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## **The Structure of Higher Education in the US and Europe: Reflections on the Nature of the Bologna Reforms**

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### **Abstract**

Throughout much of its early history, the United States drew inspiration from the leading European models of higher education. Now, with the start of the Bologna process in 1999, Europe has adopted some of the unique aspects of the American system of higher education: a standardized undergraduate and graduate degree structure and a system of transferable academic credits. These recent changes in Europe raise two important questions for higher education in the United States: (i) How has the distinct American structure of higher education worked to improve outcomes? (ii) What are the consequences of these European reforms for the future of American higher education? This paper will explore these issues from a theoretical and empirical perspective, focusing on the benefits of flexibility and competition associated with the American system of higher education.

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## 1. Introduction

The United States has been the undisputed leader in higher education since World War II. According to a recent ranking of universities around the world, 17 of the top 20 universities are in the United States.<sup>1</sup> Moreover, the US remains the predominant destination for foreign students, accounting for over 20 percent of these students in 2004. (NSF, 2008) But there are growing concerns that American higher education is losing ground relative to other countries. Much attention is focused on the spectacular growth of higher education in India and China.<sup>2</sup> And, indeed, these countries are poised to become among the world's leaders in the not-to-distant future. However, at this juncture, it is Europe that presents the main challenge to America's dominance in higher education. After trailing in the fraction of college and university enrollments at mid-century, many countries in Europe have caught up and, in some case, overtaken the US.<sup>3</sup> Increasing numbers of foreign students are choosing to study in Europe over the US as compared to previous years. And a broader look at the university rankings reveals that 33 of the top 100 are located in Europe while not a single university from India or China is currently listed. Thus, though the American system of higher education took the lead from Europe in the mid-20<sup>th</sup> century, Europe may be on the brink of a strong comeback.

Europe is also in the process of instituting some far-reaching reforms to the structure of higher education. In 1999, ministers of education from 29 European countries issued the Bologna Declaration in order to modernize and harmonize the European

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<sup>1</sup> This is according to ratings by Shanghai Jiao Tong University's Institute of Higher Education, which have been widely cited. (<http://ed.sjtu.edu.cn/rank/2007/ranking2007.htm>)

<sup>2</sup> See Freeman (2005). Fears about China and India surpassing the United States have been widespread in the popular media but there is some contention regarding the comparability of these degrees.

<sup>3</sup> The production of PhD equivalents in Germany, France, and the United Kingdom combine to surpass the total number of PhDs granted in the United States. (NSF, 2008)

system of higher education.<sup>4</sup> The ultimate aim of the Bologna process is the creation of a European Higher Education Area (EHEA) with academic degree and quality assurance standards comparable throughout Europe. However, the Bologna Declaration also makes explicit the “objective of increasing the international competitiveness of the European system of higher education” and introduces specific reforms “to ensure that the European higher education system acquires a world-wide degree of attraction.” These reforms include the introduction of a standardized undergraduate and graduate degree structure and a system of transferable academic credits. With these reforms, Europe is set to adopt some central elements of the American system of higher education. That the United States originally drew early inspiration from the leading European models of higher education at the time makes Europe's convergence to the modern American model of higher education especially striking.

How might these structural reforms affect higher education in Europe? We might expect the Bologna reforms to enhance the flexibility of student choices and improve competition among institutions of higher education, two aspects often lauded in the American system of higher education. In terms of providing enhanced flexibility, these reforms may reduce the costs associated with choosing a wrong course of study by allowing students to change fields and/or universities after completing a short (bachelor) first degree. With the introduction of transferable credits, students may find it easier to switch fields and/or universities even in the midst of their degree. The Bologna reforms might also stimulate students to take and combine a variety of different fields of study. More generally, these reforms should help induce a better allocation of students to fields and courses in university. The Bologna reforms also have the potential to encourage

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<sup>4</sup> At present, 46 European nations (both EU and non-EU members) are signatories to the Bologna process.

greater competition between universities in Europe. While not sufficient for generating competition, a more comparable degree structure enables students to make meaningful comparisons across countries and encourage them to choose the best program available to them. Finally, the Bologna reforms will make the European system more compatible with other systems of higher education around the world, helping Europe compete on a global scale by attracting more foreign students.

The Bologna reforms in Europe may also have consequences for higher education in the United States. If the Bologna reforms do indeed attract more foreign students to Europe, this could lead to further declines in the share of foreign students coming to study in America. Moreover, the possibility of increased competition among European institutions of higher education could lead to greater demand for scarce resources such as highly talented faculty. This increased competition among institutions might also affect research productivity and help thrust more European universities in the top of the world rankings. Whether any or all of these possibilities are actually realized, however, is likely to depend on the introduction of further reforms, such as increased autonomy and funding for European universities.<sup>5</sup>

This chapter will explore the main characteristics associated with the Bologna reforms and consider the possible consequences of these reforms for higher education in the United States and Europe. Bringing data to bear on these important questions is exceedingly difficult. For one thing, the Bologna reforms are still ongoing, with many countries in the midst of restructuring their systems of higher education. Moreover, the most substantial effects of these reforms on higher education in Europe and America may take time to emerge. Instead, this paper attempts to offer some insight on the underlying

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<sup>5</sup> See Aghion et. al. (2007) for further discussion of spending and autonomy in European higher education.

characteristics associated with the Bologna reforms by comparing across the disparate systems of higher education *prior* to the start of the Bologna process. This approach remains extremely challenging because the data requirements are very demanding, and unfortunately, there are no comparable individual-level datasets on higher education that span both the United States and Europe. Cross-countries comparisons of higher education are also complicated by the enormous heterogeneity that still remain across different systems. Nevertheless, it is important to bring some data to bear on these questions. So, while proceeding with caution, we will attempt to make some broad comparisons across countries.

The chapter will proceed as follows: Section 2 will provide some background on higher education in the US and Europe, and describe the Bologna reforms. Section 3 will consider the impact of the structure of higher education on flexibility and competition. Section 4 will explore the effects of having separate undergraduate and graduate cycles of higher education by comparing between the United Kingdom and several key countries in continental Europe. Section 5 will explore the effect of a credit system by comparing outcomes between the United States and United Kingdom. Section 6 will describe some of the possible effects of the Bologna reforms on foreign student enrollments. And Section 7 will conclude with some final reflections.

## **2. Background: The Bologna Reforms and the Structure of Higher Education**

Systems of higher education around the world differ in many respects; in the level of funding and the source of this funding, whether public or private; in the degree of autonomy held by institutions of higher education; in the process of admitting students

into colleges and universities, and in the level of tuition and the amount of financial aid available directly to students. The United States spends over 3 percent of GDP on higher education whereas most countries in Europe spend less than 2 percent. (OECD, 2007) And a far larger proportion of funding for higher education in the US comes from private sources as compared to Europe where most universities are completely state-funded.<sup>6</sup> However, even within Europe, there are large differences in the degree of autonomy granted to institutions of higher education.<sup>7</sup> There is also wide variation in the level of tuition: for example, Denmark, Norway and Sweden have tended to subsidize the full cost of education for their students while the UK and the US in particular have fairly high fees.

There are also major differences in the underlying structure of higher education – i.e. the manner in which courses and degrees are organized. The UK, as well as the US and other Commonwealth countries, have three main degree cycles: bachelor, master, and doctorate. The bachelor degree ranges from 3 to 4 years while the master is usually 1 or 2 years (with doctorates generally requiring at least 3 additional years of research).<sup>8</sup> In contrast, many countries in continental Europe have traditionally had a much longer first degree cycle, sometimes taking up to 6 years to complete, though the formal length was often shorter. For example, students in Germany have generally received a *magister* or *diplom* after 4 to 6 years of successful study; in Italy, students often completed their *laurea* after even longer periods of study. Other countries have structured their systems of

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<sup>6</sup> This is reflected with a large and decentralized private sector of higher education. The United States is also rather unique in the prominence of its private institutions.

<sup>7</sup> For example, Sweden and the UK have a rare degree of wage-setting autonomy while some countries in southern Europe lack even hiring autonomy. See Aghion et. al. (2007) for more details.

<sup>8</sup> Note that, in `Scotland, the first degree is sometimes referred to as an MA degree (as distinguished from MLitt or MSc which are used to refer to second degrees).

higher education in a way that does not conform to the Anglo-Saxon or German/Italian paradigm. Thus, France has had its own unique structure of higher education, with a broad set of degrees which spans two different sectors: traditional universities and the *Grandes Ecoles*. It is this diverse structure of higher education that the Bologna reforms seek to harmonize.

Much of the groundwork for the Bologna reforms was introduced by the “Sorbonne Declaration” signed on May 25, 1998 in Paris by the ministers of education of France, Germany, Italy, and the United Kingdom. In it, these four key members of the European Union called for the harmonization of their disparate systems of higher education. Just over a year later, on June 19, 1999, the ministers of education from 29 European countries gathered in Bologna to sign the Declaration on the “European Higher Education Area.” This Bologna Declaration, as it has become known, proposed a number of specific reforms for higher education in Europe: (i) adoption of a system of easily readable and comparable degrees, (ii) adoption of a system essentially based on two main cycles, undergraduate and graduate, (iii) establishment of a system of credits, (iv) promotion of mobility by overcoming obstacles for the effective exercise of free movement, (v) promotion of European cooperation in quality assurance, and (vi) promotion of the European dimension of higher education. In subsequent meetings, held every two years, additional objectives have been proposed and many new signatory countries have joined the Bologna process.

Though the proposed reforms are far-reaching and multifaceted, most of the attention has been focused on the changes in degree structure. While the Bologna reform initially called for a two-cycle system, amendments to the original declaration added the

doctoral level as a third-cycle. Thus, the proposed harmonization of the degree structure for European systems of higher education mirrors the bachelor, masters, and doctorate degrees which underpin the structure of higher education in the UK and the US. In particular, the Bologna reforms have pushed for replacing the longer first degrees with a three to four-year first (bachelor) degree followed by a one to two-year master degree. Another important, but less emphasized, aspect of the reforms is the call to establish a system of academic credits. Indeed, differences in the structure of higher education also extend to the organization of the courses within degrees. The US has been somewhat unusual in having a modular system where students accumulate credit for each course taken. In fact, a European Credit Transfer System (ECTS) was introduced in 1989 to facilitate the recognition of periods of study abroad through the ERASMUS program.<sup>9</sup> However, with the Bologna reforms, the ECTS is set to develop into an accumulation system which accounts for the progress that students make through their degrees. These two features of the Bologna reforms which affect the structure of higher education, changes to the degree structure and the adoption of academic credits, are the focus of the this chapter.

### **3. The Impact of Structure on Outcomes: Flexibility and Competition**

How might the structure of higher education impact student and institutional outcomes? There are two important aspects that are likely to be affected by the structure of higher education. First, the structure of higher education can either enhance or inhibit flexibility in student choices. Second, the structure of higher education can either foster

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<sup>9</sup> The ERASMUS is a study-abroad program set up in 1987 to encourage student mobility in Europe. It has since been incorporated in the Socrates I and Socrates II programs, and recently replaced by the Lifelong Learning Program 2007-2013.



or impair competition among institutions of higher education. Each of these is discussed in more detail below.

### *3.1 Flexibility*

The decision to invest in higher education is usually made under considerable uncertainty. Students may be unsure about their aptitude for college and graduate school.<sup>10</sup> Students may also be uncertain about their talents and interests in different fields of study.<sup>11</sup> Moreover, the labor market rewards and opportunities associated with higher levels of education and specific fields of study are never fully known. They may shift over time and differ across regions due to labor market volatility. Finally, since college or graduate school is typically a one-time investment expenditure rather than a repeated purchase, students do not have complete information on the quality of the educational product being offered by institutions. In light of these various sources of uncertainty, certain structures of higher education may be better suited to reveal important information and allow students the flexibility of adjusting their choices based on this information.

A system of higher education with a straightforward degree structure that allows for credit transfers and accumulation should provide students with greater flexibility in their choices. Having course credits banked in each student's transcript allows for relatively easy transfer both between institutions and within institutions between major fields. Thus, students who discover that they chose the wrong institution or the wrong field of study are able to switch to a preferred alternative.<sup>12</sup> A straightforward degree

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<sup>10</sup> See Cunha, Heckman, and Navarro (2005) and Cunha and Heckman (2007) for attempts to separately estimate the role of this type of uncertainty (as distinguished from heterogeneity across students).

<sup>11</sup> See Malamud (2007a) for a detailed exploration associated with this aspect of uncertainty about talents.

<sup>12</sup> Trow (2005) discusses problems that arise when such flexibility leads to incoherent courses of study.

structure with a relatively short first degree cycle can also contribute to this type of flexibility. Students who realize that their first degrees did not provide for a good match can switch institutions and fields of study for their second and/or third degree. On the other hand, a system in which students followed a long and rigid curriculum would not provide students with the opportunity to gather information and correct their mistakes.

The structural reforms associated with the Bologna process are likely to enhance flexibility. Since many European universities have traditionally had rigid structures, the introduction of an academic credit system and a shorter first degree cycle should reduce the costs associated with choosing a wrong course of study or the wrong institution. Upon making such mistakes, we should observe students switching fields and institutions. Jacobs and van der Plaag (2000) have also argued that the Bologna reforms would encourage students to take a more demanding study. If the cost of switching fields or degrees is relatively high, as in traditionally long degree programs, students may avoid science and engineering degrees where the prospects of successful completion are often lower. In this case, the option value associated with a shorter degree program may lead students to experiment with more difficult majors. And starting a degree in mathematics or science may be a less daunting prospect when the expected length is 3 years rather than 5 or 6 years. On the other hand, if students tend to underestimate the difficulty of completing a degree, an inability to switch fields within a long degree program may lead to a greater rate of science and engineering degrees. Finally, the modular structure associated with a credit system may also enable students to take a more diverse set of course. This may encourage students to pursue joint degrees that would not necessarily be offered by the institutions themselves.

### *3.2 Competition*

The nature of competition in the market for higher education has been a subject of much recent research.<sup>13</sup> Most of this attention has focused on American higher education, with its highly decentralized institutions and large private (non-profit) sector. Due to the hierarchical structure of institutions in the United States, it isn't clear that all colleges and universities necessarily compete with one another. But within certain tiers, institutions do appear to compete for students, for faculty and for prestige. Underpinning the success of such competition is the common structure of higher education. Most American institutions award a similar set of degrees and structure their courses in a similar fashion with transferable academic credits. This no doubt helps students compare and choose among the many alternative options open to them. In other words, the market structure of higher education is likely to be influenced by the structure of degrees and courses within and across different systems of higher education.

The Bologna reforms have the potential to encourage greater competition between universities across Europe. In the absence of a comparable degree structure across countries, students may have trouble evaluating the relative benefits of different types of degrees. Employers, too, may have difficulties in assessing the value associated with diverse set of qualifications. By introducing a more comparable degree structure, the Bologna reforms should enable students to more readily make comparisons across countries. They may also encourage institutions of higher education to improve their quality or seek certain niche markets while offering a similar set of qualifications.<sup>14</sup> Of course, it is also necessary to provide these institutions with autonomy and the necessary

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<sup>13</sup> See Rothschild and White (1993, 1995) and Winston (1999) for insightful discussions.

<sup>14</sup> Much like Caltech and MIT have focused on particular areas of study or liberal arts colleges have focused on providing a certain type of college experience.

incentives to attract students (as well as faculty). In many of the state-funded and state-controlled systems of higher education in Europe today, institutional autonomy is severely lacking. Whether increased competition can result under a different institutional setting is an interesting question, but one that is far beyond the scope of this paper.

An important condition for a well-functioning market in higher education is the ability and willingness of students to relocate in order to choose among the various institutions and programs available to them. Hoxby (1997) documents the consequences of increased competition among colleges in the United States resulting from the deregulation of the airline and telecommunications industries which lowered the cost of moving to college. The barriers to mobility for students within Europe are substantially higher due to differences in language and culture, in addition to the financial costs associated with travel and lodging. By providing grants to subsidize travel and expenses, the ERASMUS program has led to large increase in the number of European students studying abroad.<sup>15</sup> However, the length of time spent studying at other institutions has been relatively short, on the order of a 6 months or a year. For competition across institutions to take hold, students probably need to stay longer and complete their degrees. Still, there is little doubt that a high level of student mobility is an important factor for encouraging competition in higher education.

#### **4. The Length of First Degree: A Cross-Europe Comparison**

The Bologna Declaration calls for the adoption of a comparable degree structure in which 3 to 4 year bachelor-level degrees are followed by 1 to 2 year master-level

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<sup>15</sup> According to the European Commission, approximately 1.67 million students have taken part in the program since its inception in 1987.

degrees. As a result, many countries in continental Europe have taken steps to shorten their more lengthy first degree programs and introduce relatively short second degree programs. In this section, I explore some of the possible effects associated with this change by comparing across the disparate systems of higher education in Europe *prior* to the start of the Bologna process. The primary analysis focuses on the primary signatories of the Sorbonne Declaration which laid the groundwork for the Bologna Declaration: France, Germany, Italy, and the UK. These also represent the largest countries in Europe, both in terms of GDP and population.

The degree structure in France, Germany, Italy, and the UK differed widely prior to the Bologna reforms. First degree programs in Germany had a formal duration of 4 to 5 years and led to the *diplom*, or *magister*, depending on the subject. After obtaining these degrees, graduates could continue their education in two ways: through specialized postgraduate courses leading to a variety of postgraduate certificates or by pursuing a doctorate degree. First degree programs in Italy also had a formal duration of 4 to 5 years and led to a *laurea*. Graduates could then proceed to further graduate degrees if they wished. France had a rather unique structure of higher education with a highly disaggregated set of degrees; in French universities, students would first complete a 2-year *diplôme* followed by a 1-year *licence*, and then choose whether to complete a 1-year *maîtrise*.<sup>16</sup> The *Grandes Ecoles* have had a different structure altogether, with 2 years of preparatory classes followed by a 3 year degree. Finally, students in the UK generally received a BA or BSc degree after 3 or 4 years of study. After completing this first degree, students could continue to a 1 to 2 year master's degree and then proceed to a

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<sup>16</sup> After attaining these initial degrees, students could proceed to complete a *diplôme d'études approfondies* (DEA) or a *diplôme d'études supérieures spécialisées* (DESS).

doctorate degree. While differences in the formal length of degrees across Germany, Italy and the UK may not appear to be quite so stark, the *de facto* differences were substantially larger (as shown below).

The data used to compare across France, Germany, Italy, and the UK are taken from the Careers after Higher Education European Research Survey (CHEERS).<sup>17</sup> The CHEERS study focused on graduates from 12 countries who were awarded a first degree in the 1994-95 academic year. In 1999, some four years after graduation, they were surveyed about their socio-economic background, their early careers, and their retrospective views on their experience in higher education. The CHEERS study focused on first degrees, which required between 3 and 6 years of study at institutions of higher education (as defined by national system). For the most part, questionnaires were mailed out to graduates yielding an average response rate of around 40 percent.<sup>18</sup> The sampling frames were determined by each country and a weighting was undertaken so that final sample was representative of the target population defined by type of institution and degree, field of study and gender.<sup>19</sup> The final sample size was around 3,500 respondents per country.

Table 1 highlights some descriptive statistics concerning student demographics and degree characteristics across France, Germany, Italy and the UK. In line with recent trends in educational attainment by gender, the majority of students in France, Italy, and the UK are female. Across all four countries, the average student age at the time of

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<sup>17</sup> For more information about the CHEERS survey and methodology, see Schomberg and Teichler (2006).

<sup>18</sup> There was some variation across countries; the response rate ranged from 33 percent for France to 43 percent for Germany. In Italy, information was collected through in-person interviews.

<sup>19</sup> In the UK, the CHEERS survey included graduates from both traditional universities and the former polytechnics. In Germany, the CHEERS survey included graduates from both traditional universities and *Fachhochschulen*, which were meant to provide more applied skills in sciences and the arts.

survey is 30. Years of schooling prior to entry into higher education range from 12.4 years in France to 13.1 in Italy and the UK. As mentioned earlier, differences in the formal duration of first degrees across countries do not appear to be particularly large. However, the actual length of time taken to complete the first degree, as reported by respondents, varies widely. Students in the UK report completing their degrees in about 3.4 years while those in France and Germany take over 5 years and those in Italy require almost 7 years. Figure 1 plots the distribution of the degree duration across the four countries. Thus, prior to the Bologna reforms, first degrees in continental Europe took at least 1.5 years longer on average than those in the UK. The proportion of students reporting foreign citizenship is substantially larger in the UK, with 11 percent as compared to 2 or 3 percent in Germany and France (and essentially zero in Italy).<sup>20</sup> Approximately 15 percent of students report traveling during their studies, mostly for a short period of study-abroad. Interestingly, looking at the reported hours spent on course activities reveals that students in the UK spend about 4 fewer hours on their studies as compared their counterparts in France, and Germany, and almost 10 hours less than students in Italy.

Appendix Tables 1 and 2 follow up on these basic summary statistics by presenting some simple conditional means. Appendix Table 2 examines the determinants of delay in graduation by regressing the difference between the actual and required length of degrees on a variety of background characteristics. The pattern of country coefficients reveals that the differences between countries remain largely unchanged. There is substantial delay in France, Germany, and especially Italy, relative to the UK. Students

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<sup>20</sup> These are undoubtedly underestimates due to reporting bias (foreign citizens are more likely to return to their home countries after completing their studies, or wish to avoid interactions with bureaucratic entities).

studying humanities and engineering experience the largest delays, although some of the differences across fields are driven by gender. Appendix Table 2 examines the determinants studying abroad using a similar specification. The only robust and significant difference across countries appears to be between Italy and the rest of the countries. Relative to education, students studying other fields (especially humanities and social sciences) are more likely study abroad, even though women are generally more likely to study abroad. There does not appear to be a pattern relating length of degree to the likelihood of studying abroad.

Table 2 documents the composition of field of study for both first and advanced degrees in France, Germany, Italy, and the UK.<sup>21</sup> Some of the differences derive from country-specific features of higher education; education asis not represented in France because teacher training only takes place after a completing a degree. Moreover, the number of slots available in each field is sometimes determined at the central level. Still, there is no evidence that students in the UK are more likely to study science and engineering than their counterparts in Italy or Germany where the length of first degree is far longer. The proportion of students who proceed to get an advanced degree also seems to depend on the structure of degrees in each country. That some 40 percent of students report having a further degree in France and the UK, compared to less than 20 percent in Germany and Italy, is a likely a consequence of having relatively short postgraduate degrees.

Among those students who choose to pursue advanced degrees, some decide to switch to a different field of study. Students in the UK are much more likely to switch

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<sup>21</sup> Fields of study are aggregated to nine broad categories: Education, Humanities, Social Sciences, Law, Natural Sciences, Mathematics, Engineering, and Medical Sciences.



fields relative to students in France, Germany, and especially Italy. This might suggest that students in countries with long first degree cycles would like to switch fields if given the opportunity. In order to verify that the pattern of field switching is not driven by other observable characteristics across countries, Appendix Table 3 reports the results of a multivariate regression analysis. These simple regressions confirm that the differential in field switching in France, Germany, and Italy relative to the UK remains after controlling for field of study, as well as a set of individual background characteristics. Finally, there is greater switching out of certain fields (humanities, social sciences, mathematics, engineering, and especially medical sciences) relative to fields such as education.

The CHEERS data also elicited retrospective views from students regarding their degrees. Specifically, students were asked how likely they were to choose certain aspects of their degree again, how they rate different aspects of their degree course, and their assessment of the most appropriate level of education for their work. In each case, Table 3 reports the proportion of students who expressed a high likelihood or provided a high rating to each category.<sup>22</sup> Interestingly, there are no clear patterns regarding the likelihood of wishing to change certain aspects of their degree (Panel A) or the appropriate level of education for work (Panel C). However, the broad patterns in Panel B suggest that students in the UK were more satisfied with the course content, assessment system, and the opportunity to choose courses as compared to students in France, Germany, and Italy. Students in Germany and Italy were especially dissatisfied with the design of their degree program as compared to those in France and the UK.

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<sup>22</sup> Responses were elicited on a scale of 1 to 5. These are aggregated in two broad categories, with the top ratings (1 and 2) representing high likelihoods and ratings.

## 5. The Academic Credit System: A US-UK Comparison

The Bologna Declaration also calls for the establishment of a system of academic credits. Although a European system of transferable credits was introduced with the Erasmus program in order to facilitate the recognition of periods of study abroad, it was not widely adopted and most European institutions continued to structure their courses as one continuous period of study. On the other hand, the credit system has been an integral part of the American undergraduate landscape. In order to try and understand more about the possible effect of introducing a credit system, we proceed by comparing student outcomes in the United States and the United Kingdom, which have a very similar degree structure but historically have had a rather different structure of courses during the first degree. Note, however, that comparisons between the US and UK need to be interpreted with caution since their systems of higher education do differ on other counts as well. The US has historically had a higher rate of participation in higher education than the UK. Funding for students has also been different, with substantial subsidies for students in the UK in contrast to much higher levels of tuition for student in the US.

In most American universities, with each course taken, students accumulate credits which can be allocated towards different fields of study or transferred to other institutions.<sup>23</sup> On the other hand, students in England and Wales have traditionally applied to a specific field of study prior to entering college or university. Once admitted, students usually followed a relatively rigid curriculum which culminated in a set of exams at the end of the degree.<sup>24</sup> Switching to a different field of study or transferring to

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<sup>23</sup> See Heffernan (1973) for a history of the credit system in American higher education.

<sup>24</sup> Since the mid-1990s, more universities in England have begun offering degrees with modular courses.

a different institution would generally require starting anew. The structure of coursework in Scotland has been somewhat different from that in England and Wales, with students initially studying several fields and specializing only later. Nevertheless, the possibility of later specialization in Scotland was not encompassed within a system of transferable credits. More recently, with the formation of the Scottish Credit and Qualifications Framework (SCQF), Scotland has adopted a national credit transfer system.<sup>25</sup> And after an influential report on measuring and recording student achievement, England and Wales are also in the process of establishing a national credit system that would allow for transfer and accumulation of credits.<sup>26</sup> In light of these recent changes, we restrict our attention to data from before the introduction of any of these systems.

Data for United Kingdom come from the Universities Statistical Record (USR). The USR consists of administrative data on all students in British universities undertaking courses of one academic year or longer between 1972-1993, amounting to almost 1.9 million undergraduates and over 1 million graduate students.<sup>27</sup> These administrative data include detailed background information on demographic characteristics and entry qualifications in addition to information related to the degree attained. This is supplemented by information on the occupation, industry and location of the job held in the first year following graduation. Data for the United States come from the 1993 National Survey of College Graduates (NSCG). The NSCG is a survey based on the 1990 Census limited to those individuals who had at least a baccalaureate degree and

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<sup>25</sup> The SCQF was developed in partnership with the Quality Assurance Agency for Higher Education, the Scottish Executive, the Scottish Qualifications Authority and Universities Scotland in 2001.

<sup>26</sup> See the “Measuring and Recording Student Achievement Steering Group Report” chaired by Professor Robert Burgess: <http://bookshop.universitiesuk.ac.uk/downloads/measuringachievement.pdf>

<sup>27</sup> Excluded are students in the Open University, Cranfield University, the University of Buckingham, and former polytechnics and central institutions which obtained university status from 1992 onwards.

were 72 or younger as of April 1, 1990. A lot of attention was paid to the accuracy of the education responses, and detailed information was gathered about the majors of the respondents for up to 3 degrees. Unfortunately, there is little information on other aspects of the degree program, such as changes in major and transfers across institutions. Hence, we also draw on basic tabulations from the longitudinal datasets collected by the National Center of Education Statistics (NCES).

The ability to accumulate credits within an institution enables students to transfer across institutions relatively easily. Evidence from the National Longitudinal Study (NLS-72) High School and Beyond (HSB) and National Education Longitudinal Study (NELS-88) indicates that over half of American bachelor's degree recipients have attended more than one institution of higher education as undergraduates since the 1970s. (Adelman, 2004) Looking at bachelor's degree graduates who completed high school in 1972, over 38 percent had attended two institutions and 19 percent had attended more than two institutions. While the fraction of students attending two institutions remained roughly constant among bachelor's degree graduates who completed high school in 1982 and 1992, the fraction who attended even more than two institutions increased to almost 23 percent. In contrast, university administrative (USR) data from the UK show that the fraction of students who switched universities was less than 1 percent in both England and Wales and Scotland from 1972 to 1992. Even accounting for switches across a broader set of institutions (including the former polytechnics and colleges of higher education), the likelihood of switching institutions is less than 5 percent.<sup>28</sup> This confirms an important role for the credit system in allowing students to switch institutions in the midst of the degree.

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<sup>28</sup> This is based on author's tabulations from the 1980 National Survey of Graduates and Diplomates.

The ability to accumulate credits within an institution also enables students to switch their major fields of study more easily. Out of those students who completed high school in 1992 and earned a bachelor's degree, 40.5 percent changed their major during the course of their undergraduate education.<sup>29</sup> (Adelman, 2004) The likelihood that students in England switch majors during their undergraduate degree is far lower using a very similar classification of fields of study. According to the USR undergraduate data, it appears that 7 percent of students switch their majors during university in England and Wales. The fraction of Scottish students who switch their majors during university is substantially higher at 18 percent. This corresponds to the differences in the timing of specialization between England and Scotland and indicates that it is possible to allow for flexibility within institutions without instituting a national credit system.<sup>30</sup> However, with a comprehensive system of credit transfer and accumulation, the degree of flexibility in higher education would probably be even greater.

Table 4 shows the distribution of fields in the US and the UK for first and advanced degrees for students who completed their degrees between 1986 and 1992.<sup>31</sup> Students in the UK are more likely to study natural and social sciences and less likely to study engineering during their first degrees as compared to students in the US, although these differences disappear for advanced degrees. Students in the US are substantially more likely to study business and law as compared to students in the UK as undergraduates and graduate students. That more students in the UK study biological and health sciences as a first degree than in the US but vice versa for advanced degrees is a

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<sup>29</sup> This is based on student responses to questions asked in the 2000 survey and transcript records. Fields of study were aggregated into twelve broad categories of fields of study.

<sup>30</sup> Malamud (2007b) explores the consequences of differences in academic specialization.

<sup>31</sup> These are the only years where it is possible to form the variable indicating whether students switch their field of study between their first and advanced in the USR data.

consequence of medicine being only offered as a second degree in the US. The proportion of student who change field of study between their first and advanced degrees is larger in the US than in the UK. While the absolute level of switches is larger under more detailed field categories, the pattern remains the same.

## **6. Foreign students**

An important objective underlying the Bologna Declaration is “to ensure that the European higher education system acquires a world-wide degree of attraction.” In many ways, the Bologna reforms make the European system more compatible with Anglo-Saxon systems of higher education around the world and in much of Asia and Latin America. This may help Europe to compete on a global scale and attract more foreign students from around the world. In this section, we focus on the main destinations for foreign students: United States, United Kingdom, Germany, and France, as well as Australia (the next largest destination for foreign students) and Italy (by virtue of being one of the main instigators of the Bologna reforms). Between them, the United States, United Kingdom, Germany, and France serve as destinations for over 50 percent of foreign and international students. Since Europe and the United States compete from a common pool of foreign students, the Bologna reforms have important implications for the future of both regions.

There are a number of difficulties with estimating the effect of the Bologna reforms on foreign and international student enrollments. First, there are some thorny data issues. The OECD and UNESCO attempt to collect and standardize information on foreign student enrollments from member countries. Unfortunately, there are differences

in collection strategies as well as coverage of students across different sectors of higher education. In many cases, countries report the number of students with foreign citizenship rather than the number of students who moved from another country for the purpose of completing higher education.<sup>32</sup> In recent years, the OECD has begun requiring countries to compile information on international students as distinct from foreign students but it is not yet possible to construct medium and long-term series with this data. Second, it is not always straightforward to pinpoint an exact data for when the Bologna reforms were instituted in each country. Changes to the systems of higher education usually required the introduction of new laws and these were sometimes implemented in a gradual fashion. Moreover, the Bologna process also involved several different reforms, which were not always implemented at the same time. Finally, looking at simple changes is subject to many confounding influences. As it happened, many countries began implementing the Bologna reforms in the early 2000s, not long before or after September 11, 2001. The subsequent tightening of visa restrictions surely altered the distribution of foreign students between the US and the rest of the world's main destinations. Moreover, changes in foreign student enrollment may well be correlated with other changes in higher education within a country, such as increasing overall student enrollments.

In an attempt to circumvent some of these issues, I collected data on foreign students directly from educational statistics agencies in United States, United Kingdom, Germany, France, Australia and Italy. These provided more recent figures on student enrollments and did not suffer from discrepancies associated with some of the OECD

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<sup>32</sup> These include foreign students who immigrated at younger ages and exclude own-nationality students who lived abroad and returned to their home country for the express purpose of entering higher education.

numbers.<sup>33</sup> The basic trends in foreign student enrollments are shown in Figure 2. Although the Bologna reforms did include numerous policy changes, the most significant reform for most countries involved the introduction of a two or three-cycle degree system. Hence, we collected information about the year in which the country established the BA/MA cycle in higher education. Furthermore, because these changes were likely to have gradual effects on the number of foreign students enrolled, I intended to test for a change in trend rather than a one-time jump around the cutoff. Unfortunately, the results did not prove to be robust to different functional forms or alternative regression specifications so they are not presented here (although they are available by request). Hopefully, this exploratory work will be useful for future research on this question.

## **7. Conclusion**

The structure of higher education is an important mediating factor in determining student outcomes. Earlier work on the structure of K-12 education has indicated that school structure may have consequences.<sup>34</sup> In higher education, structure may prove to be even more significant. A flexible course and degree structure may help allocate students more efficiently into their preferred institutions and fields of study. Moreover, having a comparable structure of higher education within and across countries may help garner competition and foster a more efficient market in higher education. The Bologna reforms in Europe are an important development on this front. Indeed, some recent work examining the changes induced by the Bologna reforms suggest that students may

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<sup>33</sup> For example, OECD data on foreign students in the US exhibits a large increase following 2001 which is inconsistent with data gathered from other sources.

<sup>34</sup> Bedard and Do (2005) find that moving from junior high school system, where students stay in elementary school longer, to a middle school system has negative effects on-time high school completion.



respond positively to these new structures.<sup>35</sup>

An additional benefit for the harmonization of the degrees across countries is from a research perspective. As this study has shown, the difficulties in making cross-country comparisons in higher education are substantial. With more comparable degree structure, it will be possible to make even more progress in understanding the factors which help determine the performance and success of higher education.

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<sup>35</sup> See Cardoso et. al. (2007) and Cappellari and Lucifora (2008).

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**Table 1: Descriptive Statistics (CHEERS data)**

	France	Germany	Italy	UK
Female	0.55	0.44	0.53	0.61
Age in 1999	28	31	31	30
Years of schooling prior to higher education	12.4	12.9	13.1	13.1
<i>Length of degree</i>				
Required	4.0	4.1	4.4	3.4
Actual	5.1	5.1	6.9	3.4
<i>Mobility</i>				
Foreign Citizenship	0.03	0.02	0.00	0.11
Travel during courses	0.13	0.11	0.16	0.13
<i>Hours spent on course activities</i>				
Main subjects: attending lectures	22.5	21.4	17.7	15.5
Main subjects: other study activities	11.9	12.3	23.2	14.7
Other subjects	0.7	1.2	0.0	1.2
Extra-curricular activities	4.4	5.4	6.6	5.4
Employment/ work	3.8	5.6	4.8	6.2
Other	15.2	18.0	14.0	17.2

Notes: Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. The overall number of observations for France, Germany, Italy, and the UK are 3050, 3442, 3102 and 2936 respectively (with some minor differences in sample sizes for specific questions).

**Table 2: Field Switching (CHEERS data)**

	France	Germany	Italy	UK
<i>Distribution of first degree by field</i>				
Education	0.1	7.0	1.8	3.9
Humanities	15.0	10.7	17.3	22.8
Social Sciences	38.0	31.2	26.6	29.9
Law	11.0	6.5	15.0	2.4
Natural Sciences	18.0	9.1	7.6	13.2
Mathematics	8.4	5.0	3.2	7.0
Engineering	9.2	25.6	17.2	10.7
Medical Sciences	0.3	5.0	11.3	10.2
<i>Distribution of second degree by field</i>				
Education	0.1	10.4	5.6	16.1
Humanities	13.8	16.0	19.6	14.8
Social Sciences	39.0	24.1	10.8	32.2
Law	13.4	4.7	5.0	5.6
Natural Sciences	17.9	18.8	5.0	10.1
Mathematics	6.3	7.1	1.5	5.0
Engineering	8.8	13.8	5.6	7.9
Medical Sciences	0.8	5.1	47.1	8.3
Have a further degree (%)	44.1	20.0	14.9	37.1
Switched field (%)	24.9	36.5	11.9	44.1

Notes: Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. The 'Switched field' variable accounts for the proportion of student who changed their field of study among those who have a further degree. The overall number of observations for France, Germany, Italy, and the UK are 3050, 3442, 3102 and 2936 respectively (with some minor differences in sample sizes for specific questions).

**Table 3: Views on the Degree (CHEERS data)**

	France	Germany	Italy	UK
<i>Panel A: If you were free to choose your degree course again, how likely is that you would choose</i>				
a. the same course of study?	0.663	0.655	0.607	0.625
b. the same college / university?	0.603	0.582	0.581	0.656
c. a higher level of higher education?	0.494	0.163	0.460	0.409
d. a lower level of higher education?	0.090	0.035	0.085	0.019
e. not to study at all?	0.027	0.068	0.050	0.024
<i>Panel B: How would you rate the following aspects of your degree course?</i>				
a. Course content of main subjects	0.590	0.410	0.383	0.730
b. Variety of courses offered	0.609	0.462	0.420	0.593
c. Design of your degree programme	0.497	0.365	0.216	0.545
d. Assessment system	0.341	0.306	0.192	0.512
e. Opportunity to choose courses	0.419	0.436	0.382	0.538
<i>Panel C: What is the most appropriate level of education for your work?</i>				
A higher level than the one I graduated	0.186	0.041	0.112	0.163
The same level	0.489	0.675	0.582	0.620
A lower level of higher/tertiary education	0.238	0.191	0.142	0.142
No higher/tertiary education at all	0.059	0.066	0.122	0.057
Other	0.029	0.027	0.042	0.018

Notes: Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. Panels A and B: Individuals were asked to rate each aspect on a 1 to 5 scale, where 1 was for 'Very likely' or 'Very good' and 5 for 'Not likely at all' or 'Very bad', the figures presented collapsed this information using a dummy variable for each aspect that assigns 1 to scores 1 and 2, and 0 to scores 3, 4 and 5. The overall number of observations for France, Germany, Italy, and the UK are 3050, 3442, 3102 and 2936 respectively (with some minor differences in sample sizes for specific questions).

**Table 4: Field Switching**

	United States	United Kingdom	United Kingdom	
			England & Wales	Scotland
<i>BA Field distribution</i>				
Math & Physical Sciences	12.4	16.9	18.2	15.8
Engineering	18.5	14.8	14.6	16.9
Biological & Health Sciences	11.3	18.0	17.6	20.0
Social Sciences	16.5	19.7	21.1	14.7
Business and Law	21.3	11.3	9.5	12.6
Education and Arts	20.0	19.3	19.1	20.1
<i>MA/PHD Field distribution</i>				
Math & Physical Sciences	10.2	11.1	10.8	13.2
Engineering	12.2	12.3	12.0	14.6
Biological & Health Sciences	17.0	14.9	14.4	18.5
Social Sciences	15.8	15.1	15.8	9.6
Business and Law	21.3	15.5	13.4	31.1
Education and Arts	23.5	31.2	33.6	13.0
Switched fields (%)	0.394	0.295	0.293	0.314

Notes: Data for the US is from the National Survey of College Graduates (NSCG) 1993. Data for the United Kingdom is from the Universities Statistical Record (USR) postgraduate files. The sample includes graduates with a first (BA) degree and advanced (MA/PhD) degree between 1986-1992. The percentage of students who switched fields is constructed by comparing the BA field with the MA/PhD field among those who have further degrees.

**Appendix Table 1: Determinants of delays in graduation (CHEERS data)**

<i>Dependent variable: Difference between actual and required time for get degree</i>				
	(1)	(2)	(3)	(4)
<i>Country</i>				
Italy	2.548 (0.048)**	2.558 (0.050)**	2.302 (0.047)**	2.29 (0.048)**
France	1.107 (0.048)**	1.11 (0.050)**	1.356 (0.047)**	1.33 (0.048)**
Germany	0.979 (0.048)**	0.992 (0.050)**	0.721 (0.047)**	0.711 (0.048)**
<i>Field of Study</i>				
Humanities		0.396 (0.103)**	0.478 (0.097)**	0.528 (0.098)**
Social Sciences		-0.03 (0.10)	0.103 (0.09)	0.144 (0.09)
Law		0.056 (0.11)	0.251 (0.104)*	0.302 (0.106)**
Natural Sciences		0.071 (0.11)	0.276 (0.101)**	0.336 (0.102)**
Mathematics		0.197 (0.12)	0.321 (0.111)**	0.377 (0.112)**
Engineering		0.228 (0.102)*	0.325 (0.098)**	0.366 (0.099)**
Medical Sciences		-0.057 (0.12)	-0.067 (0.11)	-0.044 (0.11)
Female			-0.03 (0.03)	-0.03 (0.03)
Age at 1999			0.147 (0.004)**	0.149 (0.004)**
<i>Father Education</i>				
Completed (upper) secondary school				0.056 (0.04)
Higher education diploma/degree				-0.001 (0.05)
<i>Mother Education</i>				
Completed (upper) secondary school				-0.107 (0.041)**
Higher education diploma/degree				-0.05 (0.05)
Constant	-0.019 (0.04)	-0.141 (0.10)	-4.578 (0.146)**	-4.638 (0.152)**
Observations	11654	11400	11340	11022
R-squared	0.2	0.2	0.31	0.31

Notes: \*\* and \* indicate statistical level of significance at the 1 and 5 percent level, respectively; robust standard errors in parenthesis. Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. The dependent variable is the difference between how long it took for each individual to get the referenced degree and the time was normally required. The omitted variables are the United Kingdom (among countries), education (among fields of study), and completion of compulsory schooling (for mother's and father's education).



**Appendix Table 2: Determinants of studying abroad (CHEERS data)**

<i>Dependent variable: Study abroad during course or not</i>				
	(1)	(2)	(3)	(4)
<i>Country</i>				
Italy	0.034 (0.009)**	0.037 (0.009)**	0.043 (0.009)**	0.043 (0.009)**
France	0.006 (0.01)	0.003 (0.01)	-0.004 (0.01)	-0.002 (0.01)
Germany	-0.015 (0.01)	0 (0.01)	0.008 (0.01)	0.009 (0.01)
<i>Field of Study</i>				
Humanities		0.213 (0.019)**	0.212 (0.019)**	0.207 (0.019)**
Social Sciences		0.104 (0.018)**	0.102 (0.018)**	0.103 (0.018)**
Law		0.069 (0.020)**	0.066 (0.020)**	0.055 (0.021)**
Natural Sciences		0.065 (0.019)**	0.062 (0.019)**	0.054 (0.020)**
Mathematics		0.036 (0.02)	0.038 (0.02)	0.032 (0.02)
Engineering		0.039 (0.018)*	0.042 (0.019)*	0.039 (0.019)*
Medical Sciences		0.029 (0.02)	0.031 (0.02)	0.02 (0.02)
Female			0.014 (0.007)*	0.014 (0.007)*
Age at 1999			-0.004 (0.001)**	-0.003 (0.001)**
<i>Father Education</i>				
Completed (upper) secondary school				0.023 (0.009)**
Higher education diploma/degree				0.053 (0.009)**
<i>Mother Education</i>				
Completed (upper) secondary school				0.02 (0.008)*
Higher education diploma/degree				0.055 (0.010)**
Constant	0.128 (0.006)**	0.035 (0.02)	0.15 (0.027)**	0.087 (0.028)**
Observations	12530	12249	12175	11820
R-squared	0	0.03	0.04	0.05

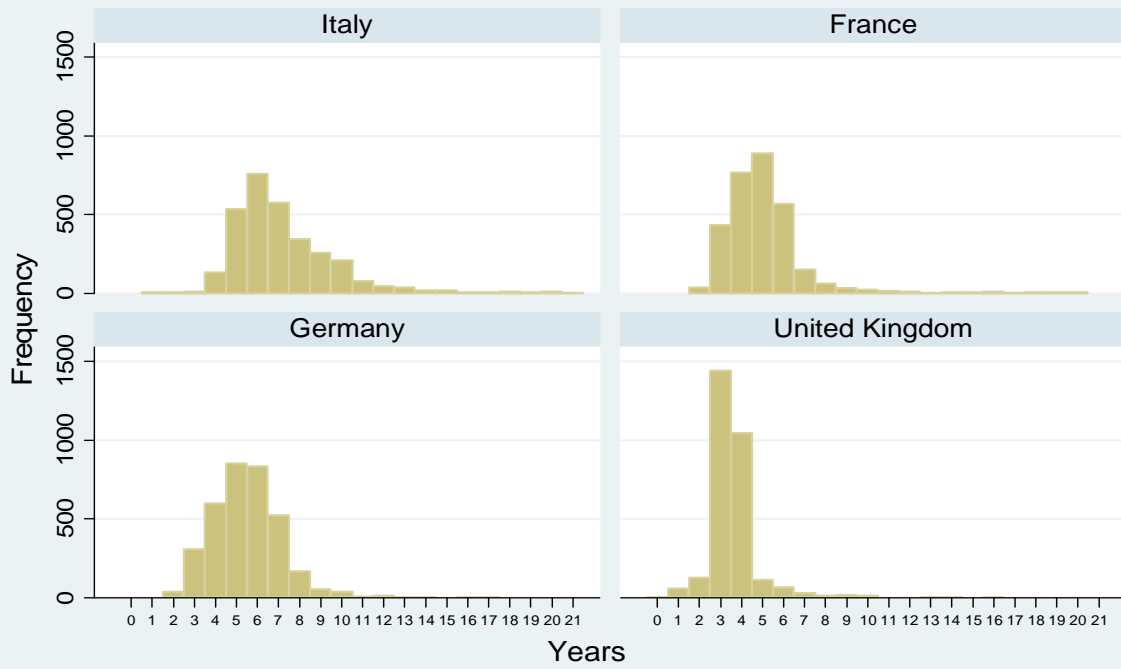
Notes: \*\* and \* indicate statistical level of significance at the 1 and 5 percent level, respectively; robust standard errors in parenthesis. Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. The dependent variable is a dummy indicating whether students studied abroad during their courses. The omitted variables are the United Kingdom (among countries), education (among fields of study), and completion of compulsory schooling (for mother's and father's education).

**Appendix Table 3: Determinants of changing field of study (CHEERS data)***Dependent variable: Change field of study after first degree*

	(1)	(2)	(3)	(4)
<i>Country</i>				
Italy	-0.322 (0.025)**	-0.314 (0.026)**	-0.313 (0.026)**	-0.311 (0.027)**
France	-0.192 (0.018)**	-0.228 (0.019)**	-0.22 (0.020)**	-0.215 (0.020)**
Germany	-0.076 (0.022)**	-0.097 (0.023)**	-0.093 (0.023)**	-0.093 (0.024)**
<i>Field of Study</i>				
Humanities		0.13 (0.056)*	0.126 (0.057)*	0.12 (0.059)*
Social Sciences		0.156 (0.055)**	0.154 (0.056)**	0.152 (0.058)**
Law		-0.007 (0.06)	-0.007 (0.06)	-0.014 (0.06)
Natural Sciences		0.068 (0.06)	0.072 (0.06)	0.065 (0.06)
Mathematics		0.126 (0.061)*	0.134 (0.063)*	0.127 (0.064)*
Engineering		0.147 (0.058)*	0.154 (0.059)**	0.148 (0.061)*
Medical Sciences		-0.107 (0.06)	-0.112 (0.06)	-0.118 (0.06)
Female			0.026 (0.02)	0.025 (0.02)
Age at 1999			0.002 (0.00)	0.003 (0.00)
<i>Father Education</i>				
Completed (upper) secondary school				0.012 (0.02)
Higher education diploma/degree				0.005 (0.02)
<i>Mother Education</i>				
Completed (upper) secondary school				0 (0.02)
Higher education diploma/degree				0.041 (0.02)
Constant	0.441 (0.014)**	0.369 (0.054)**	0.286 (0.075)**	0.264 (0.079)**
Observations	3584	3504	3481	3363
R-squared	0.06	0.09	0.09	0.09

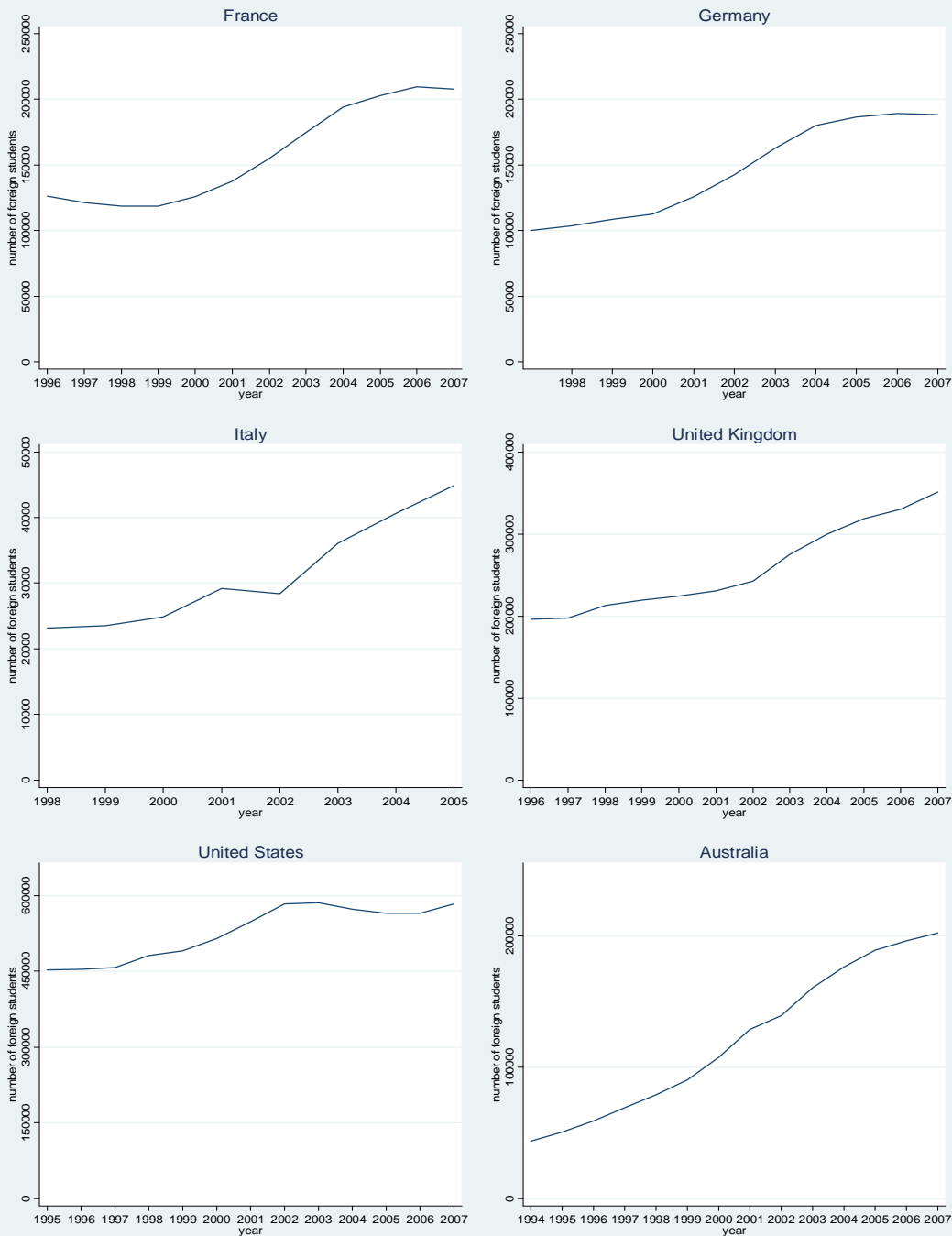
Notes: \*\* and \* indicate statistical level of significance at the 1 and 5 percent level, respectively; robust standard errors in parenthesis. Data are from the surveys Higher Education and Graduate Employment in Europe - CHEERS Project. The dependent variable is a dummy indicating whether, among the students that have a further degree, they switched their field of study or not. The omitted variables are the United Kingdom (among countries), education (among fields of study), and completion of compulsory schooling (for mother's and father's education).

Figure 1. Length of studies



Source: CHEERS

Figure 2. Foreign Students



Notes: Data from: i) France: L'état de l'Enseignement supérieur et de la Recherche (2007). ii) Germany: Wissenschaft Weltoffen 2008. Sample restricted to students which higher education entrance qualifications were gained at a foreign school (Bildungsauslaender). iii) Italy: OECD. iv) United Kingdom: Higher Education Statistical Agency - HESA. v) United States: Open Doors 2007, Report on International Educational Exchange. vi) Australia: Australian Government - Australian Education International.