Intangibles: The Role of Government Statistics

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Intangible Assets: Measuring & Enhancing their Contribution to Corporate Value & Economic Growth

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Measuring the Nation's Economy.

BEA
BUREAU OF ECONOMIC ANALYSIS
U.S. DEPARTMENT OF COMMERCE

The Multi-Factor Productivity Residual

	1960-2005	1960-1995	1995-2000	2000-2005
Gross domestic product	**3.35**	**3.31**	**4.29**	**2.76**
Hours worked	**1.39**	**1.52**	**1.89**	**-0.02**
Average labor productivity	**1.96**	**1.78**	**2.40**	**2.78**
Contribution of capital deepening	**1.03**	**0.94**	**1.36**	**1.40**
Information technology	**0.40**	**0.31**	**0.92**	**0.56**
Non-information technology	**0.63**	**0.63**	**0.45**	**0.84**
Contribution of labor quality	**0.29**	**0.29**	**0.19**	**0.35**
Total factor productivity	**0.64**	**0.56**	**0.85**	**1.03**
Information technology	**0.22**	**0.16**	**0.51**	**0.33**
Non-information technology	**0.42**	**0.40**	**0.34**	**0.70**

§ Preliminary results of BEA's R&D Satellite Account indicate that between 1959-2004, R&D accounted for 5 percent of growth in real GDP.

§ Between 1995-2004, R&D's contribution rose to 7 percent

§ If spillovers (residual unexplained portion of growth) from R&D are – as research suggests- at least as large as the direct returns, R&D may account for 1/6 of total factor productivity growth.

Source for table: Jorgenson, Dale W., Mun S. Ho, and Kevin J. Stiroh. 2005. Information Technology and the American Growth Resurgence, Cambridge, MA: MIT Press, pp. 38-39

A Broader Measure of Business Intangibles, 1998-2000

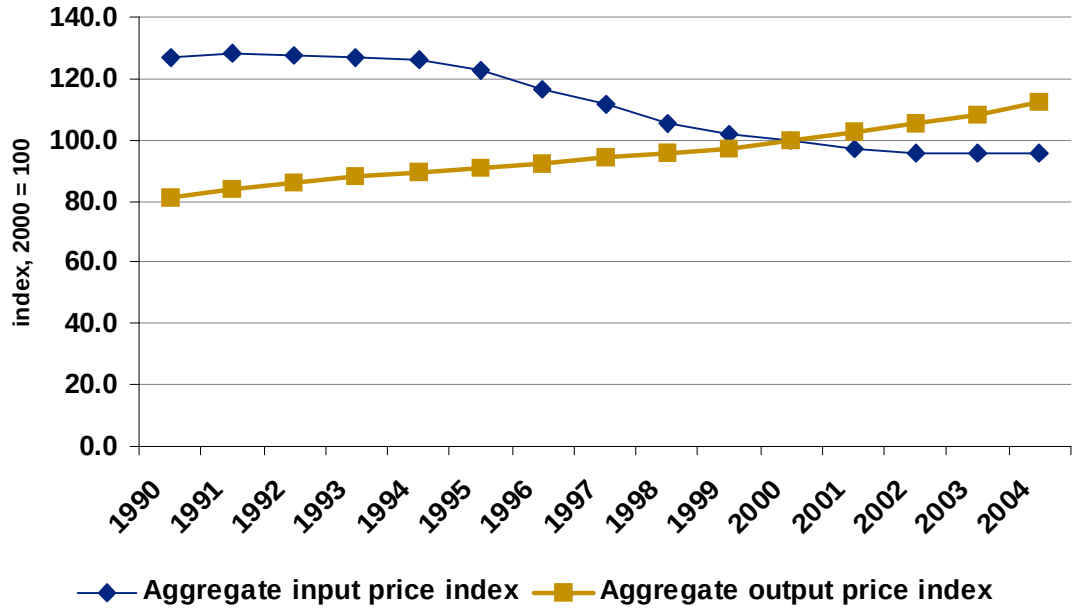
(billions of dollars, annual average)

Type	Total Spending	Comments on evidence as capital spending	Capital spending (included in NIPAs)
1. Computerized information	154	Firms capitalize only a fraction of purchased software in financial accounts. Relatively little is known about the service life of software assets.	154 (151)
2. Innovative property			
(a) Scientific R&D	201	Research suggests that scientific R&D yields relatively long-lasting returns and is capital spending.	201 (16)
(b) Nonscientific R&D	223	Little is known about nonscientific research R&D, but a portion of new product development expenditures in the entertainment industry apparently have relatively short-lived effects.	223 (40)
3. Economic Competencies			
(a) Brand equity	235	Research shows that the effects of some advertising dissipate within one year, but that more that half has effects that last more than one year.	140 (0)
(b) Firm-specific resources	407	Research suggests that firm-specific training is investment. Spending for organizational change is also likely has long-lived effects, but a portion of management fees probably is not capital spending.	365 (0)
Total	1220		1085 (205)
Percent of existing GDP			11.7
Ratio of Tangible Capital Spending			1.2

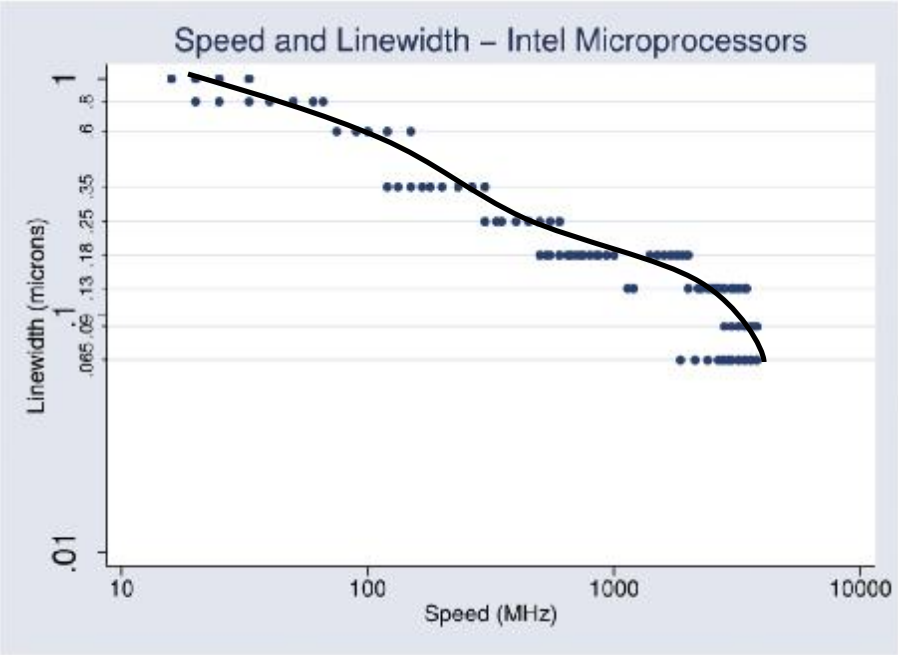
Source: Corrado, Carol, Charles Hulten and Daniel Sichel. "Intangible Capital and Economic Growth, " Working paper as part of the Finance and Economics Discussion Series, Divisions of Research and Statistics and Monetary Affairs, Federal Reserve Board, Washington, D.C. April 2006.

Estimation Challenges: R&D Price Indexes

- Developing an appropriate price index
  - Four scenarios presented in 2006 R&D Satellite Account
  - Updated 2007 R&D Satellite featured an aggregate R&D output price index of 13 R&D intensive industries

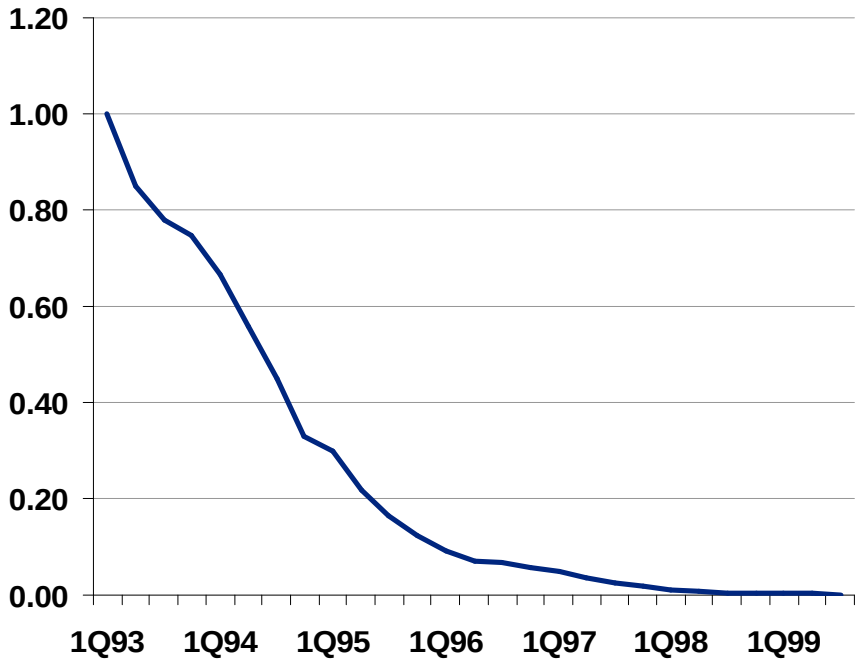


Research still remains- R&D Output price indexes



Price index for Semiconductors

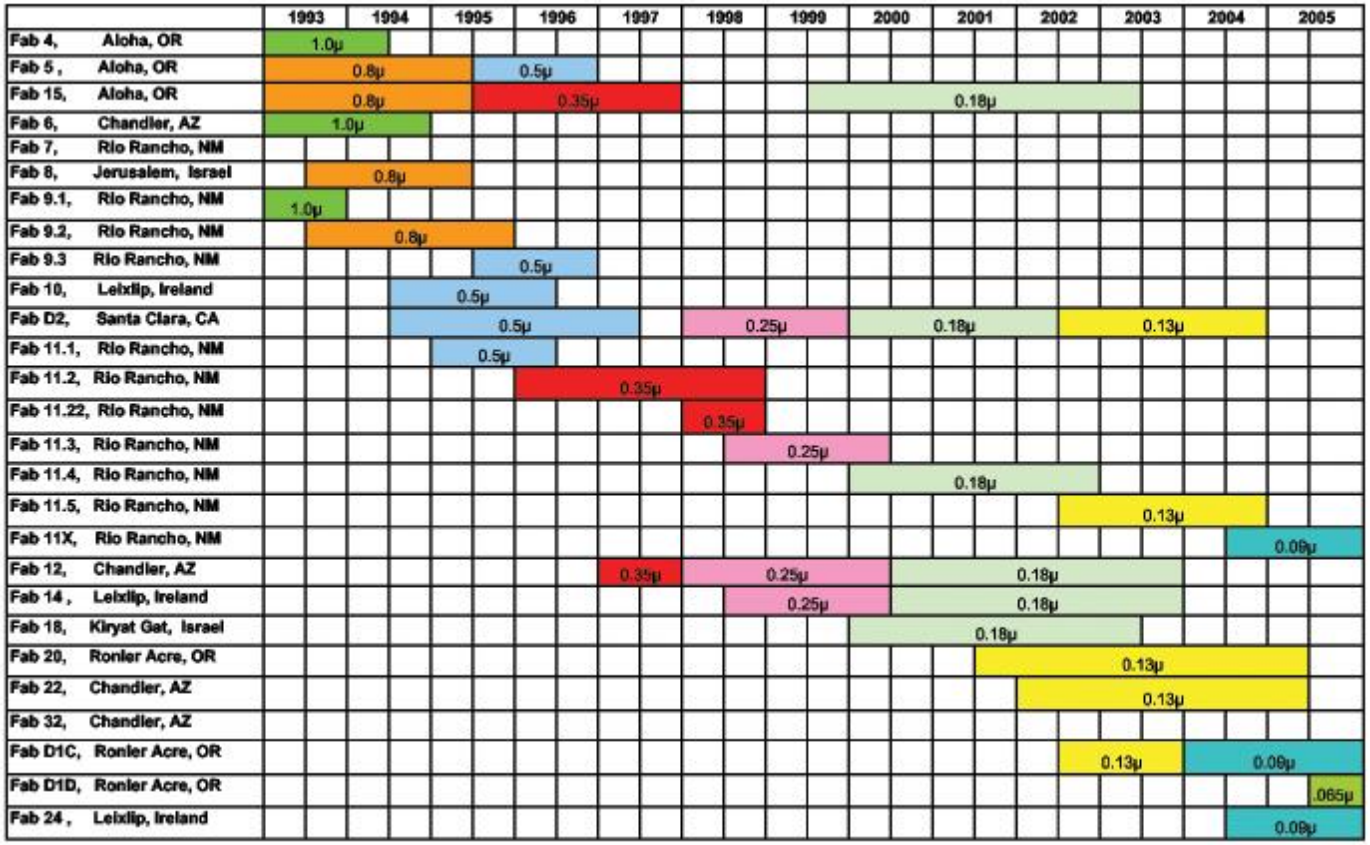
[Index, 1993:Q1 = 1.00]



Source: Aizcorbe, Ana, Samuel Kortum and Unni Pillai, "Equipment Costs in Microprocessor Production Quantitative Implications of a Vintage Model," presentation, April 10, 2007

Vintages of Semiconductor Equipment & Manufacturing at Different Intel Plants

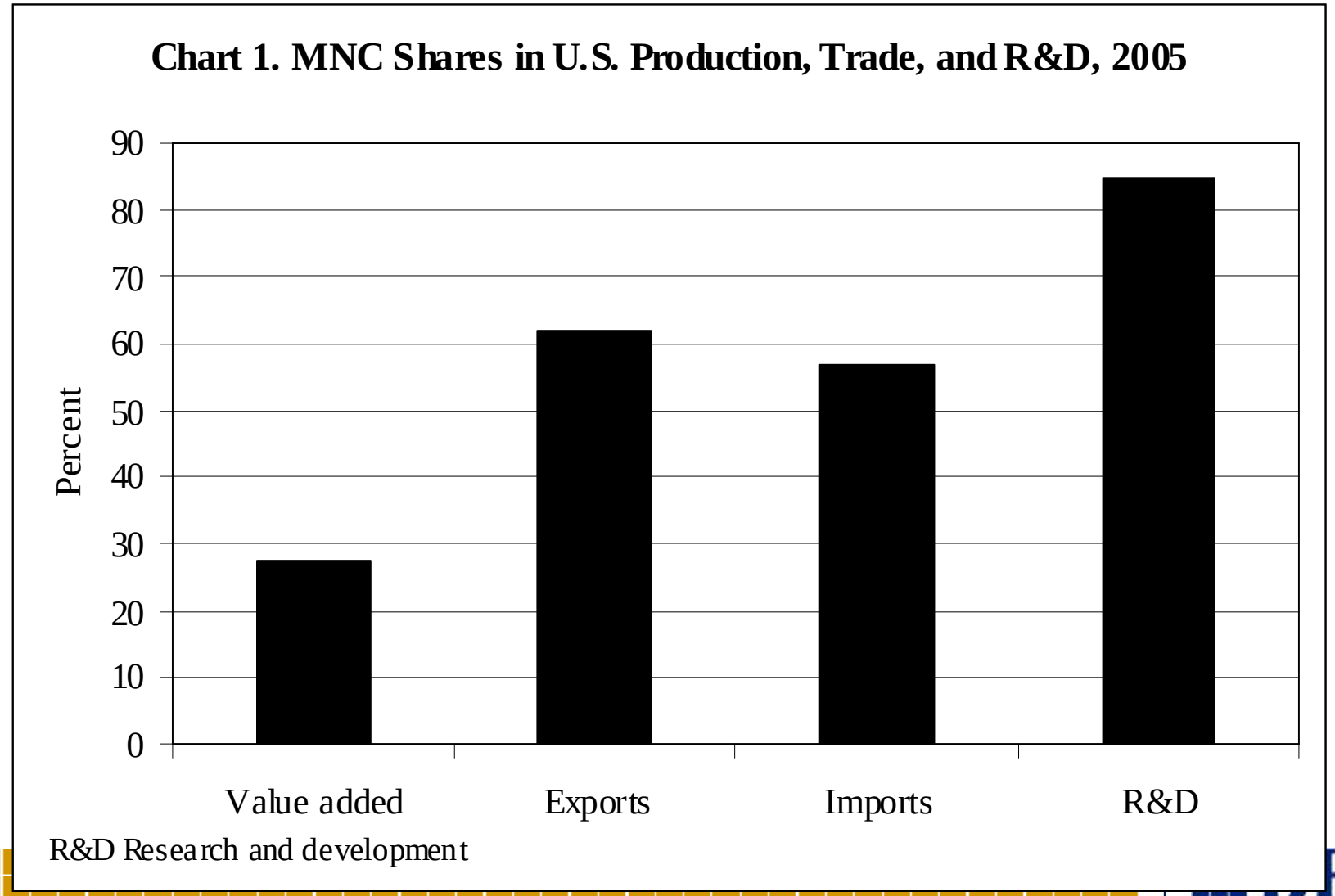
- Reflects both R&D of semiconductors industry and semiconductor equipment manufacturing industry



- Implication: potential misallocation of R&D across industries

Source: Aizcorbe, Ana, Samuel Kortum and Unni Pillai, "Equipment Costs in Microprocessor Production Quantitative Implications of a Vintage Model," presentation, April 10, 2007

Importance of MNC's to GDP and Trade



Growing Importance of Transfers of Intangible Assets

Table 1. U.S. Parents' Receipts for Royalties and License Fees from Foreign Affiliates in Lower Tax Countries*

[Millions of dollars]

	1977	1982	1989	2005
Belgium	104	149	326	580
Ireland	10	39	255	4,285
Luxembourg	2	1	5	91
Netherlands	107	166	633	1,589
Switzerland	45	83	255	4,160
Bermuda	2	10	4	(D)
UK Islands, Caribbean	0	0	0	(D)
Hong Kong	3	14	94	393
Singapore	10	24	151	2,278
Tax haven total	283	486	1,723	13,995
Worldwide total	2,173	3,585	10,082	37,771
Tax haven share (percent)	13	13.6	17.1	37.1

Source: * The list of low-tax-haven destinations for FDI is from Martin A. Sullivan, "U.S. Multinationals Move Profits to Tax Havens," *Tax Notes* (weekly newsletter of www.taxanalysts.com) February 9, 2004; reciepts data are from BEA.

Growing Importance of Investment in Lower-Tax Countries

Table 2. U.S. Direct Investment Position in Lower-Tax Countries*

[Millions of dollars]

	1977	1982	1989	2005
Belgium	4,612	5,549	7,710	48,409
Ireland	986	2,031	4,665	71,255
Luxembourg	677	1,098	1,560	69,746
Netherlands	4,534	6,760	19,160	184,614
Switzerland	7,182	12,863	21,144	81,048
Bermuda	7,708	11,519	18,297	103,454
UK Islands, Caribbean	336	1,425	6,123	79,728
Hong Kong	1,328	2,854	5,412	32,577
Singapore	516	1,720	2,998	54,500
Tax haven total	27,879	45,819	87,069	725,331
Worldwide total	145,990	207,752	381,781	2,135,492
Tax haven share (percent)	19.1	22.1	22.8	34

Source: * The list of lower-tax countries that are a destination for FDI is taken from Martin A. Sullivan, "U.S. Multinationals Move Profits to Tax Havens," *Tax Notes* (weekly newsletter of www.taxanalysts.com) February 9, 2004; the positioon data is from BEA.

Future research & long term plans

- R&D: Source data development and conceptual work
- Further steps toward integrated productivity accounts as recommended by 2008 Revision of the SNA
- Secretary's Innovation Committee draft recommendations relating to:
  - Expanded data sharing
  - Improved measures of services output
  - Integrated macro model of GDP and productivity
  - Linking data from existing NSF R&D survey to BEA and Census data on R&D conducted in the U.S. by U.S. and foreign multinational cos.

Expanded measurement of intangibles – Candidates for innovation satellite account

- Research and Development (R&D): Spending on scientific and engineering R&D
  - Product and process innovation
  - More timely data and more frequent indicators
  - Receipts (royalties and license fees) as well as expenditures
  - Associated capital investment expenditures
  - Someday: Valuation of Intellectual Property

Expanded measurement of intangibles – Candidates for innovation satellite account

- Expenditures on social science R&D of new products and processes.
  - Explicit subcategories for:
    - Industrial product and process design and development
    - Artistic and entertainment product and process design and development
- Human Capital: Employer spending on employee training and development
- Computer software
- Investment in business models
  - i.e. - Inventory and distribution control systems

BEA data priorities

- 1st priority – incorporation of R&D in National Income and Product Accounts (GDP)
  - What's needed?
    - consistent benchmark estimates of R&D
    - reasonable extrapolators for quarterly estimates
    - capital stock estimates of R&D
- Next- further incorporation of R&D to other account areas:
  - International, Industry and Regional Accounts
- Long term: Expanded measures of intangibles, including social science R&D, human capital, business models and firm specific R&D.

BEA data priorities

- Key issue is collaboration with business and accounting profession
  - Business interest in consistent valuation of intangibles
  - Government interest
  - Coincident interest:
    - Reliance on market data
    - Accuracy and consistency
    - Minimization of respondent burden