

R&D: changing patterns and implications for growth

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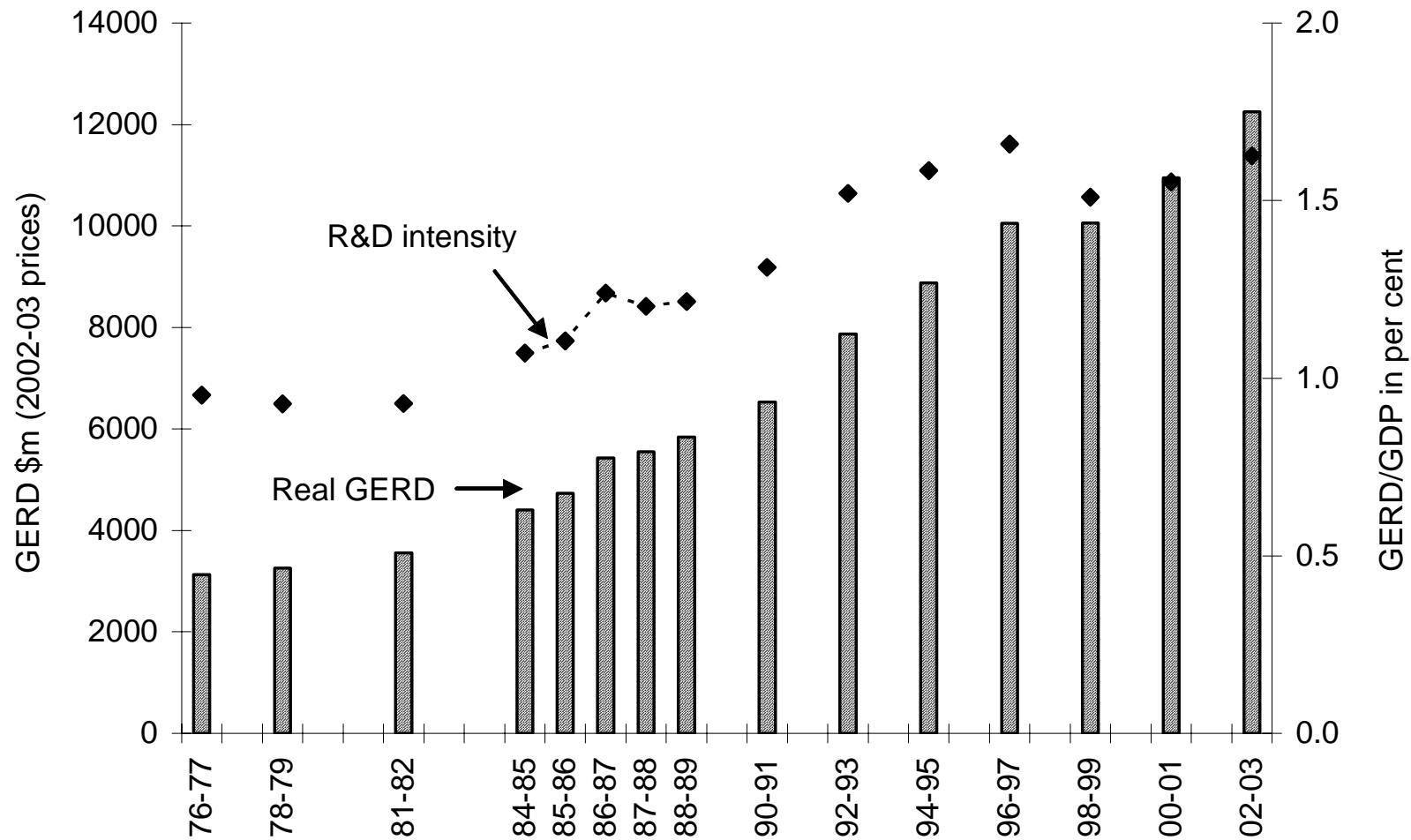
Australian Government
Productivity Commission

Goals of the project

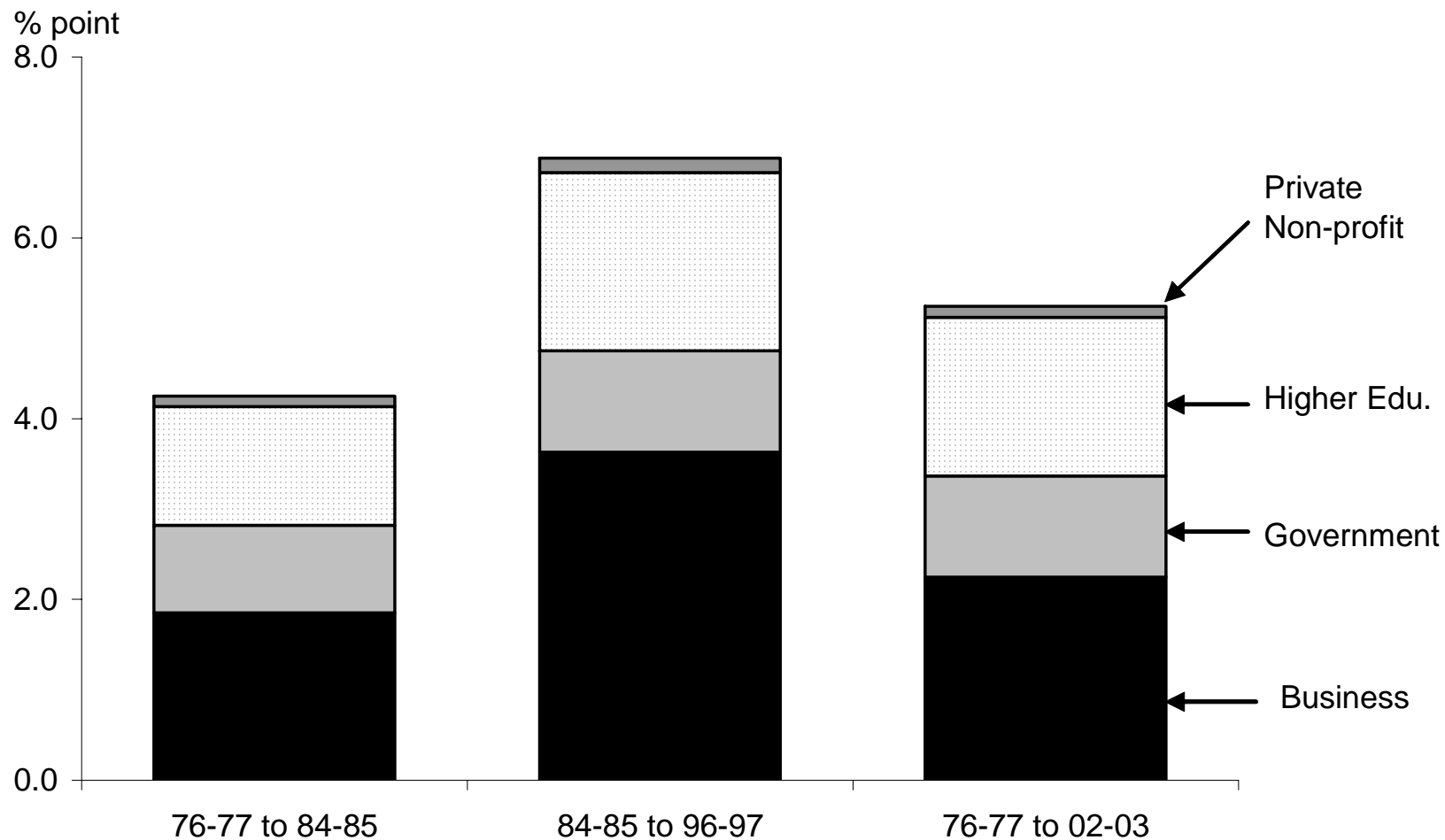
- ❑ Investigate changes in the nature and industry mix of R&D
- ❑ Investigate the drivers of R&D effort
- ❑ Investigate the influence of R&D on industry and national productivity growth



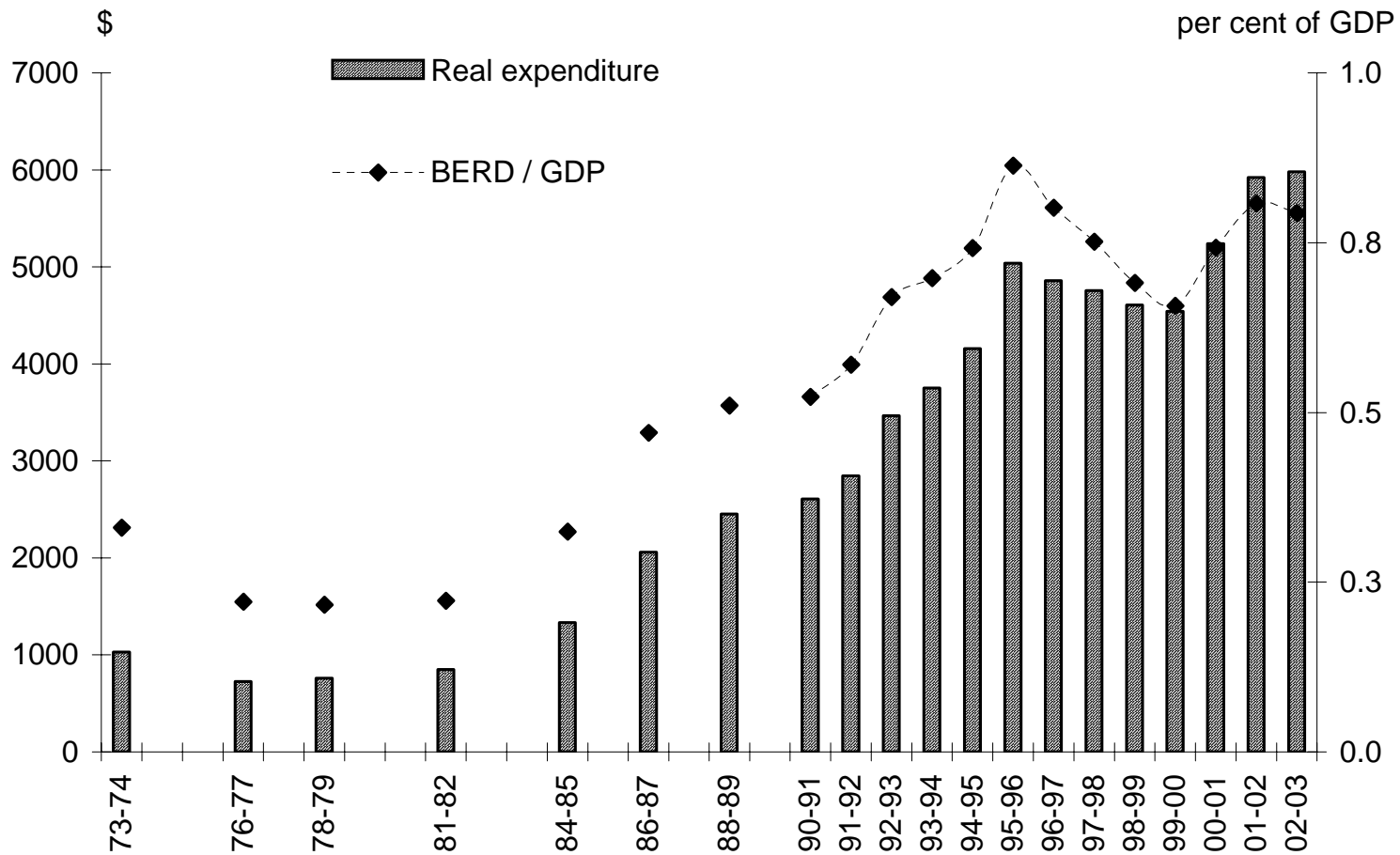
The long run increase in Australian R&D activity



Average annual growth in GERD and institutional contributions

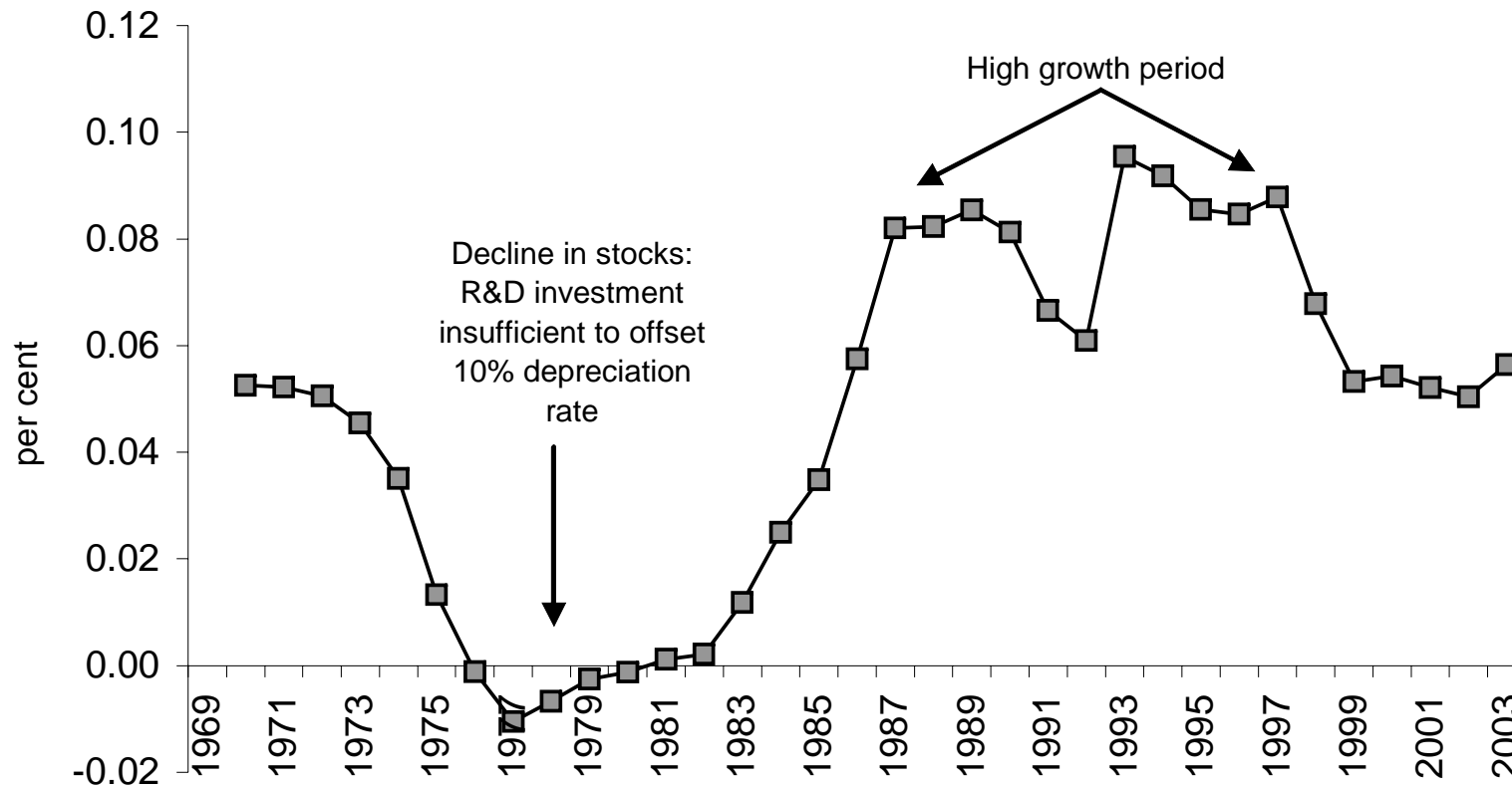


Business expenditure is the main driver

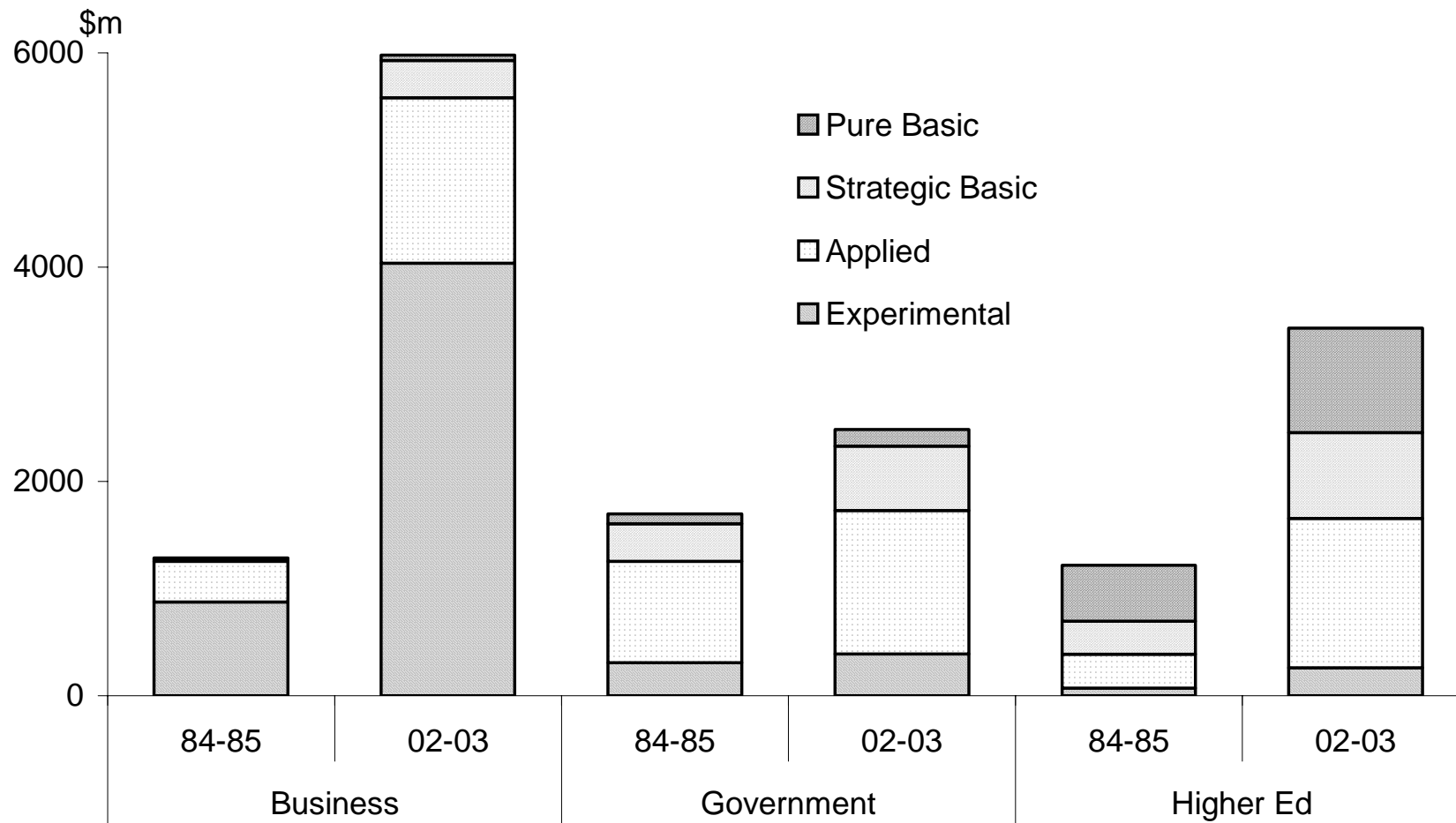


High growth period: mid-80s to mid-90s

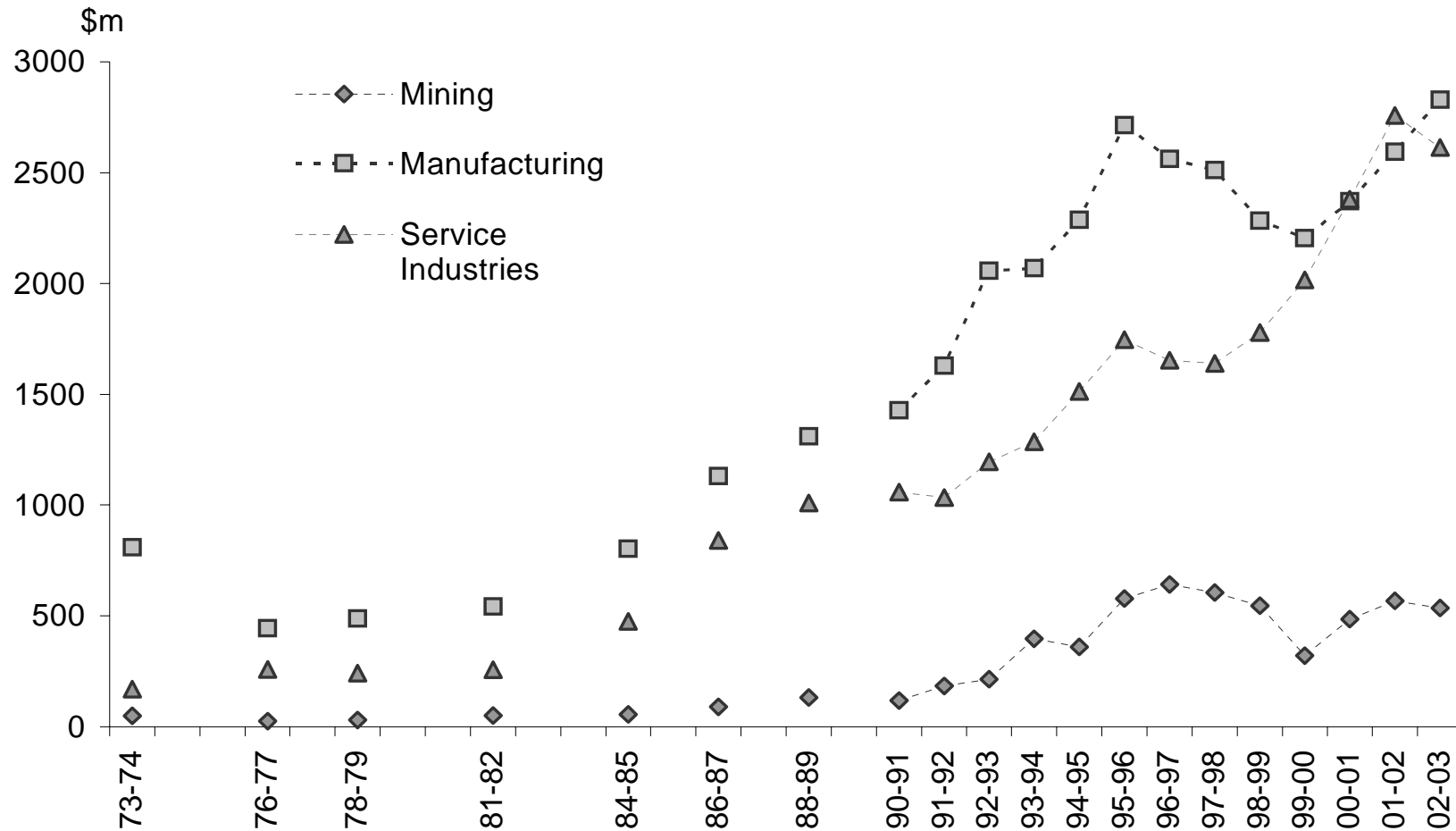
Growth Rate of BERD
(Percentage change in R&D stock depreciated at 10%)



GERD is more 'market oriented'



Services R&D now rivals manufacturing



Implications for measuring the effect of R&D on productivity?

- Significant differences in rates of growth, and differences by time periods across industries: variance in the relationship between R&D & productivity
- Impact of changing industry shares in BERD on productivity
- Impact of greater 'market' orientation of R&D on productivity
 - ❖ *More "D" than "R"*
- Changing relationships over time
- Indirect linkages – spillovers and role of domestic R&D in absorption
 - ❖ *The 'two faces' of R&D*



Work-in-progress results

■ Basic model –

- ❖ *Some encouraging results ... but*
- ❖ *Problems with robustness of estimates and getting results on some variables of interest (particularly, ‘external’ R&D and spillovers)*
- ❖ *Estimation challenges (for example, trending series)*
- ❖ *Have only looked at market sector and manufacturing to date*

■ Implications -

- ❖ *‘Wide band’ on estimates of rates of return to R&D at this stage*
- ❖ *Many extensions and issues yet to be investigated: some way to go in getting a “benchmark” set of results*



Key points

- Long run increase in GERD
- Driven mostly by business, but also increasing Higher Education R&D
- Growth in service industries particularly strong
- Growth in BERD strongest in the reform period
- Increased market orientation in all sectors

