L&R
Uddannelse
EGMONT

Projekt 4.11 Zipfs lov – Et omfattende datamateriale præsenteret af Geographical Economics (engelsk tekst)

(Projektet baserer sig på et materiale fra *The New Introduction to Geographical Economics; 2nd edition, 2009*, af Steven Brakman, Harry Garretsen, and Charles van Marrewijk. Cambridge University Press

1. Hvad er Zipfs lov? Gå på nettet efter en mere generel forklaring, eller læs teksten nedenfor og forklar det konkret ud fra eksemplet med byernes udvikling i et givet land.

2. Nogle naturvidenskabsfolk mener, at loven er nærmest universel. Vi vil arbejde med det datamateriale, du finder adgang til nedenfor. Vælg lande fra forskellige kontinenter og på forskellige udviklingstrin og undersøg loven. Undersøg på nettet eller ved at spørge samfundsfag, om der findes forsøg på at forklare loven.

Zipf's Law, or the Rank-Size Distribution

 "Zipf's Law" is the name of a remarkable regularity in the distribution of city sizes all over the world, also known as the "Rank-Size Distribution". Take, for example, Amsterdam, the largest city in the Netherlands and give it rank number 1. Then take the second largest city, Rotterdam, and give it rank number 2. Keep on doing this for those cities for which you have data available, possibly selecting only cities exceeding a certain minimum size. If you calculate the natural logarithm of the rank and of the city size (measured in terms of the number of people) and plot the resulting data in a diagram you will get a remarkable log-linear pattern, this is the Rank-Size Distribution. If the slope of the line equals minus 1, as is for example approximately the case for the USA, India, and France, the relationship is known as Zipf's Law.

The remarkable log-linear relationship of the city-size distribution holds for virtually all countries. To demonstrate this, we have collected data on the city-size distribution for many countries, calculated Zipf's Law, and illustrated it in a figure. The results, containing cities with more than 100,000 inhabitants, are made in the Microsoft Office Excel '97 files downloadable below. The files distinguish between measurements of the "city proper" and the "urban agglomeration". When available the latter estimates of city sizes gives a more reliable view of Zipf's Law.

To use the files below you must have available either internet explorer or a version of Microsoft Office Excel '97 or up.

america.xls (405 kb)   europe.xls (531 kb)   index.xls (237 kb)

asia.xls (658 kb)   africa.xls (211 kb)

- opening the "index" file with Excel will now make the data available in the other files easily accessible.

Talmaterialet er ca 20 år gammelt. Forfatterne har senere tilføjet:

Our findings are in line with the main findings by Rosen and Resnick (1980) which was until very recently probably the most extensive study on the rank size rule. Until recently, that is to say until the paper by Kwok Tong Soo (2002) came along.

Using a new data set on 75 countries Soo finds the slope to be 0.90 for cities proper and 1.17 for urban agglomerations (based on a smaller sample and data that are not as good as in Soo (2002), we find these coefficients to be respectively 0.88 and 1.05). In line with the work by for instance Ades and Glaeser (1995), Soo also finds that variations of the slope are better explained by political variables than by economic geography variables like proxies for economies of scale or transportation costs.

Kwok Tong Soo, 2002, Zipf's Law for Cities: A Cross Country Investigation, *mimeo.* An updated version has been published in 2005 in *Regional Science and Urban Economics* 35(3): 239-263.

The data set used in Soo's study is compiled by Thomas Brinkhoff, City Population, http://www.citypopulation.de

Denne website indeholder et omfattende datamateriale til illustration af befolkningstilvækst i byer og bydele verden over.