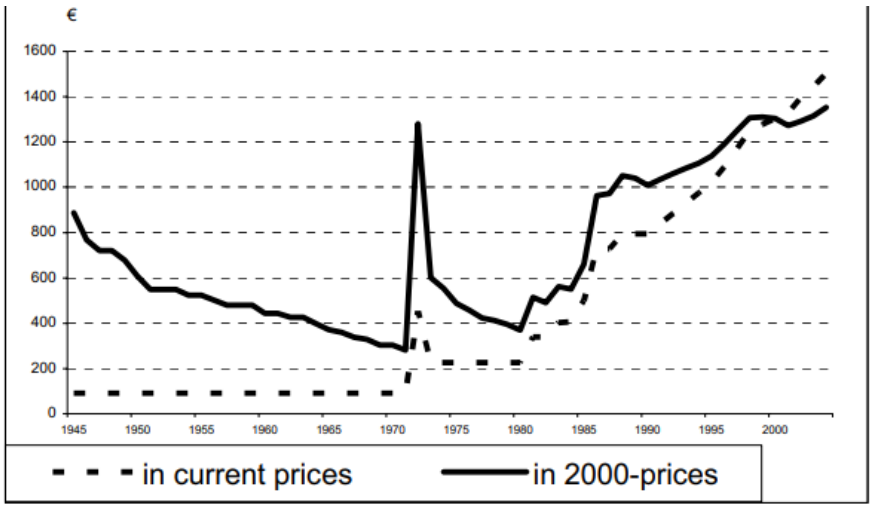

Figure 1 - tuition fees throughout the years in The Netherlands (Vossensteyn & Jong, 2008).

In 1986, the Dutch Cabinet implemented the Student Finance Act[2] (Roovers & Gelder, 1996). This meant the introduction of the base grant and additional grant. The amount of the base grant depended on the living situation of students. All students who lived with their parents/guardians would receive the same amount of approximately 265 Dutch guilders ,- (Roovers & Gelder, 1996). In today's terms, this amount translates to €120,- (Roovers & Gelder, 1996). If students would live somewhere else than with their parents/guardians, they would receive an amount of approximately 604 Dutch guilders. In today's terms, this amount translates to €274,-. The additional grant was from the very beginning based on the income of parents. Students whose parents would earn below-average received either a majority of the additional grant or entirely. Students whose parents would earn above average, on the other hand, received either a small part or nothing. To prevent forever-students, the Cabinet implemented the following restriction: Students who took longer than six years to complete their studies pay 40% more of tuition fees per extra year (SUSA, 2021). This was considered a lot at that time as the tuition fees already had been rising throughout most recent years. Arguably, the

[2] This law is in The Netherlands known as *de wet van studiefinanciering.*

Student Finance Act meant stagnation in the rising total costs of studying for many students.

In 1996, to prevent students from not completing their studies, the government introduced the so-called performance grant[3] (SUSA, 2021; Hermans, 2000). The key idea of this grant is that, if students would graduate on time, the base and additional grants were converted into a scholarship. On time, at that time, meant two years on top of the nominal duration of students' study. That was not the only change made that year; the duration of the grants was shortened from infinite to the duration of your study – often 4 years. A couple of years later, in 2000, the performance grant got changed already. Many students were suffering the consequences of the implementation in 1996 and the Cabinet decided to change the performance act: Students would now have ten years to complete their studies instead of six (SUSA, 2021; Hermans, 2000). Another development around this time was the stagnation of the tuition fees. The total cost of studying, particularly the potential total cost, decreased. Likely as a consequence, the total number of enrolment of students in The Netherlands increased heavily after the implementation in 2000.

In 2011, as a response to this change, the government implemented the Slow Study Act[4] – students who would need longer than their nominal study duration plus one year would have to pay a fine of €3063,- per extra year (SUSA, 2021). As throughout the years this has been the most radical form of sanctioning excessive student behaviour, this implementation resulted in immediate demonstrations (Vries, 2011). As a result, barely a year later, the Slow Study Act was abolished (SUSA, 2021).

In 2015, opponents of the Study Finance Act argued that studying should be an own investment of students, and their parents as graduates earn on average almost twice as much as workers their age who have not completed any form of higher education (Rijksoverheid, 2012). Abolishing this act would provide a quality boost for HE in general (Bussemaker & State Secretary, 2014). All the released money would be invested in education. The government decided to abolish the base grant and exchange it for the SLS. Students now would not receive any grants but could borrow a maximum of approximatively €1034 per month. Apart from the increase in total study costs due to the abolishment of the grants, the total study costs increased even more as the tuition fees grew as well in 2015 (HOP, 2018).

[3] This grant is in The Netherlands known as *de prestatiebeurs*.
[4] This law is in The Netherlands known as *de langstudeerboete*.

Today, according to the Cabinet, this investment has not been sufficiently visible. In addition, the implementation of the SLS has proved harmful to students. For instance, less students progress towards a master's degree and debts of students tends to negatively influence the acquirement of mortgages after studies, (Tweede Kamer, 2018; Mast & Abbing). As stated before, as a result, the abolition of the SLS is currently an inevitable topic in the Dutch Chambers (NU, 2021; Zuidervaart, 2021).

3. Theory

3.1 Study Financing and Decision-Making

In the following section, we discuss Classical Economic Theory. Classical Economical Theory, also known as Neo Economic Theory, is one of the first theories of economics. Due to criticism on its rationality, Behavioural Economic Theory emerged. "Behavioural economics explores what affects people's economic decisions and the consequences of those decisions for market prices, returns, and resource allocation" (Miller, Amit, & Posten, 2016, p. 1). This indicates that how individuals behave in terms of economic decisions can explained through Behavioural Economic Theory. By using a combination of Classical Economical Theory and Behavioural Economic Theory, we aim to predict the behaviour of students since the SLS.

The total study costs raise in The Netherlands in 2015 but there are more elements to consider for students. For instance, the costs associated with studying such as tuition fee costs, living costs and opportunity costs. These costs could influence students' decision-making.

According to Neo Economic Theory, human behavior is estimable with rational choice (Boatman, Evans, & Soliz, 2014; Mele & González-Cantón, 2014). In terms of Classical Economic Theory, this rational choice suggests that individuals are homo economicus – individuals aim to maximize their utility according to their preferences (Boatman, Evans, & Soliz, 2014; Mele & González-Cantón, 2014). This implies that individuals act in such manner to satisfy their preferences in order to achieve a high utility. One decisive factor is then individuals' budget constraint. Meaning, that resources, particularly monetary resources are limited.

Given that the opportunity cost likely increases as a consequence of the increase in the total study costs, one could argue that Dutch students would want to graduate relatively quicker or decide to not proceed studies at all. As mentioned before, this second possibility is already the case in The Netherlands as significantly fewer students proceed towards a master's degree (CBS, 2021). One could state that the eventual utility of students will be much higher when completing a degree as salaries will likely be higher. Then, one could argue that a current increase in total costs will not necessarily influence decision-making due to the potential situation in the future. According to Barr (2020), "people have the capacity (a) to formulate utility maximizing plans and (b) to translate those plans into action." (p. 55). Yet, according to complementary behavioural theory,

individuals are bounded to cognitive limitations (Gonzalez & Chipman, 2014). This means that individuals are not always able to rationally decide given their utility function and preferences. Examples of such cognitive limitations which can influence decision-making are bounded rationality, bounded will-power and time prevalence. According to bounded will-power Theory, individuals value the present more and frequently make decisions which does not guarantee the best interests in the long run, despite being aware of their best interests (Barr, 2020, p. 56). A student could be aware of potential salaries after acquiring a degree, yet still choose to work instead of proceeding studies.

Another criticism of Classical Economic Theory in HE terms concerns the type of decision-making. Decision-making in HE could be based on non-monetary decision-making (Marginson, 2017). According to behavioural theory, some students could like being a student (McMahon, 1987). Students could enjoy non-monetary aspects such as little responsibilities, more flexibility and more spare time while having an acceptable living standard.

3.2 Literature review

3.2.1 Empirical Literature

The implementation of the SLS in 2015 meant a change in study financing schemes. The relationship between study financing schemes and study progress in HE has been analysed throughout the years. As mentioned earlier, the most used study financing schemes are loans and grants.

A case study about the relationship between grants and study progress revealed clear answers. In a cross-sectional and within-university study of Italian universities the effects of need-based grants – grants awarded to students who do not meet a certain financial level – showed that the use of these grants positively affect academic performance (Graziosi, Sneyers, Agasisti, & De Witte, 2020). Students who met the standards of the grant received between €1500,- and €5700,- per year, dependent on their financial situation. Students who received a grant achieved more credits than students of similar characteristics who did not receive a grant. Consequently, as more credits were achieved, the drop-out rates were significantly lower. Apart from this finding, receiving a grant also affected the degree attainment as receiving a grant appeared to have a positive effect on graduating within the nominal graduation time (Graziosi, Sneyers, Agasisti, & De Witte, 2020). This study points out that there is a difference in near-home

students and students from other regions. Students from other regions are likely dealing with higher study costs due to rental and living expenses. The study showed that these students have a higher probability of acquiring credits due to the grants.

The relationship between a study loan and study progress, on the other hand, seems to be rather ambiguous. In another case study about study loans and grants and their effects on academic performance of low-income background students, based on a large sample from 101 Chinese Universities, loans did not appear to improve academic performance (Huang, Li, Liao, & Pingping, 2018). Findings in similar studies determined even a decrease in academic performance due to loans (Facer; Miltenburg, 2018). In the Chinese case study, low-income background students are the students who meet a certain financial threshold which makes them eligible for a student loan or grant. The loans, however, caused an increase in doing side jobs as students. In two cases studies in The Netherlands and Virginia, other HE scholars also find that increasing net study costs largely disadvantages low-income students (Been, Knoef, & Dalhuijsen, 2020; Mulhern, Spies, Staiger, & Wu, 2015).

Dowd and Coury (2006), investigated the effect of subsidized loans in HE on degree attainment and persistence using logistic regressions. In this study, to have a study loan did not affect the study attainment. In other words, the students did not graduate quicker or slower due to the loans. Yet, the loans did affect degree persistence negatively. This is an interesting finding as Graziosi, Sneyers, Agasisti, and De Witte (2020) found an opposite effect of the financial scheme: Students dropped-out less. The only striking difference between these two cases is that Graziosi, Sneyers, Agasisti, and De Witte (2020) focused on grants and Dowd and Coury focused on loans. On its turn, the difference between these two financial schemes is that one decreases the total study costs and the latter increases the total study costs. Hence, a possible explanation for the negative effect on degree persistence is that, for some students, the costs did not outweigh the benefits anymore. As shown in the studies, in many cases students drop-out due to rising costs. In other cases, the study attainment rate goes up. Arguably, to minimize loan and study costs. In most of these cases, the time allocation of students changes. The time allocation of students can be seen as a core mechanism that affects study progress (Bachmann & Boes, 2014).

3.2.2 Mechanisms

The literature shows that the loans rather influence study progress indirectly. In Huang, Li, Liao, and Pingping's (2018) case study, to cover the increasing total costs due to the loans, students were allocating their time towards side jobs and less towards studying. In Graziosi, Sneyers, Agasisti, and De Witte's (2020) case study, an important detail is that "Many students, especially the most disadvantages, are forced to work during their studies to cover their living costs. A grant can allow them to work for fewer hours and free up for studying" (Graziosi, Sneyers, Agasisti, & De Witte, 2020, p. 33). That said, in this case we see that the intervention of providing a grant likely resulted in a change in the time allocation of disadvantaged students. Students start to work more to cover the costs. The more time students invest in their studies, the higher the study progress (Zulauf & Gortner, 1999). Hence, the time allocation of students likely influences the study progress. We hold the following model:

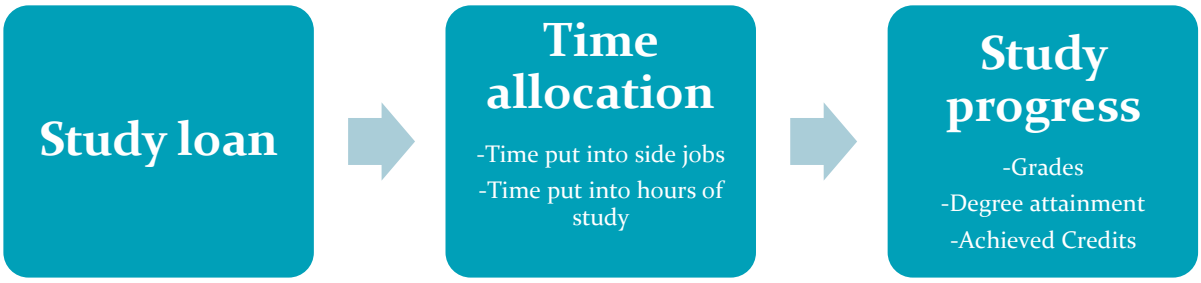

Figure 2 - Conceptual representation of variables

According to the literature, a student loan causes changes in time allocation and, thereafter, affects the study progress. Time allocation represents the balance between time put into side jobs and time put into hours of study. As stated before, study progress is frequently conceptualized as the performance in grades, credits, and the rate of study attainment. These components are interrelated as the achievement of credits will likely boost the completion of a study. Passing grades will help you acquire credits which are needed initially to complete a study. Yet, degree attainment can be affected by more than only the completion of credits. The time of enrolment for the thesis, if included in the study programme, and the submission date of a specific course or part of the study are examples of how the completion of a study can depend on more than only achieved credits. Some students decide randomly to treat themselves with a long holiday and some decide to work next to their studies, which can be reasons for missing submissions dates. Grades, on their turn, can increase but that does not necessarily mean that there is a higher completion rate or even that more credits have been achieved. A student

could score higher, yet still not pass the threshold. Therefore, one could argue that despite the interrelation of these components, they need to be analysed separately. Important to note, the effect of loans may depend on the conceptualization of study progress. The exclusion of one of these components might result in contradictive findings regarding study progress. Some scholars might include the performance in grades, credits, and the rate of study attainment while others only focus on two. In this study, we will analyse statistically the time spent on studying and the self-reported study progress of students. Due to limited data acquirements, we analyse exclusively these components.

3.3 Hypotheses

We developed four hypotheses for this study. As will be explained in the following chapter of this study, our research design consists out of two parts. Therefore, we hold different hypotheses per part.

For part 1, we expect that:

1) **Since the implementation of the SLS students' behaviour changed in terms of their time spend on studying, working behaviour and ultimately study progress.**

Our academic literature indicated a considerable effect on time allocation, and eventually study progress when new study financing schemes were implemented. Yet, the SLS's effect might be considerably bigger as its implementation meant a new financing scheme and an abolition of the old one. In other words, the SLS meant the abolition of the grant system as well. Consequently, the total costs increased likely more drastically than in the other case studies. Hence, as stated above, we expect noticeable changes in time allocation and study progress.

For part 2, we expect that:

2) **The higher the loans, the more time students spend on studying on average.**

If the loans are higher, one could argue that students would have to work less due to the income from the loans. Consequently, more free time becomes available to study.

Our third expectation is that:

3) **The more hours in jobs students spend, the lower the study progress of these students will be on average.**

Working more means a shift in time allocation. Time which is spent on working cannot be spend on studying anymore. We expect lower study progress as a consequence of more hours put into working by students.

Finally, we hold that:

4) **Students with financial difficulties will have less study progress than students without financial difficulties on average.**

According to our literature, students with financial difficulties are mainly affected by changes in financial schemes, particularly in time allocation as having a side job sometimes becomes crucial for these students. Therefore, we expect less study progress for those with financial difficulties.

4. Research Design

To assess the impact of the SLS, we divide the research design in two parts: part 1 and part 2. In part 1, in time series, we give an overview of the relevant figures of students such as student debts, hours spent in jobs, hours spent in study and study progress. In part 2, we will identify the impact of the variables of interest on each other by running linear regressions which could explain perceived trends in part 1.

4.1 Design, data description, and variable operationalization of part 1

In part 1, we focus on relevant statistics of students in time series and analyse these. To do so, we will give an overview of how study debts, the spent hours in jobs, the spent hours of study and the achieved credits evolved over time. We make a divide between HBO[5] and WO[6] students to analyse whether there are differences in these relevant figures per education type. We aim here to identify and indicate changes associated with the implementation of the SLS. We indicate the changes by stating whether we determine an increase, decrease or non-effect since the implementation of the SLS. Nevertheless, to clarify, in part 1 we are not drawing any conclusions regarding the correlation between loans and study progress. We analyse the years closely related to the implementation of the SLS and hold 2011-2020. We use partly secondary sources and individual data. To be more precise, we will use secondary national data from the Dutch Statistics Center (CBS), secondary national data from Studentenmonitor.nl, and individual data from ResearchNed, from 2001-2015. The secondary national data from the CBS will be used to give an overview of the evolvement of study debts. The secondary national data from Studentenmonitor.nl and the individual data from ResearchNed will be used combined to give an overview of the evolvement of the spent hours in jobs, study, and the achievement of credits.

CBS

The CBS is the national centre of statistics in The Netherlands. Statistics Netherlands (CBS) reports this on the basis of new figures. The CBS almost always obtains your data from the Personal Records Database of the municipality where you live (Beukenhorst &

[5] In The Netherlands, there are two types of higher education at university level of which one is HBO. HBO refers to universities of applied sciences. These universities are more practical in nature.

[6] WO refers to academic universities. In The Netherlands, these universities are the highest level of education.

Kerssemakers, 2010). The municipalities are required by law to provide the CBS with the most recent data from the Basic Registration of Persons.

Therefore, the derived data from CBS is based on available personal records of all Dutch citizens from 2019 (CBS, 2019). Within the data, the exact number of the sample is not shared.

Studentenmonitor.nl and ResearchNed

On request of Dutch Ministry of Education, a yearly online survey through research institute ResearchNed. The data covers topics such as education, study progress, individuals' economic and personal characteristics, family of individuals' economic and personal characteristics, earnings, and time allocation. The given values within the data are self-reported.

The online national data derived from online data source Studentenmonitor.nl covers the years 2016-2020. The years 2011-2015 are missing in the online data source. Therefore, for these remaining years, we use individual data from ResearchNed and convert it into national data to complete the time series. In 2010, the yearly online survey was not executed and, therefore, data from this year is missing and not included. The online national data retrieved from Studentenmonitor.nl are retrieved from ResearchNed as well, based on the yearly surveys conducted from 2016-2020.

The sample size of the total questionnaire of ResearchNed from 2001-2015 holds 186 665 respondents. The sample size of the retrieved data from Studentenmonitor.nl, which is the total response of the questionnaire of ResearchNed from 2016-2020, holds 85 152 respondents (Studentenmonitor, 2020).

Within part 1, the following variables are analysed: spent hours in jobs, spent hours in study time, and the achievement of credits.

To start with the spent hours in jobs, the response is based on the average time spent on a daily base on paid work. This variable concerns exclusively the time spent on paid work. That said, time spent on voluntary work and administrative university jobs are not included. The response is based on the average time spent on a daily base on paid work.

Second, the variable spent hours in study time is calculated as the sum of time spent on contact hours and self-study per week. Time spent on other activities such as internship or thesis activities has been excluded. Also here a correction has been made by excluding extreme scores.

Lastly, the achievement of credits is measured as following: the percentual amount of achieved credits is divided by the percentual amount the student could have had obtained at that particular time. Within the ReseachNed data, this variable is named Study progress.

4.2 Design, data and model description, and variable operationalization of part 2

As stated before, part 2 concerns identifying the impact of the variables of interest. The variables of interest are 'time spent on studying' and 'self-reported performance'.

In this part, we run two statistical analyses. In the first analysis, we investigate how choices loans and work affect the time spent on studying. In the second analysis, we investigate how loans and work affect self-reported performance. How this is done is explained in the operationalization in 5.2.3.

We include exclusively students who started studying in or after study year 2015-2016. We do so to assure as much as possible that the results are derived from a post-SLS implementation period which allows us to draw conclusions. The used data is retrieved from Eurostudent.

Eurostudent

Eurostudent is a consortium which works closely together with national Ministry representatives and researchers over Europe. The data – Eurostudent VII - is retrieved from research institute DZHW. This dataset provides insights about students in various European countries and their behaviour in 2019. The conducted questionnaire which resulted in this dataset mainly covered the following topics: current study situations, study background, study conditions, living conditions, international mobility, family conditions, and personal details. The given values within the data are self-reported.

The sample size of the data holds 143 255 respondents. Yet, the data represents values of more countries than only The Netherlands. After our considerations, our sample size holds 8092 respondents.

As stated before, we will run two analyses. In the first analysis, we investigate how loans and working affect the time spent on studying.

In model 1, we hold the following formula:

$$\textit{Time spent on studying} = \beta_0 + \beta_1 * \textit{Incomestudentloan} + \beta_2 * \textit{Averagetimeweekjobs} + \beta_3 * \textit{age} + \beta_4 * \textit{gender} + \beta_5 * \textit{edupare} + \beta_6 * \textit{financialdif} + \varepsilon$$

In this first regression, the dependent variable is 'Time spent on studying'. This variable represents the total time spent on studies in hours per week. Within the data, the total time spent on studies is separated into personal study time and taught study time. We combine these two variables and merge them into one. That said, this variable includes time spent on lessons, seminars, labs, tests, live online courses of study programme, preparation time, studying, homework, and unpaid internships.

The variables 'Incomestudentloan' and 'Averagetimeweekjobs' represent our independent variables. The variable 'Incomestudentloan' represent students' the height of the income from student loans in euros per month. Within the data, the height of the student loan is merged into the variable 'Income from public sources' which represents the income from public sources in euros per month. Public sources are either student loans or grants. That said, this variable which indicates the income from public sources does not exclusively measure the height of the student loan. Even though the grant system got abolished in 2015 in The Netherlands, we cannot be confident about the exclusion of scholarships or grants as these can be provided by third parties. Since we cannot be confident about the exclusive inclusion of income from student loans in this variable, we interacted with this variable with two other binary variables. One of these binary variables indicates whether students did have a public student loan. The other binary variable indicates whether students did receive grants or scholarships. We interacted with these two binary variables in such a way that the income from public sources variable exclusively represents the height of the public student loan.

The variable 'Averagetimeweekjobs' represents the average time spent on paid jobs during lecture week days in hours per week. That said, the average time spent on paid jobs during weekends is not included in this variable.

The other variables up to 'Financial dif' represent the control variables. We control, respectively, for age, gender, education of parents, financial difficulties, and type of higher education. Respondents to the variable 'age' either selected 1 for up to 21 years, 2 for 22 to <25 years, 3 for 25 to <30 years or 4 for 30 years or over. The variable 'gender' is a binary variable which indicates the gender of the respondents. 0 represents males, and 1 represents females. The control variable 'edupare' refers to the highest educational attainment of students' parents. This variable is ordinally registered under three levels:

1) low educational background (ISCED 0-2[7]), 2) medium education level of parents (ISCED 3-4), and 3) high education level of parents (ISCED 5-8[8][9]). The self-perceived financial difficulties that students might perceive is what is expressed by 'financialdif'. Within the data, the self-perceived financial difficulty is registered under three levels but we recoded it into a binary variable: 1 for no perceived financial difficulties and 0 for perceived financial difficulties.

Furthermore, regarding the remaining terms, the β0 represents the constant and 'ε' the error term.

In model 2, we hold the following formula:

$$Study\ progress = \beta 0 + \beta 1 * Incomepublicsources + \beta 2 * Averagetimeweekjobs + \beta 3 * age + \beta 4 * gender + \beta 5 * edupare + \beta 6 * financialdif + \varepsilon$$

In this second regression, the dependent variable is 'Study progress'. This variable is measured as the self-reported performance of students compared to their fellow students. The performance is measured in Likert scale of 5 values in which 1 represents much better, 3 just as good, and 5 much worse.

All other, remaining variables and their values representation are equal to those in the first analysis. The descriptive statistics of our variables are shown in the table below:

Table 1 - Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Income from PSL	7716	0	1000	361.13	363.049
Time spent on studying	7969	.00	110.00	35.3078	12.95597
Male	8092	.00	1.00	.6367	.48099
Highest educational attainment of parents	7661	1	3	2.54	.627
Age	8092	1	4	1.24	.597
Average time spent on paid jobs	8088	0	95	8.67	9.059
Students with/without financial difficulties	8076	0	1	.42	.493
Study progress	8082	1	5	2.51	.869

[7] This code represents all Lower secondary education and below.
[8] This code represents Upper secondary education and Post-secondary non-tertiary education
[9] This code represents all types of Tertiary education varying from tertiary programmes to a doctorate degree.

5. Results: part 1

In this part, we start by analysing the national student debt in The Netherlands. Hereafter, we analyse students' time spent on paid jobs, study time, and achievement of credits. In the figures 4, 5 and 6, the black vertical line represents the policy implementation of the SLS.

In 2019, shown in the figure below, the total Dutch student debt of former and current students held 19.3 billion euros. This number represents an increase in debts as it is 1.9 billion more than the year before. Student debts increase every year. But not as much as since 2015, the year of the implementation of the SLS. As visible in the table below, more and more students are borrowing, and we can determine an accelerating National student debt, particularly since 2015.

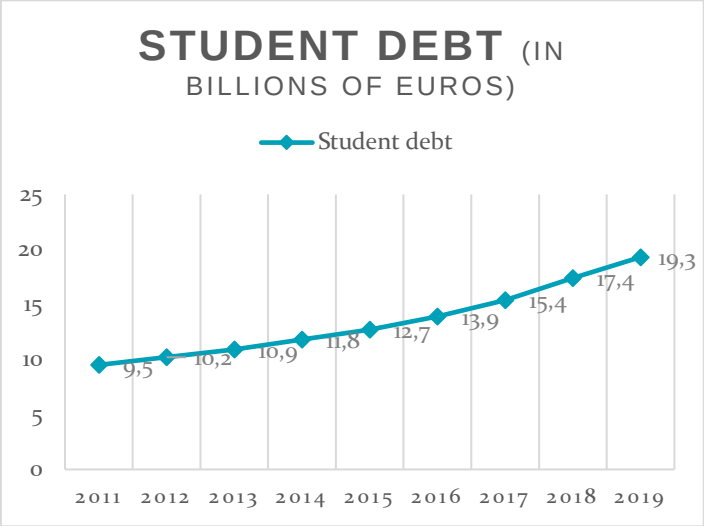

Figure 3 - Total national student debt between 2011-2019 in The Netherlands (CBS, 2019)

To give an indication, the percentual change in billions of euros student debt from before the SLS time can be measured by comparing 2015 its debt to 2011 its debt. Then, the percentual change holds: 12,7 billion – 9,5 billion / 9,5 billion x 100 = 33,68%. To indicate, this means that from 2011 to 2015, the National student debt in The Netherlands has increased by 33,68%. The percentual change in the SLS time, compared to pre-SLS time can be measured by comparing 2019 its debt to 2015 its debt. Then, the percentual change holds: 19,3 billion – 12,7 billion / 12,7 billion x 100 = 51,96 %. As the debt increased by 51,96%, this indicates that the National student debt in The Netherlands increased more heavily after 2015. To conclude, since the implementation of the SLS we determine a rising increase in the national Dutch student debt.

5.1 Time use on paid jobs and study time and the evolvement of study progress

The tables below show the evolution of hours spent on paid jobs and on study time across the higher education type. In figure 4, the trend in hours in paid jobs differs per education type. On average, HBO students work more than WO students. After the implementation of the SLS, we determine an increase for both groups in hours spent on paid jobs. Yet, it must be noted that this increase in hours spent on paid jobs is relatively small for WO students. On average, WO students spent 0.8 hours more hours in paid jobs. For HBO students, this increase is bigger. On average, HBO students spent 2 hours more in paid jobs after the implementation of the SLS. To conclude, since the implementation of the SLS we determine an increase in the time spent on paid jobs in hours for both education types.

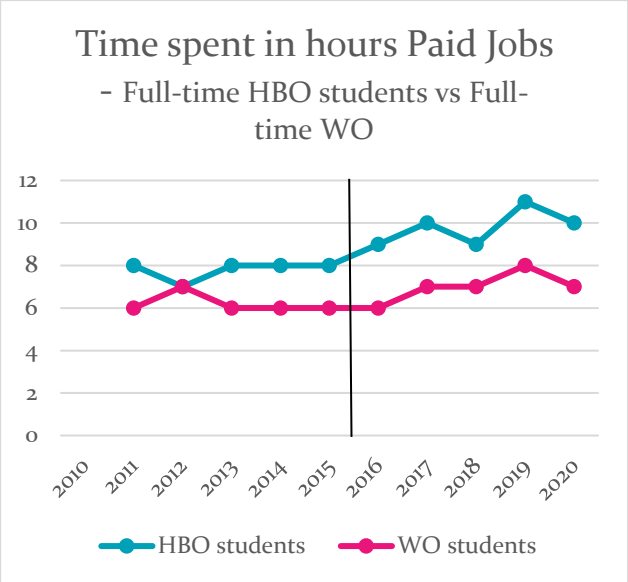

Figure 4 - Average time spent on paid jobs per education type in hours from 2010-2020

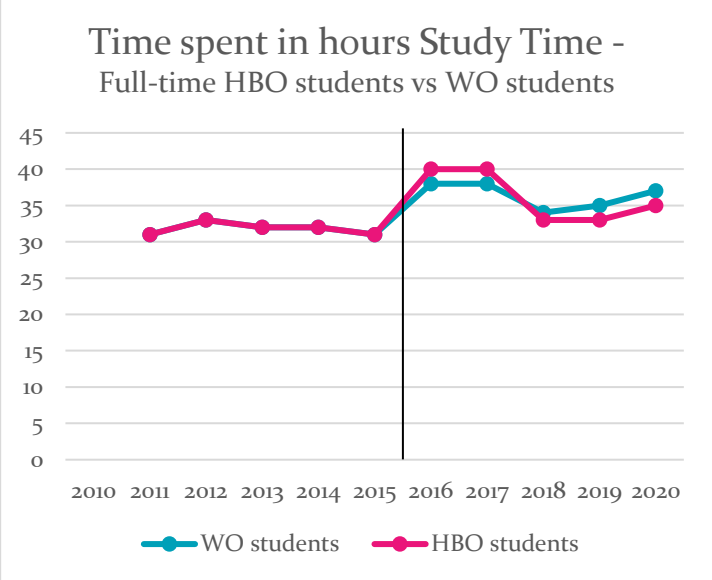

Figure 5 - Average time spent on study time per education type in hours from 2010-2020

In figure 5, the average time spent on study time is shown. Based on the pre-SLS time, we determine a similar pattern for both educational groups. All though variance between the two educational groups increases slightly after 2015, they show the same pattern. To conclude, since the implementation of the SLS we determine a strong increase in the time spent on study time for both education types.

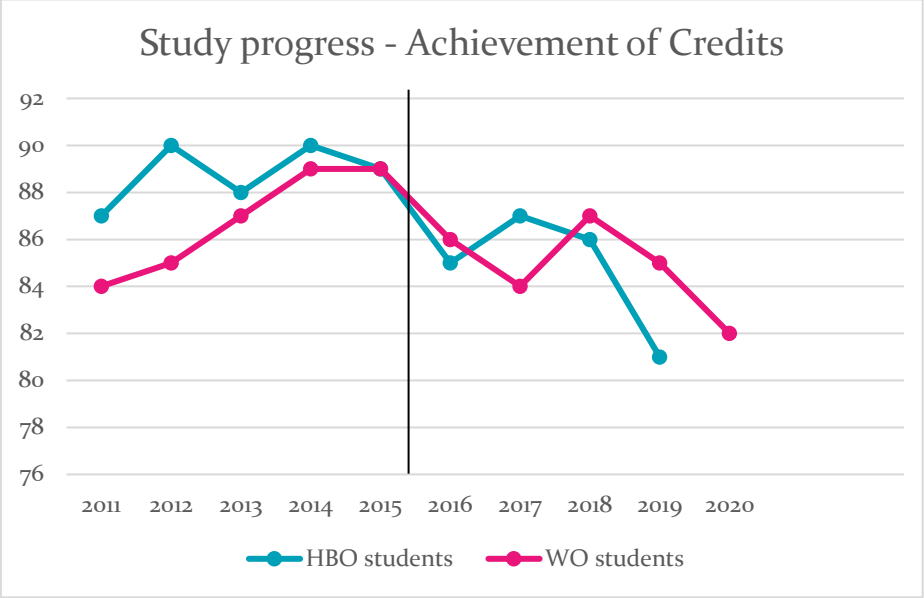

Figure 6 - Overview of how the achievement of credits has evolved between 2011-2020

In figure 6, the achievement of credits between 2011-2020 is shown. Based on before 2015, the achievement of credits on average is going through an upwards trend for both educational groups. Right after the implementation, we determine a sharp decline, for both education types. Based on 2015-2020, we determine that this sharp decline has evolved into a downwards trend for both educational groups. To conclude, since the implementation of the SLS the achievement of credits has decreased.

Our expectation was that we would perceive a change since the implementation of the SLS in students' behaviour in terms of their time spend on studying, working behaviour and study progress. Since the implementation of the SLS, we have determined noticeably an increase in the time spent on paid jobs, an increase in the time spent on study time, and a decrease in the achievement of credits. That said, since the implementation of the SLS we determine striking changes in students' behaviour in above stated terms. Hence, we accept our hypothesis.

6. Results: part 2

Table 1 - Effects of the height in student loan and the time spent on paid jobs on study time and study progress

		Time spent on studying	Study progress
1	Income student loan	.849 (.461)**	.139 (.028)***
	Male	1.262 (.316)***	.067 (.021)***
	Highest educational attainment of parents	.377 (.246)	-.044 (.017)***
	Age	-1.633 (.263)***	.069 (.018)***
	R^2	.009	.008
2	Income student loan	-.342 (.423)	.122 (.029)***
	Male	1.166 (.313)***	.062 (.021)***
	Highest educational attainment of parents	.094 (.244)	-.038 (.017)**
	Age	-.738 (.272)***	.057 (.019)***
	Av. Time spent on paid jobs	-.229 (.018)***	.001 (.001)
	Financial difficulties	1.151 (.309)***	-.092 (.021)***
	N	7235	7314
	R^2	.033	.011

*Std. Error in brackets. * P < 0.1; ** p<0.05; *** p<0.01.*

In the following section, we discuss the empirical findings that are derived from our statistical analyses. Important to note, that to analyse separately the effect of a student loan and the mediating effect of time allocation, we divided each model into two stages. In the first stage, only the income from a student loan is included as an independent variable with the control variables 'Male', 'Highest educational attainment of parents', and 'Age'. In the second stage, the second independent variable 'Av. Time spent on paid jobs' and the remaining control variables are added.

In the first analysis, we look into the relationship between the time spent on studying in hours, the income from a public student loan, and the average time spent on paid jobs

in hours. In the second analysis, we look into the relationship between the study progress in comparison to fellow students, the income from a public student loan, and the average time spent on week jobs in hours. As discussed, we assume that students with financial difficulties will have less study progress, compared to students without financial difficulties.

6.1 Analysis of results of the first model

Our findings indicate that the first stage of our model accounts for 0.9% of the change in the time spent on studying (table 2). That said, the income from a student loan and the control variables 'Male', 'Highest educational attainment of parents', and 'Age' account for 0.9%. This is relatively low. The coefficients in table 2 show that in the first stage of our model statistical significance has been found in the income from a public student loan, male, and age. According to our model, an increase per unit of income from a public student loan results in an increase of 0.849 in time spent on studying. This implies that per extra euro received in public student loan per month 0.849 extra time is spent on studying per week, ceteris paribus. To be more specific, per extra euro received in public student loans per month, 51 extra minutes are spent on studying per week, ceteris paribus. It is important to take into account that this is the exclusive effect of the income deriving from a public student loan. The male variable indicates clear significance in relation to the dependent variable, yet has a smaller eventual impact. It indicates that per gender change, the time spent on studying per week increases by 1.26 which means female students are slightly more likely to increase their hours in studies per week. Per hour, this result indicates that female students study approximately 15 minutes more than male students, ceteris paribus. The age variable indicates clear significance as well. Per increase in unit, the time spent on studying decreases in hours per week by 1.63, ceteris paribus. It implies that the older students are, the less time is spent on studies. To be more precise, per hour, based on an average increase of 3 years in age, students study 38 minutes less per week, ceteris paribus.

According to the second stage of our model, the income from a public student loan, the average time spent on paid jobs, and all our control variables account for 3.3% of the change in the time spent on studying per week. We determine an increase in the R square value in the second stage of our model. The variables that show significance in the second stage of our first model are 'Male, 'Av. Time spent on paid jobs', and 'Financial difficulties'. To start with the 'male' variable, our model indicates again that female

students study more per week. Female students study approximately 10 minutes more than male students, ceteris paribus. The 'age' variable coefficient indicates that the older students are, the fewer time students spend studying per week. To be more precise, based on an average increase of 3 years in age, students study approximately 16 minutes less per week. Arguably, the most interesting finding is the coefficient of the average time spent on paid jobs. Per increase in hour on jobs, students study approximately 14 minutes less, ceteris paribus. This finding indicates the trade-off relationship between time spent in studies and jobs that has been described in our literature.

The final significant variable, perceived financial difficulties, indicates an interesting relation. As this variable is binary, an increase in unit equals the relation between students without financial difficulties and students with financial difficulties, respectively. Our findings suggest that students with financial difficulties spend more hours in studies per week. To be more precise, students with financial difficulties spend 1.15 hours per week spent in study time more than students without financial difficulties, ceteris paribus. Per hour, this indicates that students with financial difficulties study 9 minutes more. To give an indication of this result, based on part 1, on average, HBO and WO students spend approximately 37 hours in studies per week since the SLS. That said, assuming that these hours represent students without financial difficulties, students with financial difficulties would study a total of 42 hours and 31 minutes on average which is a striking result as this is means this group studies 5 hours and 31 minutes more than the average.

The results in the second stage of our first model are striking as the male and age variables now indicate variance in their values. Regarding the male variable, we see 6 minutes less study time per week than in the first stage of our model. Regarding the age variable, there is a 54 minutes difference in spending less time studying per week per 3 years age increase. We perceive these changes since we included the dependent variable 'Av. Time spent on paid jobs and the control variable 'Financial difficulties'. Hence, these variances in coefficients can be explained by their inclusion. Another striking result is that our independent variable 'Income student loan' lost its significance and its coefficient is now negative since this inclusion. This implies that holding the time spent on working fixed and controlling for financial difficulties of students harms the effect of loans. Students who work the same amount of hours but have a loan spend less time on studying. That said, the mediating effect of the time spent on paid jobs statistically proves to be impactful.

Our findings suggest that the time spent on studying on average increases when the income on public student loans increases. In reflection on our first hypothesis, we expected that the higher the loans, the more time students spend studying on average. Our results, based on the complete first model, indicate that this is not the case. Therefore, we reject this hypothesis.

6.2 Analysis of results of the second model

The first stage of our second model in which we include exclusively the independent variable 'income from a public student loan', and the control variables 'male', 'highest educational attainment of parents', and 'age' accounts for 0.8% of the change in study progress (Table 2). This is relatively low. We determine statistical significance in all variables.

We determine a positive relationship between the income from student loans and study progress. Our findings suggest that one euro increase in student loans per month results in higher study progress, ceteris paribus. Accordingly, although this might look bearable, an increase of 100 euros in student loans per month would result in more study progress as the coefficient per one euros increase holds 0.139 per euro. Yet, it must again be noted that in this stage the exclusive effect of loans is measured. A variance in gender appears to be less impactful in relation to study progress. Our findings suggest that the study progress is barely affected by gender. Yet, despite its little effect, it indicates that female students are more likely to have a lower self-perceived performance. In its turn, this finding means that male students are slightly more (over)confident. Our findings regarding the highest educational attainment of parents in relation to study progress suggest a very little variation. As we have conceptualized the educational attainment of parents into three levels, the decrease in study progress due to the highest educational attainment of parents is minimal. At first sight, the relationship between age and study progress might appear interesting. According to our findings, per average increase in age of 3 years, the study progress increases by 0.069. Although there are students of various age groups, the average time studying in The Netherlands holds between 4 and 6 years (CBS, 2010). That said, within this average study time, there is a small chance that the study progress of students would change as a consequence of age. To add up, based on this coefficient, one could even argue that based on a life expectancy of 80 years, the study progress will barely change exclusively due to age.

In the second stage of our model, we see that all our independent and control variables account for 1.1% of the perceived change in study progress. This is again relatively small. In comparison to the first stage of our second model, we determine an increase. Yet however, this increase is relatively small. This implies a small mediating effect of the inclusion of the average time spent on paid jobs and the financial difficulties of students. Consequently, the corresponding coefficients per variable have not changed drastically in comparison to the first stage of our second model. To add up, the mediating effect that the average time spent on paid jobs appeared to have in our first model, is not visible in our second model. The time spent on paid jobs is not significant and does not appear to affect the study progress. The income from a public student loan still appears to be impactful to the study progress of students. Yet now we know, as stated, its impactful relationship has nothing to do with the average time spent on paid jobs according to our model. Even the coefficient of financial difficulties indicates a weak relationship in relation to study progress. Our findings imply that students with financial difficulties have slightly less study progress than those without financial difficulties. Yet, not to the extent that students with financial difficulties are having less study progress in terms of study progress level. That said, according to our model, students with financial difficulties appear not to be disadvantaged in terms of study progress.

In reflection to our hypotheses, we expected that the more hours students spend in jobs, the lower the study progress of these students will be on average and that students with financial difficulties will have less study progress than students without financial difficulties. As shown, our findings suggest that the time spent working does not affect the study progress and that financial difficulties have a rather limited effect on study progress. That said, we will have to reject both of our hypotheses.

6.3 Robustness check of analyses with Robust Standard Errors

Within this study, we have run two regressions. To guarantee no harm to the internal reliability, we run robustness checks. When running a regression, we assume that variants of residuals are equal or consistent across levels of our predicting variables (Hayes & Cai, 2007). Where this assumption is not met, one could speak of heteroscedasticity (Hayes & Cai, 2007). What this means is that the fit of a regression model is varying across levels. In its turn, this means that the model is not behaving the same way across predictors which can result in errors. If we can obtain robust standard errors, we can be more confident about the relationships between the dependent

variables and their predictors (Hayes & Cai, 2007). To judge the accuracy of the results of our models, we ran a univariate analysis of variance with parameter estimates with Robust Standard Errors. The results are shown in the table below.

Table 3 – Parameter Estimates of statistical analyses with Robust Standard Errors

		Time spent on studying	Study progress
1	Income student loan	.862 (.425)**	.139 (.028)***
	Male	1.286 (.315)***	.067 (.022)***
	Highest educational attainment of parents	.377 (.256)	-.043 (.017)***
	Age	-1.638 (.270)***	.069 (.018)***
	R^2	.010	.008
2	Income student loan	-.342 (.434)	.122 (.030)***
	Male	1.166 (.311)***	.062 (.022)***
	Highest educational attainment of parents	.094 (.255)	-.038 (.017)**
	Age	-.738 (.278)***	.057 (.019)***
	Av. Time spent on paid jobs	-.229 (.021)***	.001 (.001)
	Financial difficulties	1.151 (.312)***	-.092 (.021)***
	N	7235	7314
	R^2	.033	.011

*Robust Std. Errors in brackets. * P < 0.1; ** p<0.05; *** p<0.01.*

In comparison to the coefficient values and standard errors shown in the results, our robustness check shows variances exclusively in our first model. Yet however, these jumps are rather small. To start with, our check shows a bigger r square value of the first stage of our first model. This finding implies that the relationship between the first stage of our first model and the time spent on studying is 0.1% stronger than initially assumed in our results. Furthermore, possibly the cause of the increase in r square, the effect of the income from public student loans in relation to the time spent on studying in the first stage of our first model appears to be different according to our robustness check.

The shown coefficient holds 0.862. Compared to our results, the robustness check estimates this coefficient 0.013 higher than we assumed. Translated in terms of the time spent on studying, this implies that the impact of increasing the height of a public student loan increases the time spent on studying by 40 seconds more than initially assumed. This is relatively a small jump and does not harm the empirical validity. As furthermore our check indicates alignment among coefficients, standard errors and significances, we can be confident about the overall reliability of our analyses.

7. Limitations

Arguably, the most important limitation to address is that the study progress in our statistical analyses is based on self-perceived performance compared to other students. Accordingly, this means measuring perceptions and not facts. Confident students could consider themselves students with a lot of study progress while in fact performing poorly and vice versa; unconfident students could consider themselves students with little study progress while in fact performing remarkably. Besides, apart from the possible variances in self-perception of students, the comparison to other students harms the internal reliability maybe even more. To consistently compare to other students is hardly possible. Not all students are the same nor do all students perform equally. Among different universities, we might perceive unaccountable variances in students and their behaviours. Hence, it is important to note that all conclusions derived from this study are based on self-perceptions. Certain statistical results such as the not-existing mediating effect of hours spent working in relation to study progress cannot be guaranteed. Because of this reason, further statements in our conclusion, in answer to our research question, based on the self-perceived performance will be left out.

Another overall limitation is that this research only proves the immediate, short-term effects of the executed regressions. Particularly, as the statistical analysis is based on exclusively 2019. This research does not take adjustment rates into account. As shown in the context, this study generation has experienced quite a new public financing system. Over time, it is not unimaginable that students adjust to this new system. What it could mean stays rather ambiguous. For instance, the consequences of debt could be less impactable than initially assumed. Hence, this study provides exclusively findings for a short timeframe.

Another limitation concerns data generality. Within the Eurostudent data, there is no separation made between HBO and WO students. Apart from the lost additional information that this separation in data could have provided in terms of time allocation and study progress, the inclusion of both of these higher education types affects the beta coefficients outcome and, thus, the internal validity. To clarify, HBO students have high drop-out rates (Ministry of Education, Culture and Science, 2017). Especially compared to WO students. In its turn, one could argue that students who think about dropping out are arguably more likely to spend fewer hours studying, and more into working.

Based on this assumption, the mediating effect of the average hours spent in work will likely be different per education type.

In another study about the effects of the SLS scholars Broeders, Been, and Knoef (2020) found that since the implementation of the SLS, parental transfers have been increasing significantly. With parental transfers, we refer to the financial contribution to students deriving from the parents of students. The increase in parental transfer could indicate an omitted variable bias. Students who receive financial contributions from their parents could borrow less while putting more hours into their studies. Within this study, we have not accounted for this potential bias. Consequently, this bias might have resulted in attributing the effect of the omitted variable to the variables that were included. That said, the exclusion of this variable might to a certain extent have harmed the internal validity of our study.

8. Conclusion

In this study, we examined the effect of the implementation of the SLS, which is the Dutch reform in the financing system in higher education, on study progress. Based on Economic Theory and literature, we assumed that we would 1) perceive a change in students' behaviour in terms of their time spend on studying, working behaviour and study progress since the implementation of the SLS, 2) the higher the loans, the more time students spend studying on average, 3) the more hours students spend in jobs, the lower the study progress of these students will be on average and that 4) students with financial difficulties will have less study progress than students without financial difficulties. We used a two-parted research design. In part 1, we gave an overview of the relevant figures of students in terms of debts, time allocation and study progress. In part 2, we identified the impact of the variables of interest by running linear regressions which gave insights into perceived trends derived from the results of part 1. Our findings were in favour of the first hypothesis as since the implementation of the SLS indeed a lot has changed in terms of time allocation and study progress. Other of our findings were not favourable to our hypotheses. Our second assumption was wrong as according to our findings an increase in the income from public student loans does not increase the time spent on studying on average. Interestingly, we found proof of the mediating effect of the time spent on jobs in hours per week. Apart from its mediating effect on the income from public student loans, we can state that the more a student spends working, the less he/she will spend studying. Furthermore, based on the hour, we found that students with financial difficulties study 9 minutes more than the average student. This is a striking result as one could argue that financially disadvantaged students would study less due to current opportunity costs. Since our model proves the trade-off between time spent studying and time spent in jobs, one could state that since students with financial difficulties are studying more, they are not working more. A possible explanation is that these financially disadvantaged students want to graduate quicker. This could be due to the wish to acquire a post-study salary as soon as possible. Students who graduate within the nominal study time can quickly acquire a post-study salary. In light of behavioural and economic theory, that these financially disadvantaged students want to graduate quicker and study more for it instead of working implies that students are not bound to cognitive limitations such as bounded will-power but do have the capacity to formulate utility goals and translate those into plans (Barr, 2020). In terms

of study progress, we found divergent results. The time spent on jobs appears to not affect the study progress to any extent. Nor does the financial situation of students harm the study progress sufficiently to state that students with financial difficulties have less study progress. Therefore, we have to reject hypotheses 3 and 4. Despite that the study progress does not appear to be affected by the time spent in jobs, according to our results it is positively affected by an increase in the height of public student loans. The higher the loan, the higher the study progress. Yet, unlike in our first model, this effect is not affected by any included variable and suggests a direct effect. Another result deriving from our analyses is that older students spend less time studying per week. The second stage of our first model indicated a noticeable change spend hours in studies when controlling for hours put into work. Hence, one could argue that older students mainly spend less time in studies per week due to more hours put into work. Once again, this indicates that the time allocation of hours spend in jobs is a strong mediator within the lines of study loans and study progress.

How the implementation of the SLS has affected study progress remains ambiguous. Based on our findings, it has affected study progress to a certain extent, yet not necessarily negatively. Our results indicate that students not only work more, but they also study more. And, as shown in our statistical analysis, there is a trade-off relationship between the time allocation of jobs and study. Students with loans who choose to study more and work less will likely have more study progress than those who choose to work more and study less.

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Attachments

*Descriptives based on dataset from ResearchNed - HBO students

	Included		Excluded		Total	
	N	Percent	N	Percent	N	Perce
Uren zelfstudie * Jaar	29557	88.4%	3872	11.6%	33429	100.
Contacturen op instelling * Jaar	30100	90.0%	3329	10.0%	33429	100.
Uren betaald werk * Jaar	30008	89.8%	3421	10.2%	33429	100.
Studievoortgang * Jaar	31587	94.5%	1842	5.5%	33429	100.

Report

Jaar		Uren zelfstudie	Contacturen op instelling	Uren betaald werk	Studievoortgang
2011	Mean	15.1571	15.8036	7.8844	87.2247
	N	8251	8405	8389	8827
	Std. Deviation	10.23931	10.41394	7.85470	23.51442
2012	Mean	16.1247	16.9510	7.3868	87.4419
	N	3572	3669	3683	3866
	Std. Deviation	10.16936	10.82900	7.39372	22.43336
2013	Mean	15.7519	16.1449	8.0573	89.5591
	N	6816	6915	6871	7339
	Std. Deviation	10.35472	10.34242	7.58222	24.08622
2014	Mean	15.7159	16.3491	7.8959	88.0000
	N	5156	5240	5227	5614
	Std. Deviation	10.31161	10.40842	7.73248	22.53612
2015	Mean	14.8238	15.9995	7.9687	90.0123
	N	5762	5871	5838	5941
	Std. Deviation	9.99578	10.18963	7.68342	22.24374
Total	Mean	15.4437	16.1550	7.8813	88.4558
	N	29557	30100	30008	31587
	Std. Deviation	10.23192	10.41014	7.68451	23.14060

*Descriptives based on dataset from ResearchNed – WO students

	N	Percent	N	Percent	N	Percent
Uren zelfstudie * Jaar	41813	91.3%	3966	8.7%	45779	100.0%
Contacturen op instelling * Jaar	41969	91.7%	3810	8.3%	45779	100.0%
Uren betaald werk * Jaar	42707	93.3%	3072	6.7%	45779	100.0%
Studievoortgang * Jaar	40379	88.2%	5400	11.8%	45779	100.0%

Report

Jaar		Uren zelfstudie	Contacturen op instelling	Uren betaald werk	Studievoortgang
2011	Mean	17.4033	13.9995	6.1006	83.4865
	N	11803	11879	12104	11706
	Std. Deviation	10.56513	9.85366	6.96001	23.76035
2012	Mean	17.5053	15.3008	6.0482	84.4501
	N	7186	7274	7392	7195
	Std. Deviation	10.46351	10.32615	6.91774	22.74091
2013	Mean	17.7086	14.5431	5.8772	87.4305
	N	8241	8248	8379	7874
	Std. Deviation	10.65035	10.05855	6.74357	23.90697
2014	Mean	17.6918	14.3107	6.0060	88.9439
	N	5898	5887	6025	5636
	Std. Deviation	10.47075	9.77402	6.62009	23.44789
2015	Mean	17.0768	14.2625	6.1719	89.2216
	N	8685	8681	8807	7968
	Std. Deviation	10.36790	9.65451	6.75673	23.66428
Total	Mean	17.4539	14.4299	6.0491	86.3207
	N	41813	41969	42707	40379
	Std. Deviation	10.51258	9.93533	6.82185	23.67004