

Measuring R&D Investment Returns

- **Rate of Return across Asset Types:** The 2006 satellite account adopted two alternative assumptions about the rate of return to R&D relative to other assets.
 - Net returns are equalized across asset types.
 - Shortcoming: no allowance for risk.
 - Net returns are higher for R&D compared to other assets.
 - Shortcoming: Difficult to estimate the appropriate risk premium.
- **Rate of Return to Government and Nonprofit R&D:**
 - Because the Federal government appears more willing to invest in high-risk, long-term projects than business, it appears to have a different discount rate for R&D investment. For the 2006 satellite account, BEA used the real rate of return on long term treasury bonds as a measure of the opportunity cost of government funds, and adjusted it upwards for a net rate of return to government and nonprofit funded R&D.
 - What is the appropriate rate of return for government and nonprofit R&D investment?
- **Depreciation:** While it is difficult to empirically disentangle net rates of return from depreciation rates, empirical analyses have estimated a range of average annual depreciation rates for business R&D between 12 and 25 percent. For the 2006 R&D Satellite Account, BEA assumed two alternatives: A 15 percent annual depreciation rate and a time variant rate based on depreciation of tangible equipment for all R&D assets. This assumed that government-funded R&D had the same depreciation rate as business-funded R&D.
 - Shortcoming: R&D is not homogenous and the rate of depreciation varies due to obsolescence and the useful life of R&D. What classification framework for R&D would allow these rates to be separately developed? Should it be process improvement vs. product development; basic vs. applied research; technology-related; using-industry related; or some other framework?