



THE COUNCIL FOR CHEMICAL RESEARCH

CCR Phase II Study
***“Measure for Measure:
Chemical R&D Powers the
U.S. Innovation Engine”***

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President & Executive Director



CCR Study

In the Fall 1999, the CCR commenced a special study with the objective:

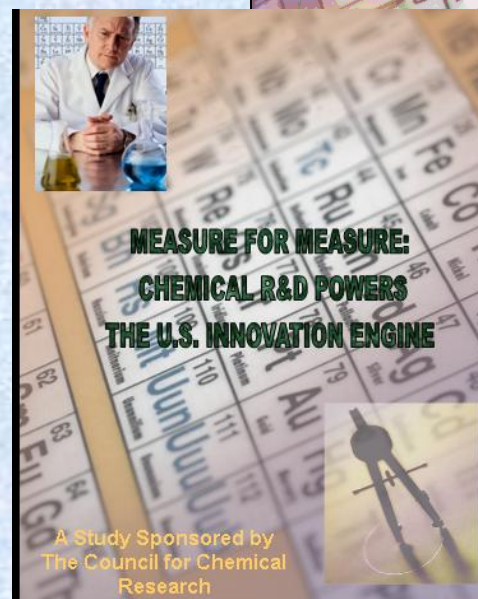
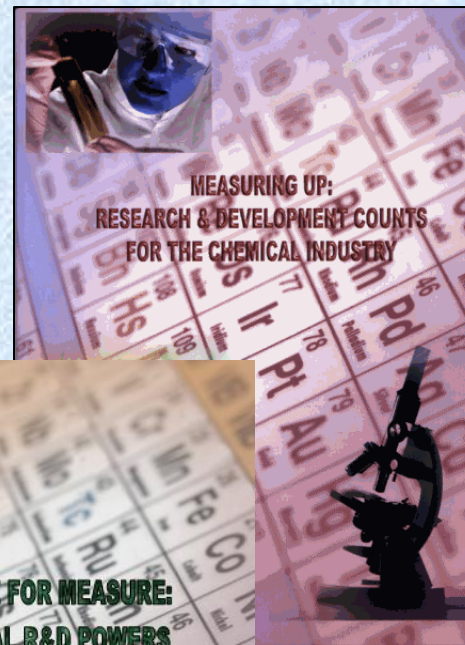
Measure the impact (return or payoff) of chemical research and development

- Provide comprehensive and quantitative results**
- Use leading edge methodologies**
 - Econometric production function (Dr. Baruch Lev, NYU)**
 - Bibliometric analysis (Dr. Francis Narin, CHI Research, now ipIQ)**



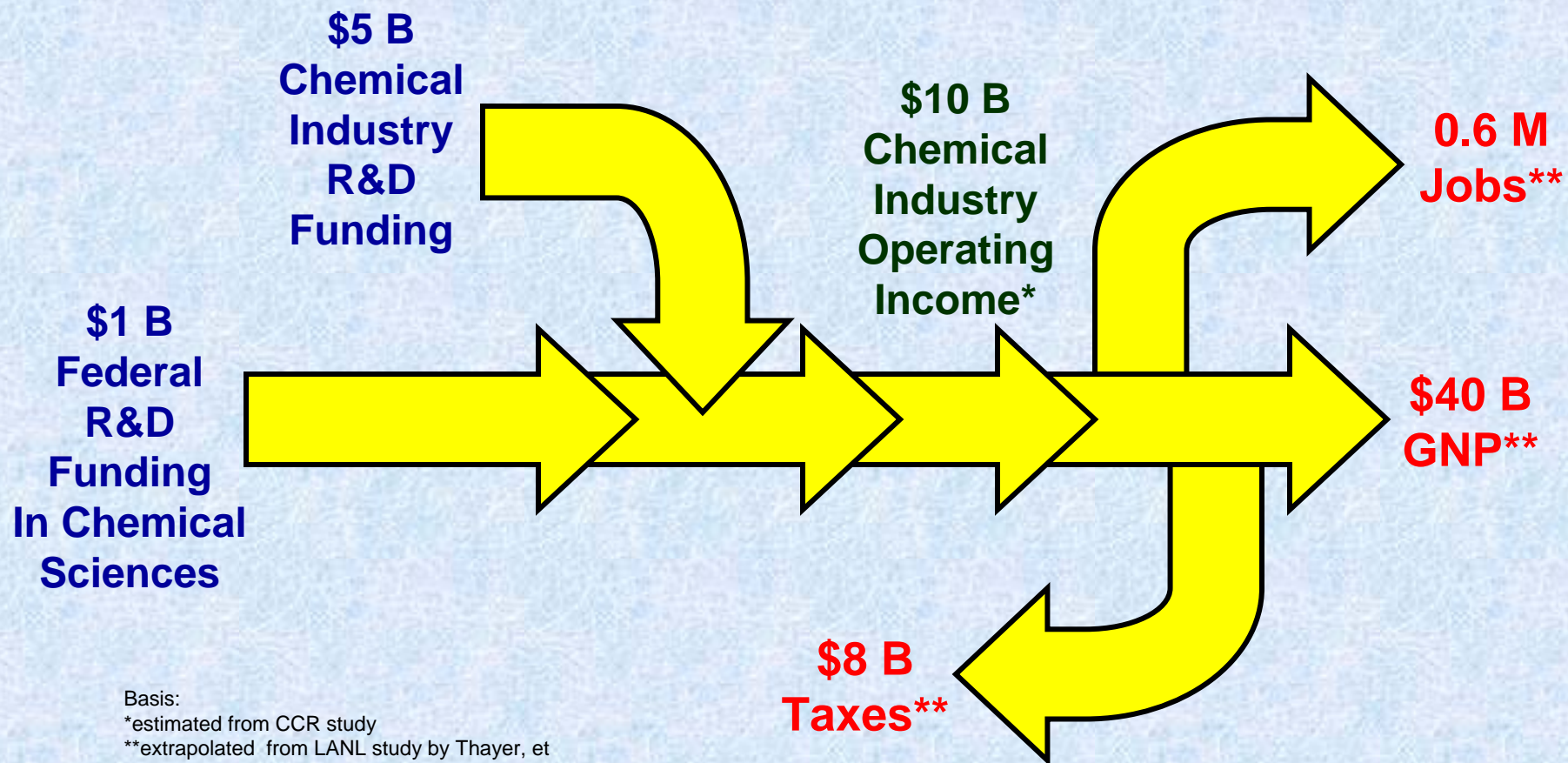
CCR Study Results

- Results of the 5 year (2 phase) study were published in two reports:
 - *“Measuring Up: R&D Counts for the Chemical Industry”* – 2001
 - *“Measure for Measure: Chemical R&D Powers the U.S. Innovation Engine”* - 2005





Macroeconomic Implications



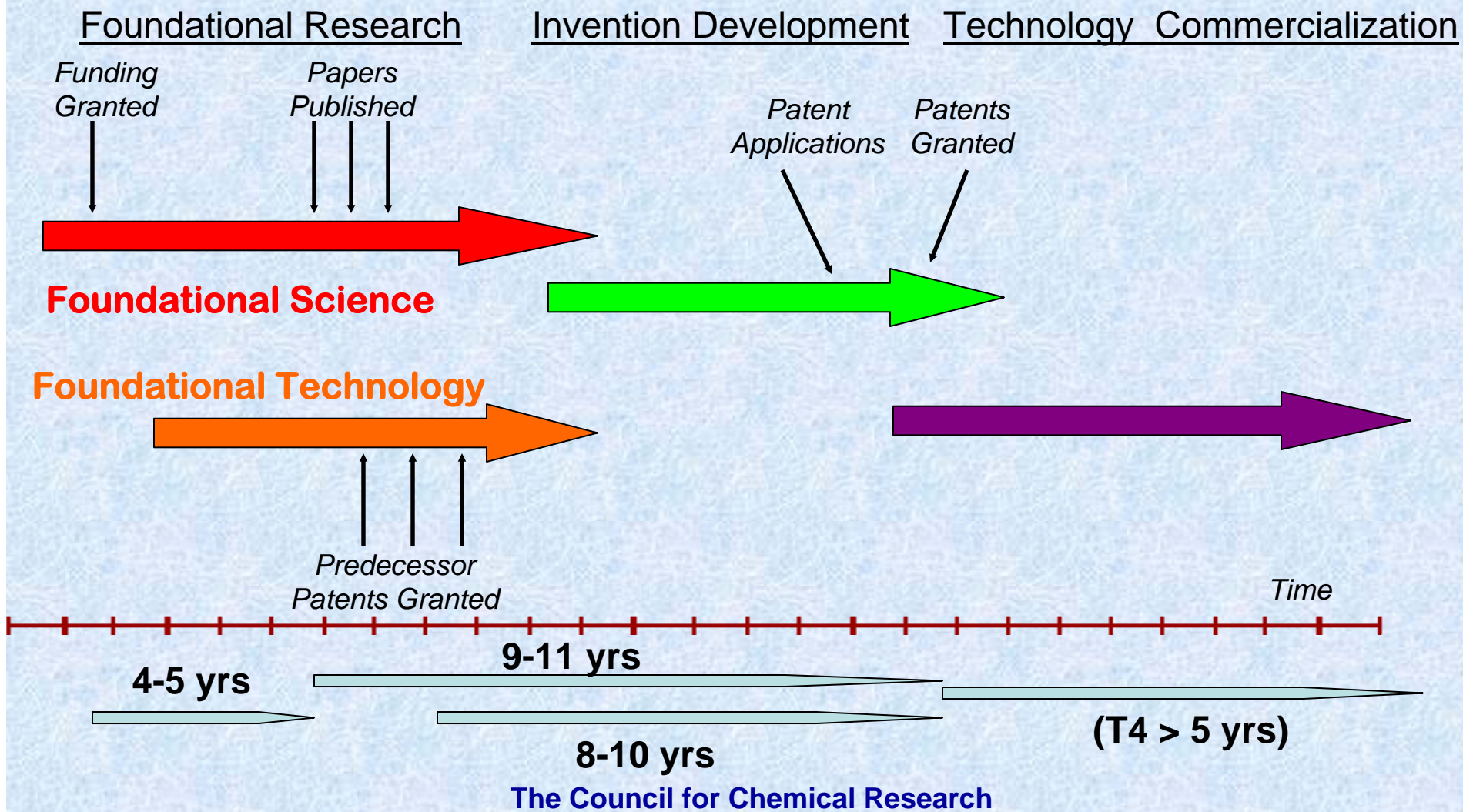
Basis:

*estimated from CCR study

**extrapolated from LANL study by Thayer, et al., April 2005 using REMI economic model



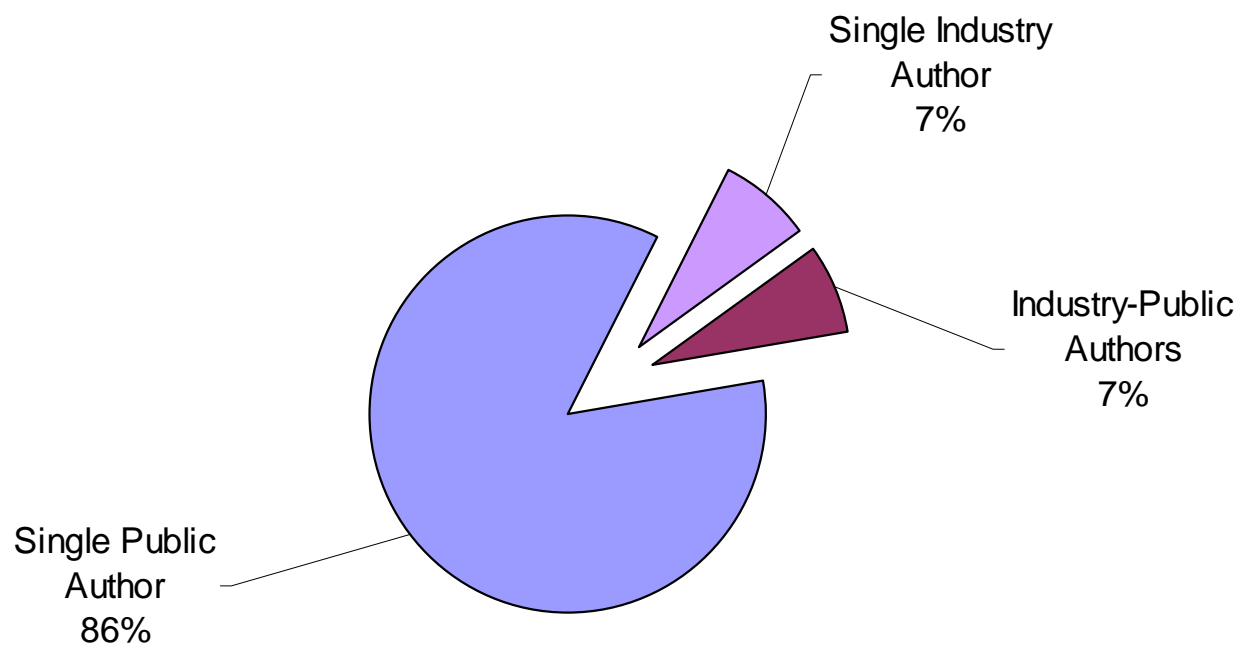
Timeline from Conception to Market





Limited Collaboration in Cited Papers

Collaboration Between Industry and Public Authors





Overall Conclusions

- Chemical companies get \$2 of operating income for every \$1 of R&D invested; that's a 17% after tax return
- Chemical technology is highly dependent on publicly funded chemical science research
- U.S. economy gains roughly \$40 dollars in GDP growth and \$8 in increased tax revenues for every dollar of federal investment in chemical sciences research
- **Technology quality, innovation speed and strong scientific links deliver greater shareholder value**
- **All industries are significantly impacted by the chemical sciences. It is the most enabling science and technology**
- The big opportunity is to reduce the 20-year innovation time lag from initial public research funding to commercialization



Phase III Plans

Determine Optimum Level of Public and Private R&D Spending

- Previous studies, including CCR Phase I & II, indicate rates of return above marginal cost of capital; inconsistent with economic theory
- Need to analyze whether spending consistent with theory and why or why not
- Develop tools to enable public and private policy makers to ascertain priorities and optimal level of R&D spending