Comments on “The Research University, invention, and industry: evidence from German history”, Jeremiah Dittmar and Ralph R. Meisenzahl

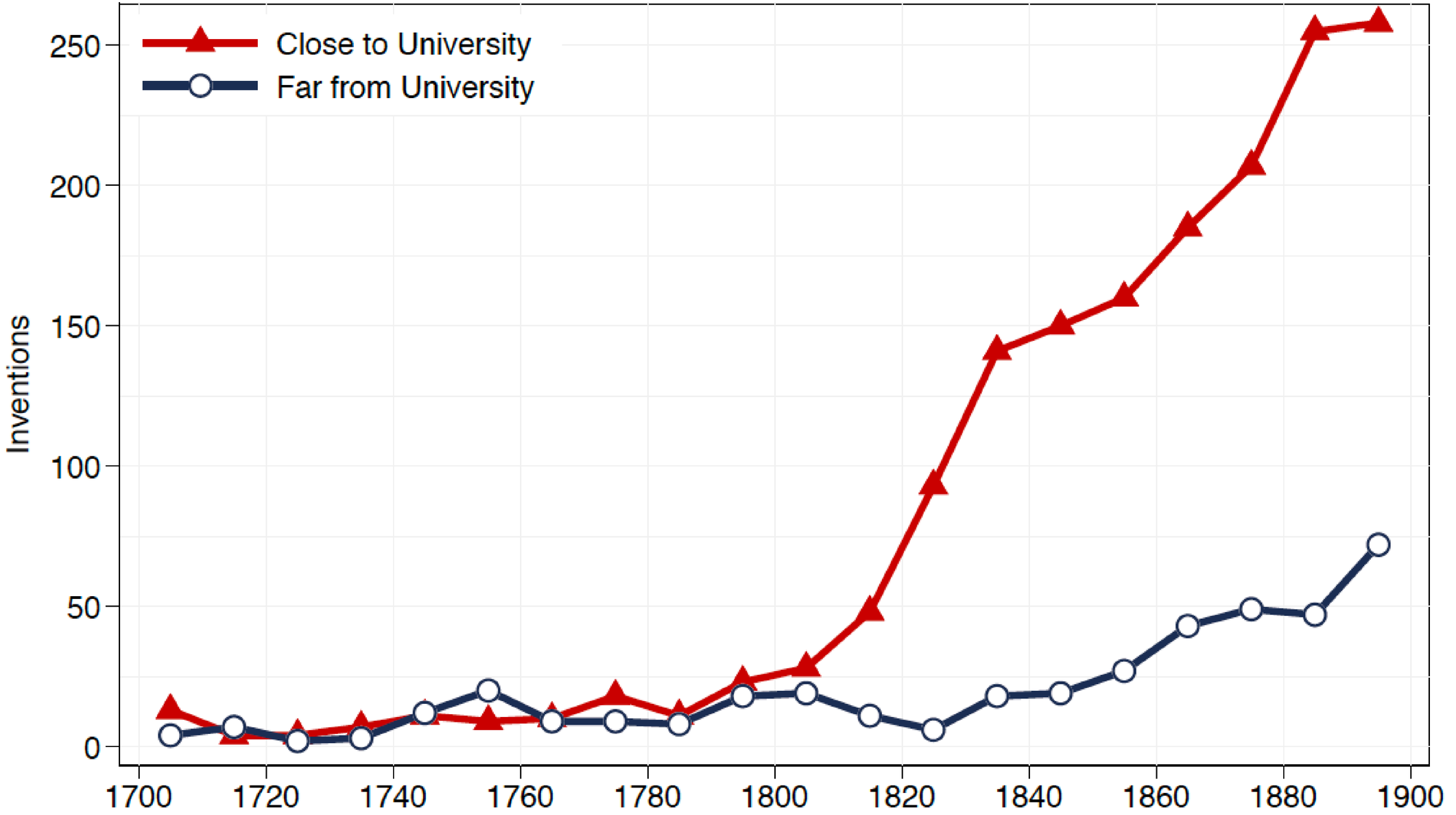
Anna Grzymala-Busse
Stanford University

June 2023

5 stars, would recommend:

- Clear and critical question about how universities contributed to innovation, manufacturing and economic development
- Great use of diverse evidence, including prizes awarded at the Great Exhibition at Crystal Palace in London (1851)
- Killer graph that shows that starting in 1800, innovation near universities takes off

Figure 1: The Pattern of Scientific and Technological Discovery



1800:

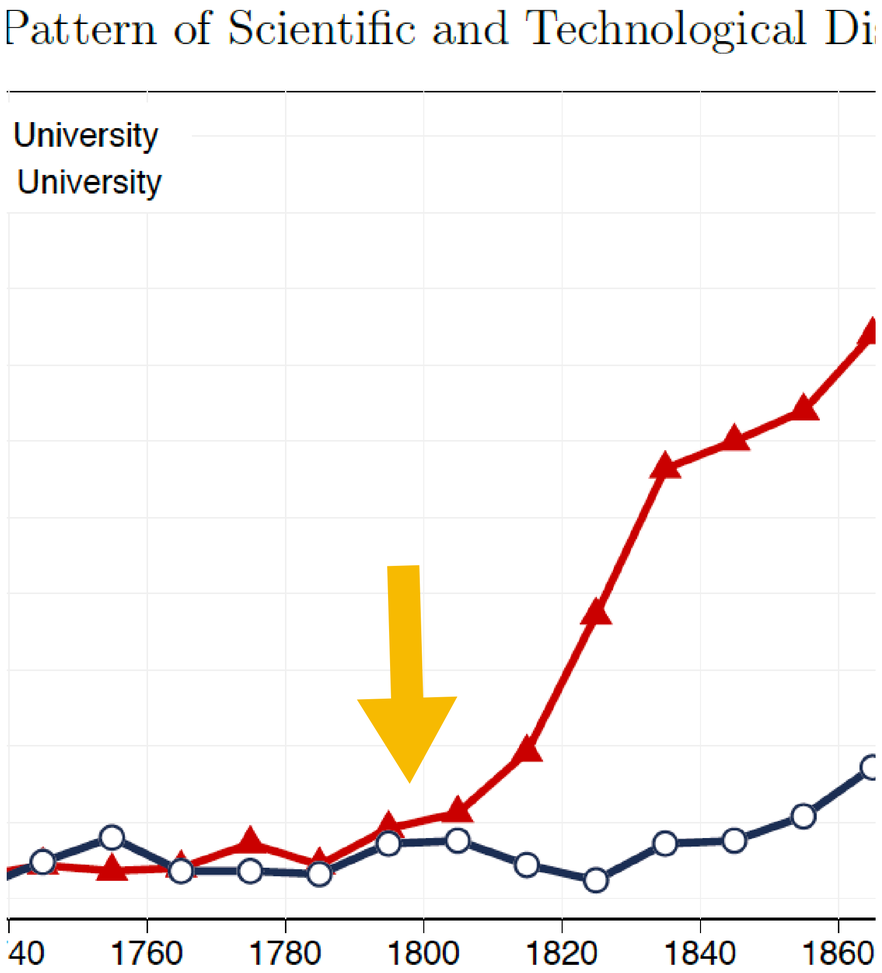
- Before: universities and innovation/ manufacturing are not associated
- 1800: twin shocks of French Revolution (1789-1799) and Napoleonic wars (1806-1815)
- After 1800: universities and manufacturing linked: more manufacturing events in high knowledge industries in proximity to universities

3 questions:

- Timing
- Mechanisms
- German uniqueness?

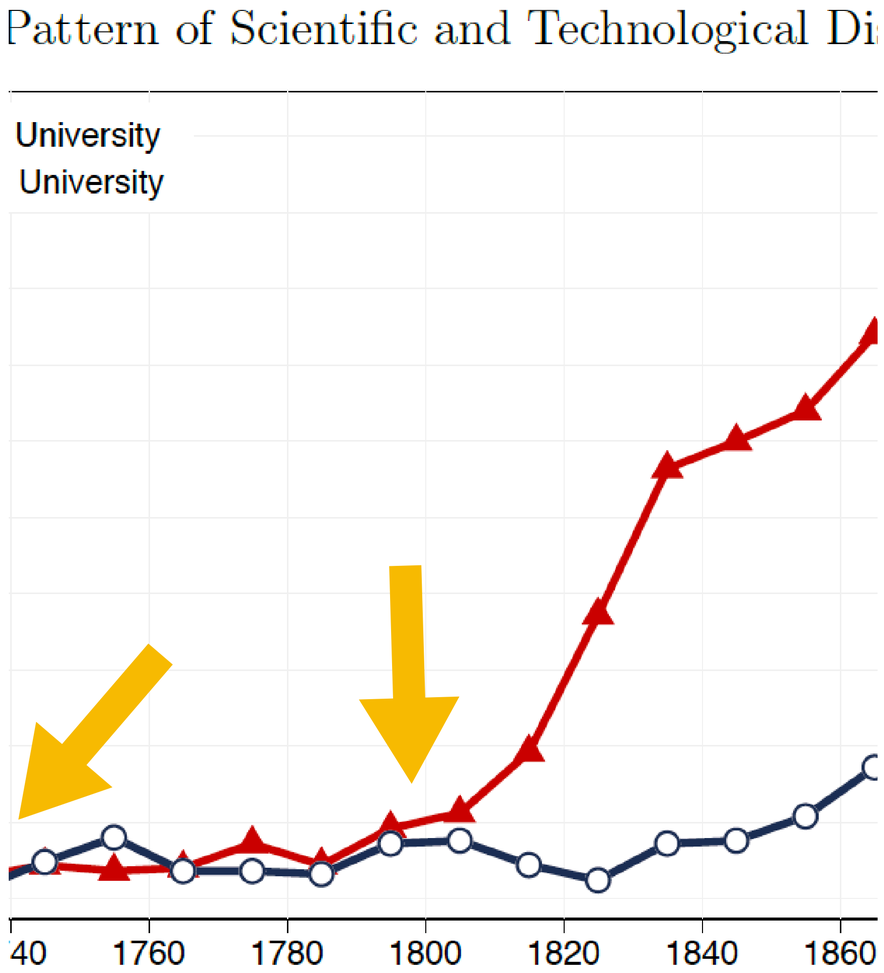
Timing:

- Scientific Institutes est. ~ 1800
- Tech progress builds on existing tech
- Would expect lag of decades?
- External shock = D for new manufacturing, but how could S meet D so quickly?
- Exponential growth?



Timing:

- Scientific Institutes est. ~ 1800
- Tech progress builds on existing tech
- Would expect lag of decades?
- External shock = D for new manufacturing, but how could S meet D so quickly?
- Exponential growth?



1800 takeoff:

- Result of earlier processes?
  - Diffusion of 17th scientific R and 18th engineering R
  - Merton hypothesis? Diffusion of Protestantism (Giessen, Jena, Berlin, Leipzig.) Tubingen RC, but already middle class business
  - 1760s reforms: emancipation of serfs and Jews, compulsory education, Frederick the Great and commerce/ expansion of industrial capacity in Prussia

Mechanisms?

- How coherent and *widespread* the new R & D program?
- Curriculum and research at new institutes?
- Above all: *how* did it influence high-end manufacturing?
  - Diffusion to industry, coherent industrial policy?
  - Mutual exchange of ideas and patents, revolving door for inventors?
  - Industry funding institutes, mechanics attending classes?

Uniqueness?

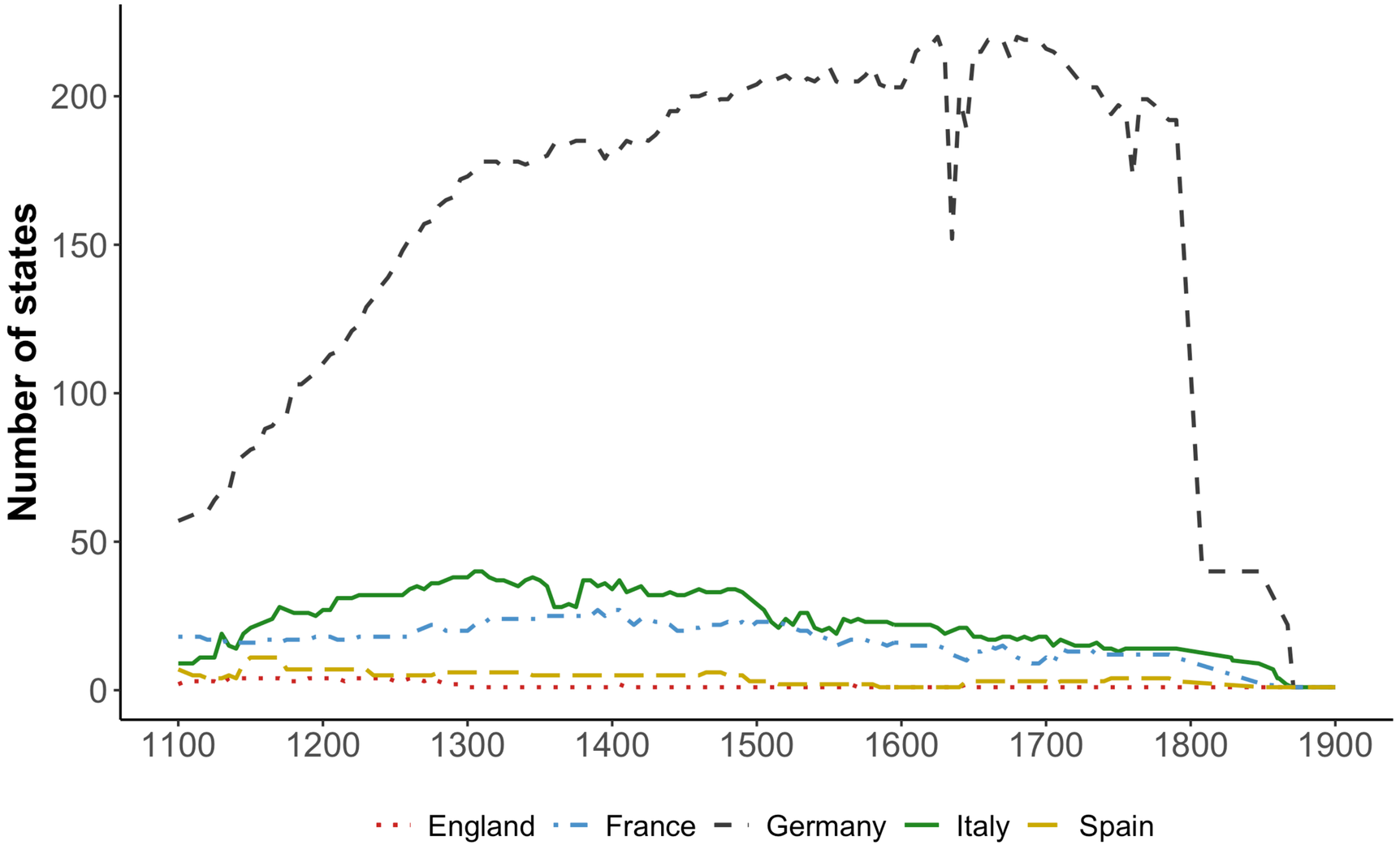
- Elsewhere, universities did not play the same role
  - England: Royal Society and amateur scientists collaborating with manufacturing innovators
  - France: Royal Academy central sponsorship
  - Both cases: network effects, lower access costs (Mokyr 2005)

Germany different:

- No central authority prior to 1870s
- Highly fragmented (began in 12th c)
  - Critical to spread of other ideas, eg Protestant Reformation
  - No central network, local islands of sovereignty


Kingdom of Denmark
Baltic Sea
North Sea
Swedish Pomerania
Holstein
Jever (Russian)
Lübeck
Hamburg
Wismar
Mecklenburg
Kolberg
Pomerania
Danzig
West Prussia
Vistula
Emden
Elbe
Stettin
Thorn
District of the Netze
Oldenburg
Bremen
Hanover
Brandenburg
Oder
Arenberg
Weser
Batavian Republic
Hanover
Berlin
Posen
Potsdam
Salm
Münster
Magdeburg
South Prussia
Warthe
Kalisch
Cleves
Kottbus
Glogau
Göttingen
Westphalia
Kassel
Leipzig
Saxony
Breslau
Duchy of Berg
Hesse-Darmstadt
Electorate of Hesse
Saale
Dresden
Silesia
Meuse
Cologne
Erfurt
Thuringian States
Rhine
Nassau
Wetzlar E.A.
Nassau-Orange
Glatz
Oder
Koblenz
Elbe
Austrian Silesia
Frankfurt
Aschaffenburg E.A.
Prague
Mosel
Main
Bohemia
French Republic
Würzburg
Trier
Nuremberg
Moravia
Ansbach
Regensburg E.A.
Moldau
Brünn
Budweis
Rhine
Nordlingen
Strasbourg
Electorate of Baden
Electorate of Wurtemberg
Bavaria
to Salzburg
Austria
Danube
Passau
Augsburg
Pressburg
Inn
Linz
Vienna
Munich
Austria
Breisgau
Salzburg
Lake Constance
Basel
Zurich
Styria
Electorate of Salzburg
Kingdom of Hungary
Helvetian Republic
Liechtenstein
Innsbruck
Norenberg
Berne
Carinthia
Tyrol
Lausanne
Rhone
Drava
Geneva
Republic of Valais
Venetia
Sava
Piedmont
Carniola
Milan
Italian Republic (Cisalpine Republic)
Verona
Istria
Padua
Venice
Po
Turin
Po
Piedmont
French R

Persistent fragmentation

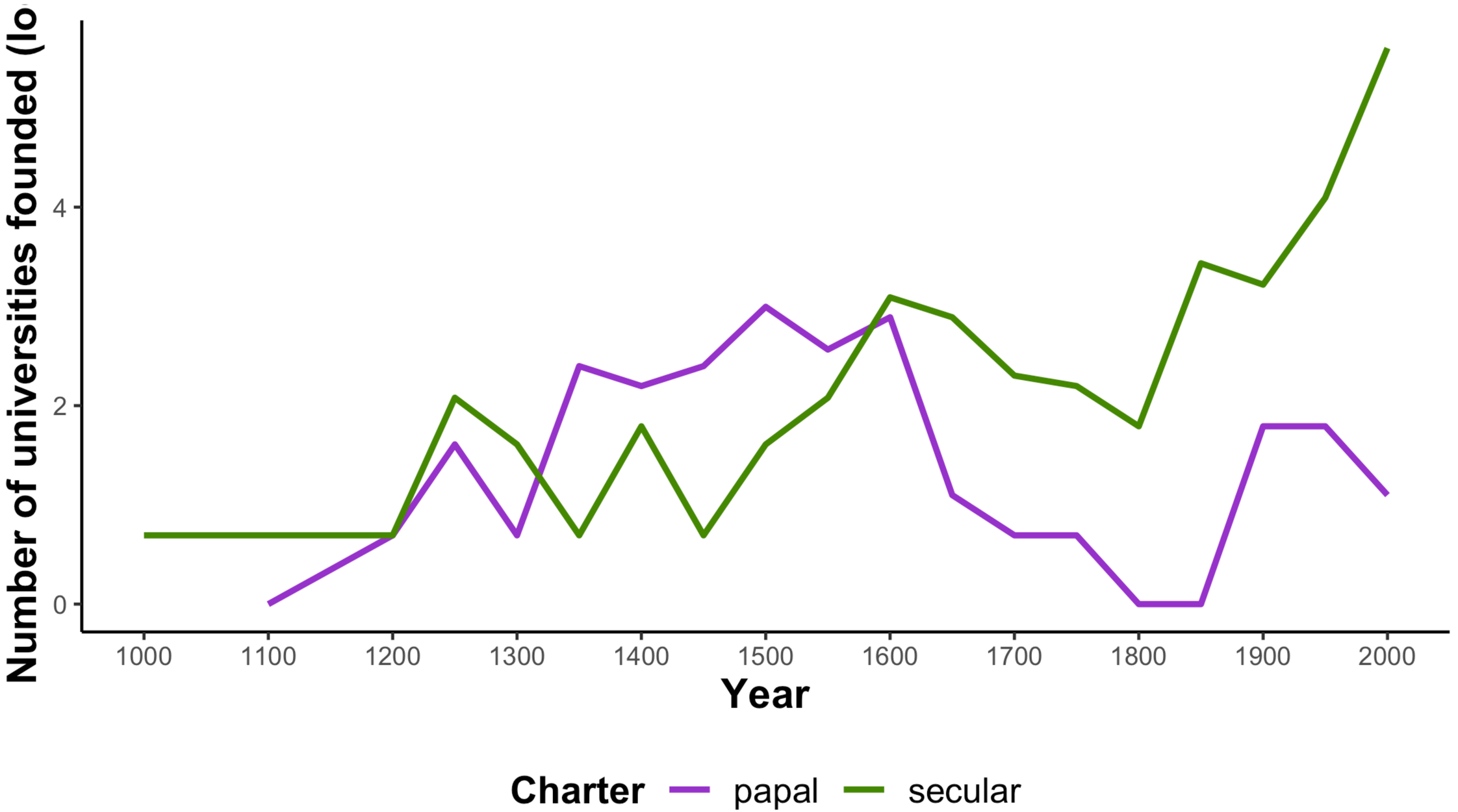


Suggests that:

- Even if region-specific factors do not matter:
  - Heterogeneity, where some rulers favor scientific investment and others do not
  - Competition to attract manufacturing, etc?
  - Universities as local substitutes for central Royal Societies?

Conclusion:

- 1800 takeoff fascinating: but locating causes further back in time to avoid causal shallowness
- Mechanisms: how did proximity to universities work?
- Political fragmentation as leading to unique German path of manufacturing development?
- Thank you for a great read!


Number of universities founded (lo
4
2
0
1000
1100
1200
1300
1400
1500
1600
1700
1800
1900
2000
Year
Charter
papal
secular