# Research Plan

[Notes]

* put in support from literature
* filling logical gaps
* expand the story with more details

## 1. Introduction

[general intro here]

## 2. Chapter 1

### 2.1 Background and Motivation

[insert something bigger here]

The tuition fees of public universities often depend on the level of financial support from governments. Therefore, studying the effect of tuition policy plays an important role in evaluating the efficiency of financial fund utilization and determining the direction of financial fund investment. [logical gap here] The tuition fees of public universities often directly depend on the amount of financial investment. In the past few decades, the tuition fees of public universities around the world have undergone some changes, among which the most discussed ones include England‘s introduction of tuition fees in 1998, several German states introducing fees in the early 21st century and abandoning them about a decade later, and so on. Many of these major policies shift the systems away from or into being free. However, in real life, what we face more are adjustments in levels of tuition fees, rather than the introduction or cancellation of them. In this article, we explore how changes in tuition fees will have an impact.

### 2.2 Objectives

The 2008 financial crisis in the United States spread to the world, leading to the largest global economic crisis in decades. European countries were greatly affected, and many governments fell into difficulties. The Spanish government, in order to reduce expenses, had to increase university tuition fees in the following years. This change was nationwide. The price changes in Catalonia occurred between 2010 and 2012; before and after this period, the university tuition fees in the region remained relatively stable, providing us with an ideal policy change for our research. Taking advantage of this change in tuition fees, we attempt to find out whether the increase in tuition fees has an impact on students' behaviors in the university: Will increased tuition fees incentivize them to work harder so as to graduate as quickly as possible, or does the increase in costs cause more pressure psychologically and actually have a negative impact, or students are not concerned about changes in tuition fees so that their behaviours will not change significantly?

[insert line chart here]

Besides, in Catalonia, the tuition levels for enrolling in a course for the first time and for subsequent repetitions of the same course are different. Before 2010, such differences were not significant [try to quantify it here]. However, after the policy change, the highest price per credit for retaking a course (for the fourth and subsequent times of repetition) has become almost four times the price for the first enrolment. In this situation, we are able to further explore the performance of financial investment in higher education. Does reducing the subsidy level for course repetitions and increasing the cost of retraining for students motivate them to make greater efforts so that they retake fewer courses? Does it prompt students to complete their studies faster and reduce the proportion of delayed graduation?

### 2.3 Expected Contribution

[contribute to intuition fees] Since the last century, economists have been paying attention to the impact of financial incentives on students [citing earlier articles], but a large portion of existing papers have studied the impact of various aids and scholarships (such as xxxx). Logically speaking, tuition fees are primary and subsidies are secondary. (?) Yet, there is no consensus in the academic community on the causal relationship between changes in tuition fees and student behaviors and performance. This is mainly because, compared to the introduction of aids and scholarships, tuition fees are more difficult to change due to procedural complexity, especially for public universities whose fees are strictly regulated by laws. Thus there are relatively few available policies to explore. This chapter exploits the changes in tuition fees in the Catalan region to study the impact of tuition increases and decreases on students, and contributes to the study of how tuition fees affect student behaviors.

[contribute to analyzing the intensive margin] Using the data from a single university, we examine the intensive margin. In previous research, many studies have been devoted to exploring the extensive margin. According to a meta-analysis of the literature by Havranek et al (2017), although most research reports that increasing tuition fees would lower enrollment rates, after adjusting for publication bias, this mean effect has become close to zero. For the intensive margin, the results are not as clear...

Using data from different undergraduate programs, we are also able to explore the heterogeneity among subjects with different characteristics in the face of the reduction of financial resources the university receives. For instance, disciplines with heavier reliance in experiments will probably suffer from a negative impact in student outcomes; disciplines with closer connections with the economic sector outside of universities might experience a negative effect in student performance as students may react to the increasing tuition fees by spending more time in doing part-time jobs (or maybe students in such disciplines are less affected because they can compensate for this increase by working part-time more easily).

### 2.4 Identification Strategy and Data

#### 1) Data

We use the administrative data from the University of Barcelona (UB), which provides a detailed record of the academic performance of undergraduate students before and after the change in tuition fees. The sample consists of all students who enrolled at UB from 2007 to 2017. Our data includes their course selection, grades, retakes, and graduation dates. It also incorporates the background information of students recorded during the pre-enrollment process, as well as their performance in the college entrance examination.

The main outcome variables we use to indicate academic behaviors include: 1) grades a student obtained, 2) number of enrollments for a course before passing it, 3) number of courses a student enroll in, and 4) a dummy indicating whether a student passes a course for each time of enrollment, among others. These outcomes help us to identify effects in the intensive margin, which is our main target in this research as described in previous sections. Besides, we also investigate the drop-out and completion rates, as well as pre-enrolment characteristics such as relative performance in the College Entrance Exam, which complements our main analysis by looking at the extensive margin.

#### 2) Methodology

a. Diff-in-Diff

In order to identify how such a policy shock in tuition fees affects students performance, we use the staggered Difference-in-Difference method as our baseline model:

where denotes the outcomes as defined above for individual in cohort at the -th year of study, indicates whether this individual is exposed to the rise in fees, captures the fixed effects for different years of study, captures the fixed effects for cohort , and is a vector of characteristics of individual . We assume that, in the absence of the rise in tuition fees, the pattern of evolution of students' behaviors as they proceed to higher years of study does not change across cohorts, while the absolute levels of performance may change from cohort to cohort. This assumption lays the foundation for identifying the casual effects of the policy change in tuition fees using the above specification. To illustrate, an individual in the 2008 cohort (), was affected by the sharp increase in tuition fees in the academic year 2010/11, which is the third year of her university study (). Therefore, our regression will capture any possible changes in her performance from the second to the third year, which, when compared to that of another individual in the 2007 cohort from his second to third year, will lead us to the effect caused by the rise in tuition fees.

(To disentangle the effect for extra punishment of failure: In academic year 2010/2011, there is a sharp increase in third-time enrollment for the same course, while the fees for the first and second registrations do not change significantly compared to previous years. Thus, by using a Diff-in-Diff or event study, we can separate the effect of the extra costs on failing for the third and subsequent times. That is, we compare academic performance of students in different cohorts exposed to the first rise in tuition fees in 2010/11 in their different years of study.)

b. RD in Time

### 2.5 Pilot Results

## 3. Chapter 2:

### 3.1 Motivation

### 3.2 Objectives

### 3.3 Expected Contribution

### 3.4 Identification Strategy and Data

## 4. Chapter 3:

### 4.1 Motivation

### 4.2 Objectives

### 4.3 Expected Contribution

### 4.4 Identification Strategy and Data

## 5. Data Management Plan

1. Data Summary
2. FAIR data
   1. Making data findable, including provisions for metadata
   2. Making data openly accessible
   3. Making data interoperable
   4. Increase data re-use (through clarifying licences)
3. Allocation of resources
4. Data security
5. Ethical aspects
6. Other issues

Which data will be produced, gathered, observed, reused and in which formats or how existing data will be reused.

How data will be processed, stored and preserved.

When data will be accessible and who could access to data.

The responsible for the data and the rights holder.

How ethical questions have been taken into account

How data will be reusable

**Need to answer:**

Do you use personal or sensible data?

Is your storing facility safe?

Are you using standard formats?

Will your data be understood?

Are you authorised to reuse existing data?

Are you sharing your data with your colleagues?

Are you going to publish your data?

When, where and how?

## 6. Work Plan

[insert Table 6.1 Work Plan here]

As Table 6.1 shows, the research of my PhD thesis will involve conducting the three chapters with a simultaneous and slightly staggered approach. Due to some administrative reasons, I commenced my PhD studies in February 2023; the subsequent research progress will be planned out in light of this situation. Currently, my primary focus has been on the first chapter, which is co-authored with both of my supervisors. We have summarized and reviewed the relevant literature, and are processing the data and obtaining some preliminary empirical results. Additionally, I have formulated research questions to be explored and addressed in the next two chapters and reviewed the key literature, and presented possible strategies and datasets to be used, while this still requires detailed consideration and examination in the following years.

For the academic year 2023/24, my plan entails, first, completing the first chapter and presenting it at international conferences that cover the economics of education. Second, I plan to spend a relatively substantial amount of time on the empirical analysis of the second paper. The objective is to finalize the core content by the conclusion of the second year. In the meantime, pertinent to the third chapter, I will proceed to examine in a more careful manner possible datasets and empirical strategies. For the academic year 2024/25, the plan is to finish drafting my second chapter at the beginning of the year and attend relevant conferences for presentations. Concurrently, I will advance the progress of the third article, with a predominant focus on the empirical analysis component. The writing and presentation aspects of the third article will also primarily be completed by the end of the third year.