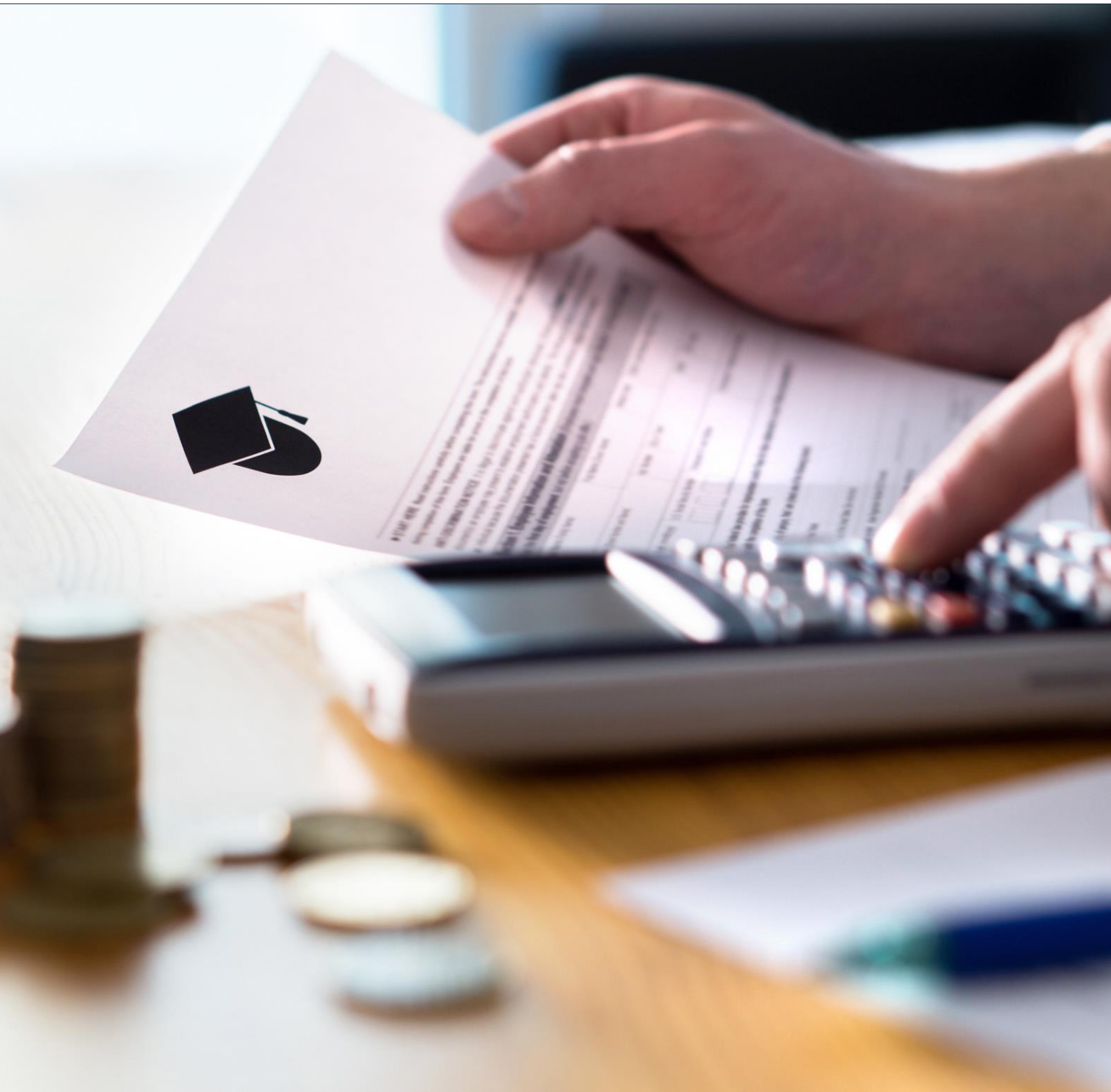
E4S White Paper

University Tuition Fees and Student Outcomes: Literature Review from a Swiss Perspective



University Tuition Fees and Student Outcomes: Literature Review from a Swiss Perspective

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1. Executive Summary

The Swiss government proposes to increase university tuition fees. How will this affect students?

The Swiss federal government is considering a significant increase in university tuition fees. The stated aim is to shift a greater share of higher education costs to "users", away from taxpayers. Under this proposal, fees for Swiss students would double, while international students would face a fourfold increase. This measure is expected to generate up to CHF 198 million in budgetary savings by 2030, or some 0.2% of federal expenditure. The proposal has raised concerns about the potential impact on student enrolment and equality of access to higher education.

Overall enrolment at public universities is largely insensitive to fee levels

A comprehensive review of the empirical literature suggests that the price elasticity of demand for places at public universities is close to zero. However, there is some heterogeneity across demographic groups:

- *Low-income students*: This population can be expected to be more price sensitive, but targeted financial aid has proven to be an effective tool for mitigating the impact of higher fees on disadvantaged students.
- *High-income students*: This group has been shown in some contexts to be more likely to consider alternative education options when fees are raised, including studying abroad.
- *Gender composition*: Some studies find a higher price sensitivity of male students. This could imply a further increase in the proportion of female students at Swiss universities.

Higher fees can prompt greater academic effort

The international empirical evidence indicates that tuition fee increases can affect the behaviour of students once they are enrolled. These effects include:

- *Greater academic effort*: Students tend to allocate more time to their studies.
- *Faster completion rates*: Higher fees create incentives to graduate on time.
- *Shifts in subject choice*: Increased fees may discourage enrolment in fields with lower post-graduation income prospects.

While these effects have been shown to exist, none of them was found to be quantitatively large.

Financial support to disadvantaged students can neutralise regressive effects

Analyses of large-scale fee changes in the UK and Ireland show that means-tested grants and student loans can maintain equitable access to higher education despite increases in tuition fees.

In England, a combination of fee hikes and enhanced grant and loan schemes was found on balance to favour a slightly higher representation of students from disadvantaged backgrounds.

If implemented in Switzerland, a compensating increase in the generosity and accessibility of financial support could likewise ensure that fee increases do not disadvantage low-income students.

Educational inequalities are mostly shaped before students reach university age

The available research suggests that inequality in university access by family background is almost entirely predetermined by student outcomes at the primary and secondary school levels. Tuition fees play a comparatively minor role.

Nevertheless, a uniform increase in Swiss university fees would risk exacerbating such inequalities. Offsetting changes in the accessibility and generosity of means-tested support would therefore be key to safeguarding equitable access to higher education.

2. Introduction

Around the world, the cost of third-level education is borne in widely differing proportions by the public sector, by private benefactors, and by students themselves. The Swiss model primarily relies on public-sector funding, with a comparatively small contribution of student fees and an even smaller share of private donor funding. Domestic students, on average, pay fees of CHF 790 per semester, with tuition fees contributing some 3% of university funding (Frey *et al.*, 2019). This is a low funding share in international comparison.[1]

At a time of increased demands on the Swiss federal-level public finances, the government is evaluating a proposal whereby higher education should be increasingly "user funded" through higher tuition fees. Specifically, a government-appointed expert committee recommends that tuition fees at public universities be doubled for Swiss students and quadrupled for foreign students. The federal government's financial contribution should be cut accordingly (Gaillard *et al.*, 2024). According to the committee's own estimate, such a measure could allow for budgetary savings of CHF 198m by 2030, corresponding to 0.2% of federal expenditure.

The committee's report stipulates that "the excellent education offered by the universities could be billed to a larger degree to students", and that the raise should be larger for foreign students, because "their human capital also benefits foreign countries" (Gaillard *et al.*, 2024, p. 27).[2] No further economic arguments are provided, nor does the report attempt to compare benefits with costs.

The aim of this brief literature survey is thus to summarise the findings of academic research on the implications of higher tuition fees, with a view to the economic and institutional situation of Switzerland.

The paper is divided into three main parts. In Section 3, we review the literature that seeks to quantify the price elasticity of overall demand for university equation, i.e. the effect of tuition fees on student enrolment. In Section 4, we focus on the distributional dimension by considering differential effects according to socio-economic background, and the effects of means-tested support. We then take enrolment as given and, in Section 5, survey the literature that explores the effects of tuition fees on various student outcomes including degree completion and subject choice. Section 6 concludes.

[1] According to the OECD (2024, p. 297), the average share of expenditure on public universities coming directly from households is 11% across OECD countries and 7% in the EU25 – with a minimum of 0% in Denmark and Norway and a maximum of 45% in Australia. Unfortunately, these statistics do not cover Switzerland, which is why a precise comparison is not possible.

[2] Our own translations from the French version of the report.

3. The Price Elasticity of Demand for University Education

From the point of view of a prospective student, an increase in tuition fees can be viewed as a rise in the price of higher education. If the standard law of demand holds, such a price increase will reduce the quantity demanded: university enrolment will drop. The magnitude of this effect is usually expressed as an elasticity, i.e. as the percentage change in the demand for university places relative to a certain percentage change in tuition fees. An elasticity of zero would imply that enrolment is completely insensitive to the level of fees. The more negative the elasticity, the more sensitive enrolment is to tuition fees.[3]

A sizeable empirical literature has attempted to estimate this elasticity. This literature has been reviewed in a comprehensive and careful meta-analysis by Havranek *et al.* (2018). The authors subjected 443 estimates provided by 43 studies to a systematic analysis. In doing so, they accounted for publication bias and weighted studies by their methodological quality and impact.[4] As no high-quality empirical studies have been published since that meta-analysis, we consider the Havranek *et al.* (2018) paper still to provide the most comprehensive summary of the existing evidence.

The Havranek *et al.* (2018) "best-practice" estimate of the price elasticity of demand for places in public universities is 0.003 [95%CI: -0.033, 0.039].[5] Taken at face value, this estimate implies that a doubling of tuition fees, i.e. an increase by 100%, would lead to a change in enrolment of between -3.3% and +3.9%.

Statistically speaking, this is a quite precisely estimated zero effect. Or, in the words of the authors: "the correct interpretation of our analysis is that, judging from the available empirical research, our best guess concerning the effect of tuition on enrolment is close to zero" (Havranek *et al.*, 2018, p. 1174). They find this effect to be stable over time and across a number of robustness checks.

However, the Havranek *et al.* (2018) "best-practice" estimates are not zero in all cases. With respect to private universities, the authors report a statistically significant elasticity, their "best-practice" estimate being -0.17 [95%CI: -0.19, -0.14]. This implies that a doubling of fees by private universities reduces enrolment by between 14% and 19% on average. For MBA programmes, they find even stronger effects.

The meta-study also reveals a significant gender gap, with male students seemingly more price sensitive than female students. The reported elasticity estimates are -0.36 [95%CI: -0.53, -0.19] for men and -0.02 [95%CI: -0.12, 0.09] for women, public and private universities considered together. The authors speculate that this difference may be explained by female students having a higher

[3] Positive elasticities would violate the law of demand but are possible in theory. If fees were perceived as a signal of quality and/or status, then higher fees could, up to a point, raise the demand for university places. While such a mechanism undoubtedly exists at the level of individual institutions and programmes, it is unlikely to apply to the public university system as a whole.

[4] Havranek *et al.* (2018) provide prima facie evidence of publication bias in this literature, based on a strong left skew in the distribution of reported elasticity estimates. They attribute selective publication to "the common preference of authors, editors and referees for results that are intuitive and statistically significant" (p. 1147), and they correct for it statistically following Stanley (2008). Heterogeneity in the elasticity of university enrolment with respect to tuition fees could also introduce left skew. Indeed, correcting the published figures by the type of university and year in which the paper was published reduces the left skew somewhat but does not eliminate it. None of the underlying studies used any data relating to Switzerland.

[5] The probability that the estimate lies in the interval [-0.033, 0.039] is 95%. See Table 5 in Havranek *et al.* (2018).

rate for return from university education, but they do not present substantive evidence on the underlying mechanism.[6]

These results suggest that an increase in tuition fees in Switzerland would be unlikely to reduce demand for university places to any significant extent, but it could further tilt the gender composition of the student body towards women.[7]

[6] For this interpretation, they refer to Mueller & Rockerbie (2005), who, in an analysis of applications to Canadian universities, also found significant evidence of men being more price sensitive than women. In a qualitative literature survey, Dynarski *et al.* (2023, p. 271) however observe that "some studies find larger effects for men or women, the patterns are not consistent across the literature".

[7] According to the Swiss Federal Statistical Office, women accounted for 52.0% of the student body in 2023-2024 (https://www.bfs.admin.ch/bfs/en/home/statistics/education-science/pupils-students/tertiary-higher-education-institutions/universities.html, accessed 01/02/25).

4. Heterogeneity across Socio-Economic Groups

The meta-study of Havranek *et al.* (2018) leaves out a crucial policy-relevant dimension: the heterogeneity of tuition-fee effects by socio-economic status (SES). Do higher tuition fees affect the demand for university places differently among young people from low-income households compared to their peers from high-income households?

In economic terms, this is a question about credit constraints (Carneiro & Heckman, 2002). At a first approximation, higher tuition fees will impose a greater financial burden on low-SES students than on high-SES students. In reality, however, tuition fees are typically associated with financial support schemes targeted at low-SES applicants. If higher fees are fully compensated by more generous means-tested grants, then a raise in tuition will in effect improve the relative financial accessibility of higher education for low-SES applicants.

An extensive literature documents how grant support targeted at low-SES applicants increases enrolment and improves educational outcomes for the beneficiaries (for a recent survey, see Dynarski *et al.*, 2023). In France, for example, Fack and Grenet (2015) show that means-tested student grants increase enrolment and completion rates by more than 5 percentage points per EUR 1,500. In a similar study for the UK, Dearden *et al.* (2014) find that a GBP 1,000 increase in grants targeted at low-SES students leads to a 4 percentage-point increase in enrolment. Solis (2017) provides causal evidence that access to college loan programmes in Chile significantly boosts college enrolment rates. The study shows that government-backed loans boost enrolment by low-SES students particularly strongly.[8]

In contrast to programmes targeted at low-SES students, policies that affect primarily high-income families, such as tax credits or saving incentives, have not been found to affect higher-education enrolment (Dynarski *et al.*, 2023). However, survey-based evidence points to high-SES students being more open to considering lower-cost options abroad (Wilkins *et al.*, 2012).

Probably the most prominent such policy change has been implemented in England, where tuition fees were raised from zero in 1998 to GBP 9,000 in 2012. This increase in the sticker price was accompanied by a system of student loans covering the full fee amount and means-tested grants to low-income students. The stated aim of these reforms was to shift the burden of higher-education funding from taxpayers to the beneficiaries, i.e. to students themselves. Accordingly, the share of higher-education costs covered by public expenditure fell from 80% in 1995 to 25% in 2011 (Azmat & Simion, 2018). In that sense, the reforms were motivated by the same concerns as the proposal currently being discussed in Switzerland.

Empirical analyses detect “only very modest effects of the reforms, [...] which contrast with the large budget savings” (Azmat & Simion, 2018, p. 3). The fee increase from GBP 1,000 to GPB 3,000 in 2006 is found to have led to a 1% decrease in enrolment, while the increase to GBP 9,000 in 2012 is not found to have affected enrolment significantly (Azmat & Simion, 2018). Slight reductions in enrolment are observed for the highest SES groups only, while participation by students from lower SES groups was unaffected or even slightly increased. In a more descriptive analysis covering all three reform steps, Murphy *et al.*

[8] To be eligible for those loans, however, Chilean students needed to achieve a good score in a nationwide university admission test. Performance in such tests is strongly negatively correlated with SES. Hence, targeted support programmes that are conditional on pre-university academic achievement can only eliminate a limited part of the inequality of access to higher education. See also our discussion of the evidence on reforms in England and Ireland below.

(2019) likewise observe a slight increase in the participation share of low-SES students.

The academic literature also offers evidence on the reverse policy experiment: an abolition of tuition fees. This path was chosen by Ireland in 1996, when fees were dropped from EUR 3,380-6,045 (depending on the field of studydiscipline) to zero for all Irish students and students from other EU countries.[9] The stated aim of the reform was to improve the chances of low-SES students progressing to university. However, Denny (2014), using survey data on some 5,000 randomly sampled school leavers, finds that "the abolition of fees did not change the effect of SES on university entrance" (p. 32).

The abolition of fees in Ireland was regressive in the sense that it reduced the price of higher-education more strongly for high-SES students than for low-SES students, as the latter had previously benefitted from means-tested grants. Why did the composition of the student body nevertheless not change? Denny (2014) offers an explanation: university entrance was largely predetermined by secondary school outcomes. While university enrolment is significantly positively correlated with SES status, this correlation vanishes once one controls for secondary-school attainment. In that respect, the Irish experience is consistent with observations based in the context of increased tuition fees in England. In a panel analysis using administrative data on a million school leavers, Chowdry *et al.* (2013) conclude that "poor achievement in secondary schools is more important in explaining lower higher-education participation rates among pupils from low SES backgrounds than barriers arising at the point of entry to higher education".

In systems that combine tuition fees with means-tested grants, therefore, the available research suggests that heterogeneity in university access by SES status is almost entirely predetermined by student outcomes at the primary and secondary levels, with a negligible effect of tuition fees.

[9] We report 1996 Irish pound prices as converted into 2013 Euro prices by Denny (2014).

5. Effects of Tuition Fees Conditional on Enrolment

Tuition fees could conceivably affect not only participation but also student behaviour conditional on participating. Outcomes of interest include study effort, duration of studies, degree completion rates, subject choice, and post-university labour-market trajectories.

In their literature survey, Dynarski *et al.* (2023) conclude that "financial aid can [positively] impact a wide range of outcomes, from initial entry, to persistence and degree completion, to postgraduate degrees, and later-life earnings". This conclusion, however, concerns only targeted support to low-SES students, and not the effect of fee levels overall.

Looking at detailed data for England, Azmat & Simion (2018) find that higher tuition fees led to improved completion rates overall but increased dropout rates for students from lower SES backgrounds. Their "overall most compelling finding", however, is "that these extensive reforms in funding higher education had only a small overall economic impact on student enrolment and other outcomes, with little distributional effect" (p. 4). This is quite a remarkable conclusion in view of the large scale of the university funding reforms undertaken in England.

Bietenbeck *et al.* (2023) exploit a reform in some German Länder, where fees were introduced after a court ruling in 2005 even for students who had already enrolled. This allows for a particularly clean statistical identification of "intensive-margin" effects, conditional on enrolment.[10] This study finds significant effects. For instance, degree completion rises by 2.8 percentage points for students who had to pay up to EUR 1,000, and by 5.9 percentage points for students with fee costs of up to EUR 4,000. When looking at the mechanism that leads to these outcomes, the authors find that fee-paying students expend more effort, by dedicating 11% more time to their studies.

On this issue, we can also draw on a peer-reviewed study that is based on Swiss data. Similar to Bietenbeck *et al.* (2023), Fricke (2018) explores the effects of an increase in tuition fees that occurs once students have already enrolled. In spring 2012, the University of St. Gallen unexpectedly raised tuition fees by 80% (CHF 950) for foreign students and by 20% (CHF 200) for Swiss students. As Fricke (2018) points out, these were relatively modest fee increases, in the sense that they represented no more than 8% of students' previous expenditure, estimated at around CHF 12,000 per semester. Based on a combination of survey data and administrative data, Fricke (2018) finds that students funded the fee increase almost entirely through reduced consumption that was unrelated to academic achievement, with no statistically significant effects on study duration, graduation rates, and grades. In the context of the German fee increases, Thomsen & von Haaren-Giebel (2016) similarly observe that students mainly reduced their expenditure, especially on rent and food.

One outcome not considered by the studies surveyed so far is subject choice. On this too, we can draw on empirical evidence. Sá (2019) studies the increase in tuition fees of English universities from GBP 3,375 to GBP 9,000 in 2012 – a reform that contained also corresponding changes to loans and means-tested grants. Sá (2019) detects a drop in demand for courses that on average lead to lower earnings after graduation (mainly Arts and Humanities), and she finds that demand for places in STEM fields and at more selective universities was essentially unaffected.

[10] In the jargon of the economic literature, the participation decision is often referred to as the "extensive margin", whereas different outcomes conditional on participation are referred to as "intensive margins".

In a recent paper, Yong *et al.* (2023), study the effect of differentiated tuition fees by field of study in Australia. They find that demand for places in specific fields responded negatively to idiosyncratic increases in field-specific tuition fees, but that "the response elasticity is not particularly large" (p. 3). The identifying variation was considerable, with field-specific changes in fees ranging from -59% to +117%. Yet, the authors estimate that only 1.5% of students changed their choice of field relative to a counterfactual with unchanged fees.

Intrinsic preferences for study fields seem to be strongly held and therefore respond only weakly to changes in tuition fees. Such an apparent insensitivity to financial incentives can be rationalised economically, as tuition fees paid during one's university years are typically only a small fraction of the expected life-time income (and professional satisfaction) that is at stake (Fricke, 2018).

6. Conclusion

This paper summarises the empirical literature on the implications of higher university tuition fees, with a view to contributing to ongoing policy discussions in Switzerland.

Our review suggests that an increase in tuition fees is unlikely to significantly reduce university enrolment, especially if financial aid programmes are in place to offset the additional fee costs for students from lower-income families.

Tuition fees may have small effects on overall enrolment, but they can affect student outcomes once enrolled. There is some evidence that higher fees are associated with more effort, faster completion, and lower consumption expenditure. The evidence also indicates that financial considerations can impact student decisions regarding the field of study, with cost-sensitive students potentially avoiding disciplines perceived to offer lower financial returns. Such effects have been found to exist but to be of relatively small magnitude.

Drawing on international experiences from the UK, Ireland, and Germany, we conclude that the proposed tuition fee increases in Switzerland would have limited if any effects on overall enrolment rates. However, they could exacerbate inequalities for low-income students unless they are accompanied by corresponding increases in means-tested support. While the empirical literature shows that most educational inequalities are already shaped at the primary and secondary school level, a uniform increase in university fees would risk exacerbating them further. Offsetting changes in the accessibility and generosity of means-tested support have been shown to effectively "neutralise" the potentially regressive effects of higher tuition fees and thereby to safeguard equitable access to higher education.

One issue our survey has had to leave unaddressed is a tuition fee increase specifically on international students. According to current policy proposals in Switzerland, fees would be raised significantly more for international students than for national students. To our knowledge, rigorous empirical evidence exists neither on the specific price elasticity of enrolment by international students nor on the implications of two-tier fee structures for the host universities.[11] This would be a worthwhile area for future research.

[11] Beine *et al.* (2020) find that enrolment of foreign students correlates negatively with tuition fees charged by Italian universities, but their reported effects are identified only cross-sectionally. Vortisch (2024) studies the effect of changes in fees on international students in a German region, but he can consider only student flows from outside the European Union.

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