

## World Flash on Basic Research

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### SCIENTOMETRIC VERSUS SOCIO-ECONOMIC INDICATORS. SCATTER PLOTS FOR 51 COUNTRIES, 1978–1980

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#### Comments to Figures 1–10

*Previous basics:* scientometric indicators used in the following figures are identical with those reported in T. BRAUN, W. GLÄNZEL, A. SCHUBERT: One more version of the facts and figures on publication output and relative citation impact of 107 countries, 1978–1980, *Scientometrics*, 11 (1987) 9 and 11 (1987) 127.

*Data sources:* annual cumulations of the magnetic tapes of the *Science Citation Index (SCI)* database of the Institute for Scientific Information (ISI, Philadelphia, PA, USA) were used as source of scientometric data.

Population, GNP, and energy consumption data are from “Development Indicators.” In: *World Development Report 1982*. Published for the World Bank by Oxford University Press, 1982.

Source of telephone data is “The World’s Telephones. A Statistical Compilation as of January 1981”, AT&T Long Lines, Morris Plains, NJ, USA, 1982.

*Source and citation periods:* original papers, review papers, notes, and letters published in the *SCI* source journals in 1978–80 were considered source items, and citation to them in the two years following their publication were counted. Thus, e.g., mean citation rate per paper was calculated as 1979–80 citations to 1978 papers plus 1980–81 citations to 1979 papers plus 1981–82 citations to 1980 papers divided by the number of publications in 1978–80.

*Selection of countries:* all countries, which produced at least 300 first authored papers in the source period were included. (Papers were assigned to countries accord-

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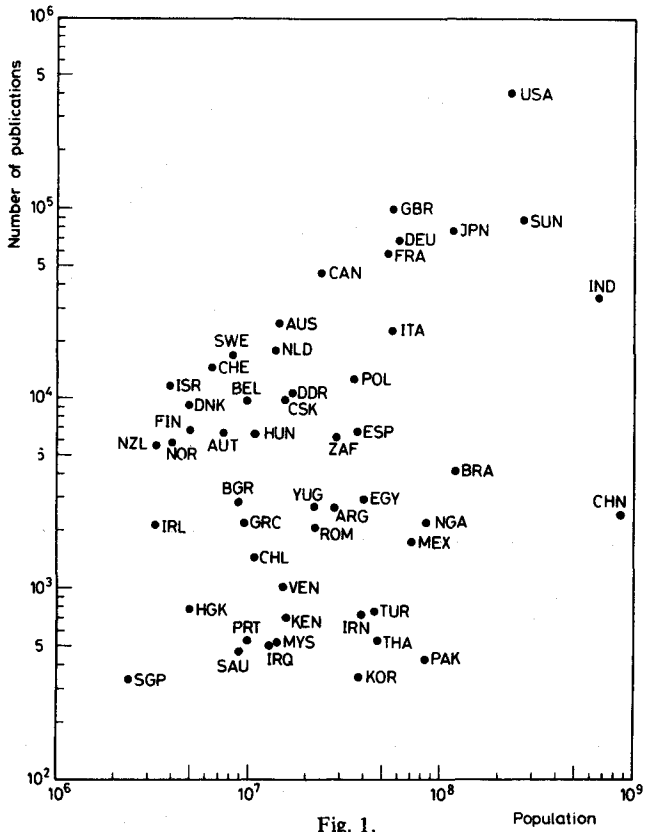


Fig. 1.

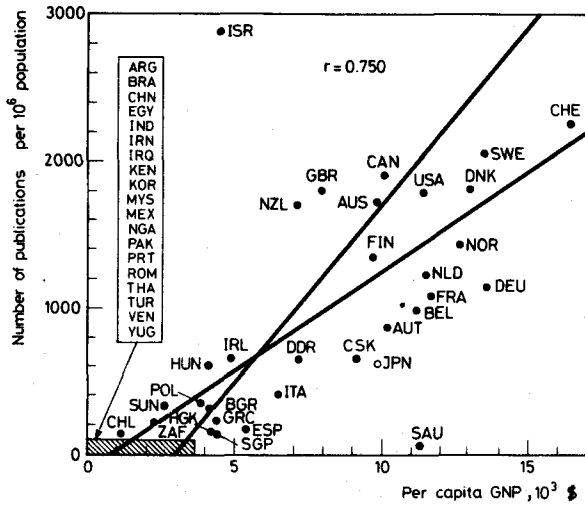


Fig. 2.

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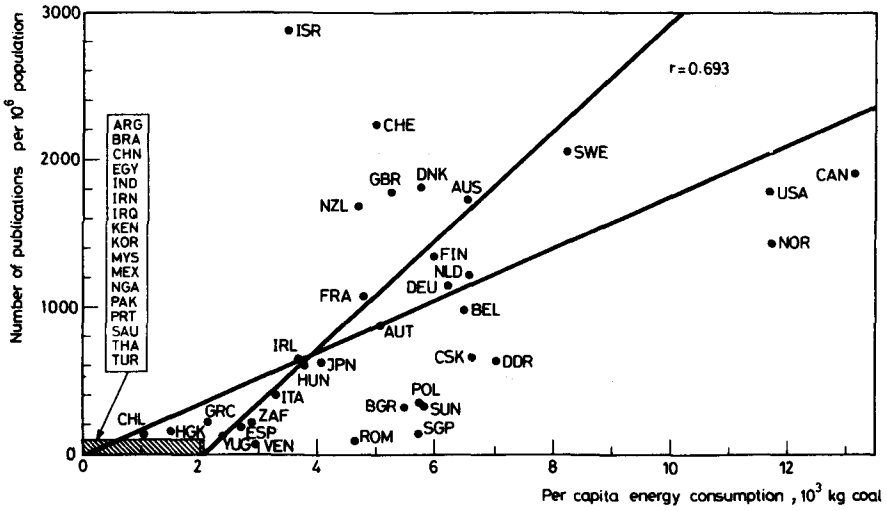


Fig. 3.

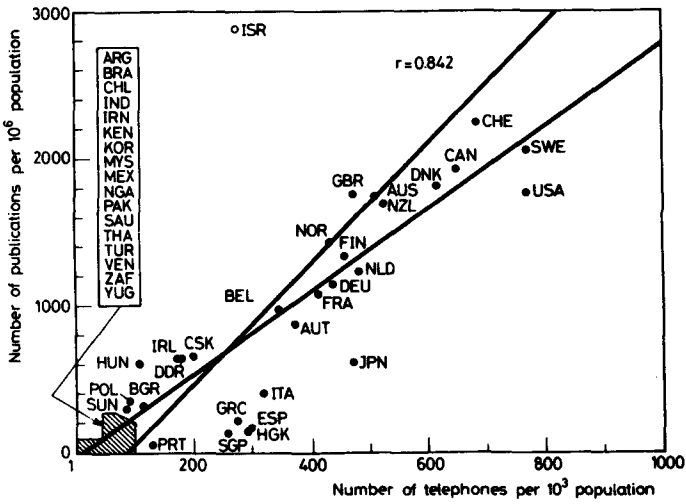


Fig. 4.

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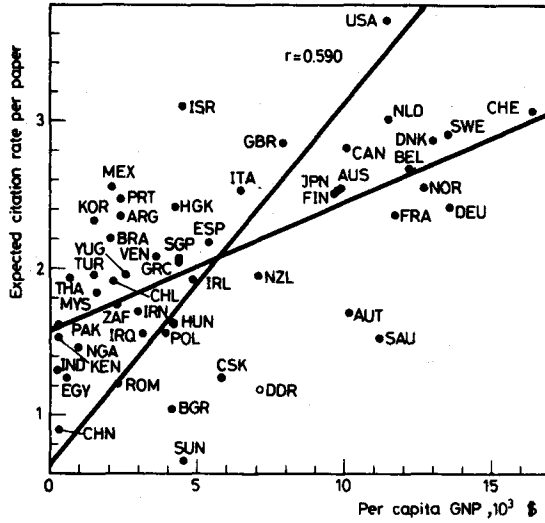


Fig. 5.

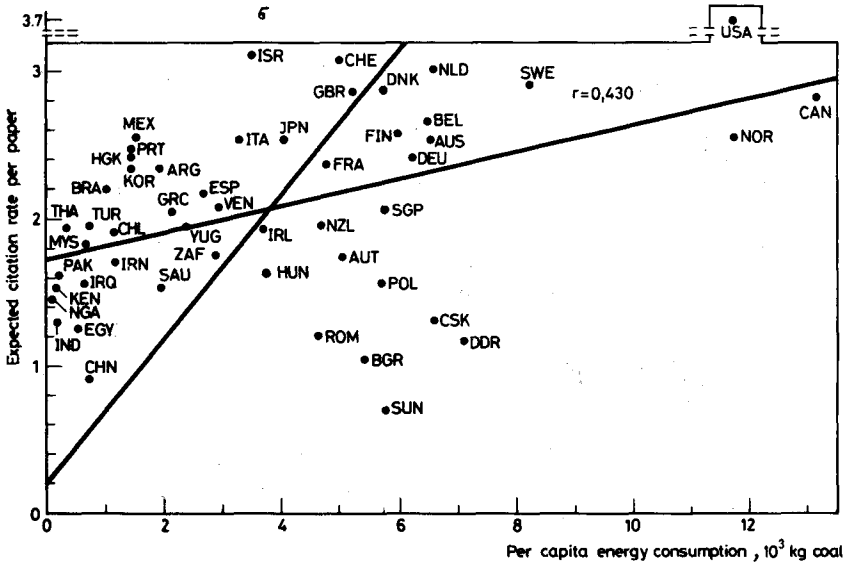


Fig. 6.

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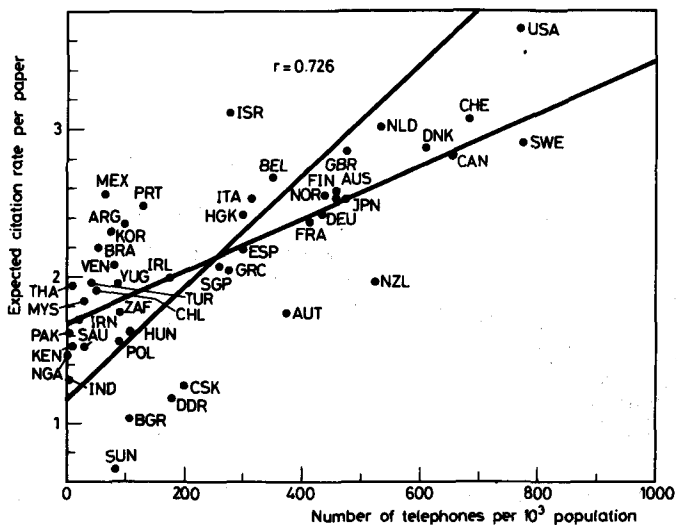


Fig. 7.

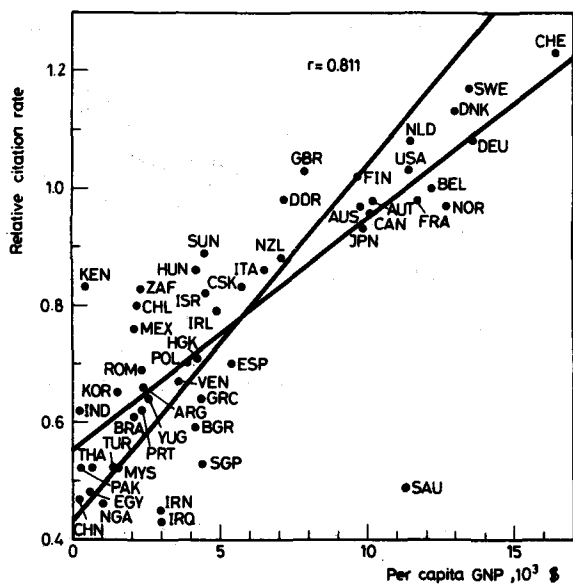


Fig. 8.

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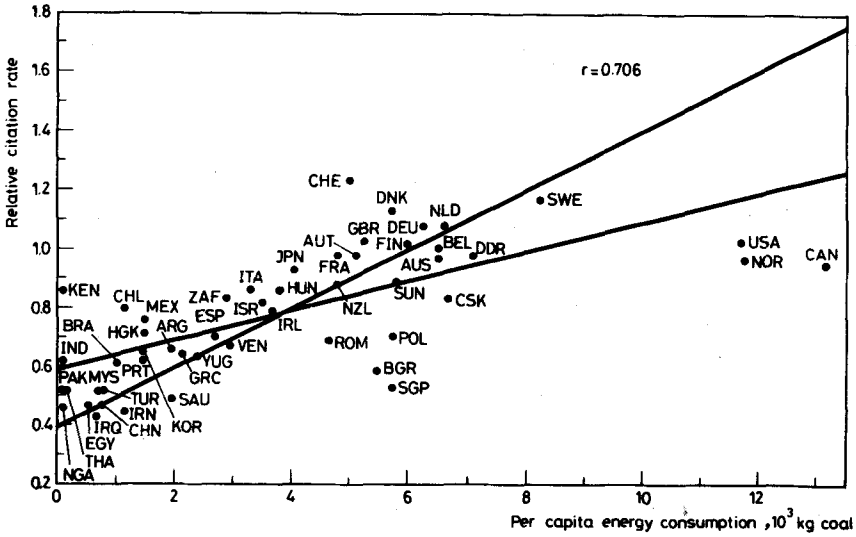


Fig. 9.

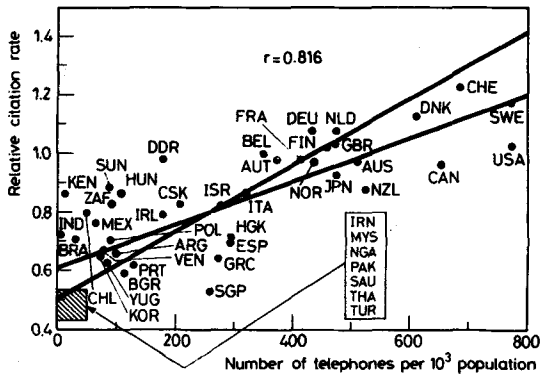


Fig. 10.

ing to the corporate address of the first author as indicated in the byline of the publication.)

*Citation indicators:* Indicators of the type "citation rate per paper" are to be interpreted as mentioned above, i.e., considering counts of three two-years citation periods and one three-years source period (1978–80). Expected citation rates were calculated from the average citation rates of the journals involved. Actual citation rates were

the results of direct citation counts. Relative citation rate means the ratio of actual to expected citation rates.

*Correlation coefficients and regression lines:* coefficients of correlation ( $r$ ) between each scientometric – socio-economic indicator pair are indicated in Figs 2–10. The closer the value of  $r$  to 1.0, the closer the relationship between the indicators concerned. The two crossing straight lines are the regression lines corresponding to the best linear approximations of the interrelation between the two variables concerned. The angle of inclination between the two lines indicates the strength of correlation: if  $r = 1$  then the two lines coincide, in case of  $r = 0$ , the two lines are orthogonal to each other. Strikingly, the highest correlation with the scientometric indicators is shown by the *number of telephones* indicator. This underlines the impact of the infrastructural environment on the quality and quantity of scientific research.

*Country codes:* trilateral country codes according to ISO standard are used throughout the figures:

ARG	Argentina	KEN	Kenya
AUS	Australia	KOR	Korea
AUT	Austria	MYS	Malaysia
BEL	Belgium	MEX	Mexico
BRA	Brazil	NLD	Netherlands
BGR	Bulgaria	NZL	New Zealand
CAN	Canada	NGA	Nigeria
CHL	Chile	NOR	Norway
CHN	China	PAK	Pakistan
CSK	Czechoslovakia	POL	Poland
DNK	Denmark	PRT	Portugal
EGY	Egypt	ROM	Romania
FIN	Finland	SAU	Saudi Arabia
FRA	France	SGP	Singapore
DDR	German Democratic Republic	ZAF	South Africa
DEU	Germany, Federal Republic	ESP	Spain
GRC	Greece	SWE	Sweden
HGK	Hong Kong	CHE	Switzerland
HUN	Hungary	THA	Thailand
IND	India	TUR	Turkey
IRN	Iran	GBR	United Kingdom
IRQ	Iraq	USA	USA
IRL	Ireland	SUN	USSR
ISR	Israel	VEN	Venezuela
ITA	Italy	YUG	Yugoslavia
JAP	Japan		