

Experimental Industry Estimates in BEA's R&D Satellite Account

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Measuring the Nation's Economy.



New in the 2007 Release

- Satellite account extended two years: 1959-2004.
- Building on 2006 SA, includes several enhancements:
 - Improved measures of prices for R&D.
 - Adjusts R&D investment for international trade in R&D services.
 - Adjusts for the double-count with previously capitalized R&D in software investment.
 - Includes a preliminary estimate of R&D investment in social sciences based on Economic Census data.

New in the 2007 Release (cont'd)

- First look at industry-level estimates of R&D investment (1987-2004).
 - Impact of R&D as investment on gross output and value added for R&D-intensive industries.
- First look how the international and regional accounts would implement the capitalization of R&D.

Industry Detail : R&D Intensive Industries

Manufacturing Detail:

Chemical excluding Pharmaceutical

Pharmaceutical and medicine

Computer & electronic products

Communications equipment

Semiconductors

Navigational/measuring/medical/control instruments

Motor vehicles, trailers and parts

Aerospace and other transportation equipment

Services Detail:

Software publishing

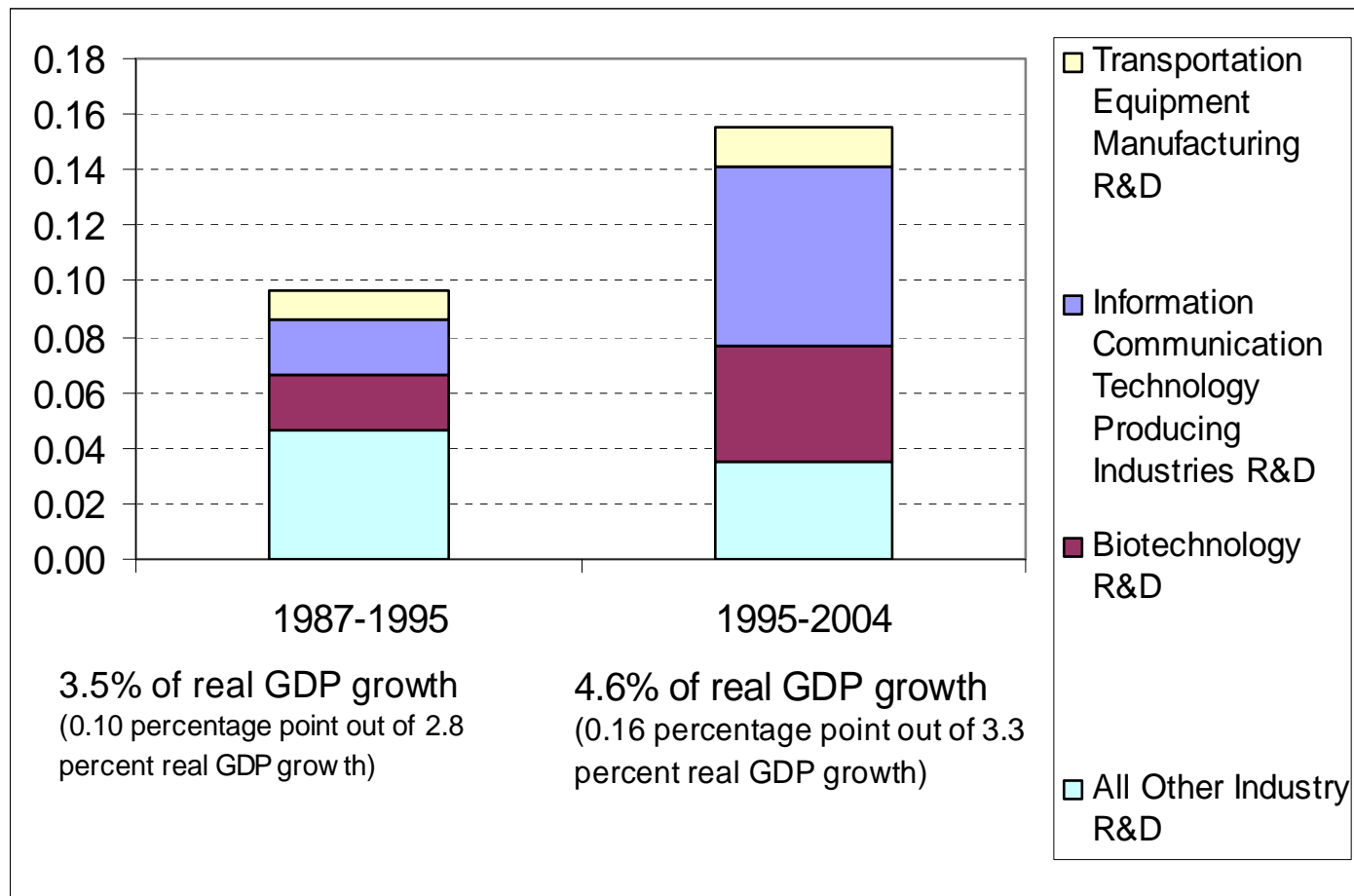
Computer systems design and related services

Scientific R&D services

Industry Impacts

- Impacts industry gross output and value added.
- Business investment in R&D by industry split:
 - Own account
 - Purchased R&D
- Purchased R&D adjusted from a cost basis to an imputed purchase price basis.
- Purchases of nonscientific R&D added.

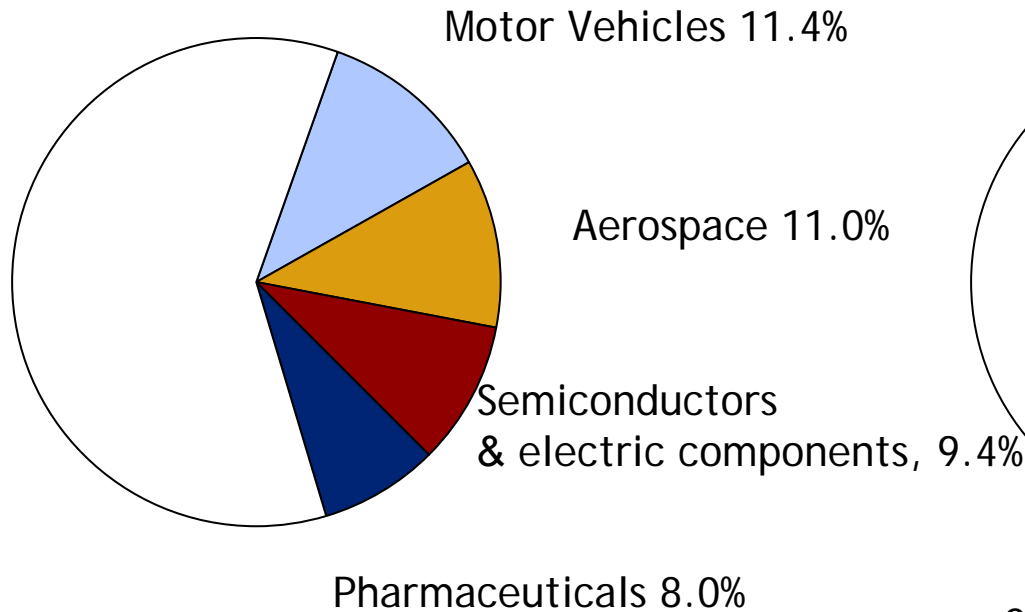
Business R&D Investment's Contribution to Real GDP Growth, 1987 to 1995 and 1995 to 2004



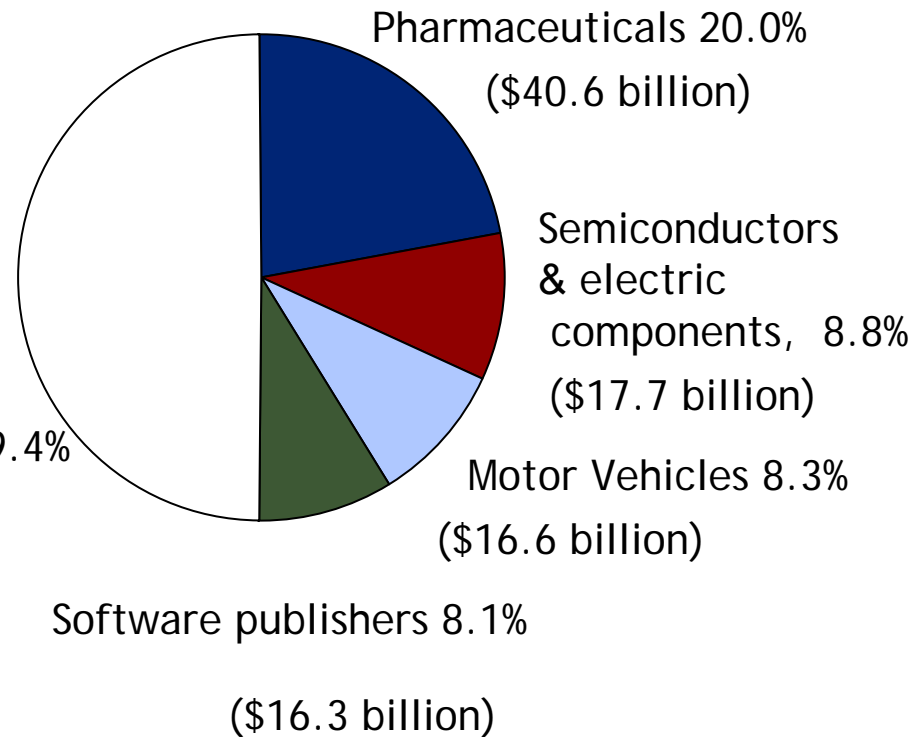
Trends in top four R&D-investing industries

[% of Private Business Investment in R&D]

1987



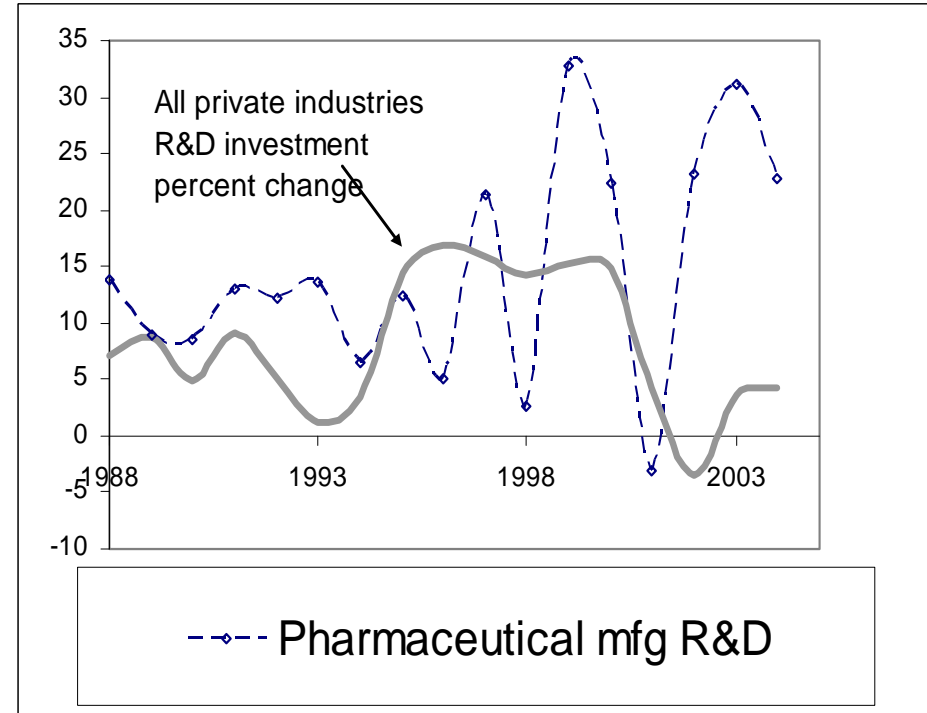
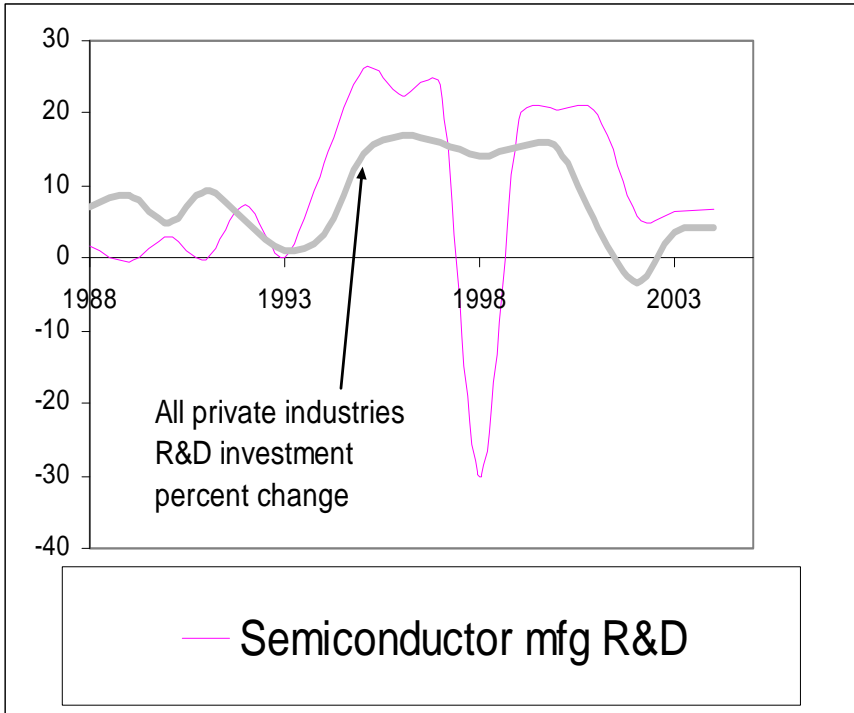
2004 (\$200.9 billion)



How does treating R&D as Investment change our measures of industry contributions to the growth rate in value added? 1995-2004

	Growth rate in private industry VA	
	Unadjusted	Adjusted
All Industries	3.24	3.35
	Industry share of the growth rate in private industry VA	
	Unadjusted	Adjusted
Pharmaceutical and medicine manufacturing	0.5	1.8
Computer and peripheral mfg	5.5	5.3
Semiconductor mfg	8.5	8.5
Scientific R&D services	0.4	1.3
All other industries	85.1	83.1

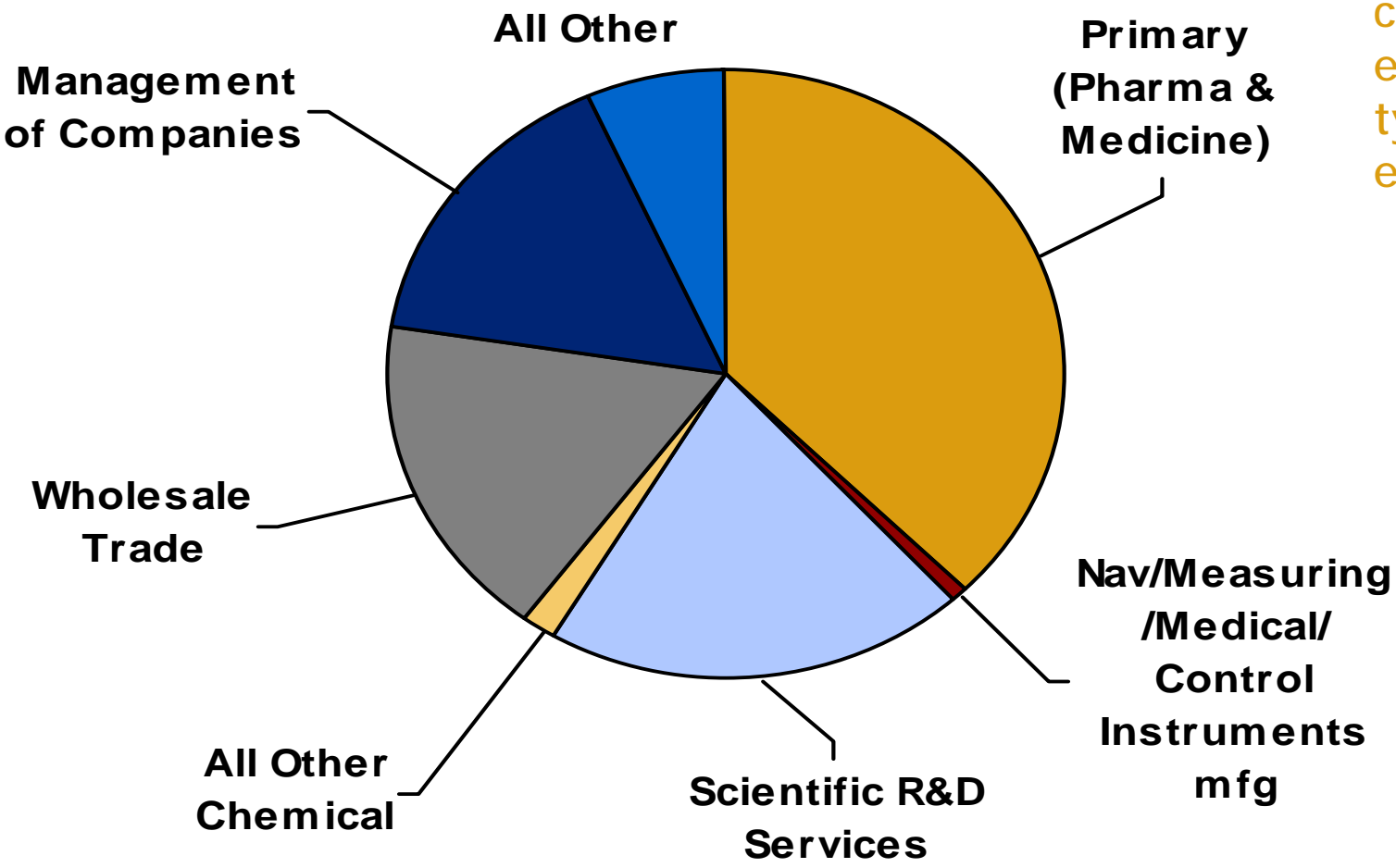
Business Cycle Effects



Company to Establishment Adjustment

Where within pharmaceutical and medicine manufacturing companies is R&D performed?

What we know:
company
employment by
type of
establishment

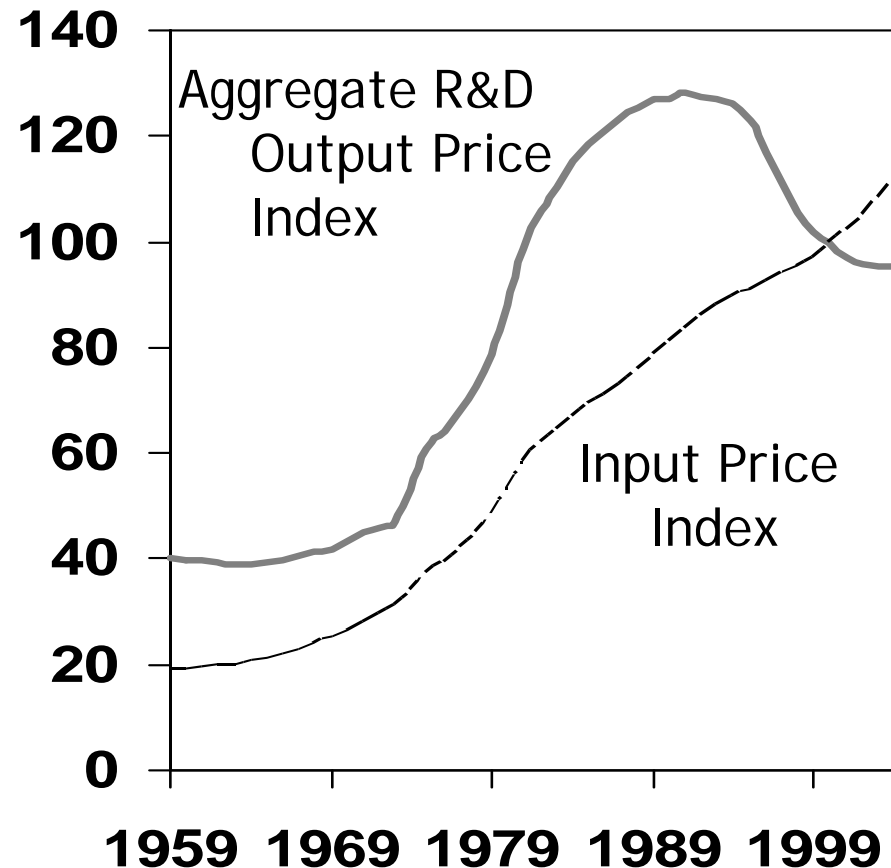


Example: Pharmaceutical and Medicine Manufacturing: 2004 \$billions

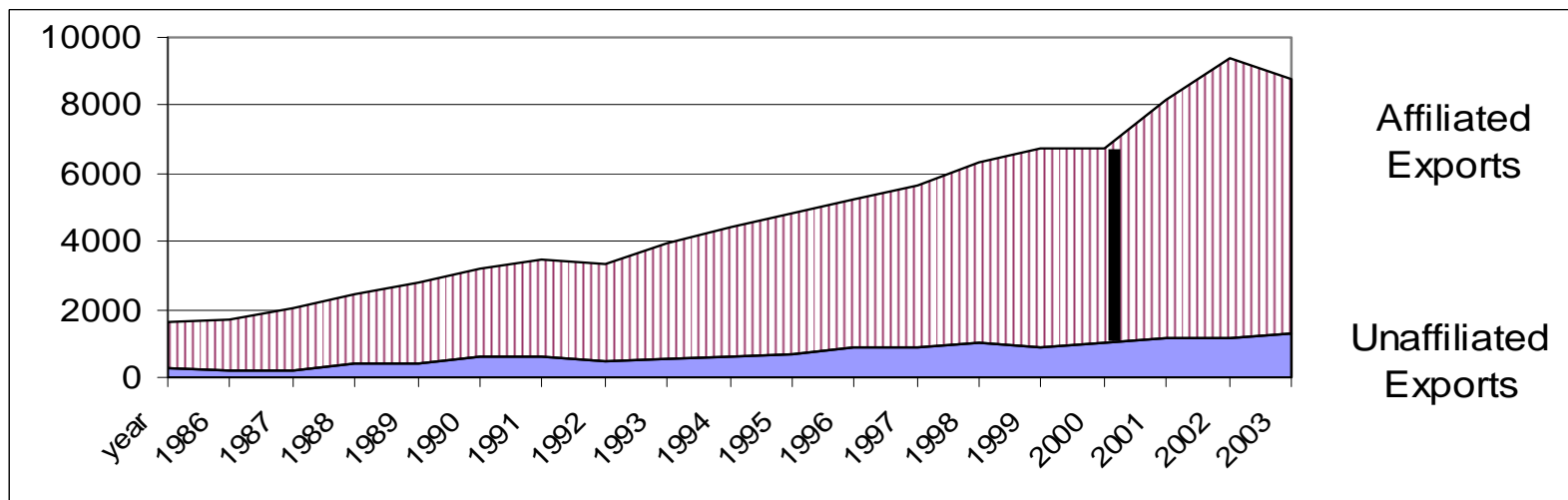
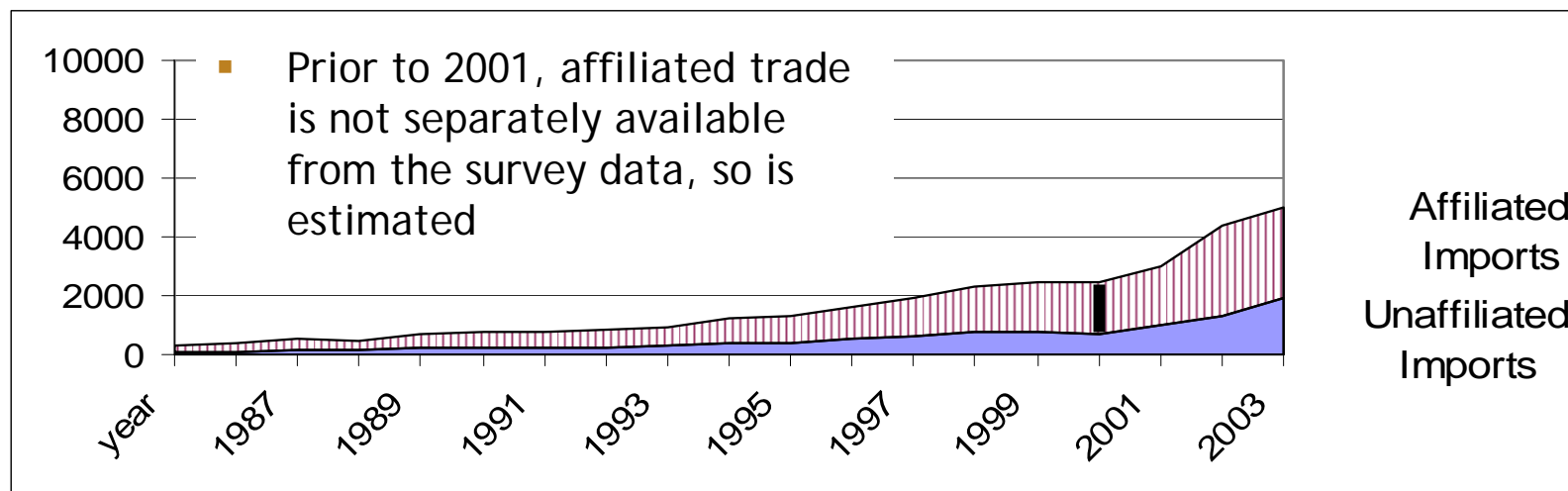
	Unadjusted	Adjustment	Adjusted
Gross output	155.4		
Plus: Own account R&D		10.9	
Less: own account R&D software double-count		(0.1)	
Gross Output			166.2
Intermediate Inputs	83.7		
Less: Purchased R&D		29.7	
Intermediate Inputs			54.0
Value Added	71.7		112.2
Addendum: R&D investment		40.6	

Aggregate Output Price Index for R&D Investment

- Uses BEA industry output prices, which are based on BLS PPIs
- Fisher aggregation, weighted by industry R&D investment by R&D intensive industries
- Each industry's R&D investment is deflated with this one aggregate index



Research, Development, and Testing Services International Trade, estimated \$millions



Questions for the Advisory Committee for the Industry Estimates

- R&D Investment prices are based on investing industry output price indexes:
 - Is this sufficient or should we test other estimation approaches?
- BEA has data for a small fraction R&D investment in humanities, social sciences, and other non-science areas.
 - Should we wait for new survey data from NSF before expanding our existing estimate of social science and humanities R&D?
- Company to Establishment Conversion
 - To produce data that can be used for industry-level productivity analysis, how far should BEA go to allocate output to establishments without establishment-based R&D expenditure data?
- Intrafirm transactions
 - Should affiliated trade in R&D output change the domestic stock of R&D?