

Large-scale analysis of university patenting in the innovation activities of European regions

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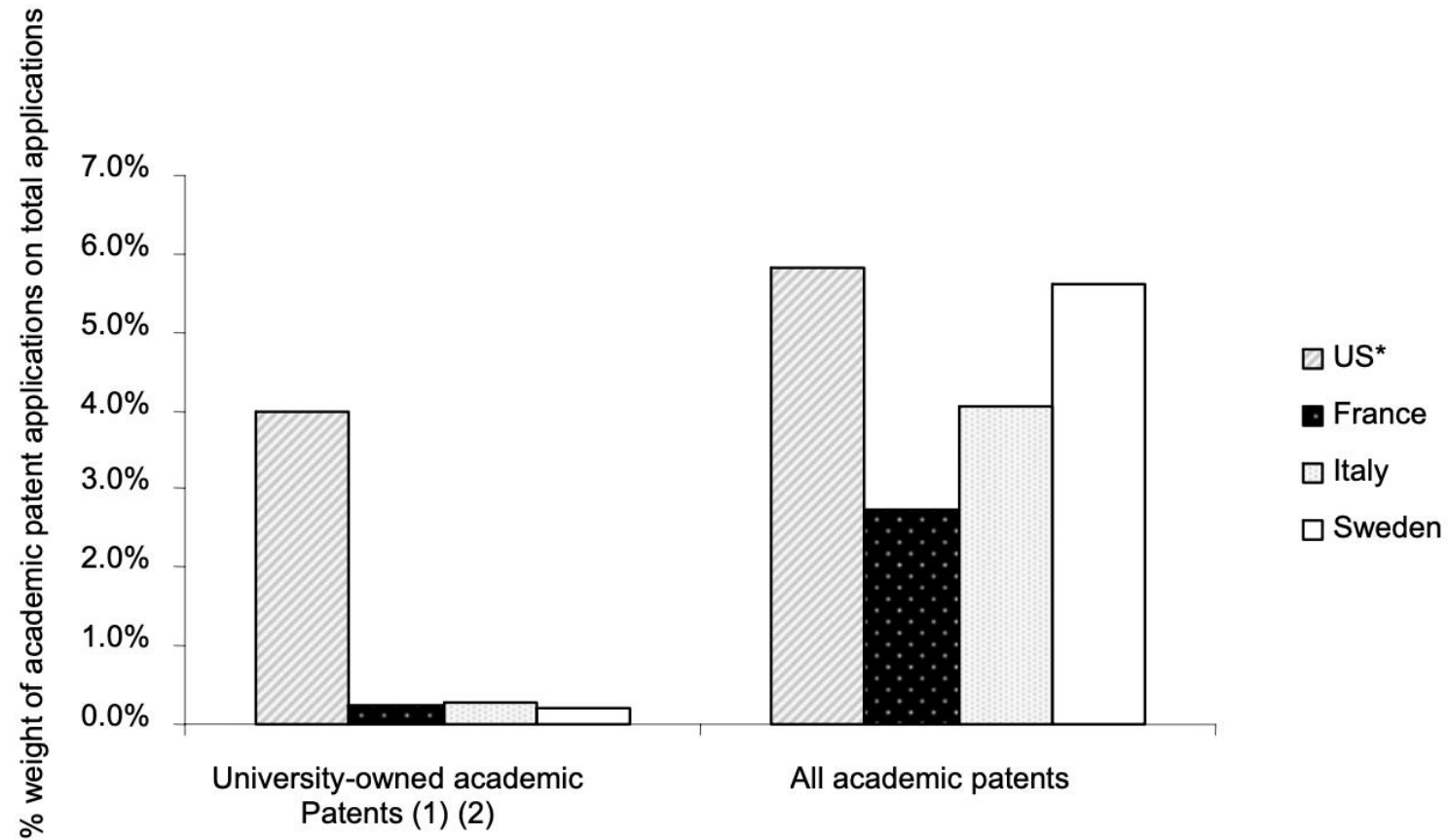
On the effects of universities on regional innovation

- Increasing research expenditures of universities have a positive and significant effect on number of corporate patents/innovations within the state/region (Jaffe, 1989; Acs – Audretsch – Feldman, 1992; Anselin – Varga – Acs, 1997;)
- An expansion of a university system increase the innovation activity of local industry, especially in poorer regions (Cowan – Zinovyeva, 2013)

On the problems of empirical measurements

- Diverse patent rights of universities in Europe converge only after 2000 (Martinez and Sterzi, 2020)
- Nowadays, and in the majority of European countries, except Sweden, universities file patent applications for themselves so that they are rightful owners of the invention they've developed

Share of academic patents in and outside of the university ownership (granted patents only, 1994-2001)



On the methods of identification of academic patents

- Mechanical comparison of inventor names in the patent database with the "PROFLIST" database, and subsequent manual check in uncertain cases (Lissoni, et. al., 2008) - labour demanding and sluggish
- Mechanical comparison of national inventor data (NIFU in Norway, Statistics bureau of Finland) with the patent data (Hvide – Jones, 2018; Ejeremo - Toivanen, 2018)
- Data-scientific approach – algorithm identify academic patents based on the high degree of similarity in-between the patent applications and the scientific papers written by academic authors (Maraut and Martinez, 2014; Dornbusch et. al., 2012)

Matching publications with the patents



The name of the patent inventor matches the name of the author of the publication (full last name + first letter of the first name)



Affiliation address on the side of the publication, and the inventor address on the side of the patent inventor are within NUTS2 region

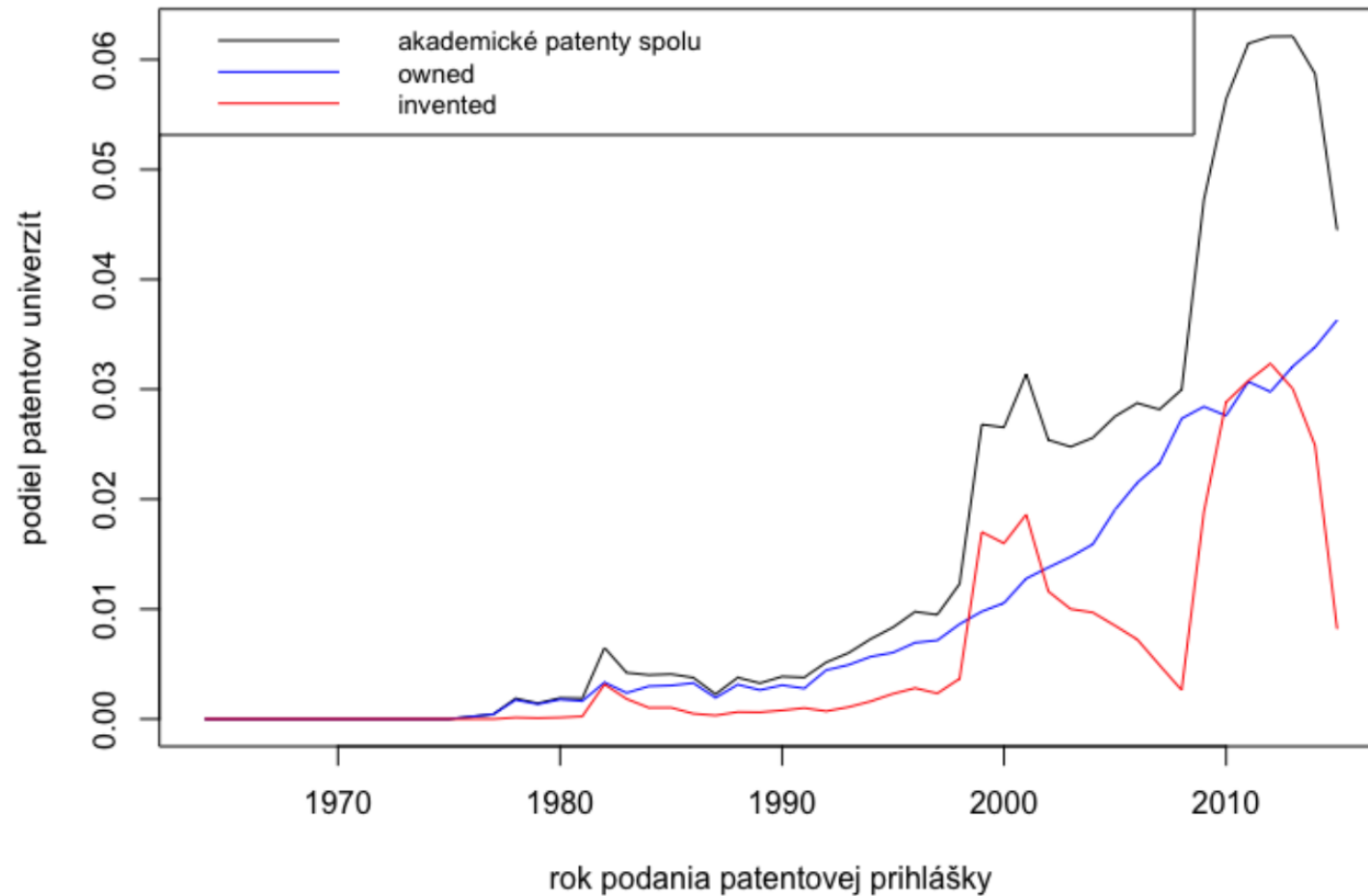


The journal article is published within the two-year time window after the patent application was filed for the first time

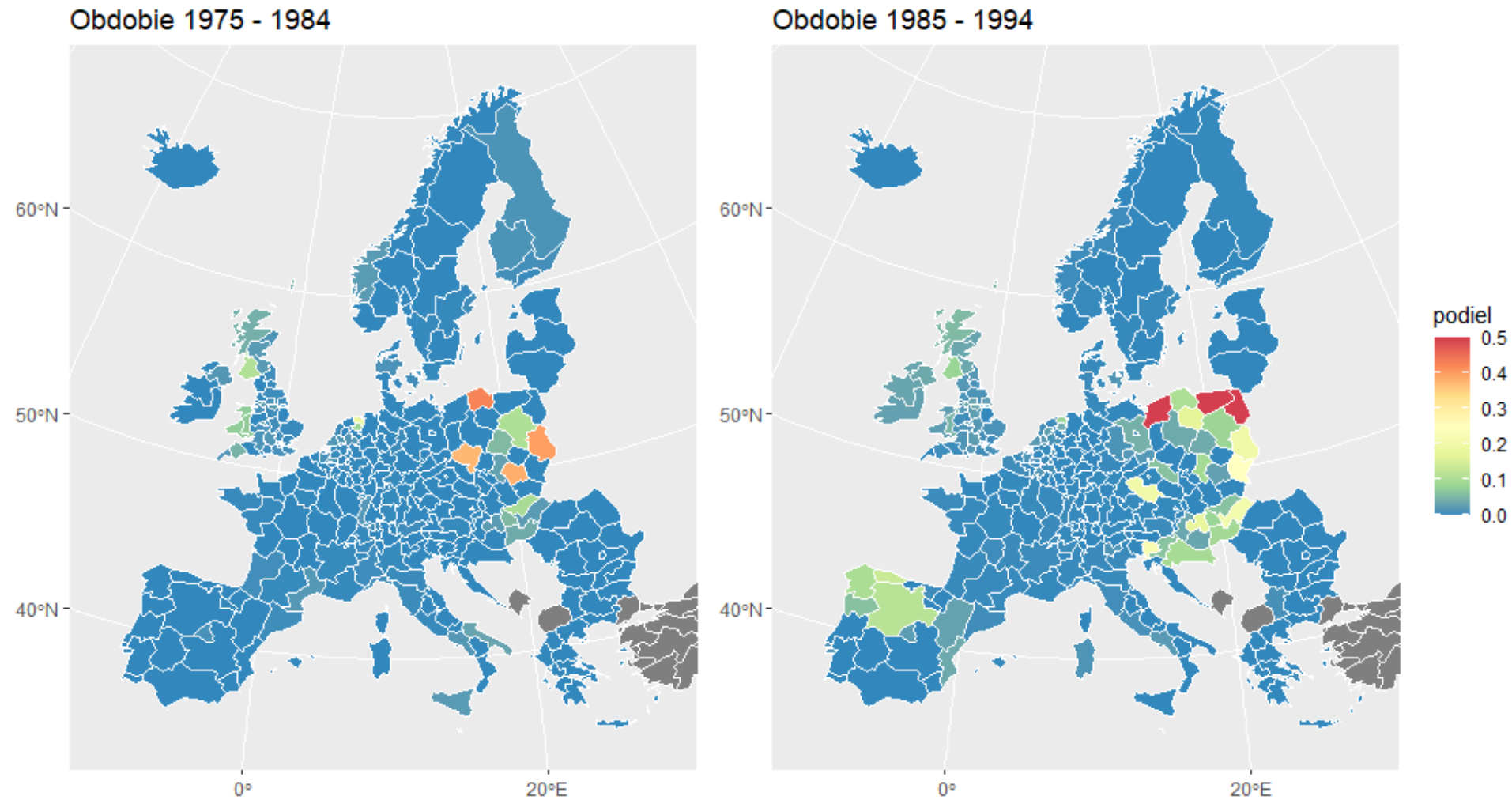


Journal Science Classification (ASJC) must be cognitively close to technology in which patent was published (IPC)

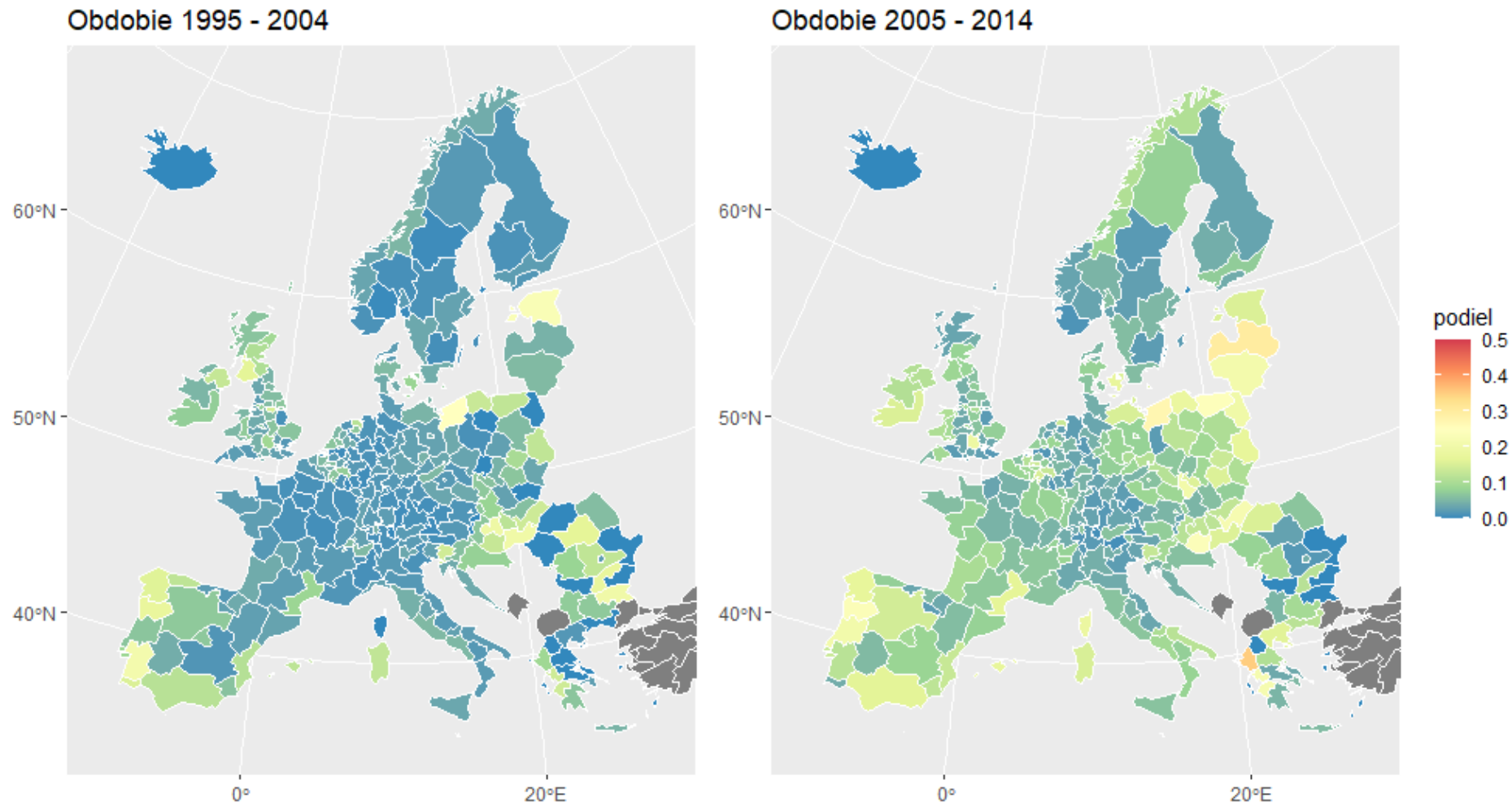
Results – share of academic patents in EPO 1964 - 2015



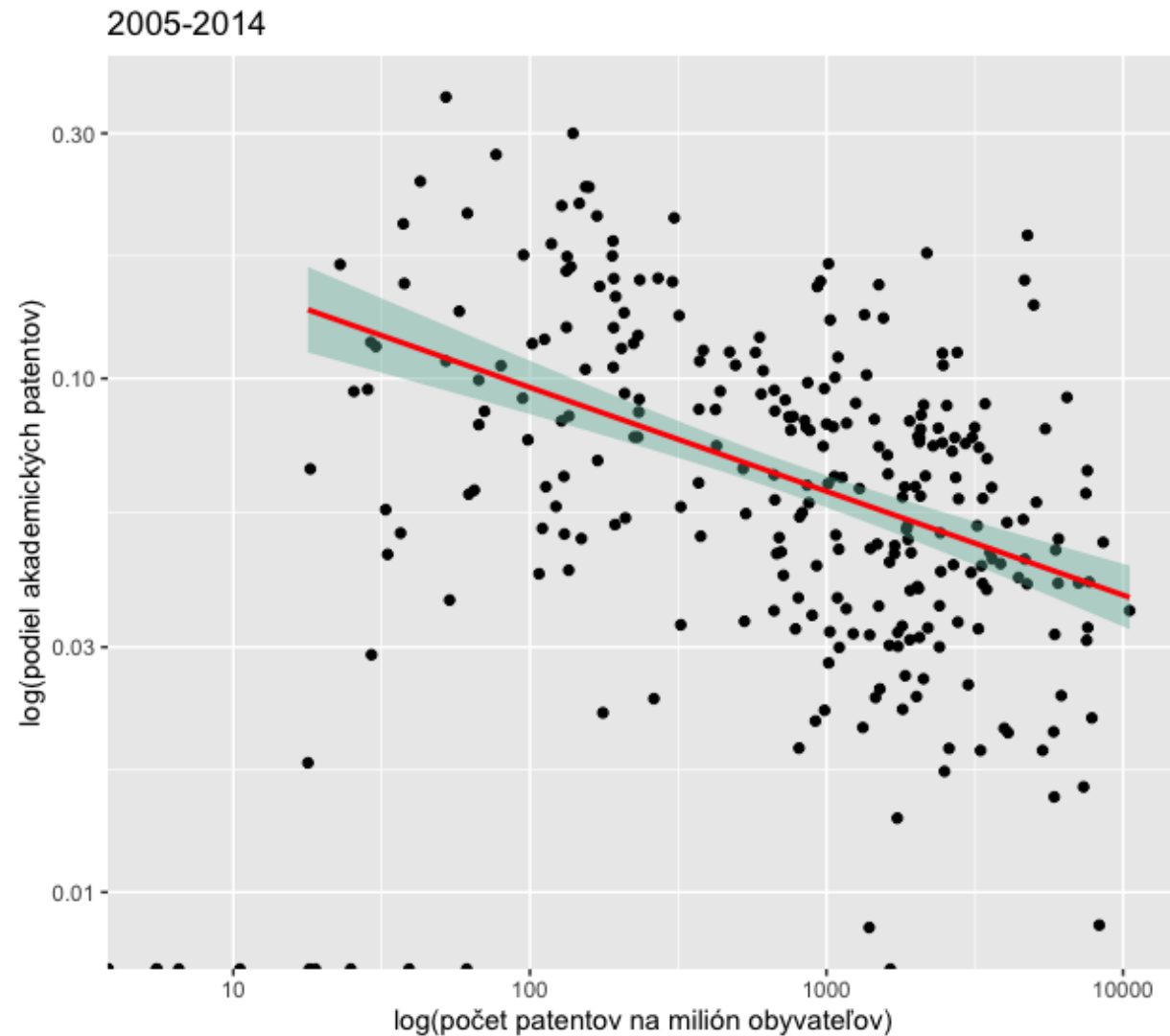
Share of academic patents



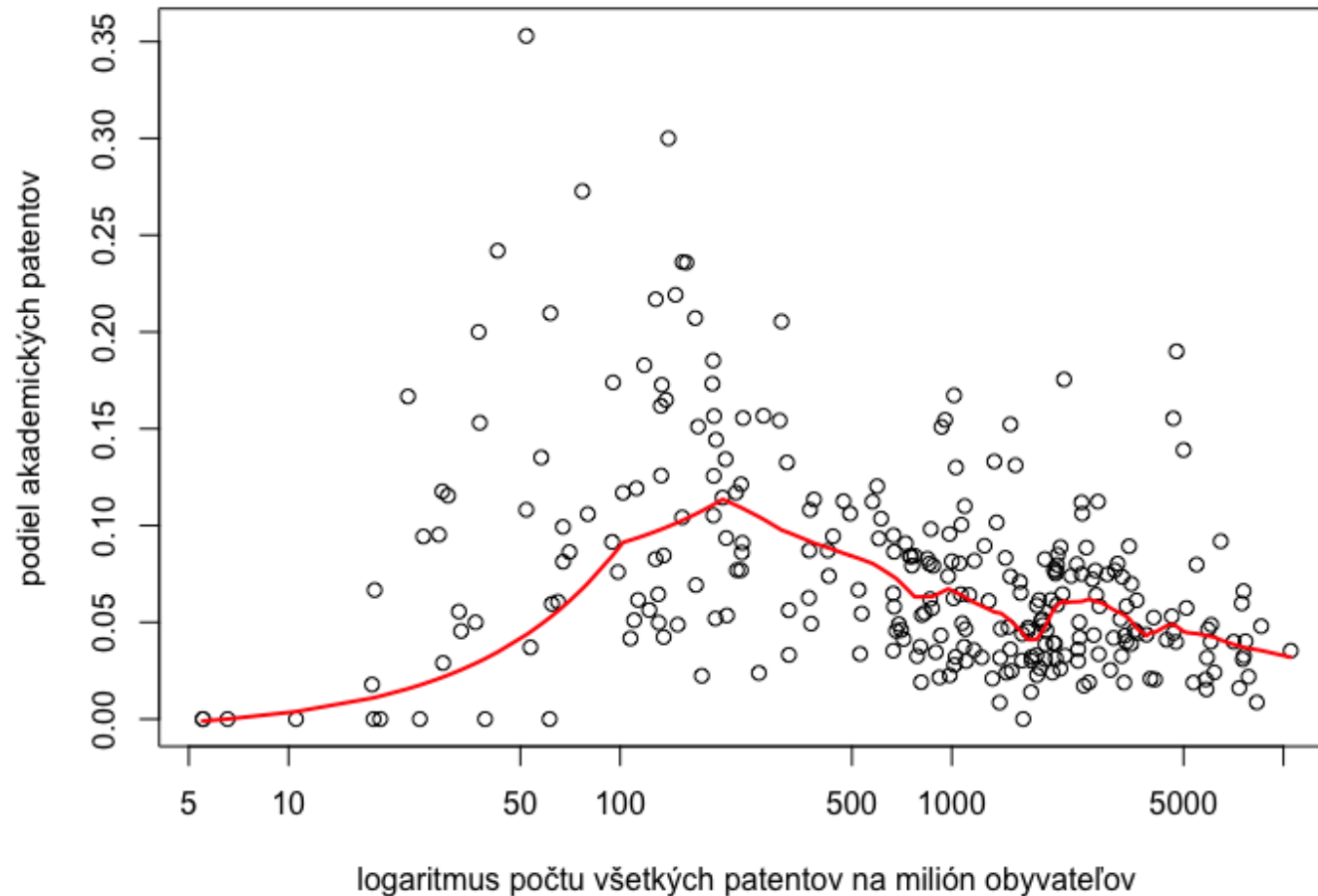
Share of academic patents



Number of patents per million inhabitants(x)
and share of academic patents (y) in regions



Number of patents per million inhabitants(x)
and share of academic patents (y) in regions



Conclusions

- 40% of academic patents is in the ownership of universities
- Universities are increasingly active in the patenting arena
- We conclude, that in the less innovative regions, universities may be more important actors in the regional innovation development, for firms are unable to patent in sufficient rate. However, after certain point of innovation rate, the number of firms patents increases at the expense of academic patents.

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