THE ECONOMIC IMPACT OF UNIVERSITIES: EVIDENCE FROM ACROSS THE GLOBE

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- They develop a new dataset using the World Higher Education Database (WHED) which is produced by the International Association of Universities in association with UNESCO
- They map the location of over 15,000 universities into 1,500 regions across 78 countries to explore how changes in the number of universities within regions have affected subsequent growth.
- There are a number of channels through which universities may affect growth including (i) greater skill supply; (ii) more innovation; (iii) support for democratic values; and (iv) demand

GREATER SKILL SUPPLY

- Universities are producers of human capital; and skilled workers tend to be more productive than unskilled workers
- The empirical macro literature has generally found that at the country level, human capital (typically measured by years of schooling) is important for development and growth
- human capital appears to also have an indirect effect via externalities which are analyzed inter alia by Gennaioli et al. (2013) using international data (where regional human capital is found to raise firm level productivity, over and above firm level human capital) and Moretti (2004) (where human capital in US cities is found to raise individual wages)
- Squicciarini and Voigtländer (2014) show that "upper tail" knowledge was important in the industrial revolution, and they measure this type of knowledge using city level subscriptions to the Encyclopédie in mid-18th century France

UNIVERSITIES MAY AFFECT GROWTH IS INNOVATION

- University researchers themselves produce innovations, or indirect via universities' role as human capital producers, should graduates enter the workforce and innovate
- Universities increase local innovative capacity

UNIVERSITIES MAY MATTER IS BY FOSTERING PRO-GROWTH INSTITUTIONS

- Universities could promote strong institutions directly by providing a platform for democratic dialogue and sharing of ideas, through events, publications, or reports to policy makers
- Universities strengthen institutions via their role as human capital producers
- Human capital is the basic source of growth, and the driver of democracy and improved institutions (Glaeser et al., 2004)

UNIVERSITIES MAY AFFECT GROWTH THROUGH A MORE MECHANICAL "DEMAND" CHANNEL

- Increased consumption from students and staff and the universities' purchase of local goods and services from the region could in principle have a material impact on GDP
- This would occur when university costs are financed though national governments from tax revenues raised mainly outside the region where the university is located

FINDINGS

- They show that university growth has a strong association with later GDP per capita growth at the sub-national level
- Even after including a host of controls (including country or region fixed effects to control for differential regional trends, and year dummies) they find that a doubling of universities in a region is associated with over 4% higher GDP per capita
- They find that universities in neighboring regions or other regions in a country also affect a region's growth, and there appears to be a spatial element to this, with larger effects for regions that are close together

- They show that the university effect works through increasing the supply of human capital and also through raising innovation, but both these channels are small in magnitude
- They find that universities appear to affect views on democracy even when we control or human capital, consistent with a story that they may have some role in shaping institutions over longer time horizons

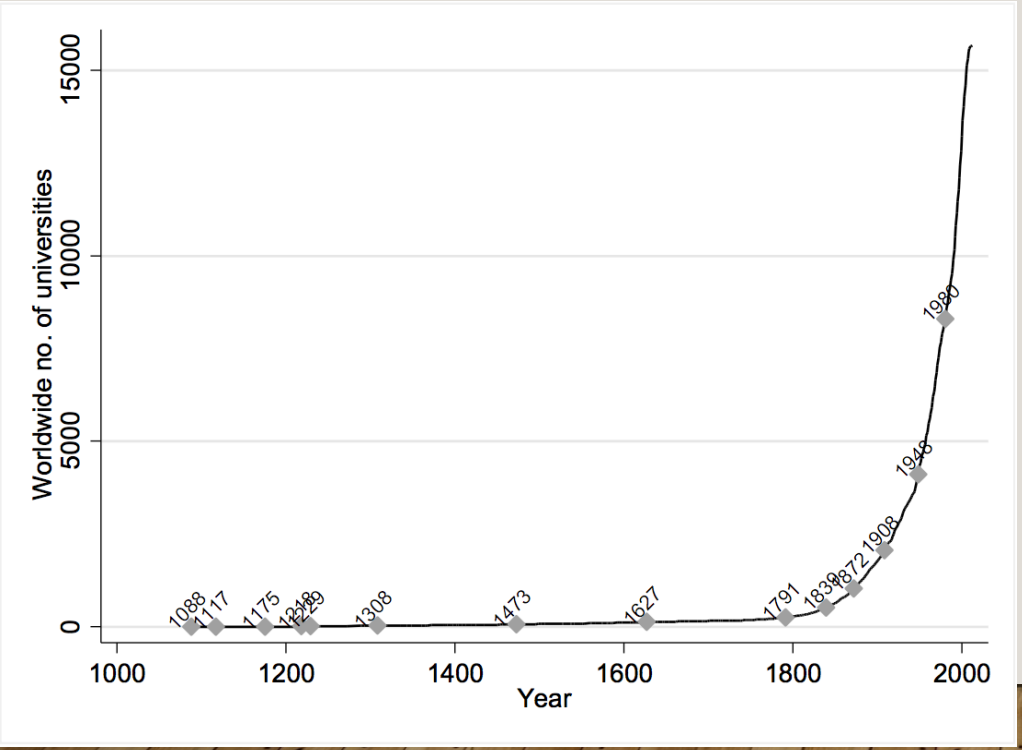
DATA

- World Higher Education Database is an online database published by the International Association of Universities in collaboration with UNESCO
- It contains information on higher education institutions that offer at least a three or four year professional diploma or a post-graduate degree
- Key variables of interest include university location, founding date, subjects and qualifications offered and other institutional details such as how they are funded
- Their regional analysis is based on that sample of countries for which GDP and other data are available from 1955, which covers 78 countries, comprising 14,868 (or 91%) of the institutions from the full listing

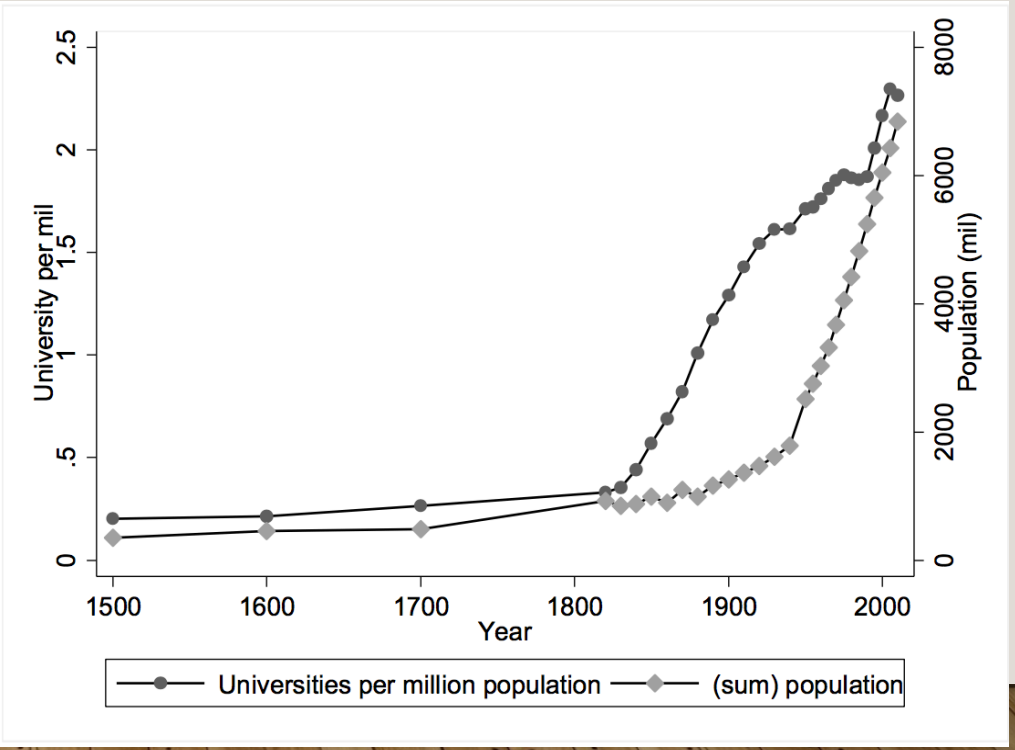
- They examine the cross sectional correlations of universities with key economic variables at the country level
  - They find that higher university density is associated with higher GDP per capita levels. Countries with more universities in 1960 generally had higher growth rates over 1960-2000
  - There are strong correlations between universities and average years of schooling, patent applications and democracy

WORLDWIDE UNIVERSITIES OVER TIME

PANEL A: UNIVERSITY COUNT

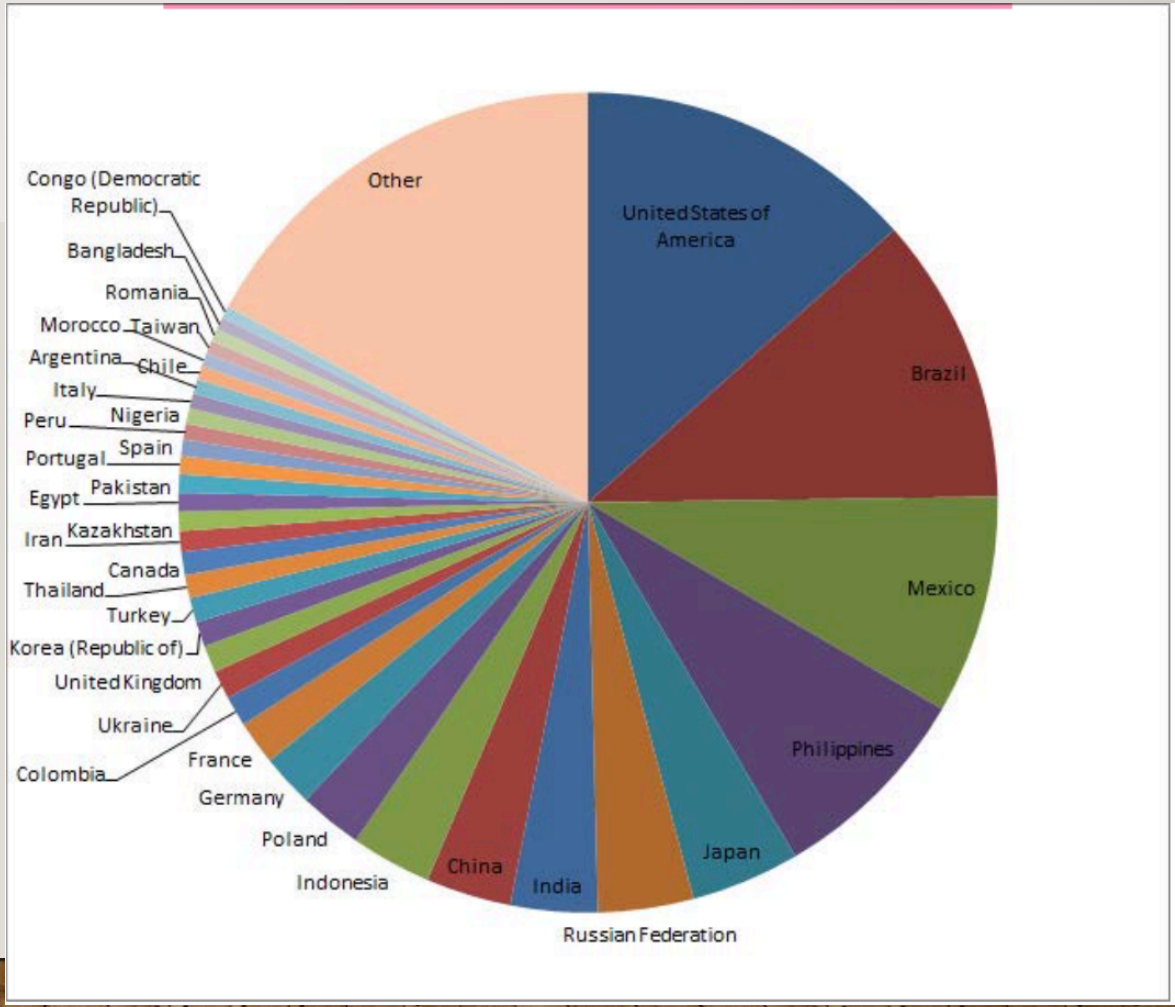


PANEL B: UNIVERSITY DENSITY AND POPULATION



LOCATION OF UNIVERSITIES IN 2010

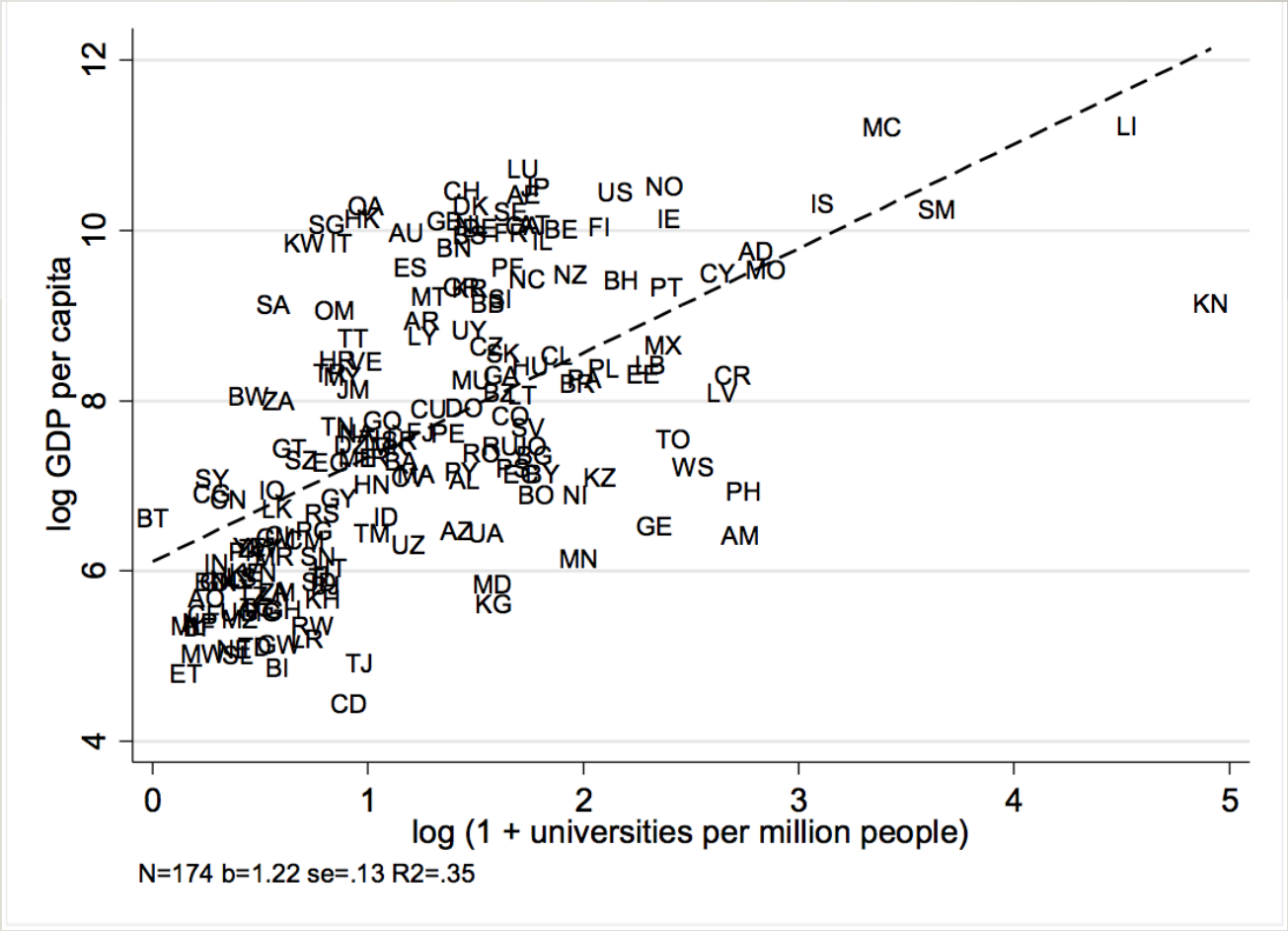
Notes: Pie chart shows the share of worldwide universities in each country, as at 2010. Source: WHED.



SCATTER PLOTS AT COUNTRY LEVEL, CROSS SECTION IN 2000

Universities and income in 2000

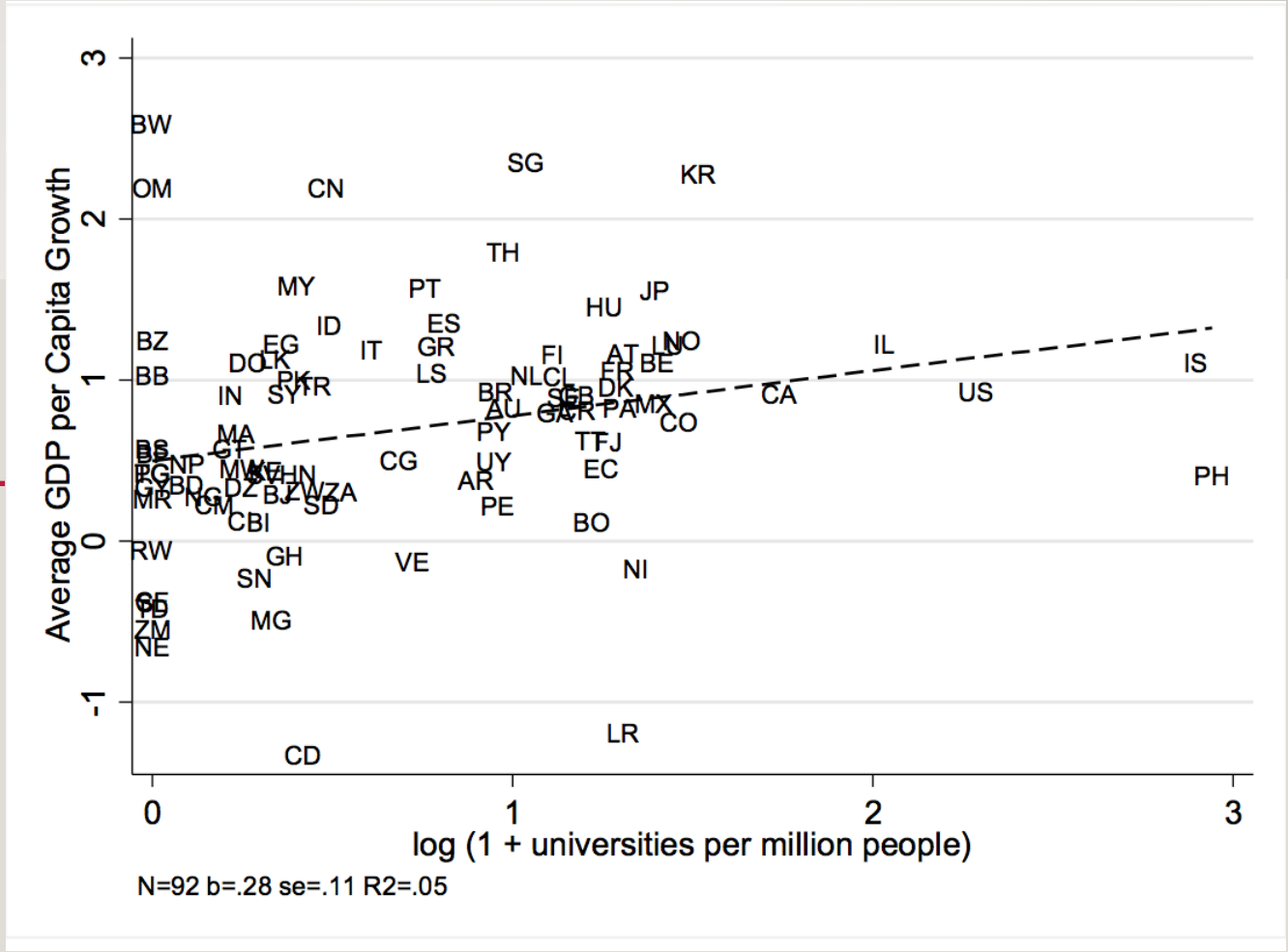
Notes: Each observation is a country in 2000. Source: WHED and World Bank GDP per capita



SCATTER PLOTS AT COUNTRY LEVEL, CROSS SECTION IN 2000

Universities in 1960 and GDP per capita growth (1960-2000)

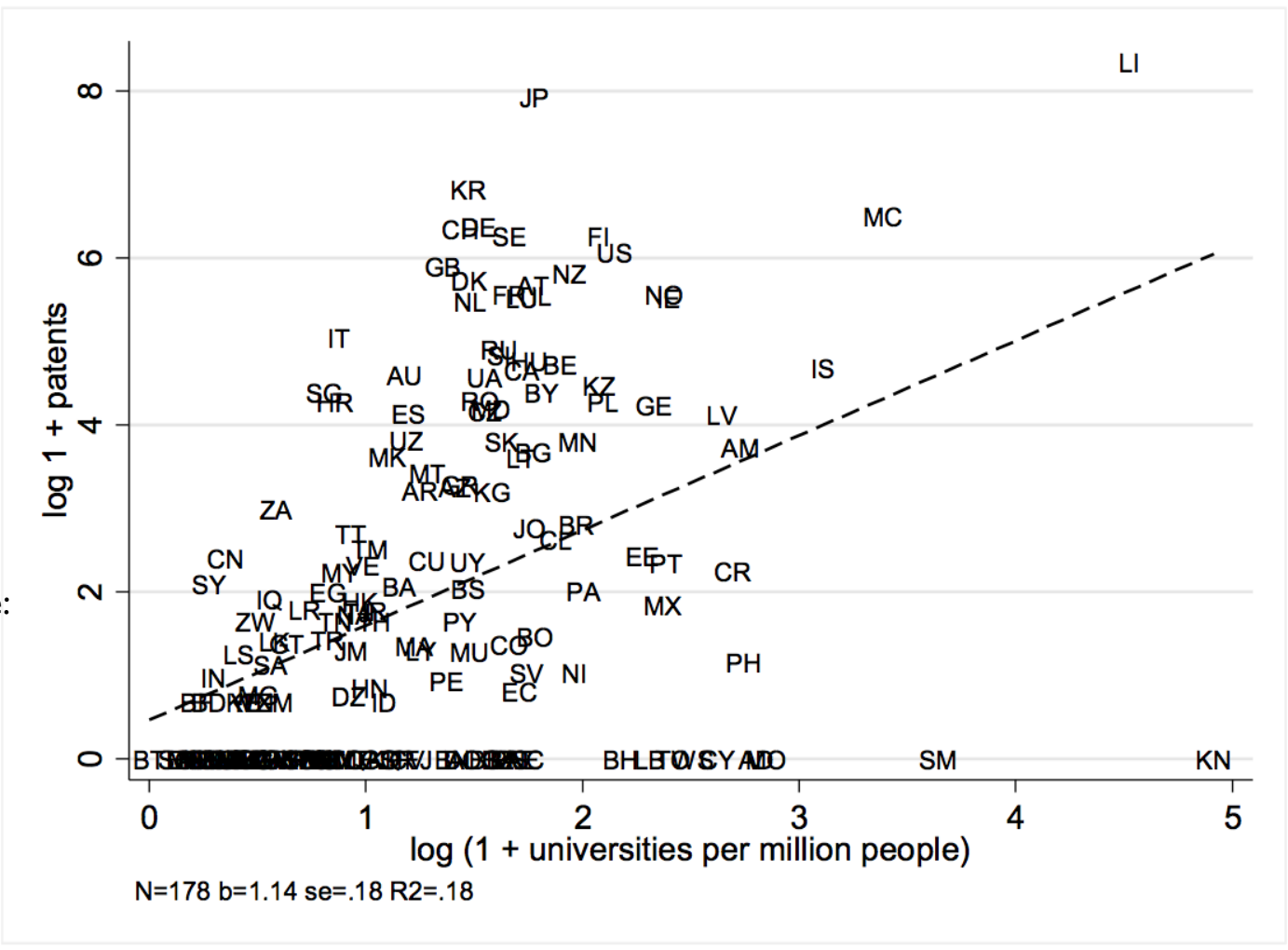
Notes: Each observation is a country. Average annual growth rates over the period 1960-2000 on the y axis. Source: WHED and World Bank GDP per capita



SCATTER PLOTS AT COUNTRY LEVEL, CROSS SECTION IN 2000

Universities and patents in 2000

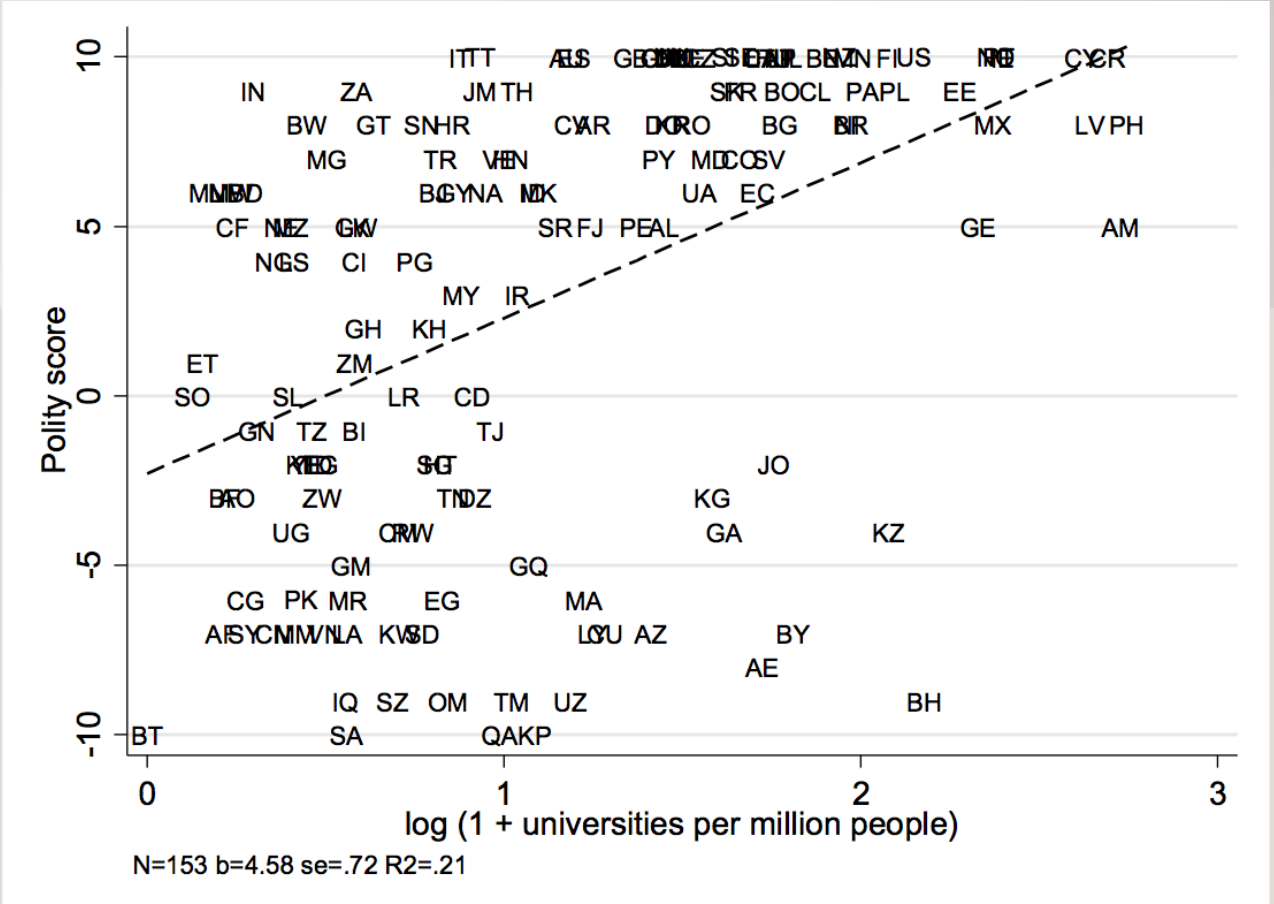
Notes: Each observation is a country in 2000. Source: WHED and patents from WIPO



SCATTER PLOTS AT COUNTRY LEVEL, CROSS SECTION IN 2000

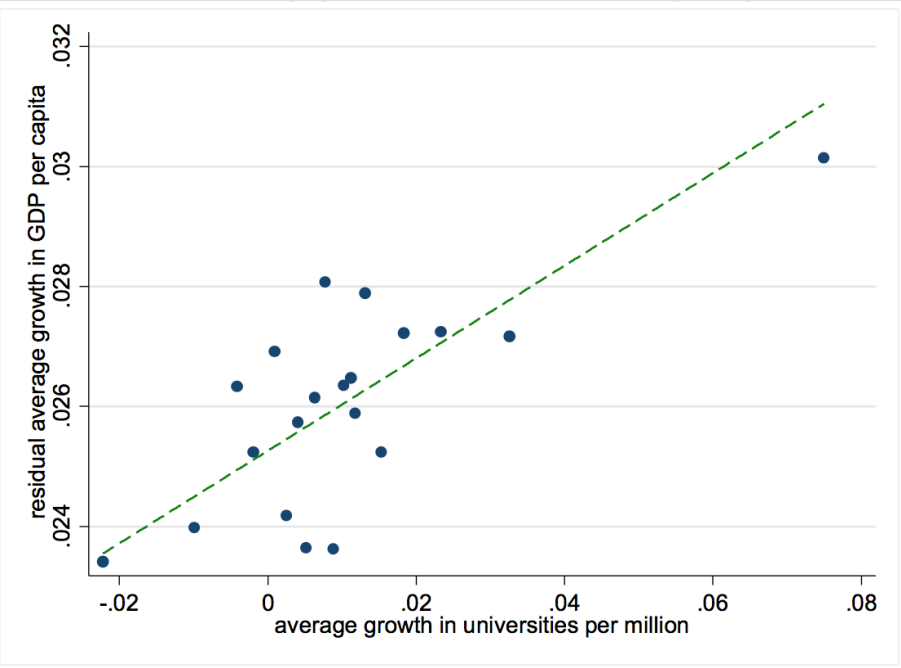
Universities and democracy in 2000

Notes: Each observation is a country in 2000. Source: WHED and Polity2 scores from Polity IV project

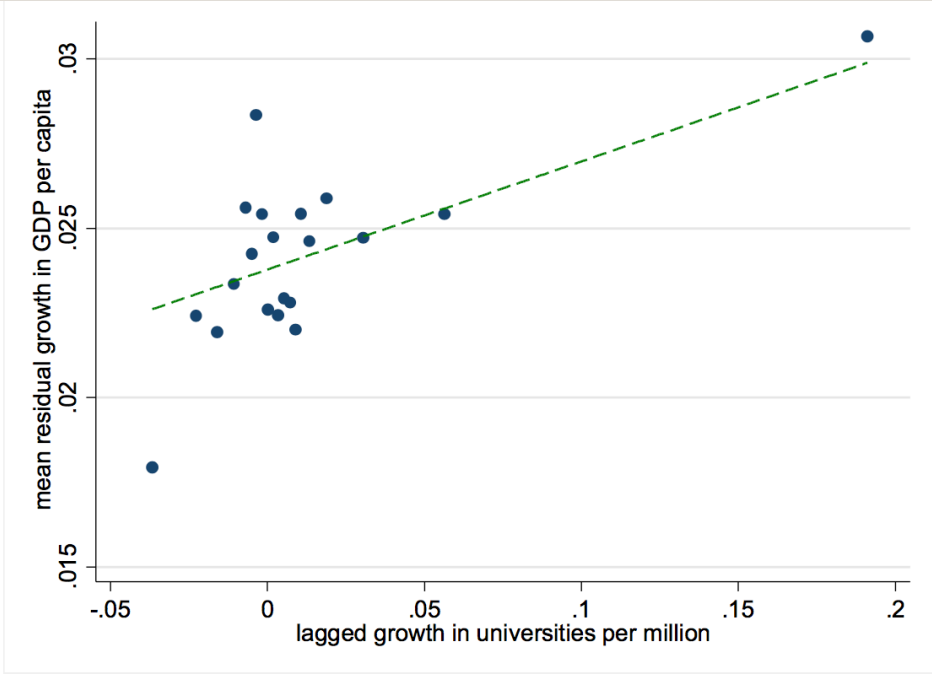


REGIONAL GDP PER CAPITA GROWTH AND UNIVERSITY GROWTH

PANEL A: AVERAGE GROWTH RATES, ONE OBSERVATION PER REGION



PANEL B: AVERAGE GROWTH RATES, REGION-YEAR OBSERVATIONS



CONCLUSIONS

- The benefit of universities is not confined to the region where they are built but "spills over" to neighboring regions, having the strongest effects on those that are geographically closest. Using these results, we estimate that the economic benefits of university expansion are likely to exceed their costs
- They find a role for innovation and human capital supply, although these are small in magnitude
- Universities play a role in promoting democracy, and that this operates over and above their effect as human capital producers