

Who is to pay for mobile students?

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Abstract:

This paper analyses aspects of financing within the Bologna process, with a focus on the financing of student mobility. It argues that the current system for financing cross-border student mobility, based on the host country, appears to be neither sustainable nor efficient. Against this background, and motivated by a recent decision of the European Court of Justice, the paper explores two alternative solutions. The first one envisages substituting financing by the host country with financing by the country of origin, possibly through vouchers that students may use at home or abroad (provided the quality of education in the host institution has been recognized). The second one combines this substitution with a reimbursement of education costs through interjurisdictional transfers or the change of vouchers into contingent loans.

Keywords: Bologna process, Higher Education, Contingent loan, Bhagwati tax.
JEL: I22, I23, H77

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1. Introduction

In most European countries higher education tuition fees are especially low when not zero. This does not mean that university studies are free goods. Indeed, graduates are expected to get higher wages than less skilled people and therefore to pay higher taxes, especially in those countries where labour income tax is progressive. In that sense students receive implicit loans from the government during the time of their studies that they later repay possibly with an interest, in a way contingent to the income generated by their studies. One could conclude from that simple reasoning that the current system of financing higher education is close to a contingent loan mechanism, namely a system where the students receives money covering the cost of studies and sometimes the cost of living, and pay back that amount after her graduation, in line with her income.

That reasoning holds in a world where the graduate pays her tax in the country where she graduated. However it no longer holds in a setting where people graduate in one jurisdiction and then spend their career in another or in some other countries. In such a setting, one country pays for the cost of studies and other countries benefit from the skill, the contribution to local GDP and tax revenue.

In today European Union we are in some sense moving from the first to the second setting even if the first one still extensively dominates. However the second setting may no longer be ignored; on the one hand it corresponds to an emerging single market for high skilled labour, and on the other hand it creates spill over effects or externalities which call for internalization if one wants to improve the efficiency of the higher education system in Europe.

That latter issue is addressed in this paper. In other terms, our research question is “who is to pay for mobile students?” By “who” we mean which jurisdiction as well as which individual. In other terms we plan to investigate a key missing character in the Bologna process: its financing side.

Prior to go ahead with that issue, we may usefully document on the mobility of students in Europe and the relevance of the issue we cope with; this is done in Section 2 where the contemplation of Table 1 especially deserves interest since it motivates our investigation. Based on the examination of those stylized facts, with a focus on the imbalance in student migration, the research question actually becomes: “how to internalize the negative externality imposed to Austria, Belgium and similar countries by their large neighbours”.

Then, in Section 3 we briefly examine, based on the existing literature, the impact of student mobility, including on economic growth. Section 4 is the core of the paper. It presents, in words, a series of models that we elsewhere develop more formally (Gérard 2007, 2010a,b), which set forth the relative inefficiency – or degree of efficiency – of alternative ways to finance mobile students. We first describe the system currently operated in Europe based on a host country principle;

we then turn to another system based on the alternative origin country principle. Then we relate to that latter model the use of two-part vouchers – shown to be also instruments to direct students to some fields of studies and to favour some targeted groups within the population –, of a Bhagwati tax and of contingent loans. In Section 5 we highlight those developments by three country cases referring to Norway, Australia and Switzerland respectively. Policy suggestions conclude the paper in Section 6.

Literature on the subject of this paper includes Mechtenberg and Strausz (2008, 2009, 2010) and their references. For those authors “the most stable result (...) is that although increasing mobility (...) will lead to higher private investment in education, public provision will decrease. The government will tend to free ride on the education system of other country”. Similar results might be read in Buettner and Schwager (2004); next to the free riding effect, Kemnitz (2005) sets forth competition between governments to provide education to mobile students.

2. International student mobility

International student mobility is not a new phenomenon. To take an example let us mention that German students, for a long time, were known for travelling across German states for the purposes of studying. Also, many professors currently teaching in EU universities have spent one or more years in US institutions. The importance of the phenomenon, however, is sharply growing and it is encouraged by the European higher education system through fellowships like the Erasmus or European Research Council (ERC) scholarships, and by the approximation of degrees and the information of supplements to diploma set up by the Bologna process.

Student mobility is now regarded as part of the European culture, as a mean to favour peace, prosperity, and employment through the raise of a single market for graduates or high skilled labour. Moreover, many governments consider the mobile student as a future ambassador; she contributes to a positive knowledge of her own country abroad, and when she comes back home, to a positive knowledge of the host jurisdiction.

2.1. Who is an internationally mobile student?

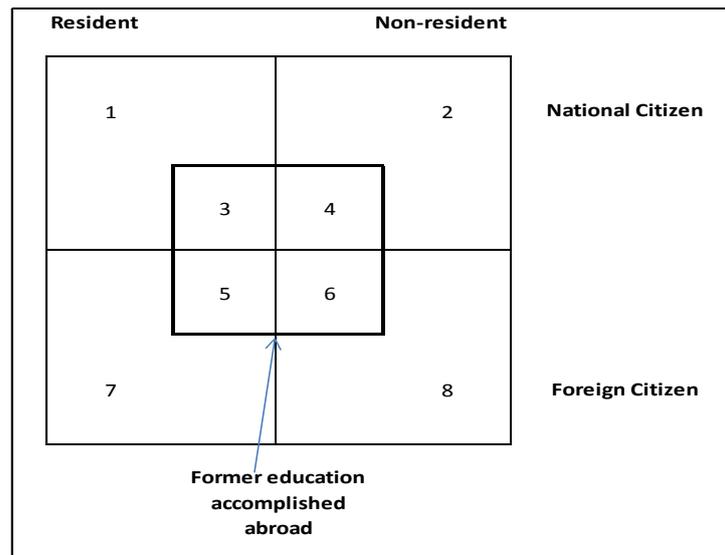
In this contribution, international student mobility relates to higher education, sometimes also called tertiary education. We may use the definition suggested by Kelo and al. (2006); for them, mobile students are “students who crossed a national border to study or undertake other activities relating to the studies, for a part or less than one syllabus or for a certain period of time, in the country in which they moved”.

We understand that international student mobility implies a physical move, including a cultural contact with the country in which she studies; that rules out e.g. distance learning.

Considering three main criteria for mobility, Chevalier and Gérard (2010) proposes a useful diagram to understand the concept – see Figure 1. In that figure, a (non-) resident means an individual who is (not) a permanent resident of the country in which she is studying; and a national (vs. foreign) citizen refers to an individual who does (not) have the nationality of the country in which she studies.

Students located in box 6, who study in a country whose they are neither citizen nor permanent resident and where they did not obtain their previous degree (say, the degree received for secondary education) are the sole ones to be regarded as truly mobile. That definition will be taken into account in the theoretical and policy sections of this paper, though it is more severe than the concept used in many statistics where the citizenship plays a major role.

Figure 1. Criteria for determining an internationally mobile student



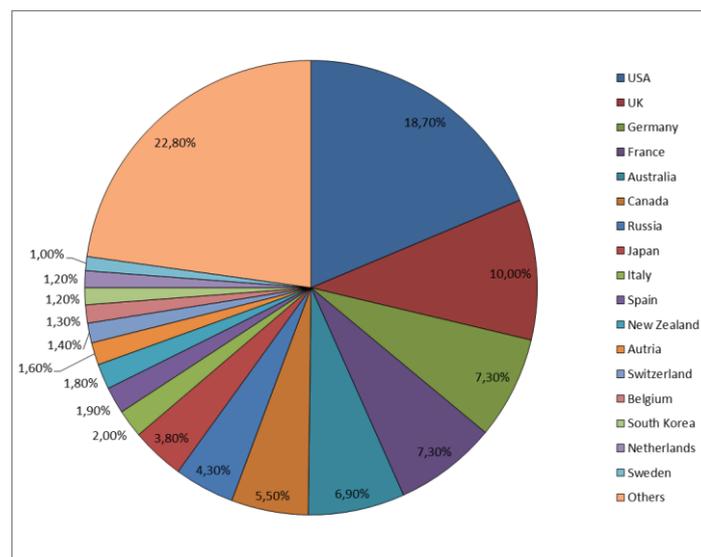
Source: Chevalier and Gérard (2010).

2.2. Which are the main host countries for internationally mobile students?

According to OECD data, the number of internationally mobile students enormously increased in the recent past. Indeed, in little more than thirty years, it was multiplied by four, to reach approximately 3.3 million individuals in 2008.

Figure 2 enables to observe the distribution of student mobility across host countries. It is to be noticed that a little more than 40 per cent of the mobile students move to Anglo-Saxon countries and that more than 30 per cent move to EU Member states. More generally, nearly three quarter of the mobile students are concentrated in seventeen countries. These countries are all among those with the highest GDP per capita.

Figure 2. Market share of the main host countries in international student mobility.



Source: OECD, *Education at Glance 2010*.

Though not illustrated here, the distinction made by Rivza and Teichler (2007) which suggests two types of mobility deserves interest; those two types respectively are the “vertical” mobility, which primarily concerns flows of students going from developing to developed countries, and the “horizontal” mobility which corresponds to students moving between similarly developed countries – say between European countries.

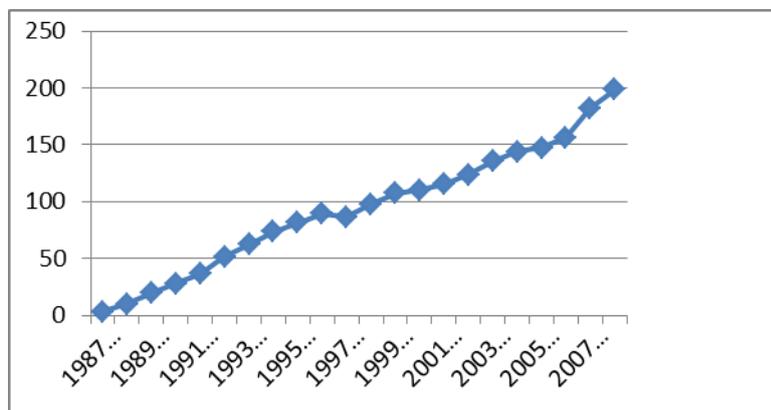
2.3. The Erasmus program and the Bologna process

The European Union started nearly sixty years ago. Its main objective was to build up a union organized around the coal and steel industries. Today, one of the objectives of the EU Member states is to set up a single European labour market, a condition for a monetary union to function. Another objective is to make the EU the most advanced area in research, development and innovation – see the Lisbon

Agenda (European Council 2000), the Sapir Report (Sapir and al. 2003), and more recently the Europe 2020 Agenda (European Commission 2010).

Both the Erasmus program and the Bologna process might be read today in that prospect. In 1987 the ERASMUS program was launched, encouraging EU students to spend a term or a year of their higher education in an institution located in another Member state. This program has been especially successful, as we may observe in Figure 3.

Figure 3. Number of students in the ERASMUS program.



Source:

European Commission, *The ERASMUS program 2008/2009; A statistical overview*.

The Bologna process was not an initiative of the EU itself, when launched in 1999; its initial goal was to build up a European educational space by 2010. Although it was signed by the ministers in charge of higher education of forty six European countries, this process does not rest on an intergovernmental arrangement. Its philosophy is well summarized in the Bologna's Declaration (Bologna Declaration 1999). That declaration states that "A Europe of Knowledge is now widely recognized as an irreplaceable factor for social and human growth and as an indispensable component to consolidate and enrich the European citizenship, capable of giving its citizens the necessary competences to face the challenges of the new millennium, together with an awareness of shared values and belonging to a common social and cultural space".

Then participants recognize the "Importance of education and educational cooperation in the development and strengthening of stable, peaceful and democratic societies" and "Universities' central role in developing European cultural dimensions". They promote the "creation of the European area of higher education as a key way to promote citizens' mobility and employability and the Continent's overall development".

In line with this philosophy six main goals were to be implemented,

- Adoption of a system of easily readable and comparable degrees in order to promote European citizens employability and the international competitiveness of the European higher education system.
- Adoption of a system essentially based on two main cycles.
- Establishment of a system essentially based on two main cycles.
- Establishment of a system of credits as a proper means of promoting the most widespread student mobility.
- Promotion of mobility by overcoming obstacles to the effective exercise of free movement.
- Promotion of European co-operation in quality assurance.
- Promotion of the necessary European dimensions in higher education.

Though both the Erasmus program and the Bologna process favour students' mobility, a main difference exists between those two features. The Erasmus program is an exchange program; a student staying abroad in that framework remains enrolled in the institution of her country of origin and is just "in exchange" in the host institution where she is not asked to pay a tuition fee; usually Erasmus students do not appear in statistics on foreign students. Unlike that, within the Bologna framework, a student enrolls in the school where she actually attends classes for a term, a year or more, pays a tuition fee in that institution and is permitted to impute the credits obtained abroad – the so called ECTS – on the program she follows in her original country.

2.4. Imbalance in students migration

Table 1 completes this section and provides the data which eventually motivate this paper. The second and fifth columns represent the share of foreign students of European nationality enrolled in the tertiary education of the host country. The third and sixth columns represent the difference between the share of nationals staying abroad for the purpose of studies and the share of foreign EU national students hosted in the country. A negative (viz. positive) figure of that balance means that the country hosts more (viz. less) EU foreign students than it sends nationals to other EU institutions.

In other terms, countries like Austria, Belgium, United Kingdom, Czech Republic, Netherlands and Denmark are thus net importers of students and net exporters of enriched human capital. Such imbalances deserve investigation and are at the root of a challenge for the financing of higher education in Europe. However, the cases of those countries are far to be identical.

Belgium and Austria share a common border and a similar language with a large neighbouring country where *numerus clausus* is at work in medical and paramedical disciplines. Moreover they charge low tuition fees to local students and therefore are bound to charge similar low fees to nationals from other EU countries. Then, numerous students not accepted in German and French schools come

to Austria or Belgium². The same kind of argument holds for the Czech Republic, Netherlands and Denmark who also have a common border with Germany; the Czech figures have also to be related with the Slovak ones. One can say that, in those countries, immigrant students are not the top ranked graduates from secondary schools. Further, due to the low tuition fee charged, the human capital of EU immigrant students is enriched at the expenses of local taxpayers.

Table 1. Imbalance in the mobility of students within the EU (2008).

Countries	Foreign students (%)	Balance of mobility (%)	Countries	Foreign students (%)	Balance of mobility (%)
Austria	11,36%	-8,02%	Hungary	1,20%	0,36%
Belgium	6,98%	-4,62%	Italy	0,54%	1,06%
United Kingdom	4,06%	-3,63%	Finland	0,74%	1,37%
Czech Republic	5,21%	-3,01%	Poland	0,11%	1,43%
Netherlands	4,17%	-2,41%	Portugal	0,68%	2,50%
Denmark	2,70%	-1,18%	Greece	0,15%	4,06%
Sweden	2,03%	0,11%	Ireland	1,92%	7,47%
Germany	2,61%	0,26%	Slovak Republic	1,59%	9,73%
Spain	0,75%	0,30%	Luxembourg	37,00%	232,70%
France	1,60%	0,33%			

Source: Eurostat and own computation

The British situation is very different. They are attractive for foreign students because they provide higher education of good quality taught in the most international language. Those characteristics are searched by talented students who regard the high tuition fee charged to both British and EU students as an investment in their future. In the rest of the paper we leave aside the case of UK while we consider that of the other net student importers countries as the stylized fact motivating this paper. The research question then becomes: “how to internalize the negative externality imposed to Austria, Belgium and similar countries by their large neighbours”.

3. Evaluation of the impact of student mobility

Economic literature recognizes various effects to international student mobility. Among them it sets forth a positive link between mobility and economic growth. More generally, studying abroad generates individual and collective positive impacts. Individual effects include access to a foreign culture which may help find-

² According to OECD (2010), there are 16,650 French students in tertiary education in Belgium against 2,768 Belgian students in France; similarly there are 17,464 German students in Austrian tertiary education against 6,419 Austrian in Germany.

ing a job in a foreign country after graduation; that opportunity however still needs extra empirical evidence. Collective impact stems from mobility making it possible to bring closer different cultures and nations, and then favouring peace among them.

If we focus on economic effects, two groups of effects appear: simultaneous and direct effects on the one hand, and differed and indirect effects on the other hand.

3.1. Simultaneous and direct effects

Direct economic effects are quite clear. They relate to the economic impact of hosting foreign students on the territory. Like national students, international students contribute expanding the real estate market and spend money in local stores. But, on the other hand, they generate a cost for the local community due to the hosting related expenditures, namely in terms of teaching and supporting staff. Since most foreign students do not remain in the host country after their completing their studies, that cost is a sunk cost.

Direct economic effects also occur for the country of origin of the students since there is some probability that those students will not come back home after their stay abroad or not spend their career at home, which means a loss of skill and of contribution to GDP.

According to Throsby (1999), all in all the impact for the host country is neutral. For the origin country, that impact is more ambiguous: in the case of Germany, it seems that there exists a direct cost in terms of student support, and also in terms of lost output and less social contributions; in Sweden however, the effects seem to be balanced.

3.2. Differed and indirect economic effects

A stay abroad also improves human capital indirectly. The economic literature stresses that human capital obeys a process of accumulation. In that respect, a stay abroad, like other features from life and education, is an experiment which may add to the accumulation of knowledge and help improving productivity. This is so because, next to making it possible for an individual to attend classes in another, possibly better, university, staying abroad means being confronted with a new environment. This environment may include the use of another language and the adaptation to a different culture. Such an experiment is positive in terms of productivity; indeed, the mobile student acquires concepts harder to get domestically and she expects that her future employer will recognize that she has a larger capacity in terms of integration and practice of foreign language.

Moreover mobility enables to create cross border networks. Former mobile students will be able to propose new outlets for trade to their employers. A good example is reported by Hsu and Sexenian (2001); they set forth the important links woven by a community of Taiwanese people which had settled in Silicon Valley,

California. That network effect seems particularly important, though not easily measurable.

The following two questions are especially relevant for our purposes,

- Do studies abroad influence the geographic area in which current mobile students evolve? and
- Do studies abroad influence the geographic area in which former mobile students will evolve?

Large numbers of foreign students could affect the structures which host them. In that respect Ward (2001) proposes to study the following four questions: What is the nature of the interaction and relations between the international students and, respectively, the local students and the host institutions? What is the difference in terms of use of the institutional support between the international and local students? What is the impact of the mobile students on teaching and the training? And what are the conditions so that positive effects of internationalization appear?

These questions led the author to note that the interactions between local and foreign students are weak, even non-existent. It also seems that the impact of the foreign students on the local teaching habits is very weak and that the internationally mobile students have very little influence on the functioning of the institutions in the host country.

One of the most important impacts of student mobility consists in a shift of human capital. If one admits that studying abroad increases the probability of working abroad later in the career, one can easily imagine that international student mobility will allow the creation of an efficient EU wide job market which would permit a better allocation of resources and thus a stronger growth.

Oosterbeek and Webbink (2009) study the impact of a subsidy to cross border mobility of individuals who pursue higher education in The Netherlands. Their first results, using ordinary least squares, show that the subsidy increases the probability of studying abroad from 25 to 30 per cent and the number of months spent abroad from five to eight months. They also show that recipients of the help have the probability of living in the Netherlands during the first years of their professional career decreased by 30 per cent. Further, second results based on instrumental variables reinforce the first findings: studying abroad increases the probability of settling abroad by 100 per cent, each month spent abroad decreasing the probability of living in the Netherlands at the beginning of the career from 4 to 5 per cent. This study confirms the intuition issued above; however it refers to the sole case of the Netherlands and it would be interesting to see similar studies for other countries.

Jahr and Teichler (2001) summarize the results of a study undertaken by the Center for Research on Higher Education and Work of the University of Kassel in Germany, over the 1989-1994 period of time. The purpose of this study is to analyse the impact of a temporary stay abroad during the studies. The investigation reveals that 94 per cent of the former Erasmus students graduated during the following five years. Moreover the students who studied abroad think that their stay was positive for their personal development and their learning of other cultures

and foreign languages. However, the majority of the students estimate that the stay abroad did not have a decisive impact on their future job from the point of view of the qualification or remuneration. On the other hand, the authors mention that, among the students actually employed five years after the stay, 18 per cent work abroad (9 per cent in the country which hosted them during their Erasmus stay, and another 9 per cent in another country), a figure which is 2 to 3 per cent higher than the European average. Five years later, a new questionnaire addressed to those individuals reveals that half of them frequently use the language of the country which hosted them; and that approximately one third always use competences acquired abroad. And even for those who do not work abroad, the knowledge acquired during their stay is important for their employment.

That new study tends to confirm the effects that we anticipated above. For the authors however it is likely that the study is biased. Indeed, it is pretty sure that the most mobile people have also little time for filling a questionnaire. In the same way, one can think that some competences had already been acquired in the origin country – like mastering the language – or that the students who left had already an experience of living abroad.

The work of Parey and Waldinger (2011) tries to avoid the above biases. Through a more complex econometric methodology, their first conclusion is that granting more subsidies involves larger student mobility and increasing professional mobility. Then, using a large database on German students, they investigate the causality between student mobility and professional mobility; their results show that studying abroad increases the probability of working abroad from approximately 15 to 20 per cent. Moreover, it seems that students tend to migrate to the countries where they stayed during their studies.

4. Theoretical analysis

The developments above were devoted to the presentation of stylized facts motivating this study (Section 2) and to that of results from the economic literature able to highlight some aspects of the topic (Section 3). Now we turn to a theoretical analysis based on Gérard (2010a,b). It assumes a deliberately simplified world in order to set forth some results that may eventually be turned into policy propositions.

We first assume that higher education is entirely financed by local taxpayers and we call such feature an application of the *host country principle*. Then we turn to an alternative principle: studies are financed by the country where students got their previous degree; in such a system studies are paid by the country where the student comes from and we can name that an application of the *origin country principle*.

In order to circumvent the difficulties of implementing the latter system we explore close specific designs like a system of two-part vouchers granted by the origin country government. In that case the first part of the voucher is dedicated to cover the cost of the studies either at home or abroad provided it is in an institu-

tion whose quality has been recognized by the issuer of the voucher. The second part of the voucher aims at providing a *student wage* which might be also an incentive for attracting students to higher education in general, through an extra wage for students belonging to targeted groups, or to specific fields of studies.

4.1. The host country principle

Let a Union consists of two countries. Each one wants to maximize the social welfare of its population which depends on the number of graduates from higher education who work in the country, in turn a factor for producing GDP. Resident students educated abroad and foreign students hosted in the country and remaining in the territory after completing their studies might be more productive than purely domestically educated residents. This is why countries have to decide on the degree of international opening of their workers, represented by the number of credits (or ECTS) that they intend to deliver to students coming from abroad; such a mechanism encompasses the *quotas* of foreign students introduced by Austria and Belgium in some fields of studies. There is no tuition fee charged to students and the costs of providing higher education are supported by local tax revenue. Furthermore, there is no difference in costs between national and international students, or between countries.

Externalities are clearly at work in such a setting. Indeed a country only cares for students who will work on its territory and thus only includes those people in its objective function neglecting the human capital represented by foreign students educated in its territory but who go back home after completing their studies; those students will increase GDP in their country of origin.

This model makes it possible to build up a two country infinitely living non cooperative game and to draw two main conclusions from the obtained Nash equilibrium. On the one hand, too few credits, or seats in aula, are proposed to foreign students as compared with an efficient benchmark where the governments – or a supranational authority – jointly maximize the social welfare of their countries. On the other hand, the number of credits supplied to foreign students decreases when the probability that they return home at the end of their studies increases; indeed those students will not contribute to local GDP in the future.

The policy lesson driven by this model is that using quotas to limit the number of foreign students is an inefficient option; we come back below on that issue.

4.2. The origin country principle

Suppose the same theoretical framework as in the previous model. But studies of foreign students are financed by the country where they come from; that country is termed their origin country and it has to finance the studies of its students. Henceforth, each government has to choose the quantity of credits that it will grant to the students that it sends abroad or, more simply, to decide on the number of students that it sends abroad.

One can show that, although it is still inefficient compared with the efficient benchmark above, the outcome of this design is more efficient than the previous one, provided that the probability of returning home after completion of the studies is higher than a given threshold. By more efficient we mean that the number of credits or of foreign students is closer to that generated by the efficient benchmark. The reason of the efficiency gain is that countries now decide on their provision of seats in aula or of ECTS based on the domestic students expected to return home after their studies abroad instead of the foreign students supposed to stay in the host country after those studies, the share of the former being larger than that of the latter.

We may conclude from these two models that *the origin country principle supports a more efficient solution than the current application of the host country principle, even if neither of those principles makes it possible to eliminate the free riding phenomenon that a country might have the studies of further contributors to its own GDP financed by taxpayers of the other country.*

However the implementation of that second model raises some issues. A simple solution should be that the two countries agree to jointly implementing that design. They may do that through, say, a bilateral treaty like treaties existing in tax or social security matters; or through a directive decided by the EU authorities. In that case each country commits to pay the actual costs of studies – not the nearly or actually zero tuition fees – of its origin students to the other country, provided that the students enrol in schools agreed by the country of origin, by which is meant that the quality of their education is recognized by the origin country. That recognition might be based on a principle of mutual recognition or on the use of quality certification process.

However we may question the reasons why an origin country is prepared to pay for studies in another jurisdiction. In other words will Germany or France be ready to approve a treaty or a directive implying that they have to pay for the studies of their residents in Austria or in Belgium? Of course, we cannot rule out such possibility, e.g. in the framework of a policy package or in that of a more integrated higher education policy; nevertheless for the time being it is hard to imagine such policy design being adopted easily. Therefore we should consider other, possibly close, designs. The first one comes out to be a good proxy for the just above described mechanism, the other two potentially involve a more efficient outcome. The first one is based on vouchers delivered by the country of origin; the second one on a Bhagwati tax and the last one on contingent loans.

Notice that, within the European Union, the origin country principle currently applies for health care abroad: a Belgian citizen hospitalized in Spain will have her health care eventually paid to Spain by Belgian social security. In higher education matters, the principle applies in Switzerland – see Section 5 below – where a canton without a university pays the cantons with a university, which host its students.

4.3. A two-part voucher system

Rather than explicitly transferring means to partner country one may imagine a European or Bologna area reform of higher education financing based on a system of vouchers; and if possible a system of two-part vouchers.

4.3.1. First part of the higher education voucher: covering the cost of studies

By that system we first mean that the government of the origin country provides its prospective students with vouchers that they may use to pay the actual cost of their studies, i.e. the cost supported by the teaching institutions and you may imagine that the voucher value corresponds to one year of studies or 60 ECTS, either at home or abroad, again provided that students enrol in schools whose quality is recognized by the issuer of the voucher. For those students who keep studying domestically nothing is changed by the reform. For those who prefer studying abroad the voucher is to be passed to the authorities of the foreign university.

The efficiency of such a mechanism first call for a pre-condition, that higher education institutions across the participating area – the EU or the Bologna area, or a larger geographic area – do not accept students unable to produce such a voucher, although we hardly rule out that they accept them at a tuition fee higher than actual cost.

That condition being fulfilled, the system exhibits the important property to allow each country to expand its area of sovereignty over its nationals, in terms of higher education, especially if the vouchers are specified by field of studies.

To take the example of medical studies, Germany or France might decide to grant a given number of vouchers for first year study in medicine; French or German students who get those vouchers may use them in their country or abroad; those who fail to obtain a voucher are no longer permitted to enrol either at home or abroad. Therefore the *numerus clausus* decided by France or Germany hold for students from those countries even if they decide for studying in another jurisdiction.

Table 2 below is based on Belgian figures and provides values for the vouchers at stake.

4.3.2. Second part of the higher education voucher: covering the cost of living and providing incentives to targeted students

The second part of the voucher, though not a necessary condition for the system to operate, would relate it to the financing of the student's life during the studies, providing her with a so called *student wage*.

Such a student wage could pursue two goals. One goal is to encourage students to undertake studying some fields which, though especially needed by the society, are less attractive, maybe because they are less rewarded in money terms, or be-

cause they are less prestigious. Another goal is to favour some targeted groups like women, low income or immigrant families. That second part of the voucher actually makes it a tool for education – or labour market – and social policy.

Table 2. Budget allocated by the French-speaking Community of Belgium.

<i>University higher education</i>	Euros per student
Any year of bachelor and master degree in philosophy, theology, humanities, history, art and archaeology, architecture and urban planning, information and communication, political and social sciences, law, criminology, economics and management, psychology and sciences of education	5,597.50
1st or 2nd year of bachelor in medical sciences, veterinary medicine, dental sciences, agronomic sciences and biological engineering, engineering, any year of bachelor or master's degree in art or sciences of art	11,195.00
3rd year of bachelor degree or any year of master degree in medical sciences, veterinary medicine, dental sciences, sciences, agronomic sciences and biological engineering, engineering.	16,792.50
<i>Non university higher education</i>	
Short-type economic studies	4,665.63
Long-type economic studies, short-type technical studies	5,132.19
Short-type agronomy, social studies	5,365.48
Applied arts (industrial engineer...)	5,598.76
Translator-interpreters	6,765.16
Paramedical	6,998.45
Education (teachers, ...), long-type agronomy, long-type technical	7,698.29

Source: Gérard and Vandenberghe (2007b). Estimates by field of studies, based on the budget 2005-2006 of the French-speaking Community of Belgium.

4.4. A Baghwati tax

So far the government of the country financing the improvement of students' human capital gets a return on investment only if graduates stay in the country af-

ter completing their studies – under the host country principle – or if they stay or return home after such completion – under the origin principle.

Now let us investigate more efficient policy designs where higher education investing countries either benefit from the contribution of graduates to their own GDP or social welfare, or are compensated for non-benefiting from such a return. The first such design is based on the *Bhagwati tax*. That tax has been suggested by economist Bhagwati in order to offset developing countries whose students, after completing their education in developed countries, decided to stay and work there rather than to return home (see Bhagwati, 1976, and Wilson, 2008); the tax is levied on the income of graduates remaining abroad.

Suppose therefore a graduate who studied in country H – for host – with vouchers financed by country O – for origin. After graduation she decides to stay in country H and to spend her career in that latter country. If a Bhagwati tax is at work, that person will have to pay a tax to her origin country in order to compensate it for the financing of her studies. One can show that this design is efficient if the compensation relates to both the financing cost and the opportunity cost incurred by the origin country.

That compensation might be organized through the local tax system and the local tax administration provided an international arrangement be in place. Should the career of the person at stake be shared between countries H and O, the compensation should be *pro rata temporis*. In the same line, extension of the reasoning to the case of a career distributed among various countries is straightforward.

In the introductory section above we wrote that “graduates are expected to get higher wages than less skilled people and therefore to pay higher taxes, especially in those countries where labour income tax is progressive. In that sense students receive implicit loans from the government during the time of their studies that they later repay with an interest, in a way contingent to the income generated by their studies.” We added that “that reasoning holds in a world where the graduate pays her tax in the country where she graduated. However it no longer holds in a setting where people graduate in one jurisdiction and then spend their career in another or in some other countries. In such a setting, one country pays for the cost of studies and other benefit from the skill, the contribution to local GDP and tax revenue.” The Bhagwati tax set forth in this section is precisely a remedy to that difficulty since in any case the graduates compensate the country which provided them with such an implicit grant. Provided the income tax system being progressive, the Bhagwati tax may be made so and thus the investigated design is a form of contingent loan mechanism. One – important – difference however is that the size and timing of the refund of a contingent loan is limited by the amount of the loan while the payment of the tax is not limited over time; however an equivalence in discounting terms between the two mechanisms might be computed.

Notice that such a Bhagwati tax exists for professional soccer players; a tax is levied on their gains and paid out to the clubs which supported their initial training in junior categories.

4.5. Contingent loans

In the previous section we assumed that the cost of studies was initially paid by public authorities and later recovered through the tax system by means of either a traditional income tax or a Bhagwati tax; such a mechanism looks like a contingent loan where the lender is the government of the origin country.

One can make a step further and imagine that the lender is the government of the host country. Consider again the stylized facts which motivate this study and suppose that any European student hosted in a Belgian institution of higher education located in the French-speaking Belgian Community, including Belgian residents, is proposed a loan by the government of the entity. She will pay that money back during her career, depending on her income.

The lender could be a private institution as well, like a bank or an insurance company, at least in theory. Numerous authors however – on contingent loans in general see Barr (1989, 1998), Chapman (1997, 2005); and on the particular issue investigated here del Rey and Verheyden (2011) – consider that such a loan is too risky for the private sector, but in some fields like a master in business administration, especially because students are not able to provide the bank with enough collateral. This means that the financial risk has to be partly or totally socialized, by which is meant, that private loans – supposing them feasible – will need a public guarantee. Such public guarantee could be provided by the host country or by the origin country or eventually by an international institution like the European Investment Bank. Notice that that latter already has some experience with contingent loans as a lender to organizations dedicated to that purposes.

This system still deserves at least two remarks. The first one is to mention that in some countries, like Australia, reported income for tax purposes, is used to assess the income taken into account to compute the size and timing of the refund.

A second remark makes a link between the contingent loan and the vouchers depicted above. As we have seen the vouchers can be used as incentive tools for higher education, labour and social policy. In the same way as granting extra amounts to students undertaking especially needed fields of studies, though little rewarded, or belonging to targeted social groups, the size and timing of the refund might be modulated in line with the desirability and the social value of the studies and the socioeconomic group to which belongs the – prospective – student. And some loans might be turned into grants accordingly, e.g. if you become a teacher or a civil servant paid by the government.

More generally, like vouchers were twofold – a voucher to cover the costs of studies, a voucher to support the cost of living – a contingent loan may aim at both covering the cost of studies and providing the student with a monthly amount equivalent to a student wage. As noticed by Barr in an exposition of contingent loans, that system makes studies costless for the student during the time of the studies.

Before turning to policy suggestions, we still want to highlight the topic under investigation by the examination of some national experiences.

5. Some national experiences

Let us consider three national experiences that we consider as especially relevant for our purposes.

5.1. Norway: a combination of loans and grants

In Norway, there is generally no tuition fee for higher education. Therefore, the Norwegian State Educational Loan Fund, a public institution, has not been created to help students financing the cost of studies. This Fund intends to support the student's life costs, and thus to provide them with a kind of student wage. Though it primarily aims Norwegian students, it may be also accessible to foreign students, under some conditions. The amount of the help does not depend on the student's family means; it is presented, initially, as a loan varying between 10,000 and to 14,000 Euros, according to whether or not the student lives in her parents' house and if she validates all the examinations. Later, these loans might be turned, partly or totally, into grants.

That aid is also accessible to students who decide to study abroad, though then subject to several conditions, like the similar quality of the host institution, the equivalent level of the studies and the attendance to the courses. These students benefit from the same financial help as the other Norwegian students, and might receive an extra amount related to additional costs implied by the studies abroad, like travelling costs and learning of the local language, and also in the event of very high registration fees.

This system is generous towards both national and international students, since their conditions are rather generous. The goal of Norway is twofold and well in line with the ideas developed in the previous section. The first goal is the free access to higher education for all the social classes of the country. The second goal is more international: by that system, Norway makes it possible to give an international dimension to its project. It makes it possible to stimulate the Norwegian students to study abroad and it supports the integration of the foreign students in Norway so that they remain in the country at the end of their studies.

For a more detailed description of this system, we propose to the reader to refer to Levy (2004).

5.2. Australia: a contingent loans system

In Australia, higher education is financed by the government – the Commonwealth contribution – and by the students – student contribution. The history of that system might be read e.g. in Maguain (2005). Registration fees are differentiated based on the differences in the costs of studies and the expected future return on those studies; those latter are left to the appreciation of the institutions.

Australia was the first country to introduce contingent loans, called FEE-HELP or Fee - Higher Education Loan Program, for students, irrespective they are Australian citizens or, under some conditions, foreigners. Students with few means may also call for this kind of loan in order to finance the cost of living. The loans are not charged a real interest rate and their refund is subject to future incomes: the refund is carried out from a certain income threshold and little increases with income.

Another system was set up for the mobile students, called OS-HELP. It makes it possible to finance the cost of the studies abroad. It obeys the same principle as the FEE-HELP; it is provided for a six-month period and is renewable only twice; to receive that help, students must be affiliated with an Australian institution.

5.3. Switzerland: A centralized cantonal management

Switzerland is a confederation of twenty six cantons which have an executive and a legislative power. Competences in terms of higher education are distributed between the confederation and the cantons.

Since higher education is financed partly by cantons, a system called “Inter-cantonal University Agreement” aims at coordinating the university policy. It allows each Swiss student to benefit from an equal treatment in terms of access to the university. A canton cannot operate a selection at the entrance of its universities based the canton of origin of the student. On the other hand, if a canton is debtor in term of student flow compared to another canton, it will have to pay compensation to that latter, in line with the cost of the studies in that canton.

Notice that such a system also exists among Scandinavian countries.

6. To conclude: policy suggestions

Our research question was: “how to internalize the negative externality imposed to Austria, Belgium and similar countries by their large neighbours”; answering such a question is a true challenge.

Belgian authorities have responded that challenge by imposing *quotas* to the number of first year foreign students, including European students, in some fields of studies.

That system of quotas however has been considered by the European Court of Justice – see European Court of Justice 2010 –, the ultimate custodian of EU principles, as not compatible with EU Law. For the Court indeed, “Articles 18 and 21 TFEU (the Treaty founding the EU) preclude national legislation, such as that at issue in the main proceedings, which limits the number of students not regarded as resident in Belgium who may enrol for the first time in medical and paramedical courses at Higher Education establishments, unless the referring court, having assessed all the relevant evidence submitted by the competent authorities, finds that that legislation is justified in the light of the objective of protection of public health”. Moreover, although “the Belgian Government, supported by the Austrian

Government, confirms that the legislation at issue in the main proceedings is necessary to attain the objective of ensuring the quality and continuing provision of medical and paramedical care within the French Community”, the Court adds that “it follows from the case-law that a difference in treatment based indirectly on nationality may be justified by the objective of maintaining a balanced high quality medical service open to all, in so far as it contributes to achieving a high level of protection of health. Thus, it must be determined whether the legislation at issue in the main proceedings is appropriate for securing the attainment of that legitimate objective and whether it goes beyond what is necessary to attain it (...). That being the case, it is for the competent national authorities to show that such risks actually exist. According to settled case-law, it is for those Authorities, where they adopt a measure derogating from a principle enshrined by European Union Law, to show in each individual case that that measure is appropriate for securing the attainment of the objective relied upon and does not go beyond what is necessary to attain it. The reasons invoked by a Member State by way of justification must thus be accompanied by an analysis of the appropriateness and proportionality of the measure adopted by that State and by specific evidence substantiating its arguments”.

As far as we know, the position of French-speaking Belgian Authorities is to justify the quotas “by the objective of maintaining a balanced high quality medical service open to all”.

Our conclusion, at the end of this analysis, is quite different. We entitled one of our papers (Gérard and Vandenberghe 2007a) « Mobilité étudiante en Europe: une idée qui mérite mieux que des quotas » (Student mobility in Europe: an idea which deserves better than quotas). That is to say that an alternative avenue does exist and we have explored some of its possible designs in this paper; all are based on the origin country principle.

The basic idea is that each EU government, when it decides of its higher education policy, should take into account the welfare of the whole European Union, not to say of the entire world, and not the sole welfare of its territory or its taxpayers. For that government to behave such, one needs to compensate it for the loss of local welfare generated by students not returning home after completing their studies.

Therefore, if a government pays for studies of its residents, either at home or abroad – provided it is in an institution of recognized quality – it will deserve getting a return, either a contribution of graduates to the local welfare or a pecuniary compensation paid by this graduate in line with her means – because she would have contributed to local welfare accordingly. That latter may take the form of a tax either paid directly or paid through her country of residence; this is the idea of a Bhagwati tax. Otherwise that payment for studies might take the form of a contingent loan provided by a financial institution with public guarantee; in that case the compensation goes through a payment to that institution rather than through the tax system. In that latter case also there is fundamentally no need that the paying institution be one from the origin country.

Practically both the public grant and the contingent loan may take the form of a two-part voucher, one part to cover the actual costs of studies, another part to provide the students with a student wage. Though it is not a pre-condition for the operation of the system, the student wage is an important block of the financing of higher education – see above the Norwegian case – which allows the whole system to be used to direct students to higher education in general, and to specific fields, like those which are especially needed from a social viewpoint though less rewarded in money terms, as well; and to incentivise some targeted groups of people in the population like women, low income people or migrants.

In that respect the possibility to turn loans into grants is also an interesting opportunity. The case was mentioned to us of Norway providing loans to students from developing country and turning those loans into grants if those people return home after their studies, contributing to the development of their origin country.

Although the externalities at the very root of this paper are currently limited, they are expected to grow in the future, not only within Europe but also worldwide. Studies predict an important progression of student flows from Asian countries such as China, India or Indonesia. International mobility covers more than ever a current and future policy issue. That also justifies that the European Union committed to build up a true European space of higher education.

Among final remarks let us notice that, obviously, from the point of view of eliminating externalities, centralizing, say at EU level, the organisation and financing of higher education should be an efficient device; however there is no room today in EU agenda to make higher education a EU centralized competence or even a shared one. Should that latter opportunity emerges in the future; then we should subject it to a test of subsidiarity (see Pelkmans 2005, Gérard 2008).

Moreover international mobility of students is not only a question of externalities and free riding. Other reasons may preside to the decision of an active policy of hosting foreign students. For example, France recently decided to launch a plan to increase its capacity of hosting foreign students; this country considers that such an action is a real geopolitical investment – a foreign student can be an excellent ambassador of the French culture when she returns in her country of origin – and an economic investment as well – she will be able to create links with France.

Finally, notice that throughout the paper we have kept higher education as a sector mainly state financed. We have to be aware however that mobility or globalisation are likely to reduce the size of the public sector in that field – which is externality related – though to increase the share of the private sector (Justman and Thisse 1997, 2000, Mechtenberg and Strausz 2008, 2009, Buettner and Schwager 2004, Poutvaara and Kannianen 2000).

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