

# 64,000 European university professors and academicians: human capital, mobility, families, and religion from 1000 CE to 1800 CE

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## Motivation

- Knowledge creation and diffusion was key for the development of Europe
- Most of it came from Scholars teaching at Medieval and Early Modern Universities or members of Academies
- Data collection on scholars and literati over the period 1000–1800, Europe
- look at the data through the lens of economic models

Team: Mara Vitale, Matthew Curtis, Chiara Zanardello, Filippo Manfredini, and RA's to encode data manually

+ occasional external collaborators (Fabre, Stelter)

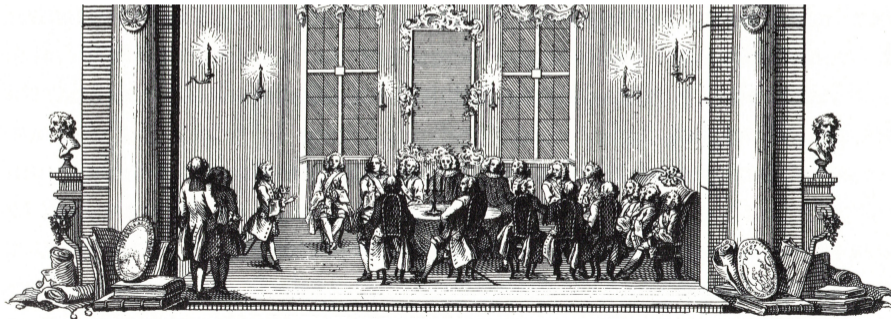
## Academies and Universities

Universities: emergence during the Middle Ages.

Teach Arts (incl. sciences), Theology, Law, Medicine

Academies: informal clubs becoming formal institutions after 1650.

Mostly arts & sciences (+ applied) – Meetings, publications, letters, prizes



First meeting of the  
academy in  
Copenhagen

## Key features of universities

Many are bottom-up. Recognized *ex post* by a charter (e.g. Papal Bull)

Variety of subjects are taught

Diplomas follow exams. Given by institutions (hence by community of masters)  
Some dose of meritocracy (*disputatio*, exams)

Very unique feature: they are *persona ficta* ( $\approx$  legal persons/corporations)  
Origin: Roman law (*universitas, societas*) + Theology (church as *corpus mysticum* of Christ) + Canon law

In corporations, professors act collectively. + one can leave a corporation.  
The institution persists beyond the existence of its members (universities more persistent than States)

## Data collection: where we stand

Data collected from 572 secondary sources (example next slide)

<https://shiny-lidam.sipr.ucl.ac.be/scholars/>

- list of relevant institutions: universities (from Frijhoff 1996), scientific academies (McLelland), Italian Renaissance academies (British Library), language academies → 381 institutions
- 64001 Scholars and Literati
- >78000 Activities, each activity representing the presence of a scholar in one institution

Originality of the database

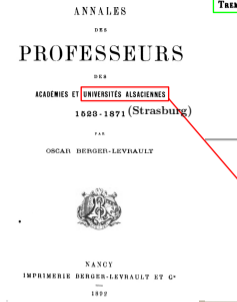
- Teachers, not students
- European scope
- Measure of the quality (human capital) of the scholars from VIAF

## Matching three different types of sources

Secondary source on members of a university/academy → field, dates, type of membership, place of birth

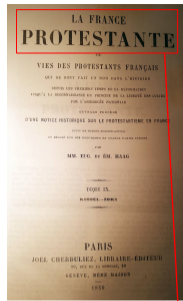
Biographical dictionaries (Treccani, Allgemeine Deutsche Biographie, etc.) → vital dates, places of death/birth

VIAF (Virtual International Authority File) page → publications



TREMELLIUS, Emmanuel, Ferrariensis.  
Natus 1510  
Denatus (Sedan.) 9 Octobr. 1580.

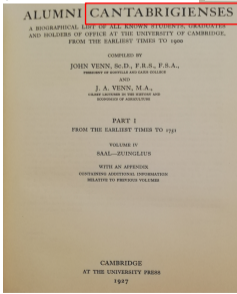
Dagmar Drüll  
HEIDELBERGER  
GELEHRTENLEXIKON  
1386-1651



18 — TRÈ  
de Jean Tremblay et d'Anne Seyvon.  
TREMELLIUS (EMMANUEL), né à  
Ferrare, vers 1510, et mort à Sedan,  
le 9 oct. 1580.  
Tremélius quitta la religion juive  
dans laquelle il était né, pour embras-  
ser la religion catholique, et celle-ci  
pour se faire protestant. Après sa con-  
version, il se retira à Lucques, où il  
enseigna quelque temps la langue hé-  
braïque, mais la crainte de l'inquisition  
fini par le chasser d'Italie, ainsi que  
Pierre Martyr et d'autres italiens, par-  
tisans secrets de la Réforme. Il s'éta-  
blit d'abord à Strasbourg, où il donna  
des leçons d'hébreu. Plus tard, il pas-  
sa en Angleterre et y resta jusqu'à la  
mort d'Edouard. Chassé de nouveau  
par Marie la sanguinaire, il retourna  
en Allemagne en 1555, et fut placé  
comme professeur d'hébreu dans l'école  
de Hornbach. Quelque temps après, l'a-  
lecteur palatin Frédéric III l'appela à  
Heidelberg. En 1560, nous le trouvons  
à Metz, où il s'était marié pendant un  
premier séjour qu'il avait fait dans cette  
ville avant de se rendre à Strasbourg.  
S'il est vrai qu'il y fut arrêté par ordre  
du maréchal de Vieilleville sous le ré-  
gne de François II, sa détention fut de  
courte durée, puisqu'il fut un des dé-  
putés (1) que les Protestants de Metz  
envoyèrent en Cour aussitôt après la  
mort de ce prince, pour demander à la  
reine régente la liberté du culte, le  
rappel des bannis et la délivrance de  
Guillaume Palisseau, prisonnier à Au-  
xerre. Les deux dernières demandes  
furent accordées; quant à la première,  
il fut répondu que les prétendus réfor-  
més n'auraient ni temple ni lieu d'exer-  
cice quelconque à Metz, qu'ils n'y tien-  
draient aucune assemblée sous peine  
de mort, mais que Senneterre leur as-  
signerait un lieu hors de la ville pour  
y faire leurs prêches. Il est probable  
que Tremélius ne tarda pas à retour-  
ner à Heidelberg, d'où, quelques an-  
nées plus tard, il fut appelé à Sedan  
par le duc de Bouillon pour y remplir  
une chaire d'hébreu qu'il occupa jus-  
qu'à sa mort.  
L'autre se nomme Didier Bousquet.

241 Académies et Universités alsaciennes.

Hebræe linguæ Professor, Luccæ 1541.  
Hebræe linguæ Professor, 1542-1547.  
Hebræe linguæ Professor, Cambridge, 1549-1553.  
Hebræe linguæ Professor in Universitate Heidelbergensi.  
Hebræe linguæ Professor in Academia Sedanensi.



TREMILL or TREMYLL, — (senior). Pens. at PETERHOUSE, in 1581. Probably Richard, s. and h. of Richard, of Bedfordshire. Of Wrawby, Lincs. Married Helen, dau. of William Thorley, of Northamptonshire. Probably brother of Henry (1580) and of James (above). (Essex Pedigrees, 608.)

TREMELLIUS, JOHN EMMANUEL, Hebrew lecturer, 1550-3. A Jew. B. at Ferrara, 1510. Studied at Padua between 1530 and 1540. Converted to Christianity by Cardinal Pole, his godfather, 1540. Teacher of Hebrew at Lucca, where he imbibed the opinions of the reformers chiefly through the influence of Peter Martyr. Came to England; resided with Archbishop Cramer at Lambeth Palace, 1547. Preb. of Carlisle, 1552. Left England on the accession of Queen Mary, 1553. Head of the gymnasium at Hornbach, 1559. Imprisoned for his Calvinistic views; released, 1560. Professor of Old Testament studies at Heidelberg, 1561. D.D. (Heidelberg), 1561. Sent to England as Envoy of the Elector; resided with Archbishop Parker, c. 1565. Expelled from Heidelberg, 1576. Appointed teacher of Hebrew at Sedan. Translated the Bible from Hebrew and Syriac into Latin. Author, miscellaneous. Died at Sedan, Oct. 9, 1580. (Cooper, i. 425; D.N.B.)

TREMLETT, GEORGE. Adm. sizar (age 17) at SIDNEY, Dec. 21,

Tremellius (Tremmel), Immanuel

1561 - 1577 Theol. Fak.

1561 - 1577 Altes Testament; 1561 - 1575 Hebräische Sprache

\* 1510 Ferrara (im Ghetto)

† 9. Okt. 1580 Sedan  
mosaisch, seit 1540 kath., seit 1541 ref.

⊙ Okt. 1544 Elisabeth N.N., Witwe

K 1 T, 1 Stief-T, 1 S; Immanuel T., s. Toepke  
2 (1886) S.26, Hundsnurscher (1996)  
S.45

# Measuring Publications from VIAF

## VIAF

Virtual International Authority File

### Search

Select Field:

All Headings

Select Index:


All VIAF


Search Terms:


Trémellius, Emmanuel, 1510-1580


Search


Tremellius, Immanuel, 1510-1580. 


Tremellius, Immanuel 

Immanuel Tremellius italienischer Exulant und reformierter Theologe 

טרמליוס, עמנואל 


Tremellius, Immanuel (1510-1581). 

Tremellio, Emanuele, 1510-1580 

Emmanuel Tremellius 

VIAF ID: 56619788 ( Personal )

Permalink: <http://viaf.org/viaf/56619788>

 Preferred Forms

 4xx's: Alternate Name Forms (63)

 5xx's: Related Names (29)

 Works



Biblia sacra des Oudē ende Nieuwē Testamēts ofte De gantsche Heylige Schrift vervattende het beschrevene woort Godes:

Biblia sacra, sive Testamentum Vetus, ab Im. Tremellio et Fr. Junio ex Hebræo Latinè redditum, et Testamentum Novum, à Theod. Beza è Græco in Latinum versum

Bibliorum pars secunda, id est libri historici

Bijbel.

Catéchisme de l'Eglise de Genève.

Christiana Katechesis Hebraicis literis mandata / Emanuel Tremelius. - Londini, [1820].

Jesu Christi domini nostri Novum Testamentum

Libri Apocryphi

Nieuwe Testament. Ofte, het Nieuwe verbondt onses Heeren Jesu Christi

Praelectiones doctiss. in Epistolam D. P. ad Ephesios... D. Martini Bucerī, habitae Cantabrigiae... anno MDL et LI, ex ore praelegentis collectae et nunc primum in lucem editae diligentia Immanuelis Tremellii,....

Proverbiorvm Solomonis regis Israel, liber carmine elegiaco redditus:

Psalmi Davidis

Rudimenta Hebraicae linguae : accurata methodo et brevitate conscripta : eorundem rudimentorum praxis quae vivae vocis loco esse possit

Şəpər hınnuķ behırē yah

Testamenti Veteris Biblia Sacra, sive Libri canonici priscae Judaeorum ecclesiae a Deo traditi

Testamentvm Novvm



Biblia sacra, sive Testamentum Vetus, ab Im. Tremellio et Fr. Junio ex Hebræo Latinè redditum, et Testamentum Novum, à Theod. Beza è Græco in Latinum versum



Bibliorum pars secunda, id est libri historici



Bijbel.



Catéchisme de l'Eglise de Genève.



Showing 1 to 10 of 25 entries

Previous **1** 2 3 Next

Selected Co-authors

Countries and Regions of Publication (8)

Publication Statistics

Selected Publishers (13)

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Record Views

History of VIAF ID:56619788 (35)



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## Human capital index $q_i$

No. characters of Wikipedia page	0.358
No. languages Wikipedia	0.367
No. of alternative names in VIAF	0.413
No. of countries in VIAF	0.438
No. of publishers in VIAF	0.425
No. of titles in VIAF	0.440
No. Eigenvalues $> 1$	1
% variance explained by 1st PC	70.6%

Table: First principal component of the human capital of scholars

Normalization: no VIAF, no WIKI  $\rightarrow q_i = 0$

## Human capital index

Seen from the point of view of today

Includes both output and citations

Measurement errors

Bias: printed press, non academic works

## Ranking of top scholars

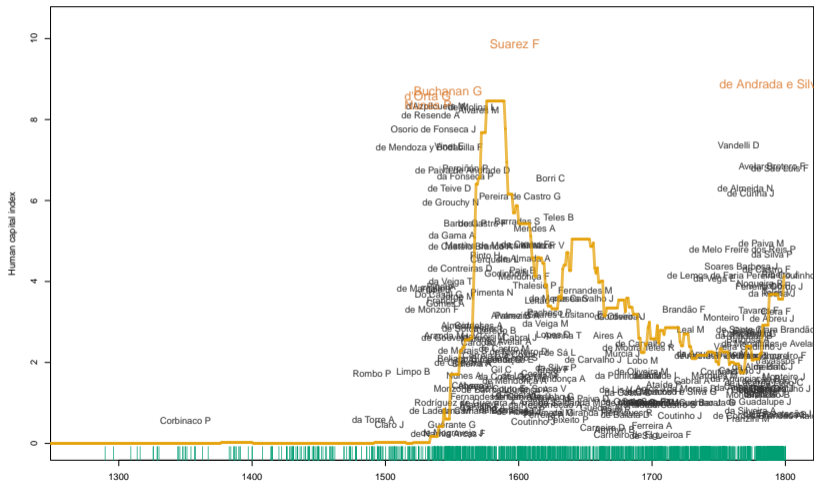
Scholar	Index ( $q_i$ )
François-Marie Arouet de Voltaire (many academies)	11.45
Martin Luther (U. Wittenberg)	11.37
Thomas Aquinas (U. Paris)	11.32
Jean-Jacques Rousseau (A. Lyon)	11.02
Immanuel Kant (U. Königsberg)	10.91
JC Friedrich von Schiller (U. Jena)	10.90
Desiderius Erasmus (U. Cambridge, Louvain)	10.81
Niccolo Machiavelli (A. Plato, U. Firenze)	10.67
Gottfried Wilhelm von Leibniz (many academies)	10.66
Carl Linnaeus (U. Uppsala, academies)	10.61
Jean Calvin (U. Strasbourg, Geneva)	10.56

## Notability index $Q_k$

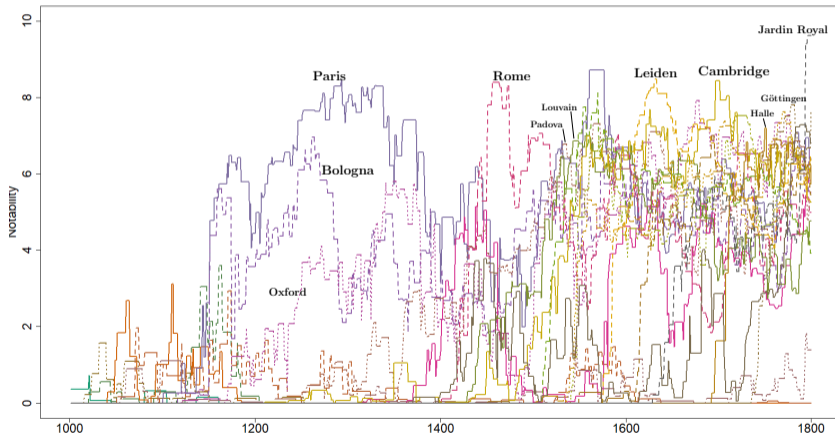
At time  $t$ , the notability  $Q_{kt}$  of a university  $k$  aggregates the  $q_i$  of the top 5 persons who were active at any point  $\in [t - 25, t[$  using the following formula:

$$Q_{kt} = \sqrt{\sum_{i=1}^5 \frac{1}{5} (q_i)^2}$$

# Notability index $Q_k$ for Coimbra



# Notability index $Q_k$

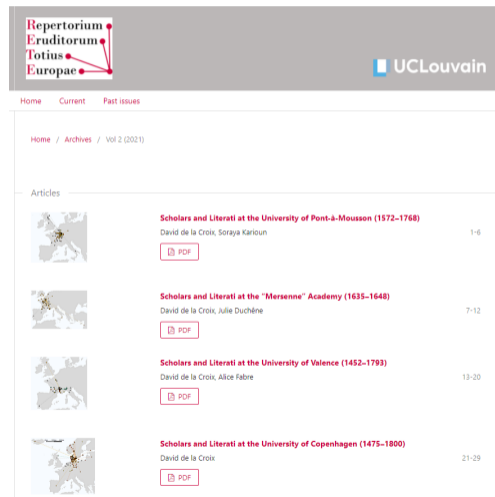




## Descriptive papers

When data collection completed for one institution we produce a data sheet

Last one (nb 72): Scholars and Literati at the Academy of Georgofili (1753 – 1800) by Blandine Clément and Chiara Zanardello



The screenshot displays the website for the Repertorium Eruditorum Totius Europae, hosted by UCLouvain. The page title is "Repertorium Eruditorum Totius Europae" and the UCLouvain logo is visible in the top right. Navigation links for "Home", "Current", and "Past issues" are present. The current page is "Home / Archives / Vol 2 (2021)". Under the "Articles" section, four entries are listed, each with a map icon, a title, author information, and a PDF download button:

- Scholars and Literati at the University of Pont-à-Mousson (1572–1768)**  
David de la Croix, Soraya Karioun | 1-6 | PDF
- Scholars and Literati at the "Mersenne" Academy (1635–1648)**  
David de la Croix, Julie Duchêne | 7-12 | PDF
- Scholars and Literati at the University of Valence (1452–1793)**  
David de la Croix, Aïce Fabre | 13-20 | PDF
- Scholars and Literati at the University of Copenhagen (1475–1800)**  
David de la Croix | 21-29 | PDF

## Integrated market

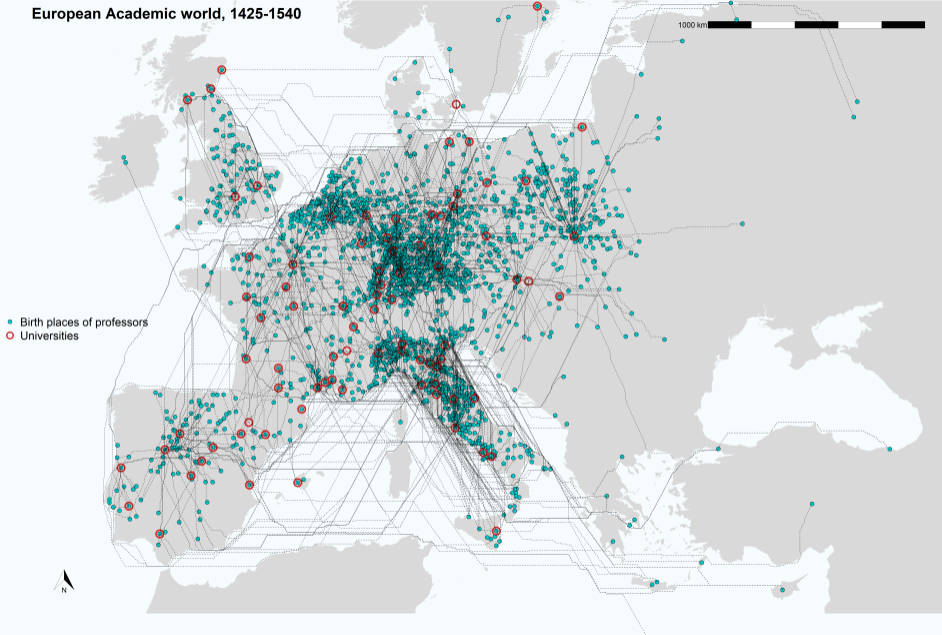
Was there an **integrated** academic market since the Middle Ages? Did it matter ?

Should help to sustain a market:

- Political fragmentation of Europe preventing strong control from the top.
- Intellectual unity (use of latin).
- *licentia ubique docendi*, right to teach anywhere with a doctoral degree

Would allow to harness together universities and UTHC (upper tail human capital)

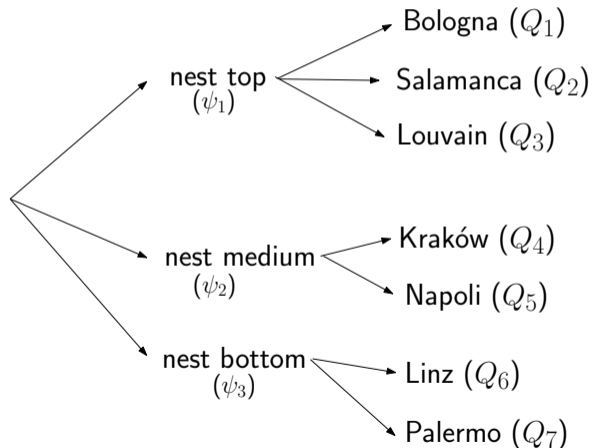
# European Academic world, 1425-1540



## Methodology: nested multinomial logit



scholar with  $q_i$



## Results

The probability for a scholar to go to university  $k$  decreases with

– distance from birth

increases with

– notability of  $k$  ( $Q_k$ )

– interaction  $q_i \times Q_k \rightarrow$  positive sorting

high quality scholars are attracted by notable places and agglomerate there

▷ More in: de la Croix, Docquier, Fabre, Stelter, The Academic Market and the Rise of Universities in Medieval and Early Modern Europe (1000-1800), *Journal of the European Economic Association*, forthcoming

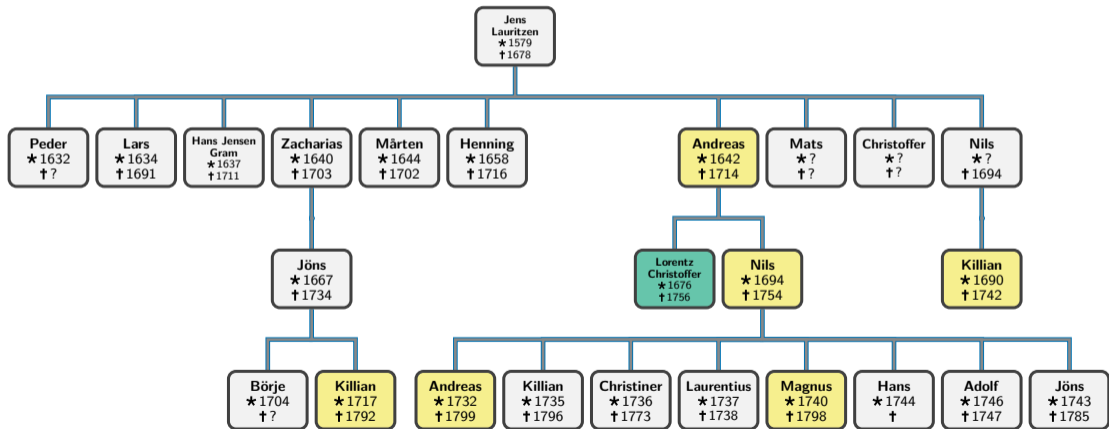
## Nepotism vs Intergenerational transmission of human capital

Father-son pairs – common in academia: Bernoullis, Eulers, Cassinis, Bartholin

**Question:** Did fathers secure jobs for their son ahead of better qualified candidates (nepotism) ?

or talent was scarce and scholars' sons inherited big endowments of human capital ?

# The Stobaeus family. Professors at Lund in yellow squares. Member of Academy in Stockholm in green



## A structural model

Children's human capital:  $h_t = \beta h_{t-1} + u_t$ ,

where  $\beta$ : intergenerational elasticity of human capital.

Consider the universe of families  $i \in \mathbb{I}$ .

Selection into being a scholar depends of human capital:  $h_{t-1} > \tau$

Nepotism: selection criterion is weaker for the sons of scholars:  $h_t > \tau - \nu$

The set  $\mathbb{P}$  of scholar lineages (father and son are scholars):

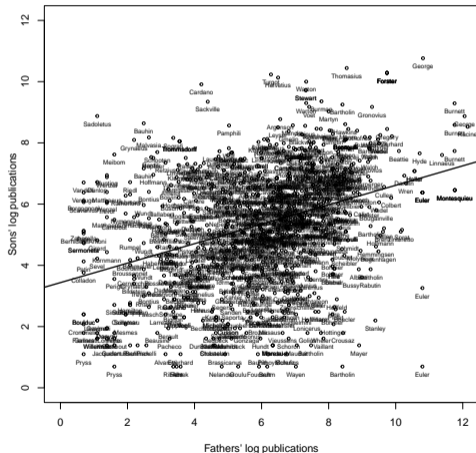
$$\mathbb{P} = \{i \mid h_{t-1} > \tau, h_t > \tau - \nu\} \subset \mathbb{I}$$

Share of nepotic sons:  $\gamma = F_h(\tau \mid h_{i,t+1} \geq \tau - \nu)$

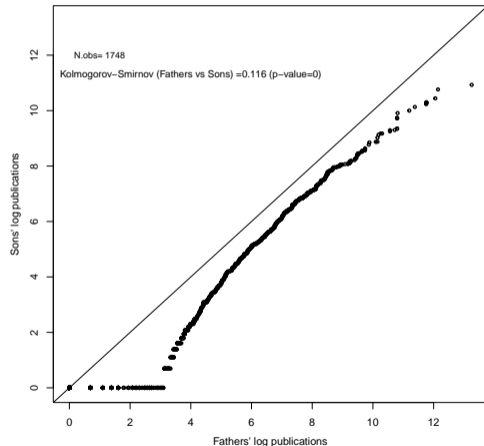


# Parameters are identified by SMM, fitting a series of key moments

## Father-son correlation



## Parent-child distributional differences



## Main results

- High rate of transmission of human capital ( $\approx 0.63$ )
- 18.8% scholars' sons are nepotic scholars.
- Nepotism decreases during Scientific Revolution and Enlightenment.
- Nepotism more prevalent in Catholic universities.
- Nepotism less prevalent in new universities, and in Science.

▷ More in de la Croix and Goñi, Nepotism vs. Intergenerational Transmission of Human Capital in Academia (1088-1800), CEPR Discussion Paper 15159

## Network of universities and Religion

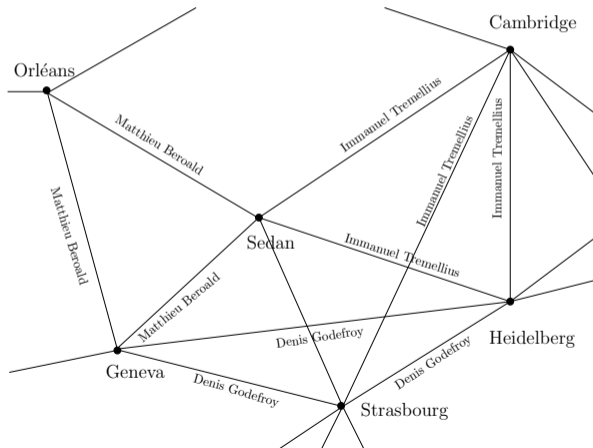
### Look at the data through the lens of graph theory

Let  $N = \{1, 2, \dots, n\}$  be the set of universities in the network  $g$  (nodes, exogenous).

For two universities  $(i, j) \in N$ , we define  $g_{ij} \in \{0, 1\}$  as the *link* (edge) between them:

$g_{ij} = 1$  if at least one same scholar has taught in both universities,  $g_{ij} = 0$  otherwise.

## Network: connecting scholars at the time of Immanuel Tremellius



Positioning of universities determined by Fruchterman-Reingold force-directed algorithm.

Groups universities more closely together when they are linked to each other.

Only show big component.

Size of circle proportional to eigenvector centrality.

Figure: Network 1000-1199

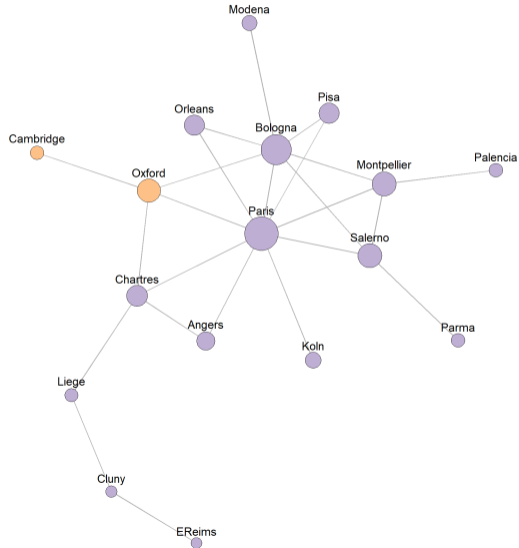


Figure: Network 1200-1347

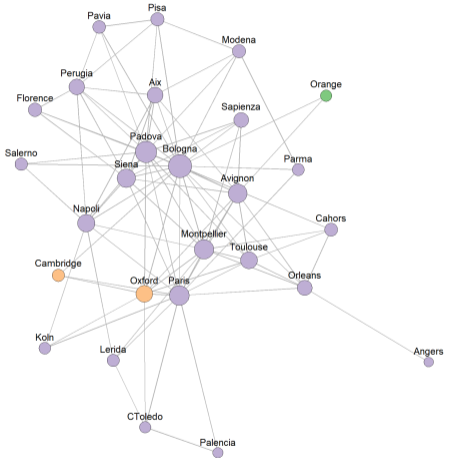


Figure: Network 1348-1449

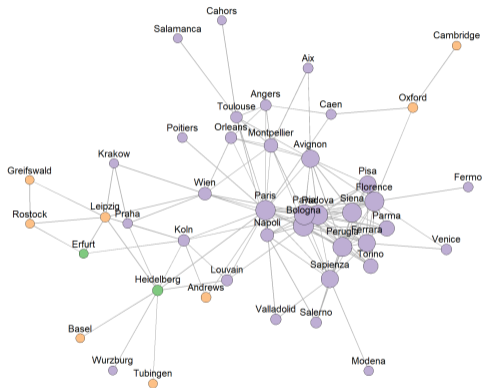






Figure: Network 1523-1597

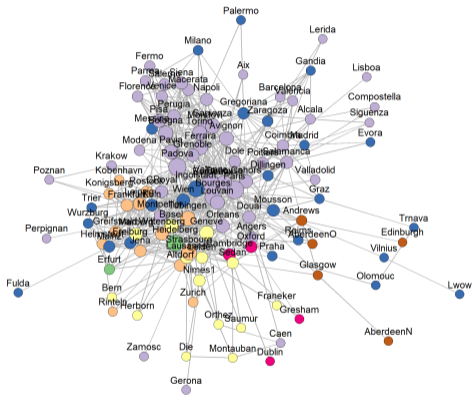


Figure: Network 1598-1684

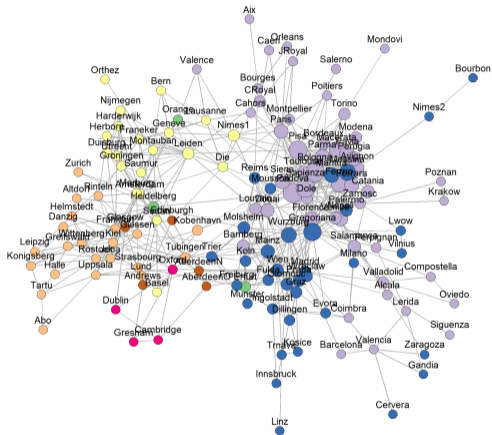
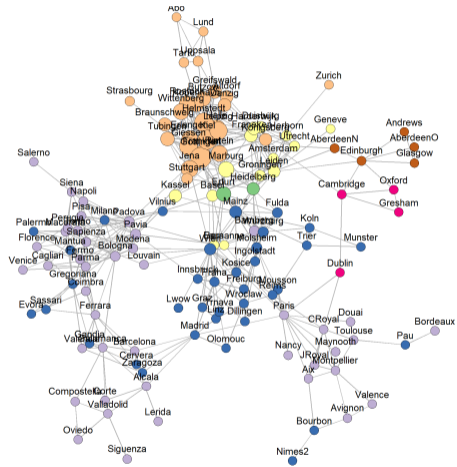


Figure: Network 1685-1793



## Main Results

The Protestant Reformation deeply affected the shape of the network of universities.

- Religion became a strong determinant of network structure, even when controlling for geography
- Sharp clear-cut divide between Protestant and Catholic univ
- The Reformation impacted positively the publications in Protestant Universities, partly by improving their relative position in the network

▷ More in de la Croix and Morault, *Winners and Losers from the Protestant Reformation: An Analysis of the Network of European Universities* IRES Discussion Paper 2020-029

## More on religion

- ▷ de la Croix and Vitale, Women in European Academia before 1800 - Religion, Marriage, and Human Capital, *European Review of Economic History*, 2023
- ▷ Blasutto and de la Croix, Catholic Censorship and the Demise of Knowledge Production in Early Modern Italy, *The Economic Journal*, 2023
- ▷ Curtis and de la Croix, Seeds of Knowledge: Premodern Scholarship, Academic Fields, and European Growth, CEPR Working Paper 18321