Understanding EPF Tuition Fee Raise

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Abstract

The idea of the project is to gain insight about why the EPF (both Lausanne and Zurich) will raise their tuition fee. Tuition fees raise are a source of great debate. We can understand that, in order to provide higher quality teaching, universities need more money. However, we can also understand that wealth should not be the criterion to access higher education.

1 Introduction

By analyzing the evolution of the different costs, the different funds, the number of students, the number of graduate, the number of scholarships, the number of staff and the projection of future number of students in the Swiss universities. Thanks to the Federal Institute of Statistics we have all those datasets available and detailed by canton. We will investigate for links explaining the need for greater fund from the students and whether the different cantons or domain of study have different schemes.

Our research questions follow two direction :

1. Economic aspect of undergraduate studying in Switzerland
   - What is the trend of the costs of universities?
   - How does the repartition between private and public funds evolve?
   - Are the number of staff and the number of students correlated?
   - In what criteria do the EPF situation differ from the Swiss universities situation?
2. Tuition Fee related information
   - Should the Tuition fee depend on your domain ?
   - Can we relate the Tuition Fees evolution to the Research funds and Confederation funds ?
   - Should we differentiate Swiss students from international students regarding tuition fees ?

2 Related Work

The related work is basically the articles we can find online about the tuition fee raise. Regarding the numbers we found the annual report and financial report of EPF schools, they present tables with detailed accounting.

3 Data Collection

In order to have official data we went looking on the Swiss data platform opendata.swiss, there in the Education and Science category we found many interesting file regarding our project.

The datasets that we used represented the scholarship numbers, the scholarships amounts, the cost coverage, the financial sources, the costs, the number of staff, the number of students and the prediction of future number of students. You will find in the Github repository for this project more details on where to get this datasets.

The files all come from the OFS (Office Federal de la Statistique). They are in a format called PC-AXIS. We found online a Python module that converts PC-AXIS files to Pandas Dataframes, which is the format we are used to.

4 Data Description

Among all the files we make the assumption that the data is not highly correlated with the field of study. We then can group the data upon this criterion. This helps us keep all the different universities in the process as some of them might not provide every field of study.

In order to deal with the difference is size and range of fields of the different universities we decided to consider the average value over all the universities. We compare this average value with the average value amongst both EPF.

4.1 Data content

File	Year Range	Categories
Financial sources	1995-2016	Tuition Fees, University, Canton, State, Projects/Research
Cost	2003-2016	Exploitation, Personnel, Buildings
Job costs	2010-2015	Teaching, Services, Research/Development
Scholarships	2004-2016	Cantons and level of diploma
Entering Students	1992-2016	Swiss or Foreigner
Number of scholarships	2004-2016	Cantons and age class
Students	2010-2015	Swiss or foreigner
Prediction of students	2015-2025	3 scenari, diploma level and Swiss or foreigner
Staff	1994-2016	Professors, Teachers, Scientists, Direction

Table 1: File description

4.2 Summary Statistics

Here is a summary of the conclusions that we reached for Milestone 2.

1. Charge-revenu (financial sources) : The different funds evolutions are similar between universities and EPFs, except EPFs don't get funds from the canton.

2. Charges (costs) : Personnel cost is rising a lot more in the EPFs. For both Building and Operating costs we see that the EPFs have a higher raise than the universities too.

3. Cout-revenu (job costs): Though all Teaching, Services and Research costs are higher in EPFs, only Research costs have a significant raise for EPFs.

4. Diplomes-bourses (Scholarships): The scholarships in Vaud and Zurich have a greater amount then the national average. We also see that they are more frequent.

5. Etudiants-entrant (Entering Students at Bachelor Level): We see that the number of students in EPFs has a raise around 70% between ??? and 2016. However the universities have a raise of about 35%.

6. Nb-bourses (Number of scholarships) : Although the national average number of scholarships seems to decrease slowly, it seems that in Vaud the number remains constant.

7. Nb-etudiants (Students) : As said before, the EPFs have a considerable raise (80%) of students where universities have only 55%. This could mean that many students enter at Master level.

8. Pred-etudiants (Prediction of students) : We can see that the predictions for Swiss students defer mainly in magnitude, even if it seems that EPFs are looking toward a greater raise up to 2018. About the foreign students, we can see that EPFs are waiting for more and more of them.

9. Staff (Staff) : We can see that, today, EPFs have about 3 times more staff than universities. However both universities and EPFs seem to have almost doubled the number of staff. For both, professors are the major part.

5 Method

In order to answer our research questions, we applied the following principles. First, we identified which data we needed to use, meaning which files to cross-examine. Then we started from a naive analysis and drew a first intuition. Afterwards we provided a deeper analysis, confirming or contradicting this first intuition. We also spent some efforts trying to determine which form of visualization was the most suited.

Regarding the visualization rules that we applied in this project, we set that data representing EPF data will be in red and universities data will be in blue. If not mentioned otherwise, we set every y-axis to start from zero so that we prevent details to be very visible simply because of the zoom.

6 Results and findings

Regarding the funds, they are highly dominated by the confederation. Currently the Tuition Fee from the students represent about 1.2% of the confederation funds (see notebook Milestone 3- 3.2). In second position we find the funds for projects and research which are not related to the students experience.

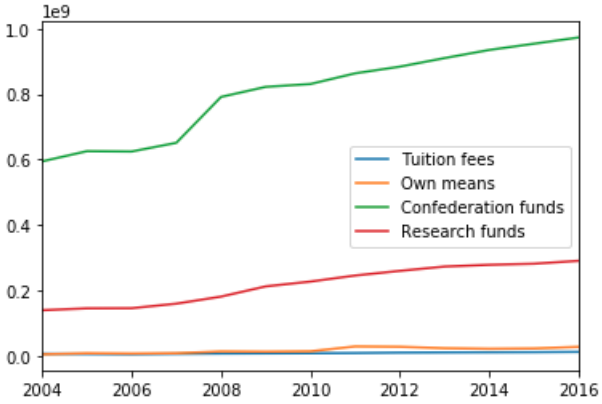

Figure 1: Evolution of funds for EPFs by category

About the repartition between private and public funds, we see that the public funds provide more and more since 2007. The EPFs have about three times the amount of public funds of the universities however the amounts of private funds are comparable (see notebook Milestone 3- 2.2).

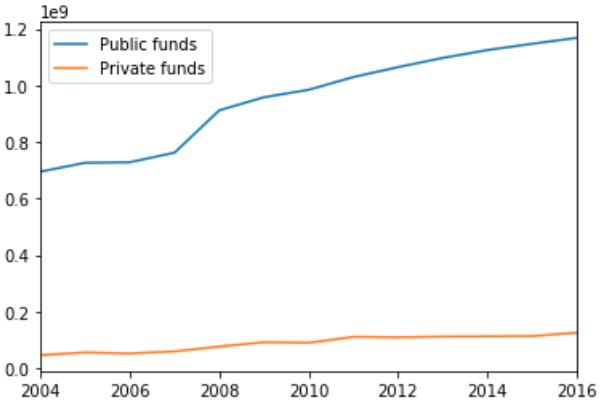

Figure 2: Evolution of public and private funds for EPFs

The costs are raising at a stable rate, except for the building costs that had a major raise in 2007. The major cost is for the personnel charges. When showing the evolution of total costs and total funds it seems to be very close with a constant gap (see notebook Milestone 3- 1). Digging deeper we can see that the negative balance grows every year of about a half million, according to the trend curve.

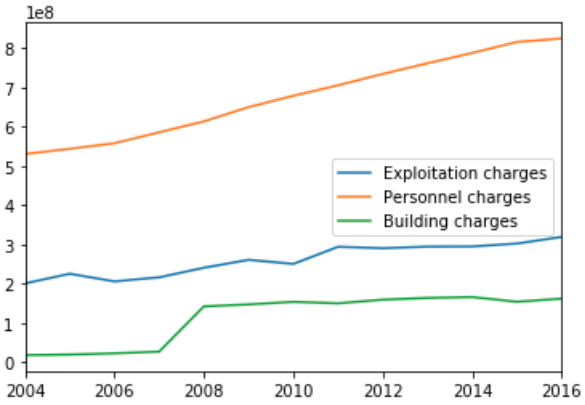

Figure 3: Evolution of costs for EPFs by category

The affluence of students at EPFs is raising, this is particularly true for foreign students since 2007. Indeed we saw that the predictions of number of students did not capture the attraction factor of EPF for foreign students (see notebook Milestone 3- 3.3). Having more students, we can understand the raise of staff (see notebook Milestone 2- 10) and more building costs for eventually renovation or construction. Hence we don't see abnormal raise in costs.

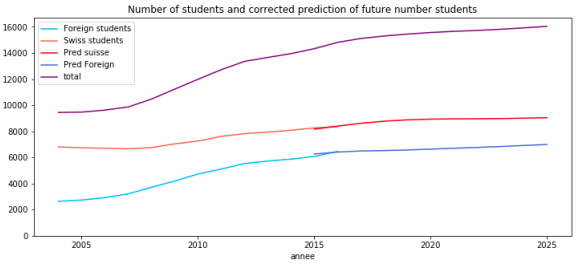

Figure 4: Evolution of number of students for EPFs with predictions

The current gap between the funds provided by the confederation and the EPFs and the cost per student is around 20'000CHF (see notebook Milestone 3- 1). As a measure, the current Tuition Fees covers about 6.8% of this gap (see notebook Milestone 3- 1).

This could imply that students have to participate more. With the proposed raise, the Tuition Fee would represent about 1.7% of the confederation funds (see notebook Milestone 3- 3.2) and about 9.4% of the gap between funds and costs (see notebook Milestone 3- 1). We would like to attract the attention toward the fact that the number

of scholarship in Switzerland is decreasing (see notebook Milestone 3- 1). The simultaneous raise of fee and decrease of scholarship could block some students from entering one EPF.

The proposed raise would provide an additional amount of 8 million francs in 2025 (see notebook Milestone 3- 3.3). We tried to see how this amount could be spread over the students. Our data of the cost of one student depending on the domain of study is insufficient to draw clear numbers. However, knowing that some universities such as the polytechnique university of Montral make the foreign students pay 8 times the fees of Canadian students, we decided to explore this hypothesis. By applying the raise only to foreign students, the raise amount would be around 1160 CHF (raise of 90%) only for the foreign students in order to match the expected amount (see notebook Milestone 3- 3.3). While exploring this hypothesis, one should take into account the cost of living in Switzerland while having a foreign income and consider if this raise is acceptable.

7 Conclusion

As a final word to this project, we would say that the Tuition Fee raise (+40%) introduced for the Fall semester of 2019 is justified. The confederation continuously provides more and more funds to the EPFs which spends a greater amount each year. If the students can accept this raise, this should not be the go-to solution as the fact that other foreign schools have huge Tuition Fee is no excuse.

We would like to comment on the facts that if the students are asked to contribute more, they should be able to see the impact in their experience. The point is that those additional funds should be use for teaching purposes (e.g. provide more courses, improve classrooms...) and should be kept away from research or advertising.

References

Github user : "miseran" 2017. *Python module to convert PC-AXIS file to Pandas Dataframe*, `https://github.com/miseran/opendata/blob/master/px_reader.py`