

## **U.S. Corporate R&D Investment, 1994 – 1999 with Advance Estimates for 2000**

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Despite a slowing economy, public corporations headquartered in the U.S. almost doubled the growth rate of their investment in research and development (R&D) in 2000<sup>1</sup>.

According to advance estimates from the Office of Technology Policy's *U.S. Corporate R&D* data series, R&D investment rose sharply by 9.3 percent in inflation-adjusted terms,<sup>2</sup> increasing from \$145.6 billion in 1999 to an estimated \$162.7 billion in 2000.<sup>3</sup> The increase reverses a 5-year trend of slowing annual percentage increases in corporate R&D investment, and approaches the recent high of a 10.2 percent annual increase set in 1995.

### **Data Background**

The *U.S. Corporate R&D* data series is derived, in part, from *Standard and Poor's Compustat* database, which in turn is based on financial statements filed with the Securities and Exchange Commission (SEC). *Compustat* includes 10,000 actively-traded U.S. corporations (and 11,000 no longer active corporations) of which approximately one-third report R&D in a given year. Based on analysis of SEC filings and other sources, the Office of Technology Policy (OTP) substantially adjusts raw *Compustat* data to remove R&D double counts and write-offs of "acquired in-process R&D"<sup>4</sup> that are largely associated with firm acquisitions and mergers.

To more accurately depict levels of corporate R&D, this is the first OTP report to be based on the North American Industry Classification System (NAICS) rather than the decades-old Standard Industrial Classification (SIC). The *U.S. Corporate R&D* data series now includes nine "major sectors" that conduct R&D, which are subdivided into 63 "detailed" sectors. This advance estimate brief includes data for all nine major sectors, and for certain selected industries within three of these sectors. Future updates will include all 63 detailed industries. A final report to be published in 2002 will finalize 2000 estimates and will include additional economic indicators such as sales, capital expenditures, and employment.

*U.S. Corporate R&D* data has a number of characteristics and limitations that should be considered in using the data and in comparing it to data available from other sources such as the National Science Foundation. For example, these data represent the total R&D conducted by U.S.-headquartered corporations in the United States and abroad. Therefore, these data do not represent total R&D performed only in the United States by both U.S. and foreign corporations. Year to year changes in total R&D in *U.S. Corporate R&D* tables will be lowered by foreign acquisitions of U.S. corporations doing R&D here and abroad and will be raised when U.S. corporations acquire foreign-owned businesses engaged in R&D. This report does not include estimates of the effects of such acquisition activity. Please refer to this footnote<sup>5</sup> for a more complete understanding of *U.S. Corporate R&D* data series characteristics and comparisons to NSF's Division of Science Resources Statistics (SRS) data series, which is based on data collected by the Bureau of Census.

## Year 2000 Highlights

While the year 2000 increase in corporate R&D investment suggests a growing belief by many firms in the importance of technology competitiveness, the nine major sectors have significantly divergent R&D investment patterns (see attached figures and tables).

- **Information and electronics manufacture and services (I&E)**, a sector that accounts for more than two-thirds of total corporate R&D growth, doubled its R&D growth rate in 2000. The largest R&D-investing sector, I&E invested \$76.8 billion in 2000, an annual increase of 16.3 percent. Within this sector (see **figure 8** and **table 4**):
  - *Software publishers* is the largest industry in terms of R&D investment at \$15.5 billion in current dollars with a year 2000 annual increase of 20.8 percent over 1999.
  - The next two largest industries, which include *semiconductor and computer peripheral equipment manufacture*, are also important drivers of I&E sector R&D in 2000, experiencing 31.7 and 22.1 percent growth respectively. (Caution should be exercised in considering industry data in this and other highly turbulent sectors since some industry R&D annual percentage changes between 1994 and 2000 are due in part or substantially to acquisitions that reclassify certain R&D amounts from one industry to another.<sup>6</sup>)
  - Reaching \$1.9 billion in 2000, R&D in the *on-line information services* industry grew 88.5 percent over the 1999 level. This trend continues strong growth rates of between 39.5 and 76.1 percent from 1995 through 1999.
- The second largest R&D sector, **medical substances and devices** increased its investment by 4.8 percent to \$32.2 billion in 2000. This rate of growth is lower than the previous two years, reflecting a considerable decline from the 1998 level of 10.8 percent. As **figure 8** and **table 4** show, the medical substances portion of this sector is substantially larger and faster growing than is the medical devices portion.
- With R&D investment reaching \$9.0 billion in 2000, the **chemical manufacture** sector grew 6.3 percent, continuing a 3-year trend of improving growth rates.
- For the second consecutive year, the **surface transport equipment manufacture** sector maintained a positive, but modest R&D growth rate in 2000 at 1.1 percent, avoiding the declines of 1997 and 1998. Firms in this sector invested \$19.6 billion in 2000.

- For the third year in a row R&D investment by the *basic industries and materials* sector declined. The sector's \$7.5 billion investment in 2000 represents a 6.0 annual percent decline from the 1999 level.
- Similarly, for the second consecutive year, *aerospace* R&D investment declined. The sector's \$4.7 billion investment in 2000 represents a 5.5 annual percent decline.
- The smallest sector, *various services*, was the fastest growing sector for R&D investment during the past three years. In 2000 it experienced a 32.4 percent annual growth rate, increasing to \$2.8 billion. As **figure 8** and **table 4** show, the sub-sector *electronic shopping* reported very significant R&D growth over the past 5 years.
- R&D investment by the sector *unclassifiable and conglomerates*, which is dominated by two large R&D-intensive firms, increased by 11.1 percent in 2000 to \$3.7 billion.

### 1994-2000 Highlights

- As shown in **figure 5**, the *I&E* sector invested nearly half of all U.S. corporate R&D in 2000, up from a little more than a third in 1994. Three other major sectors increased their share of corporate R&D: *medical substances and devices*, *machinery manufacture*, and *various services*. The remaining five sectors lost shares, particularly *basic industries and materials*, which lost nearly half its share.
- As shown in **figure 6** and **table 3**, after rising to a peak of more than 3,600 in 1998, the estimated number of R&D-investing corporations declined to just above 3000, not too far above the number registered in 1994. Not surprisingly, this recent falloff is concentrated in the turbulent *I&E* sector, which experienced large numbers of firm acquisitions and closings within the past two years. The 2000 firm count for *medical substances and devices* is also down significantly in 2000. When the data is finalized, the 2000 firm count may increase somewhat.
- Interestingly, the previously very high overall R&D annual increase of 10.2 percent in 1995 is associated with considerable growth in the number of R&D-investing corporations, whereas the strong 2000 R&D growth rate of 9.3 percent is accompanied by an estimated decline in the number of such corporations. It is unclear to what extent the 2000 R&D increase is due to the acquisition of any private or foreign firms that would not have been included in the 1999 R&D total.

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<sup>1</sup> Year 2000 data includes R&D reported by corporations with fiscal years ending between June 1, 2000 and May 31, 2001. The majority of corporations reported in December of 2000.

<sup>2</sup> All annual percent changes are expressed in 1996 dollars that are adjusted for inflation. 1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

<sup>3</sup> All dollar amounts are expressed in current, or "nominal" dollars that are not adjusted for inflation.

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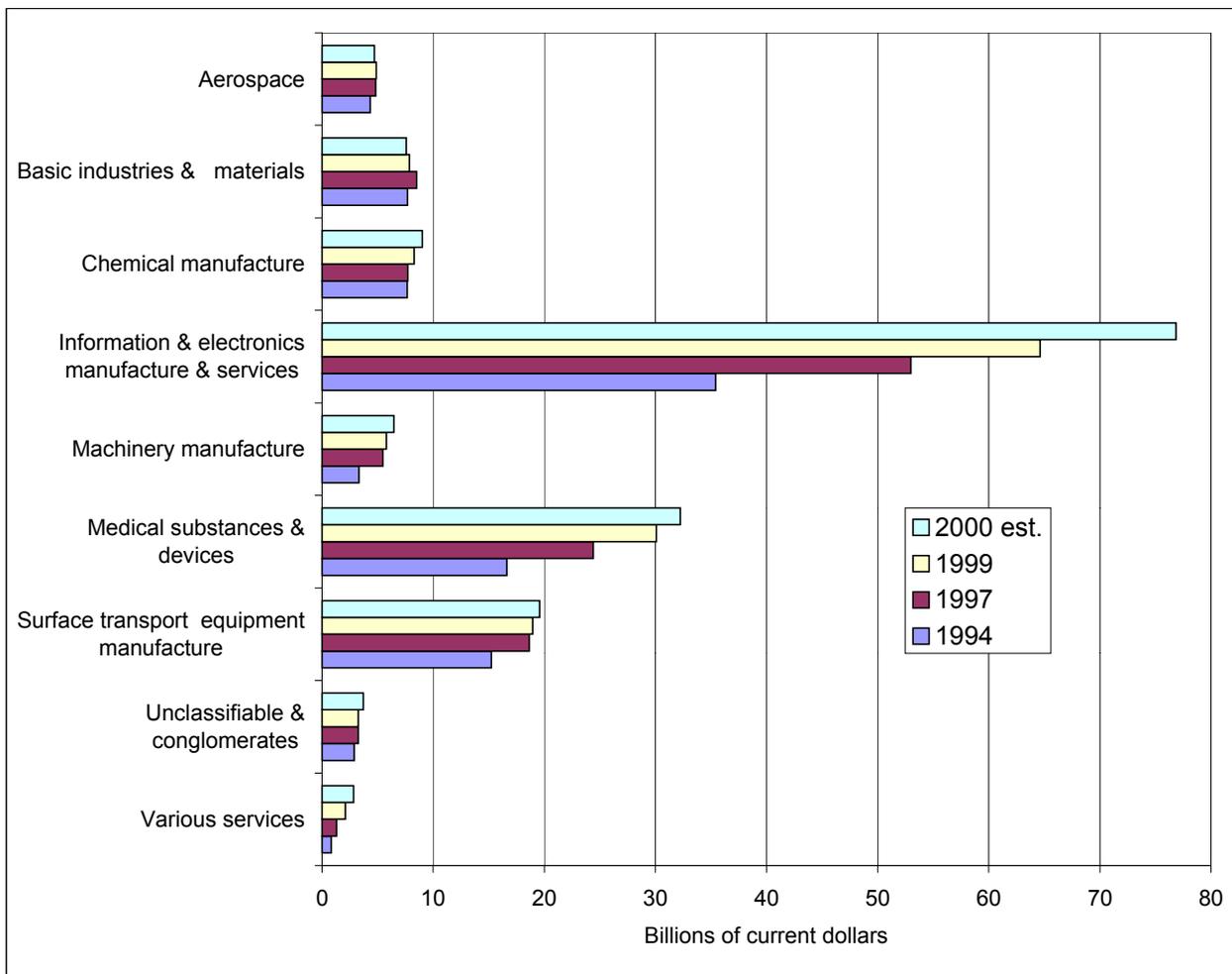
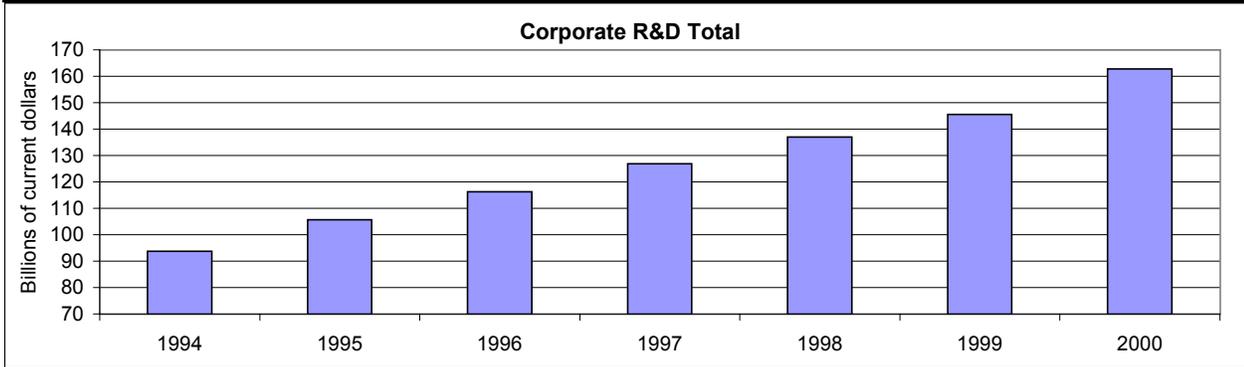
<sup>4</sup> In reviewing this data and comparing it to R&D data available from other sources it is important to take into account that the *U.S. Corporate R&D* data series excludes billions of dollars of acquired in-process R&D (IPR&D) write-offs that are reported by *Compustat* for numerous corporations. According to generally accepted accounting practices, corporations can write-off IPR&D when they acquire another company. However, current *Compustat* “standardization” practice usually combines corporate internal R&D expenditures with write-offs of acquired IPR&D and reports these as a single R&D expense. This practice mixes together IPR&D write-offs, which are estimates of future value, with real-time R&D expenses, which are current expenditures. Reported IPR&D valuation often significantly exceeds the amount an acquired firm previously spent on R&D. As a consequence, users of *Compustat* -derived data may draw inaccurate conclusions regarding the R&D activity of certain companies. To avoid this problem these IPR&D amounts are excluded to ensure aggregate corporate R&D investment amounts are not overstated. While *Compustat* provides certain supplemental data on IPR&D write-offs that are helpful, the coverage is incomplete.

<sup>5</sup> The following is a list of some *U.S. Corporate R&D* data series structural characteristics and differences between it and NSF’s SRS data series:

- *U.S. Corporate R&D* includes only publicly held firms, whereas the SRS data series includes both publicly and privately held firms.
- U.S. R&D-investing firms that switch from private to public ownership enter the *U.S. Corporate R&D* data series. Conversely publicly held firms that revert to private ownership exit the data series. Switches in ownership status do not influence the SRS data series.
- In contrast to the SRS data series, *U.S. Corporate R&D* generally attributes R&D investment to the firm that is the source of the R&D funds, not the performer of the R&D (i.e., not contractors). This fact, for example, explains why the SRS data series attributes a much larger amount of R&D performance to R&D service firms than does *U.S. Corporate R&D*.
- *U.S. Corporate R&D* includes U.S. firm R&D conducted abroad, while the SRS data series excludes it.
- *U.S. Corporate R&D* excludes R&D conducted in the United States by firms headquartered outside the United States, whereas the SRS data series includes such R&D.
- The R&D investments of foreign firms that are acquired by U.S.-headquartered firms may be added to the *U.S. Corporate R&D* total. Conversely, U.S.-headquartered firms that are acquired by foreign-headquartered firms are no longer included in the data series after the date of acquisition. The SRS data series is unaffected by change in national affiliation of a given firm or subsidiary conducting R&D in the United States.
- *U.S. Corporate R&D* does not include the R&D expenditures of banks, utilities, and property and casualty companies, while the SRS data series includes the R&D of such companies.

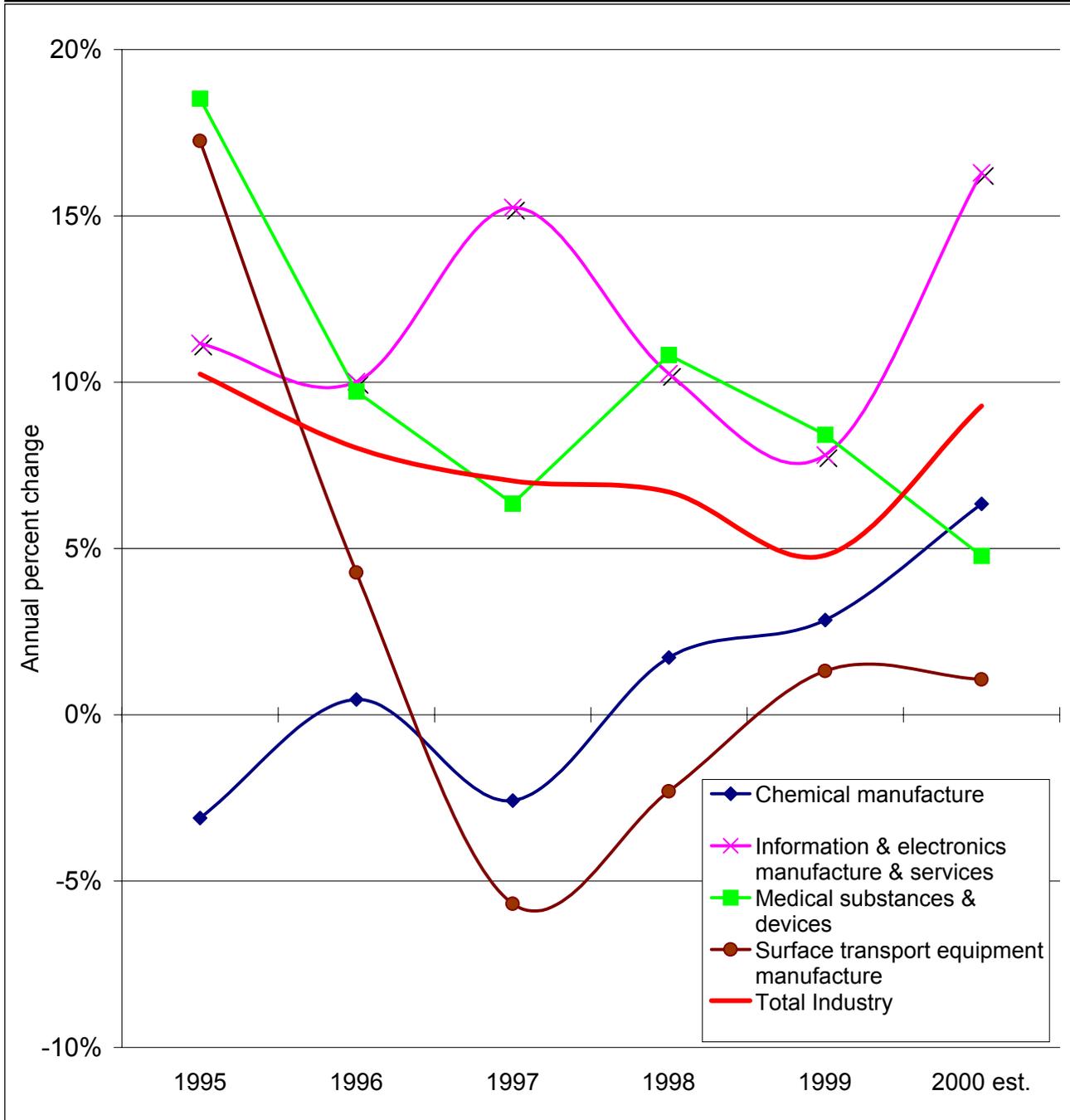
<sup>6</sup> This subject will be discussed in a later update.

**Figure 1. Corporate R&D investment total and by major sectors,\* 1994-1999 and 2000 estimated, billions of current dollars**



\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.  
 SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 2. Annual percent change in corporate R&D investment by total and four largest major sectors,\* 1994-1999 and 2000 estimated, 1996 dollars^**

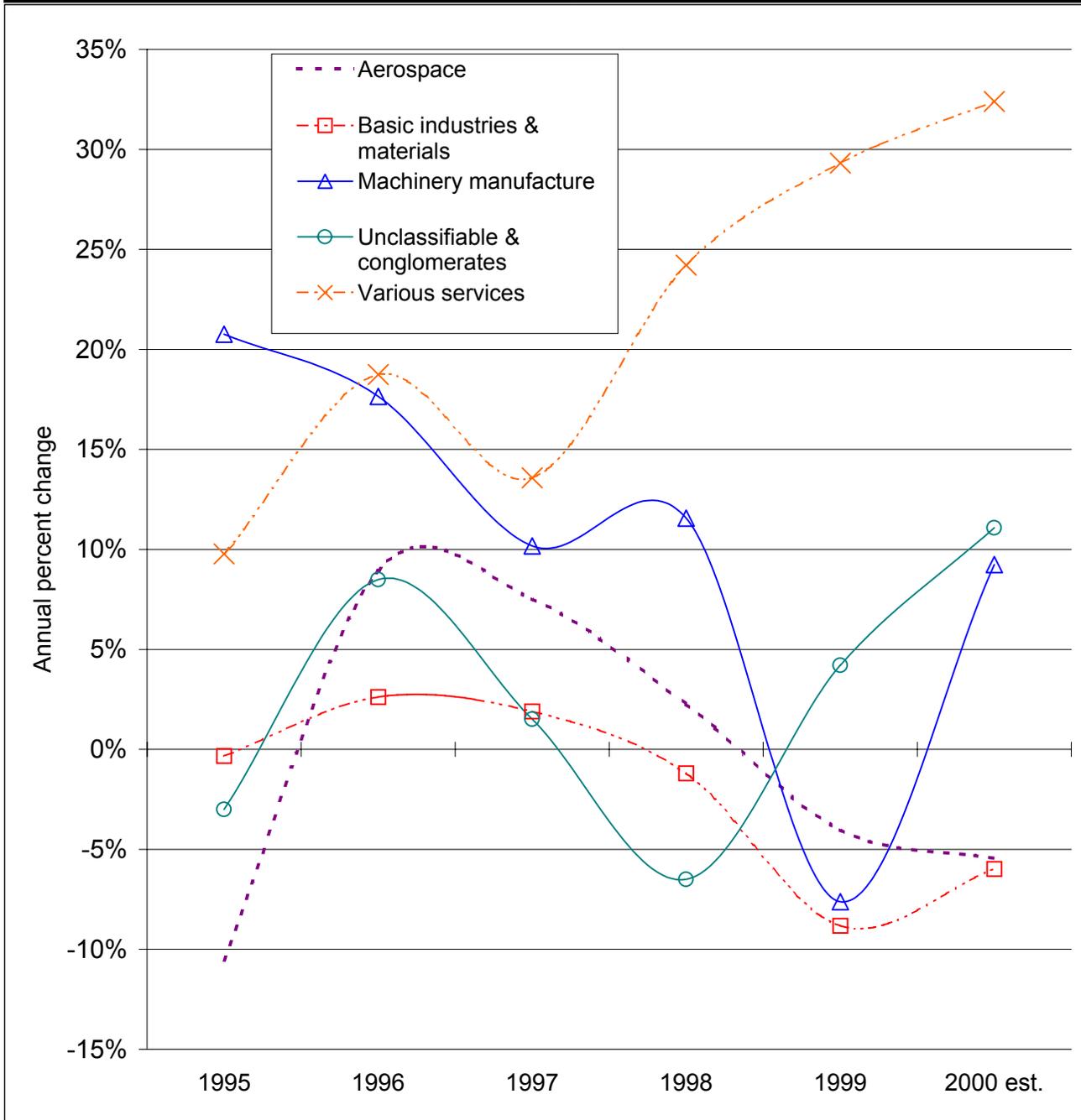


\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 3. Annual percent change in corporate R&D investment by five smaller major sectors,\* 1994-1999 and 2000 estimated, 1996 dollars<sup>^</sup>**

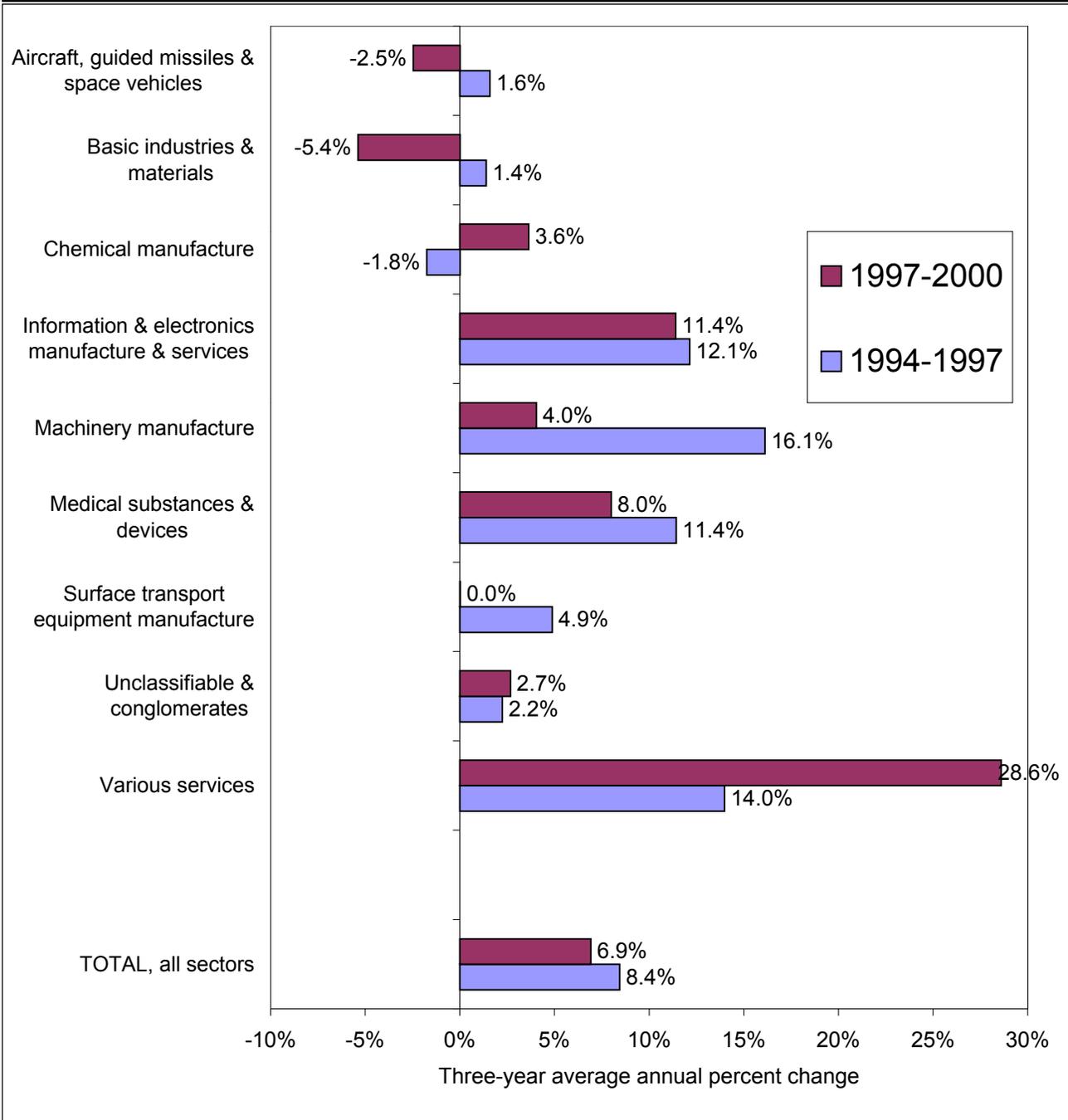


\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

<sup>^</sup>1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 4. Three-year average annual percent change in corporate R&D investment by major sectors,\* 1994-1999 and 2000 estimated, 1996 dollars^**

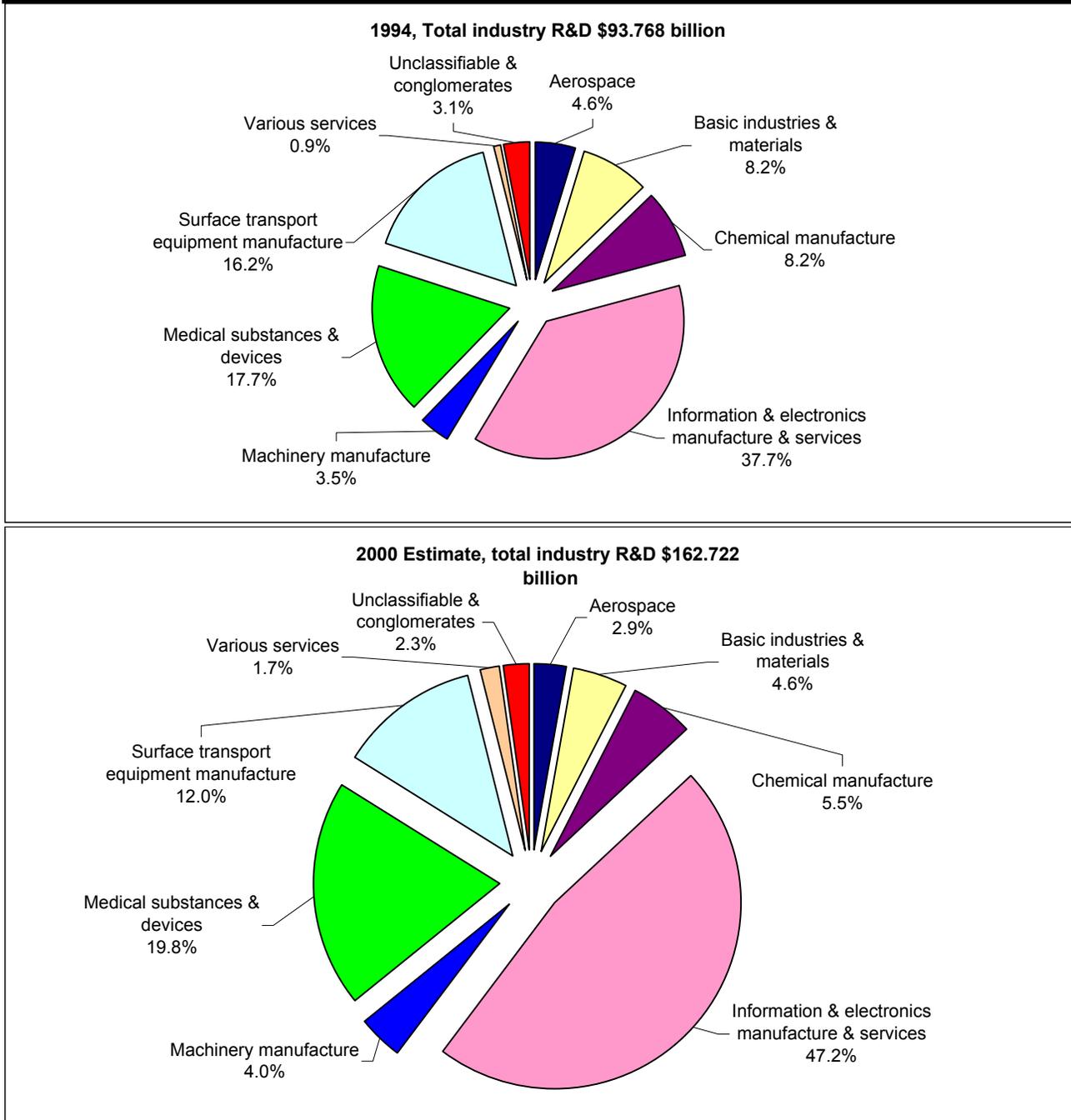


\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

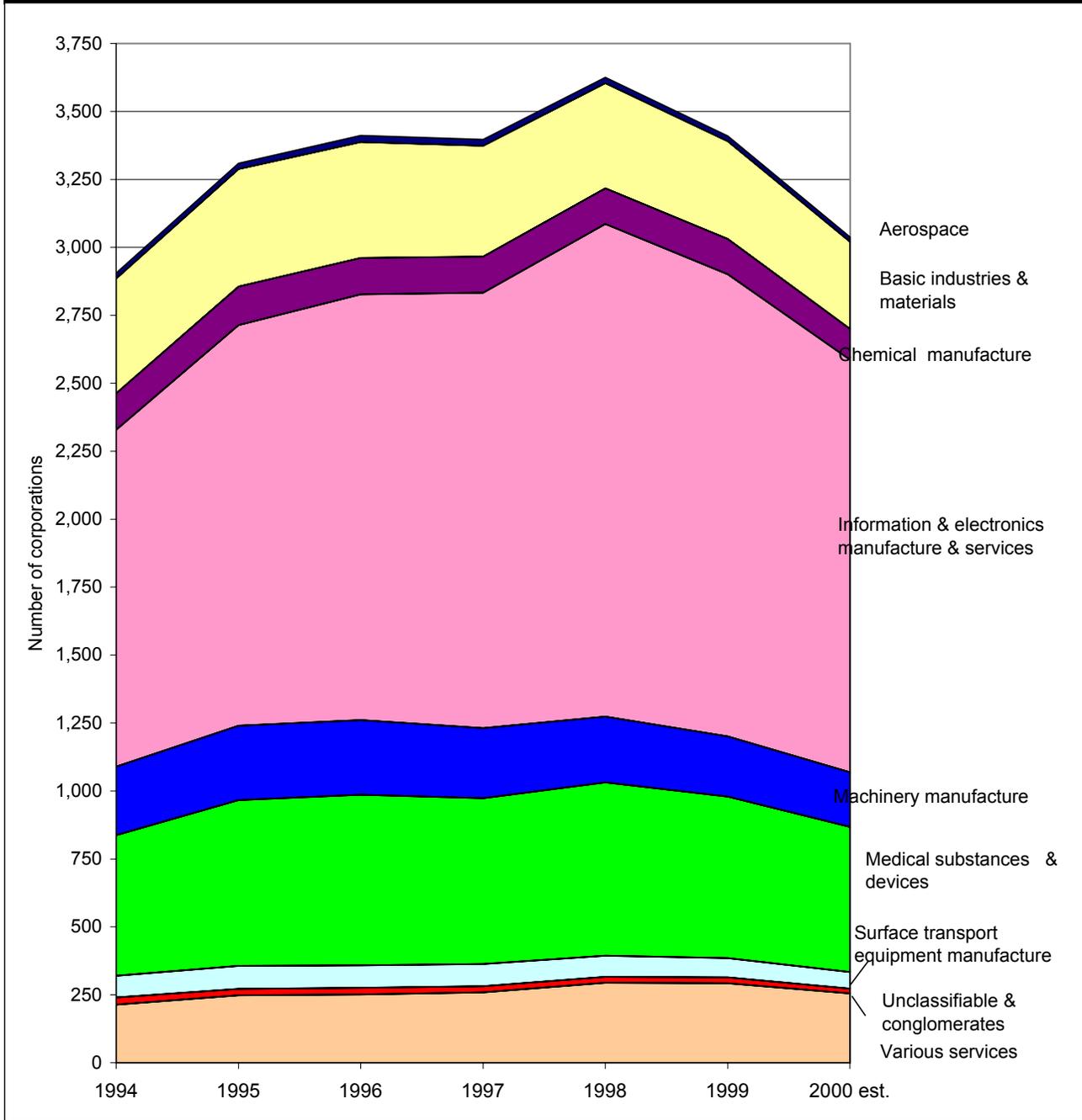
SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 5. Share of total corporate R&D investment by major sectors,\* 1994 and 2000 estimated, billions of current dollars**



\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States. States. SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 6. Number of corporations reporting R&D~ by major sectors,\* 1994-1999 and 2000 estimated**

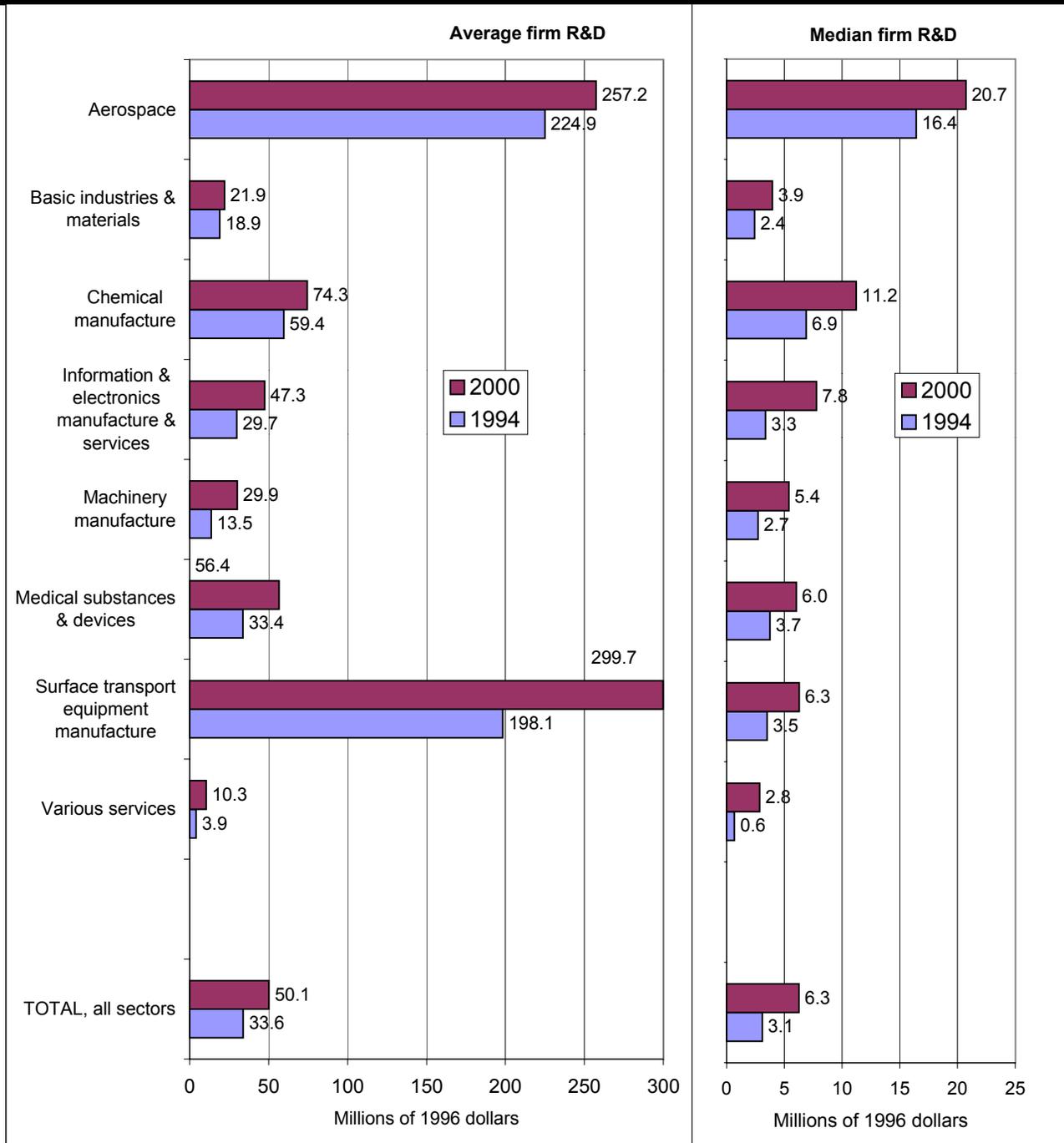


\*Data applies to publicly-held R&D-investing corporations that are headquartered in the United States.

~For any given year, the firm count includes extant firms that report \$0 R&D if such firms report an R&D amount that is greater than \$0 R&D in at least one year during the 1994-2000 time period.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 7. Average and median corporation R&D investment by major sectors,\* 1994 and 2000 estimated, millions of 1996 dollars^**

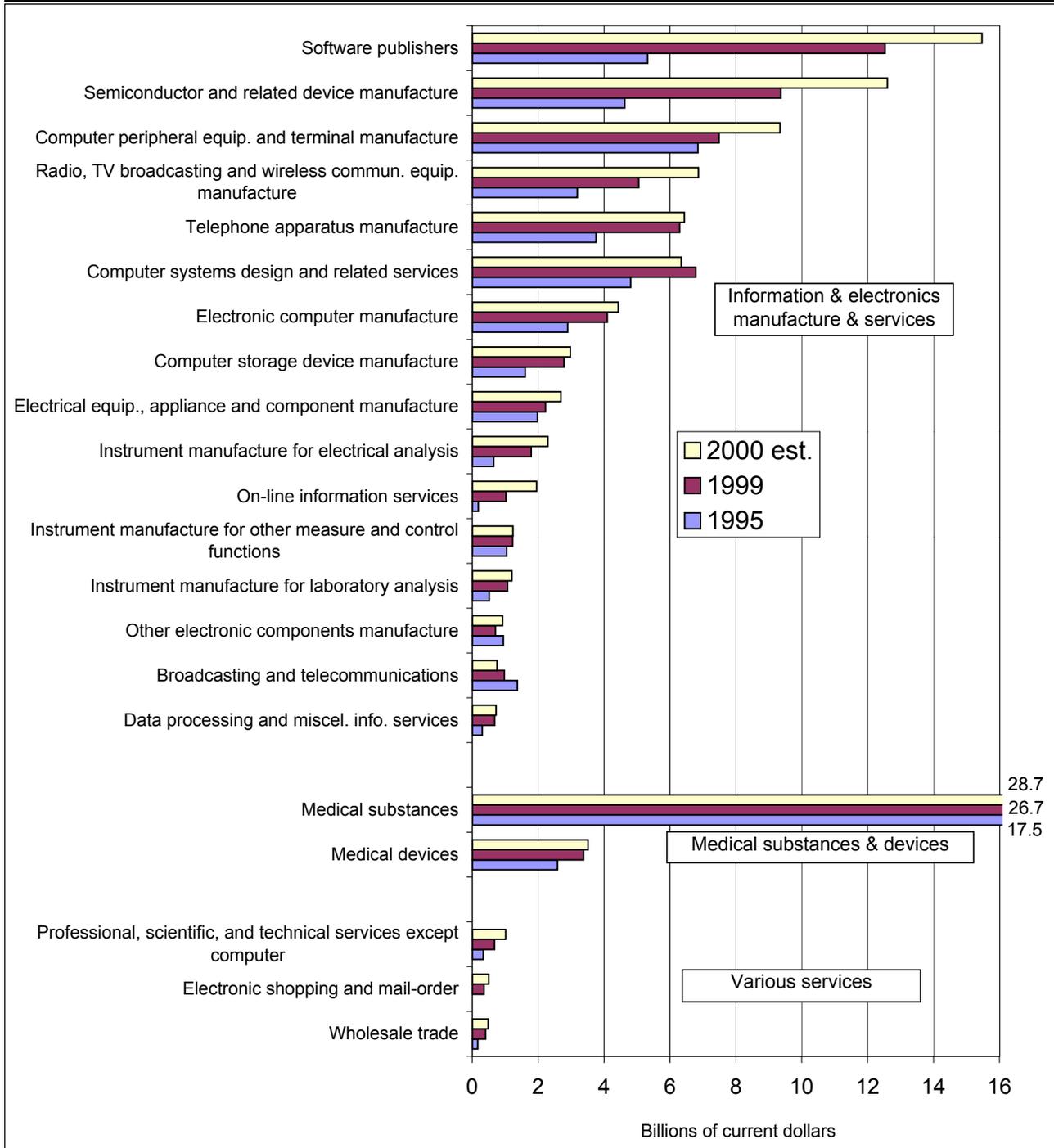


\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Figure 8. Corporate R&D investment by selected industries and subsectors of three major sectors,\* 1995-1999, 2000 estimated, billions of current dollars**



\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.  
 SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Table 1. Corporate R&D investment by major industrial sectors,\* 1994-1999, 2000 estimated**

Major sectors	R&D investment						
	Billions of current dollars						
	1994	1995	1996	1997	1998	1999	2000
Aerospace	4.319	3.948	4.383	4.803	4.972	4.839	4.679
Basic industries & materials	7.663	7.804	8.162	8.477	8.477	7.838	7.537
Chemical manufacture	7.645	7.569	7.750	7.696	7.924	8.265	8.988
Information & electronics manufacture & services	35.382	40.188	45.065	52.942	59.080	64.590	76.814
Machinery manufacture	3.279	4.045	4.851	5.448	6.152	5.763	6.438
Medical substances & devices	16.599	20.102	22.481	24.370	27.336	30.054	32.203
Surface transport equipment manufacture	15.216	18.230	19.376	18.628	18.420	18.924	19.558
Unclassifiable & conglomerates	2.861	2.836	3.136	3.245	3.071	3.245	3.686
Various services	0.804	0.901	1.091	1.263	1.588	2.082	2.819
<b>Total</b>	<b>93.768</b>	<b>105.623</b>	<b>116.295</b>	<b>126.872</b>	<b>137.019</b>	<b>145.600</b>	<b>162.722</b>

Major Sectors	Billions of 1996 dollars <sup>^</sup>						
	1994	1995	1996	1997	1998	1999	2000
Aerospace	4.498	4.024	4.383	4.713	4.819	4.625	4.373
Basic industries & materials	7.981	7.954	8.162	8.317	8.217	7.492	7.045
Chemical manufacture	7.962	7.715	7.750	7.550	7.681	7.900	8.401
Information & electronics manufacture & services	36.849	40.962	45.065	51.939	57.264	61.738	71.795
Machinery manufacture	3.414	4.123	4.851	5.344	5.963	5.509	6.018
Medical substances & devices	17.287	20.490	22.481	23.909	26.496	28.727	30.099
Surface transport equipment manufacture	15.847	18.581	19.376	18.275	17.854	18.088	18.280
Unclassifiable & conglomerates	2.980	2.891	3.136	3.184	2.977	3.102	3.445
Various services	0.837	0.919	1.091	1.239	1.539	1.990	2.635
<b>Total</b>	<b>97.654</b>	<b>107.657</b>	<b>116.295</b>	<b>124.470</b>	<b>132.809</b>	<b>139.170</b>	<b>152.091</b>

Major Sectors	Annual percent change, 1996 dollars <sup>^</sup>						
	1995	1996	1997	1998	1999	2000	
Aerospace	-10.5%	8.9%	7.5%	2.3%	-4.0%	-5.5%	
Basic industries & materials	-0.3%	2.6%	1.9%	-1.2%	-8.8%	-6.0%	
Chemical manufacture	-3.1%	0.5%	-2.6%	1.7%	2.9%	6.3%	
Information & electronics manufacture & services	11.2%	10.0%	15.3%	10.3%	7.8%	16.3%	
Machinery manufacture	20.8%	17.6%	10.2%	11.6%	-7.6%	9.2%	
Medical substances & devices	18.5%	9.7%	6.3%	10.8%	8.4%	4.8%	
Surface transport equipment manufacture	17.3%	4.3%	-5.7%	-2.3%	1.3%	1.1%	
Unclassifiable & conglomerates	-3.0%	8.5%	1.5%	-6.5%	4.2%	11.1%	
Various services	9.8%	18.7%	13.6%	24.2%	29.3%	32.4%	
<b>Total</b>	<b>10.2%</b>	<b>8.0%</b>	<b>7.0%</b>	<b>6.7%</b>	<b>4.8%</b>	<b>9.3%</b>	

\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

<sup>^</sup>1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the U.S. Securities and Exchange Commission.

**Table 2. Three-year and six-year average annual percent change in corporate R&D investment by major sectors,\* 1994-1999 and 2000 estimated, 1996 dollars<sup>^</sup>**

Major Sectors	Annual percent change		
	Three-year average		Six-year average
	1994-1997	1997-2000	1994-2000
Aerospace	1.6%	-2.5%	-0.5%
Basic industries & materials	1.4%	-5.4%	-2.1%
Chemical manufacture	-1.8%	3.6%	0.9%
Information & electronics manufacture & services	12.1%	11.4%	11.8%
Machinery manufacture	16.1%	4.0%	9.9%
Medical substances & devices	11.4%	8.0%	9.7%
Surface transport equipment manufacture	4.9%	0.0%	2.4%
Unclassifiable & conglomerates	2.2%	2.7%	2.4%
Various services	14.0%	28.6%	21.1%
Total	8.4%	6.9%	7.7%

\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

<sup>^</sup>1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the U.S. Securities and Exchange Commission.

**Table 3. Number of corporations reporting R&D~ by major sectors,\* 1994-1999 and 2000 estimated**

Major Sectors	Billions of 1996 dollars^						
	1994	1995	1996	1997	1998	1999	2000
Aerospace	20	21	23	22	21	19	17
Basic industries & materials	422	432	427	408	387	359	321
Chemical manufacture	134	142	134	133	131	130	113
Information & electronics manufacture & services	1,240	1,474	1,566	1,602	1,812	1,700	1,518
Machinery manufacture	252	274	275	258	243	222	201
Medical substances & devices	517	609	627	610	637	594	534
Surface transport equipment manufacture	80	85	83	81	78	71	61
Unclassifiable & conglomerates	26	24	25	23	21	21	18
Various services	214	248	251	259	295	293	255
Total	2,905	3,309	3,411	3,396	3,625	3,409	3,038

\*Data applies to publicly-held R&D-investing corporations that are headquartered in the United States.

~For any given year, the firm count includes extant firms that report \$0 R&D if such firms report an R&D amount that is greater than \$0 R&D in at least one year during the 1994-2000 time period.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the Securities and Exchange Commission.

**Table 4A. Corporate R&D investment by selected industries of three major sectors,\* 1995-1999, 2000 estimated, current dollars**

Major sector	Detailed industry	R&D investment Billions of current dollars					
		1995	1996	1997	1998	1999	2000
<b>Information &amp; electronics manufacture &amp; services</b>							
	Software publishers	5.311	6.968	8.369	10.716	12.522	15.464
	Semiconductor and related device manufacture	4.621	5.703	7.045	8.218	9.353	12.595
	Computer peripheral equip. and terminal manufacture	6.840	7.872	8.756	8.212	7.478	9.335
	Radio, TV broadcasting and wireless commun. equip. manufacturi	3.177	3.546	4.200	4.728	5.048	6.856
	Telephone apparatus manufacture	3.752	3.147	4.405	5.171	6.284	6.427
	Computer systems design and related services	4.799	5.183	6.318	6.619	6.774	6.333
	Electronic computer manufacture	2.887	2.834	3.039	3.380	4.090	4.419
	Computer storage device manufacture	1.597	1.841	2.057	2.455	2.777	2.966
	Electrical equip., appliance and component manufacture	1.971	2.086	2.302	2.198	2.212	2.685
	Instrument manufacture for electrical analysis	0.644	0.783	0.790	0.864	1.777	2.283
	On-line information services	0.173	0.286	0.407	0.565	1.009	1.944
	Instrument manufacture for other measure and control functions	1.037	1.195	1.496	1.841	1.217	1.223
	Instrument manufacture for laboratory analysis	0.509	0.651	0.795	0.932	1.060	1.196
	Other electronic components manufacture	0.933	0.882	0.910	1.073	0.695	0.911
	Broadcasting and telecommunications	1.363	1.335	1.136	1.063	0.964	0.744
	Data processing and miscel. info. services	0.292	0.353	0.427	0.558	0.669	0.713
	Motion picture and sound recording industries	0.018	0.066	0.072	0.109	0.304	0.332
	Other communications equip. manufacture	0.071	0.094	0.119	0.143	0.147	0.195
	Audio and video equip. manufacture	0.105	0.139	0.151	0.149	0.149	0.137
	All other publishing industries	0.088	0.100	0.147	0.085	0.061	0.057
<b>Medical substances &amp; devices</b>							
	Medical substances	17.523	19.511	21.051	23.931	26.683	28.701
	Medical devices	2.579	2.971	3.319	3.405	3.371	3.503
<b>Various services</b>							
	Professional, scientific, and technical services except computer	0.325	0.344	0.342	0.535	0.665	1.007
	Electronic shopping and mail-order	0.004	0.015	0.023	0.087	0.350	0.493
	Wholesale trade	0.159	0.181	0.220	0.327	0.394	0.471
	Admin., support, waste management and remediation services	0.082	0.160	0.181	0.231	0.207	0.314
	Finance, insurance, real estate and leasing	0.143	0.214	0.316	0.210	0.219	0.200
	All other retail trade	0.021	0.023	0.029	0.035	0.070	0.122
	Education, arts, entertainment, recreation and other services	0.080	0.064	0.046	0.063	0.083	0.105
	Transportation and warehousing	0.052	0.056	0.068	0.077	0.067	0.067
	Health care and social assistance	0.037	0.034	0.038	0.022	0.026	0.041

\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the U.S. Securities and Exchange Commission.

**Table 4B. Corporate R&D investment by selected industries of three major sectors,\* 1995-1999, 2000 estimated, 1996 dollars**

Major sector	Detailed industry	R&D investment					
		Billions of 1996 dollars					
		1995	1996	1997	1998	1999	2000
<b>Information &amp; electronics manufacture &amp; services</b>							
	Software publishers	5.414	6.968	8.211	10.387	11.969	14.454
	Semiconductor and related device manufacture	4.710	5.703	6.912	7.965	8.940	11.772
	Computer peripheral equip. and terminal manufacture	6.972	7.872	8.590	7.960	7.148	8.725
	Radio, TV broadcasting and wireless commun. equip. manufacture	3.238	3.546	4.121	4.583	4.825	6.408
	Telephone apparatus manufacture	3.824	3.147	4.322	5.012	6.006	6.007
	Computer systems design and related services	4.891	5.183	6.198	6.416	6.475	5.919
	Electronic computer manufacture	2.943	2.834	2.982	3.276	3.910	4.131
	Computer storage device manufacture	1.627	1.841	2.018	2.379	2.655	2.772
	Electrical equip., appliance and component manufacture	2.009	2.086	2.259	2.130	2.114	2.509
	Instrument manufacture for electrical analysis	0.657	0.783	0.775	0.838	1.699	2.134
	On-line information services	0.176	0.286	0.399	0.548	0.964	1.817
	Instrument manufacture for other measure and control functions	1.057	1.195	1.468	1.784	1.163	1.143
	Instrument manufacture for laboratory analysis	0.519	0.651	0.780	0.903	1.013	1.118
	Other electronic components manufacture	0.951	0.882	0.892	1.040	0.664	0.852
	Broadcasting and telecommunications	1.389	1.335	1.114	1.031	0.922	0.695
	Data processing and miscel. info. services	0.297	0.353	0.419	0.541	0.640	0.667
	Motion picture and sound recording industries	0.018	0.066	0.070	0.106	0.291	0.310
	Other communications equip. manufacture	0.073	0.094	0.117	0.139	0.141	0.182
	Audio and video equip. manufacture	0.107	0.139	0.148	0.144	0.142	0.128
	All other publishing industries	0.089	0.100	0.144	0.082	0.058	0.053
<b>Medical substances &amp; devices</b>							
	Medical substances	17.861	19.511	20.653	23.195	25.505	26.826
	Medical devices	2.629	2.971	3.256	3.300	3.222	3.274
<b>Various services</b>							
	Professional, scientific, and technical services except computer	0.331	0.344	0.335	0.518	0.636	0.941
	Electronic shopping and mail-order	0.004	0.015	0.022	0.085	0.334	0.460
	Wholesale trade	0.162	0.181	0.216	0.317	0.377	0.440
	Admin., support, waste management and remediation services	0.083	0.160	0.178	0.224	0.198	0.294
	Finance, insurance, real estate and leasing	0.145	0.214	0.310	0.204	0.209	0.187
	All other retail trade	0.021	0.023	0.028	0.034	0.067	0.114
	Education, arts, entertainment, recreation and other services	0.082	0.064	0.045	0.061	0.080	0.099
	Transportation and warehousing	0.053	0.056	0.067	0.075	0.064	0.063
	Health care and social assistance	0.038	0.034	0.037	0.022	0.025	0.038

\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the U.S. Securities and Exchange Commission.

**Table 4C. Annual percent change in corporate R&D investment by selected industries of three major sectors,\* 1995-1999, 2000 estimated, 1996 dollars**

Major sector	Detailed industry	Annual percent change in R&D investment				
		Billions of 1996 dollars				
		1996	1997	1998	1999	2000
<b>Information &amp; electronics manufacture &amp; services</b>						
	Software publishers	28.7%	17.8%	26.5%	15.2%	20.8%
	Semiconductor and related device manufacture	21.1%	21.2%	15.2%	12.2%	31.7%
	Computer peripheral equip. and terminal manufacture	12.9%	9.1%	-7.3%	-10.2%	22.1%
	Radio, TV broadcasting and wireless commun. equip. manufacture	9.5%	16.2%	11.2%	5.3%	32.8%
	Telephone apparatus manufacture	-17.7%	37.3%	16.0%	19.8%	0.0%
	Computer systems design and related services	6.0%	19.6%	3.5%	0.9%	-8.6%
	Electronic computer manufacture	-3.7%	5.2%	9.9%	19.3%	5.7%
	Computer storage device manufacture	13.1%	9.6%	17.9%	11.6%	4.4%
	Electrical equip., appliance and component manufacture	3.9%	8.3%	-5.7%	-0.7%	18.7%
	Instrument manufacture for electrical analysis	19.3%	-1.0%	8.1%	102.7%	25.6%
	On-line information services	62.3%	39.5%	37.2%	76.1%	88.5%
	Instrument manufacture for other measure and control functions	13.1%	22.8%	21.5%	-34.8%	-1.7%
	Instrument manufacture for laboratory analysis	25.3%	19.8%	15.8%	12.2%	10.4%
	Other electronic components manufacture	-7.3%	1.2%	16.5%	-36.2%	28.3%
	Broadcasting and telecommunications	-3.9%	-16.5%	-7.5%	-10.6%	-24.6%
	Data processing and miscel. info. services	18.7%	18.8%	29.1%	18.2%	4.2%
	Motion picture and sound recording industries	262.7%	6.0%	50.6%	174.3%	6.8%
	Other communications equip. manufacture	29.5%	24.2%	18.7%	1.4%	29.3%
	Audio and video equip. manufacture	30.0%	6.3%	-2.4%	-1.4%	-10.4%
	All other publishing industries	12.3%	44.0%	-43.0%	-29.5%	-8.7%
<b>Medical substances &amp; devices</b>						
	Medical substances	9.2%	5.9%	12.3%	10.0%	5.2%
	Medical devices	13.0%	9.6%	1.4%	-2.4%	1.6%
<b>Various services</b>						
	Professional, scientific, and technical services except computer	3.9%	-2.5%	54.5%	22.7%	48.0%
	Electronic shopping and mail-order	307.1%	48.2%	282.2%	294.9%	37.7%
	Wholesale trade	11.6%	19.2%	46.9%	18.8%	16.8%
	Admin., support, waste management and remediation services	92.0%	11.2%	26.2%	-11.8%	48.5%
	Finance, insurance, real estate and leasing	47.3%	44.9%	-34.4%	2.9%	-10.9%
	All other retail trade	10.8%	21.1%	20.4%	97.9%	71.0%
	Education, arts, entertainment, recreation and other services	-21.3%	-29.3%	33.7%	31.3%	23.8%
	Transportation and warehousing	4.6%	20.1%	11.7%	-14.0%	-2.6%
	Health care and social assistance	-9.5%	9.6%	-41.6%	14.3%	53.5%

\*Data represent publicly-held R&D-investing corporations that are headquartered in the United States.

^1996 dollars are calculated using the "implicit price deflator" published August 29, 2001 by the U.S. Department of Commerce, Bureau of Economic Analysis.

SOURCE: Standard & Poor's Compustat, Englewood, CO and corporate financial statements submitted to the U.S. Securities and Exchange Commission.