

Mobility and the changing structure of research and higher education in Europe

Lex Borghans

Department of Economics and ROA

Maastricht University

The Netherlands

lex.borghans@algec.unimaas.nl

Frank Cörvers

ROA

Maastricht University

The Netherlands

f.coervers@roa.unimaas.nl

Abstract

Over the past two decades there has been a substantial increase in the mobility of students in Europe, while also research has become much more internationally oriented. In this paper we document changes in the structure of research and higher education in Europe and investigate potential explanations for the strong increase in its international orientation. While higher education started to grow substantially around 1960, only a few decades later research and higher education transformed gradually to the American standard. Decreased communication costs are likely causes for this trend. This transformation is most clearly revealed in the change of language used in research from the national language, Latin, German and French to English. Smaller language areas made this transformation earlier while there are also clear timing differences between research fields. Sciences and medicine tend to switch to English first, followed by economics and social sciences, while for law and arts only the first signs of such a transformation are currently observed. This suggests that returns to scale and the transferability of research results are important influences in the decision to adopt the international standard.

1 Introduction

Over the past two decades there has been a substantial increase in the mobility of students in Europe, while also research has become much more internationally oriented. Student mobility has increased between European countries as well as between Europe, The United States and the rest of the world. This seems to hold at bachelor, master and PhD level. Compared to the past European researchers publish more in foreign journals, there is more international travel, more migration and a strong increase in international cooperation in research. These trends have strong implications for international cooperation and competition in higher education and research.

The aim of this paper is to document changes in the structure of research and higher education in Europe and to investigate potential explanations for the strong increase in its international orientation. The theoretical perspective we take is that the decision to study or to do research in either the home country market or the international market depends on cost and benefits, determined by the size of the market, communication costs, the transferability of knowledge between countries and financial regulations. We argue that several dimensions of this trade-off have shifted in favor of international cooperation: cheaper travel possibilities, European integration, the internet and the shift of the priorities in research from discussing and analyzing national policies towards measuring scientific output in international journals. The convergence of country specific habits and institutions towards the global (US) standards, has further facilitated the internationalization of research and higher education in Europe.

Using a variety of indicators we show the changes in the structure of higher education and research in Europe. While higher education started to grow substantially around 1960, only a few decades later research and higher education transformed gradually to the American standard. Decreased communication costs are likely causes for this trend. This transformation is most clearly revealed in the change of language used in research from the national language, Latin, German and French to English. Smaller language areas made this transformation earlier while there are also clear timing differences between research fields. Sciences and medicine tend to switch to English first, followed by economics and social sciences, while for law and arts only the first signs of such a transformation are currently observed. This suggests that

returns to scale and the transferability of research results are important influences in the decision to adopt the international standard.

The remainder of this paper is structured as follows. In section 2 we provide some background information for the developments investigated in this paper, and explain our conceptual framework. Section 3 provides data about the development of higher education in Europe and especially the Netherlands. Section 4 deals with changes in the language used in research and other indicators of change of the structure of higher education and research in Europe. Section 5 concludes.

2 Background and framework

Higher education and research is not a homogeneous good. Different countries teach different things in science, economics or law, and the aims and focus of research can be rather different across countries. Table 1 describes the characteristics of Dutch universities in 1980 and 2008. The focus is on economics. In 1980 a study in economics nominally took 5 years, but most students spend much from 6 up to 10 years on their study. The diploma was called “drs.” and was regarded as equivalent to a MA diploma. In 1982 the nominal duration was reduced to 4 years, although the diploma remained officially unchanged. Furthermore, measures were taken to reduce the time spend at university to a maximum of 6 years. Later further measures were taken to reduce the length of stay. In 2002 – following the Bologna agreement of 1999 – the structure was changed into a BA-MA-structure, with 3 years of bachelor and 1 (sometimes 2) years of MA.

In the 80s it was very common for members of the faculty not to have a PhD. Some wrote a “proefschrift” (PhD thesis) as a member of the faculty. Some of them used this thesis as an opportunity to bring together all their research at the end of their career as a *magnus opus*. Other never wrote a PhD thesis, but could nevertheless become full professor. Famous professors in economics at that time were often involved in the national political discussion about economics. Many were affiliated to a political party and joined national committees advising the Dutch government about economic policy. Gradually this situation shifted. Obtaining a PhD became a prerequisite to become assistant professor, an official PhD programme was implemented (aio). Initially, aio’s just had to write their thesis, but gradually course

work was introduced in these programs. Joining the national debate and publishing in national journals became less important while success in international publications gradually became the measure of success.

Initially there was not one European system for higher education. Like the Netherlands, most countries in Europe had their own specific characteristics. Germany had and has a 'habilitation', a kind of second thesis after PhD, required to become full professor. France, distinguishes many different diplomas for different levels obtained in higher education and has a distinction between universities that focus mainly on teaching and *Écoles supérieures*. In international comparisons such differences are not always acknowledged for several reasons. First, international communication about higher education is clearly affected by selection bias: those who go to international conferences, prefer the international system and therefore behave most of the time in accordance with the American standard and tend to phrase their home situation by using the American terminology. Secondly, for international statistics degrees are translated to facilitate comparison, hiding the obvious differences between degrees in different countries. Thirdly, when norms about what is good research change, there is a tendency to judge research in the past using these new norms. Consequently researchers who do not publish in international journals are easily considered to be lazy: Differences in the system are therefore regarded as a lack of appropriate incentives.

This implies that universities/researchers/students can decide to join the national research discussion or to join the international discussion. This decision can be interpreted from a cost-benefit perspective. If the benefits from research are subject to returns to scale, a researcher who joins the international debate, profits from a larger peer group. These benefits are counterbalanced however by a reduced benefit of the research findings for the situation in the home country and higher communication costs. One could think about the reduced benefits of international research in terms of transferability of research findings. In some fields the relevance of research will not depend on the country that is investigated, while for other fields research this might be very country specific.

The trade-off between national or international research might also be influenced by the incentives for pure versus applied research. In applied research the potential for the transferability of results from country-specific research to other countries may be limited.

If the size of the market, communication costs, transferability and incentives determine the choice for either national or international oriented research, the following predictions can be made:

Size of the market

The growth of higher education in Europe and the process of European integration will shift the attention of researchers towards the European market. This will imply a decrease of the importance of research aimed at specific European countries, but would also reduce the focus on international research.

Communication cost

There are many reasons to assume that communication costs are decreasing. Travel is cheaper, Internet and email provided important tools for long distance communication between researchers while European integration (the use of English and the introduction of the BA-MA system) improved comparability and therefore facilitated communication.

Transferability

Differences in transferability of research in the first place might predict differences between research fields. For sciences it will be relatively easily to join one international research discussion, while e.g. for literature and law national differences might be too large to allow for international cooperation. Economics and social sciences will be an intermediate case.

Finance

In many European countries there is a trend towards subsidies based on research output, e.g. the number of publications, number of diplomas and number of PhDs. Such financial incentives will also affect decision with respect to research, although the direction of these influences is sometimes difficult to predict.

To facilitate cooperation between researchers in either the national or the international research discussion, it is likely that conventions will be adjusted towards a standard. The most obvious case of this is the language, but one could also think about a standardization of other aspects to facilitate comparability. Standardization of

diploma's, both in terms of names and content is such an example. The adoption of the BA-MA structure can be interpreted in this way, but also the use of terminology such as assistant professor, associate professor and full professor and the role of a PhD thesis could be affected by a change in research community.

In this paper we will therefore look at trends in the language used in research, the nationality of researchers who publish in national journals, the country of origin of research that is cited, but also the size of a PhD thesis and the age at which it is typically finished.

3 Developments in higher education

Like in the USA many of the richer European countries faced a rapid increase of participation in higher education in the 60s. Universities were transformed from small elite school to mass universities. Figure 1 depicts the developments for the Netherlands, distinguishing the number of students at the university from students in professional higher education (HBO). The strongest increase is in the 60s, but the number of students keeps increasing until the early 80s. From the 80s on the growth in participation at the universities stagnates, while participation at professional colleges remains growing. Fluctuation in the development of participation for universities from the 80s onward mainly reflects new regulations that aim at a reduction of the years spend on university.

Figure 2 compares the development of student participation with the size of the faculty. In line with the growth of the number of students also the number of teachers and researchers grows. To growth rate is about 50% of the growth rate in student population, implying an increase in the student-teacher/researcher rate from 3 to 7 between 1960 and 1990. After 1990 the number of teachers/researchers sharply increases, but this is only due to a change in definition.

Also the participation of European students in US programs increased. Figure 3 shows these figures for Dutch and German students in the USA. For both countries the start of this growth in the early 60s coincides with the growth of higher education in Europe. Around 1975 there is a sharp decline in the participation of Dutch and German students at US universities, but after 1975 this trend recovers. From 1975 onwards the participation of Dutch students in the USA grows faster than the German

participation. In 1992 quit suddenly the trend in participation of the Dutch students reverses. The same happens to the German participation in 2001. Changes in the university in the home countries could perhaps account for this change in the trend. Initially only a very small fraction of the students came from abroad. This started to change in the 90s when also some universities started to provide course in some fields in English. Figure 4 shows the increase in US students in the Netherlands in those years. Between 1995 and 1998 the participation of US students more than doubled and remained increasing since then. Participation of European students in the USA, increased much earlier.

Table 2 compares international mobility of European students using the CHEERS survey. This survey provides information about students in 10 European countries. Information in each line therefore represents the international experience of students who were enrolled in a university in that country. The table distinguishes students who spend some time abroad before they started their study, who spend time abroad during their study and who went abroad after the studies. The European Union provides subsidies for students to spend some time abroad during the study. The table reveals a distinction between smaller and larger countries in this tendency to go abroad during the study. In Austria, the Netherlands, Finland and Sweden about 30 % of the student spend some time abroad during the study, while in Italy, Spain, France and Germany this is 20% or lower. In Norway the participation is also lower, perhaps due to the fact that Norway is not an EU member state.

Figure 5 shows the number of doctoral dissertations defended at Dutch universities between 1600 and 2000. We used information on doctoral dissertations in the library system of Maastricht University. Since 1993 the university stopped collecting all doctoral dissertations from other Dutch universities, explaining the decline at the end. Moreover, only a few doctoral dissertations were published each year in the first centuries of the sample period. The Figure shows a strong increase in PhD's awarded in the 70s. The spike in the middle of the 20th century is in 1938, just before the Second World War. Figure 6 compares student participation with PhDs awarded. The Figure makes clear that these indicators follow a very different pattern. Initially writing a PhD thesis was not a requisite for faculty. There were many full professors who did not obtain a PhD and some wrote their PhD later in their career as a summary of all their main research. Only in the mid-seventies this started to change and nowadays for most position as an assistant professor a PhD is required.

4 Importance of language for research

One way to illustrate the increasing dominance of Anglo-American academic research is to look at the language in which Continental European researchers are publishing. Nowadays it is common in many research fields and countries to publish in English. However, for some fields, like law and national history, this seems to be less relevant due to a lack of international academic audience that is interested in country oriented research. On the contrary, for areas like physics, chemistry and medicine the international academic community is more or less dealing with the same questions everywhere. Therefore in these areas the interest to understand each other and to communicate in the same language is much bigger. Moreover, due to globalization and converging institutions – think of financial markets, international law, the end of communism in many countries, but also the higher education system – societies may have become more similar over time. Therefore the interest to share the knowledge that emerges from research may have been increasing. Communicating in one instead of different languages is easier to make sure that research output gets feedback from others all over the world, and that new knowledge will be generalized and used for practice.

Doctoral dissertations

International

To illustrate the growing dominance of the English language in academic research on the European continent we use data of the foreign doctoral dissertation database of the Center for Research Libraries (CRL) in Chicago.¹ For nine Continental European

¹ The CRL is a consortium of North American universities, colleges and independent research libraries. The consortium acquires and preserves newspapers, journals, documents, archives and other traditional and digital resources for research and teaching. These resources are then made available to member institutions cooperatively, through interlibrary loan and electronic delivery. The CRL-website for foreign dissertations is:

<http://www.crl.edu/content.asp?11=5&12=23&13=44&14=25>

countries in the database we analyzed to what extent the doctoral dissertations have been written either in the home language or in English, and how the share of dissertations in the home language has evolved over the last hundred years. The CLR-collection includes doctoral dissertations submitted to institutions outside the U.S. and Canada. A list of these institutions is available at the CLR-website. The subjects of the dissertations are very mixed, but the database contains no variables to categorize the dissertations by discipline. We did some provisional analyses on recent years of databases from French, Danish, German and Austrian national libraries to check our results. We found that the CLR-data are reasonably well in line with those in other national data sources. Nevertheless, it is likely that there remains some bias due to selectivity in the figures.

Figure 7 presents the percentages of home language dissertations in the total of home and English language dissertations. The percentages are averages for 10-years periods between 1908 and 2007 (see the Annex). The figure shows that in many Continental European countries the development of increasingly writing dissertations in English started already at the beginning of the previous century. This holds in particular for the Scandinavian countries. The Netherlands had a somewhat slower start, but caught up with these countries. Italy seems to follow the Netherlands till the 1960s, but then remained more or less constant. During the last 10 to 20 years, PhDs in Spain and Austria increasingly write their thesis in English. In Germany this process seems to have started up recently. Based upon the CRL-database, 5% of the doctoral dissertations in Germany were written in English. In France there are some weak signals in this direction.² It seems that in particular countries that are part of big language areas (i.e. French, German and Spanish) have small incentives to switch to publishing in English. Moreover, France is known for its language policies in many different areas of life.³

The Netherlands

² From the extensive 'Système universitaire de documentation' of French academic libraries we found that till 1997 almost all doctoral dissertations in France had been written in French. In 2002 1% of the dissertations were written in French and in 2007 this percentage increased to 3%.

³ For example the use of French is required by law in commercial and workplace communications (Toubon Law). However, we do not know exactly how French governmental language policies can affect the use of language in academic publications.

Figure 8 shows the average age of PhDs of the doctoral dissertations in our sample. As has been argued before, we expected that the age of PhDs falls over time due to the transition of the Dutch to the Anglo-American system. However, the figure shows a huge drop in average age from the 17th to the 18th century. In the 19th century average age began to rise to reach the top in the 1960s. During the last few decades average seems to decrease slightly. In that respect our expectation of a declining average age of PhDs is confirmed.

Since the average age of PhDs may considerably differ between disciplines, Figure 9 differentiates the age of finishing a PhD by discipline. We only take the last few decades in which there was a peak around 1970. After 1970 average fell for in particular science, medicine and economics. In these disciplines the transition to the Anglo-American system may have been most prominent. On the contrary, average ages increase for arts and social sciences. For PhDs in law the average age fluctuates between years.

A comparable indicator of convergence to the Anglo-American standard of PhDs is the size of the dissertations. Figure 10 shows the average page length of the doctoral dissertations in our sample. Also for this measure we expected that the number of pages would fall due to the transition of the Dutch to the Anglo-American system. Apart from an outlier around 1800, the figure reveals that the average number of pages of doctoral dissertations has gradually increased over time. This also holds for the last few decades.

This upward trend could be generated by composition effects. To check that in Figure 11 the average page length of doctoral dissertations has been differentiated by discipline for the last 50 years. It turns out that that science and medicine have the smallest size and arts and law the highest. Social sciences and economics are in between. In accordance with the overall picture above, page length of doctoral dissertations tends to increase in most disciplines and years. However, for economics, social science and medicine this trend has been reversed in the last 15 years.

Figure 12 shows the language that was used in the doctoral dissertations in our sample. We distinguished between the five languages that appear to have a substantial frequency: Latin, Dutch, German, French and English. The figure shows the cumulative shares of these languages. Till about the 1850s Latin was the main language in doctoral dissertations at Dutch universities. After the 1850s this changed very rapidly, and Dutch became the main language. Also the importance of German

and later on French increased. The share of English dissertations began to increase only after the First World War. This share started to increase very rapidly in the 1960s. Latin was still used in a number of Dutch doctoral dissertations till the 1960s.

The use of English in doctoral dissertations differs very much between disciplines, as Figures 13 reveals. Science and medicine have the largest share of doctoral dissertations in English, followed by economics and social sciences. In law the use of English is even smaller than in arts. The figure also reveals that the share of dissertations in English increased very much in medicine. Substantial increases have also been found for science, economics and social sciences. The increase for arts and law was only moderate.

Economics journals

International

Also for academic journals the switch to the use of the English language can be analyzed. We looked at the publishing language of many Continental European and Anglo-American economics journals since the emergence of the first academic journals in economics around 1850. We follow these journals from the year of foundation, and noted when they switched from their home language to English. The selection of economics journals in different Continental European and Anglo-American countries is based on the overview by Gonçalo L. Fonseca. The list of selected journals has been published on the website 'Economics Journals: A Chronological Account'.⁴ Only journals founded until 1990 were included on this website. We checked the year of foundation and the year when the journal stopped publishing with other data sources.

For none of the twelve Continental European countries in our dataset English is a native language. Countries can have more than one national languages (like German and French in Switzerland), and obviously the same language can be spoken in different countries. Journals may start in English from the foundation year (like an Italian and two Soviet journals), or switch to English at a later stage (see the Annex

⁴ <http://cepa.newschool.edu/het/essays/journal.htm> . We selected the period from 1850 onwards, when the first academic economics journals emerged. We excluded the light and news oriented journals, or journals not principally dedicated to economics, which are all marked as such on the website.

for detailed data). Information on the year of switching to English was drawn from data sources such as home pages of journals, national libraries, econlit. Journals should publish all regular articles (i.e. excluding book reviews, etc.) in English to be considered as an English language journal. The first year in which this happens is noted as the transition year (this can also be after 1990).

In Figure 14 the emergence of Continental European economics journals and their language use is presented. The total number of journals has gradually increased since 1844. After World War II the number of journals suddenly increased, and the first English language journal on the Continent was published (the Italian 'Banca nazionale del lavoro quarterly review'). This journal was a new journal, as were also two Soviet journals founded in 1958 and 1964. The first old economics journal that switched to English was the Swedish 'Ekonomisk Tidskrift' in 1964. In the same year it also changed its name into Scandinavian Journal of Economics. Starting from the first half of the 1990s the use of German (in journals from Germany, Austria and Switzerland) and other languages (Italian, Spanish) seriously declined. By 2001 only four German and two other language journals were left.⁵ Many economics journals in these languages switched to English or disappeared. On the contrary, all French language journals from France as well as from Belgium and Switzerland, kept publishing in French. It has to be noticed that some French journals are bilingual, publishing French as well as English articles. These journals are not counted as English language journals in our dataset. Even based on this strict definition the English language journals on the European continent outnumber the French language journals during the last few years (13 versus 11 in the year 2001).

Figure 15 shows the development of the number of English language economics journals in Anglo-American countries since 1859 until 1990. For some years there was only one serious academic economics journal according to our source (the British Macmillan's Magazine, 1859-1907(?); see the Annex). In 1886 the first US journal was founded (Quarterly Journal of Economics), and in 1891 the first well known British economics journal emerged (Economic Journal). Only after World War II the US journals began to outnumber the journals in the UK and other English speaking countries (Australia, Canada, South Africa). The first international journal (i.e. without a real home country) was published in 1921. Around 1970 the number of

⁵ Of course this is based upon the selection of journals on the website 'Economics Journals: A Chronological Account', which only includes journals founded until 1990.

international journals suddenly increased. In 1990 there were 26 international journals, 28 US journals and 14 English journals in the UK and other English speaking countries.

The Netherlands, Austria and Italy

To show the development in international orientation of economics journals in more detail, we analyzed three general interest journals. These journals are *De Economist*, founded in 1852 in the Netherlands, the *Journal of Economics*, founded in 1892 in Austria as the *Zeitschrift für Nationalökonomie*, and *Research in Economics* founded in 1947 in Italy as *Ricerche Economiche*. For these journals we drew information from databases on the internet with respect to the language of articles, the nationality of the authors, and the language of the references to other publications.⁶

Figure 16 shows that the decline of the use of the Dutch language in the Netherlands went rather fast after the 1960s. Within less than a decade the language switched from Dutch to English. From 1979 onwards no regular articles have been published in Dutch anymore.

The language change in *De Economist* certainly coincided with the nationality of the authors. The decline of the fraction of Dutch authors, however, developed more gradually than the decline of the fraction of articles in Dutch, as is shown in Figure 17.

Figure 18 shows the developments in the language of the references. The change in international orientation of *De Economist* had also a clear impact on the language of the publications to which was referred to in the articles. In the 1960s between 0.4 and 0.5 of the references were in the Dutch language. During the last decades this share was less than 0.1 for most years.

For the Austrian *Journal of Economics* Figure 19 shows that the switch from German to English started about a decade later compared to *De Economist*. In about two decades the journal transforms from German to English. From 1982 onwards no regular articles have been published in German anymore.

⁶ For *De Economist* and the *Journal of Economics* we used the website of Springer, for *Research in Economics* we used the following website (starting in 1960) as a starting point: <http://www.biblio.liuc.it/scripts/essper/ricerca.asp?tipo=anno&codice=78/1960>

As shown in Figure 20 the fraction of articles by German or Austrian authors in the Journal of Economics declined rapidly after World War II. The fraction reaches a level below 0.2 in the late 80s and the early 90s. In recent years the fraction of German and Austrian authors however increased again.

Also for the Journal of Economics the change in international orientation had a clear impact on the fraction of references to publications in the home language, as can be revealed from Figure 21. The fraction decreased over years. In particular after 2000 this fraction is very low.

Like for the Netherlands, in Italy the switch from Italian to English went within less than a decade. Figure 22 shows that the switch for Research in Economics took place later than for De Economist in the Netherlands and the Journal of Economics in Austria, namely from the beginning of the 80s to the beginning of the 90s. From 1993 onwards no regular articles in this journal have been published in Italian anymore.

Figure 23 provides information about the nationality of the authors in Research in Economics. Since the 80s the fraction of Italian authors gradually decreased, reaching a level of about 20% in recent years.

5 Conclusions

In this paper we documented the shift of the European research and higher education system from a national to an international orientation. This gradual process did not start immediately after the expansion of higher education, but developed over time. Smaller countries with smaller language areas were the first to adopt English as a research language and to adjust their system to American standards suggesting that returns to scale are an important factor in the decision to join the international research society. Comparing between fields of study sciences and medicine turn out to make this change earlier than economics and social sciences, while in arts and law still the majority of the work is focused on the own country. Differences in the transferability of research outcomes might account for these differences.

These trends might imply that mobility of students and researchers in Europe will increase substantially in the years to come. The standards used, the use of English and a focus on American research, go hand in hand. So once these changes start, it becomes increasingly beneficial to continue this process. At the same time, when

more researchers join the international society, the scale of the national research communities shrinks, which further stimulates internationalization. When research in Europe becomes more harmonized and more focused on American research, the need for European students to study in the US might be reduced while at the same time the system will become more attractive for students and researchers from outside Europe.

Until now the inflow of students from outside Europe is still relatively small, so we can only speculate about the potential size of these developments. Another remaining question is whether law and arts will follow other disciplines in their shift towards the American/international standard.

Table 1
 Characteristics of Dutch universities in 1980 and 2008

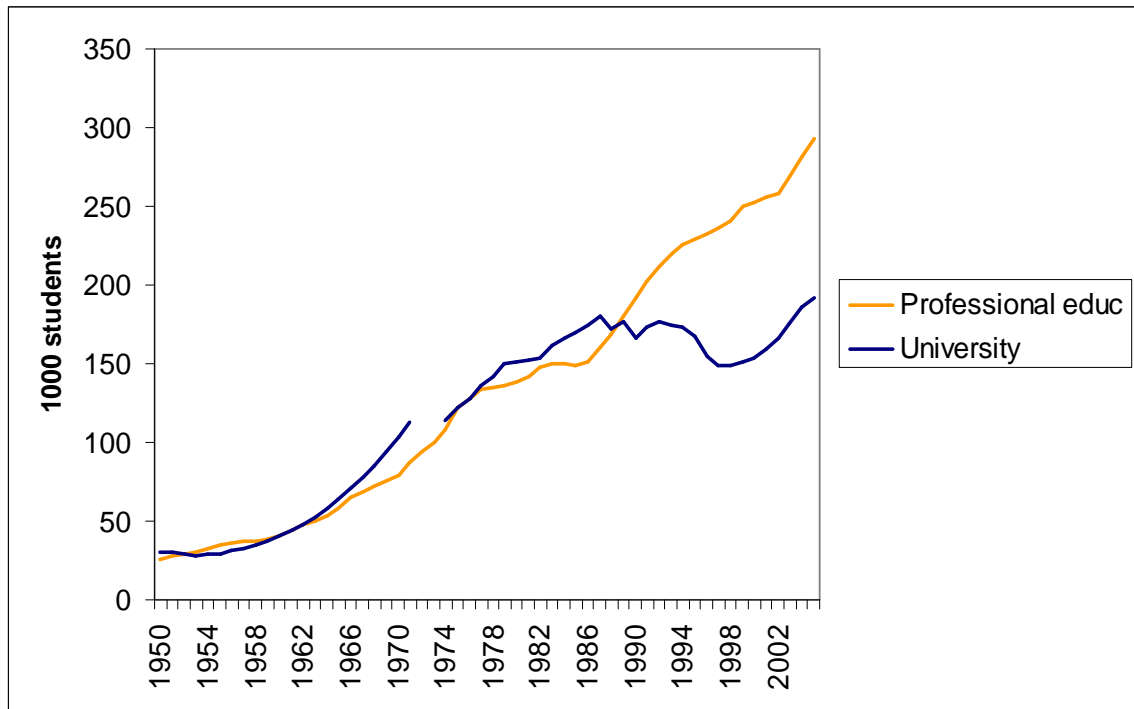
1980	2008
Drs-diploma, 5-8 years of study	BA and MA, 3+1 years of study
A drs could become member of the faculty	Then “aio” = employee who writes a thesis
Some wrote a thesis	Gradual shift:
Often as a <i>magnus opus</i>	From employee to student
	Introduction of course work
	Use of term PhD rather than aio
Aim: Participation in national discussion	Aim: Publish in international (American) journals
Some researchers have an international focus	Most researchers have an international focus

Table 2

Students living abroad CHEERS 1994

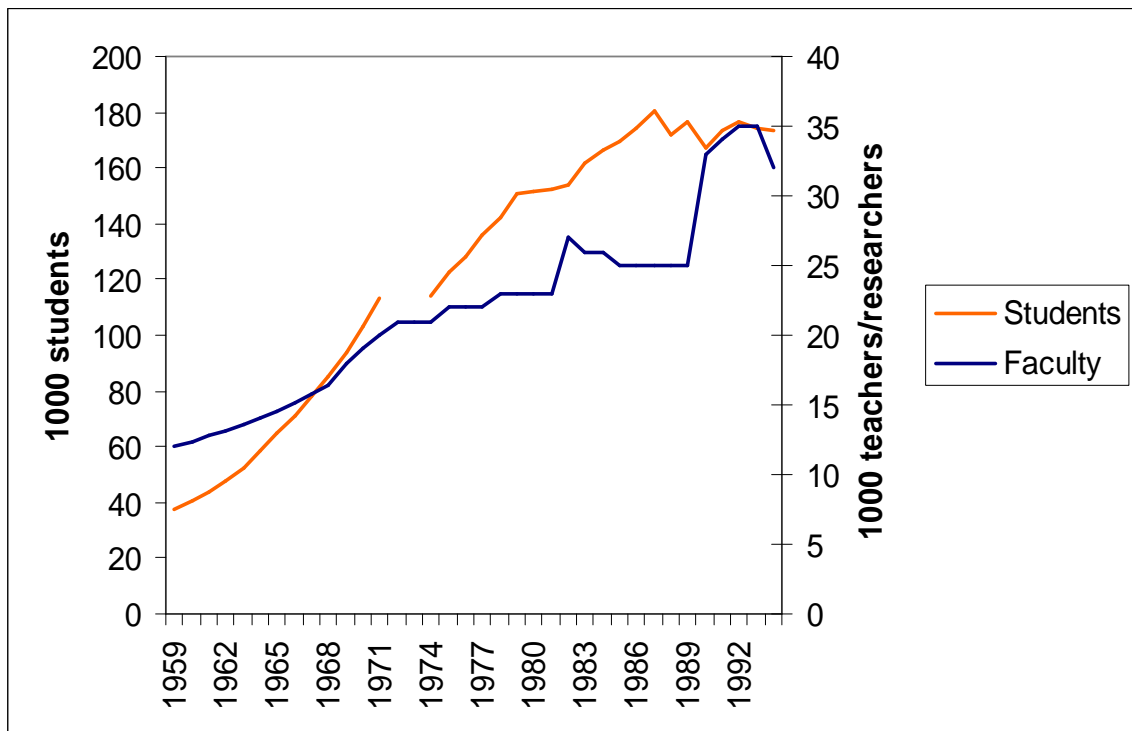
	Living abroad for work or study			
	Secondary education			
	abroad	Before study	During study	After study
Italy	0.5	7.4	21.4	1.2
Spain	4.8	0.3	13.8	1.0
France	6.7	7.2	21.7	4.6
Austria	6.1	10.0	29.2	5.5
Germany	1.9	5.7	19.9	6.4
Netherlands	4.7	9.0	30.0	1.7
UK	10.7	10.0	25.9	8.6
Finland	3.6	18.6	27.5	3.8
Sweden	5.8	32.5	29.6	4.9
Norway	4.6		19.4	0.5

Figure 1
Growth of higher education in the Netherlands



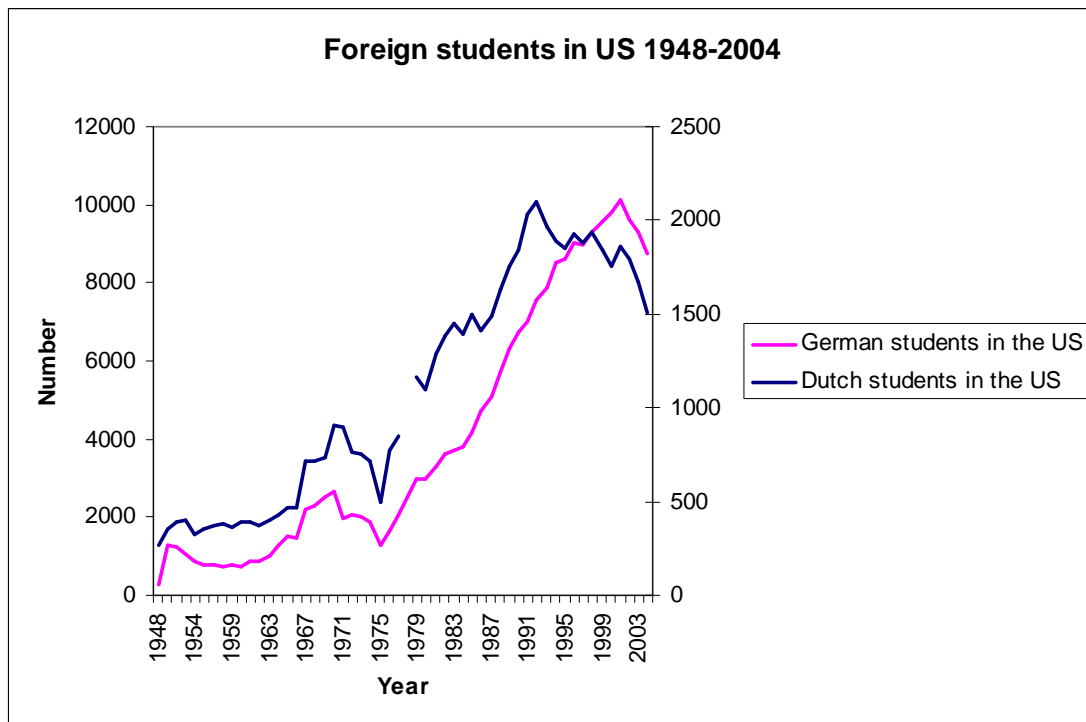
Source: Statistics Netherlands

Figure 2
Students versus faculty in the Netherlands



Source: Statistics Netherlands

Figure 3
Dutch and German students in the USA



Source: Unesco

Figure 4
US students in the Netherlands

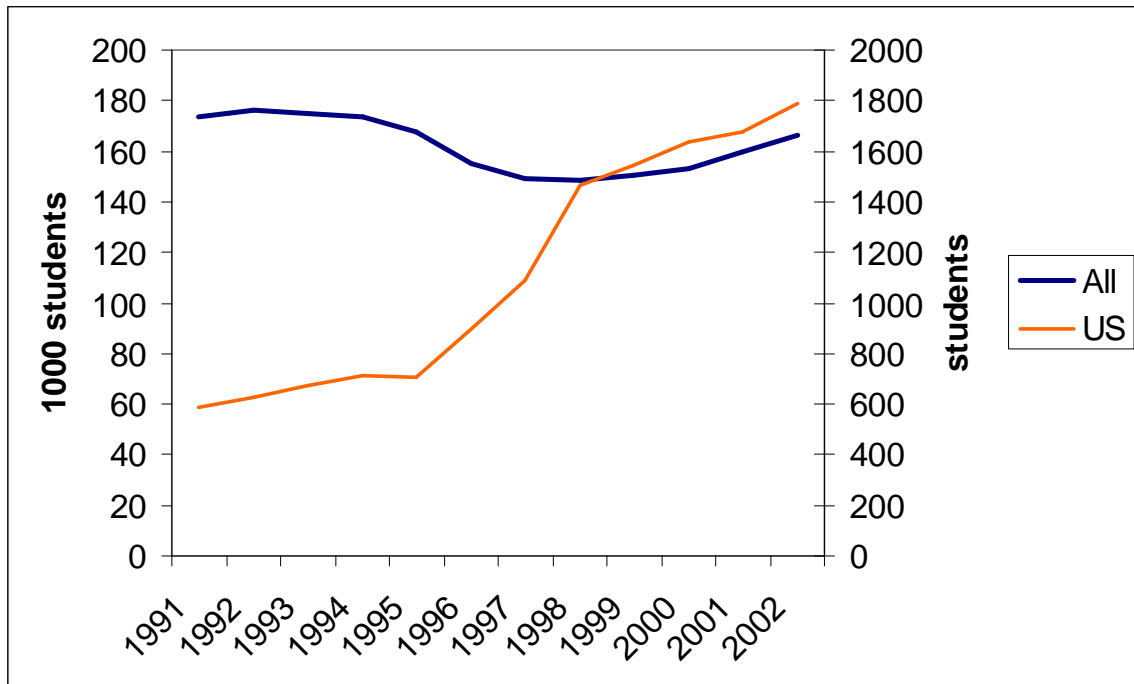


Figure 5

The number of doctoral dissertations defended at Dutch universities in the sample of the library of Maastricht University, 1674-2000

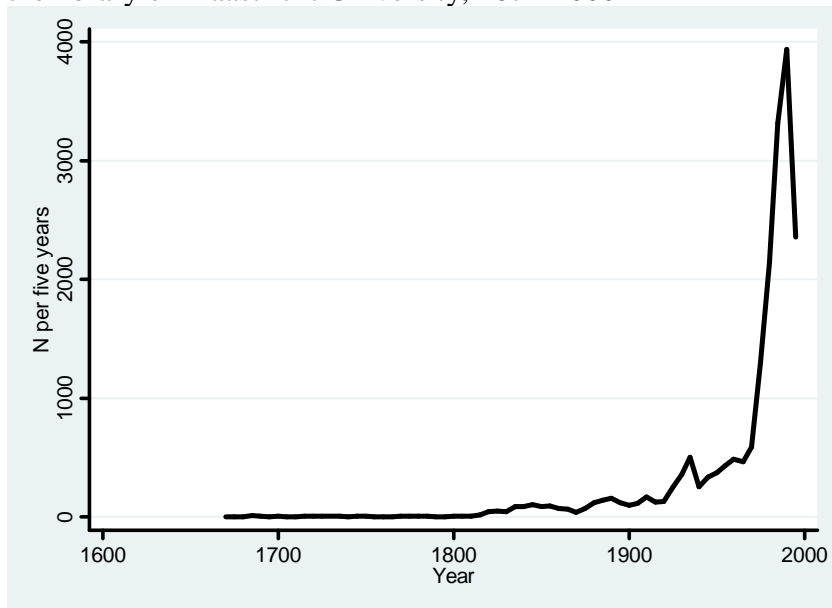


Figure 6
Comparison of number of PhDs and students at universities in the Netherlands 1950-2005

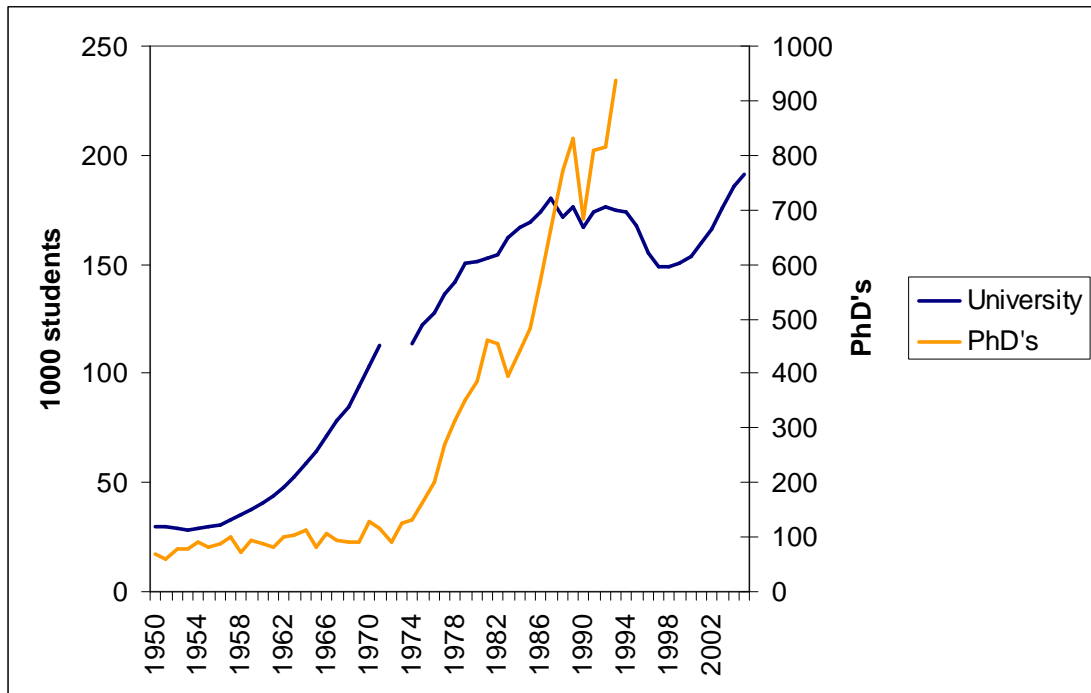


Figure 7

Percentage of doctoral dissertations in the home language 1908-2007

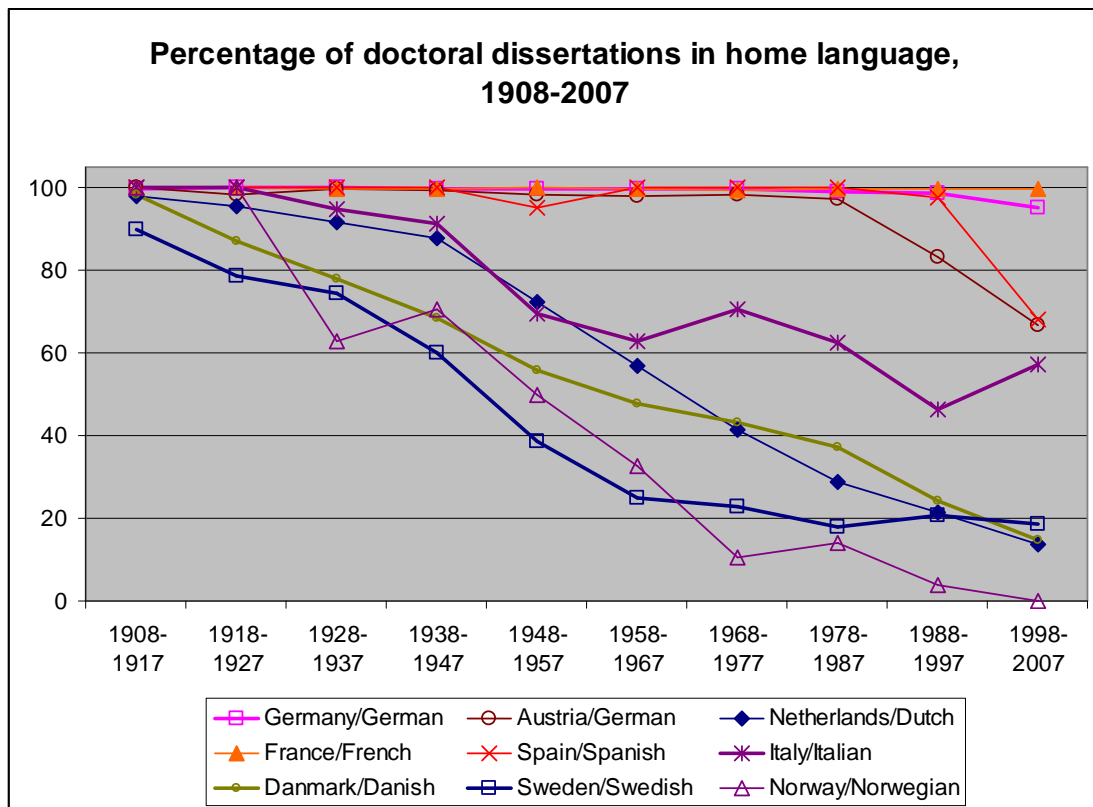


Figure 8
Average age of PhDs, the Netherlands 1674-2000

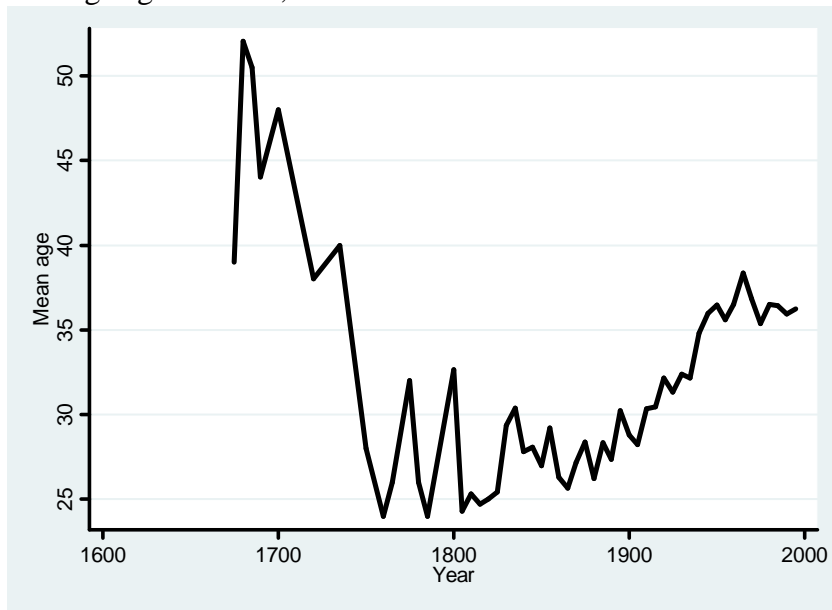


Figure 9
Average age of PhDs by discipline, the Netherlands 1945-2000

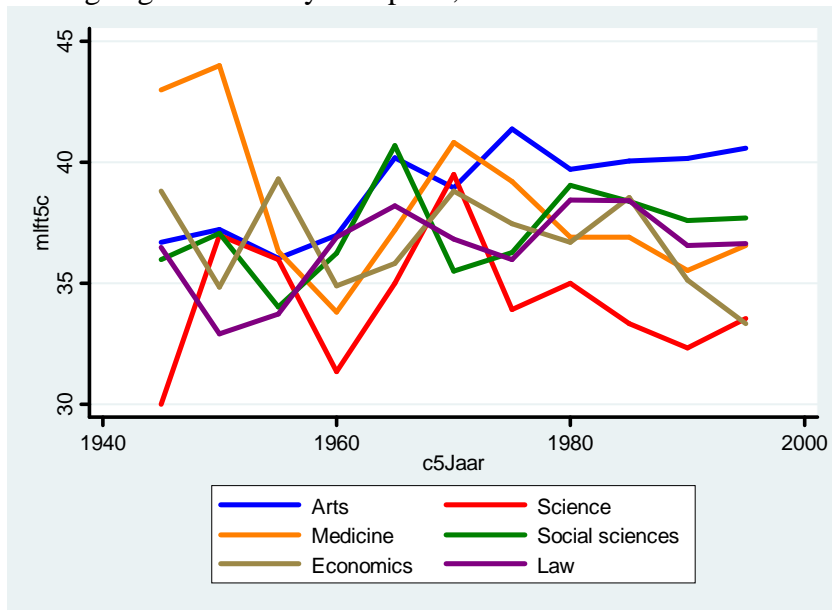


Figure 10

Average page length of doctoral dissertations, the Netherlands 1674-2000

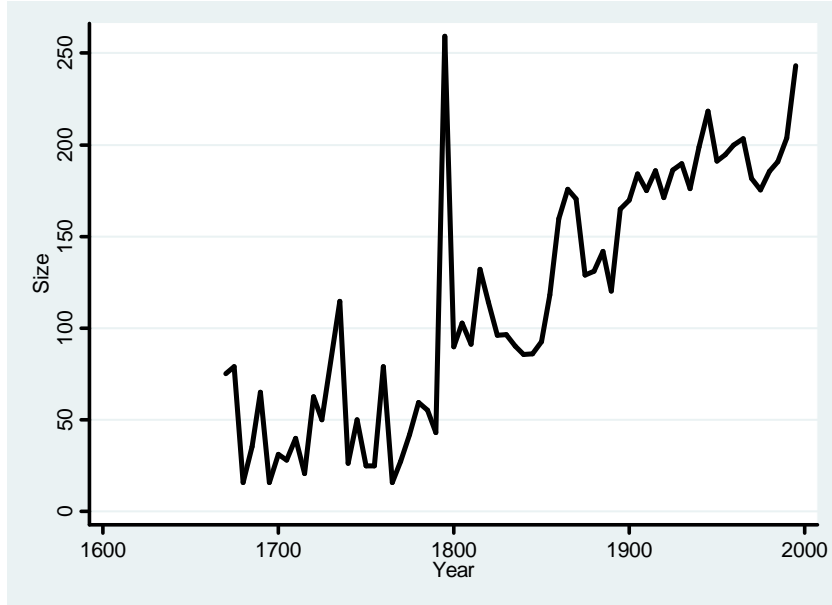


Figure 11
Average page length of doctoral dissertations by discipline, the Netherlands 1945-2000

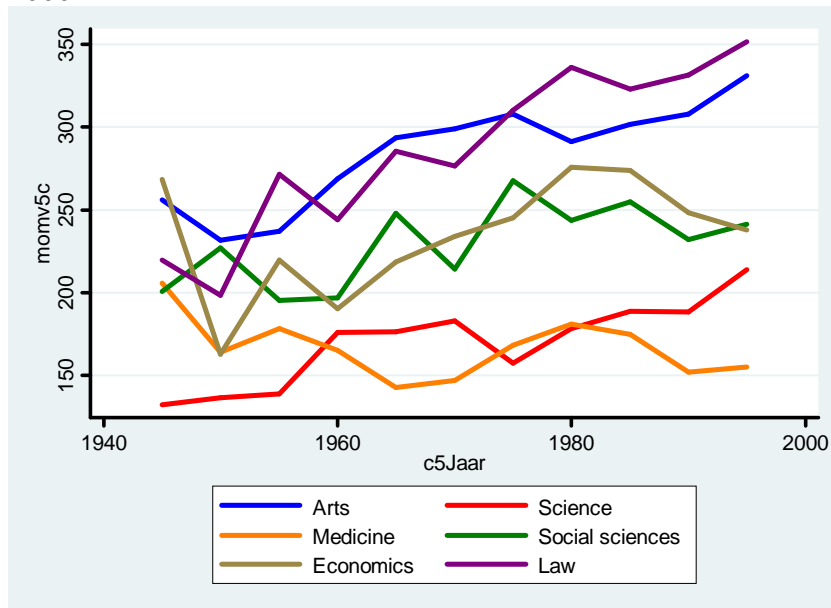


Figure 12
Language of doctoral dissertations, the Netherlands 1674-2000

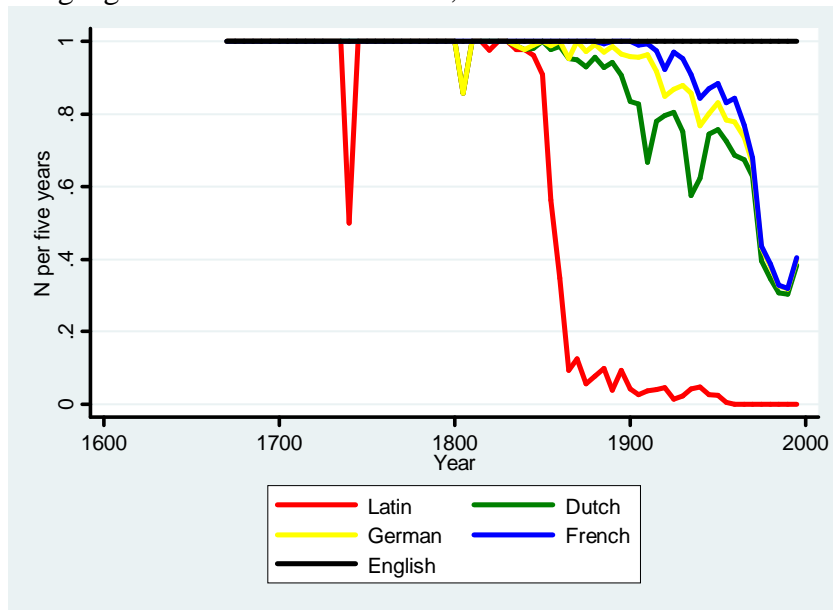


Figure 13
The use of English language in doctoral dissertations by discipline, the Netherlands
1945-2000

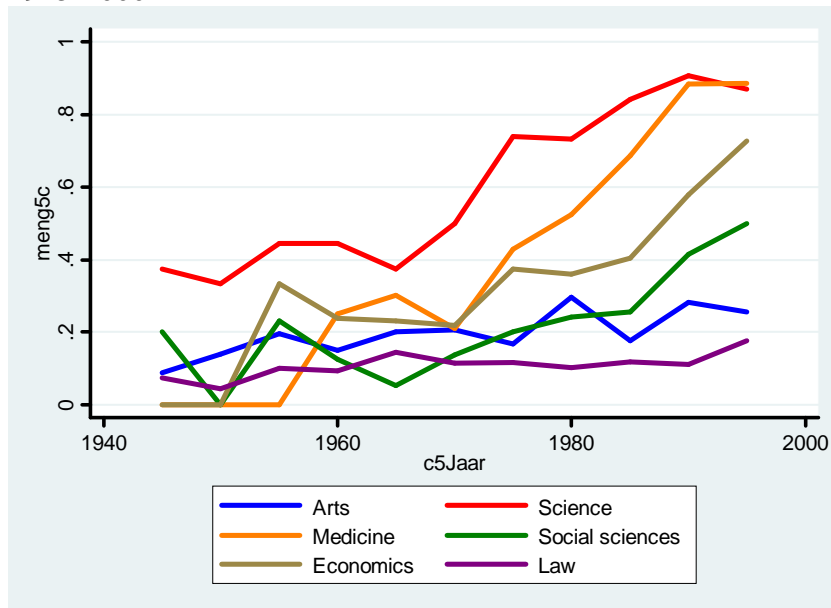


Figure 14
Language of Continental European Journals in Economics, 1844-2001

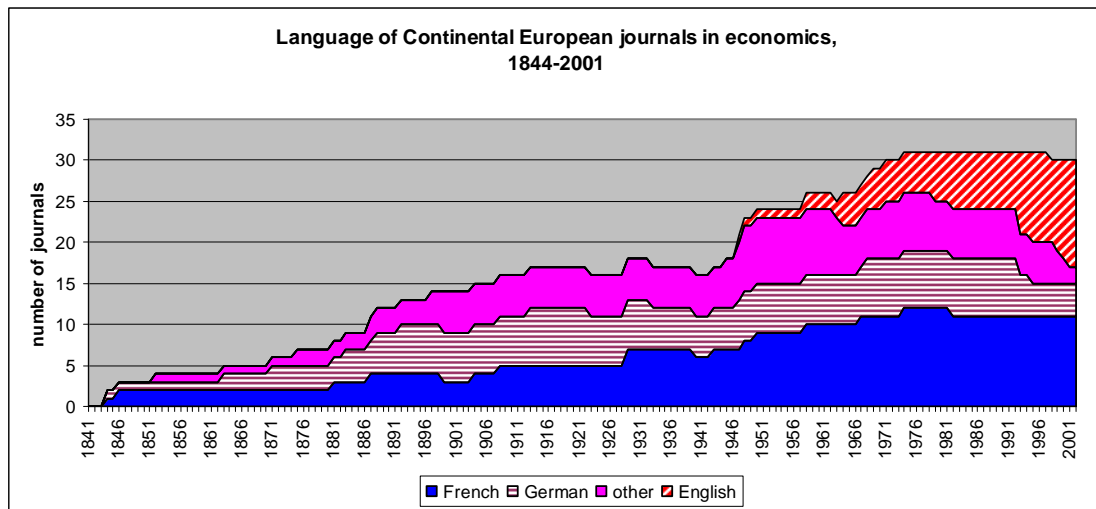


Figure 15
Country of origin of English language economics journals in Anglo-American countries, 1859-1990

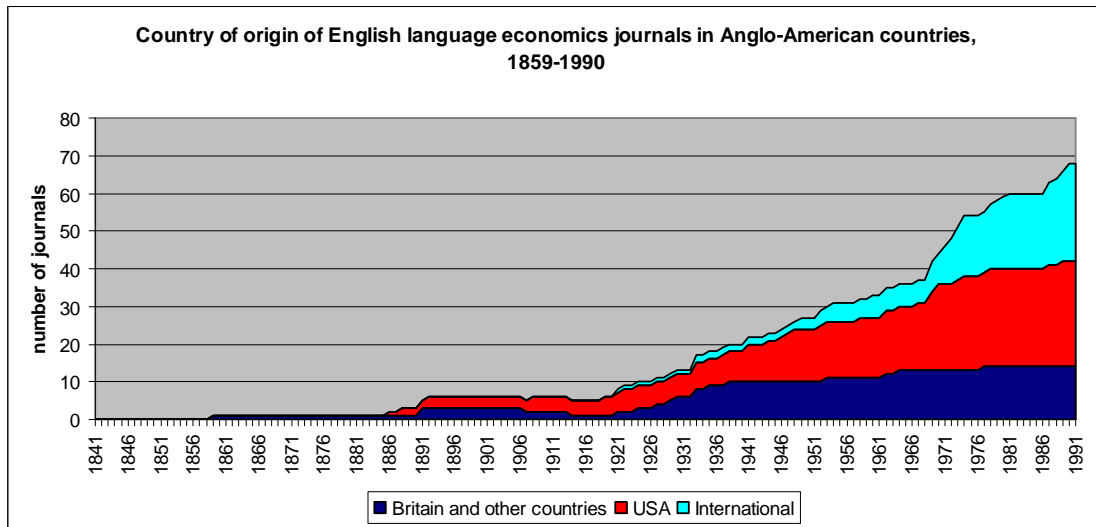


Figure 16
The use of Dutch language in De Economist, the Netherlands 1930-2007

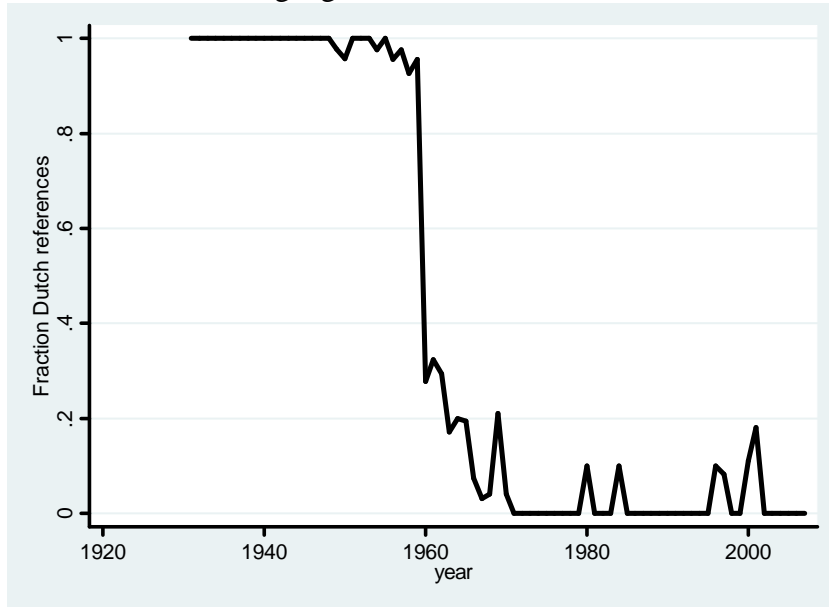


Figure 17

The fraction of articles by Dutch authors in De Economist, the Netherlands 1930-2007

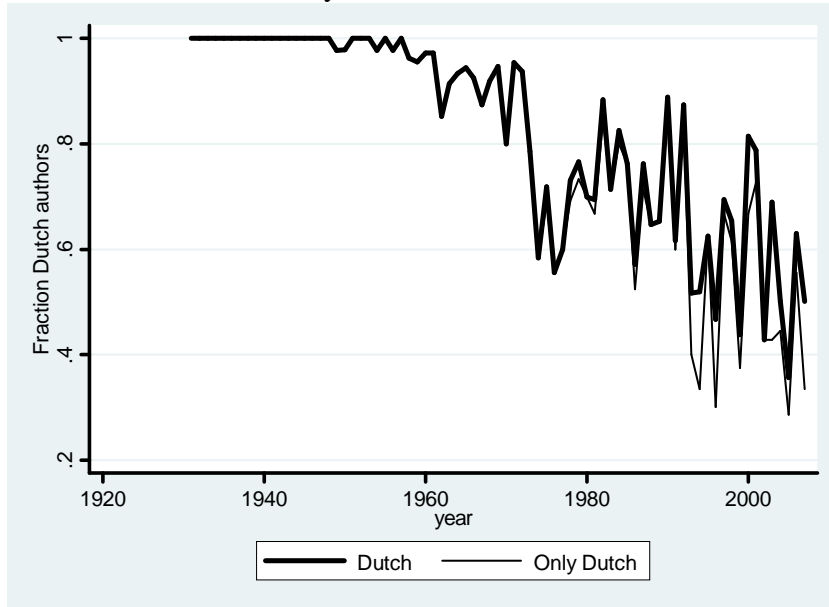


Figure 18

The fraction of references to Dutch publications in De Economist, 1960-2007

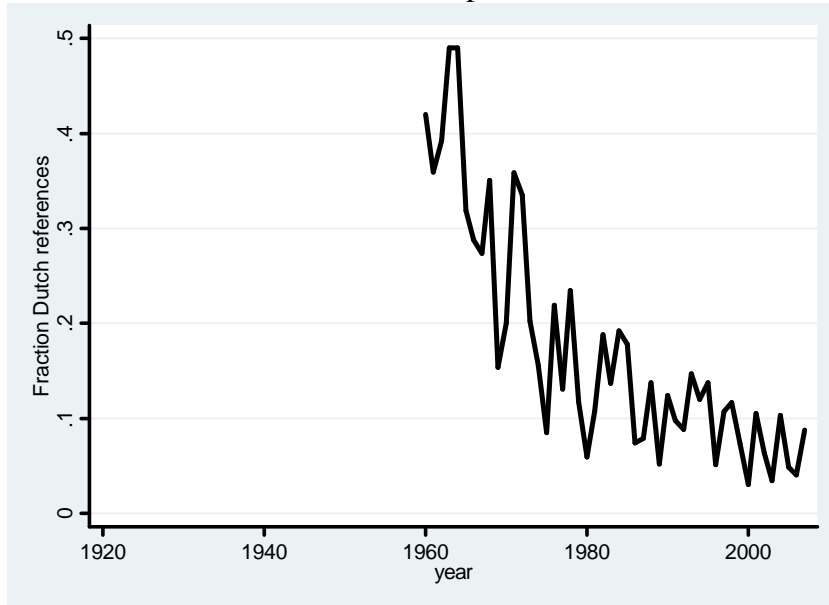


Figure 19
The use of German language in the Journals of Economics, 1930-2007

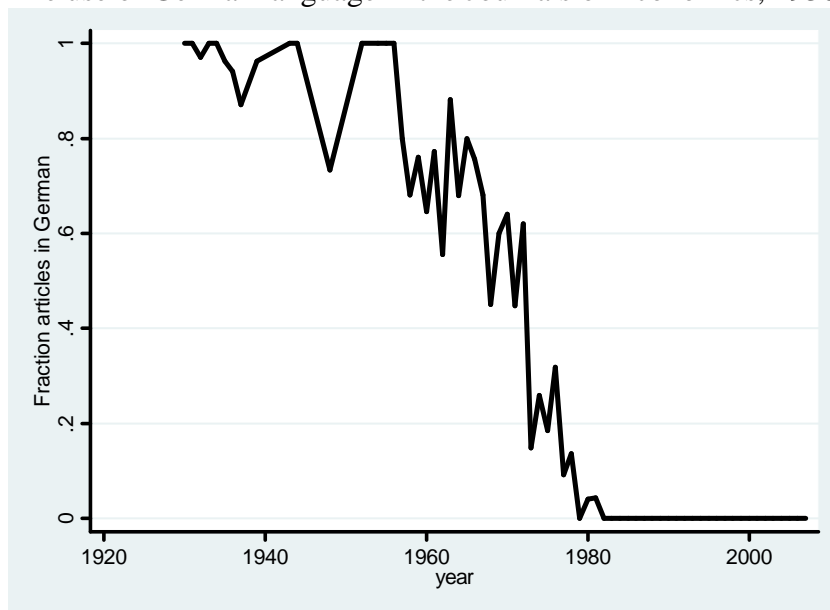


Figure 20

The fraction of articles by German or Austrian authors in the Journal of Economics, 1930-2007

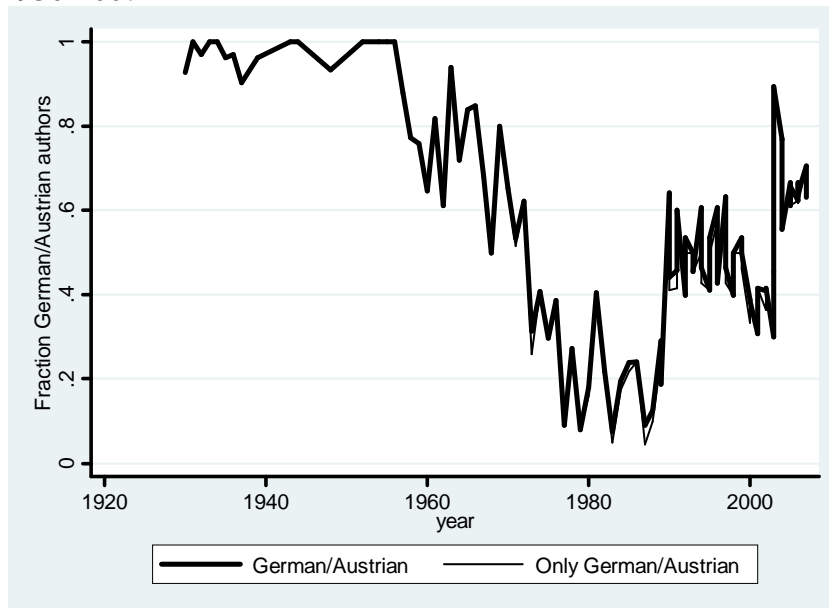


Figure 21

The fraction of references to publications in German, Journal of Economics, 1968-2007

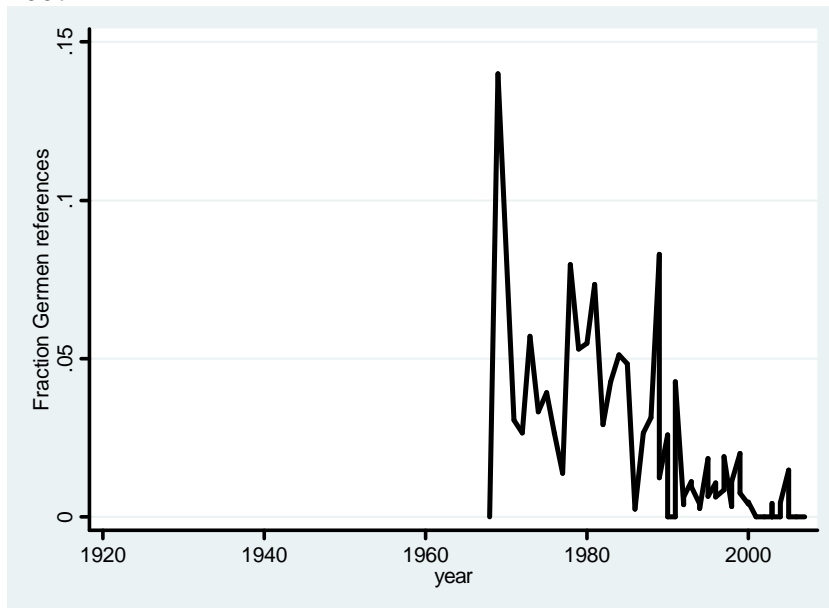


Table 22

The use of Italian language in Research in Economics, 1960-2007

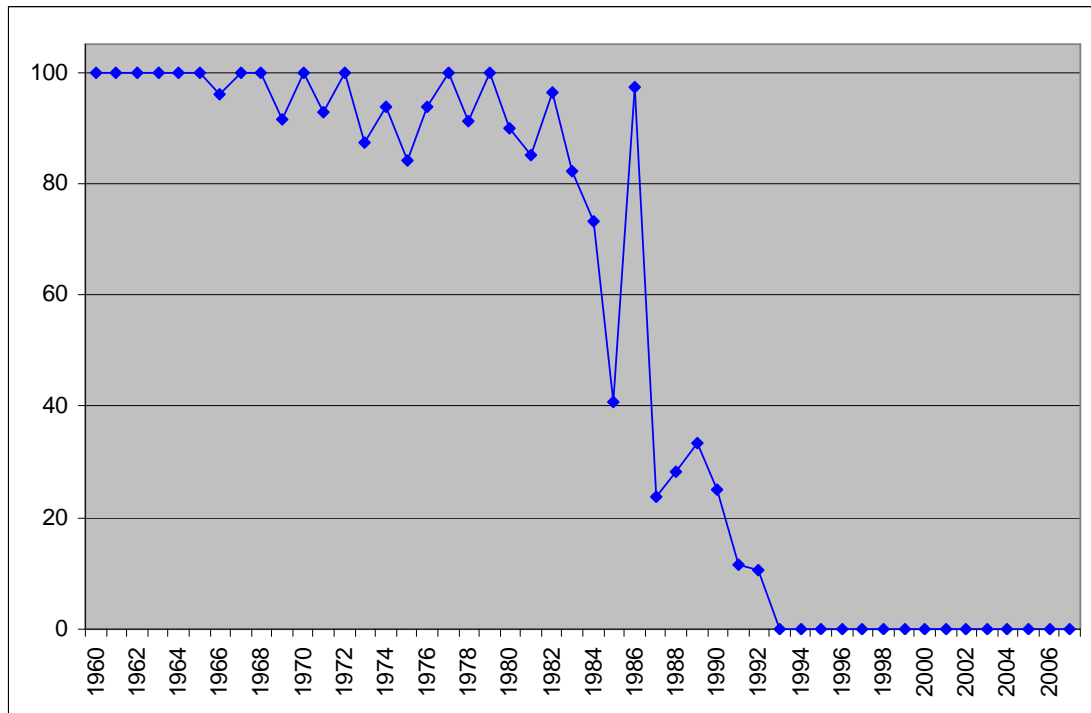
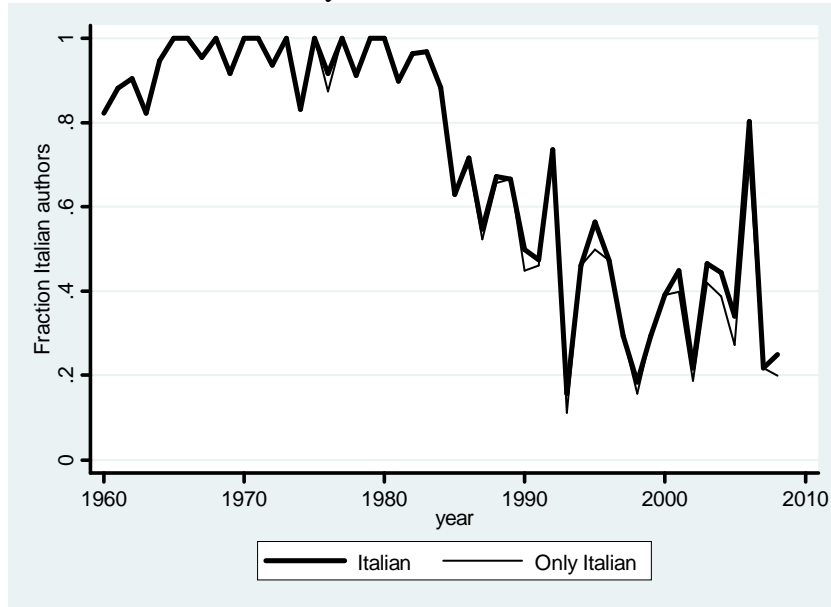


Table 23

The fraction of articles by Italian authors in Research in Economics 1960-2007



Annex to Figures 7, 14, 15

Numbers of dissertations by country and language, 10-year periods 1908-2007

Source: Foreign Dissertations database in the Centra for Research Libraries (CRL) Catalog

Austria	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	German	86	112	245	191	375	302	336	205	79	22
	English	0	2	1	1	6	6	6	6	16	11
	% German	100	98	100	99	98	98	98	97	83	67
Germany, West	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	German	35326	34764	60550	11833	11020	42177	63229	63253	70751	24594
	English	56	10	23	13	21	80	269	514	1042	1222
	%German	100	100	100	100	100	100	100	99	99	95
Netherlands	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	Dutch	622	1207	1978	1448	1643	1648	1796	1360	1169	435
	English	13	57	183	201	630	1243	2551	3342	4287	2771
	% Dutch	98	95	92	88	72	57	41	29	21	14
France	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007

	French	7148	10187	8733	6808	4861	10331	18213	6993	18120	7591
	English	6	5	17	9	4	22	87	17	24	21
	% French	100	100	100	100	100	100	100	100	100	100
Spain	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	Spanish	4	28	41	11	20	188	436	59	234	32
	English	0	0	0	0	1	0	0	0	6	15
	% Spanish	100	100	100	100	95	100	100	100	98	68
Italy	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	Italian	8	5	18	21	23	49	31	60	56	8
	English	0	0	1	2	10	29	13	36	65	6
	% Italian	100	100	95	91	70	63	70	63	46	57
Danmark	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	Danish	112	133	213	247	249	256	260	260	222	66
	English	2	20	60	113	198	280	342	438	696	377
	% Danish	98	87	78	69	56	48	43	37	24	15
Sweden	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007

		1917	1927	1937	1947	1957	1967	1977	1987	1997	2007
	Swedish	240	249	243	267	294	288	622	842	1411	1084
	English	27	68	84	177	469	864	2102	3854	5440	4695
	% Swedish	90	79	74	60	39	25	23	18	21	19
Norway	year	1908- 1917	1918- 1927	1928- 1937	1938- 1947	1948- 1957	1958- 1967	1968- 1977	1978- 1987	1988- 1997	1998- 2007
	Norwegian	5	7	22	12	9	13	15	34	6	0
	English	0	0	13	5	9	27	127	206	153	51
	% Norwegian	100	100	63	71	50	33	11	14	4	0

Language of Continental European academic journals in economics

Sources:

<http://cepa.newschool.edu/het/essays/journal.htm>

<http://www.periodicals.com/download.html>

home pages of journals, national libraries, econlit, etc

Country	Original language	National journal name	English journal name	Publishing years	Year of publishing solely English articles
Austria	German	Zeitschrift für Nationalökonomie	Journal of Economics	1892-	1982
Belgium	French	Revue économique internationale	-	1904-1940	-----
Belgium	French	Recherches Economiques de Louvain	Louvain Economic Review	1929-	----- Still partly in French
Belgium	French	Cahiers économiques de Bruxelles	Brussels Economic Review	1958-	----- Still mix of French and English language
Europe	English	European Economic Review	-	1969-	1969

France	French	Annuaire de l'économie politique et de la statistique	-	1844-1899	-----
France	French	Annales d'Économie Politique	-	1846-	----- Still in French
France	French	Revue d'économie politique	-	1887-	----- Still mainly in French
France	French	Les Etudes Social	-	1881-	----- Still in French
France	French	Histoire, économie et société	-	1908-	----- Still in French
France	French	Annales d'histoire économique et sociale	-	1929-	----- Still in French
France	French	Économie appliquée		1948-	----- Still mainly in French
France	French	Revue économique		1950-	----- Still mainly in French
France	French	Economies et sociétés	-	1967-	----- Still in French
France	French	Cahiers d'économie politique	-	1974-	----- Still mix of French and English

					language
Germany	German	Zeitschrift für die gesamte Staatswissenschaft	Journal of Institutional and Theoretical Economics JITE	1844-	1993
Germany	German	Jahrbücher für Nationalökonomie und Statistik	-	1863-	----- Still in German
Germany	German	Schmollers Jahrbuch	Journal of Applied Social Science Studies	1871	----- Still partly in German
Germany	German	Die Neue Zeit: Revue des geistigen und öffentlichen Lebens	-	1883-1923	-----
Germany	German	Archiv für Sozialwissenschaft und Sozialpolitik	-	1888-1933	-----
Germany	German	Weltwirtschaftliches Archiv	Review of World Economics	1913-	1995
Germany	German	Kredit und Kapital	-	1968-	----- Still in German
Italy	Italian	Giornale degli Economisti e Annali di Economia	-	1875	2000
Italy	English	Banca nazionale del lavoro quarterly review	Previously: Quarterly review. Banca nazionale del lavoro;	1947-	1947

			Nowadays: BNL Quarterly Review		
Italy	Italian	Ricerche Economiche	Research in Economics	1947-	1993
Italy	Italian	Economia internazionale	-	1948-	2001
Netherlands	Dutch	De Economist	De Economist Netherlands Economic Review	1852-	1979
Norway	Norwegian	Norsk Økonomisk Tidsskrift	-	1887-	----- Still in Norwegian
Soviet Union	English translations	Problems of Economic Transition	-	1958-	1958
Soviet Union	English translations	Matekon	-	1964-1998	1964
Spain	Spanish	Revista Española de Economía	Spanish Economic Review	1971-	1999
Spain	Spanish	Revista de Historia Económica	Journal of Iberian and Latin American Economic History	1945-	----- Submissions in English, Spanish or

					Portuguese
Sweden	Swedish	Statsvetenskaplig tidskrift för politik-statistik-ekonomi	-	1897-1963	-----
Sweden	Swedish	Ekonomisk Tidskrift	Scandinavian Journal of Economics	1899-	1964
Switzerland	German	Kyklos	Kyklos International Review for Social Sciences	1947-	1993
Switzerland	French	Revue Économique et Sociale	-	1943-	-----

English language journals (only English speaking countries)

Country	National journal name	Publishing
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		years
Australia	Economic Record	1924-
Australia	Australian Economic Papers	1962-
Britain	Macmillan's Magazine	1859-1907 (?)
Britain	Economic Journal	1891
Britain	Economic Review	1891-1914
Britain	Economica	1921-
Britain	Economic History Review	1927-
Britain	The Manchester School of Economic and Social Studies	1929-
Britain	Lloyds Bank Review	1930-
Britain	Review of Economic Studies	1933-
Britain	Oxford Economic Papers	1938-
Britain	Scottish Journal of Political Economy	1953-
Britain	Journal of Development Studies	1964-
Britain	Cambridge Journal of Economics	1977-
Canada	Canadian Journal of Economics*	1935-
International	International Labour Review	1921-
International	Econometrica	1933-
International	Metroeconomica	1949-
International	Journal of Industrial Economics	1952-

International	IMF Staff Papers	1954-
International	International Economic Review	1960-
International	Journal of Economic Theory	1969-
International	History of Political Economy	1969-
International	Journal of International Economics	1971-
International	International Journal of Game Theory	1971-
International	Journal of Public Economics	1972-
International	Journal of Monetary Economics	1972-
International	Journal of Econometrics	1973-
International	Atlantic Economic Journal	1973-
International	Journal of Mathematical Economics	1974-
International	Journal of Development Economics	1974-
International	Economics Letters	1978-
International	Journal of Economic Dynamics and Control	1979-
International	Journal of Economic Behavior and Organization	1980-
International	Mathematical Social Sciences	1981-
International	The New Palgrave: A dictionary of economics	1987-
International	Review of Austrian Economics	1987-
International	Economic Systems Research	1988-
International	Games and Economic Behavior	1989-
International	Structural Change and Economic Dynamics	1990-
International	Journal of Evolutionary Economics	1990-
South Africa	South African Journal of Economics	1933-

US	Quarterly Journal of Economics	1886-
US	Journal of American Statistical Association	1888-
US	Journal of Political Economy	1892-
US	Bulletin of the American Economic Association**	1908-1910
US	American Economic Review	1911-
US	Review of Economics and Statistics	1919-
US	Journal of Business	1922-
US	Southern Economic Journal	1933-
US	Encyclopedia of the Social Sciences	1937-
US	Journal of Economic History	1941-
US	American Journal of Economics and Sociology	1941-
US	Review of Social Economy	1944-
US	Journal of Finance	1946-
US	International Organization	1947-
US	Monthly Review	1948-
US	Economic Development and Cultural Change	1952-
US	Journal of Law and Economics	1958-
US	Western Economic Journal	1962-
US	Journal of Economic Issues	1967-
US	Journal of Economic Literature	1969-
US	Review of Radical Political Economy	1969-
US	Journal of Money, Credit and Banking	1969-
US	Brookings Papers on Economic Activity	1970-
US	Bell Journal of Economics***	1970-1973
US	Carnegie-Rochester Conference Series on Public Policy	1973-

US	RAND Journal of Economics	1974-
US	Eastern Economic Journal	1974-
US	Journal of Post Keynesian Economics	1978-
US	Journal of Economic Perspectives	1987-
US	Review of Political Economy	1989-

* Formerly published as Canadian Journal of Economics and Political Science

** Predecessor of American Economic Review

*** Predecessor of RAND Journal of Economics

Remarks

Continental European Journals selected from 1850 onwards (emergence of academic economics journals, excl. light and news oriented journals, or journals not principally dedicated to economics)

Only journals that were founded until 1990 have been included.

The selection of journals is based upon the website 'Economics Journals: A Chronological Account'