ACADEMIC HUMAN CAPITAL IN EUROPEAN COUNTRIES AND REGIONS, 1200-1793

Matthew Curtis, David de la Croix, Filippo Manfredini and Mara Vitale

LIDAM Discussion Paper IRES
2025 / 12

UCLouvain

LIDAM
IRES | Louvain Institute of Data Analysis and Modeling in economics and statistics

Academic Human Capital in European Countries and Regions, 1200–1793

Matthew Curtis[a], David de la Croix[b,d], Filippo Manfredini[b,c], and Mara Vitale[b]

[a]University of Southern Denmark
[b]IRES/LIDAM, UCLouvain, Belgium
[c]National Fund for Scientific Research, F.R.S.-FNRS, Brussels
[d]& CEPR, Paris

August 18, 2025

Abstract

We present new annual time-series data on academic human capital across Europe from 1200 to 1793, constructed by aggregating individual-level measures at three geographic scales: cities, present-day countries (as of 2025), and historically informed macro-regions. Individual human capital is derived from a composite index of publication outcomes, based on data from the *Repertorium Eruditorum Totius Europae* (RETE) database. The macro-regional classifications are designed to reflect historically coherent entities, offering a more relevant perspective than modern national boundaries. This framework allows us to document key patterns, including the Little Divergence in academic human capital between Northern and Southern Europe, the effect of the Black Death and the Thirty Years' War on academic human capital, the respective contributions of academies and universities, regional inequality within the Holy Roman Empire, and the distinctiveness of the Scottish Enlightenment.

Keywords: human capital, universities, academies, pre-industrial Europe, long-run growth, Little Divergence

JEL codes: N33, O47, I23

1 Introduction

The systematic collection and analysis of macroeconomic data for Medieval and Early Modern Europe is still in its infancy. A fundamental contribution was made by Maddison (2007), who provided cross-country estimates of population and GDP per capita at several points in time. Following this, scholars such as Fouquet and Broadberry (2015) and others constructed annual GDP series for parts of Europe. More recently, the focus has changed to using large-scale data from online libraries and encyclopedias to produce macroeconomic estimates, marking a new phase of cliometric research (Chaney 2020; Koch, Stojkoski, and Hidalgo 2024).

In preindustrial economic history, human capital has often been overlooked, primarily due to a lack of reliable data. Theories such as those proposed by Galor (2011) account for the increasing importance of human capital through regime changes. Although they provide insight into the beginnings of modern economic growth, these models abstract from the complexity of earlier periods and tend to understate the role of human capital before the Industrial Revolution. In fact, human capital accumulation was already underway in the preindustrial era—a point recognized by a growing cohort of scholars, including Boucekkine, De la Croix, and Licandro (2002), Squicciarini and Voigtländer (2015), and De Pleijt (2018). In this paper we provide new data on upper-tail human capital in the preindustrial period and introduce a novel data source that can support future analysis of the long-run dynamics.

Over the past decade, contributors to RETE, the *Repertorium Eruditorum Totius Europae*, have systematically recorded individual-level data on library footprints for the entire population of university professors and members of scientific academies across Medieval and Early Modern Europe. In this paper, we develop an index of academic human capital based on scholars' productivity and other meaningful attributes, exploiting the new elements introduced in the most recent update of the Virtual International Authority File (VIAF). We aggregate these data by city, present-day country (as of 2025), and historically relevant macro-regions. Macro-regions are drawn from different historical academic traditions, ethnolinguistic divisions, religious affiliations, and political boundaries. By using this regional structure we document several salient patterns discussed in the litterature: the Little Divergence between Northern and Southern Europe; the impact of major shocks such as the Black Death and the Thirty Years' War; the respective roles and complementarities of universities and academies; regional disparities within the Holy Roman Empire; and the intellectual distinctiveness of the Scottish Enlightenment. That our data reveals such patterns suggests that academic human capital may have played a meaningful role in shaping these historical outcomes. A more systematic exploration of these relationships is left to future research.

Among the databases that are currently available, the RETE database offers the most systematic and fine-grained measurement of human capital in the preindustrial era. Universities and academies are among the few educational institutions for which a representative and identifiable set of individuals can be reliably reconstructed over the entire preindustrial period. This approach provides a robust and historically grounded basis for further inquiry.

We focus on the interval from 1200 to 1793, covering the institutional consolidation of medieval universities up to the paroxysm of the French Revolution. However, our original dataset spans the period from 1000, when monastic and cathedral schools dominated the academic landscape, to 1800. In fact, the French Revolution marked a decisive break in the history of higher education: the revolutionary Convention abolished all universities and academies in France—a policy that was subsequently exported to neighboring regions through military conquest. To avoid conflating structural trends with the effects of this exceptional political upheaval, we exclude the final years of the series from our analysis.

Most existing measures of human capital rely on macro-level proxies—such as literacy rates (Boucekkine, De la Croix, and Peeters 2007), years of schooling (De Pleijt 2018), urbanization (De Pleijt and Van Zanden 2016), heaping indexes (A'Hearn, Baten, and Crayen 2009) and book consumption (Buringh and Van Zanden 2009)—which, although valuable, offer only coarse approximations of the central tendency of an underlying distribution. By contrast, our dataset is constructed from individual-level observations. This granularity not only increases its analytical versatility but also opens the door to a wider range of research questions on the nature and diffusion of human capital in the preindustrial world.

Unlike the top-down approach, going from an encyclopedia or database to disaggregated data, our strategy is bottom-up: we begin with specialized secondary sources on universities and academies and aggregate the information from the ground up. This method helps reduce the selection bias inherent in encyclopedic compilations (De la Croix and Licandro 2015; Laouenan et al. 2022; Serafinelli and Tabellini 2022; Koch, Stojkoski, and Hidalgo 2024). In contrast to authors who start from library catalogues (Chaney 2020), our approach offers the additional advantage of clearly defining a universe—academia—from which a large, coherent sample is drawn. We focus primarily on scholars, deliberately excluding lovers, poets and preachers (although occasionally some academy members fall into these categories).

Our dataset captures a substantial share of highly skilled individuals who were involved in producing propositional knowledge, including theologians, lawyers, humanists, physicians, and scientists. While some knowledge from this period—such as Aristotelian physics—is now outdated, these scholars established reasoning habits and intellectual rigor that laid the foundation for modern thought. Additionally, they were instrumental in training professionals who were essential to early modern society, such as parish priests, notaries, schoolteachers,

doctors and astronomers. By including members of academies, we also incorporate those who applied new intellectual frameworks from the Scientific Revolution and Enlightenment.

The *Repertorium Eruditorum Totius Europae* relies on a large and diverse set of secondary sources. References are available for each individual observation on the project's website at https://perso.uclouvain.be/david.delacroix/menushiny.html. The dataset is still expanding as new sources are analyzed daily, but version 1.0—containing 83,000 scholars, 376 institutions, and 669 sources—already provides a sound approximation of academic human capital in Medieval and Early Modern Europe.

In the next section we introduce our measure of human capital, derived from data on university scholars and academicians. In Section 3 we outline our aggregation strategy and the levels of geographical resolution. In Section 4 we present the macro-regional classification that serves as the primary analytical framework. In Section 5 we document the main empirical patterns revealed by the data. Finally, in Section 6 we present our concluding remarks and directions for future research.

2 Individual Human Capital

Measuring scholars' human capital remains a complex endeavor, especially in premodern contexts. While wages are a standard proxy in labor markets, there are major limitations to this approach in our case. Salary data are often scarce, incomplete, or entirely missing. Compensation varied widely—ranging from student payments and in-kind benefits (e.g., rent, wine, grain (Drüll 1991)) to fixed salaries vulnerable to external shocks. Theology professors, in particular, were often unpaid and instead received prebends outside the university (Post 1932; Paquet 1958). These characteristics preclude the determination of reliable, individual-level wage data. We elaborate on these challenges and our wage dataset in De la Croix et al. (2024a).

As an alternative, we measure human capital by individual notability as observed today in two contemporary sources, VIAF and Wikipedia. Initially proposed by De la Croix et al. (2024b) using WorldCat Identities (now defunct) and Wikipedia, this approach was later extended to VIAF by Curtis and De la Croix (2023). "The VIAF (Virtual International Authority File) combines multiple name authority files into a single OCLC-hosted name authority service. The goal of the service is to lower the cost and increase the utility of library authority files by matching and linking widely-used authority files and making that information available on the Web."[1] VIAF contains a broad array of bibliometric indicators of scholarly output and impact, incorporating both authored works and secondary literature

1. From https://viaf.org/.

about the individual. Wikipedia complements this measure by highlighting forms of "service to society", such as becoming an ambassador, pope, or saint. In this paper, we propose an expanded measure compared to De la Croix et al. (2024b) and Curtis and De la Croix (2023), based on more information from the last version of VIAF, in particular concerning the timing of publications.

To combine the information provided by VIAF and Wikipedia into one measure, we compute the first principal component of the following indicators:

1. the number of characters of the longest Wikipedia page across all languages (ranging from a minimum of 60 to 261,408), incorporating a correction for the length of different languages - we used the length of the Gospel according to Saint Mark in different languages; we have also assumed that having no Wikipedia page is the same as having a very short page of 60 characters, which is a meaningful normalization;
2. the number of languages in which a Wikipedia page exists (ranging from a minimum of 1 to 219);
3. the number of publication countries in VIAF (ranging from 0 to 82);
4. the number of different publishers recorded in VIAF (ranging from 0 to 33);
5. the number of titles in VIAF (ranging from 0 to 788);
6. the number of coauthors in VIAF (ranging from 0 to 43): we do not believe that everyone listed is a coauthor, but that some are names appearing on the publication, such as a censor, a dedicatee etc.;
7. the number of publications with ISBNs (ranging from 0 to 2784): this reflects the recent importance of the publications as ISBNs (International Standard Book Numbers) were invented in 1966 and formally implemented in 1970;
8. number of publications before 1900 (ranging from 0 to 10708) - this sums the publications by decade indicated in the histogram provided by VIAF: note that publications and titles are two different measures in VIAF;
9. number of publications after 1900 (ranging from 0 to 7307).

One advantage of combining multiple variables to construct the Human Capital Index (HCI) is that it helps to mitigate distortions inherent in any single source. For instance, including Wikipedia data can offset the bias whereby affiliation with a prestigious institution increases the likelihood of titles appearing in VIAF, regardless of individual merit.

A conceptual issue in measuring human capital is the highly skewed distribution of the indicators discussed above. These measures have fat tails due to the presence of "superstars"—scholars with far more publications and much longer Wikipedia pages than their peers.

Consider François Arouet de Voltaire (1694–1778), a towering Enlightenment figure, elected to the Académie française in 1746, and a lifelong advocate of reason, civil liberties, and free speech. Voltaire has 396 recorded titles, and his longest Wikipedia page contains 120,896 normalized characters. Compare this with Charles Batteux (1713–1780), a respected but less famous Enlightenment thinker. A member of the Académie française (elected 1754) and professor at the Royal College (now Collège de France), Batteux also advanced Enlightenment ideals through his commentaries on classical philosophy, especially Aristotle. Yet he has only 54 recorded titles, and his longest Wikipedia page contains 5,645 normalized characters. Is it plausible that Voltaire's human capital was over ten times greater than Batteux's?

This touches on the economics of superstars (Rosen 1981), where rewards are modeled as a convex function of talent—disproportionately favoring top performers. If we treat publications or Wikipedia length as rewards and talent as human capital, this implies that human capital should be a concave function of these metrics: small differences in human capital may yield large disparities in observable output, particularly at the top. Conversely, modest increases in skill at lower levels may not translate into proportionate gains in visibility or productivity.

We thus interpret the variables from Wikipedia and VIAF as reward-based measures that are heavily skewed towards the upper tail of the distribution. We apply a concave transformation to all variables, namely the inverse hyperbolic sine (asinh), before conducting the principal component analysis.

Variable (in asinh)	PC1	PC2
No. characters of longest Wikipedia page	0.31	-0.07
No. Wiki pages in different languages	0.29	-0.47
No. publication countries	0.36	0.09
No. different publishers	0.36	0.29
No. titles	0.36	0.25
No. coauthors	0.35	0.32
No. ISBN	0.27	-0.61
No. publications before 1900	0.36	0.23
No. publications after 1900	0.33	-0.29
Eigenvalue	6.96	0.90
Proportion of Variance explained	0.77	0.10

Table 1: First two principal components of the Wikipedia and VIAF indicators

Table 1 presents the loadings of the first two principal components derived from the transformed variables. Following the common eigenvalue-greater-than-one rule of thumb, only the first component qualifies as statistically relevant: it has an eigenvalue of 6.96 and

explains 77% of the total variance. In this component, all the measures drawn from Wikipedia and VIAF enter positively with relatively similar loadings of around 0.3. We interpret this component as a summary index of a scholar's human capital and use it throughout the analysis. Notably, the second component, despite its lower eigenvalue (0.90) and modest explanatory power (10%), reveals an interesting pattern. It loads negatively on indicators related to recent international reach and digital visibility, such as the number of Wikipedia language editions and ISBN counts. We return to this component later.

On the basis of the first principal component, we can compute a composite measure of human capital, which we name q_i:

$$\begin{aligned} q_i = &-1.38 + 0.31\,\text{asinh}(\text{no. characters of longest Wikipedia page}) \\ &+ 0.29\,\text{asinh}(\text{no. Wikipedia pages in different languages}) \\ &+ 0.36\,\text{asinh}(\text{no. publication countries}) + 0.36\,\text{asinh}(\text{no. different publishers}) \\ &+ 0.36\,\text{asinh}(\text{no. of titles}) + 0.35\,\text{asinh}(\text{no. coauthors}) \\ &+ 0.27\,\text{asinh}(\text{no. of isbn}) + 0.36\,\text{asinh}(\text{no. publications before 1900}) \\ &+ 0.33\,\text{asinh}(\text{no. publications after 1900}) \end{aligned} \tag{1}$$

In this equation, we chose a constant term that would give $q_i = 0$ for someone with neither a Wikipedia page, nor a VIAF page.

To discuss the merits and drawbacks of the HCI, let us consider the scholars at the top of the distribution. Table 2 provides a list of them covering all periods and most regions of Europe. The scholar with the all-time highest human capital is Martin Luther, professor at the University of Wittenberg. He was not a scientist like Galileo Galilei, Isaac Newton, or Carl Linnaeus, but his profound influence on institutional changes in Europe is inarguable (Becker et al. 2020).

Next comes Voltaire, the prolific French philosopher, member of many academies in the 18th century. In third place is Thomas Aquinas, the medieval theologian and professor at the universities of Paris and Naples. The first scientist is René Descartes, who was a member of the informal Mersenne academy in Paris.

In the list in Table 2, there are some scholars who only have a weak link to our selected institutions. For example, Baruch Spinoza never taught at a university, but he interacted frequently with people at the University of Leiden; the same holds for Michel de Montaigne and his link with Bordeaux. There are also some who were actual teachers but are better known, at least nowadays, for non-scholarly reasons: François Rabelais, known for his novels, was also a physician who taught at Montpellier; Friedrich von Schiller, a German poet and

Name	q_i	Name	q_i	Name	q_i
Luther	18.34	Locke	16.41	Rabelais	15.63
Voltaire	17.97	Racine	16.36	Llull	15.55
Aquinas	17.85	Goldoni	16.26	Rameau	15.47
Rousseau	17.73	Pascal	16.26	Jefferson	15.43
Kant	17.61	Linnaeus	16.26	Burke	15.39
von Schiller	17.46	Montesquieu	16.25	Tasso	15.35
Swift	17.30	Corneille	16.16	da Fidanza	15.35
Erasmus	17.21	de Montaigne	16.15	Melanchthon	15.33
Machiavelli	17.17	Franklin	16.10	Wieland	15.30
Diderot	17.08	Bacon	16.01	von Hohenheim	15.27
Descartes	17.05	Galilei	15.99	Berkeley	15.16
Calvin	16.95	von Humboldt	15.95	Pope	15.16
de La Fontaine	16.87	Fichte	15.95	Cook	15.16
Boccaccio	16.73	Smith	15.94	de Groot	15.15
Perrault	16.72	von Schelling	15.85	Kepler	15.13
von Leibniz	16.72	Newton	15.78	Euler	15.12
Lessing	16.55	Hobbes	15.77	Wesley	15.11
Petrarca	16.55	von Herder	15.72	von Hochheim	15.07
Spinoza	16.45	Swedenborg	15.69	Bruno	15.06
Hume	16.43	de Quevedo	15.66	Villon	15.05

Note: q_i computed from Equation (1)

Table 2: Top 60 academic scholars and their human capital index q_i

professor at the University of Jena, also falls into this category.

Our ranking of human capital is very much in line with other rankings in the recently published databases of Schich et al. (2014) and Yu et al. (2016) which use recent data on the scientific impact and the influence of scholars. All three are built from a contemporary point of view. It is true that some scholars may have acquired their fame through post-mortem publications, while some others were highly regarded when alive but their output did not survive, and they are completely forgotten today.

One final remark before moving to the second principal component. The human capital index we built is based on digitally-native sources, Wikipedia and VIAF, which are regularly updated. Wikipedia pages can change every day based on the work of those who collaborate to the project. VIAF is periodically altered as well, for example if a new library joins the system.

As reported above, the second principal component loads negatively on indicators related to recent digital visibility (Wikipedia, ISBN, and publications after 1900) relative to the other measures which enter positively. With this component we can build a Faded Fame Index

(FFI). Scholars with a high FFI are those with a large number of titles and many publishers and publications before 1900, but no Wikipedia page, no publications after 1900, and no ISBN. They did a lot but were forgotten.

3 Aggregation

Aggregating human capital involves grouping universities and academies into defined sets for which we compute totals. We propose three main approaches to aggregating our individual-level data. First, by city of activity, allowing users to further aggregate data as needed. Second, by grouping institutions according to present-day national borders. Third, we offer alternative aggregations, called macro-regions, based on qualitative historical information about former states and their associated systems of higher education (see Section 4). For each of these aggregation levels, we provide four types of data.

- Total human capital in universities. We sum individual human capital based on individuals' affiliations. In each year, multiple affiliations across different universities are accounted for by attributing an equal share of the individual human capital to each institution.
- Number of universities. The list of universities, along with their respective years of establishment and closure, is based on Frijhoff (1996), with the addition of some other higher education institutions. See De la Croix et al. (2024b) for details.
- Additional human capital in academies. We sum the human capital of the scholars who only belong to academies. In the case of multiple affiliations, we allocate individual human capital across institutions with equal shares.
- Number of academies. The list of academies is based on The British Library (2021) for Renaissance universities and McClellan (1985) for the scientific academies of the 17th and 18th centuries.

4 Definition of the Macro-Regions

To facilitate historical analysis, we complement modern country-based aggregation with an alternative classification into 18 macro-regions, shown in Figure 1. These are defined to reflect long-term institutional, linguistic, religious, and political commonalities, offering a more coherent framework for studying the development of academic human capital between 1200 and 1793. Although their boundaries were actually not fixed in time, they are more historically grounded than modern national borders and better suited to tracking patterns

of continuity and divergence across the centuries. We briefly describe them here, while more details are given in Appendix A

The delineation begins with the geopolitical situation in the aftermath of the Peace of Westphalia (1648), which ushered in a relatively stable territorial order in Europe. We define macro-regions by grouping modern administrative units (primarily NUTS-2 and NUTS-3 regions in their 2016 edition) into larger, historically coherent territories. For areas like Ukraine and Belarus, where the NUTS system does not apply, we rely on equivalent oblast-level units taken from Natural Earth (2023). We also used academic traditions, institutional typologies, linguistic boundaries, and religious affiliations to guide the grouping.

Several contrasting cases illustrate the relevance of this approach. In the British Isles, we distinguish Scotland from the "English Realms" (England, Wales, and Ireland). This reflects not only political autonomy but also clear institutional and religious differences. Scottish universities were Presbyterian after the Reformation. They were early adopters of Enlightenment ideals, offering broad curricula in science and philosophy (Mokyr 2005, p. 311; Wood 2006, pp. 191-194). By contrast, English and Irish universities were Anglicans, and have traditionally been portrayed as more conservative institutions,[2] retaining a strong emphasis on the liberal arts and theology well into the eighteenth century (Schmitt 1983, p. 40). The development of external academies, such as the Royal Society in London, partly compensated for this delay in university reform (Hunter 1989).

In the Iberian Peninsula, we distinguish between Levante and Castilla, which align roughly with the historic territories of the Crowns of Castile and Aragon, respectively. This division reflects differences in language, academic institutions, and patterns of state centralization. While Spain had many universities, it had relatively few scientific academies, in contrast to Northern Europe. Though small in institutional numbers, Portugal maintained a distinct political and linguistic identity and is treated as a separate region (Disney 2009).

France is divided into Francia and Occitania, following the historic langue d'oïl/langue d'òc boundary. This line reflects deep cultural differences, which were reinforced during the Reformation. Francia, in the North, was more integrated into centralized Catholic structures, while Occitania had more Protestant sympathies and a more fragmented institutional landscape (Félice 1853). This divide also mirrors Grendler's typology of southern versus northern European universities: Occitania resembled the Italian and Spanish model with a focus on law and medicine, whereas Francia leaned toward theology and the arts.

Italy is split into Northern, Central, and Southern regions. Southern Italy largely corre-

2. This view, supported by historians such as Hill (1965), Westfall (1980, 1971), and Mokyr (2002, 2010), has been challenged by Feingold (1984) and more recently by Koschnick (2023), who question both the degree of conservatism and universities' role during the Scientific Revolution.

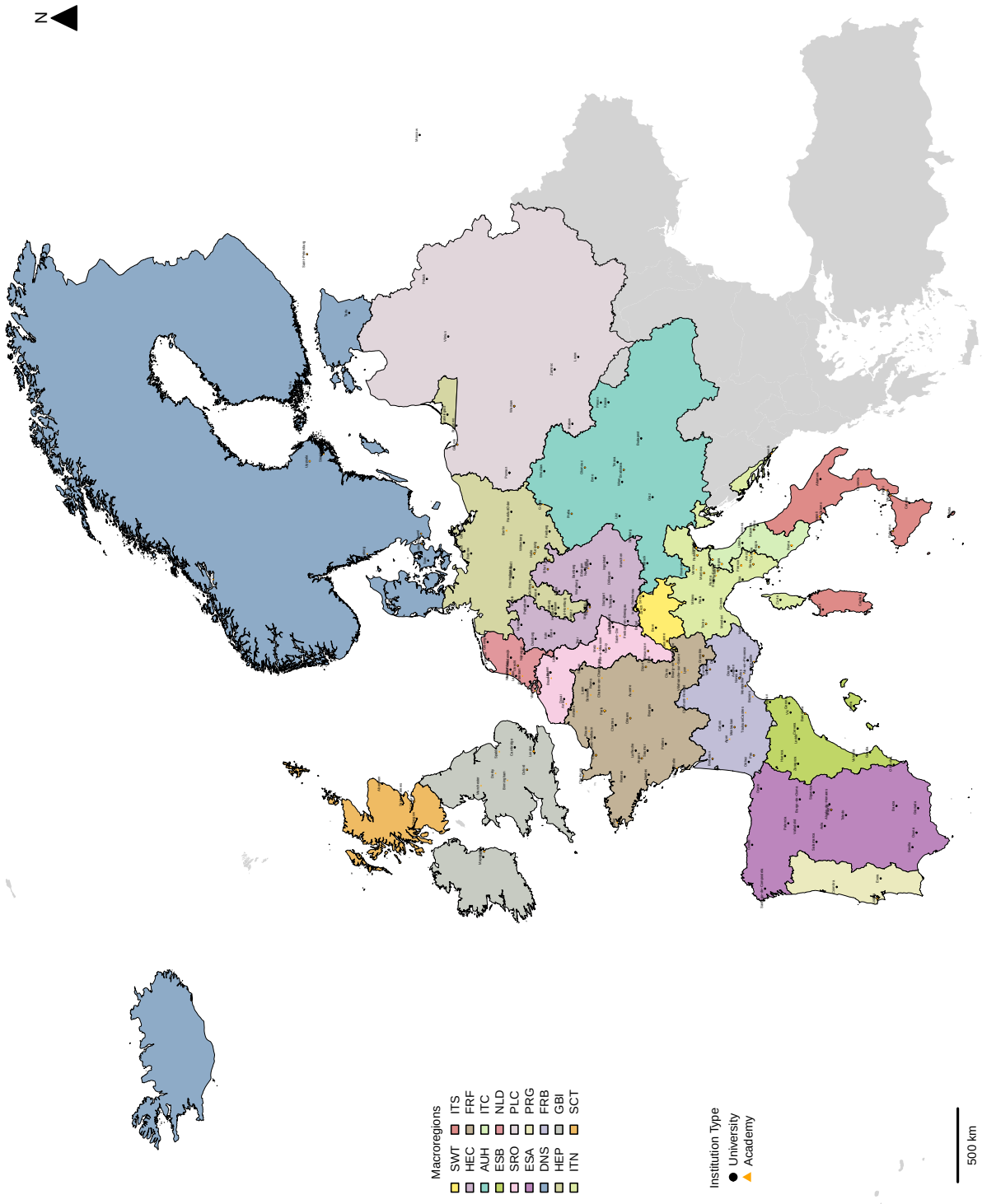


Figure 1: Macro-regions

sponds to the territories of the Spanish-controlled Kingdoms of Naples, Sicily, and Sardinia. Central Italy aligns with the Papal States, where universities like Bologna and Rome were under strong ecclesiastical influence. Northern Italy was more politically fragmented and culturally diverse, with institutions like the University of Padua operating under relatively autonomous republics. The North played a leading role in fostering scientific academies and Renaissance scholarship (Maylender 1930), while the South remained more centralized and doctrinal.

The Holy Roman Empire is divided into Evangelical Germania (the Protestant north) and Tridentine Germania (the Catholic south and center). This split captures the long-term impact of the Reformation and Counter-Reformation on academic structures. Protestant territories founded numerous new institutions, often closely tied to local rulers and reform movements (Hammerstein 2003). Catholic regions, by contrast, relied heavily on the Jesuits and emphasized doctrinal control. This division is critical for understanding the confessional foundations of early modern knowledge regimes.

Other important macro-regions include the Netherlands, which emerged as a major intellectual and commercial hub in the seventeenth century, with Calvinist-leaning universities and a strong academic network; the Lotharingian corridor, a transitional region between France and Germany with dense academic activity and historical ties to the house of Burgundy and, later, the Spanish Habsburgs; and the Austrian Habsburg Lands, where university development followed a more centralized Catholic pattern, with strong Jesuit involvement (Grendler 2019) and a late shift towards Enlightenment reforms under Maria Theresa.

We also identify Poland-Lithuania as a macro-region, encompassing a wide range of universities and academies in a decentralized but academically dynamic context, and with a strong Jesuit presence. Switzerland is treated as a distinct unit, with its patchwork of Protestant and Catholic cantons, each supporting their own academic institutions or relying on foreign universities (Zurbuchen 2011; Neumann 2014). Finally, we group the Kingdoms of Denmark-Norway and Sweden under Scandinavia, reflecting their shared Lutheran orientation and monarchical structures, which shaped a relatively homogeneous academic environment.

This macro-regional approach enables more meaningful comparisons of academic human capital across time and space, accounting for historically embedded patterns of governance, religion, and institutional development. It also avoids the pitfalls of imposing present-day national categories on premodern dynamics.

5 Reviewing Some Established Facts

In this section, we present a series of key patterns that have been discussed in the literature and can be observed in the human capital data. To enable meaningful cross-regional comparisons, the aggregate human capital for each macro-region is normalized by the number of active universities in every year. By dividing total human capital by the number of institutions, the measure captures the intensity of human capital per university rather than its aggregate scale. This allows us to measure whether the typical university in a given region was becoming more or less human capital-intensive over time.

This normalization is motivated by the substantial heterogeneity in the structure and evolution of academic systems across Europe. While some regions—most notably English Realms—remained relatively oligopolistic, with a small number of elite institutions concentrating much of the intellectual activity, others such as Evangelical Germania and Central Italy expanded widely by founding a larger number of universities. These divergent institutional dynamics would render raw aggregate comparisons misleading: a region with many small, low-capacity institutions might appear as dynamic as a region with fewer but much more academically productive universities. Since total human capital is not a reliable proxy for human-capital intensity, one might instead consider the relative contribution of each macro-region to the overall European stock of human capital in each year. However, this approach would also be misleading if population size were not taken into account. For instance, if the relative contribution of Levante increased over time, this might simply reflect relative demographic growth rather than a rise in academic productivity. The lack of consistent, disaggregated annual population data prevents us from pursuing this approach. Despite their contrasting structures, even regions with vastly different academic configurations—such as English Realms and Evangelical Germania—achieve primacy in terms of human-capital intensity. This reinforces our confidence that human capital per institution is a meaningful and robust indicator. Importantly, the number of universities was not used as a criterion in defining macro-regions and therefore does not mechanically bias regional comparisons of human capital levels. Variation in total human capital over time can reflect changes either in the average number of affiliated scholars (quantity) or in their average human capital (quality). However, since variation in quantity typically outweighs that in quality, changes in human capital per institution are largely driven by shifts in institutional size. By concentrating more minds in one place, larger institutions should foster greater intellectual cross-pollination—an effect aligned with research by De la Croix, Scebba, and Zanardello (2025).

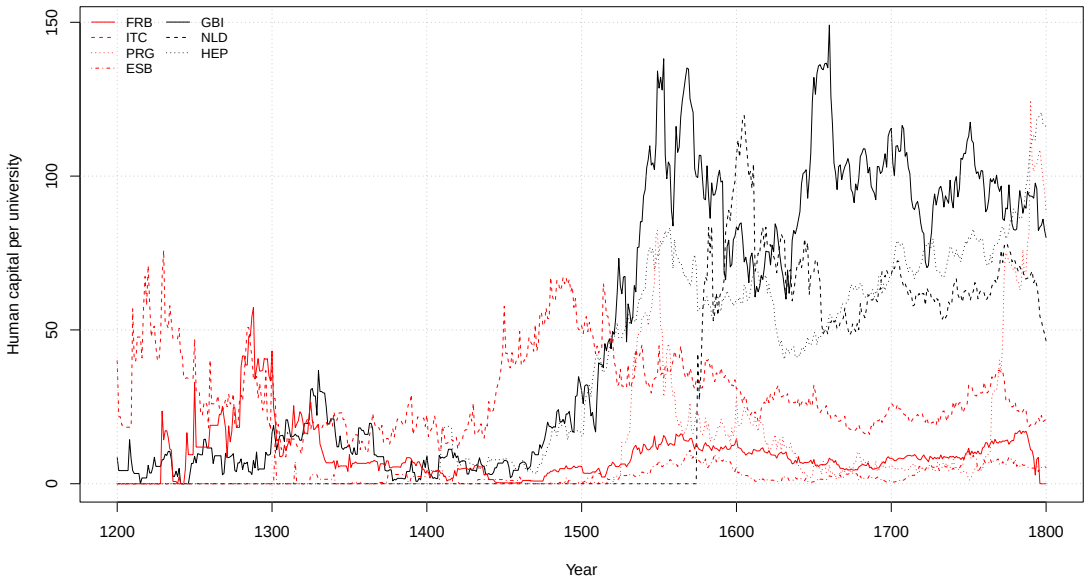


Figure 2: The Little Divergence in academic human capital, as measured by average human capital per university. Black lines: Northern Europe (English Realms (GBI), Netherlands (NLD) and Evangelical Germania (HEP))). Red lines: Southern Europe (Occitania (FRB), Central Italy (ITC), Portugal (PRG) and Castilla (ESB)).

5.1 The Little Divergence

A notable economic divergence emerged in Europe prior to 1800: the sustained economic ascent of northwestern regions (present-day Great Britain and the Netherlands) over their southern counterparts. This phenomenon, often termed the "Little Divergence," is empirically observed across various socioeconomic indicators, including real GDP per capita (Maddison 2007), urbanization rates (De Vries 1984; Bairoch, Batou, and Chevre 1988; Buringh 2021), book consumption (Buringh and Van Zanden 2009), and quality of institutions (Hough and Grier 2015; Henriques and Palma 2023), among others. While the precise causes remain a subject of scholarly debate, De Pleijt and Van Zanden (2016) propose that human capital, proxied by book consumption, significantly accounts for a substantial portion of this divergence, a claim that contrasts with findings by Allen (2003) and Acemoglu, Johnson, and Robinson (2005).

Figure 2 exhibits the average human capital per university for some representative macro-regions of the North and South of Europe. Starting in 1500, English Realms, Evangelical Germania and the Netherlands witnessed a remarkable increase in the average human capital per university. Conversely, the southern regions of Occitania, Central Italy, Portugal and Castilla stagnated.

From the perspective of human capital, this shift had a twofold manifestation. In Southern Europe—particularly on the Italian Peninsula—it was associated with the cultural and intellectual Renaissance movement. Conversely, in Northern Europe it materialized with the Northern Renaissance, which was concomitant with the Reformation. While different in nature, these movements both coincided with a resurgence of human capital, which, in Northern Europe, proved to be quantitatively more substantial and persistent. In fact, the decline of the Renaissance brought Central Italy back to stagnation. Conversely, the Northern Renaissance was a prosperous period for Northwestern Europe that brought it to a position of primacy relative to the Southern and Central regions. In terms of academic human capital, Portugal had a very different path compared to Spain. The arrival of the Jesuits around 1540, as part of a broader project of evangelization and cultural control over the colonial territories, marked an initial—albeit temporary—phase of growth. A renewed impetus came in the mid-eighteenth century with the reform program of the Marquis of Pombal—which also included the expulsion of the Jesuits—aimed at reorganizing educational institutions along more modern lines and improving their overall quality (Maxwell 1995; Vitale 2022; De la Croix, Gualandris, and Vitale 2023).

The 17th century was characterized by numerous conflicts and plague outbreaks. Both the Netherlands and Evangelical Germania suffered a brief decline, most likely due to the Thirty Years' War (1618–1648) and the Dutch War of Independence from the Habsburgs (1568–1648). The English Realms's human capital reached its peak in this period, coinciding with the Educational Revolution (Stone 1964), before the Stuart Restoration ushered in a century-long decline in tertiary education.[3].

Similar trends can be spotted using alternative macro-level measures of human capital. By 1600, the English Realms and the Netherlands were the Western European regions with the highest literacy rates, while Ireland and Spain had the lowest rates (Buringh and Van Zanden 2009, tab. 9). However, while academic human capital was highest in the English Realms, surpassing both the Low Countries and Evangelical Germania, the Netherlands had become the most literate European macro-region by 1600. A comparable gradient appears in per capita consumption of printed books (Buringh and Van Zanden 2009, tab. 4).

5.2 The Black Death and the Thirty Years' War

Two periods are particularly relevant for analyzing human-capital intensity: the decades surrounding the Black Death and the Thirty Years' War.

3. The Educational Revolution aligns with data on grammar school foundations (Boucekkine, De la Croix, and Peeters 2007, fig. 1), while the subsequent decline is evident in the average tertiary education (De Pleijt 2018, fig. 4) and matriculation rates to universities and the Inns of Court (Stone 1964, p. 69; 1974).

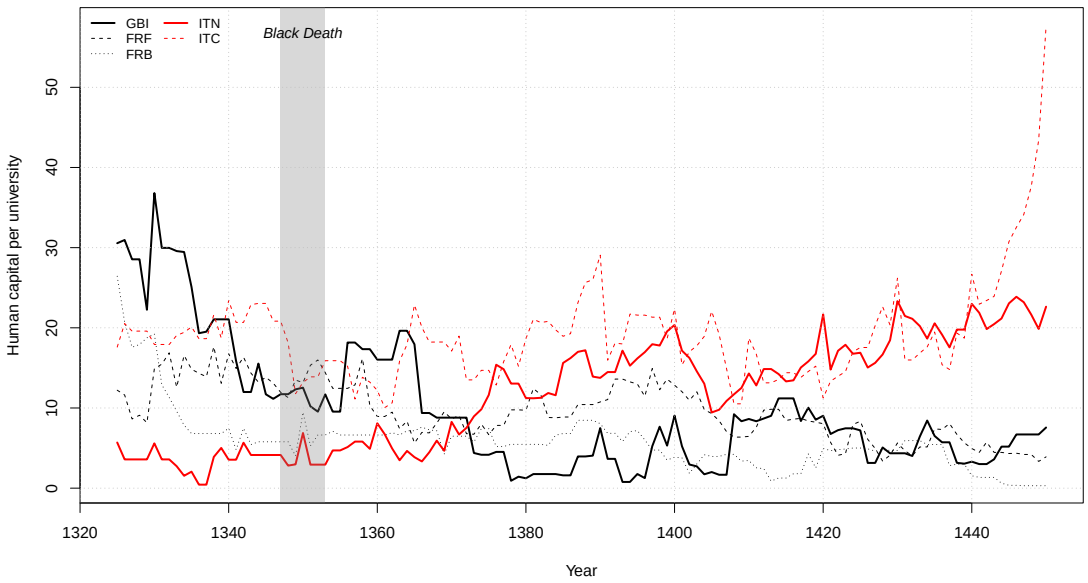


Figure 3: The Black Death and Human Capital. Black lines: macro-regions following the Parisian model (English Realms (GBI), Francia (FRF) and Occitania (FRB)), red lines: macro-regions following the Bolognese model (Northern Italy (ITN) and Central Italy (ITC)).

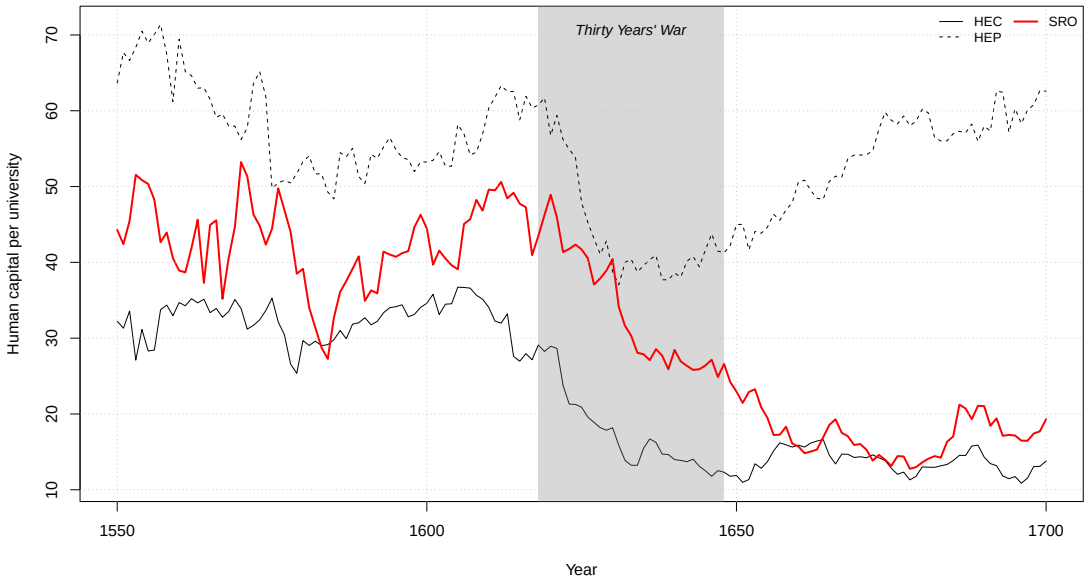


Figure 4: The Thirty Years' War and Human Capital for Tridentine Germania (HEC), Evangelical Germania (HEP) and Lotharingian corridor (SRO)

Around 1348, Europe was struck by one of the most devastating pandemics in recorded history. The plague is traditionally believed to have arrived via Genoese ships retreating from the Mongol siege of the commercial outpost of Caffa, in present-day Crimea. While population loss estimates range between 20–50%, the literature emphasizes that the severity of the crisis was compounded by the extreme unhealthiness of European urban environments—cities which Voigtländer and Voth (2012, p. 804) described as "death traps" due to their poor sanitation and higher exposure to trade and warfare.

Campbell (1931) remains the first major monograph dedicated to this question, pioneering the study of the Black Death's impact on European higher education. The most immediate and intuitive consequence was the death of scholars and students. Despite the scale of demographic loss, Oxford, for instance, appears not to have contracted significantly in size (Brockliss 2016, p. 33), perhaps thanks to the students and faculty's youth.[4].

The immediate post-plague labor shortage may have led individuals at the margin to forego higher education, resulting in an immediate decline in university enrollments (short-run effect) and in a subsequent contraction in the pool of qualified teachers (long-run effect). Nevertheless, the sharp rise in land-labor ratios and real wages, alongside an increasing preference for human capital-intensive goods, like books (Baten and Zanden 2008, fig. 1; Dittmar 2011, pp. 1139, 1156), generated growing demand for university education and contributed to rising urbanization rates (Buringh 2021). As the supply of qualified instructors failed to keep pace with this rising demand, universities and grammar schools increasingly resorted to hiring underqualified personnel—potentially accounting for the widely observed qualitative decline in instruction. Conversely, Courtenay (1980) attributes the decrease to the limited ability to replace grammar school teachers—mostly clergy—who suffered disproportionately high mortality. While both theories offer an account of this persistent deterioration, they lack the support of modern quantitative methods and continue to be debated.

Conversely, Grendler (2002, p. 7-8) reports that, starting with about 17 professors in 1351 the University of Bologna grew steadily through the 1440s, when the faculty stabilized at about 85-110 members. Available evidence on the effect of the plague on the quality of Southern European universities is extremely scattered and scarce. Nonetheless, we note a striking increase in human capital intensity both in Northern Italy and Central Italy. One possible explanation is that teaching at Bologna focused primarily on law and medicine. In the aftermath of the Black Death, demand for both disciplines likely increased: legal studies were vital for regulating urban life and enforcing public health measures, while medicine

4. In European universities, some students were as young as 14 years old (Ridder-Symoens 1996, pp. 285-286), and to become eligible to teach, they typically needed to graduate—a process that generally required between 8 and 12 years of study (Ridder-Symoens 1996, pp. 360-361)

was central to managing health crises and searching for effective treatments. This made both fields strategically important for the university and for society more broadly. To maintain and strengthen teaching quality, especially after the demographic impact of the Black Death, the university actively sought to attract new professors, likely expanding its international network of scholars. Another possible explanation is that several Italian universities—particularly in the North—temporarily relocated to avoid the plague. Such relocations may have contributed to maintaining, or even improving, the quality of human capital at these institutions.

On the whole, universities across Europe responded unevenly to the pandemic. Although the Black Death disrupted academic life in nearly all macro-regions, institutions shaped by the Parisian tradition (centered around theology and philosophy) experienced a sharper decline, whereas those following the "Bologna model" (centered around law and medicine) proved more resilient. Figure 3 illustrates the evolution of human-capital intensity across different macro-regions in the aftermath of the plague. The plague impacted almost all the macro-regions and the underlying assumption is that the demography of each region was affected equally.

The Thirty Years' War (1618–1648) was a protracted and devastating conflict that engulfed much of continental Europe. Like the Black Death, it had profound demographic and institutional consequences. Among its many effects, the war led to the closure or disruption of numerous universities (Stelter, De la Croix, and Myrskylä 2021). Using matriculation data, Hotson (2018, Fig. 4.5, 4.13) shows that Reformed universities of Calvinist tradition—notably Heidelberg, Duisburg, and Basle—were among the hardest hit. Notwithstanding several aborted attempts to reopen it, the University of Heidelberg remained closed from 1622 to 1652 (Hotson 2018, pp. 143-144). In contrast, some Catholic and Lutheran institutions also experienced increases in matriculations, likely due to their safer locations or confessional alignment. Overall, the war severely disrupted international academic trade routes, deepened religious polarization and led to forced displacement of students and scholars to neighboring macro-regions.

Figure 4 illustrates the evolution of human capital across the three regions of Evangelical Germania, Tridentine Germania, and the Lotharingian corridor in the period 1550-1700. All regions experienced an initial decline, yet their trajectories diverged notably as the conflict progressed. While both Tridentine Germania and the Lotharingian corridor entered prolonged stagnation around the war's midpoint, Evangelical Germania underwent a marked recovery, ultimately achieving primacy at the European level.

5.3 Universities vs. Academies

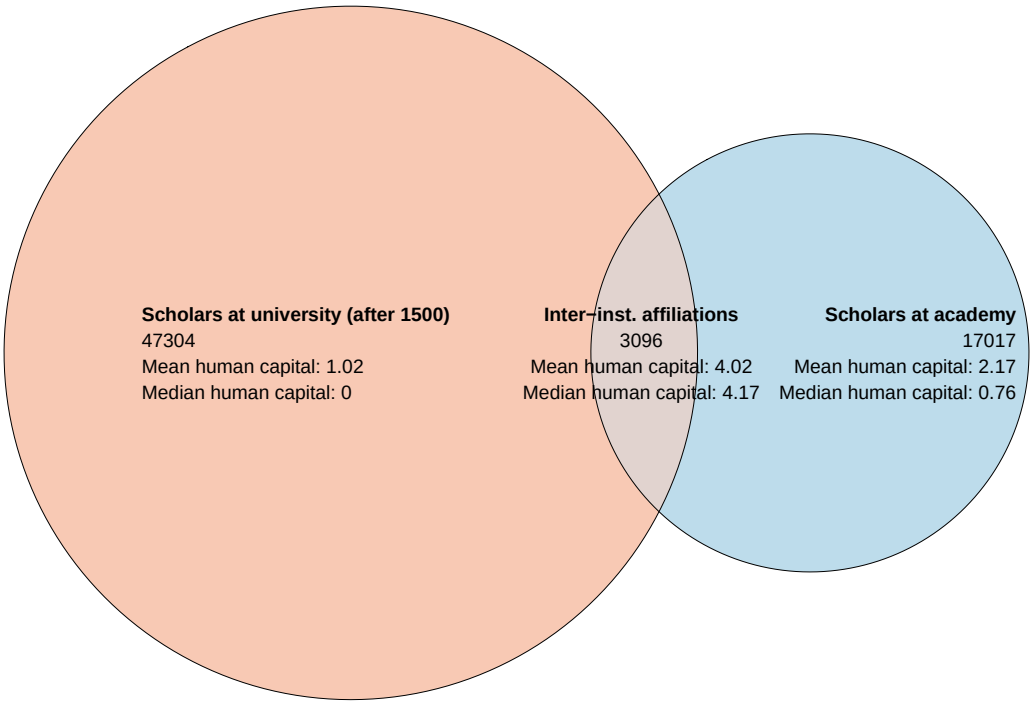


Figure 5: Venn diagram of scholars by type of affiliation

From around 1500, the first academies emerged in European cities. The first wave stems from the Humanistic Revolution, mostly in Italy (Maylender 1930). The second wave, from around 1650, stems from the Scientific Revolution (McClellan 1985; Applebaum 2003). In contrast to universities, whose mission was primarily educational, academies were chiefly devoted to research. From a data standpoint, a key distinction between the two concerns the attribution of scholarly affiliation. University professors were typically salaried educators, often subject to requirements such as celibacy and residency on campus. Academicians, by contrast, were not obliged to teach and were generally not subject to such constraints. This institutional divergence had important geographic implications. Universities had a clearly defined local sphere of influence tied to their physical location. Academies, however, operated within more diffuse and networked structures. It was common for them to include "corresponding members"—scholars who contributed to academic discussions via epistolary exchange without residing near or ever visiting the academy's headquarters. These correspondence networks played a central role in shaping the so-called Republic of Letters (Mokyr 2010, 2016; Zanardello 2024; Cervellati et al. 2025). While available data do not always allow us to distinguish between resident and corresponding members, anecdotal evidence suggests

that several academicians visited their affiliated institutions very rarely.

Figure 5 is a Venn diagram that shows the extent of joint membership of universities and academies. It also shows that scholars affiliated exclusively with academies had more than twice the level of human capital, on average, than those affiliated exclusively with universities after 1500. Several mechanisms could account for this difference: we focus on two in particular. Firstly, given their research-oriented mission, academicians primarily engaged in scholarly production rather than teaching. This likely contributed to a greater number of published works—both in terms of titles and editions—which is directly reflected in our human capital index. In contrast, teaching activities do not directly factor into the construction of this index. Secondly, the practice of appointing corresponding members—often prestigious scholars from outside the local area—allowed academies to extend their intellectual reach and institutional prestige at minimal cost. This contributed to a broader geographic footprint for academies relative to universities. In our analysis, individuals affiliated with both a university and an academy have their human capital attributed solely to the university. As a result, the human capital associated with academies is drawn from scholars exclusively affiliated with them. Although inter-institutional affiliations constitute a minority of the overall sample, these scholars exhibit markedly higher human capital. On average, their human capital index is 1.85 times greater than that of scholars affiliated only with academies, and 3.94 times greater than that of university-only scholars. These disparities are even more pronounced at the median: the median scholar affiliated only with a university has no publication record, and therefore a human capital index of zero.

Figure 6 displays the relationship between total European human capital produced by universities and by academies after 1600. The outputs of the two types of institution appear to be at least partially complementary. Their aggregate human capital levels tend to move in the same direction over time. Zanardello (2024) provides evidence that the establishment of academies spurred growth in existing universities, suggesting a positive spillover effect.

The role of academies is particularly visible when comparing Francia to Occitania. Figure 7a and Figure 7b display the human capital series first for universities, and then for the sum of universities and academies. Academies located in Francia, and especially in Paris,[5] played a substantial role in raising the region's human-capital intensity. Since the academy series encompasses members of academies without university affiliation, the post-1500 rise of Northern French institutions in Figure 7b was driven by scholars who never taught at a university. The relatively high levels of human capital experienced by Occitania between the 13th and 14th centuries gradually waned. From 1600 the series starts to diverge. While

5. According to our data, until 1750 the academies located in Paris contributed to more than half of the total human capital supplied by academies in Francia

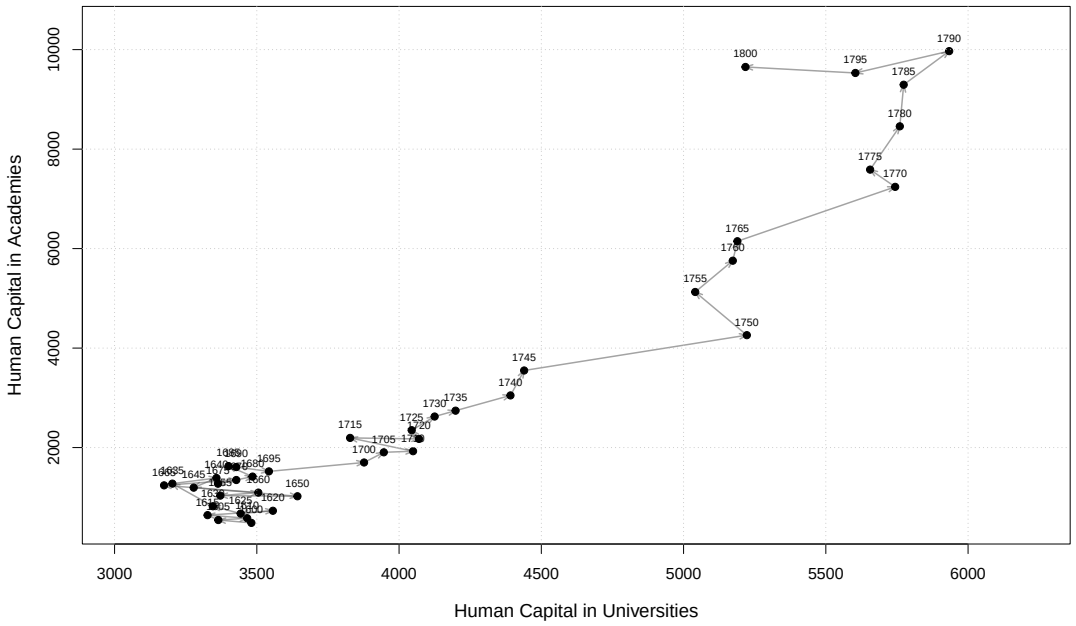
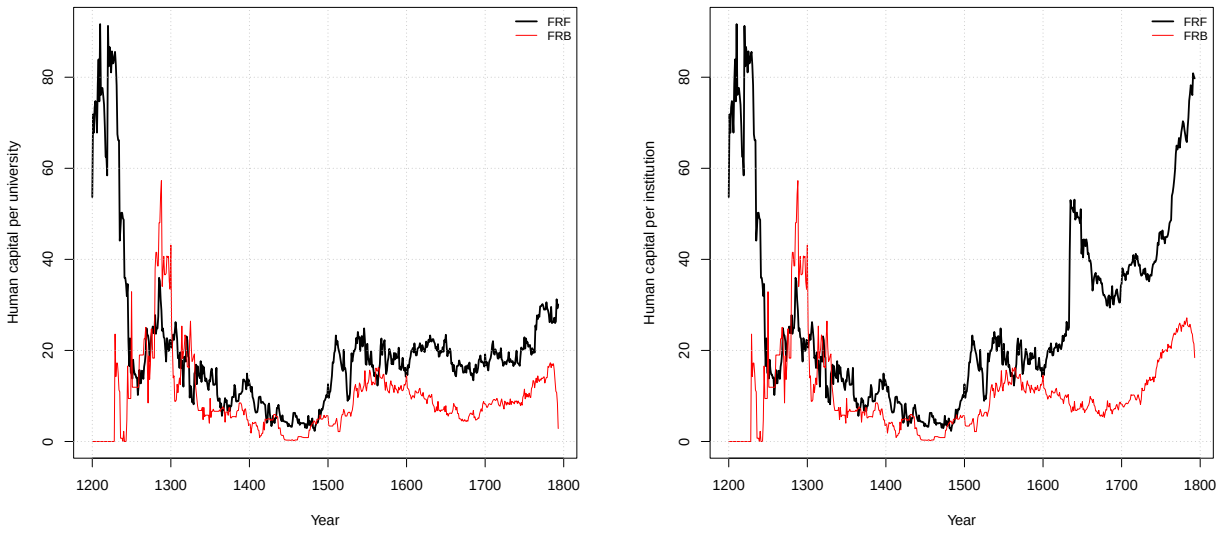


Figure 6: Scatter plot of the total human capital produced in universities and academies after 1600.



(a) (b)

Figure 7: Human capital per university (7a) and per institution (academies and universities) (7b) in Francia (FRF) and Occitania (FRB)

the northern region of Francia seems to be tied to the trends of the English Realms and the Netherlands, Occitania stagnates, as do most other Southern European regions. When looking at universities alone, this divergence appears modest; the inclusion of academies, however, reveals a much wider gap.

5.4 Heterogeneity in Germania and the Habsburg Lands

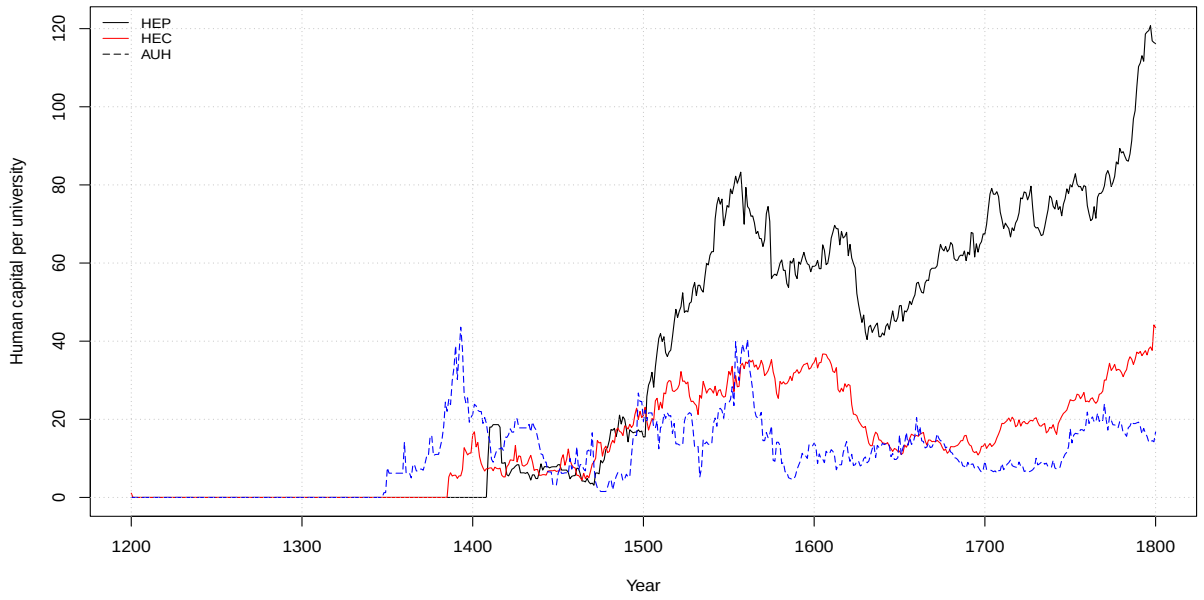
The religious separation of the Holy Roman Empire allows us to identify a pattern long debated in economic history: the relative performance of Protestant versus Catholic regions (Weber 1930; Becker and Woessmann 2009; Becker, Pfaff, and Rubin 2016; De la Croix and Morault 2025). As shown in Figure 8a, universities in both the Catholic (Tridentine Germania) and Protestant (Evangelical Germania) parts of the Empire displayed comparable levels of average human capital until the early 1500s. After that point, a divergence emerged: Protestant regions began to exhibit higher human capital per university than their Catholic counterparts. This shift coincides with the rise of Lutheranism and brings Evangelical Germania onto the path of Northern European economic and intellectual development more broadly, as discussed in Section 5.1.

Whether this divergence is a cause or an effect of the Reformation lies beyond the scope of this paper. Nonetheless, the pattern is clearly visible in our measure of human capital. It is well established that the Reformation spurred the creation of new institutions dedicated to training clergy in Lutheran doctrine. For instance, the founding charter of the University of Giessen (1607) explicitly identifies this as its main purpose. Similar aims motivated the foundation of universities such as Marburg (1527), Königsberg (1544), and Jena (1558), among others.

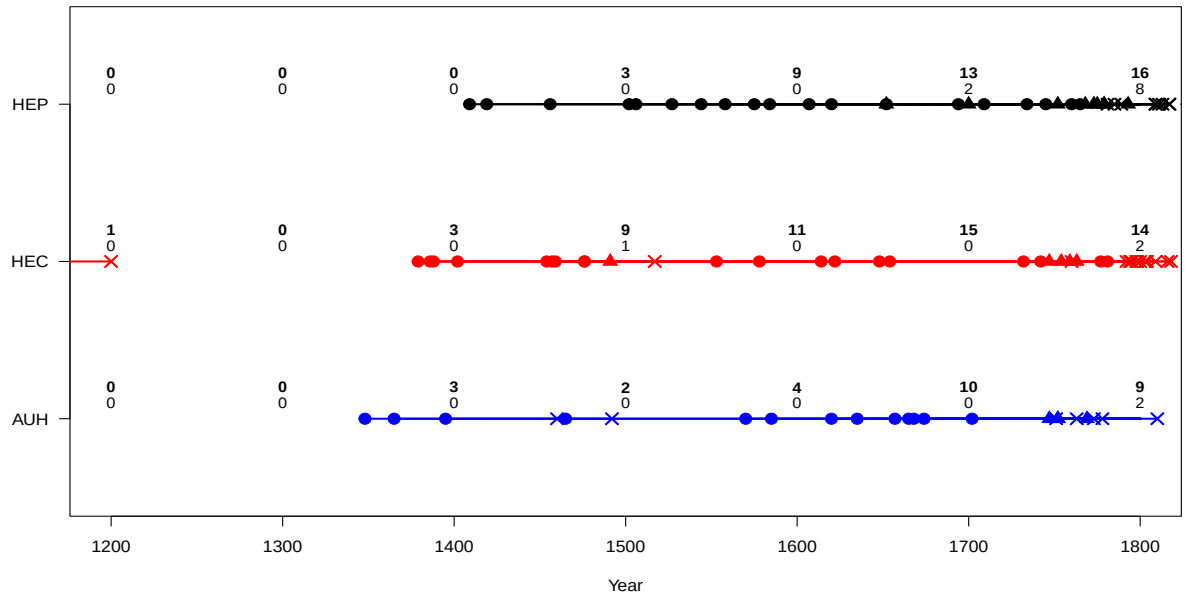
The principle of "cuius regio, eius religio"[6], enshrined in the Peace of Augsburg (1555), inaugurated a wave of foundations of "Regal Universities," established by local rulers to reinforce the prestige and autonomy of their territories (Ridder-Symoens 1996, pp. 140-141). As shown in Figure 8b, the number of universities in Protestant regions more than tripled between 1500 and 1600. Catholic regions followed with a similar expansion shortly after 1600. By 1700, Evangelical Germania hosted two active academies, while Tridentine Germania and Austrian Habsburg Lands had none.

Despite a broadly similar total number of institutions in Evangelical Germania and Tridentine Germania, the Protestant regions consistently outperformed their Catholic counterparts in terms of university size and average human capital. The Catholic expansion of university infrastructure was not accompanied by a corresponding rise in scholar numbers

6. Latin for "whose realm, his religion," granting rulers the right to determine the official religion of their territory.



(a)



(b)

Figure 8: Human capital per university for Evangelical Germania (HEP), Tridentine Germania (HEC) and Austrian Habsburg Lands (AUH) (Figure 8a) and foundation and closure of new institutions (Figure 8b). Dots: foundation of new universities. Triangles: foundation of new academies. Crosses: closure of an institution. Upper bold label: number of active universities. Lower label: number of active academies.

or quality. In contrast, Protestant regions managed to couple institutional growth with increased scholarly capacity.

Austrian Habsburg Lands, by comparison, maintained a lower number of active institutions throughout the period. While this alone does not necessarily imply weaker performance in human capital—the English Realms, for instance, retained their medieval universities from 1200 to 1793—it is worth noting that Austrian Habsburg Lands's institutions tended to be smaller and of more modest academic standing.

5.5 The Scottish Enlightenment

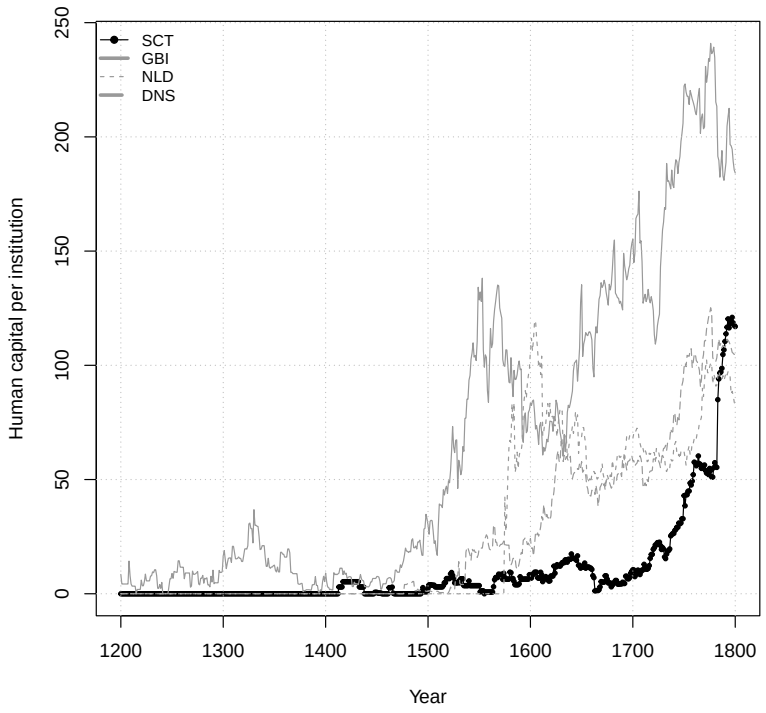


Figure 9: Scottish Enlightenment (SCT) compared to other Northern European macro-regions (English Realms (GBI), Netherlands (NLD) and Scandinavia (DNS)

The Scottish Enlightenment was a period of intense intellectual and cultural development in 18th-century Scotland, spanning approximately 1700 to 1793. It was one of the most influential movements in European history, laying foundations for modern economics, philosophy, sociology, and science. Scottish universities like Edinburgh, Glasgow, and Aberdeen, which had previously been second order, started to focus on critical thinking, empiricism, practical reason, and moral philosophy (Broadie 2001). Hume, Smith, and Reid were the leading fig-

ures. Herman (2007) defends the view that the Scottish Enlightenment transformed Scotland into a cultural powerhouse and changed the trajectory of Western thought.

Figure 9 shows the evolution of human capital per institution in Scotland, the English Realms, the Netherlands and Scandinavia. It shows that Scotland was modest until very late in our period, when it overtook the Netherlands and Scandinavia, and caught up with the English Realms. The time series include here both universities and academies, with academies being important in the four plotted regions. The Royal Society of Edinburgh was the institutional heart of scientific and intellectual exchange in the city during the later stages of the Enlightenment.

6 Conclusions

We have presented new data on the evolution of academic human capital in preindustrial Europe, based on systematic individual-level data and historically-grounded regional classifications. The patterns we have uncovered point to persistent and meaningful differences in the distribution, organization, and development of scholarly activity across space and time. These regularities suggest that academic human capital might have been not merely a byproduct of broader economic or political transformations, but an organized and historically contingent phenomenon worthy of independent analysis.

Crucially, the patterns identified here open a wide range of research directions. Future work could investigate the causal role of academic human capital in regional divergence, examine its responsiveness to institutional and demographic shocks, and explore its interactions with confessional polarization and the process of modern European political integration. The distinct trajectories of universities and academies invite further studies on their respective functions in knowledge production and diffusion. Lastly, the granular temporal and spatial resolution of our dataset provides a unique empirical foundation for embedding elite human capital more firmly into macroeconomic models of long-run growth.

By illuminating these pathways, our findings encourage a reappraisal of human capital's historical role, not only as an outcome of development, but as a potential engine of divergence and transformation in its own right.

Acknowledgements

This project has received funding from the European Research Council under the European Union's Horizon 2020 research and innovation program under grant agreement No 883033 "Did elite human capital trigger the rise of the West? Insights from a new database of

European scholars." Filippo Manfredini acknowledges financial support from the National Fund for Scientific Research (F.R.S.-FNRS), mandat d'aspirant FC 59949.

References

A'Hearn, Brian, Jörg Baten, and Dorothee Crayen. 2009. Quantifying quantitative literacy: age heaping and the history of human capital. *The Journal of Economic History* 69 (3): 783–808.

Acemoglu, Daron, Simon Johnson, and James Robinson. 2005. The rise of Europe: atlantic trade, institutional change, and economic growth. *The American Economic Review* 95 (3): 546–579.

Allen, Robert C. 2003. Progress and poverty in Early Modern Europe. *The Economic History Review* 56 (3): 403–443.

Applebaum, Wilbur. 2003. *Encyclopedia of the Scientific Revolution: from Copernicus to Newton.* New York: Routledge.

Bairoch, Paul, Jean Batou, and Pierre Chevre. 1988. *Population des villes européennes de 800 à 1850: banque de données et analyse sommaire des résultats.* Librairie Droz.

Baten, Joerg, and Jan Zanden. 2008. Book production and the onset of modern economic growth. *Journal of Economic Growth* 13 (February): 217–235. https://papers.ssrn.com/abstract=1003128.

Becker, Sascha, Yuan Hsiao, Steven Pfaff, and Jared Rubin. 2020. Multiplex network ties and the spatial diffusion of radical innovations: Martin Luther's leadership in the early Reformation. *American Sociological Review* 85 (5): 857–894. https://doi.org/10.1177/0003122420948059.

Becker, Sascha, Steven Pfaff, and Jared Rubin. 2016. Causes and consequences of the Protestant Reformation. *Explorations in Economic History* 62:1–25.

Becker, Sascha, and Ludger Woessmann. 2009. Was Weber wrong? a human capital theory of Protestant economic history. *The Quarterly Journal of Economics* 124 (2): 531–596.

Boucekkine, Raouf, David De la Croix, and Omar Licandro. 2002. Vintage human capital, demographic trends, and endogenous growth. *Journal of Economic Theory* 104 (2): 340–375.

Boucekkine, Raouf, David De la Croix, and Dominique Peeters. 2007. Early literacy achievements, population density, and the transition to modern growth. *Journal of the European Economic Association* 5, no. 1 (March): 183–226.

Broadie, Alexander. 2001. *The scottish enlightenment: the historical age of the historical nation.* Edinburgh: Birlinn.

Brockliss, Laurence. 2016. *The university of oxford: a history.* Oxford: Oxford University Press.

Buringh, Eltjo. 2021. The population of european cities from 700 to 2000: social and economic history. *Research Data Journal for the Humanities and Social Sciences* 1:1–18.

Buringh, Eltjo, and Jan Luiten Van Zanden. 2009. Charting the "Rise of the West": manuscripts and printed books in Europe, a long-term perspective from the sixth through eighteenth centuries. *The Journal of Economic History* 69 (2): 409–445. https://doi.org/10.1017/S002205070909003X.

Campbell, Anna Montgomery. 1931. *The black death and men of learning.* Columbia University Studies in History, Economics and Public Law, No. 343. New York: Columbia University Press.

Cervellati, Matteo, Sara Lazzaroni, Gianni Marciante, and Paolo Masella. 2025. The rise of the knowledge economy: Republic of Letters and communication infrastructures in Early Modern England. University of Bologna.

Chaney, Eric. 2020. Modern library holdings and historic city growth. University of Oxford.

Clément, Jean Pierre. 1994. *Las instituciones científicas y la difusión de la ciencia durante la Ilustración.* Vol. 23. Ediciones Akal.

Courtenay, William J. 1980. The effect of the black death on english higher education. *Speculum* 55 (4): 696–714. https://doi.org/10.2307/2847250. https://www.jstor.org/stable/2847250.

Curtis, Matthew, and David De la Croix. 2023. Measuring Human Capital: from WorldCat Identities to VIAF. *Repertorium Eruditorum Totius Europae* 10:17–22. https://doi.org/10.14428/rete.v10i0/hc.

De la Croix, David, Frédéric Docquier, Alice Fabre, and Robert Stelter. 2024a. Are scholars' wages correlated with their human capital index? *Repertorium Eruditorum Totius Europae* 10:10–16. https://doi.org/10.14428/rete.v10i0/wages.

———. 2024b. The Academic Market and the Rise of Universities in Medieval and Early Modern Europe (1000-1800). *Journal of the European Economic Association* 22 (4): 1541–1589. https://doi.org/10.1093/jeea/jvad061.

De la Croix, David, Tifenn Gualandris, and Mara Vitale. 2023. Scholars and Literati at the University of Coimbra (1290–1800). *Repertorium Eruditorum Totius Europae* 9:49–57. https://doi.org/10.14428/rete.v9i0/coimbra.

De la Croix, David, and Omar Licandro. 2015. The longevity of famous people from Hammurabi to Einstein. *Journal of Economic Growth* 20 (3): 263–303. https://doi.org/10.1007/s10887-015-9117-0.

De la Croix, David, and Pauline Morault. 2025. Winners and losers from the Protestant reformation: an analysis of the network of European universities. *Journal of Economic History.*

De la Croix, David, Rossana Scebba, and Chiara Zanardello. 2025. Flora, cosmos, salvatio: pre-modern academic institutions and the spread of ideas. Presented at seminar, CERGE–EI, Prague, May 26, 2025.

De la Croix, David, and Mara Vitale. 2021. Scholars and Literati at the University of Bologna (1088–1800). *Repertorium Eruditorum Totius Europae* 1:1–10. https://doi.org/10.14428/rete.v1i0/Bologna.

De Pleijt, Alexandra M. 2018. Human capital formation in the long run: evidence from average years of schooling in England, 1300–1900. *Cliometrica* 12 (1): 99–126.

De Pleijt, Alexandra M, and Jan Luiten Van Zanden. 2016. Accounting for the "little divergence": what drove economic growth in pre-industrial Europe, 1300–1800? *European Review of Economic History* 20 (4): 387–409.

De Vries, Jan. 1984. *European urbanization, 1500-1800.* Also published by Routledge, 2013 and 2007 (paperback editions). Cambridge, Mass.: Harvard University Press. ISBN: 0674270150. https://doi.org/10.4324/9780203716526.

Disney, Anthony R. 2009. *A history of Portugal and the Portuguese empire: from beginnings to 1807.* Vol. 2. Cambridge University Press.

Dittmar, Jeremiah E. 2011. Information technology and economic change: the impact of the printing press. *The Quarterly Journal of Economics* 126 (3): 1133–1172. https://EconPapers.repec.org/RePEc:oup:qjecon:v:126:y:2011:i:3:p:1133-1172.

Drüll, Dagmar. 1991. *Heidelberger gelehrtenlexikon: 1652–1802* [in German]. Berlin: Springer.

Feingold, Mordechai. 1984. *The mathematicians' apprenticeship: science, universities and society in england, 1560–1640.* viii + 248. Cambridge & New York: Cambridge University Press. ISBN: 0521251338.

Félice, G. de. 1853. *History of the protestants of france, from the commencement of the reformation to the present time.* Second revised and corrected edition. Translated by Philip Edw. Barnes. Translated from French; available via Project Gutenberg mirror. London: George Routledge & Co.

Fouquet, Roger, and Stephen Broadberry. 2015. Seven centuries of european economic growth and decline. *Journal of Economic Perspectives* 29 (4): 227–244.

Frijhoff, Willem. 1996. Patterns. Chap. 2 in *A history of the University in Europe. vol. II: Universities in Early Modern Europe (1500–1800),* edited by Hilde de Ridder-Symoens. Cambridge University Press.

Galor, Oded. 2011. *Unified growth theory.* Princeton: Princeton University Press. https://doi.org/10.1515/9781400838868.

Grendler, Paul F. 2002. *The Universities of the Italian Renaissance.* Baltimore: JHU Press.

———. 2004. The universities of the Renaissance and Reformation. *Renaissance Quarterly* 57 (1): 1–42.

Grendler, Paul F. 2019. *Jesuit Schools and Universities in Europe 1548–1773.* Brill Research Perspectives in Jesuit Studies. Leiden: Brill. https://doi.org/10.1163/9789004391123.

Hammerstein, Notker. 2003. The structure of the University in the 17th and 18th Centuries. In *A history of the University in Europe. Volume ii: Universities in Early Modern Europe (1500–1800),* edited by Hilde de Ridder-Symoens, 485–548. Cambridge: Cambridge University Press.

Henriques, António, and Nuno Pedro G Palma. 2023. Comparative European institutions and the little divergence, 1385-1800. *Journal of Economic Growth* 28:259–294.

Herman, Arthur. 2007. *How the scots invented the modern world: the true story of how Western Europe's poorest nation created our world and everything in it.* New York: Crown.

Hill, Christopher. 1965. *The intellectual origins of the english revolution.* Oxford: Clarendon Press.

Holt, Mack P. 1995. *The French wars of religion, 1562-1629.* Cambridge University Press Cambridge.

Hotson, Howard. 2018. Catchment areas and killing fields: towards an intellectual geography of the thirty years' war. In *Geographies of the university,* edited by Peter Meusburger, Michael Heffernan, and Laura Suarsana, 135–192. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-75593-9_4.

Hough, Jerry F., and Robin Grier. 2015. *The long process of development: building markets and states in pre-industrial england, spain, and their colonies.* Cambridge: Cambridge University Press.

Hunter, Michael. 1989. *Establishing the new science: the experience of the early royal society.* Boydell & Brewer Ltd.

Koch, Philipp, Viktor Stojkoski, and César A. Hidalgo. 2024. Augmenting the availability of historical GDP per capita estimates through machine learning. *Proceedings of the National Academy of Sciences* 121 (39): e2402060121. https://doi.org/10.1073/pnas.2402060121.

Koschnick, Julius. 2023. *Teacher-directed scientific change: the case of the English Scientific Revolution.* Technical report.

Laouenan, Morgane, Palaash Bhargava, Jean-Benoît Eyméoud, Olivier Gergaud, Guillaume Plique, and Etienne Wasmer. 2022. A cross-verified database of notable people, 3500bc-2018ad. *Scientific Data* 9 (290). https://doi.org/10.1038/s41597-022-01369-4.

Maddison, Angus. 2007. *The world economy volume 1: a millennial perspective volume 2: historical statistics.* Paris: OECD.

Manfredini, Filippo, and Mara Vitale. 2024. Scholars and Literati at the University of Perugia (1308–1800). *Repertorium Eruditorum Totius Europae* 12:9–17. https://doi.org/10.14428/rete.v12i0/perugia.

Marley, Dawn. 1999. La situation linguistique à Perpignan. *Plurilinguismes* 17 (1): 157–181.

Maxwell, Kenneth. 1995. *Pombal, paradox of the Enlightenment.* Cambridge University Press.

Maylender, Michele. 1930. *Storia delle accademie d'Italia* [in Italian]. Bologna: L. Cappelli.

McClellan, James E. 1985. *Science Reorganized: Scientific Societies in the Eighteenth Century.* New York: Columbia University Press.

Mokyr, Joel. 2002. *The gifts of athena: historical origins of the knowledge economy.* Princeton: Princeton University Press.

———. 2005. The intellectual origins of modern economic growth. *Journal of Economic History* 65 (2): 285–351. https://doi.org/10.1017/s0022050705000112.

———. 2010. *The enlightened economy: an economic history of britain 1700-1850.* New Haven: Yale University Press.

———. 2016. *A culture of growth: the origins of the modern economy.* Princeton: Princeton University Press.

Moran, Josep, and Josep Moran i Ocerinjauregui. 2004. *Estudis d'història de la llengua catalana* [in Catalan]. Vol. 336. L'Abadia de Montserrat.

Natural Earth. 2023. *Natural earth: free vector and raster map data.* https://www.naturalearthdata.com. Accessed: 2025-07-15.

Neumann, Urs. 2014. Die Universitätsgeschichte der Schweiz im 17. Jahrhundert [in German]. In *Schweizer Hochschulwesen. Eine Kultur- und Wissenschaftsgeschichte,* edited by Thomas Mayer and Claudia Steiner, 125–148. Zürich: Chronos.

Paquet, Jacques. 1958. Salaires et prébendes des professeurs de l'université de Louvain au XVe siècle [in French]. *Studia universitatis "lovanium"* 2:1–36.

Post, Gaines. 1932. Masters' salaries and student-fees in the medieval universities. *Speculum* 7 (2): 181–198.

Ridder-Symoens, Hilde de. 1996. Mobility. In *A history of the university in Europe. vol II,* edited by Hilde de Ridder-Symoens, 416–448. Cambridge University Press.

Rosen, Sherwin. 1981. The economics of superstars. *The American economic review* 71 (5): 845–858.

Rüegg, Walter. 2003. The Rise of Humanism. In *A History of the University in Europe: Volume 1, Universities in the Middle Ages,* edited by Hilde de Ridder-Symoens, 442–468. Cambridge: Cambridge University Press.

Schich, Maximilian, Chaoming Song, Yong-Yeol Ahn, Alexander Mirsky, Mauro Martino, Barabasi Albert-Laszlo, and Dirk Helbing. 2014. A network framework of cultural history. *Science* 345 (6196): 558–562. https://doi.org/10.1126/science.1240064.

Schmitt, Charles B. 1983. *John case and aristotelianism in renaissance england.* McGill-Queen's Studies in the History of Ideas. Kingston, Ontario: McGill-Queen's University Press. https://doi.org/10.1515/9780773564008.

Serafinelli, Michel, and Guido Tabellini. 2022. Creativity over time and space: a historical analysis of European cities. *Journal of Economic Growth* 27 (1): 1–43. https://doi.org/10.1007/s10887-021-09199-6.

Squicciarini, Mara P, and Nico Voigtländer. 2015. Human capital and industrialization: evidence from the age of enlightenment. *Quarterly Journal of Economics* 130 (4): 1825–1883. https://doi.org/10.1093/qje/qjv025.

Stelter, Robert, David De la Croix, and Mikko Myrskylä. 2021. Leaders and Laggards in Life Expectancy among European Scholars from the Sixteenth to the Early Twentieth Century. *Demography* 58:111–135. https://doi.org/10.1215/00703370-8938107.

Stone, Lawrence. 1964. The Educational Revolution in England, 1560–1640. *Past & Present* 28 (1): 41–80.

———. 1974. The size and composition of the Oxford student body 1580–1910. In *The university in society: Oxford and Cambridge from the 14th to the early 19th century,* edited by Lawrence Stone. London: Oxford University Press.

The British Library. 2021. *Database of Italian academies.* Consulted on June 6, 2023. https://www.bl.uk/catalogues/ItalianAcademies/About.aspx.

Vitale, Mara. 2022. Scholars and Literati at the Royal Academy of Sciences of Lisbon (1779-1800). *Repertorium Eruditorum Totius Europae* 7:47–54. https://doi.org/10.14428/rete.v7i0/ALisbon.

Voigtländer, Nico, and Hans-Joachim Voth. 2012. The three horsemen of riches: plague, war, and urbanization in early modern Europe. *The Review of Economic Studies* 80 (2): 774–811. https://doi.org/10.1093/restud/rds034.

Weber, Max. 1930. *The Protestant ethic and the spirit of capitalism.* Routledge.

Westfall, Richard S. 1971. *The construction of modern science: mechanisms and mechanics.* Cambridge: Cambridge University Press. ISBN: 9780521292955.

———. 1980. *Never at rest: a biography of isaac newton.* Cambridge University Press.

Wood, Paul. 2006. Candide in caledonia: the culture of science in the scottish universities, 1690–1805. In *Universities and science in the early modern period,* edited by Mordechai Feingold and Victor Navarro-Brotons, 183–199. Dordrecht: Springer Netherlands. ISBN: 978-1-4020-3975-1. https://doi.org/10.1007/1-4020-3975-1_13. https://doi.org/10.1007/1-4020-3975-1_13.

Yu, Amy Zhao, Shahar Ronen, Kevin Hu, Tiffany Lu, and César A Hidalgo. 2016. Pantheon 1.0, a manually verified dataset of globally famous biographies. *Scientific data* 3 (1): 1–16. https://doi.org/10.1038/sdata.2015.75.

Zanardello, Chiara. 2024. Early modern academies, universities and growth. LIDAM Discussion Paper - IRES/2024/12.

Zurbuchen, Jacqueline. 2011. Le savoir et la confession. Académies et universités protestantes en Suisse (xviie siècle) [in French]. *Revue historique vaudoise* 119:45–62.

A Definition of the Macro-Regions

In addition to using current country borders we propose an alternative way to aggregate individual universities. We divided Europe into 18 macro-regions. The resulting map is shown in Figure 1. Given the broad historical period under consideration, the boundaries of these regions do not correspond precisely to those of present-day states or historical political entities at any point in time. They suffer from the same issue as the one we face when using modern day countries: the constancy of the borders through time. Nonetheless, our division is more historically relevant than that of modern-day countries. This division was also chosen to facilitate the analysis and interpretation of the data we collected.

To build our reference map, we took 1648 Europe as a starting point—the year of the Peace of Westphalia. This treaty, which ended thirty years of armed conflict across Europe, led to a general redefinition of borders and ushered in a period of relative political and territorial stability in the following decades.

The shape of the regions is constructed by assembling different territorial entities at the NUTS2 and NUTS3 level in their 2026 edition. NUTS stands for the *Nomenclature of Territorial Units for Statistics*, a standardized system of territorial division regulated by the European Union. The NUTS2 level corresponds to administrative units such as the Italian *Regioni* or the Belgian *Provinces*. In some cases, it was necessary to disaggregate to the NUTS3 level to more precisely define borders—for example, Perpignan is included in Castilla rather than Occitania, and Jena belongs to Evangelical Germania instead of Tridentine Germania. Since our region of interest includes parts of present-day Belarus and Ukraine, where no NUTS classification exists, we used their administrative division at the oblast level from Natural Earth (2023).

English Realms and Scotland. A first significant case is that of the United Kingdom, where a clear distinction emerges between Scotland and England-Ireland. We call the latter "English Realms," as the Kingdoms of Ireland and England were held in personal union by the Kings of England for most of the period. Scotland hosted five institutions (four universities and one academy), while the rest of the country—including Ireland—had four universities (including the Gresham College in London) and six academies. The differences were not only quantitative but also qualitative, concerning the educations on offer. Scottish universities stood out for a more modern and diversified curriculum that systematically included natural sciences, medicine, and moral philosophy. By contrast, universities in England and Ireland maintained a strong focus on the liberal arts (rhetoric, logic, moral philosophy, and theology) well into the eighteenth century, with limited specialization and a marginal presence of scientific or professional disciplines such as medicine and law (Rüegg 2003). Moreover, until the late eighteenth century, distinct faculties in the modern sense did not exist (Brockliss 2016, p. 23). From the late seventeenth century onward, the limited attention paid by universities to scientific disciplines was progressively offset by the development of external academies, such as the Royal Society (founded in 1660), which played a crucial role in the promotion of modern science in England (Hunter 1989).

Levante and Castilla. In Spain, there is a notably high number of universities but only two academies. The relative scarcity of scientific academies in Spain can be explained by the strong state centralization and the utilitarian orientation of science, which was often linked to military or technical concerns. It was only in the late eighteenth century that

local academies began to emerge, though they lacked the stability and recognition of their European counterparts (Clément 1994). The universities are mainly concentrated in the territories of the Crown of Castile (Levante), which constitute the first macro-region, and in those of the Crown of Aragon (Castilla). Levante is a term (from Latin *levare*, "to rise"), referring to the eastern coast of Spain. The decision to divide Spain into two macro-regions is also based on linguistic grounds: in a large part of the territories belonging to the Crown of Aragon, the official language was Catalan. This second macro-region largely corresponds to the historical area of Catalan language diffusion (Moran and Ocerinjauregui 2004).

The University of Perpignan became part of the Kingdom of France following the Treaty of the Pyrenees (1659); however, Catalan continued to be spoken in those territories. As Marley (1999) notes, it was not until the 19th–20th centuries that the process of Francization was completed and extended to the entire population.[7]

Portugal. We decided to treat neighboring Portugal separately, even though it had a relatively small number of institutions and its human capital was not particularly significant. This choice is justified by the fact that Portugal maintained substantial continuity as an independent kingdom throughout the period, with only a brief interlude between 1580 and 1640 when it was part of the Iberian Union under Spanish Habsburg rule (Disney 2009). Therefore, Portugal is characterized by its distinct political and linguistic independence from the rest of the Iberian Peninsula.

Francia and Occitania. For France, we took into account the historical linguistic line that divides the country in two. This line helped us more precisely define the boundaries of the two regions we considered, while also ensuring a good balance in terms of the institutions present in each. We call the Northern part "Francia" (early medieval core of the Frankish kingdom) and the Southern part "Occitania." During the period under consideration, the North was more densely populated, economically integrated with the monarchy and traditional institutions, and remained largely Catholic. Paris, in particular, was one of the main centers of the Catholic League (Holt 1995). In contrast, the South of France, more rural and characterized by greater local autonomy, was more receptive to the ideas of the Reformation. Numerous urban centers and members of the local nobility embraced Protestantism, and cities such as La Rochelle, Montauban, Nîmes, Castres, and Alès became genuine Huguenot strongholds (Félice 1853). In terms of universities, our divide also fits well with Grendler (2004) view that universities in the North of Europe (including North of France) differed greatly from those in the South in their teaching and organization. In general, during the first period of their existence and throughout the Renaissance, Italian, Spanish and Occitan universities favored the teaching of law and medicine, while northern universities favored the teaching of theology and the arts.

Northern Italy, Central Italy, and Southern Italy. The Italian peninsula underwent continuous and profound changes throughout the period under consideration. Precisely due to its complexity and the variety of sociopolitical situations, the Italian peninsula

7. As Marley (1999, p. 158) observes, Catalan—a language already standardized and widely used during Catalonia's golden age (1276–1344)—gradually lost its status following the union with the Crown of Castile (1412) and the subsequent rise of Castilian, leading to a situation of diglossia among the ruling classes. After the Treaty of the Pyrenees (1659), the Catalan-speaking regions annexed to France (Roussillon, Conflent, and Cerdagne) underwent a process of Francization, which began with the elites, gradually extended to the middle classes, and finally encompassed the entire population during the 19th and 20th centuries.

witnessed the emergence of numerous academic institutions. Alongside the universities—established also to meet the growing need for a competent ruling class driven by the demographic expansion of urban centers—literary and scientific academies flourished, especially in the early stages, and for a long time remained an almost exclusively Italian phenomenon (Maylender 1930). In this context, the decision to divide the peninsula into macro-regions required particular attention on our part.

A first major macro-region historically corresponds to the territories of the Kingdom of Naples, the Kingdom of Sicily, and the Kingdom of Sardinia (Southern Italy). The combination of these domains granted the Spanish monarchy a position of predominance over approximately half of today's Italian territory.[8]

A second macro-region corresponds to the territories of the Papal States (Central Italy). The universities in this area played a significant role in the cultural development of Europe, particularly in the fields of theology and law. Among them, the University of Bologna stands out as one of the earliest and most important centers for legal studies, over which the papacy exercised strong influence (De la Croix and Vitale 2021), particularly in the appointment of professors and the direction of doctrinal teaching. Similarly, the University of Perugia was closely tied to the Roman Curia (Manfredini and Vitale 2024). The University of Rome "La Sapienza," founded in 1303 by Boniface VIII, was under direct papal control from the outset: its professors were appointed or approved by the Curia, and the university served as a privileged center for the training of clergy and ecclesiastical jurists.

A third region includes Northern Italy and Tuscany (Northern Italy). Here, the landscape appears fragmented, marked by a pronounced cultural, social, and political heterogeneity. In this area, we have included the Republic of Venice with part of its possessions in Istria and Dalmatia. The independence and autonomy of the Venetian Republic from the major European powers—which succeeded in asserting their control elsewhere—are also reflected in the only university that developed in these northeastern regions: the University of Padua. The university distinguished itself by its relative autonomy, which attracted numerous intellectuals, especially during the Renaissance.

The division into three macro-regions proves particularly useful for analyzing the emergence and development of universities and intellectual academies in light of the different forms of governance and cultural specificities. In the south, Spanish rule was marked by a centralized and generally restrictive policy; in the Papal States, moral and ideological control was especially pervasive; while the north functioned as a crossroads of exchange, serving both as a gateway for new ideas and a channel for the transmission of erudite traditions from the past.

Netherlands. In the vast territory of north-central Europe, we identified several macro-regions. One such area corresponds to the Dutch Republic, a territorial entity formed as a confederation of seven states that existed from 1579 to 1795. In this region, as many as seven universities and four scientific academies were established. Although not all of them enjoyed long-lasting success—the University of Nijmegen, for instance, was founded in 1655 and closed already in 1672—these institutions nevertheless served as important centers

8. The Kingdoms of Naples (1504–1713), Sicily (1500–1713), and Sardinia (1516–1713), as well as the Duchy of Milan (1535–1706) and the State of the Presidi (1557–1707) along the Tuscan Maremma coast, were under the direct control of the Spanish Crown.

for the production and dissemination of knowledge, attracting prominent European scholars. Indeed, the seventeenth century was the golden age of Dutch history: despite the ongoing war of independence against Spain, the Republic launched an ambitious colonial and commercial expansion, which would later be curtailed by a series of conflicts with England, marking the beginning of a rapid decline. Another distinctive feature of this group of universities is their confessional affiliation with Protestantism, particularly its Calvinist branch. Finally, we opted for the label "Netherlands"; even though the modern state of the Netherlands only emerged in the 19th century, the term Netherlands (or its Latin form Nederlandia) was used earlier to refer to the northern part of the Low Countries.

Lotharingian corridor. The adjacent macro-region includes the territories of the Spanish Netherlands, the present-day French region of Nord-Pas-de-Calais, Eastern Lorraine, Alsace, and Franche-Comté. The aim of this delineation was to reconstruct the middle zone between France and Germany, often contested or bridging both powers, and which belonged to the old kingdom of Lotharingia. It also corresponds to the so-called Spanish Road—the overland route established by the Spanish monarchy during the reign of Philip II (1556–1598) to transfer troops and military supplies from Spain to the Low Countries through Habsburg-controlled territories, particularly during the Eighty Years' War (1568–1648). This logistical corridor was essential for maintaining communication with the northern dominions while avoiding the risks posed by English and Dutch naval control. In addition to their shared Catholic background, numerous academic connections can also be observed among the universities of the macro-region, which we have therefore chosen to analyze as a single unit.

Switzerland. The territories of modern Switzerland form one of the macro-regions analyzed here. Their academic landscape in 1650—the cartographic reference year—was sufficiently rich to capture regional dynamics with confidence. Seventeenth-century Switzerland housed only one fully fledged university with *ius promovendi*: Basel (founded 1460). Around it grew a web of confessionally defined schools—most notably the Academy of Lausanne in the Reformed cantons and Jesuit colleges in the Catholic ones. Protestant institutions trained clergy and canton officials, whereas Catholic elites were typically educated abroad in Jesuit colleges in Italy or southern Germany (Zurbuchen 2011). These establishments were largely cantonal in scope and modest in international reach, though Basel produced scholars of European stature. External models nonetheless shaped them: German-speaking cantons gravitated toward Wittenberg and Heidelberg, while the French-speaking *Pays de Vaud* echoed the French Calvinist emphasis on theology, law, and eloquence (Neumann 2014). The central Alpine cantons (Uri, Schwyz, Obwalden) founded no institutions of their own, entrusting elite education to religious colleges elsewhere.

Evangelical Germania and Tridentine Germania. In the case of the Holy Roman Empire, the decision to divide the territory into two macro-regions reflects the need to capture the deep interrelation between political structure, confessional affiliation, and the organization of knowledge. The Empire was a fragmented reality, composed of a multitude of autonomous political entities—both secular and ecclesiastical—that exercised full sovereignty over educational matters. In this context, universities were founded and supported as instruments of local power and confessional control (Hammerstein 2003), especially in the wake of the Reformation and Counter-Reformation. Our division reflects this configuration, distinguishing a northern region—including, among others, the lands of Hesse, Thuringia, Saxony, and Mecklenburg—where only Protestant universities are found, and a central-southern re-

gion dominated by Catholicism, though home to both Catholic and Protestant institutions. This geographical dichotomy mirrors the logic of the confessional principalities that emerged during the sixteenth and seventeenth centuries, in which the religious identity of rulers translated into coherent educational policies, supported by reforms, funding, and direct oversight. In the Protestant region, the early adoption of the Reformation led to more direct control of academic institutions by local rulers, while in the mixed region the presence of religious orders—especially the Jesuits—strongly shaped the character of Catholic universities (Hammerstein 2003). This evolution was also driven, on the Protestant side, by the role of Martin Luther, who—supported by his own sovereign—explicitly tied his teachings to specific territories within the Empire, reinforcing the broader trend toward the territorialization of both religion and education. His appeal to princes to found and supervise schools and universities consolidated the long-term jurisdiction of secular authorities over educational matters—a practice that soon extended to Catholic territories as well. Universities, as privileged sites of intellectual inquiry and scientific debate, held a position of considerable importance in the construction of political legitimacy and prestige. Often seen as the pride and joy of a prince, they were promoted, reformed, and supported at the initiative of the courts, which recognized their strategic value. The support of the ruler was crucial: academic reforms depended on it, and a lack of political interest could lead to rapid decline, as seen after 1700 in Heidelberg, Freiburg, and Wittenberg. The link between power and knowledge, therefore, was not only ideological or confessional, but also profoundly institutional. The label "Tridentine" refers to the Council of Trent (1545–1563), the driving force behind the Catholic Counter-Reformation, and evokes a Catholic identity marked by the Jesuits, Baroque piety, and Roman orthodoxy.

Austrian Habsburg Lands. A further macro-region considered brings together eleven universities located in territories historically linked to the Habsburg monarchy: Austria (Vienna, Graz, Innsbruck, Linz, Salzburg), Bohemia and Moravia (Prague, Olomouc), Silesia and Slovakia (Kielce), Hungary (Budapest), and Bavaria (Ingolstadt). This represents a relatively homogeneous political and cultural space, marked by the strong influence of the Habsburg Crown and an early process of confessional centralization, particularly through Jesuit activity (Grendler 2019). Some institutions, such as Olomouc and Graz, were strongholds of Catholic education, while Vienna became a center of university reform already under Maria Theresa, anticipating state models of higher education. Despite local differences, these institutions shared a curriculum centered on the liberal arts and theology, with limited inclusion of scientific disciplines until the reforms of the late eighteenth century.

Poland-Lithuania. Another identified macro-region includes nine universities and two academies active in the territories of the Polish-Lithuanian Commonwealth, which until the end of the eighteenth century constituted an autonomous political entity with a culturally complex structure. The identified institutions are mainly distributed across present-day Poland (Kraków, Poznań, Warsaw, Wrocław, Braniewo), Lithuania (Vilnius), and Western Ukraine (Lviv, Polotsk). Among these, the University of Kraków (founded in 1364, refounded in 1400) played a leading role as a center for the teaching of liberal arts and theology, establishing itself as one of the main universities of Central Europe. Vilnius, founded by the Jesuits in 1579, represents the educational expansion of the Society towards the east, while other centers such as Braniewo and Polotsk attest to the strong Catholic influence and the educational role of Jesuit missions in border territories (Grendler 2019). The university

landscape in the region is characterized by a strong confessional component and an early penetration of Jesuit schooling networks, albeit within a decentralized political context and with limited curricular centralization compared to Western European models. We included Königsberg in Evangelical Germania instead of Poland-Lithuania despite the Dutchy of Prussia being, for a while, fiefdom of the Polish-Lithuanian Commonwealth. Königsberg was a major German cultural center and the Dutchy was held in personal union by the Electors of Brandenburg. On the other hand, we include Royal Prussia in Poland-Lithuania as it was fully integrated into the Commonwealth.

Scandinavia. Finally, the macro-region that includes the Kingdom of Denmark-Norway and the Kingdom of Sweden (Scandinavia) has been defined to group universities and territories that, following the Protestant Reformation, were part of a political-cultural context closely linked to the Scandinavian monarchies. Despite local differences and specific policies of their sovereigns, these universities played a central role in the education of state officials and clergy, establishing a strong connection between the academic world and monarchical power. Turku (Abo), the easternmost node of this network, also extended Swedish cultural and academic influence to the shores of the Baltic Sea. We exclude the lands held by Scandinavian monarch in the Holy Roman Empire, such as Swedish Pomerania and Danish Schwelstig-Holstein, as they remained culturally integrated with their Low German neighbors.

B Institutions by Macro-Regions

Name	Start	End	Place	Univ.	Acad
English Realms					
University of Oxford	1200		OxfordGBR	1	0
University of Cambridge	1209		CambridgeGBR	1	0
University of Dublin	1592		DublinIRL	1	0
Gresham College	1596		LondonGBR	1	0
St Patrick's College, Maynooth	1795		MaynoothIRL	1	0
Oxford Philosophical Society	1651	1690	OxfordGBR	0	1
Royal Society of London	1660		LondonGBR	0	1
Royal Dublin Society	1683		DublinIRL	0	1
Society of Antiquaries of London	1707		LondonGBR	0	1
Philosophical Society	1710	1770	SpaldingGBR	0	1
Botanical Society	1721	1726	LondonGBR	0	1
Lunar Society of Birmingham	1766	1791	BirminghamGBR	0	1
Literary and philosophical society	1781		ManchesterGBR	0	1
Derby Philosophical Society	1783	1858	DerbyGBR	0	1
Royal Irish Academy	1785		DublinIRL	0	1
The Linnean Society of London	1788		LondonGBR	0	1
Scotland					
University of St Andrews	1411		Saint-AndrewsGBR	1	0
University of Glasgow	1451		GlasgowGBR	1	0

Name	Start	End	Place	Univ.	Acad
University of Aberdeen (Kings college)	1495		AberdeenGBR	1	0
University of Edinburgh	1582		EdinburghGBR	1	0
University of Aberdeen (Marischal)	1593		AberdeenGBR	1	0
Royal Society of Edinburgh	1731		EdinburghGBR	0	1
Castilla					
University of Palencia	1208	1264	PalenciaESP	1	0
University of Salamanca	1218		SalamancaESP	1	0
University of Valladolid	1280		ValladolidESP	1	0
University of Siguenza	1489	1807	SiguenzaESP	1	0
University of Alcala	1499		Alcala-de-HenaresESP	1	0
University of Sevilla	1505		SevillaESP	1	0
University of Toledo	1521	1807	ToledoESP	1	0
University of Santiago de C.	1526		Santiago-de-CompostelaESP	1	0
University of Granada	1531		GranadaESP	1	0
University of Onate	1540	1807	OnateESP	1	0
University of Baeza	1542	1807	BaezaESP	1	0
University of Osuna	1548	1807	OsunaESP	1	0
University of Saint Catherine	1555	1807	Burgo-de-OsmaESP	1	0
Imperial College of Madrid	1560	1767	MadridESP	1	0
University of Oviedo	1574		OviedoESP	1	0
University of Ávila	1576	1787	AvilaESP	1	0
School of Mathematics	1582	1625	MadridESP	1	0
Royal Spanish Academy	1713		MadridESP	0	1
Levante					
University of Lleida	1300	1717	LeridaESP	1	0
Majorcan cartographic school	1330	1600	PalmaESP	1	0
University of Perpignan	1350	1793	PerpignanFRA	1	0
University of Huesca	1354		HuescaESP	1	0
University of Barcelona	1450	1714	BarcelonaESP	1	0
University of Zaragosa	1474		ZaragozaESP	1	0
University of Mallorca	1483	1718	PalmaESP	1	0
University of Valencia	1500		ValenciaESP	1	0
Belen College	1544	1767	BarcelonaESP	1	0
University of Gandia	1547	1767	GandiaESP	1	0
University of Orihuela	1552	1807	OrihuelaESP	1	0
University of Gerona	1587	1717	GeronaESP	1	0
University of Vich	1599	1713	VicESP	1	0
University of Cervera	1714	1821	CerveraESP	1	0
Royal Academy of Sciences and Arts	1764		BarcelonaESP	0	1
Portugal					
University of Coimbra	1290		CoimbraPRT	1	0
College of Saint Antony	1553	1759	LisboaPRT	1	0
University of Evora	1558	1759	EvoraPRT	1	0

Name	Start	End	Place	Univ.	Acad
Royal Academy of Sciences of Lisbon	1783		LisboaPRT	0	1
Francia					
Cathedral School of Chartres	1000	1190	ChartresFRA	1	0
Cathedral School of Reims	1000	1190	ReimsFRA	1	0
Cluny Abbey	1000	1200	ClunyFRA	1	0
Abbey of Our Lady of Bec	1034	1790	Bec-HellouinFRA	1	0
Cathedral School of Laon	1050	1190	LaonFRA	1	0
University of Paris	1200	1793	ParisFRA	1	0
University of Orléans	1235	1793	OrleansFRA	1	0
University of Angers	1250	1793	AngersFRA	1	0
University of Grenoble	1339	1565	GrenobleFRA	1	0
University of Poitiers	1431	1793	PoitiersFRA	1	0
University of Caen	1432	1793	CaenFRA	1	0
Ducal University of Brittany	1460	1793	NantesFRA	1	0
University of Bourges	1464	1793	BourgesFRA	1	0
Collège Royal	1530		ParisFRA	1	0
University of Reims	1548	1793	ReimsFRA	1	0
Clermont College	1563	1763	ParisFRA	1	0
Academy of Saumur	1596	1685	SaumurFRA	1	0
Academy of Sedan	1599	1681	SedanFRA	1	0
Henri IV College of La Flèche	1603	1763	LaFlecheFRA	1	0
College of the Mount	1609	1763	CaenFRA	1	0
Royal College of the Dauphin	1622	1763	GrenobleFRA	1	0
Royal Garden	1635	1793	ParisFRA	1	0
University of Dijon	1722	1792	DijonFRA	1	0
University of Rennes	1735	1793	RennesFRA	1	0
French Academy	1635	1793	ParisFRA	0	1
Académie Mersenne	1635	1648	ParisFRA	0	1
Montmor Academy	1653	1664	ParisFRA	0	1
Academy of physics of Caen	1662	1672	CaenFRA	0	1
Academy of inscriptions	1663	1793	ParisFRA	0	1
French Academy of Sciences	1666	1793	ParisFRA	0	1
Academy of Soissons	1674	1793	SoissonsFRA	0	1
Academy of Villefranche	1677	1793	Villefranche-sur-SaoneFRA	0	1
Academy of Angers	1685	1793	AngersFRA	0	1
Academy of Lyon	1700	1790	LyonFRA	0	1
Academy of Caen	1705	1793	CaenFRA	0	1
Academy of Dijon	1725	1793	DijonFRA	0	1
French Academy of Medecine	1731	1793	ParisFRA	0	1
Academy of Belles-Lettres	1732	1793	La-RochelleFRA	0	1
Academy of Rouen	1744	1793	RouenFRA	0	1
Academy of Auxerre	1749	1772	AuxerreFRA	0	1
Academy of Amiens	1750	1793	AmiensFRA	0	1
Royal Naval Academy of France	1752	1793	BrestFRA	0	1
Academy of Châlons-sur-Marne	1753	1793	Chalons-en-ChampagneFRA	0	1

Name	Start	End	Place	Univ.	Acad
Academic Society	1755	1793	CherbourgFRA	0	1
French Academy of Agriculture	1761	1793	ParisFRA	0	1
Academy of the Dauphiné	1780	1793	GrenobleFRA	0	1
Academy of Orleans	1781	1793	OrleansFRA	0	1
Society of Emulation of the Ain	1783	1793	Bourg-en-BresseFRA	0	1
Society of Observers of Man	1799	1804	ParisFRA	0	1
Occitania					
University of Toulouse	1229	1793	ToulouseFRA	1	0
University of Montpellier	1289	1793	MontpellierFRA	1	0
University of Avignon	1303	1793	AvignonFRA	1	0
University of Cahors	1332	1751	CahorsFRA	1	0
University of Aix	1409	1793	Aix-en-ProvenceFRA	1	0
University of Bordeaux	1441	1793	BordeauxFRA	1	0
University of Valence	1452	1793	ValenceFRA	1	0
University of Nimes	1539	1663	NimesFRA	1	0
College of Tournon	1548	1626	TournonFRA	1	0
University of Nice	1559	1720	NiceFRA	1	0
University of Orthez	1566	1620	OrthezFRA	1	0
University of Orange	1583	1793	OrangeFRA	1	0
University of Montauban	1598	1659	MontaubanFRA	1	0
University of Die	1601	1684	DieFRA	1	0
Royal College Bourbon	1603	1763	Aix-en-ProvenceFRA	1	0
University of Nîmes	1634	1795	NimesFRA	1	0
University of Pau	1722	1793	PauFRA	1	0
Academy of Castres	1648	1670	CastresFRA	0	1
Academy of Arles	1666	1791	ArlesFRA	0	1
Academy of Nimes	1682	1793	NimesFRA	0	1
Academy of Montpellier	1706	1793	MontpellierFRA	0	1
Academy of Bordeaux	1712	1793	BordeauxFRA	0	1
Academy of Pau	1718	1793	PauFRA	0	1
Academy of Beziers	1723	1793	BeziersFRA	0	1
Academy of Marseille	1726	1793	MarseilleFRA	0	1
Academy of Toulouse	1729	1793	ToulouseFRA	0	1
Academy of Fine Letters	1741	1793	MontaubanFRA	0	1
Society of Clermont-Ferrand	1747	1793	Clermont-FerrandFRA	0	1
Academic Society of Agen	1776	1793	AgenFRA	0	1
Academic and Patriotic Society	1784	1793	ValenceFRA	0	1
Northern Italy					
University of Modena	1175		ModenaITA	1	0
University of Padua	1222		PadovaITA	1	0
University of Siena	1246		SienaITA	1	0
University of Florence	1321		FirenzeITA	1	0
University of Pisa	1343		PisaITA	1	0
University of Pavia	1361		PaviaITA	1	0

Name	Start	End	Place	Univ.	Acad
University of Torino	1404		TorinoITA	1	0
University of Parma	1412		ParmaITA	1	0
University of Genoa	1471		GenovaITA	1	0
College of Brera	1556		MilanoITA	1	0
University of Mondovi	1560	1719	MondoviITA	1	0
University of Mantua	1625	1771	MantovaITA	1	0
University of Corte	1765	1768	CorteFRA	1	0
Neoplatonic Florentine Academy	1462	1523	FirenzeITA	0	1
Aldina Academy	1494	1515	VeneziaITA	0	1
Academy of the Intronati	1525		SienaITA	0	1
Accademia Fiorentina	1540	1783	FirenzeITA	0	1
Academy of the Burning Ones	1540	1545	PadovaITA	0	1
Academy of Domenico Venier	1548	1550	VeneziaITA	0	1
Academy of Concord	1550	1560	DubrovnikHRV	0	1
Academy of Elevati	1557	1559	PadovaITA	0	1
Venetian Academy	1557	1561	VeneziaITA	0	1
Academy of the Invaghiti	1562	1738	MantovaITA	0	1
Academy of Animosi	1573	1576	PadovaITA	0	1
Accademia della Crusca	1583		FirenzeITA	0	1
Venetian Academy (Second Academy)	1594	1608	VeneziaITA	0	1
Academy of Ricovrati	1599		PadovaITA	0	1
Academy of the Unknown	1626	1661	VeneziaITA	0	1
Academy of Cimento	1657	1667	FirenzeITA	0	1
Academy of Dissonanti	1680		ModenaITA	0	1
Virgilian Academy of Sciences	1686	1797	MantovaITA	0	1
Academy of Fisiocratici	1690		SienaITA	0	1
Academy of Botany	1717	1783	FirenzeITA	0	1
Academy of Cortona	1727		CortonaITA	0	1
Academy of the Planomaci	1740	1772	VeneziaITA	0	1
Academy of the Hypochondriacs	1746	1784	Reggio-EmiliaITA	0	1
Royal Academy of Georgofili	1753		FirenzeITA	0	1
Botanical Society of Cortona	1754		CortonaITA	0	1
Private Society of Turin	1757		TorinoITA	0	1
Academy of Filopatria	1782	1791	TorinoITA	0	1
Italian Society of Sciences	1782	1796	VeronaITA	0	1
Rangonian Academy	1783	1796	ModenaITA	0	1
Academy of Arezzo	1787		ArezzoITA	0	1
Central Italy					
University of Bologna	1088		BolognaITA	1	0
Sapienza University of Rome	1303		RomaITA	1	0
University of Perugia	1308		PerugiaITA	1	0
University of Ferrara	1391		FerraraITA	1	0
University of Macerata	1540		MaceataITA	1	0
Pontifical Gregorian University	1556		RomaITA	1	0
University of Ancona	1562	1739	AnconaITA	1	0

Name	Start	End	Place	Univ.	Acad
University of Fermo	1585		FermoITA	1	0
University of Urbino	1671		UrbinoITA	1	0
Pomponio's Accademia Romana	1457	1466	RomaITA	0	1
Academy of the Wine-growers	1530	1538	RomaITA	0	1
Academy of Virtue	1532	1545	RomaITA	0	1
Academi of Elevati	1540	1541	FerraraITA	0	1
Academy of Sdegnati	1541	1545	RomaITA	0	1
Bocchian Academy	1546	1562	BolognaITA	0	1
Academy of Filareti	1554	1563	FerraraITA	0	1
Academy of the Insensati	1561	1725	PerugiaITA	0	1
Vatican Nights Academy	1562	1565	RomaITA	0	1
Academy of the Confused	1570	1575	BolognaITA	0	1
Academy of Catenati	1574		MaceratаITA	0	1
Academy of Gelati	1588	1799	BolognaITA	0	1
Nights Academy	1590	1663	BolognaITA	0	1
Parthenian Academy	1594	1639	RomaITA	0	1
Academy of the Intrepidi	1601	1787	FerraraITA	0	1
Lincean Academy	1603	1630	RomaITA	0	1
Academy of the Humorists	1603	1670	RomaITA	0	1
Academy of the Intrecciati	1641	1692	RomaITA	0	1
Academy of the Uncultured	1658		RomaITA	0	1
Academy of the Traccia	1665	1667	BolognaITA	0	1
Academy of Physics and Mathematics	1677	1698	RomaITA	0	1
Academy of Dogmi	1694	1695	RomaITA	0	1
Academy of Sciences of Bologna	1714	1804	BolognaITA	0	1
Southern Italy					
University of Naples Federico II	1224		NapoliITA	1	0
University of Salerno	1231	1811	SalernoITA	1	0
University of Catania	1444		CataniaITA	1	0
University of Messina	1548	1678	MessinaITA	1	0
University of Palermo	1578		PalermoITA	1	0
Jesuit College of Malta	1592		VallettaMLT	1	0
University of Cagliari	1606		CagliariITA	1	0
University of Sassari	1617		SassariITA	1	0
University of Altamura	1748	1799	AltamuraITA	1	0
Pontanian Academy	1443	1542	NapoliITA	0	1
Martiranian Academy	1530	1555	NapoliITA	0	1
Academy of Incogniti	1546	1548	NapoliITA	0	1
Academy of Svegliati (Awake)	1560	1593	NapoliITA	0	1
Academy of the Idle	1611	1673	NapoliITA	0	1
Academy of Investiganti	1650	1737	NapoliITA	0	1
Boreliana Academy	1673	1720	PalmiITA	0	1
Palermitan Academy	1718		PalermoITA	0	1
Peloritan Academy of the Perilous	1728		MessinaITA	0	1
Academy of the Cratilid Fishermen	1756	1784	CosenzaITA	0	1

Name	Start	End	Place	Univ.	Acad
Royal Academy of Sciences	1778		NapoliITA	0	1
Netherlands					
Leiden University	1575		LeidenNLD	1	0
University of Franeker	1585	1811	FranekerNLD	1	0
University of Groningen	1612		GroningenNLD	1	0
Athenaeum Illustre of Amsterdam	1632	1877	AmsterdamNLD	1	0
Utrecht University	1636		UtrechtNLD	1	0
University of Harderwijk	1647	1811	HarderwijkNLD	1	0
Nijmegen University	1655	1679	NijmegenNLD	1	0
Holland Society of Sciences	1752	1804	HaarlemNLD	0	1
Royal Zeeland Scientific Society	1769		VlissingenNLD	0	1
Batavian Society for Experim. Philosophy	1769		RotterdamNLD	0	1
Utrecht Society of Arts and Sciences	1773		UtrechtNLD	0	1
Teylers Second Society	1778		HaarlemNLD	0	1
Lotharingian corridor					
Cathedral School of Liège	1000	1230	LiegeBEL	1	0
University of Dole	1422	1691	DoleFRA	1	0
University of Louvain	1425	1797	LeuvenBEL	1	0
University of Strasbourg	1523	1792	StrasbourgFRA	1	0
Jesuit College of Louvain	1542	1773	LeuvenBEL	1	0
University of Douai	1559	1793	DouaiFRA	1	0
University of Pont-à-Mousson	1572	1768	Pont-a-MoussonFRA	1	0
University of Molsheim	1617	1792	MolsheimFRA	1	0
University of Besaçon	1691	1793	BesanconFRA	1	0
University of Nancy	1768	1793	NancyFRA	1	0
Gymnasium of the Vosges	1500	1520	Saint-DieFRA	0	1
Royal Academy of Arras	1737	1793	ArrasFRA	0	1
Royal Society of Sciences of Nancy	1750	1793	NancyFRA	0	1
Academy of Sciences of Besançon	1752	1793	BesanconFRA	0	1
Royal Society of Sciences and Arts	1757	1793	MetzFRA	0	1
Imperial and Royal Academy of Science	1772	1794	BruxellesBEL	0	1
Switzerland					
Saint Gallen Abbey	1000	1076	St-GallenCHE	1	0
University of Basel	1460		BaselCHE	1	0
Collegium Carolinum	1525		ZurichCHE	1	0
University of Bern	1528		BernCHE	1	0
University of Lausanne	1537		LausanneCHE	1	0
University of Geneva	1559		GeneveCHE	1	0
Society of Natural Scientists	1746		ZurichCHE	0	1
Society of Physical Sciences	1783	1790	LausanneCHE	0	1

Name	Start	End	Place	Univ.	Acad
Evangelical Germania					
Leipzig University	1409		LeipzigDEU	1	0
University of Rostock	1419		RostockDEU	1	0
University of Greifswald	1456		GreifswaldDEU	1	0
University of Wittenberg	1502	1813	WittenbergDEU	1	0
Viadrina European University	1506	1811	FrankfurtOderDEU	1	0
University of Marburg	1527		MarburgDEU	1	0
University of Königsberg	1544		KaliningradRUS	1	0
University of Jena	1558		JenaDEU	1	0
University of Helmstedt	1575	1809	HelmstedtDEU	1	0
Herborn Academy	1584	1817	HerbornDEU	1	0
University of Giessen	1607		GiessenDEU	1	0
University of Rinteln	1620	1809	RintelnDEU	1	0
University of Kiel	1652		KielDEU	1	0
University of Halle	1694	1817	HalleDEU	1	0
Carolinum	1709	1785	KasselDEU	1	0
University of Göttingen	1734		GottingenDEU	1	0
University of Technology	1745		BraunschweigDEU	1	0
University of Butzow	1760	1789	ButzowDEU	1	0
University of Mining and Technology	1765		FreibergDEU	1	0
Academy of Sciences Leopoldina	1652		HalleDEU	0	1
Royal Prussian Academy of Sciences	1700		BerlinDEU	0	1
Academy of Sciences and Humanities	1752		GottingenDEU	0	1
Jablonowski Society of Sciences	1768		LeipzigDEU	0	1
Society of Friends of Natural Science	1773		BerlinDEU	0	1
Patriotic Society of Hesse-Homburg	1775	1781	Bad-HomburgDEU	0	1
Upper Lusatian Society of Sciences	1779		GorlitzDEU	0	1
Society of Friends of Natural Science	1779		HalleDEU	0	1
Societas Physica	1793	1850	JenaDEU	0	1
Tridentine Germania					
Reichenau Abbey	1000	1200	Insel-ReichenauDEU	1	0
University of Erfurt	1379	1816	ErfurtDEU	1	0
Heidelberg University	1386		HeidelbergDEU	1	0
University of Cologne	1388	1798	KolnDEU	1	0
University of Würzburg	1402		WurzburgDEU	1	0
University of Trier	1454	1798	TrierDEU	1	0
University of Freiburg	1457		Freiburg-im-BreisgauDEU	1	0
University of Ingolstadt	1459	1800	IngolstadtDEU	1	0
University of Mainz	1476	1792	MainzDEU	1	0
University of Tubingen	1476		TubingenDEU	1	0
University of Dillingen	1553	1803	DillingenDEU	1	0
University of Altdorf	1578	1809	AltdorfDEU	1	0
Unversity of Paderbon	1614	1818	PadernornDEU	1	0
University of Munster	1622		MunsterDEU	1	0

Name	Start	End	Place	Univ.	Acad
University of Bamberg	1648	1803	BambergDEU	1	0
University of Duisburg	1654	1804	DuisburgDEU	1	0
Universty of Fulda	1732	1803	FuldaDEU	1	0
University of Erlangen	1742		ErlangenDEU	1	0
University of Bonn	1777	1798	BonnDEU	1	0
Karl's high school	1781	1794	StuttgartDEU	1	0
Rhenan Literary Sodality	1491	1517	HeidelbergDEU	0	1
Cosmographical Society	1747	1760	NurnbergDEU	0	1
Academy of Sciences of Mainz	1754		ErfurtDEU	0	1
Bavarian Academy of Sciences	1759		MunchenDEU	0	1
Palatine Academy of Sciences	1763	1795	MannheimDEU	0	1
Austrian Habsburg Lands					
University of Prague	1348		PrahaCZE	1	0
University of Vienna	1365		WienAUT	1	0
University of Buda	1395	1460	BudapestHUN	1	0
University of Bratislava	1465	1492	BratislavaSVK	1	0
University of Olomouc	1570	1778	OlomoucCZE	1	0
College of Brno	1578	1773	BrnoCZE	1	0
University of Graz	1585		GrazAUT	1	0
University of Salzburg	1620	1810	SalzburgAUT	1	0
University of Trnava	1635		TrnavaSVK	1	0
University of Kassa	1657	1773	KosiceSVK	1	0
Evangelical College of Prešov	1665		PresovSVK	1	0
University of Innsbruck	1668		InnsbruckAUT	1	0
Jesuit College of Linz	1674	1773	LinzAUT	1	0
Leopoldina University of Breslau	1702		WroclawPOL	1	0
The Society of Anonymous Scholars	1747	1751	OlomoucCZE	0	1
Pressburg Society of Friends	1752	1763	BratislavaSVK	0	1
Academy of Agiati	1752		RoveretoITA	0	1
Royal Bohemian Society of Sciences	1769		PrahaCZE	0	1
Poland-Lithuania					
Jagiellonian University	1364		KrakowPOL	1	0
Lubrański Academy	1519	1780	PoznanPOL	1	0
Academic Gymnasium Danzig	1558		GdanskPOL	1	0
Jesuit College of Braniewo	1568	1773	BraniewoPOL	1	0
University of Vilnius	1578	1831	VilniusLTU	1	0
Jesuit College in Polotsk	1580	1820	PolockBLR	1	0
Zamojski Academy	1594	1784	ZamoscPOL	1	0
Jesuit College of Warsaw	1598	1773	WarsawPOL	1	0
Jesuit College of Poznan	1611	1780	PoznanPOL	1	0
University of Lwow	1661	1803	LwowUKR	1	0
Collegium Nobilium (Warsaw)	1740	1832	WarsawPOL	1	0
Danzig Research Society	1743	1936	GdanskPOL	0	1
Society of Friends of Sciences	1800	1832	WarsawPOL	0	1

Name	Start	End	Place	Univ.	Acad
Scandinavia					
University of Copenhagen	1475		KobenhavnDNK	1	0
Uppsala University	1477		UppsalaSWE	1	0
Sorø Academy	1586		SoroDNK	1	0
University of Tartu	1632	1710	TartuEST	1	0
Åbo Akademi University	1640	1828	TurkuFIN	1	0
University of Lund	1666		LundSWE	1	0
Royal Society of Sciences in Uppsala	1710		UppsalaSWE	0	1
Royal Swedish Academy of Sciences	1739		StockholmSWE	0	1
Royal Danish Science Society	1742		KobenhavnDNK	0	1
Cosmographic Society	1758	1824	UppsalaSWE	0	1
Royal Norwegian Society of Sciences	1766		TrondheimNOR	0	1
Royal Society of Arts and Sciences	1778		GoteborgSWE	0	1
Royal Physiographic Society in Lund	1778		LundSWE	0	1

C Files available for download

macroregions-shapefile.dbf
macroregions-shapefile.prj
macroregions-shapefile.shp
macroregions-shapefile.shx
total-human-capital-universities-by-city.csv
number-of-universities-by-city.csv
total-human-capital-academies-by-city.csv
number-of-academies-by-city.csv
total-human-capital-universities-by-macro-region.csv
number-of-universities-by-macro-region.csv
total-human-capital-academies-by-macro-region.csv
number-of-academies-by-macro-region.csv
total-human-capital-universities-by-country.csv
number-of-universities-by-country.csv
total-human-capital-academies-by-country.csv
number-of-academies-by-country.csv

INSTITUT DE RECHERCHE
ÉCONOMIQUES ET SOCIALES

Place Montesquieu 3
1348 Louvain-la-Neuve

ISSN 1379-244X D/2025/3082/12

UCLouvain

IRES | LIDAM
Louvain Institute of Data Analysis and Modeling in economics and statistics