Asssessing the Role of Immigration Policy for Foreign Students: the Case of Campus France.[*]

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Abstract

This paper studies the intended and unintended effects of a specific policy conducted by the French Government around 2007 aiming at boosting the number of foreign students admitted in French universities. The Campus France program aimed at facilitating the application process of foreign candidates from some particular countries and applying in specific universities. We develop a small theoretical model that allows for the existence of capacity constraints in order to analyse the potential effects of such a policy in terms of student inflows and in terms of selection. Using a Diff-in-Diff-in-Diff approach, we test the impact of Campus France on the magnitude of inflows. We pay attention in terms of heterogeneity of these effects across types of universities. We find that the Campus France policy led to a global increase of inflows of foreign students around 8%. The increase is concentrated on universities outside the top 150 of the Shanghai Ranking, suggesting a higher selection from better universities. We also use the CF policy as a way to test the potential crowding-out effects on native students while taking care of the usual endogeneity concerns in terms of location. We do not find any impact of crowding-out, either on native students or on foreign students coming through the traditional channel.

JEL Classification: F22, H52, I23, O15.

Keywords: Foreign students; Immigration Policy; Universities; Information costs; Selection.

1   Introduction

Foreign education has become a major ingredient of the globalization trend. In a period of less than 50 years, the number of students completing their high education in a foreign country has been multiplied by a factor higher than 6. The number of foreign students enrolled in higher education institutions located in an OECD country amounted to 3324000 individuals in 2015 (OECD (2018)). They represent today about a quarter of the students enrolled in these institutions. These trends reflect not only an increased aspiration for high quality education on the part of many individuals across the world but also an increased interest of destination countries for students coming from abroad. In these destination countries, both governments and universities have strong incentives in attracting students from abroad. For universities, foreign students allow the development of specific education programs that could not be developed with native students only, such as graduate and PHd programs. They also represent an important source of additional funding. For governments, foreign students represent after completion of their education an important source of skilled labour and allow to alleviate skill shortages in a set of important fields of economic activity. For instance, foreign students in the US represent a major source of STEM workers and HIB Visa holders who exert a massive impact on innovation and productivity of the regions (Peri et al. (2015)). Given the strong interest of governments, it is important to evaluate specific policies aiming at boosting the attraction of foreign students for their universities. Surprisingly, little is known about the effectiveness of such policies as well as their possible intended and unintended effects.

This paper aims at filling the gap in the academic literature by analyzing the intended and unintended effects of a specific policy conducted by the French government around 2008 to increase the attractiveness of universities for foreign students. The so-called Campus France program was a key component of a more general reform of the French immigration policy undertaken by the government of President Sarkoszy. While France is a major provider of foreign education (it was ranked in 2015 number 4 in terms of total enrolment, see OECD (2018)), the government aimed at boosting further the number of foreign students in order to increase in turn the inflow of skilled foreign workers. In particular, Campus France introduced contact points in a set of foreign countries in order to facilitate both the access to information for students and their application process to French universities. The major objective of that program was to boost the number of applications from foreign students and hence the number of students enrolling in a French institution of higher education. The aim of this paper is threefold. First, we evaluate whether such a policy was effective at the end. It is indeed important to assess whether the main objective was achieved given the significant costs the policy involve.[1] Also, the success of this policy is far from being granted since any

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[1]The global cost of this policy for the government is significant, albeit difficult to quantify since it involved direct and indirect costs. On the direct side of the costs, one can identify the cost of setting up a new IT platform to manage the global flows of applications as well as the new hiring in each contact point. On the indirect side, a lot of diplomatic representations had to reorganize in order to manage the increased burden of work associated to information, screening of the candidates and the management of new applications at all levels of study.

enrolment of foreign students is the result of a matching process, i.e. the match between an application from a student located abroad and the selection by the university. While the CF can be expected to boost the application part, the final effect also depends on the behaviour of universities. Second, we investigate whether there were also unintended effects of this program. In that respect, we look at whether the possible effects were homogenous across types of universities. We also look at whether the policy, while potentially valuable for foreign students, was not detrimental for native students. To the best of our knowledge, our paper is the first one providing an evaluation of a public policy targeting specifically foreign students.

In order to carry out the evaluation of the Campus France policy, we collect very rich data of enrolments of foreign students in French universities. In particular, we use annual data over a long period of time (1999-2016) of enrolment of students by country of origin, by university and by level of study. One of the nice features of the French data on foreign students is that they track whether the students hold a high school degree from France or from abroad. This is important to isolate our targeted population, i.e. the foreign students who enrolled in a French university specifically to carry out their high education. This allows to avoid mixing up this category with students with a foreign nationality who grew up in France like second or third generation immigrants. Given the share of the foreign population in France, the size of this group is likely to be substantial. Combining data on foreign students with data capturing the implementation of the CF policy, we carry out a triple difference analysis aiming at isolating the potential causal effect of the policy. The inclusion of a rich set of fixed effects allows to minimize the occurrence of an omitted variable bias as well as accounting for the validity of the common trend assumption.

We find first that the introduction of the CF policy exerted positive effects on the enrolments of foreign students in French universities. Our estimates suggest that this policy tended to increase total enrolment from abroad by at least 7%. In that respect, the policy can be considered as effective. Nevertheless, this effect did not take place by universities from the top of distribution in terms of quality and reputation. For the French universities within the top 150 in the world, the effect was virtually zero. For those universities, it might be conjectured that the increased number of applications gave rise to a stronger selection conducted by the university authorities. This might indicate that while globally effective, the CF policy tended to increase the gap between the very best universities and the other ones. Finally, we look at whether the rise in the number of foreign students did not take place at the expense of native students. We do not find any evidence of substitution between graduate native students and foreign ones, but strong evidence of crowd-in effects. While such evaluations of the crowding-out or crowding in effects have been carried out previously (Borjas (2007), Machin and Richard (2017)), the CF policy yields an interesting and innovative identification strategy to address this important issue since it did not affect the application of native students. Finally, we do not find that the rise of inflows of students enrolling through the CF policy had a negative impact on the enrolment of those not subject to the program.

Our paper builds on existing academic literatures devoted to a better understanding of

the international mobility of high skilled workers and of students. Our analysis contributes to an important strand of the literature looking at the various determinants of the movements of students across countries. As reviewed by Kahanec and Kralikova (2011), an extensive literature has devoted some attention to the various factors of attractiveness of universities for foreign students. The literature has stressed the importance of factors, such as the teaching language (Perkins and Neumayer (2014)), the quality of the educational institutions (Van Bouwel and Veugelers (2013)), the economic perspectives and skill prices (Rosenzweig (2006)), the existence of networks (Beine et al. (2014)), the cost of living (Beine et al. (2019)) and tuition fees (Alecke et al. (2013), Beine et al. (2019)). Much less attention has nevertheless been devoted to the impact of policies and their ability to raise attractiveness beyond the level implied by the previous factors. In particular, to the best of our knowledge, there is no analysis looking at a policy conducted at the government level and targeting explicitly a particular subset of the potential skilled migrants, namely foreign students. This paper fills this gap in the existing knowledge by proposing a policy evaluation of the Campus France programme that was implemented by the French government in order to boost the enrolment of foreign students in the domestic universities.

Another contribution of our work is the fact that we account for the existence of capacity constraints on the side of universities as well as for their selection policy. In general, the existing literature on foreign students has ignored the existence of these factors and have tried to infer the level of attractiveness of universities from the observed intakes of foreign students. Still, these intakes are the outcome of a complex process involving applications of the students and the impact of capacity constraints and other factors that affect the selection policy of the universities. The existence of capacity constraints in educational institutions has been recognized in previous work (Borjas (2007), Machin and Richard (2017)) and is likely to play an important role.[2] While the ultimate objective of Campus France was to boost intakes of foreign students, the most likely immediate impact was rather on applications and there is no guarantee that this will translate automatically into an increase in the inflows of these students. While we do not observe directly the extent to which capacities constraints are binding or not, our results regarding the impact of Campus France on the inflows of foreign students can shed some light on the importance of this complex process.

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[2]Beine et al. (2019) develop a model based on the Random Utility Maximisation approach that incorporates these capacity constraints. The importance of such constraints for the choice decisions and the related final outcome has been emphasized empirically in other areas such as the housing market (see De Palma et al. (2007) for instance).

2 Data

2.1 Foreign students in France

The key data we use in the subsequent analysis of the CF program is the inflow of foreign students in French universities. This data is captured by annual enrolment data collected by the French Ministry of Education over the period 1999-2016. The data is further disaggregated by country of origin, university of enrolment, level of study and year. An important advantage of the French data is that they allow to better capture the international mobility of students. In fact, the purpose of the analysis implies that we need to capture inflows of students coming from abroad for the explicit purpose of completing their higher education in France. This implies that we need to exclude two types of students with a foreign nationality. First, we need to exclude students coming under automatic exchange programs for short spells of time such as the Erasmus exchange program in Europe. Second, we need to exclude students with a foreign passport but who have grown up in France, such as second generation young people. This last distinction is of particular importance in countries with relatively high historical immigration levels, such as France. While in most countries, data on foreign students do not allow to make this distinction, French data allow to make this distinction as they provide whether the students have a French high (HS) school degree or not. This allows to isolate students of foreign nationality with a foreign high school degree as our target population for this analysis.

Table 1: Number of enrolled students by status and year in French universities

	1999	2000	2001	2002	2003	2004	2005	2006	2007
Total	1375491	1381964	1359544	1375647	1408886	1415262	1412484	1390862	1356097
French	1250123	1244624	1205077	1200710	1214442	1210575	1200811	1180802	1149307
Foreig.-for	94123	107418	126299	147711	167627	177840	185041	184039	181652
Foreig.-fra	31245	29922	28168	27226	26817	26847	26632	26021	25138
	2008	2009	2010	2011	2012	2013	2014	2015	2016
Total	1397360	1431327	1423355	1438640	1447707	1483985	1509506	1574673	1594196
French	1187897	1215023	1203955	1217750	1231475	1265573	1297075	1349234	1367154
Foreig.-for	182582	189154	191272	192072	187164	188323	180914	191461	191134
Foreig.-fra	26881	27150	28128	28818	29068	30089	31517	33978	35908

Table 1 provides aggregate numbers for each year of the four categories of students in French universities. French students (French in Table 1) represent the largest group.[3] Among the students with a foreign nationality, those with a French HS degree (Foreig.-fra in Table 1) represent between 12 and 25% of that category, depending on the year. The evolution of this share is reported in Figure 1. In short, this confirms that the failure to account for second

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[3]This category includes students of French nationality with and without a French HS degree. French students with a foreign HS degree represent a very small proportion of total students (less than 1%). Note that these students are not subject to the CF policy since this applies only to foreign students located outside the French territory.

generation students can lead to a significant overestimation of the number of students in international mobility (Foreig.-for in Table 1) and can in turn lead to a distorted assessment of the policy.
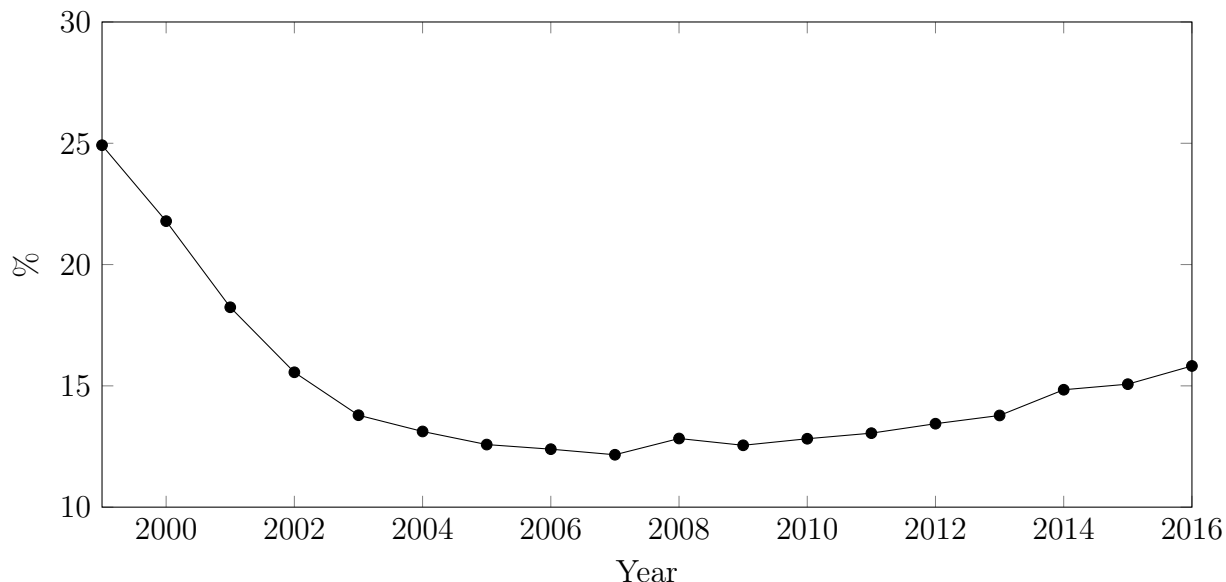

Figure 1: Share of foreign students with a French High-School degree

Figure 2 provides the evolution of the three categories by education level. In line with the stylized facts observed in most important countries providing foreign education, the proportion of foreign students increase with the education level. While they represent hardly 10% of the students at the undergraduate level, this proportion is close to 30% at the PhD level.[4] Note that PhD candidates are not subject to the CF policy and will not be integrated in the main analysis. Nevertheless, we will use foreign students at that level for a placebo assessment of our findings.

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[4]The PhD category does not only concern students enrolled in a thesis. It also includes all students enrolled in a course of study that goes beyond the BAC+5, which is mainly found in medical studies.
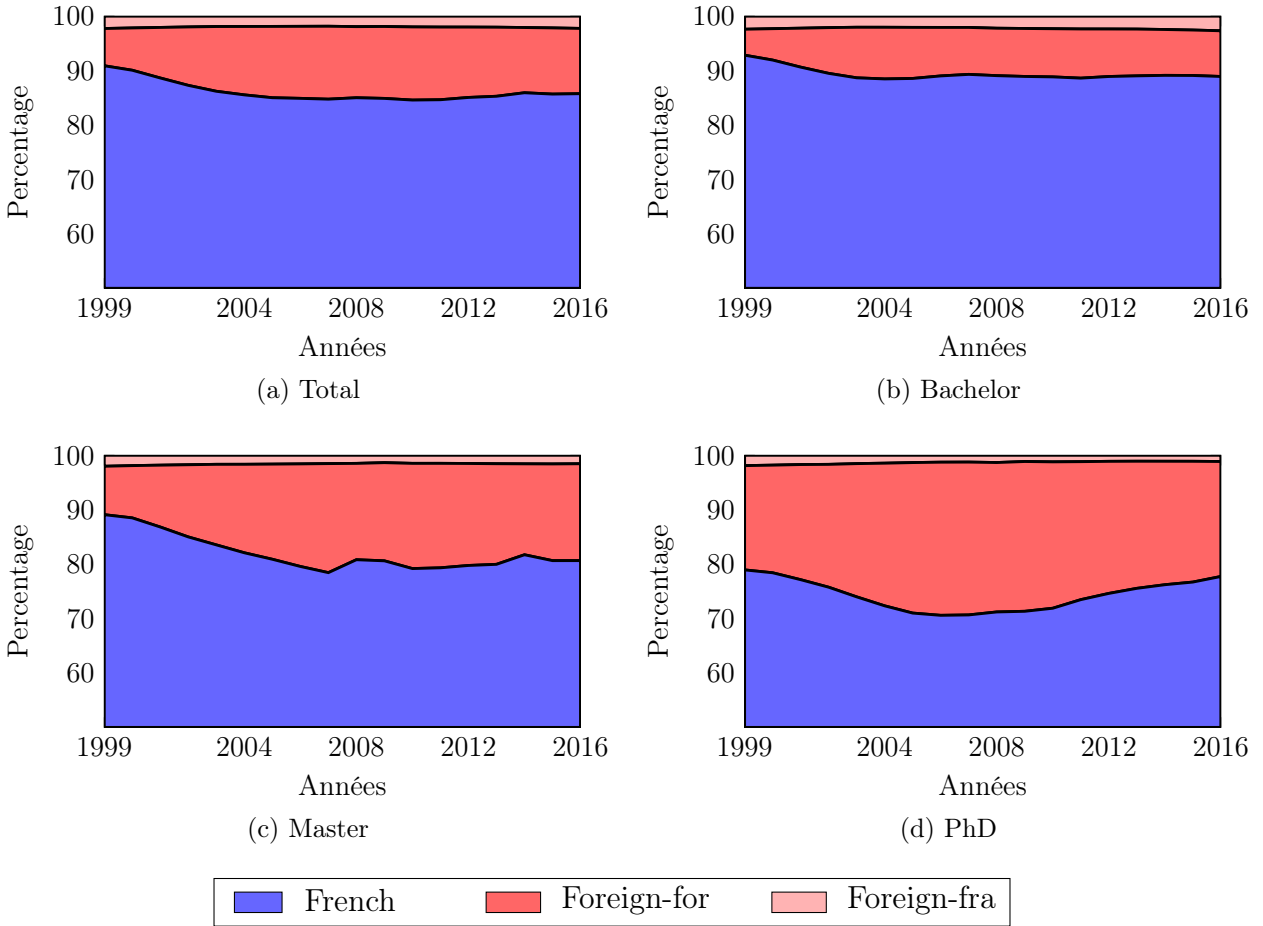
Figure 2: Share of foreign students by origin

2.2 Campus France Policy

The Campus France program was part of the immigration policy reform called *Immigration choisie* (Chosen Immigration) undertaken under the Sarkozy presidency in 2007. The objective of the program was to boost enrolment of foreign students in French universities in order to increase the inflow of skilled workers on the French labour market. To that sake, the program aimed at facilitating the application process of the foreign students and their access to information about the French universities and the teaching programs. At the same time, it also led to a better screening of these applicants by the Ministry of Foreign Affairs to prevent immigration of 'inappropriate' candidates.[5]

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[5]The CF policy introduced in a set of chosen countries a change with respect to the usual process of application. This new process set up with Campus France is called "Etudes en France". Under the usual process, all students had to deal bilaterally with all universities to apply to each program. An exception was made for the first year. The first year students are limited to 3 applications with an explicit order of preferences. The forms were sent through the diplomatic channel. A screening process of the immigration

In practice, the Campus France program settled contact points in a set of origin countries in which the candidates could undertake the whole procedure to get admitted in a French university. In particular, the candidates could get information and could undertake an interview in order to be eligible to enrol in a French university. Once considered eligible, they can apply online to their selected teaching programs.[6] An important feature of the CF program is that applicants could apply to all possible universities using a single online application form. These applications are centralized on the platform in an electronic form, which increases the security compared to the usual system that relies on paper forms. This replaced the previous system in which each application to a university was to be done bilaterally and had to follow the specific guidelines of the involved university. Also, under the usual system, each application had to be sent on paper by surface mail. This created uncertainties since the student does not know whether the application has been received and when and how it will be treated.[7] In some developing countries, since the usual postal services are not reliable, most applications were done by express services, which leads to significant cost. Therefore, while reducing the uncertainty and increasing the transparency of the process, the CF policy also lowered significantly the monetary cost of applications for these foreign students. As part of the procedure, each candidate is screened by the immigration services in the origin country, which make an evaluation that can be used afterwards to speed up the obtention of the visa. This contrasts with the old procedure in which, once admitted in a university, the student had to undertake afterwards all the procedures to get the visa and the stay permit. Finally, the cost of a student visa is reduced by 50% for students coming through the CF program.[8]

The CF program involves an IT plateform on which universities can visualize all applications by the foreign candidates. The universities proceed to the same type of selection than before, according to their preferences and their constraints. They nevertheless benefit from some better information about the candidates since they have access to the screening report made by the contact points in the origin countries. Another change is the speed at which information in terms of refusal and acceptation is transmitted in the system. While the CF program can be therefore expected to boost the applications, it is unclear whether it had

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services was done to eliminate inappropriate candidates. The three applications are managed centrally to allocate these positions. It is reported that there are significant delays and issues in this process, such that there is no guarantee that the candidate will receive an offer on time. For all the other levels of study, the applications are sent directly by the candidates to the universities.

[6]The first-year students are limited to 3 applications. These applications are ordered in preferences. The other students can make up to 15 applications (without ordering in terms of preference). In 2019 (outside our sample period), this number was decreased to 7 applications.

[7]Another important point is that under the traditional channel, reallocation of applications when these are unsuccessful depends on the fact that the other universities have been informed about the selection outcome. Anecdotic evidence suggests that this process was far from being smooth and reliable. As a result, reallocation of application to a lower order preferred university does not occur as often as it should be. In contract, the CF platform processes automatically and electronically the reallocation of unsuccessful applications.

[8]The typical fee for a student visa is 90 Euros in most origin countries. The CF policy reduces this fee to 45 Euros. In some countries like China, the base fee is 200 Euros, which means the students coming through the CF program pay only 100 Euros for the visa.

any significant impact on the final enrolment from the origin countries that taking part to the CF program. It should also be emphasized that universities had to join the program and were not obliged to do so. The new CF procedure entailed slightly additional administrative burden (for instance an explicit decision with some justifications had to be given back to each candidate), so that some universities did not join the program upon inception. Finally, it is important to mention that the CF program was applied to new incoming students at the bachelor and the master levels (from level 1 to 5).[9] It did not concern Phd students or students studying beyond the 5th grade (like students in medicine). Once admitted and once having completed successfully an academic year, the students can automatically enrol to the next grade, in a similar way to a native student. This means that the CF program had potential lasting effects on the enrolment of foreign students. In other words, the potential impact on the enrolment goes beyond the impact on newcomers.

Figure 3: Share in total foreign-for by origin country

| Less than 0.5% | 0.5% | 12.65% | Country in CF Program |
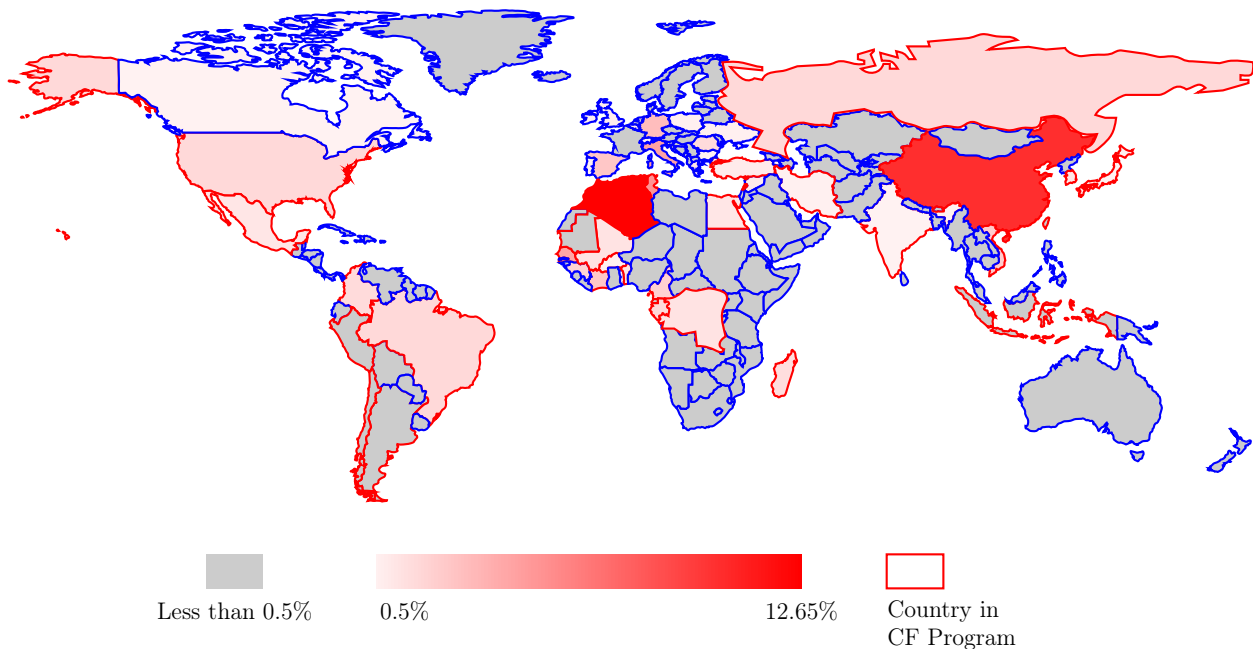
The CF program was implemented in 2007, which means that its impact concerned the intakes of student for the academic year 2008/2009. [10]. The implementation was gradual, both in terms of the eligible countries and the participating universities. Figure 3 provides for the last year of our sample (2016) the share of students of each country in the total level of enrolments for foreign students in France as well as whether the country belonged to the CF program or not (see colour of the border). Table 2 reports the key features in

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[9]A foreign student can apply to any grade between the 1st (first year of the bachelor program) and the 5th grade (second year of the master)

[10]By convention, we assign academic year t/t+1 to calendar year t since the academic year starts in September in France.

terms of implementation. Upon inception, 19 countries were involved in the program. This number gradually increased to reach the final number of selected countries (35).[11] Appendix A provides additional information about the CF program. In particular, Table 9 provides the full list of countries included in the sample as well as the list of eligible countries along with the year they joined the program.
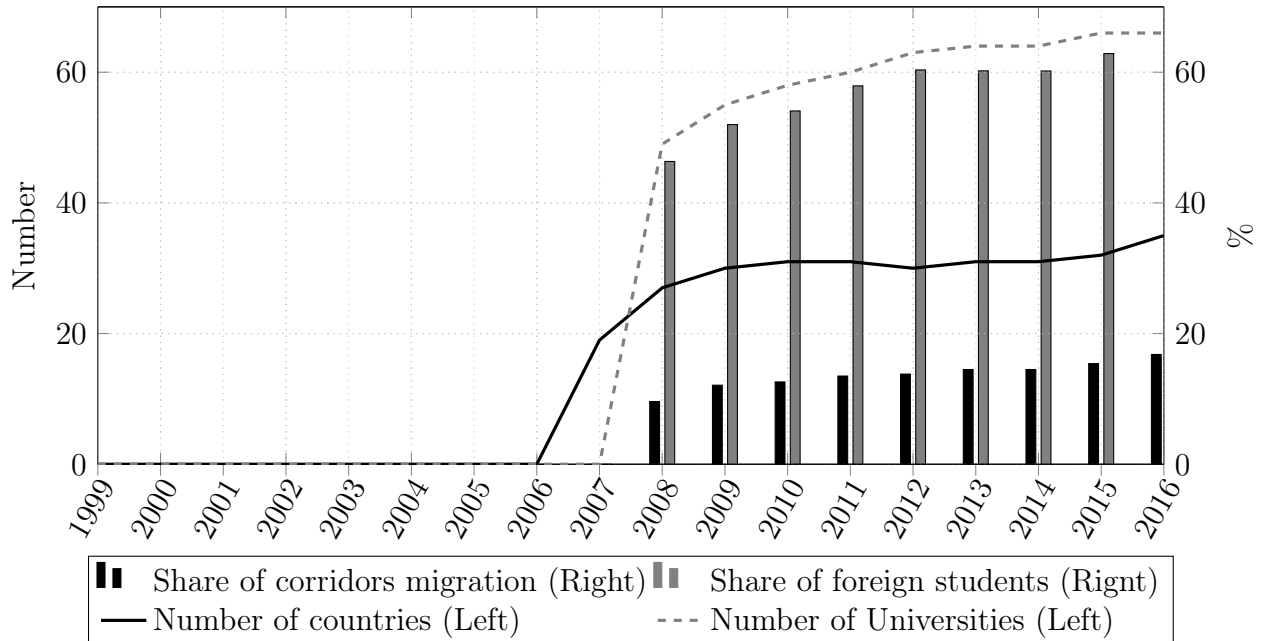
Figure 4: The deployment of Campus France (1999-2016)

The same gradual process was observed on the side of universities. 49 universities joined the CF in 2008. This number gradually increased to 66 universities (see Figure 4). At the end of our sample period, 8 universities were still operating under the old procedure.[12] It is important to stress that in order to apply to a university through the CF program, a student must be in an eligible country and the targeted university has to participate to the program. For instance, if a student from Columbia, a selected country, wishes to apply to a non-participating university, he/she will have to apply using the old procedure implying a process specifically decided by this university. Table 2 reports the proportion of country-university pairs complying with the CF program over time. It shows that over time, this proportion went from about 10% to 17%. This rise is due both to the integration of new countries and to the participation of some universities. Column (5) reports the evolution of the proportion of enrolled students through the CF program. While the CF program concerns only a modest proportion of the pairs, it involves an important share of the foreign students. The proportion grew gradually over time and in the final year of our investigation

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[11]Note that Canada was taken out of the program in 2012. The program in Syria was ended in 2014.

[12]Table 10 in the Appendix provides a similar type information as Table 9 on the side of participating universities.

period, about two thirds of the foreign students had come through the CF program.[13]

Table 2: The Campus France Policy

(1) Year	(2) # Countries	(3) # Univ	(4) # CU-Pairs	(5) % Flow	(6) % Pairs	(7) # For Students
2007	19	0	0	0	0	144590
2008	27	49	9855	46.34	9.6	146211
2009	30	55	10950	51.98	12.1	152938
2010	31	58	11315	54.07	12.6	156017
2011	31	60	11315	57.91	13.5	158663
2012	30	63	10950	60.35	13.8	155220
2013	31	64	11315	60.21	14.5	156884
2014	31	64	11315	60.19	14.5	156269
2015	32	66	11315	62.85	15.4	161298
2016	35	66	12775	65.27	16.8	163629

Notes: Col (2): # of participating countries. Col (3): # participating universities.
Cols (4) and (6): # and % of country-university pairs participating to the CF program.
Col (5): % of enrolled foreign students coming through the CF program.
Col (7): Total number of foreign students enrolled in French universities.

2.3 University specific data

Sample

Our sample consists of 73 French public universities followed annually over the period 1999-2016. We do not include alternative institutions such as the well-known Grandes Ecoles since they belong to a different education system and have very different hiring processes.[14] 3 of our 73 universities are *ComUE*, i.e. entities formed from sub-parts of existing universities. We include these institutions since they involve significant numbers of (native and foreign) students. The other ComUE were not considered since they were negligible.[15]

Quality

In the subsequent analysis, depending on the outcome of interest and the specification, it is desirable to account for university specific variables. *Quality* of the universities is captured by the rank and the score of the Shanghai top 500 ranking. The advantage of this measure is that it is available for the whole period of investigation (1999-2016) and is homogenous

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[13]Note that in Column (7), we report the number of foreign students in the bachelor and the master programs. This differs from the figures in Table 1 which cover all foreign students including those enrolled beyond the fifth grade.

[14]For instance, admission to the Grandes Ecoles is governed by contests (concours) while it is decided by committees on the basis of the application file at universities . In contrast to universities, the number of slots is fixed in Grandes Ecoles. A different Campus France program was put in place for the Grandes Ecoles, to boost applications to the constest. A number of predetermined slots for foreign students was usually set for the foreign students and for the natives.

[15]Negligible, in the sense that students (native and foreign) are enrolled at the level of member universities and not at the level of ComUE

over time. While the assessment of quality would need a larger set of measures, we can nevertheless expect that an improvement in the Shanghai Ranking corresponds to a rise of quality, at least as perceived by the potential foreign students. It is by far the most accessible and well-known measure used by these students to make their choice in terms of applications.

Mergers

While looking at potential crowding-out or crowding-in effects of foreign students, we account for the strategies for the universities. We first measure mergers. During our period of investigation, 7 mergers happen between universities. Most of the time, they involve universities of the same city or the same region (Aix-Marseille, Bordeaux, Clermont-Ferrand, Grenoble, Montpellier, Nancy and Metz, Strasbourg). We track these mergers. In order to have an homogenous and balanced sample, we treat all universities as if they were merged from the start of the sample. To that aim, we aggregate the relevant measures (foreign students, native students, programs, ...) to get hypothetical merged institutions.[16]

Education programs

We also account for the number of education programs at the master level to capture expansions/recessions in the educational capacities. This data is retrieved from the Open-Data depository of the French Ministry of Higher Education and Research.[17] In particular, the dataset provides for each level of the master (first level and second level) all the details about each education program in each university. The data are available over the 2006-2016 period. We count the total number of master programs at each level and for both levels in each institution. From there, we can compute the net variation in the number of education programs. For the years prior to 2006, we use two alternative strategies to find the information. When online archives are available in some universities, we retrieve the number of programs. When these are (partially or totally) unavailable, we use wayback internet machine to extract previous version of the university websites.[18] Appendix XXX gives a summary of the data for our sample.

3 Econometric Analysis

3.1 A Diff-in-Diff-Diff Approach

The specification that we use to carry out the estimation of the CF policy is the following:

$$ln(foreign_{ijt,l}) = \alpha_0 + \alpha_{it} + \alpha_{jt} + \alpha_{ij} + \alpha_l + \beta CF_{ijt} + \epsilon_{ijt,l} \tag{1}$$

where $foreign_{ijt,l}$ is the total inflow of foreign students coming from country i and enrolling in university j at time t and level of study (grade) l; CF_{ijt} is a variable capturing

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[16]We can do that because for all the 7 mergers, we have synchronized participation to the CF program of the constituting entities. For instance, while Aix1, Aix2 and Aix3 merged in 2012 in the new Aix-Marseille University (AMU), they all join the CF in 2008.

[17]www.dataenseignementsup-recherche.gouv.fr

[18]We also provide in the Appendix some comparisons for the year 2006 of measures provided by the Ministry and through our strategies.

whether the flow from i to j was subject or not to the CF program at time t. Since the CF program involved new countries gradually and new universities gradually from 2007, this variable exhibits variation within a country and within a university. We control for a rich set of fixed effects. We control for all time-varying country specific factors α_{it} such as income at origin, business cycles, crises; we control for time-varying university specific factors through α_{jt} such as investment in capacities, introduction of new programs or new locations and so on.[19] Through α_{ij}, we control for country-university pair specific factors such as bilateral agreements, proximity of some countries of origin and so on. Finally we allow for some heterogeneity across levels of study (α_l). In an alternative specification, we also allow for α_{lt} fixed effects. This can be useful to capture factors that are time-varying and level specific such as the reform that changed the admission procedures in the master programs. [20]

The use of a rich set of fixed effects is meant to ensure that the estimation results are not confounded by unobservable factors. Also, their introduction aims at making sure that the assumption of similar pre-treatment trends that underlies the Diff-in-Diff approach is fulfilled. An alternative approach to the fixed effects model is the use of the lagged dependent variable as control in the econometric specification.[21] We also report the results using that approach, both for the scaled OLS and the PPML estimates. The estimation results are reproduced in columns (5) and (8) of Table 3. The results are very in line with the one with the fixed effects approach.

It should be emphasized that our β coefficient in equation (1) captures the impact of the CF program on enrolment. This means that we estimate a medium-run impact of the program on students inflow. Once admitted through the CF program and after the completion of the first year of study, a particular foreign student will be treated as a native one (from the point of view of the application of course). Therefore, depending on the level of admission, this means that the CF program can have a lasting effect on enrolment beyond one year.[22]

Table 3 provides the estimation results. Estimations are based on the various approaches explained above, i.e. Scaled OLS vs Poisson, different sets of fixed effects and a static vs a

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[19]The introduction of α_{jt} is particularly important to make sure that the estimate of the impact of CF_{ijt} will not be confounded by the simultaneous creation of new education programs by universities joint the CF program.

[20]One important reform for instance changed the selection procedure of master students in 2017. Before the reform, the selection was carried-out at the entry of the Master 2 level, i.e. the second year of the graduate programs. After the reform, the selection was made possible at the entry of the first year of the graduate program (Master 1 level). While the reform took place outside our sample period, this illustrates the type of action that can be captured by this particular fixed effect.

[21]The choice between the two approaches is not easy to do from an empirical point of view since it is difficult to discriminate between the two data generating processes underlying the two specifications. See Angrist and Pischke (2009) (chapter 5) for a discussion. One further issue is that the combination of a dynamic specification with fixed effects gives rise to the Nickell bias in the estimation of the coefficients. We follow their advise and check whether both approaches give the same results. Since the lagged dependent approach gives similar results, we use in the subsequent analyses the fixed effect framework as a benchmark.

[22]The impact of the CF program on a student admitted in the first year of the bachelor can therefore last for 5 years if the student decides to carry out until the end of the master. The admission through the CF program is possible at any level of the bachelor or the master, but not for postgraduate studies.

dynamic specification. The results suggest that the CF policy had a non negligible quantitative effect on foreign student enrolment. Depending on the estimation methodology, the effect amounts between 7 and 13%. Therefore, the results suggest that when CF policy was activated, long-run enrolment of foreign students from the involved country in the specific university increased by anout 10%. The results are very robust across the different approaches. Dynamic specifications tend to yield slight larger estimated effects. Unsurprizingly, the choice of the the set of fixed effects tends to matter for the quantification of the effect. Static specifications with the whole set of possible fixed effects (columns (4) and (8)) provide a conservative estimate of 7.5%.

While the results of Table 3 seem robust, it is important to validate further our estimation results. To that aim, we provide a placebo analysis of the CF policy by focusing on foreign students that cannot, by law, be subject to the CF scheme. This is the case for the students enrolling beyond the master level, i.e. beyong the fifth grade. This concerns Phd students and students from specific disciplines, mostly in the medical sciences. Table 4 provides estimation results of the CF policy for these students. We use the same basic approach than in the benchmark case, i.e. SOLS and Poisson and the whole set of possible fixed effects.[23] The results suggest that Campus France had virtually no effect on these students.

3.2   Impact on inflows and selection

The previous investigation implicitly assumed that capacity constraints for all institutions were not binding, such that all institutions were able to host additional foreign students. This assumption is likely to be strong as a subset universities might already be operating at full capacity. The existence of binding constraints implies that the behaviour of the universities in selecting the applicants might matter for the final outcome in terms of enrolment. For universities with binding constraints, the impact of Campus France might simply mean that they have access to a larger pool of foreign applicants and that they are able to increase the selection of students than before. In this subsection we investigate whether the previous impact of Campus France might be heterogenous, depending on whether these universities face binding constraints or not.

Since educational constraints are unobservable, we have to assume that the degree to which these constraints are binding is correlated with some characteristics of these universities. A natural assumption is that binding constraints will be more likely in good institutions. Therefore, we conduct the following regression :

$$ln(foreign_{ijt,l}) = \alpha_0 + \alpha_{it} + \alpha_{jt} + \alpha_{ij} + \alpha_l + \beta CF_{ijt} + \gamma(TopX_{jt} \times CF_{ijt}) + \epsilon_{ijt,l} \qquad (2)$$

where $TopX_{jt}$ is a dummy variable taking the value of 1 (0 otherwise) if university j belong to the Top X in the Shanghai Ranking at time t. We look at different values of X (from Top 250 to Top 50) since once again the capacity constraints are difficult to observe and to assess. We specifically test whether γ is negative for the best French universities, such that

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[23]Note that we cannot include level fixed effects since we do not have the exact level at which these students are enrolled.

the positive impact of campus France on the enrolment of foreign students might be either mitigated or even offset due to the binding constraints. Since we cannot measure the quality of the enrolled students and the degree to which each French university selects the foreign students among the pool of applicants, we look basically at the impact on total enrolment. We conjecture that to the extent that Campus France increases the number of applications from foreign students, a negative γ goes hand in hand with more selection.

The results are reported in Table 5. All in all they suggest that universities belonging to the top 100 and to a lesser extent to the top 150 experienced a lower impact of CF on total enrolment. For the best universities (Top 50 and Top 100), the global impact was close to zero, which means that these universities were able to select more in a larger pool of applicants. For universities outside the top 150, the positive impact of CF remains similar to the previously estimated one in Table 3. All in all, the results that tehre is heterogeneity in the way educational constraints are binding in the French high education system and that these constraints interplay with the Campus France policy to yield the final outcome on enrolment of foreign students.

The use of Shanghai Rankings to capture quality of the French institutions has the obvious advantage that it is established independently of the French ministry of Education and is not subject to any political influence. Nevertheless, the Shanghai ranking has also been subject to some criticisms as a mere measure of quality. One criticism pertains to the fact that it is easier for large institutions to rank at the top. Some indicators entering in the ranking such as the number of highly cited researchers, the number of prize winners (Nobel prize or Field Medal for instance) and the number of publications in Science and Nature are obviously correlated with the size of the institution. Therefore, it might be desirable to assess the robustness of the previous results by using an indicator of research quality that is less correlated with the size of institutions to make sure we capture a true quality effect rather than a coupound effect of quality and size. To that aim, we use an alternative indicator based on the IDEX project conducted by the French government in 2010. The IDEX initiative aimed at allocating substantial research budgets to research consortia submitting projects seen of excellence at the international level.[24] The decision to support these initiatives was based on the evaluation from some international jury. An interesting aspect is that due to the fact that these projects were ran by consortia and not by individual institutions, small institutions could easily participate to the contest.

We use 3 alternative IDEX indicators. The first indicator called $IDEX1$ takes the value of 1 for universities that were leaders of successful IDEX consortia and for which the IDEX status was confirmed in the second round of project allocations in 2016.[25] The second indicator ($IDEX2$) expands the selection and integrates also institutions of these consortia that were not leading ones.[26] Finally we also use a third indicator $IDEX3$ including universities that were selected in the first round but whose project was not confirmed in the

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[24]The endowments vary from 750 millions to 950 millions Euros.

[25]This includes 8 universities: Paris 4, Paris 5, Paris 6, Paris 7, Paris 11, Strasbourg, Aix-Marseille and Bordeaux.

[26]This indicator includes 3 more universities compared to $IDEX1$: Universities of Compiègne, Versailles and Evry.

second round.[27][28] The results based on the use of the IDEX indicators are reported in Table 6. They are in line with those based on rankings (Table 5): we find that for the high quality universities, the Campus France did not lead to an expansion of the enrolment of foreign students.

3.3   Testing for crowding-out or crowding-in effects

The previous analyses suggest basically two important conclusions so far. First, the implementation of the CF policy tended to boost enrolment of foreign students. Second, this was not the case in all universities. In the universities with the highest reported quality, the policy did not result in an increase in numbers, but we might expect that it improved the out-selection of intakes. The latter result suggests in turn that some universities faced binding capacity constraints. Related to that point, an important question arises. To what extend the overall expansion of enrolments of foreign students was made possible. A possibility is that most universities had non binding capacity constraints and could enroll further foreign students without any further investment. A related possibility is that the universities expanded in a progressive way their capacities, allowing more native and foreign students to be admitted over time. Another different scenario however is that the increased intake of foreign students was made possible without any expansion of the capacities by reducing the number of admitted native students. In contrast with the first two evolutions, this last scenario implies that the expansion of foreign students due to the CF program had detrimental consequences for native ones. For the purpose of this paper, it is therefore important to know what scenario dominates the scene.

3.3.1   Impact on natives

In order to disentangle between the various possibilities, we test whether and how the inflows of the foreign students affected the intakes of native students in French universities. This investigation is directly related to an economic literature that analyzed the possible crowding-out or crowding-in effects of foreign students on native ones. Borjas (2007) finds little evidence of a general crowdout effect of foreign students on native ones, but identifies a strong negative correlation between foreign students intakes and white native students' enrolment at the graduate level. More recently, Machin and Richard (2017) test the same effect for

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[27]This includes the three universities of Toulouse.

[28]There is a partial overlap between the IDEX indicators and the Shanghai Ranking indicators. IDEX1 includes two universities appearing in the top 50 during the sample (Paris 6 and Paris 11). It also includes University of Strasbourg that make regular appearances in the top 100. It includes Aix-Marseille and Paris 7 but not University of Grenoble from the top 150. IDEX3 includes Paris 5, Bordeaux and Toulouse 3, but excludes Universities of Lorraine, Lyon1 and Montpellier from the top 250. It includes University of Versailles, but not Paris 9, Nice, Lille1 and Clermont-Ferrand from the top 1000. Finally IDEX2 and IDEX3 include Universities of Evry, Compiègne, Toulouse 1 and Toulouse 2 that never appeared in the ARWU ranking. Overall, the correlation between the IDEX indicators and those based on the Shanghai rankings oscillates between 0.3 and 0.6, suggesting that they both correlate with a common factor that we think is quality.

foreign students studying in British universities. Paying attention to the endogeneity of these foreign intakes through instrumental variable estimation, they provide strong evidence of crowd-in effects in graduate programs. As Machin and Richard (2017) make clear, the choice of the appropriate program to test the interaction is key. One should obviously select only programs in which native students are subject to a selection process conducted by the universities.

In order to proceed to the investigation of the possible crowd-out or crowd-in effects, we estimate the following equation:

$$ln(natives_{jt}) = \alpha_0 + \alpha_i + \alpha_t + \beta ln(foreign_{jt}) + \gamma shanghai_{jt} +$$
$$+ \delta shanghai_{jt} * rank_{jt} + \theta merger_{jt} + \lambda \Delta program_{jt} + \epsilon_{jt} \quad (3)$$

where $natives_{jt}$ and $foreign_{jt}$ measure enrolments of native and foreign students respectively in university j at time t. $shanghai_{jt}$ is a dummy variable taking 1 if university j was in the top 1000 Shanghai ranking at time t, 0 otherwise. $rank_{jt}$ is the rank in that ranking. $merger_{jt}$ captures whether the university is a merged institution while $\Delta program_{jt}$ is the net variation of the number of master programs at level 2 between year t and $t-1$ in university j. Four preliminary comments are in order.

First, equation (3) is estimated on a sample of native students for which there is a selection. In France, up to 2017, selection was only restricted to the fifth grade at university, the so-called Master 2 (M2) program. In 2017, the reform of high education in France changed the prescriptions and allowed universities to select students at the entry of the 4th grade, i.e. the first year of the Master (the so called M1). The timing of this reform takes place outside our sample period, implying that for our whole sample, the relevant level is the 5th level. Equation (3) is estimated only on students enrolling at this level, which explains the drop of the level index l in equation (3) as well as the reduced number of observations. Second, we account for the quality of the university as it should clearly affects the attractiveness of universities. Nevertheless, one should keep in mind that what we estimate is an equilibrium equation, and not a demand equation. The intake of native students is the result of a two-step process, i.e. (i) an application process from the students followed by (ii) a selection process by universities. Importantly, quality affects both steps in opposite directions, which means that the estimated dominating effect is at the end of the day mostly an empirical question. We account for quality in two different ways. First we create dummy variable indicating whether university j was in the top 500 Shanghai ranking at time t. Second, for those in the ranking, we take the score in the ranking.

Third, the estimation of equation 3 is subject to obvious endogeneity issues. For instance, factors of attractiveness of each university not captured by observed quality are likely to affect both foreign and native students. Severity of selection of students by university authorities should be correlated between native and foreign ones. Failure to account for that will induce some bias in the estimation of the β coefficient. Fortunately, the CF policy provides a natural instrumentation procedure to estimate the β in a causal way. The CF policy concerns exclusively foreign students located outside France at the time of the application process. Other

students such as the native students located in France, native students located abroad or foreign students located already on the French territory are subject to a different application and selection process. Such a scheme ensures that instruments of foreign inflows built from the CF policy should comply with the exclusion restriction. One threat to the validity of the identification procedure could be the existence of a strategic behaviour of universities that would involve the decision to joint (or not) the CF program. In particular, universities could link the participation of the CF policy to the decision to merge. They can also link with the decision to create new programs or to scrap old programs at the master level. In turn, if mergers and/or net creation of new programs attract native students at the master level, this would undermine the validity of the exclusion restriction of our instruments based on the CF program. In order to lower such concern, we control for these strategies and include the $\Delta program_{jt}$ and $merger_{jt}$ variables.[29]

Furthermore, the first part of our estimation results suggests that such instruments should be strong enough. We use two instruments of foreign inflows of students. The first one, coined IV1 in Table 7 is simply a dummy variable indicating 1 if university j was taking part to the program at time t. This instrument varies across time and across universities since participating universities joined the program at different times. The second instrument, coined IV2, is the proportion of origin countries sending foreign students through the CF program to university j at time t. This instrument exhibits some variability, including within a specific participating university since participating countries did not join the program at the same time.

Finally, one should once again pay attention at how the $natives_{jt}$ and $foreign_{jt}$ variables are measured. In line with the previous sections, we consider foreign students as those coming from abroad with a foreign high school degree. By opposition, native students include French students (either with a French or a foreign high-school degree) as well as foreign students with a French high-school degree. As a robustness check, we also compute an alternative measure of the natives, leaving out the foreign students with a French high-school degree. Results are virtually unchanged.[30]

Results from Table 7 suggest that the increase in foreign students in French universities generated crowd-in effects on native students. The estimated β coefficient is positive and significant across all estimations. These estimations rely either on SOLS or Poisson estimations. Each method involves estimation without or with instrumentation, with IV estimations re-

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[29]Actually, we do not think that given the French reality of universities, this is a real concern for education programs. In practice, the creation of new programs emerges from the initiatives of faculties while the decision to join the CF program is made at the top level of the institution. This concern is more serious for mergers, but it concerns only 7 out of 74 institutions. In our sample, merged universities are about 8% more likely to belong to the CF program. Nevertheless, there is no occurrence in which a university merged and joined the CF program the same year. In contrast, there is a clear disconnection between these two strategies in terms of timing. University of Strasbourg merged in 2008 but had not joined the CF program by 2016. In Regarding education programs, there is a negative correlation (-0.17) between the CF participation and the net variation of master programs at the second level. This goes against the case of a positive relationship between the CF participation and the expansion of programs. Finally, note that variation in our second instrument (IV2) is also driven by the number of origin countries, which is out of control of universities.

[30]The results of this robustness check are not reported here to safe space but are available upon request.

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lying on two alternative instruments. The IV estimations suggest that an increase of 10% of foreign students led to an increase of about 5% of native students. The results confirm that both instruments are strong, both in LS and in Poisson regressions. Overall, the results suggest that the success of the CF program in raising the number of enrolled foreign students did not occur at the expense of native students.

3.3.2 Impact on other foreign students

Finally, a complementary analysis looks at whether there was any substitution between foreign students coming through the CF channel and those coming through the traditional one. For that purpose, we select only the sample of universities that were included at time t in the CF program.[31] Since selection for foreign students takes places at all levels of study, we can consider the five education levels ($l = 1, 2, 3, 4, 5$). In turn, this allows to account for time-varying university specific factors through the α_{jt} fixed effects. Then we isolate flows of students from countries elligible to the CF program from those not eligible in the program. In other terms, we look at the substitution within one university eligible to CF between students coming from countries subject to CF and countries not eligible to the CF program:

$$ln(others_{ljt}) = \alpha_0 + \alpha_l + \alpha_{jt} + \beta ln(Campus_{ljt} + 1) + \epsilon_{ljt} \qquad (4)$$

where $others_{ljt}$ and $Campus_{ljt}$ capture the inflow of foreign students coming to university j, level l at time t through respectively the traditional and the Campus France channels of application. Table 8 reports the results of this regression. Column (1) reports the scaled OLS estimates while column (2) reports the PPML estimates. The results of this investigations stand in sharp opposition with the deflection hypothesis, i.e. the fact that universities selected less students from countries not eligible to the program once they started to admit students through the CF program.[32] On the contrary, it seems that both types of flows go hand in hand, reflecting that they follow the same patterns. One possible explanation is that the arrival of a higher number of foreign students due to Campus France led to an increase of capacities in the elligible universities that benefitted also to the other foreign students. In that respect, Campus France can be seen as a program with an important impact for foreign education in France.

4   conclusion

While the literature looking at the determinants of foreign students mobility has expanded a lot over the recent years, very little attention has been devoted to the role of policies

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[31]In that sense, this analysis provides some additional information with respect to the information conveyed by the estimated effect of the CF program in the benchmark regressions.

[32]The inclusion of α_{jt} should a take care of the endogenous location of foreign students coming under the CF channel, lowering concerns of endogeneity. One could nevertheless consider that the choice of these students might be influenced by the other foreign students themselves, creating some issue of reverse causality that is not addressed by the saturation of the model with fixed effects. Nevertheless, in our opinion, this effect should be of a lower order of magnitude.

conducted by the governments to boost enrolment in their universities. In this paper, we evaluate a particular program conducted by the French government to boost applications from foreign students in its domestic universities. The Campus France program aimed at decreasing the cost of applications for foreign students in order to increase enrolment from abroad. An important feature of this program is that selection of the students remains in the hand of the universities. This induces some theoretical uncertainty of the success of this policy with respect to its final goal. We also evaluate the unintended effects of this policy, such as the possible crowding-out effects, either on native students or on other foreign students not affected by the policy.

Using a Diff-in-Diff analysis, we find that the program was moderately successful, boosting foreign enrolment by 8% in the medium-run for treated corridors. Nevertheless, this effect was not found for the best universities for which it might be conjectured that the boost in applications was offset by a more severe selection policy. We do not find any evidence of crowding-out effects, either on native students or on the other foreign students coming in the universities participating to the Campus France program.

The results of our paper have implications beyond the area of foreign students as it sheds some light on the role of out-selections factors in explaining observed outcomes in terms of international mobility. This in turn suggests that estimated relationships of determinants of the international mobility of students cannot be interpreted as demand functions for foreign education. In turn, estimating determinants of attractiveness of universities for foreign students should make use of application data instead of enrolment measures.

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A   Data: additional information

A.1   List of Origin Countries and Participating Countries to the CF program (Until 2016)

Participating country are in bold in the following table. The "Year CF" gives the year of entry of the country in the CF program.

Table 9: Countries of origin and participating countries (in 2016)

Country	Year CF	Country	Year CF
Afghanistan	-	Lesotho	-
Algeria	2007	Liberia	-
Andorra	-	Libyan Arab Jamahiriya	-
Angola	-	Liechtenstein	-
Antigua and Barbuda	-	Lithuania	-
Argentina	2008	Luxembourg	-
Armenia	-	Macedonia	-
Australia	-	**Madagascar**	2007
Austria	-	Malawi	-
Azerbaijan	-	Malaysia	-
		Continued on next page	

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Country	Year CF	Country	Year CF
Bahrain	-	Maldives	-
Bangladesh	-	**Mali**	2008
Barbados	-	Malta	-
Belarus	-	**Mauritania**	2016
Belgium	-	**Mauritius**	2008
Benin	2008	**Mexico**	2007
Bhutan	-	Moldova, Republic of	-
Bolivia	-	Monaco	-
Bosnia and Herzegovina	-	Mongolia	-
Botswana	-	Montenegro	-
Brazil	2007	**Morocco**	2007
Brunei Darussalam	-	Mozambique	-
Bulgaria	-	Myanmar	-
Burkina Faso	2011	Namibia	-
Burundi	-	Nepal	-
Cambodia	-	Netherlands	-
Cameroon	2007	New Zealand	-
Canada[*]	2007	Nicaragua	-
Cape Verde	-	Niger	-
Central African Republic	-	Nigeria	-
Chad	-	Norway	-
Chile	2009	Oman	-
China	2007	Pakistan	-
Colombia	2007	Palestinian Territory, Occupied	-
Comoros	2014	Panama	-
Congo	2008	Papua New Guinea	-
Congo, the Democratic Republic	-	Paraguay	-
Costa Rica	-	**Peru**	2013
Croatia	-	Philippines	-
Cuba	-	Poland	-
Cyprus	-	Portugal	-
Czech Republic	-	Puerto Rico	-
Côte d'Ivoire	2009	Qatar	-
Denmark	-	Romania	-
Djibouti	-	**Russian Federation**	2008
Dominica	-	Rwanda	-
Dominican Republic	-	Saint Helena, Ascension...	-
Ecuador	-	Saint Kitts and Nevis	-
Egypt	2016	Saint Lucia	-
		Continued on next page	

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Country	Year CF	Country	Year CF
El Salvador	-	Saint Vincent and the Grenadines	-
Equatorial Guinea	-	San Marino	-
Eritrea	-	Sao Tome and Principe	-
Estonia	-	Saudi Arabia	-
Ethiopia	-	**Senegal**	2007
Fiji	-	Serbia	-
Finland	-	Seychelles	-
Gabon	2007	Sierra Leone	-
Gambia	-	Singapore	-
Georgia	-	Slovakia	-
Germany	-	Slovenia	-
Ghana	-	Solomon Islands	-
Greece	-	Somalia	-
Grenada	-	South Africa	-
Guatemala	-	Spain	-
Guinea	2007	Sri Lanka	-
Guinea-Bissau	-	Sudan	-
Guyana	-	Suriname	-
Haiti	-	Swaziland	-
Honduras	-	Sweden	-
Hong Kong	-	Switzerland	-
Hungary	-	**Syrian Arab Republic***	2007
Iceland	-	**Taiwan, Province of China**	2008
India	2007	Tajikistan	-
Indonesia	2015	Tanzania, United Republic of	-
Iran, Islamic Republic of	2016	Thailand	-
Iraq	-	Togo	-
Ireland	-	**Tunisia**	2007
Israel	-	**Turkey**	2007
Italy	-	Uganda	-
Jamaica	-	Ukraine	-
Japan	2009	United Arab Emirates	-
Jordan	-	United Kingdom	-
Kazakhstan	-	**United States**	2007
Kenya	-	Uruguay	-
Korea, Democratic Republic	2007	Uzbekistan	-
Korea, Republic of	-	Vanuatu	-
Kuwait	-	Venezuela, Bolivarian Republic of	-
Kyrgyzstan	-	**Viet Nam**	2007

Table 9 – continued from previous page

Country	Year CF	Country	Year CF
Lao Democratic Republic	-	Yemen	-
Latvia	-	Zambia	-
Lebanon	2008	Zimbabwe	-

* Exit in 2012

** Exit in 2014

A.2 List of Participating Universities to the CF program (Until 2016)

Table 3: Impact of Campus France on foreign students: benchmark estimations

| | Dependent Variable: Enrolment of Foreign Students | | | | | | | | | |
| | (Scaled OLS) | | | | | | (PPML) | | | |
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Campus France	0.094***	0.094***	0.076***	0.076***	0.138***	0.067***	0.074***	0.074***	0.159***	0.105***
	(0.006)	(0.006)	(0.008)	(0.008)	(0.002)	(0.004)	(0.020)	(0.020)	(0.006)	(0.011)
Lagged enrol.	-	-	-	-	0.888***	0.742***	-	-	1.229***	0.983***
	-	-	-	-	(0.001)	(0.001)	-	-	(0.002)	(0.002)
Constant	0.405***	0.405***	0.546***	0.546***	0.047***	0.112***	2.657***	2.667**	-1.010***	-0.153***
	(0.001)	(0.001)	(0.008)	(0.008)	(0.000)	(0.001)	(0.007)	(0.007)	(0.006)	(0.008)
Origin-time FE	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES
Univ-time FE	YES	YES	YES	YES	NO	YES	YES	YES	NO	YES
Origin-Univ FE	YES	YES	YES	YES	NO	NO	YES	YES	NO	NO
Level FE	YES	NO	YES	NO	NO	NO	YES	NO	NO	NO
Level-time FE	NO	YES	NO	YES	NO	YES	NO	YES	NO	YES
Time FE	NO	NO	NO	NO	YES	NO	NO	NO	YES	NO
Observations	1235160	1235160	918220	918220	1166540	1166540	918220	918220	1166540	1026805
(Pseudo-)R^2	0.7604	0.7615	0.7416	0.793	0.7433	0.813	0.7471	0.7500	0.777	0.811

Notes: Estimation period: 1999-2016. In columns (5), (6), (9) and (10), one-year lagged enrolment use as a control.
Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4: Impact of Campus France on foreign students: Placebo

Dep. Var.: Enrolment of Foreign Students (Bac+6)				
	(Scaled OLS)		(PPML)	
Variable	(1)	(2)	(3)	(4)
Campus France	0.002	-0.012	-0.009	0.008
	(0.013)	(0.013)	(0.015)	(0.016)
Constant	0.882***	1.548***	2.944***	3.003***
	(0.002)	(0.002)	(0.005)	(0.005)
Origin-time FE	YES	YES	YES	YES
Univ-time FE	YES	YES	YES	YES
Origin-Univ FE	YES	YES	YES	YES
Level-time FE	YES	YES	YES	YES
Observations	124211	70578	124211	70578
(Pseudo-)R^2	0.8531	0.8856	0.823	0.791

Notes: Estimation period: 1999-2016. Cols (2) and (4): Positive flows only.

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 5: Impact of Campus France: the role of university quality (Shanghai)

	Dep. Variable: Enrolment of Foreign Students							
	(Scaled OLS)				(PPML)			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Variable	(Top 250)	(Top 150)	(Top 100)	(Top 50)	(Top 250)	(Top 150)	(Top 100)	(Top 50)
Campus France	0.077***	0.078***	0.079***	0.079***	0.077***	0.077***	0.080***	0.081***
	(0.003)	(0.008)	(0.008)	(0.008)	(0.021)	(0.020)	(0.020)	(0.020)
Campus F.*Quality	-0.013	-0.069***	-0.066***	-0.069***	-0.012	-0.034	-0.142***	-0.159***
	(0.008)	(0.017)	(0.017)	(0.017)	(0.019)	(0.027)	(0.040)	(0.040)
Constant	0.546***	0.546***	0.546***	0.546***	2.663***	2.663**	2.663***	2.663**
	(0.001)	(0.001)	(0.001)	(0.001)	(0.007)	(0.007)	(0.007)	(0.007)
Origin-time FE	YES	YES	YES	YES	YES	YES	YES	YES
Univ-time FE	YES	YES	YES	YES	YES	YES	YES	YES
Origin-Univ FE	YES	YES	YES	YES	YES	YES	YES	YES
Level-time FE	YES	YES	YES	YES	YES	YES	YES	YES
Observations	918220	918220	918220	918220	918220	918220	918220	918220
(Pseudo-)R^2	0.743	0.743	0.743	0.743	0.7500	0.7500	0.7500	0.7500

Notes: Estimation period: 1999-2016. Sample chosen after PPML procedure of dropping observations.

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 6: Impact of Campus France: the role of university quality (IDEX)

	Dep. Variable: Enrolment of Foreign Students					
	(Scaled OLS)			(PPML)		
	(1)	(2)	(3)	(4)	(5)	(6)
Variable	(IDEX1)	(IDEX2)	(IDEX3)	(IDEX1)	(IDEX2)	(IDEX3)
Campus France	0.088***	0.089***	0.090***	0.092***	0.095***	0.107***
	(0.008)	(0.008)	(0.008)	(0.021)	(0.021)	(0.021)
Campus F.*Quality	-0.087***	-0.075***	-0.064***	-0.088***	-0.095***	-0.126***
	(0.010)	(0.009)	(0.008)	(0.024)	(0.023)	(0.021)
Constant	0.546***	0.546***	0.546***	2.661***	2.662***	2.661**
	(0.001)	(0.001)	(0.001)	(0.007)	(0.007)	(0.007)
Origin-time FE	YES	YES	YES	YES	YES	YES
Univ-time FE	YES	YES	YES	YES	YES	YES
Origin-Univ FE	YES	YES	YES	YES	YES	YES
Level-time FE	YES	YES	YES	YES	YES	YES
Observations	918220	918220	918220	918220	918220	918220
(Pseudo-)R^2	0.743	0.743	0.743	0.750	0.7500	0.7500

Notes: Estimation period: 1999-2016. Sample chosen after PPML procedure of dropping observations.
Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 7: Impact of foreign students on natives

| | Dependent Variable: Enrolment of Native Students in 5th grade | | | | | | | | | | | |
| | (Scaled OLS) | | | | | | (PPML) | | | | | |
Variable	(1) (OLS)	(2) (IV)	(3) (IV)	(4) (OLS)	(5) (IV)	(6) (IV)	(7) (PPML)	(8) (IV)	(9) (IV)	(10) (PPML)	(11) (IV)	(12) (IV)
Ln(Foreign)	0.281***	0.538***	0.538***	0.277***	0.552***	0.551***	0.361***	0.515***	0.518***	0.355***	0.527***	0.528***
	(0.021)	(0.144)	(0.145)	(0.024)	(0.145)	(0.147)	(0.019)	(0.132)	(0.127)	(0.022)	(0.134)	(0.129)
Shanghai	-0.257***	-0.038	-0.0038	-0.281***	-0.045	-0.046	-0.147***	-0.059	-0.056	-0.160***	-0.064	-0.066
	(0.045)	(0.132)	(0.143)	(0.051)	(0.137)	(0.139)	(0.038)	(0.114)	(0.109)	(0.047)	(0.120)	(0.115)
Shanghai*Ranking	0.058***	0.011	0.011	0.065***	0.013	0.013	0.034***	0.016	0.016	0.036	0.017	0.017
	(0.013)	(0.031)	(0.031)	(0.015)	(0.033)	(0.033)	(0.011)	(0.025)	(0.024)	(0.014)	(0.027)	(0.027)
Merger	-	-	-	0.075**	0.019	0.019	-	-	-	0.022	0.023	0.023
				(0.029)	(0.054)	(0.054)				(0.026)	(0.038)	(0.038)
Δ Masters	-	-	-	0.0624	-0.0033	-0.0033	-	-	-	0.0022	-0.0029	-0.0030
				(0.003)	(0.0047)	(0.0047)				(0.023)	(0.035)	(0.035)
Constant	5.728***	5.872***	5.816***	5.751***	5.678***	5.682***	5.600***	5.934***	5.929***	5.637***	5.779***	5.773***
	(0.123)	(0.357)	(0.356)	(0.140)	(0.540)	(0.545)	(0.125)	(0.317)	(0.306)	(0.141)	(0.491)	(0.472)
Univ FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
F-stat First-stage	-	15.65	14.29	-	16.23	15.85	-	-	1.181***	-	-	1.183***
CF First-stage	-	-	-	-	-	***	-	0.190***	-	-	0.190***	-
(Pseudo)-R^2	0.959	0.949	0.949	0.957	0.950	0.950	0.951	-	-	0.951	-	-
Instrument	-	IV1	IV2	-	IV1	IV2	-	IV1	IV2	-	IV1	IV2
NB Observations	1261	1261	1261	1193	1193	1193	1261	1261	1261	1193	1193	1193

Notes: IV1: dummy variable capturing whether university j takes part to the CF program in year t.

Notes: IV2: proportion of countries subject to the CF program for university j at time t.

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 8: Deflection effect of Campus France

Variable	(Scaled OLS) (1)	(PPML) (2)
Dep. Var.: Foreign Students traditional channel		
Enrolment CF stud.	0.693***	0.843***
	(0.034)	(0.031)
Constant	0.650***	0.224
	(0.181)	(0.185)
Univ-time FE	YES	YES
Level FE	YES	YES
Observations	2725	2725
(Pseudo-)R^2	0.876	0.791

Notes: Estimation period: 1999-2016.

Robust standard errors in parentheses; * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 10: Participating Universities

Univ. Aix- Marseille	2008	Univ. Orleans	2008
Univ. Amiens	2010	Univ. Paris 1	2015
Univ. Angers	2009	Univ. Paris 2	-
Univ. Artois	2009	Univ. Paris 3*	2008
Univ. Avignon	2009	Univ. Paris 4	2011
Univ. Besancon	2010	Univ. Paris 5	2012
Univ. Bordeaux	2008	Univ. Paris 6	2011
Univ. Bordeaux 3	2008	Univ. Paris 7	2011
Univ. Brest	2009	Univ. Paris 8	2011
Univ. Bretagne sud	2008	Univ. Paris 9*	2008
Univ. Caen	2008	Univ. Paris 10	2008
Univ. Cergy Pontoise	2008	Univ. Paris 11	2008
Univ. Chambery	2008	Univ. Paris 12	2008
Univ. Clermont Auvergne	2008	Univ. Paris 13	2008
Univ. Corse	2008	Univ. Pau	2008
Univ. Dijon	2008	Univ. Perpignan	2008
Univ. Evry Val d'Essonne	2013	Univ. Poitiers	2008
Univ. Grenoble Alpes	2008	Univ. Reims	2008
Univ. La Rochelle	2009	Univ. Rennes 1	2010
Univ. Le Havre	2008	Univ. Rennes 2	2008
Univ. Le Mans	2008	Univ. Rouen	2008
Univ. Lille 1	2008	Univ. Saint Etienne	2008
Univ. Lille 2	2008	Univ. Strasbourg	-
Univ. Lille 3	2008	Univ. Toulon	2008
Univ. Limoges	2008	Univ. Toulouse 1	2008
Univ. Littoral	2008	Univ. Toulouse 2	2009
Univ. Lorraine	2008	Univ. Toulouse 3	2008
Univ. Lyon 1	2008	Univ. Tours	2008
Univ. Lyon 2	2008	Univ. Valenciennes	2008
Univ. Lyon 3	2008	Univ. Versailles St Quentin	2008
Univ. Marne La Vallee	2015	CUE Lille Nord	-
Univ. Montpellier	2008	CUE Montp. Sud	-
Univ. Montpellier 3	2008	CUE Univ. Europe Bretagne	-
Univ. Mulhouse	2008	Univ. Techn. Belfort Montbeliard	2008
Univ. Nantes	2008	Univ. Techn. Compiegne	-
Univ. Nice	-	Univ. Techn. Troyes	2008
Univ. Nimes	2008		

* Temporary exit in 2011