

The Growth Rate of Science and the Coverage of Databases

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Institut für Forschungsinformation und Qualitätssicherung

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Background

The “Input – Output” conundrum:

Comparisons of inputs and outputs evince a paradox

(Shelton R.D. 2008, *Relations between national research investment and publication output – Application to an American paradox* Scientometrics 74 (2); 191-205)

Is the growth rate of output in China sustainable?

(Larsen P.O., Maye I. & von Ins M. 2008, *Scientific Output and Impact; Relative Positions of China, Europe, India, Japan and the USA*; in H. Kretschmer & F. Havemann (Eds.): Proceedings of WIS 2008, Berlin)

Scientific publication numbers grow much faster than population

(Price D.J. d. S. 1963, *Little Science Big Science*; Columbia University Press, New York.)

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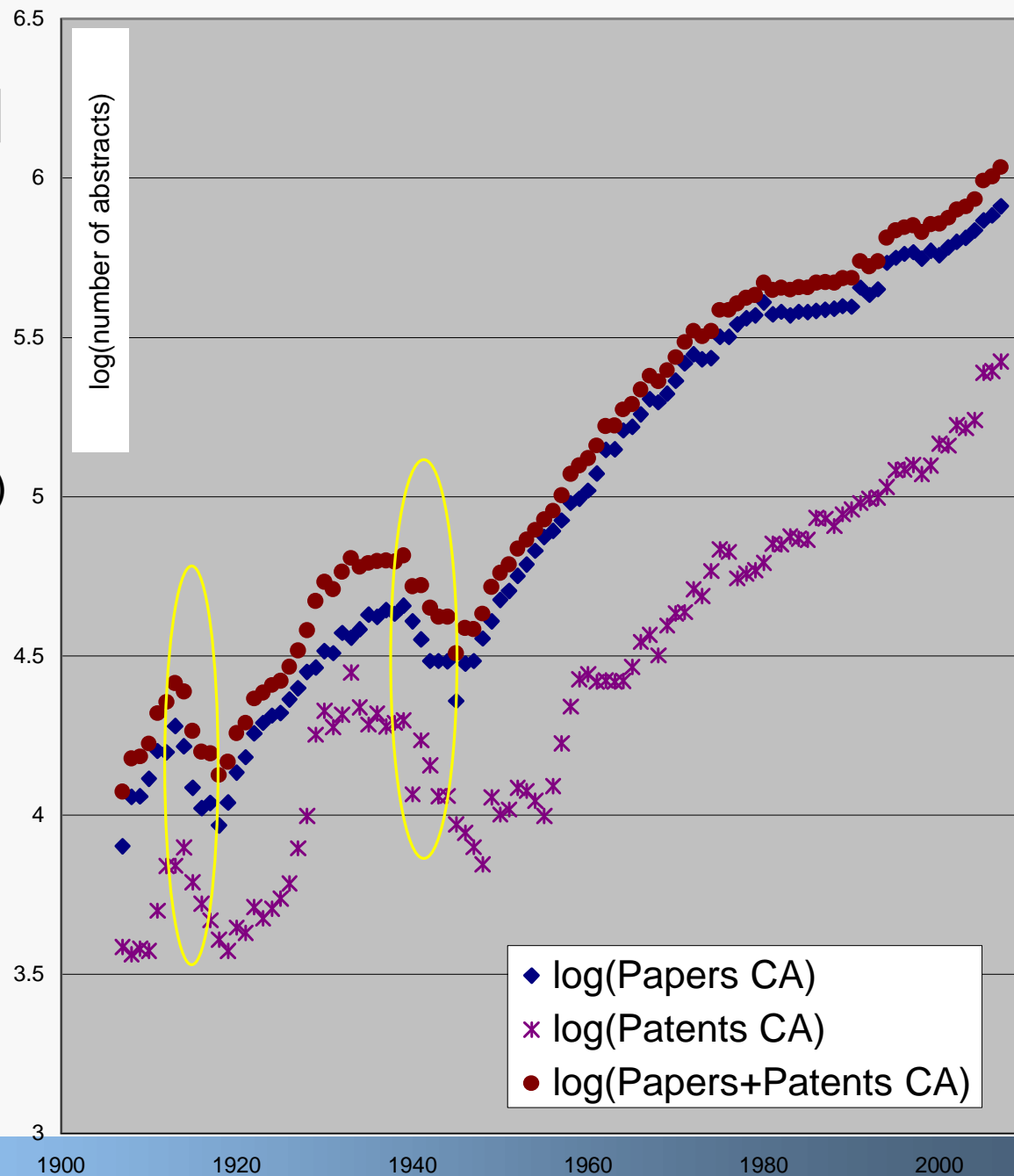
Results and Discussion

Expected and unexpected trends in

Chemical Abstracts (CA) in the past century

Source

Chemical Abstracts
1907 – 2007



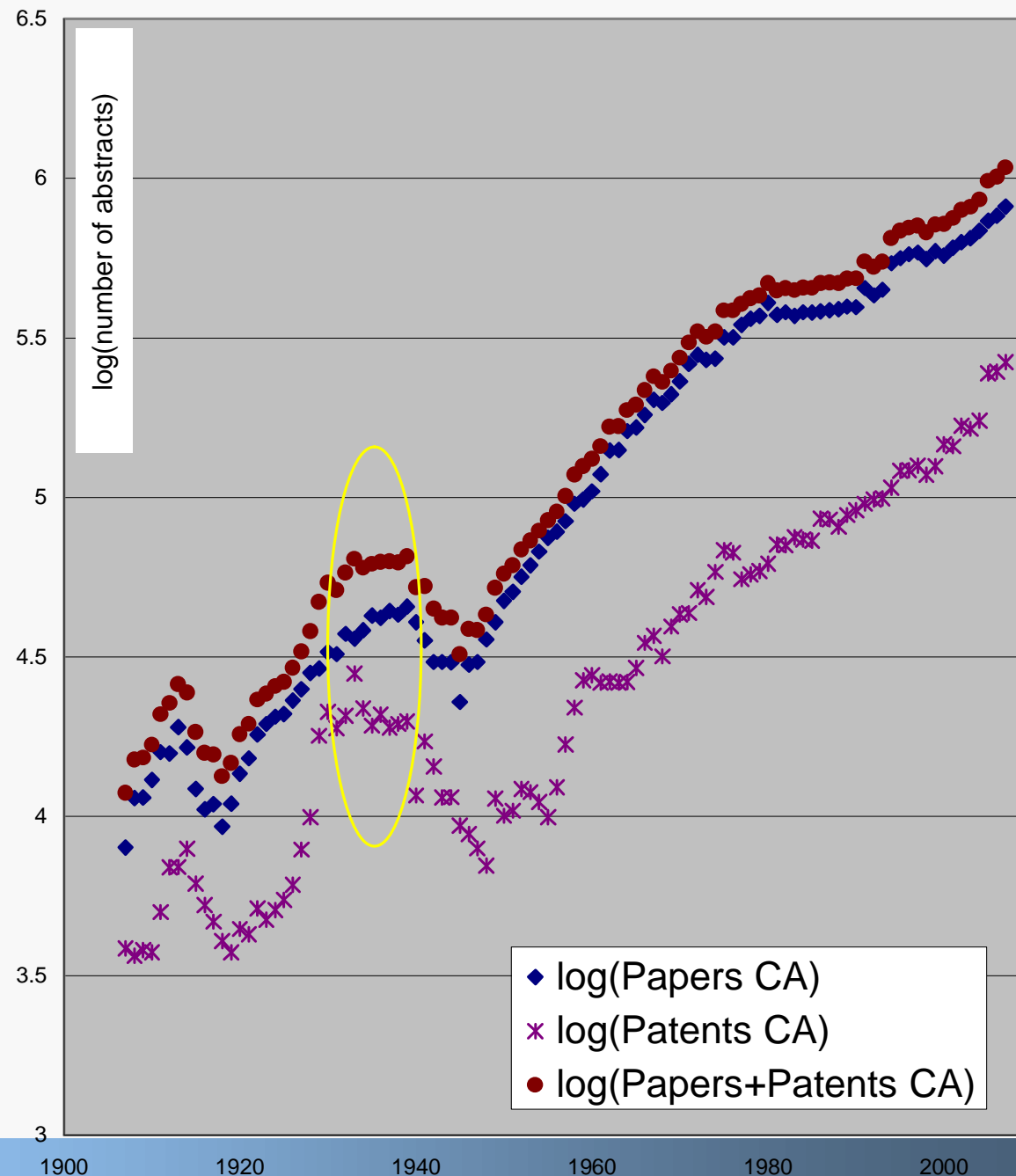
Results and Discussion

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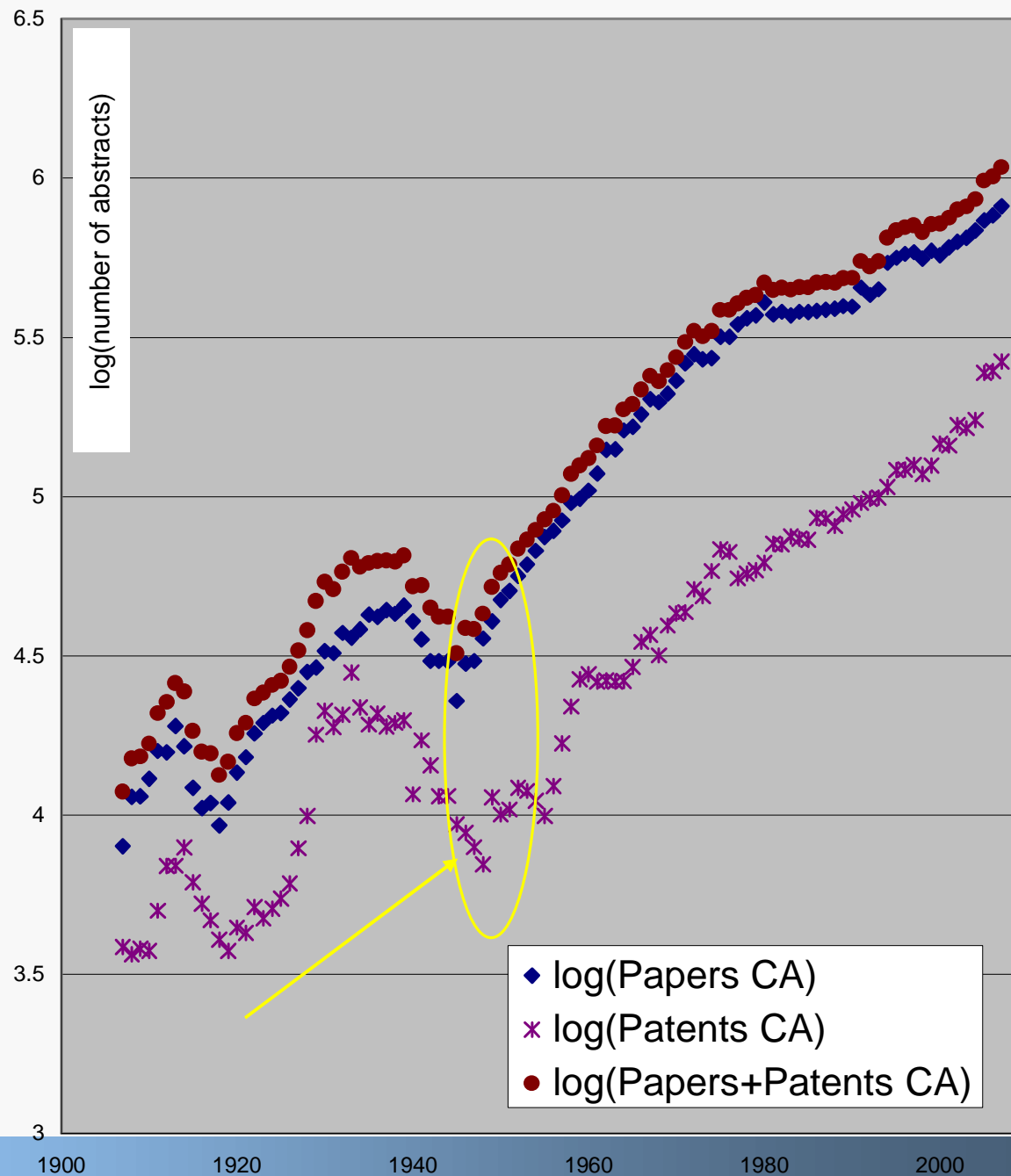
Expected and unexpected trends in

Chemical Abstracts in the past century

Source

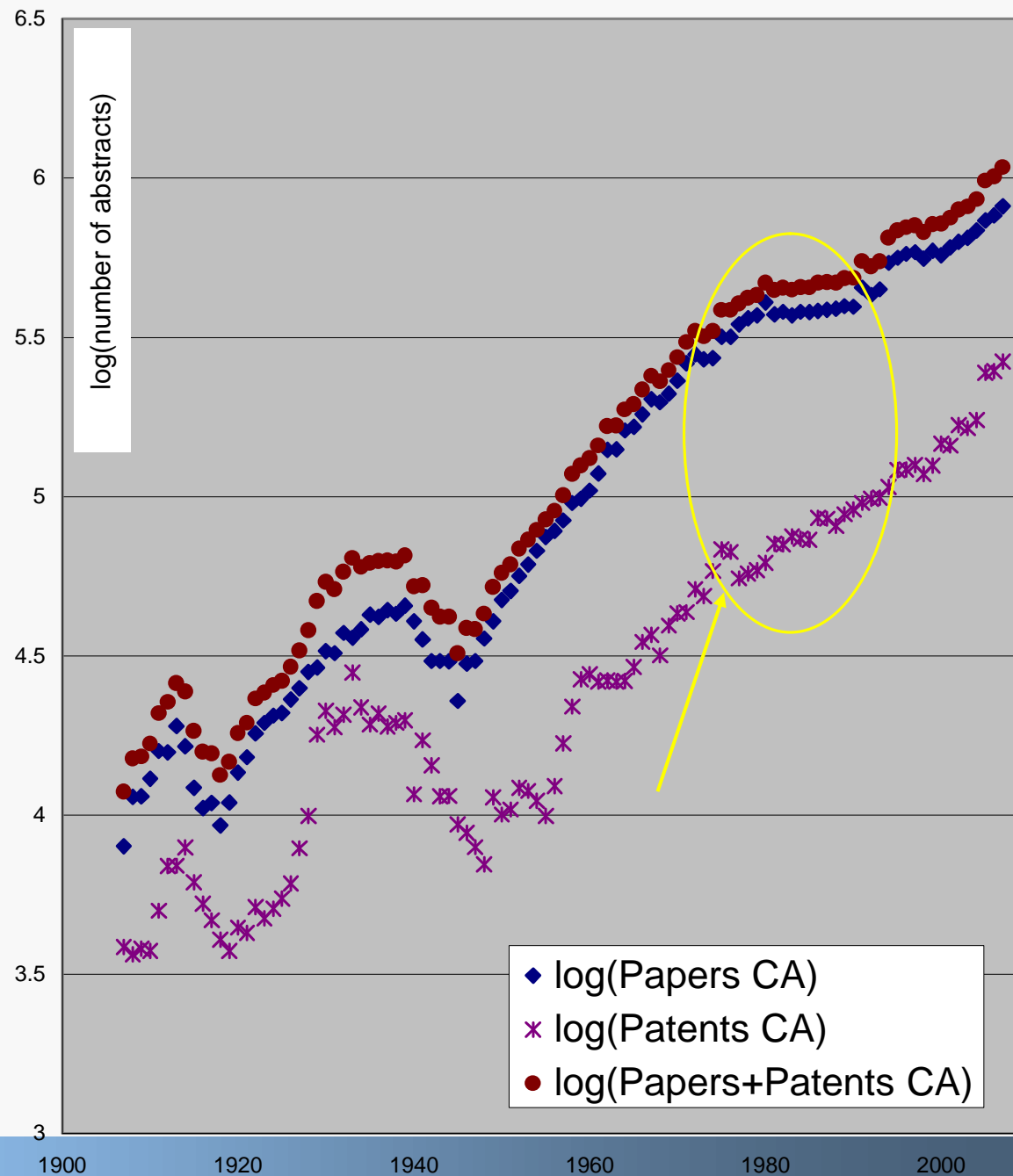
Chemical Abstracts

1907 – 2007



Results and Discussion

Expected and unexpected trends in Chemical Abstracts in the past century
Source: Chemical Abstracts 1907 – 2007



Results and Discussion

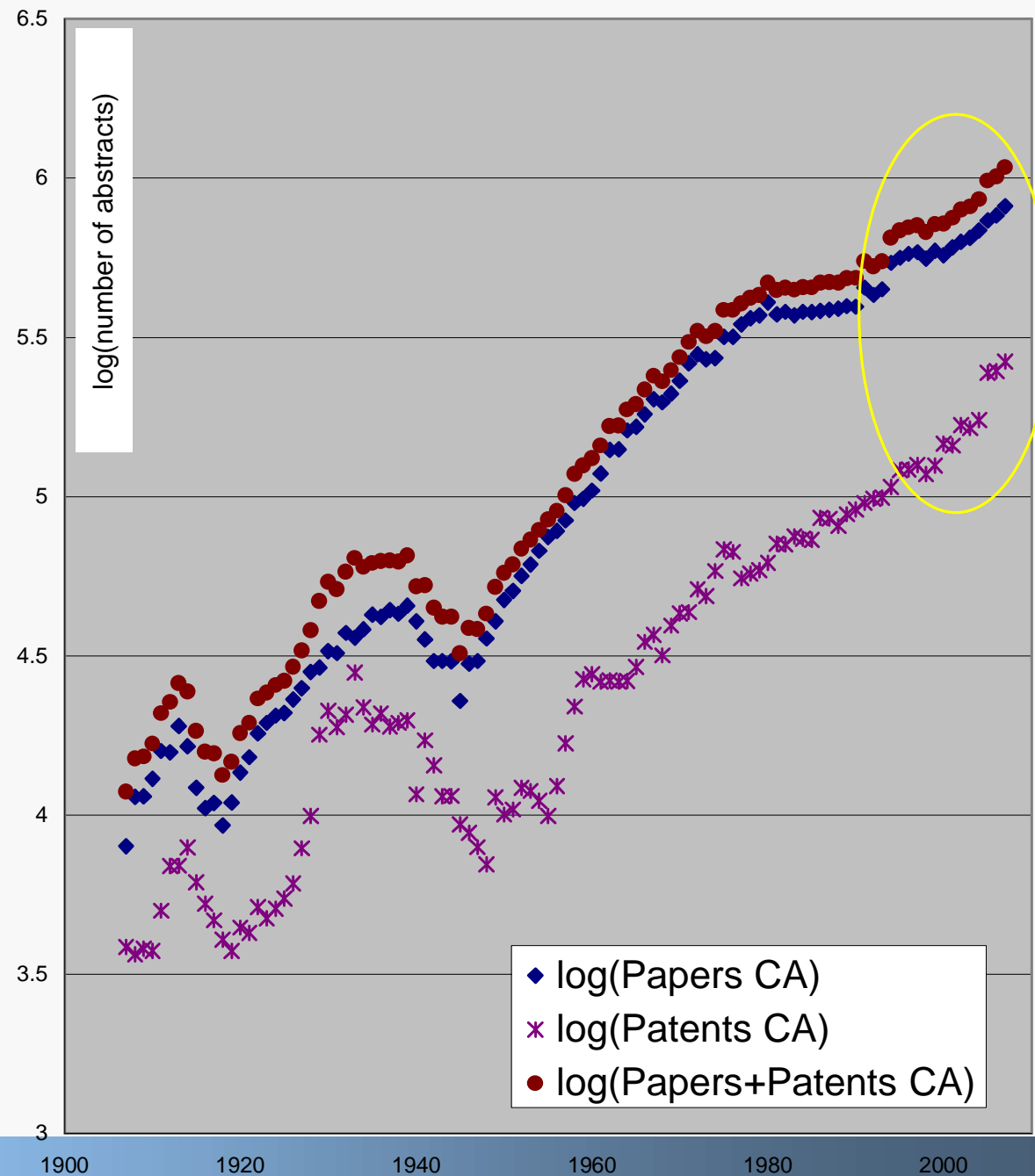
Expected and unexpected trends in

Chemical Abstracts in the past century

Source

Chemical Abstracts

1907 – 2007



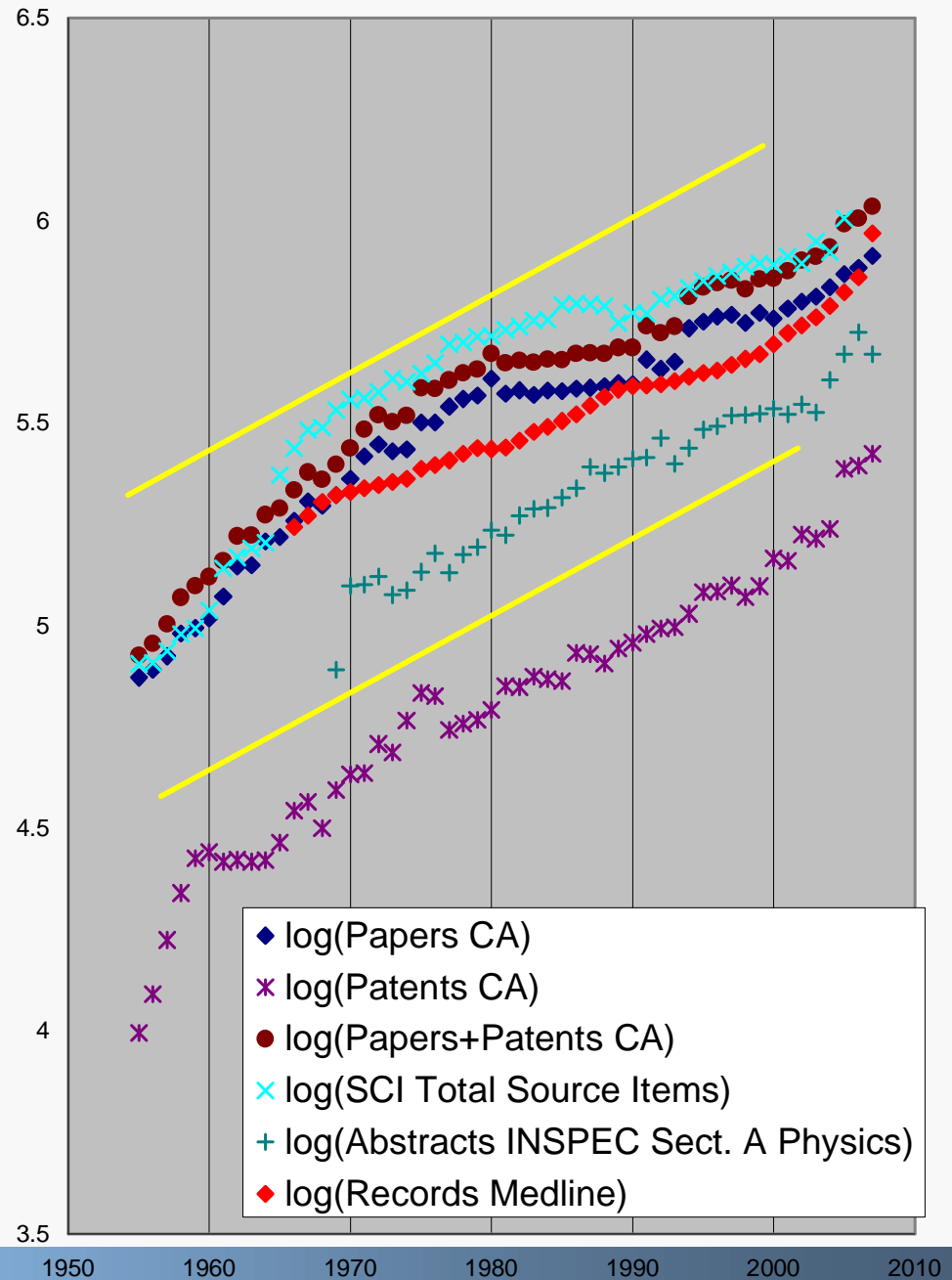
Results and Discussion

Sources:

Chemical Abstracts (CA)
Science Citation Index (SCI)
INSPEC Section A Physics
MEDLINE

Yellow lines indicate a doubling in 15 years

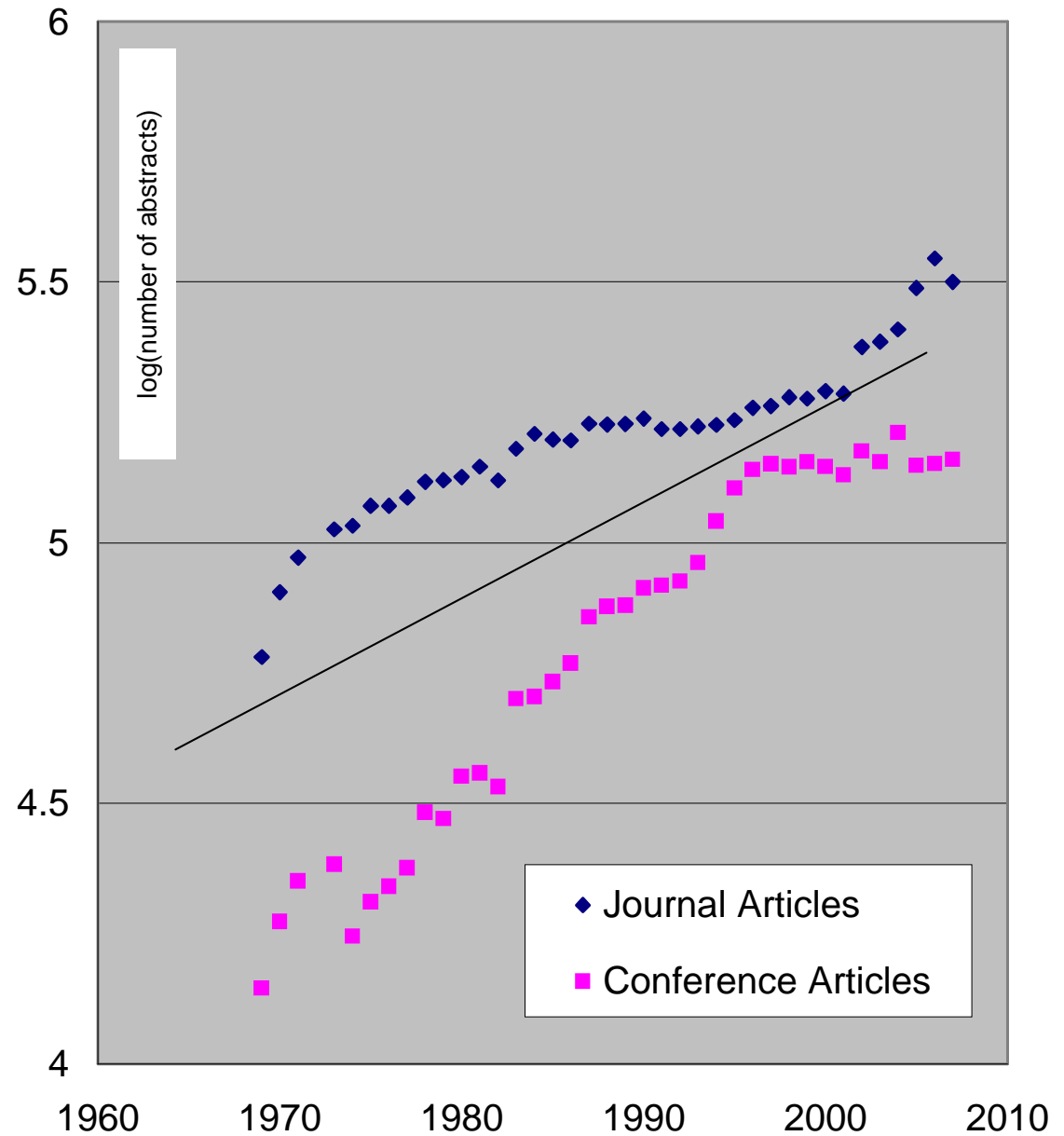
Butler L. and Visser M.S., 2006.
Extending Citation Analysis to
Non-Source Items,
Scientometrics, 66(2):327-343.



Results and Discussion

Source:
INSPEC (all sections)

The black line indicates a doubling in 15 years



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The total output of science grows much faster – doubling in 15 years - than all kinds of measurable inputs – doubling in 30-50 years.

Similar to the Social Sciences and Humanities there are several publication channels to be observed in the sciences.

The former Golden Standard of articles in scholarly journals faces increasing competition from Conference Proceedings and Open Access Online Publications and Journals.

Scientists in different disciplines use different publication channels.

Scientific literature databases based on articles in scholarly journals cover a declining part of the scientific literature and this has to be taken into account when output analyses based on literature databases focused on special types of publications are performed.

Thank you for your attention.



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