

DEPARTMENT OF AGRICULTURE
1994 Budget Passback

Stimulus (1993):

- o \$4 million in FY 93 BA to add 160 meat and poultry inspectors in the Food Safety and Inspection Service.
- o Includes \$348 million for rural water and wastewater loans and grants.
- o Funds rural very-low income housing repair loans and grants (\$7 million).
- o Includes \$188 million for Forest Service enhanced natural resource protection and environmental infrastructure (including trails).
- o Includes \$47 million for emergency watershed project repair and construction.
- o \$71 million to begin full funding for a Special Supplemental Food Program for Women, Infants, and Children (WIC).
- o \$23 million for the Emergency Food Assistance Program (TEFAP) for commodities to be delivered early in FY 1994. This would ensure a smooth flow of commodities while waiting for FY 1994 funds. FY 1994 funding will maintain approximately the FY 1993 level of commodity deliveries.
- o \$38 million for repair and maintenance activities and hazardous waste clean-up at Agricultural Research Service facilities.
- o \$56 million for the Child and Adult Care Food Program to pay for meals for children added to Head Start as a result of funds provided under the Stimulus package.

Investments (1994-97):

- o Over \$17 billion in total BA FY 1994-1997 is included for Investments above baseline levels, including:
 - oo \$871 million for water and wastewater and grants (FY 1997 outlays = \$176 million, 1994-1997 = \$331 million); part of the rural development initiative.

- oo \$2.4 billion for business and housing loans and grants (FY 1997 outlays = \$454 million, 1994-1997 = \$1,155 million); also part of the rural development initiative.
- oo \$2.7 billion for the Women, Infants, and Children (WIC) program, to begin covering all eligible, so that the President's "full" funding commitment would be met by the end of FY 1996 (FY 1997 outlays = \$1 billion, 1994-1997 = \$2.7 billion).
- oo \$9 billion in Food Stamp increases to help offset the effects of the energy tax on low-income households. (\$1 billion in FY 1994, \$2 billion in FY 1995, and \$3 billion per year after FY 1995).
- oo \$565 million for Forest Service enhanced natural resource protection and environmental infrastructure (FY 1997 outlays = \$168 million, 1994-1997 = \$506 million).
- oo \$120 million in funding for a Food Safety Initiative to hire additional meat and poultry inspectors (+200 FTEs) and perform interagency research to reduce the level of food-borne pathogens (FY 1997 outlays = \$34 million, 1994-1997 = \$111 million).
- oo \$287 million for Forestry Research to improve domestic ecosystem management, and \$180 million for Forests for the Future international forestry assistance (combined FY 1997 outlays = \$155 million, 1994-1997 = \$431 million).
- oo \$263 million for a Tree Planting Initiative, to increase tree planting in both rural and urban areas (FY 1997 outlays = \$76 million, 1994-1997 = \$246 million).
- oo \$480 million for the National Research Initiative Competitive Grants Program to support high priority agricultural, food, and environmental research (FY 1997 outlays = \$110 million, 1994-1997 = \$188 million).
- oo \$1.2 billion for the Child and Adult Care Food Program to pay for meals for children added to Head Start as a result of funds provided under the Investment package. (FY 1997 outlays = \$.3 billion, FY 1994-1997 outlays = \$.8 billion).

Proposed Discretionary Reductions (savings in outlays)

- o To fulfill the President's goal to downsize the Federal Government, a Farm Service Agency would be created from current USDA agencies serving farmers at the county level. The proposal would improve service for farmers while reducing staff needs at the USDA National, State and local levels (Savings in FY 1997 = \$307 million, 1994-1997 = \$730 million).
- o REA loans would be made at Treasury rates while preserving \$25 million in five-percent loans each year for "needy" electric borrowers (Savings in FY 1997 = \$150 million, 1994-1997 = \$374 million).
- o Phase out below-cost timber sales over four years (Savings in FY 1997 = \$86 million, 1994-1997 = \$274 million).
- o Increase meat and poultry inspection fees to cover all overtime work (Savings in FY 1997 = \$104 million, 1994-1997 = \$416 million).
- o Reduce lower-priority, earmarked agricultural research and facility construction (Savings in FY 1997 = \$112 million, 1994-1997 = \$262 million).
- o Specific agriculture user fees would be increased to cover the full cost to the Government of providing commodity grading, over-time inspection, and other services. (Affects Agricultural Marketing Service, Federal Grain Inspection Service, and the Agricultural Cooperative Service) (Savings in FY 1997 = \$16 million, 1994-1997 = \$59 million).
- o Foreign Agricultural Service (FAS) lower-priority programs would be reduced with remaining funds targeted to those agriculture sectors that most need Federal assistance in order to enhance U.S. agricultural exports (Savings in FY 1997 = \$10 million, 1994-1997 = \$40 million).
- o Streamline the Economic Research Service (ERS), reducing lower-priority economic research (Savings in FY 1997 = \$17 million, 1994-1997 = \$61 million).
- o FmHA direct farm loans would be cut by 25 percent and subsidized guarantees would be increased by an equal amount; subsidized guarantees would be targeted to beginning

farmers as authorized by the 1992 Farm Credit Improvement Act (Savings in FY 1997 = \$10 million, 1994-1997 = \$31 million).

- o Streamlining savings represent a freeze level for non-salaries and expenses accounts not affected by other proposals, and selected reductions in lower-priority programs (savings in FY 1997 = \$76 million, 1994-1997 = \$227 million).
- o Technical adjustments and miscellaneous changes, such as FTS 2000 price savings, and the removal of one-time disaster assistance from the baseline (Savings in FY 1997 = \$12 million, FY 1994-1997 = \$47 million).

Proposed Entitlement Savings (savings in outlays)

- o Commodity Credit Corporation farm payments (CCC) would be better directed to family-sized farmers. Farm payment recipients would be limited to those making less than \$100,000 in off-farm income (Savings in FY 1997 = \$140 million, 1994-1997 = \$470 million). Also, wool and mohair direct support payments would be limited to \$50,000 per person (Savings in FY 1997 = \$66 million, 1994-1997 = \$212 million).
- o Reforms contained in the 1990 Farm Bill would be extended starting in FY 1996: "triple base" acres would be increased from 15 to 25 percent, with corresponding increases in fees on "non-program" crops, and the 0/92 and 50/92 programs would be eliminated. Also, eliminate honey program subsidies in FY 1994. (Savings in FY 1997 = \$1.8 billion, 1994-1997 = \$2.9 billion).
- o Reform crop insurance by basing indemnities on area (county) yield, rather than on individual farm experience (combined mandatory and discretionary savings in FY 1997 = \$426 million, 1994-1997 = \$1.3 billion). Also, annual commodity disaster payments would be reduced by increasing the loss threshold from 35 to 40 percent and funded on a mandatory basis through a Presidential declaration of an emergency.
- o Phase in increased grazing fees over four years to approximate fair market value (Savings in FY 1997 = \$13 million, 1994-1997 = \$28 million). Secretary would be given flexibility to negotiate higher fees consistent with these savings targets.

- o **Increase recreation fees;** would increase existing fees and add entrance fees at specific national forest recreation areas (Savings in FY 1997 = \$13 million, 1994-1997 = \$46 million); no increase greater than \$3 per site or activity.
- o **Reduce Food Stamp administrative expenses.** Beginning April 1, 1994, match all State administrative expenses at 50 percent. AFDC and Medicaid matching rates will also be set at 50 percent.
- o **Market Promotion Program (MPP)** would have its current appropriation level of \$148 million extended permanently (Savings in FY 1997 = \$52 million, 1994-1997 = \$208 million).

Across-the-Board Reductions (savings in outlays)

- o **Pay adjustment** -\$124 million BA in FY 94; due to Government-wide changes in pay.
- o **FTE reduction** -\$10 million BA in FY 1994; FY 1994 FTE level of 109,669; -2,812 (-2.5%) from FY 1993; pursuant to the Executive Order. (Most of the savings from FTE reductions were assumed in the Farm Service Agency proposal)
- o **Other administrative efficiencies** -\$66 million BA in FY 1994; -3% pursuant to the Executive Order.
- o **Limits on R&D Grant Overhead** -\$16 million BA in FY 1994.

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DEPARTMENT OF COMMERCE
1994 Budget Passback

Stimulus (1993)

- EDA. An increase of \$94M targeted to assist economically distressed communities.
- NOAA. An increase of \$81M will support weather service modernization and procurement of computers and other equipment to enhance program-related research efforts.
- NIST. An increased of \$117M is proposed for NIST programs -- \$103M for the advanced technology program and \$14M for networking and computer applications.
- NTIA/Information Highways. To promote faster introduction and expansion of networks between universities, businesses, schools and libraries, \$64M in new grant funds is proposed. A new program.
- MBDA. To meet anticipated 1993 budget shortfall, an increase of \$1.9M is provided.

Investments (1994-97)

- Weather Service Modernization. Provides funds in 1994 (+\$155M over baseline) to finance the multi-year capital modernization program. Most increases are for weather satellites and improved weather detection technologies (e.g. doppler radars).
- National Institute of Standards and Technology (NIST). Grows from 1993 enacted of \$381M to \$1,369M by 1997. Increase over 1994 baseline is \$181M and over 1997 baseline is \$931M.
 - oo Advanced Technology Program grants: Program expands from \$68M in 1993 (enacted) to \$758M by 1997.
 - oo Manufacturing Extension grants: increased to support over 100 manufacturing outreach and technology centers nationwide by 1997. Program expands from \$19M in 1993 (enacted) to \$92M by 1997.
 - oo In-house research in NIST labs doubled over five-year period.
- Economic Development Administration. \$33M will be available in 1994 and \$55M will be available annually 1995 through 1998 as a part of the Defense conversion initiative.

- NTIA/Information Highways. Provides \$54M in 1994 (baseline is zero) and \$150M annually in 1995-1997 to expand the number of networks between universities, businesses, schools and libraries.
- FCCSET Initiatives. Additional funds may be provided in a separate passback.

Non-Defense Discretionary Reductions

- Bureau of Export Administration (BXA). Reduce 1994 BXA funding \$6M below baseline consistent with recent reductions in license applications. Stress bilateral/multi-lateral agreements to control technology exports to unstable countries.
- NOAA. Eliminate \$65M in 1994 spending for low priority programs, projects, and demonstrations, usually those earmarked by Congress.
- EDA - Trade Adjustment Assistance. Eliminate trade adjustment assistance to firms (-\$13M below 1994 baseline). Secretary Brown mentioned this as a low-priority program.
- Pay Adjustment. No pay raise in 1994 and pay raise reduced by one percent in each year, 1995-1997. Omit locality pay in 1994; implement revised locality pay system beginning in 1995. Savings of \$38 million in 1994 and \$94 million in 1997.
- FTE Reduction. Implement Executive Order on 100,000 FTE reduction. Savings of \$29M in 1994 and \$233M in 1997.
- Other Administrative Efficiencies. Implement Executive Order on Deficit Control and Productivity Improvement in the Administration of the Federal Government. Savings of \$21M in 1994 and \$97M in 1997.

Entitlements

- Auction Spectrum. Support legislation to require the FCC to auction radio spectrum. This legislation would transfer 200 megahertz from the Federal Government to the FCC for assignment using auction. Need to work ASAP with Dingell to ensure that auction proposal is not foreclosed by fast-moving House legislation.
- Patent and Trademark Office. Extend existing (OBRA) user fees beyond sunset date of 1995 (or increase other existing patent fees by some amount). Provide for indexing for out-years. Yields in excess of \$110M annually starting in 1996.

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National Defense Talking Points

Post-Cold War military forces will be shaped for new requirements and highly ready:

- 1.4 million men and women on active duty,
- capable forward presence of roughly 100,000 troops in Europe, and
- force readiness will be maintained at high levels.

Hardware programs:

- major weapons systems will be assessed as the entire Defense program is reviewed this Spring,
- systems will continue our technological superiority,
- airlift and sealift adequate for new challenges,
- funding for SDI will be reduced, pending a strategic review, and
- science and technology programs remain a high priority.

National Defense Program will be affordable:

- planned national defense funding over next 4 years fulfills the promise of an additional \$60 billion in program savings,
- program savings combined with government-wide pay and benefit changes and additional reductions to offset projected under-funding result in total outlay savings of \$37 billion in 1997.

Defense planning will deal with new fiscal and management challenges.

- Most recent 5-year budget plan of the previous administration may have:

- oo understated costs of forces and hardware, and
- oo overstated the savings from planned Defense Management Reforms and overhead consolidations.
- Liabilities, such as for environmental clean-up, may be greater than previously anticipated.
- A task force is reviewing these funding and management issues.

Department of Energy Defense Programs

- 3% real increase (after inflation) per year for environmental clean-up, and
- no nuclear weapons production and only 15 tests of weapons through 1996.

To ameliorate the economic effects of reductions, the plan includes new initiatives for defense conversion.

- continued funding for the Department of Defense for dual-use technology and manufacturing programs,
- additional funding for DOD's Office of Economic Adjustment and for the Economic Development Administration in the Department of Commerce for community diversification programs,
- about \$9 billion in 1994-97 in investment initiatives of the Departments of Energy, Transportation and Commerce and NASA for technology programs and high technology product acquisition, creating "market pull" for defense industries and their workforce,
- \$5.4 billion in 1994-97 to the Department of Labor for dislocated worker training, and
- funding for the Department of Energy for training, employee assistance, and community assistance programs.

EDUCATION DEPARTMENT
1994 Budget Passback

Stimulus (1993)

- o Chapter 1 Summer Programs. \$500M for FY 1993 only. (No change from prior passback.) Appropriation language proposed so that at least 80% of the money is spent at the local level by Sept. 30, 1993.
- o Chapter 1 Census Offset. \$235M for 1993 only. Added since prior passback phone call. Provides partial offset for loss of funds in some areas due to shift from 1980 to 1990 Census data for fund allocations.
- o Pell shortfall: 1993-1994 and prior years. No change from prior passback. \$2.024B: \$1.371B for old shortfalls; \$.653B for 1993-1994. Fully funds current shortfall estimates through 1993-1994 school years.

Investments (1994-1997)

- o Apprenticeship. No change in 1997: outlays of \$495M. 1994 BA reduced from \$450M to \$270M since prior passback call. Labor and ED are collaborating on policy.
- o Allowance for Reform and Initiatives. No change in 1997: outlays of \$2.7B. 1994 BA reduced from \$1.45B to \$870M since prior passback. The allowance is for:
 - Elementary and secondary: "Safe Schools"; Systemic School Reform; reauthorization of Elementary and Secondary Education Act; other programs.
 - Postsecondary: Pell grants and other higher education programs.

Non-Defense Discretionary Reductions. No change from prior passback.

- o Reform Campus-based Aid. Reduce BA for supplemental grants, loan capital, work-study \$200M below 1993; freeze remaining \$1.2B in outyears; give schools flexibility to shift funds among activities. Outlay savings: \$275M in 1997.
- o Phase-out Impact Aid "b". Three year phase-out of Impact Aid "b" payments to school districts. No cuts in the much larger "a" payments. Outlay savings: \$145M in 1997.

- o "Streamlining": Eliminate, restructure or reduce other programs. 1997 outlay savings: \$620M, derived as follows (Secretary has discretion on how to achieve):
 - Eliminate consumer/homemaking. 1997 outlay saving: \$37M.
 - Reduce outlays one-third for 60 programs with less than \$50 million in 1993 BA. 1997 outlay savings: \$186M.
 - Freeze BA at 1993 level for most other programs. 1997 outlay savings: \$398M.

Entitlements. No change from prior passback.

- o Direct Loans. Legislation to expand and modify Direct Loan pilot with goal of full implementation of Direct loans in 1997. 1997 outlay savings: \$1.3B. Prepare loan repayment options, including repayments adjusted to annual income, to permit more people to take low wage community service jobs.
- o State Default Fee. States to share costs if default rate of students in State's schools exceeds 20 %. States may pass on costs to schools. 1997 outlay savings: \$131M.

Other

- o Across The Board Cuts. 1997 outlay savings: \$71M. Savings from: FTE reductions (-50 in 1993, rising to -198 by 1995); lower administrative expenses; lower research costs per new policy to cut grantee overhead; no 1994 pay raise.
- o Technical increases. Amounts increased over baseline. 1997 outlays: \$135M. 1994 BA increase: \$148M. Provides for: continuing Pell and student loan processing contracts; improvements in accounting systems; continuing planned expansions of statistics programs; National Assessment of Educational Progress, State-based and national assessments.

DEPARTMENT OF ENERGY
1994 Budget Passback

STIMULUS (1993)

- o **Weatherization Grants.** Increase funding by \$47 million to help weatherize homes of lower income households and create jobs quickly.
- o **Federal Energy Efficiency.** Increase funding for DOE in-house energy management and Federal Energy Management Program Activities (by \$13 million in FY93).
- o **DOE Laboratories.** Increase funding for Cooperative Research and Development Agreement (CRADAs) at the National Laboratories by \$47 million in FY93.
- o **Institutional Conservation Program.** Increase funding by \$19 million for model projects demonstrating energy conservation in buildings and industrial processes.
- o **Alternative Fuel Vehicles.** Increase funding by \$28 million for conversion to or acquisition of alternative fuel vehicles for Federal fleet.

INVESTMENT (1994-98)

- o **Funding for Conservation and Renewable Energy.** Propose \$3.5 billion over the FY 1994-98 baseline as part of the investment package, including:
 - \$1.9 billion over 1994-98 for renewable energy and conservation R&D, most of which is intended for implementation of the Energy Policy Act;
 - \$460 million over 1994-98 baseline for low-income weatherization grants; and
 - \$292 million over FY94-FY98 baseline for DOE in-house energy management and Federal Energy Management Program (FEMP) activities, including an efficiency fund that DOE will administer on behalf of a number of smaller agencies.
- o Government-wide, the buildings energy conservation program would increase by \$94 million in FY 1994 and a total of \$1.4 billion over baseline between FY 94-98.

- o Government-wide, the buildings energy conservation program would increase by \$94 million in FY 1994 and a total of \$1.4 billion over baseline between FY 94-98.
- o **Technology Transfer.** Add \$30 million in 1994 for Cooperative Research and Development Agreements at the non-defense laboratories (for a total of \$230 million above the baseline in FY 1994-98).
- o **Other Energy R&D/Technology Increases.** Other technology initiatives above the baseline include increased fusion energy R&D funds, increased gas utilization R&D (\$263 million between 1994 and 1998) and initiation of the Advanced Neutron Source at Oak Ridge (\$1.2 billion between 1994 and 1998).
- o **Environmental Restoration and Waste Management.** The clean-up program would be increased by three percent above baseline.

SAVINGS

- o **Uranium Enrichment.** To pave the way for the creation of the U.S. Enrichment Corporation, one of the enrichment operating plants would be closed (located in Portsmouth, Ohio -- not Paducah, KY). Produces savings of 241 million in outlays in 1994 and \$1.3 billion between 1994 and 1997.
- o **Nuclear Reactor Research.** Stops nuclear reactor research considered commercially unviable. Produces saving of about \$103 million in outlays in 1994 and \$1 billion between 1994 and 1998.
- o **PMAs.** We are withdrawing our debt payment reform proposal and BPA conservation initiative. We will retain a savings marker of \$300 million BA in the outyears but the nature of the savings proposal is to be worked out with Congress.
- o **Strategic Petroleum Reserve (SPRO).** We are proposing to reduce SPRO acquisitions by one-third. Currently, DOE adds about 20,000 barrels per day. (The 20,000 is acquisition for non-defense purposes; another 15,000 is acquired for defense purposes.) This proposal reduces acquisition to just over 13,000 barrels per day.
- o **SSC Will Continue.** The SSC is funded at \$108 million above the baseline in 1994 (total FY94 funding of BA \$640 million). Baseline funding is assumed in the outyears. The project would be stretched out, adding about 3 years and \$1.8 billion

to the schedule. This stretch-out will provide a breather to review magnets and costs and evaluate current contractor, and fix any problems with cost and schedule controls.

DEFENSE PROGRAMS

- o Total FY 1994 BA for DOE defense activities is \$11.6 billion. Part of this (\$5.5 billion) is for defense-related nuclear waste cleanup, which is funded at 3 percent above the baseline. This will require DOE to renegotiate some environmental compliance agreements it entered into with States and EPA and to undertake some reforms in the way it operates this program.
- o All other defense activities related to weapons production, stockpiling, and testing are \$1 billion below the FY 1993 level (\$6.0 billion). This funding level conforms with prior decisions to stop producing and reduce testing of nuclear weapons.
- o \$100 million (part of the \$11.6 billion above) is to provide assistance to workers and communities who lose jobs because of defense-related cuts for DOE.

OTHER

- o **Streamlining/FTE Cuts.** Other cuts, which affect all Federal agencies, will also be taken in an effort to improve the efficiency and streamline the Department's administrative operations. This includes a reduction in the overhead allowance for grants to universities (from 26 percent to 22 percent).
- o **Alaska Power Sale.** The Administration supports the sale of the Alaska Power Administration to the State and other publicly-owned utilities. No budget effects.
- o **FCCSET.** Federal Coordinating Council for Science, Engineering and Technology R&D initiatives are funded above baseline.

**ENVIRONMENTAL PROTECTION AGENCY
1994 BUDGET PASSBACK**

STIMULUS (1993):

- o **Watershed Resource Restoration Grants** -- provide \$47M in 1993 BA in Sec. 319 non-point source grants pursuant to Administrator Browner's request.
- o **Green Programs** -- provide \$23M in 1993 BA to greatly expand EPA's existing "green programs" to promote energy efficiency and reduce greenhouse gas emissions pursuant to Administrator Browner's request.
- o **Wastewater State Revolving Funds (SRFs)** -- provide \$845M in 1993 BA to virtually complete the \$18B authorization under the Clean Water Act.

INVESTMENT (1994-97):

- o **\$1 Billion per year for Drinking Water State Revolving Funds (SRFs)** (\$599M in 1994) -- establish new drinking water SRFs to help municipalities comply with Safe Drinking Water Act requirements (\$692M in 1997 outlays; \$1,328M in 1994-97 outlays).
- o **\$2 Billion per year for Clean Water State Revolving Funds (\$1,198M in 1994) Emphasizing Stormwater Projects** (\$1,402M in 1997 outlays; \$2,700M in 1994-97 outlays)
- o **Environmental Technology** -- expand environmental technology research by \$36M in FY 1994 BA and \$1.85B over nine years (\$127M in 1997 outlays; \$271M in 1994-97 outlays).
- o **Watershed Resource Restoration and Green Programs** -- investment funding for these items included in the stimulus package would be continued at \$50M and \$25M in BA per year respectively for 1995-97 (\$30M and \$15M respectively for 1994).

PROPOSED REDUCTIONS: (all Discretionary -- EPA has only minor Mandatory spending)

- o **Completion of Wastewater Construction Grants** -- provide wastewater funding under current authorization (\$150M per year) only to support NAFTA (including funding for colonias in Texas, New Mexico, and Arizona). Reduces 1997 outlays by \$1,947M and 1994-97 outlays by \$4,104M.
- o **Increase Private Sector Superfund Financing** -- reduce funding by \$118M in FY 1994 BA for EPA cleanups by increasing private sector cleanup activity through increased enforcement. Reduces 1997 outlays by \$109M and 1994-97 outlays by \$308M.

- o **Eliminate One-Time Building Projects** -- would eliminate from the baseline two one-time building projects added by Congress to EPA's budget in 1993.

CROSCUTTING REDUCTIONS:

- o **100,000 FTE Reduction Savings** -- \$17M in 1994 BA savings due to 2.5 percent 1994 FTE cut pursuant to Presidential Executive Order. EPA's share of the FTE reduction is 448 FTE in 1994 (-179 FTE in 1993).
- o **Administrative Efficiencies** -- \$8M in 1994 BA savings due to 3 percent 1994 administrative expense cut pursuant to Presidential Executive Order.
- o **Pay Adjustment** -- \$30M in 1994 BA savings due to changes in Federal pay assumptions.
- o **Streamlining Savings** -- \$34M in 1994 BA savings due to elimination of inflation from the baseline for object classes and programs not affected by other changes.
- o **Other Crosscutting Reductions** -- \$3M in 1994 BA savings due government-wide limits on R&D grant overhead and \$1M due to FTS 2000 price reductions.

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Department of Health and Human Services

HHS-wide Talking Points

To preserve maximum Secretarial flexibility to allocate resources, maintain consistency with Clinton priorities, and achieve deficit reductions levels, the following reductions may be allocated within HHS.

Reduction of 100,000 Federal Positions

- On February 10, 1993, the President issued an Executive Order reducing 100,000 Federal positions over the next three fiscal years. To achieve the President's goal by FY 1996, HHS' contribution is over 1,000 FTE in FY 1993 and over 10,000 FTE over FYs 1993-1996. At least 10 percent of the reductions shall come from the SES, GS-15 and GS-14 levels or equivalent.

Deficit Control and Productivity Improvement in the Administration of the Federal Government

- The President is committed to achieving real reductions in the administrative costs of Federal agencies. To meet this goal by FY 1997, HHS shall reduce its administrative overhead (defined as expenditures for contractual services and supplies) by approximately \$150 million in FY 1994 and approximately \$1.7 billion in FYs 1994-1997.

Streamlining

- To achieve the President's goal of streamlining agency programs, HHS's share of additional administrative reductions is over \$100 million in FY 1994 and over \$3 billion over FYs 1994- 1997.

Stimulus (1993)

- Head Start (Summer). An increase of \$500 million to fund a summer Head Start program to help disadvantaged children retain the social and intellectual gains made during the school year.
- Ryan White Act. An increase of \$200 million to respond to the President's pledge to fully fund the Ryan White Act.
- Immunizations. An increase of \$300 million through the national vaccine program to finance vaccine purchase, certain personnel expenses, vaccine safety and research, the development of a national tracking system, and a community based outreach and information campaign.
- NIH Higher Performance Computing Applications. A \$9 million increase to develop applications of advanced computer and networking technology for health care.
- Social Security Administration. A supplemental in FY 1993 for the Social Security Administration for purchase of computers and other equipment and processing disability determinations -- \$302 million in FY 1993, \$120 million in FY 1994, and \$200 million in succeeding years.

Investment (1994-97)

- No specific amount has been set aside for reforming welfare.
- Head Start (Summer). Continues the summer Head Start program at \$514 million in 1994.
- Head Start Program Growth. As pledged in *Putting People First*, this proposal begins fully funding Head Start. Head Start funding would increase by \$785 million in 1994 and by \$3.1 billion in 1997, and is complemented by Medicaid-related spending for child health and the Child Care feeding program in the Department of Agriculture's Child and Adult Care Food Program.
- Ryan White Act. A \$120 million increase in 1994, with total additional funding of approximately \$1.4 billion for 1993-1997.
- AIDS, Women's Health, Research and Other Public Health Initiatives. Includes an additional \$1,272 million in 1994 for funding HIV/AIDS, women's health, and other priority research efforts; immunizing young children; and promoting public health.
- Low Income Home Energy Assistance. Funds will be sought to alleviate the impact of the energy tax increase on low income households. Added budget authority of \$333 million in FY95, \$667 in FY96, and \$1 billion in FY97 and FY98.
- NIH High Performance Computing Applications. Includes an increase of \$24 million in 1994 to continue the activities begun in 1993 to develop applications of advanced computer and networking technology for health care.
- Substance abuse treatment. A \$90 million increase in 1994 to create treatment capacity where is it needed most and for hard-to-treat populations, especially pregnant women and women with children.
- Social Security Administration. A dedicated automation investment fund to improve service and productivity at the Social Security Administration of about \$1 billion. Spending is estimated at about \$145 million in FY94 and \$245 million in each of the succeeding four years. This is above currently budgeted investment levels.
- Parenting and Family Support. Discretionary funds of \$60 million in FY94 (\$1.1 billion over FY94-97) will be set aside to respond to sensitive, emerging issues in parenting and family support, including activities that would help disadvantaged parents work with their children at home.
- Medicaid and AFDC State Administrative Expenses. Beginning April 1, 1994, match all Medicaid and AFDC State administrative expenses at 50%. Food Stamp match rates would also be set at 50%. Limited hardship waivers will be available.

Technical Adjustments to the Baseline

- NIH Breast Cancer Research. The NIH 1994 baseline continues over \$200 million for the breast cancer research funds that originally appropriated to the Defense Department in 1993. This policy fully funds the out-year costs of these multi-year grants.

Entitlements

- Medicare. Proposed changes have been discussed that would save \$3.0 billion in FY94, \$15.5 billion in FY97, and \$53.9 billion over five years. Final details of the design and pricing of the SMI premium need to be resolved. (NOTE: These details involve savings of about \$1 billion.)
- Medicaid. Proposed changes would save \$225 million in FY94, \$2.1 billion in FY97, and \$8.7 billion over five years. The proposals would permit States to use prescription drug formularies to control growing drug costs, close loopholes that allow individuals to divest assets in order to receive Medicaid-covered long term care, and fix a technical error in OBRA 90 to remove the mandate that States cover personal care services.
- Child Support Enforcement. Expanded child support activities including those in *Putting People First* and many of the Interstate Commission on Child Support recommendations. The proposals are targeted to produce billions of dollars in increased child support collections and medical support. Federal savings are currently estimated at \$27 million in FY94 and \$505 million over FY94-98.
- Social Security Administration. Seek Social Security Act changes that would charge States a small fee for the administration of State supplements to the Supplemental Security Income program. The monthly fee would be \$1.67 per beneficiary in the first year, \$3.13 in the second year, and \$5 in the third year.

Non-Defense Discretionary Reductions

- Health Professions Curriculum Assistance. Reduce funding for health professions curriculum assistance by \$27 million in 1994, recognizing that most health professionals are no longer in short supply. Curriculum assistance grants targeted specifically for primary care, nursing, and disadvantaged assistance would receive funding increases.
- Food and Drug Administration User Fees. Collect \$200 million in 1994 from the drug industry for the value conferred by FDA certification of the safety and effectiveness of drug, medical devices, and other FDA-regulated products.
- Reduce Overhead Rate on University R&D. Adjust the budgets for civilian R&D grant-making agencies to reflect an upper limit on administrative and facilities-related overhead charges, consistent with streamlining overhead in Federal departments and with *Putting People First*. The HHS share will save \$223 million in 1994.

February 16, 1993

TALKING POINTS - INTERNATIONAL AFFAIRS

- o Overall international affairs outlays have been reduced by \$1.4 billion in 1994 and \$2.4 billion during 1994-97.
- o Within the amounts remaining, programs will be restructured to make funds available for key Clinton Administration foreign policy initiatives.
- o Among the initiatives, greatest emphasis has been placed on programs to promote democracy abroad, particularly in the former Soviet Union. Funding for a Radio Free Asia is provided.
- o The budget would make the United States current in its legal obligations to multilateral institutions and would meet all known needs for UN peacekeeping operations.
- o Other major initiatives supported include non-proliferation activities, population control, the international environment, competitiveness, refugees and humanitarian emergency relief.
- o Savings have been taken in traditional security assistance programs, which must be redesigned for the needs of the post-cold war world. Funding for countries involved in the Middle East peace process, mainly Israel and Egypt, will not be cut.
- o Funding for Agency for International Development programs, particularly those that may export jobs, has been cut pending reorganization of that agency.
- o International radio broadcasting will be streamlined with attendant savings, but Radio and TV Marti broadcasting to Cuba and will be maintained.
- o Export financing for capital goods will be held level while the program, is reoriented for greater effectiveness.

February 16, 1993

Presidential Decisions on the FY 1994 Budget

Talking Points -- Secretary Cisneros
Department of Housing and Urban Development

- o STIMULUS: President adopted most of the Secretary's stimulus proposals.
- Expand the Community Development Block Grant (CDBG) with \$2.5 billion in 1993 BA and modify to assure faster spending. Modifications include:
 - Remove current restraints on public services spending;
 - Enforce a strict recapture provision on any unspent CDBG stimulus funds after 1994;
 - Provide the HUD Secretary authority to waive statutory or regulatory provisions that impede fast spending.
- Accelerate HOME expenditures. (No new money.) New regulations and other options to accelerate expenditure of funds will be mutually developed by OMB and HUD staff.
- Accelerate Public Housing Modernization expenditures. (No new money.) Shorten the grant-making process and streamline information requirements. HUD and OMB staff will work out details.
- Add \$423 million for HUD's Supportive Housing program. This expansion of HUD's homeless funding in 1993 is consistent with the Secretary's request in his February 3rd letter to you. The supplemental will include modifications to accelerate current slow spending, and will enforce a strict recapture provision for any stimulus funds unspent after 1994.

- o **INVESTMENT:** President selected several HUD programs for special emphasis in his investment program. He added BA of \$15.3 billion from FY 1994-1998 for HUD investments. (HUD 1997 outlays were increased \$1.4 billion above the OMB baseline to accommodate these additional investments.)
- Increase basic (non-stimulus) Community Development Block Grant (CDBG) program by \$90 million in FY 1994, and \$150 million in FY 1995-1998. (+\$690 million of BA 1994-1998; 1997 outlays of \$4.4 billion are \$137 million above the OMB revised baseline.)
- Increase HUD's Low-Income Housing Preservation and Restoration programs. This increase assures that sufficient funds are available to preserve, rehabilitate, and restore the financial soundness of current low-income rental housing. (+\$4.1 billion of BA 1994-1998);
- Invest to assist more low-income households with housing. Expands two HUD programs: (a) increase rental assistance to 100,000 new housing vouchers in 1998 (from nearly 40,000 in FY 1993; gradual increase each year), and (b) double HOME grants to State and local governments to the full amount authorized (\$2.2 billion in FY 1994; FY 1993 base is \$1.1 billion), and maintain at that level through FY 1998. (+\$6.8 billion in BA in FY 1994-FY 1998).
- Invest more in homeless programs by increasing HUD's Supportive Housing Program by \$180 million in FY 1994 and \$300 million in FY 1995-FY 1998. This provides a more permanent solution to homelessness. (1997 outlays of \$300 million are \$138 million above the OMB revised baseline.)
- Increase public housing operating subsidies. This increase will assure full funding of authorized operating subsidies for public housing units. Also includes reforms to eliminate paying subsidies for vacant units.
- Fund Community Partnership Against Crime initiative. Funding for this new program will allow HUD to work with local public housing authorities in an intense effort to reduce crime in public housing. (\$690 million in BA, FY 1994-FY 1998).

-- Increase funding for HOPE for Severely Distressed Public Housing initiative. This proposal increases the funds available for rehabilitating severely dilapidated public housing units from the level of \$300 million in BA provided in FY 1993, to \$483 million in FY 1994, and \$600 million annually in years FY 1995-FY 1998. (\$1.26 billion in BA, FY 1994-FY 1998; \$374 million in outlays, FY 1994-FY 1998)

-- Fund HOPE Youthbuild initiative. This proposal provides resources to employ, train, and educate economically disadvantaged young adults in rehabilitating public and other low-income housing. (\$48 million in BA in FY 1994, \$368 million in FY 1994-FY 1998; \$106 million in outlays in FY 1994-FY 1998)

o TAX INITIATIVE FOR HOUSING: As part of his tax package, the President has approved the following tax changes to support housing.

-- Extend the Low Income Housing Tax Credit permanently;

-- Extend Mortgage Revenue Bonds permanently;

-- Propose creation of enterprise zones. Treasury, OMB and HUD staff should work together to develop program details for final proposal similar to that in H.R. 11. President has approved tax expenditures of \$1.2 billion in 1997 for enterprise zones (\$2.4 billion tax expenditures between 1994 and 1997).

o NON-DEFENSE DISCRETIONARY PROGRAM SAVINGS:

To help meet his 1997 deficit reduction target, the President decided to reduce or reform several HUD programs. In addition, the President asks HUD to contribute its share toward government-wide savings initiatives. (Total estimated 1997 outlay savings are \$1.5 billion below the revised OMB baseline.)

-- Eliminate funding for Special Purpose Grants. These were added in the 1993 Appropriations process as "pork" items. The unauthorized projects violate the principles of open and fair distribution of HUD resources, which were enacted in the 1989 HUD Reform Act.

- Modify administrative fees for Federally-assisted housing from 7.65 percent of rents to 6.0 percent of rents. HUD fees are paid to local public housing authorities, which administer Federal housing subsidy programs. These fees substantially exceed the costs of the services the local entities perform. According to GAO and HUD studies, this proposal would gradually reduce these fees to a uniform level more consistent with service costs.
- Reallocate new construction funding from Public and Indian Housing and Elderly and Handicapped housing to HOME block grants. This proposal increases flexibility of local communities without diminishing the number of housing units being assisted. Only 70 percent of HUD new construction funds are transferred to HOME because of the state/local match requirement in HOME.
- Reform HUD's preservation program to eliminate excessively costly subsidies paid to private landlords to continue to operate rental units as low-income housing. Limits subsidy to the cost of a housing voucher. Also eliminates homeownership option.
- Government-wide savings. HUD is asked to bear its share of reductions needed to achieve the President's goals of: (1) a reduction of 100,000 FTE in federal civilian employment and (2) an across the board reduction in certain administrative costs.
- Additional savings to streamline government. In addition to the specific discretionary program savings the President has approved, the President asks that you plan to achieve additional savings to meet his objective of streamlining government.

Although these additional savings must be met in the aggregate (1997 outlay savings of \$656 million for HUD), you may reallocate them among your programs to reflect the consolidation and efficiency steps you believe are most appropriate. My OMB staff are prepared to work with your staff to develop the necessary detailed budget allocations by program.

o ENTITLEMENT SAVINGS: These proposals save \$227 million in BA and outlays for 1997.

- FHA Insurance Reforms. Reforms will reduce insurance losses by removing legislative and regulatory impediments, and improving management. These reforms will re-establish the FHA insurance programs as effective government financing vehicles.
- Propose GNMA REMICS (Real Estate Mortgage Investment Conduits). Reduces mortgage costs to borrowers by enabling intermediaries to match investor investment preferences more precisely. The government's charge for guaranteeing REMICS will capture some of the efficiency gain of a REMIC for deficit reduction. The rest will accrue to the homeowner.

February 16, 1993

DEPARTMENT OF THE INTERIOR
FY 1994 BUDGET PASSBACK

STIMULUS:

- o Total BA of \$460M (\$745M requested by Secretary Babbitt), including:
 - Enhanced Natural Resource Protection and Environmental Infrastructure (+\$349M), including the National Parks (+\$230M), Wildlife Refuges (+\$88M), and other Public Lands
 - Bureau of Indian Affairs (BIA) school operations and Economic Development on Indian reservations (+\$88M)
 - Historic Preservation repair and maintenance, National Park Service (+\$23M)

INVESTMENT:

- o Natural Resource Protection and Environmental Infrastructure (+\$160M in FY94 BA) including National Parks, Wildlife Refuges, and Public Lands
- o Bureau of Indian Affairs Dam Safety (+\$18M in FY94 BA)
- o Public land highways and Indian reservation roads (+\$32M in FY94 BA) funded through Department of Transportation's Highway Trust Fund

PROPOSED REDUCTIONS:

Entitlements:

- o Phase in increased Grazing Fees over four years to approximate fair market value (Bureau of Land Management) (-\$22M in FY97 outlays; -\$48M in FY 94-97 outlays); Secretary would be given flexibility to negotiate higher fees consistent with these savings targets.
- o Permanently extend Hardrock Mining Holding Fees; continues proposal similar to FY 1993 enacted (-\$80M in FY97 outlays; -\$320M in FY 94-97 outlays)
- o Institute Hardrock Mining Royalty; based on 12.5 percent of gross production phased in over three years (-\$277M in FY97 outlays; -\$471M in FY 94-97 outlays)
- o Permanently extend 50% Net Receipt Sharing for On-shore Oil, Gas, and Coal Extracted from Federal Lands (not OCS); (-\$45M in FY97 outlays; -\$170M in FY 94-97 outlays).
- o Increase Recreation Fees; would increase existing fees and add new sites at national parks, refuges, and public lands (-\$45M in FY97 outlays; -\$147M in FY 94-97 outlays); except at national park units, no increase greater than \$3 per site or activity.

- o Implement a Federal irrigation water surcharge (non-Central Valley Project) (-\$15M in FY97 outlays; -\$45M in FY 94-97 outlays)
- o Reform Commonwealth of Northern Mariana Islands Funding Agreement (-\$10M in FY97 outlays; -\$31M in FY 94-97 outlays)

Discretionary:

- o Reduce construction funding for selected Bureau of Reclamation water projects (-\$42M in FY97 outlays; -\$163M in FY 94-97 outlays)
- o Eliminate one-time Interior funding for disaster relief; eliminates FY 1992 contingent supplementals (-\$68M in FY97 outlays; -\$250M in FY 94-97 outlays)
- o BIA Enhanced School Operations (+\$60M BA in FY94, +\$60M in FY 97 outlays; +\$240M in FY 94-97 outlays)
- o Indian Land and Water Rights Claim Settlements (+\$200M BA in FY 94, +\$200M in FY 97 outlays; +\$800M in FY 94-97 outlays)

ACROSS-THE-BOARD CUTS PURSUANT TO PRESIDENTIAL DECISIONS:

- o Pay adjustment -\$83M BA in FY94; due to Government-wide changes in pay.
- o FTE reduction -\$68M BA in FY94; FY94 FTE level of 75,989; -1,948 (-2.5%) from FY 93; pursuant to the Executive Order.
- o Other administrative efficiencies -\$40M BA in FY94; -3% pursuant to the Executive Order.
- o Limits on R&D Grant Overhead -\$2M BA in FY94.

February 16, 1993

DEPARTMENT OF JUSTICE
1994 Budget Passback

Stimulus. None planned.

Investments/Crime Initiative.

- Community Policing/"Cops on the Beat." \$50M is provided in 1994 (\$300M by 1997) to initiate a program to aid States and localities to enhance their community policing activities. Funds may be used to: recruit and hire new officers; provide special training; or support community programs to reduce crime. Program is consistent with last year's crime bill and "Putting People First."
- Police Corps. \$25M is provided in 1994 (\$150M by 1997) to establish a program that provides scholarships to would-be police officers in exchange for a commitment to service as a State or local police officer. Candidates would receive a yearly stipend for tuition, books, and expenses. Program is consistent with last year's crime bill and "Putting People First."
- Brady Bill/Criminal Records Upgrade. \$25M is provided in 1994 (\$50M in 1995 and beyond) to initiate grants to states to upgrade criminal records infrastructure and to establish a computer interface with the FBI's criminal records databases. Initial year funding will be split between grants to States and FBI startup and operating costs. Thereafter, grants to states will be increased and FBI operations will be funded. Program is consistent with last year's crime bill and recent Presidential support of Brady Bill.
- Detention and Care of Federal Prisoners. \$199M over 1994 baseline (\$274M by 1997) will help the Bureau of Prisons and Marshals to house and feed an increased number of detainees and prisoners and to meet higher room and board and medical costs. Also includes funds to open new prisons.
- All Other Law Enforcement. \$91M over 1994 baseline. (\$126M by 1997) is provided principally to INS, and FBI to enable agencies to continue to improve their services. Among the increases are: 1) \$9M for FBI's fingerprint identification improvement project (this would fully fund the Department's request); 2) \$35M for detention/deportation of criminal aliens by INS; 3) \$10M for additional INS inspectors at land border ports of entry; 4) \$8 million for improving INS data and communications

capabilities; 5) \$10M for implementation nationwide of the FBI's program to contract background investigations to former agents; 6) \$11M for rent payments to GSA; and 7) \$8M for the Community Relations Service to process and resettle Haitians and Cubans.

Non-Defense Discretionary Reductions

- DOJ Program Streamlining. The grant programs within the Office of Justice Programs (e.g., State and local drug grants) would be funded at 1993 enacted levels (-\$17M from baseline in 1994) and funding for new law enforcement training facilities at Quantico, VA, for DEA would be eliminated (-\$8M from 1994 baseline). The current training capacity at Quantico, coupled with facilities at Treasury's Federal law enforcement training center in Georgia (FLETC), provide sufficient resources to fulfill current Justice law enforcement training needs.
- Prison Construction. Limited new future construction is proposed for 1994 and 1995, and no new construction in 1996 and beyond (-\$71M from 1994 baseline). Does not affect all construction projects currently planned and funded. This reduction is in recognition of the fact that there is an unobligated balance in this account of over \$1.6B at the start of 1993 and significant progress has been made in reducing prison overcrowding. Prison overcrowding will be reduced to less than 10% by 1997 with funding already available for new construction. (Prison repair and modernization would be maintained at \$114M in 1994 and adjusted for inflation through 1998.)
- Pay Adjustment. No pay raise in 1994 and pay raise reduced by one percent in each year, 1995-1997. Omit locality pay in 1994; implement revised locality pay system beginning in 1995. Savings \$139M in 1994 and \$340M in 1997.
- FTE Reduction. Implement Executive Order on 100,000 FTE reduction. Savings \$82M in 1994 and \$703M in 1997.
- Other Administrative Efficiencies. Implement Executive Order on Deficit Control and Productivity Improvement in the Administration of the Federal Government. Savings of \$50M in 1994 and \$189M in 1997.

Entitlements. None

Other Items.

- DOJ is requested to examine the feasibility of charging fees for processing various INS forms to offset part of the costs of land border inspection (the potential is about \$7M annually) and to propose extending the land border crossing fee pilot project.
- DOJ is requested not to increase basic rates of pay for lawyers or law enforcement officers.

DEPARTMENT OF LABOR

STIMULUS

- o Emergency Unemployment Compensation: Policy is unchanged: extend the current program of 20/26 additional weeks of benefits through October 2nd. Those receiving benefits when the program ends will receive 15 additional weeks.
 - Estimates include State administration costs.
 - Language has been drafted so extension can be done through authorization or appropriations action.
- o Summer Youth Employment and Training: No change from prior passback. \$1 B is added to existing funds available for the summer of 1993.
- o Community Service Employment for Older Americans: \$32 M add-on would finance 5,300 job slots bringing the total slots up nearly to the 1993 authorized job slot floor of 70,000.
- o Worker Profiling: \$14 M is included for FY 93 for enhanced counseling/labor exchange activity to help identify quickly and provide services to the structurally unemployed to get them back to work.

INVESTMENT

- o Dislocated Worker Assistance: \$40 M reduction in 1997 outlays (now \$1.960 B). In FY 1994, \$1.2 B (an \$800 M reduction from the earlier \$2 B level) is added to the baseline for a new comprehensive worker adjustment program (baseline is \$725 M for Trade Adjustment Assistance and Economic Dislocation and Worker Adjustment Assistance acts). \$2 B is added for FY 1995-98.
- o Summer Youth Employment and Training: No change to 1997 outlays (\$625 M). The investment change reduced the 1994 additional amount from \$625 M to \$375 M (FY 93 stimulus is \$1 B). FY 1995-98 is \$625 M.
- o Community Service Employment for Older Americans: No change in 1997 outlays of \$35 M. The investment change reduced the FY 1994 add-on from \$35 M to \$21 M (FY 93 stimulus is \$32 M). The FY 1995-98 level is \$35 M.

- o Worker Profiling: No change in 1997 (no outlays). An additional \$9 M, the level after the investment change is provided in FY 94.
- o Job Corps:
 - 50/50 Plan: \$41 M drop in 1997 outlays (now \$202 M). Capacity will be increased by 50 centers (from 112 centers to about 162) by about the year 2001. Instead of \$222 M, the program starts at \$133 M in FY 1994 (an amount determined after the investment change); amounts vary in outyears based on DOL planning estimates.
 - Maintenance: \$5 M decrease in 1997 outlays (now \$45 M). \$30 M (as opposed to \$50 M before the 40% change) is provided in FY 1994 and \$50 M each year FY 1995-98 for backlogged maintenance and relocation costs at existing Job Corps centers.
- o Youth Apprenticeship: A \$5 M drop in outlays in 1997 (now \$495 M). (Also being passed back to Education because the Secretaries are collaborating). Instead of starting at \$450 M, FY 1994 will be \$270 M level), rising to \$500 M in 1995-98.
- o One-Stop Shopping: No change to 1997 outlays (\$250 M). \$150 M provided in FY 1994 (as opposed to \$250 M before the ratchet) and \$250 M each year for FY 1995-98 for the Employment Service for a common point of access to information on jobs/job training in communities.
- o Skill Standards: Covered in the allowance for education initiatives. Funds are to establish a national system of voluntary skill standards.
- o Staffing: An additional 365 FTE are added for the approved initiatives. The cost of those staff are to be absorbed in the amounts approved for the initiatives.

ENTITLEMENT SAVINGS: No change from prior passback.

- o None.

DISCRETIONARY SAVINGS: No change from prior passback.

- o **Streamlining:** \$53 M in FY 1994 is included in a lump sum that the Secretary can decide how to allocate.
 - Amount derived by freezing at the FY 1993 appropriated level the Job Training Partnership Act (JTPA) programs for which increases were not requested.

ACROSS-THE-BOARD FTE AND OVERHEAD REDUCTIONS

- o DOL's FTE are reduced by 198 in FY 1993 and by 792 in FY 1995. The overhead cut is about \$10 M in FY 1994 and \$52 M in FY 1997.

NATIONAL AERONAUTICS & SPACE ADMINISTRATION
1994 Budget Passback

Stimulus (1993)

- o Networking and Computing Applications. NASA will receive \$5M in 1993 as part of a four-agency effort to accelerate high performance computing applications as proposed in Senator Gore's Information Infrastructure and Technology Act (S.2937). Funding will continue in 1994-1998 as part of the Administration's investment package.

Investments (1994-1997)

- o Crosscutting High Performance Computing. Continues funding in 1994-1998 for the four-agency program to accelerate high performance computing (HPC) applications (\$12M in 1994 growing to \$50M in 1997).
- o Civil Aviation Research. Augments NASA aeronautics research to support the development of technologies for high-speed and subsonic civil aviation (\$57M in 1994 growing to \$247M in 1997).
- o Short-haul Aircraft Research. Augments NASA aeronautics research to support the development of technologies for short-haul aircraft (\$5M in 1994 growing to \$20M in 1997).

Non-Defense Discretionary Savings

- o Redesign Space Station and Add New Technology Investments. Provides \$588M in 1994 and \$643M in 1997.
 - Redesign Space Station. The current Space Station design (\$100 billion future mortgage) is fraught with cost overruns and its capabilities have been dramatically reduced from that promised originally. This proposal would redesign Space Station with a less expensive approach that achieves many of the research goals. This would include the creative use of the Shuttle and increased manned space cooperation with the Russians.
 - New Technology Investments. Provides a broad range of investments in space transportation, space science, space technology, aeronautics, and institutional

technology areas. These investments will help chart a new course for NASA and can provide a more meaningful contribution to the U.S. economy. A major component includes smaller science missions that cost less and provide results sooner.

- o Government-Wide Reductions. Government-wide FTS 2000, FTE, pay, R&D grant overhead, and other administration efficiency savings. This saves \$140M in 1994 growing to \$387M in 1997.

All Other NASA Programs

- o All other programs (like Mission to Planet Earth, Cassini, and the Space Shuttle) are funded at the requested level.

Summary

- o Would like to strengthen NASA by making a valuable investment in new technology, simplify the space station, and place NASA on a steady, sustainable budget growth path.

February 16, 1993

DEPARTMENT OF TRANSPORTATION
FY 1994 BUDGET PASSBACK

Stimulus Spending (1993)

- Highways. Fully fund ISTEA (1993-97), including a \$2,976 million supplemental in 1993.
- Transit. Increase transit program by \$752 million over the baseline for 1993. Of this increase, \$270 million would be earmarked for discretionary program bus and van purchases and the remaining \$482 million would be spent on formula-allocated capital grants.
- Airport Grants. Provide an increase of \$250 million in obligation limitation to fund fully the 1993 authorizations (from \$1,800 million to \$2,050 million).
- Amtrak. Provide increase of \$188 million in 1993 for Amtrak capital projects.

Investment Spending (1994-98)

- Highways. In addition to providing full-funding for ISTEA in 1994-1997, provide additional funds (above ISTEA) for Public Lands Highways and Indian Reservation Roads: +\$36 million in 1994, increasing to +\$240 million by 1997. 2.5 cents of gas tax currently planned for deficit reduction will be diverted to the Highway Account of the Highway Trust Fund starting on October 1, 1995.

Also, increase "smart cars/smart highways" funding by \$70 million in 1994, reaching \$100 million over the baseline by 1997. This increased Intelligent Vehicle Highway System (IVHS) funding is for accelerated operational tests, increased research and development, advanced technology development (e.g., artificial intelligence applications), and acceleration of the National Advanced Driving Simulator and Automated Highway System.
- Transit. Provide increase of \$600 million over the baseline in 1994 and \$1.0 billion in each year from 1995-1998 for formula-allocated capital grant programs.
- Airport Improvement Grants and Air Traffic Control Modernization. The Federal Aviation Administration's (FAA) Airport Improvement Program would be increased by \$30 million in 1994 and \$50 million per year thereafter over the baseline. The air traffic control modernization program would be increased by \$120 million in 1994 and \$200 million per year thereafter over the baseline. This will enable the FAA to continue to address critical equipment deficiencies and prepare for future air

Defense Discretionary Reductions

- Maritime Administration- Ready Reserve Force. Ready Reserve Force funding (function 054) is reduced to \$234 million in 1994 and in 1997. This reduction is below the baseline by \$221 million and \$270 million, respectively, and reflects the overall cut in defense spending.
- Maritime Military Useful Loan Guarantees. This program is zeroed out in all years from 1994 through 1998. Savings of \$54 million in 1994 and \$59 million in 1997.

Entitlements/Revenues

- General Aviation Fees. This will assess the general aviation community for more of the costs they impose on the aviation system. Aircraft registration and renewal fees are proposed to be increased on a graduated basis over four years, reaching \$270 per aircraft by 1997 (yielding \$18 million of fees in 1994 and \$58 million in 1997 fees.)

traffic growth.

- Maglev/High-Speed Rail. Release ISTEA contract authority in 1994-1997 (+60 million in 1994, +\$175 million in 1997) and provide an additional \$575M in budget authority in 1994-1998 (\$75 million in 1994, \$125 million in 1997). These funds may be spent either on high-speed rail or maglev, whichever the Secretary finds to be superior. This requires a legislative change regarding ISTEA funding.
- Alcohol Safety and Other DOT Capital. Increase funding by \$67 million over the baseline in 1994 and \$100 million in 1995-98 to reduce alcohol-related traffic accidents, increase the use of safety belts and motorcycle helmets, and improve oil pollution abatement capability by replacing outdated equipment.

Non-Defense Discretionary Reductions

- Transportation Lower Priority Programs. Reduce funding for lower priority programs and projects totaling \$361 million in 1994, going to \$389 million in 1997. As one among several examples of possible reductions are highway demonstration projects.
- Airport Operations. FAA Operations would be reduced by \$62 million per year below the baseline to reflect the FAA's transition from a period of expanding its workforce due to rapid air travel growth to a period of slower growth and stable workforce.
- DOT Streamlining. Several DOT grant and contract programs are frozen at 1993 enacted levels (e.g., a portion of FAA research and development, motor carrier safety, and several small, outmoded railroad grant programs are terminated). Savings of \$23 million in 1994 and \$46 million in 1997.
- Civilian Pay Adjustment. No pay raise in 1994 and pay raise reduced by one percent in each year 1995-97. Omit locality pay in 1994; implement revised locality pay system beginning in 1995. Savings of \$128 million in 1994 and \$313 million in 1997.
- Military (Coast Guard) Pay Adjustment. No pay raise in 1994 and pay raise reduced by one percent in each year 1995-97. Savings of \$37 million in 1994 and \$90 million in 1997.
- FTE Reduction. Implement Executive Order on 100,000 FTE reduction. Savings of \$67 million in 1994 and \$131 million in 1997.
- Other Administrative Efficiencies. Implement Executive Order on Deficit Control and Productivity Improvement in the Administration of the Federal Government and realize savings in FTS 2000 contract costs. Savings of \$32 million in 1994 and \$151 million in 1997.

DEPARTMENT OF THE TREASURY

Talking Points for Passback

Stimulus

Internal Revenue Service -- Tax System Modernization (TSM) Acceleration: The President has approved an additional \$148 million in FY 1993 to accelerate the IRS's TSM projects and other ADP equipment replacement schedules. TSM is an ongoing, \$8 billion, decade-long (FY1990 - FY2001) effort to modernize the IRS.

Investment

Internal Revenue Service -- Tax System Modernization (TSM) Increase (1997 outlays plus \$696 million above baseline): The Budget will provide funding of \$2.1 billion above the baseline during the FY 1994 - FY 1997 period; \$98 million in FY 1994, increasing to \$731 million in FY 1997 for IRS Tax System Modernization (TSM) projects.

Over the long term, TSM will modernize IRS functions, allowing the IRS to move from an antiquated and disjointed computer system to an up-to-date, automated approach to processing taxes. TSM will enable IRS to reduce the risks and costs associated with maintaining its current systems. It will deliver productivity savings, reduce burden placed on public, and support improved compliance efforts.

Community Development Banks (1997 outlays plus \$110 million above baseline): The Administration will propose funds for community development banks to provide loans in distressed communities where capital sources are limited and discrimination in lending may be prevalent. This program has been placed in Treasury, although the final determination has not been made regarding which agency should have authority for the program. Assumes funding of \$60 million in FY 1994, increasing to \$111 million in FY 1997. OMB and Treasury staff need to work out details.

Non-Defense Discretionary Savings

Bureau of Alcohol, Tobacco and Firearms (BATF) -- User Fees: Alcohol label processing and laboratory analysis fees, producing an estimated \$5 million annually will be proposed to cover the costs of these BATF activities.

Government-wide Savings: The President expects the Treasury to bear its share of the savings necessary to achieve his objectives for (1) reducing Federal civilian employment by 100,000 FTE and (2) cutting administrative expenses.

Additional Savings from Streamlining Government (1997 outlay reductions of \$68 million from revised OMB baseline): In addition to the previously described specific changes to your programs the President has approved, the President asks that you plan to achieve additional savings to meet his objectives for streamlining government. Although these additional savings must be met in the aggregate, you may reallocate them among your programs to reflect the consolidation and efficiency steps you believe are most appropriate. My OMB staff are prepared to work closely with your staff to develop the necessary detailed budget allocations by program.

Technical Adjustments to Non-Defense Discretionary Savings

Internal Revenue Service -- Revenue Initiative: The President has approved an additional \$150 million and 2,000 FTE (3,200 positions) to raise revenues through additional audits and collections of tax debts. This will allow IRS to pursue, among other issues, non-compliance by foreign-controlled corporations. OMB, Treasury and IRS staff should work together to develop an initiative package so that the highest feasible yields from this investment are realized.

Entitlement Savings

United States Customs Service -- Merchandise/Passenger Processing Fees Extension: The Merchandise and Passenger Processing Fees due to expire in FY 1995 will be extended through FY 1998. The extension of these fees collected by Customs to cover some of the costs associated with processing passengers and merchandise are expected to increase revenues by approximately \$550 million per year.

The passenger fee assesses a flat charge on international air and sea passengers arriving in the U.S., and other fees on certain commercial conveyances. The merchandise fee is a capped ad valorem fee assessed on the value of commercial imports at entry.

United States Customs Service -- Overtime Reform: Overtime reform legislation will be proposed to curb current overtime abuses in Customs' Inspector overtime compensation provisions. It will reduce overtime costs by about \$18 million annually. The Passenger Processing Fee, which currently pays for inspector overtime and other processing costs, will also be changed to allow these savings to be realized for deficit reduction.

United States Customs Service -- Enhanced Harbor Maintenance Fee collections: Legislation will also be proposed to provide Customs with \$5 million from the existing Harbor Maintenance Trust Fund for enhanced enforcement of Harbor Maintenance Fee collections. Customs collects these fees for the Army Corps of Engineers subject to appropriation. Currently these fees are used to offset Corps costs of maintaining harbors. The savings resulting from the enhanced enforcement (\$10 million in FY 1994 increasing to \$65 million by FY 1997) will be used to reduce the deficit.

Shorten Maturity of Debt Securities (\$3.9 billion outlay reduction from 1997 baseline): This figure represents an estimate of interest cost savings that might result from a potential shortening of the maturity of securities issued by the Treasury. The Treasury Department is currently conducting a study of the appropriate maturity composition of the Federal debt. Within the next few months, the study will be completed and OMB will be provided with updated estimates of cost savings, consistent with the Treasury's policy conclusions.

Addendum

Multinational Development Banks: Provides all multilateral development bank (MDB) arrearages and all current MDB commitments including the new funding for the World Bank's International Development Association (IDA).

Assess Examination Fees for State-chartered, FDIC-insured Banks: This proposal would eliminate an incentive for banks and thrifts to shift from Federal to State charters in order to avoid OCC and OTS examination fees. FDIC and Fed supervised State-chartered banks would pay the same fees as national banks, but that they also be allowed to take credit for amounts they pay to State regulators.

VETERANS AFFAIRS (VA)

Stimulus (FY93):

- o Facility maintenance backlog: \$235m (v. \$250m before stimulus cut) for non-recurring maintenance and repair projects that can be completed quickly in medical facilities and cemeteries.

Investment:

- o Medical Care -- FY97 outlays are \$800m above baseline. FY94 outlays are \$280m above baseline to help support initiatives such as:
 - compliance with residency workload limits
 - continued implementation of automated drug dispensing
 - activation of new facilities.

Entitlement Savings: No change from prior passback

- o Proposals are largely permanent extensions of laws now in effect:
 - IRS match on income reported by pensioners (OBRA 90) savings begin in FY98.
 - \$90 for pension recipients in Medicaid nursing homes (OBRA 90) savings begin in FY98.
 - \$2 per prescription copayment (OBRA 90) savings begin in FY98.
 - Medical care cost recovery from third parties (OBRA 90) reduces outlays by \$407m in FY97 from the baseline.
 - Housing loan fee of 2% (increase similar to OBRA 90) reduces outlays by \$157m in FY97 from the baseline.

- 2.5% fee and 10% downpayment for second and subsequent use of housing guarantee reduces outlays by \$17m in FY97 from the baseline.
- Resale losses considered in housing program (93 approp) saves \$21m in FY97 from the baseline.
- Restoration of 9:1 contribution ratio in GI bill program reduces outlays by \$98m in FY97 from the baseline.
- Excess funds used to pay administrative costs in insurance programs saves \$31m in FY97 from the baseline.

Discretionary Spending Reductions

o Medical Care:

- Only one savings initiative -- use a prospective payment system to allocate resources; designed to promote better use of resources in the base; savings from the baseline: FY94--\$100m: FY97--\$400m.
- Net result of investment and savings -- In FY97, total outlays are \$277m below the baseline. For 94, the BA mark is \$606m above the 93 enacted level.
- "Comparable \$1b increase" for Medical Care -- The FY93 stimulus (\$220m estimate for Medical Care) and the 94 increase of \$606m total over \$800m above the current FY93 funding level. The pay freeze will save VA \$200m. Therefore, the \$800m is comparable to previous \$1b increases that included pay raises.

o Construction: No Change from prior passback

- Long term: investments to be considered through the Health Task Force.
- Short term: In 97, outlays are \$134m below the baseline. 94 BA level is \$362m, \$131m below the 93 enacted level. Funds to be used in accordance with two broad guidelines:
 - o Projects are to be fully funded so that they do not mortgage the future.

- o Planning process must take into account factors that are critical to stemming VA and national health care costs: health care resources available in the community, veterans' consumption of VA health care, and how the project fits into the VA medical system as a whole.

Across-the-Board Reductions

- o Overhead outlays have been reduced from the baseline by \$14m in FY94 and \$70m in FY97. "Overhead" cost categories that included program activities were exempted from the cut (e.g., contract nursing home care in the medical account).
- o FTE has cut of 2,304 in FY93 and 9,216 in FY97.
 - Impact of across-the-board FTE cut was partially offset by adding staff for Investment and other priorities before the cut was taken.

NATIONAL SCIENCE FOUNDATION
1994 Budget Passback

Stimulus (1993)

- o Research and Development. Attempts to restore NSF's research activities to the requested FY 1993 level. The focus will be on investment in fundamental research, including strategic areas such as understanding the climate system, advanced supercomputers and digital computer networks, biotechnology, materials processing, advanced manufacturing, and math and science education. This proposal includes \$188 million in FY 1993.
- o Network and Computing Applications. To develop applications using advanced computers and communication networks in fields such as health care, education, manufacturing, and access to libraries. This proposal includes \$19 million in FY 1993.

Investments (1994-97)

- o Crosscutting high performance computing. To continue the investment made in the Stimulus package focused on developing applications using advanced computers and communication networks in fields such as health care, education, manufacturing, and access to libraries. This investment includes \$36 million in FY 1994 and \$150 million in FY 1997.
- o Research and Development. Augments NSF's support for competitively awarded scientific and engineering research activities at U.S. universities and colleges, including fundamental research in such areas as understanding the climate system, advanced supercomputers and digital computer networks, biotechnology, materials processing, advanced manufacturing, math and science education. This investment grows from \$331 million in FY 1994 to \$1,054 million in FY 1997.

Savings.

- o Government-wide Reductions. Government-wide reductions in pay, FTE, administration efficiency savings, and limits on R&D grant overhead will save \$66 million in FY 1994 and \$79 million in FY 1997.

**ARE YOU BETTER OFF
AFTER A DECADE OF
REAGANOMICS? ©**

**CHART PORTFOLIO SERIES TELLS THE STORY:
YOU BE THE JUDGE**

**THESE CHARTS PRESENT A DRAMATIC
PICTURE OF ECONOMIC DECLINE DURING
THE REAGAN AND BUSH YEARS**

Written by Dr. Fred C. Allvine ©

OVERVIEW

Ronald Reagan asked voters during the 1980 Presidential Campaign "Are you better off today than you were four years ago?" Reagan defeated President Jimmy Carter by promising to improve the productivity and growth of the U.S. economy and in turn our competitiveness. Disciples of Reaganomics declared that we experienced an economic miracle during the 1980s.

This Chart Portfolio of economic data presents publicly available data that clearly shows that in many respects the U.S. economy performed poorly during the decade of the 1980s (1981-1990) relative to prior decades. The economic policies that should have been introduced were not, and as a consequence our productivity, competitiveness, and standard of living all suffered. Still worse Reaganomics borrowed heavily from the future. This leaves the public, particularly our valuable youth, with a costly legacy of a 'crushing' public and private debt load. ~~The consumption has already occurred while paying for the debt has been~~ passed on to future generations.

Reaganomics was closely tied to the untested 'supply side' economic theory. Reagan's economic plan involved: 1. cutting personal and business taxes, 2. increasing military expenditures, 3. increasing government

revenues, and 4. balancing the budget. Many people questioned how so many potentially conflicting goals could be accomplished at the same time. The many critics of Reaganomics included none other than George Bush who later became Reagan's Vice President. Bush labeled Reagan's plan as Voodoo Economics.

When George Bush became President, he chose to ignore the problems created by Reaganomics. Instead of stressing the importance of bringing the budget into balance, Bush campaigned in 1988 with the slogan "watch my lips, no new taxes." He talked about the thousand points of light and the bright future ahead. His theme song was "Don't Worry, Be Happy" which basically encouraged a continuation of more borrowing and spending throughout our economy. As a consequence, it is estimated that the Federal Budget deficit reached a record \$400 billion in fiscal year 1992.

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**Technical work provided by Timothy Hayes.*

DEBT

NONFINANCIAL DEBT TO GROSS NATIONAL PRODUCT (GNP)

- Nonfinancial debt consists of government borrowing (Federal, State and Local), personal borrowing, and business borrowing (excluding borrowing by financial institutions). A measure of the magnitude of nonfinancial debt is its size relative to GNP.
- The Debt/GNP Ratio was fairly constant during the 1960s and 1970s averaging close to 145 percent of GNP. However, it grew at an alarming rate during the 1980s and was close to 190 percent of GNP by 1990.
- Before he was elected, Ronald Reagan warned the country about the perils of borrowing and living beyond its means. However, that was exactly the consequence of Reaganomics. Borrowing soared during the 1980s. Unfortunately, the funds were not invested in improving the country's infrastructure (roads, bridges, ... etc.) or used for productive business investment. Instead, the borrowing was used to increase consumption as a percentage of GNP and for speculative purposes.

NONFINANCIAL DEBT AS A PERCENTAGE OF GNP

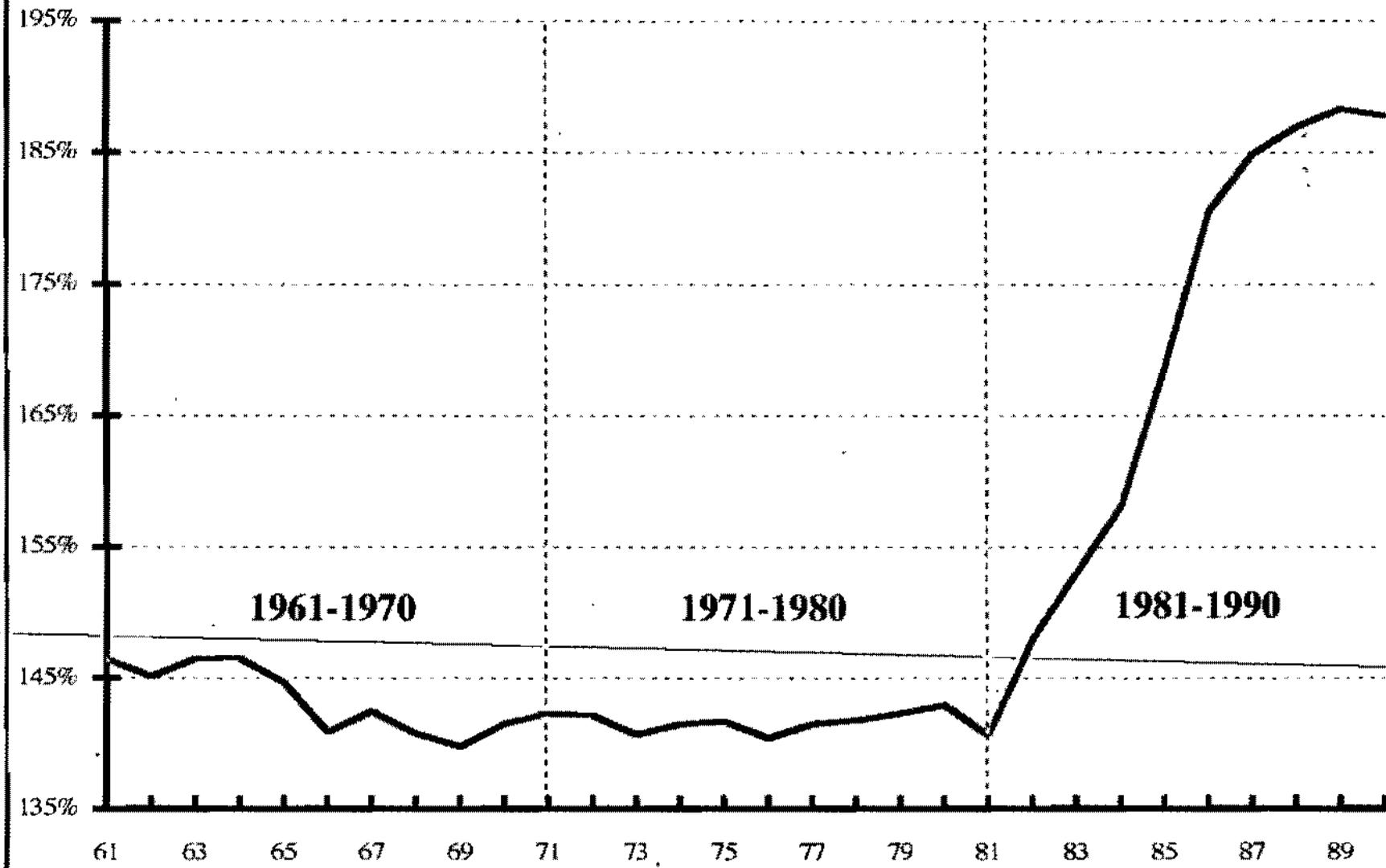


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

FEDERAL DEBT AS A PERCENTAGE OF GNP

- The Federal Debt to Gross National Product Ratio measures how well a country is managing its debt. A falling Ratio indicates that a country's debt is contracting relative to the nation's output. In contrast, an increasing Ratio indicates that Federal Debt is growing relative to national output.
- The Ratio contracted from 130 percent of GNP in 1946 (not shown) to 77 percent in 1951 and continued to decline to 33 percent in 1981. With the tax cuts of 1981 (for individuals and business) and the increase in military expenditures and other Federal government outlays, the Ratio started growing and has climbed back to the level of the late 1950s and is still rising.
- The soaring Federal Debt Ratio is a consequence of Reaganomics. Had the increased government borrowing gone to improve our infrastructure, then the additional Federal debt burden would not be nearly so bad. The uncontrolled growth of Federal debt is one of the most serious problems facing this country.

FEDERAL DEBT AS A PERCENTAGE OF GNP

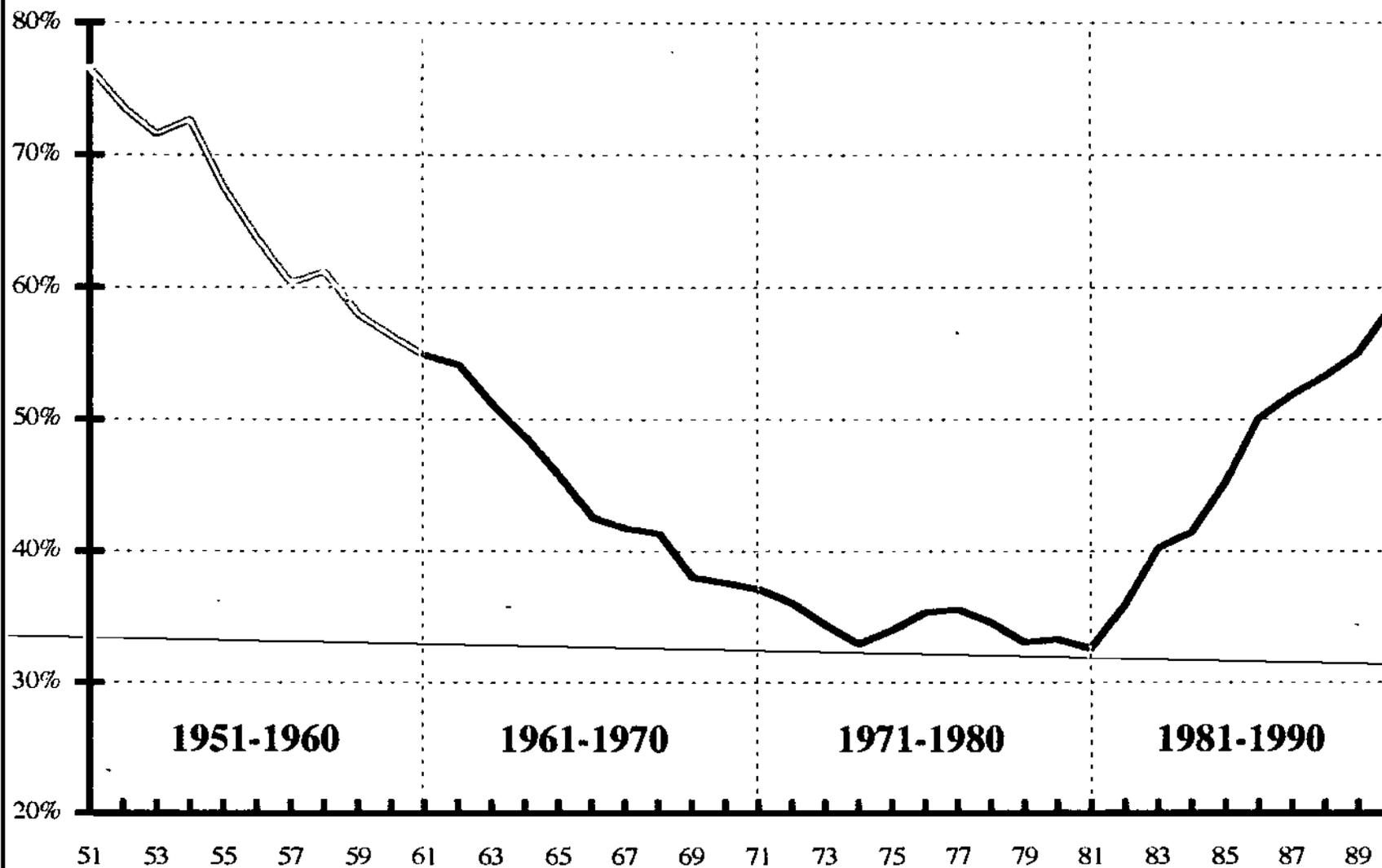


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

SOARING FEDERAL DEBT

- During the 1980 presidential campaign, Ronald Reagan criticized the \$70 billion Federal Budget Deficit of President Jimmy Carter. However, during the decade of Reaganomics the annual Federal Budget Deficit was several times larger than in 1980.
- Reaganomics did what was easy and that was to cut taxes, but it failed to reign in government expenditures. As a result, the Federal government was spending 20 percent more than it was taking in.
- The legacy of Reaganomics is a soaring Federal Debt which grew from \$908 billion in 1980 to \$4 trillion in 1992. Much of this debt was borrowed from other countries. This caused the U.S. to change from being a creditor nation (others owing us more than we owned them) to a debtor nation (owing more to others). The sad fact about the debt is that much of the Federal government expenditures were wasted and not used to improve the crumbling infrastructure of the country.

FEDERAL DEBT

Trillions of dollars

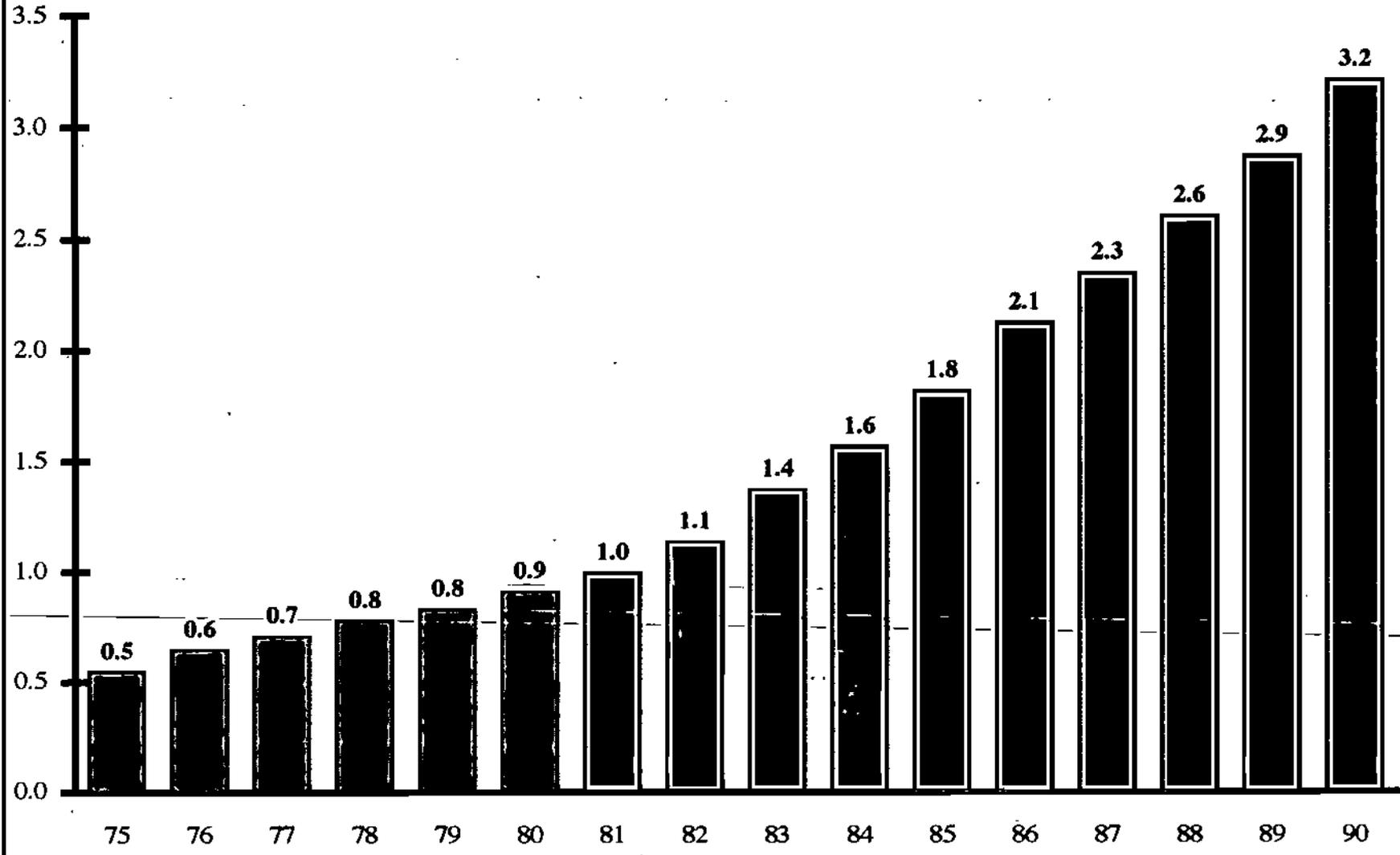


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

INTEREST PAYMENTS AS A PERCENT OF THE FEDERAL BUDGET

- One cost associated with the growing federal government debt is the increasing interest burden of the debt on the nation. Interest as a percentage of GNP in 1990 was 14.5 percent of the federal budget - double the 7 percent average of the prior decade.
- Supply side economics was the untested economic theory that Reagan adopted. Many supply siders were of the opinion that cutting taxes was all that was necessary to unleash the power of the free enterprise system.
- With the runaway nature of federal government expenditures, interest could climb to more than 20 percent by the year 2000. While Reagan campaigned on the need for fiscal discipline, he failed to practise what he preached.

INTEREST PAYMENTS AS A PERCENTAGE OF THE FEDERAL BUDGET

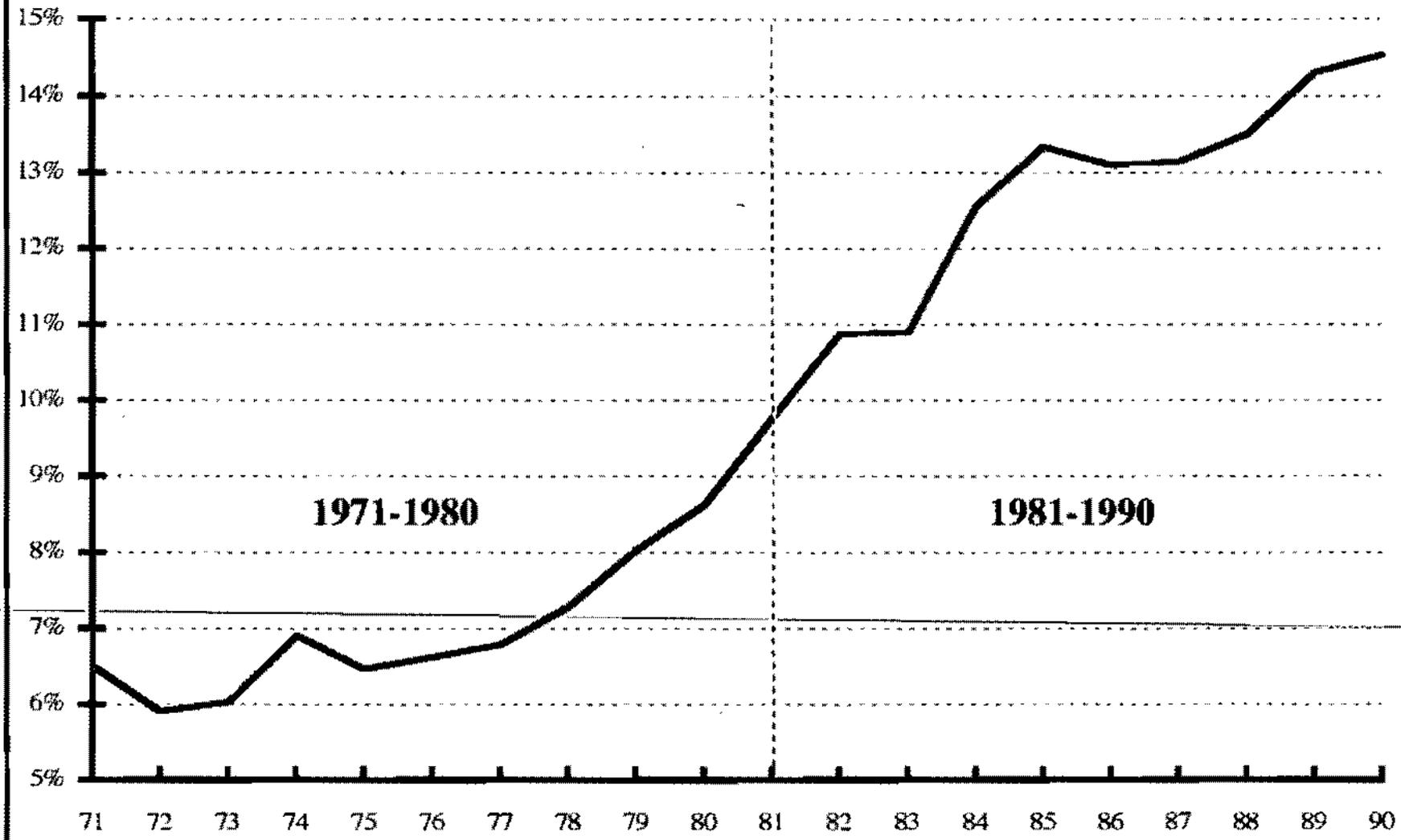


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CONSUMERS

PERSONAL SAVINGS RATE

- The personal savings rate measures the percentage of household's disposable income that is saved rather than spent. The higher the savings rate, the more money there is for investment purposes. Additionally, higher saving levels contribute to lower interest rates. The combination of lower interest rates and more funds for lending increases the opportunity for business investment.
- The personal savings rate plummeted during the 1980s. While the savings rate was 8.8 percent in 1981, it dropped to a post World War II low of 4.5 percent from 1987-1989.
- A key assumption of Reaganomics was that lower personal taxes (tax cuts of 1981-1984) would increase savings and in turn stimulate capital investment. However, this did not happen, largely because of the untested and theoretical nature of 'supply side' economics which Reagan adopted as his economic platform.

PERSONAL SAVINGS RATE

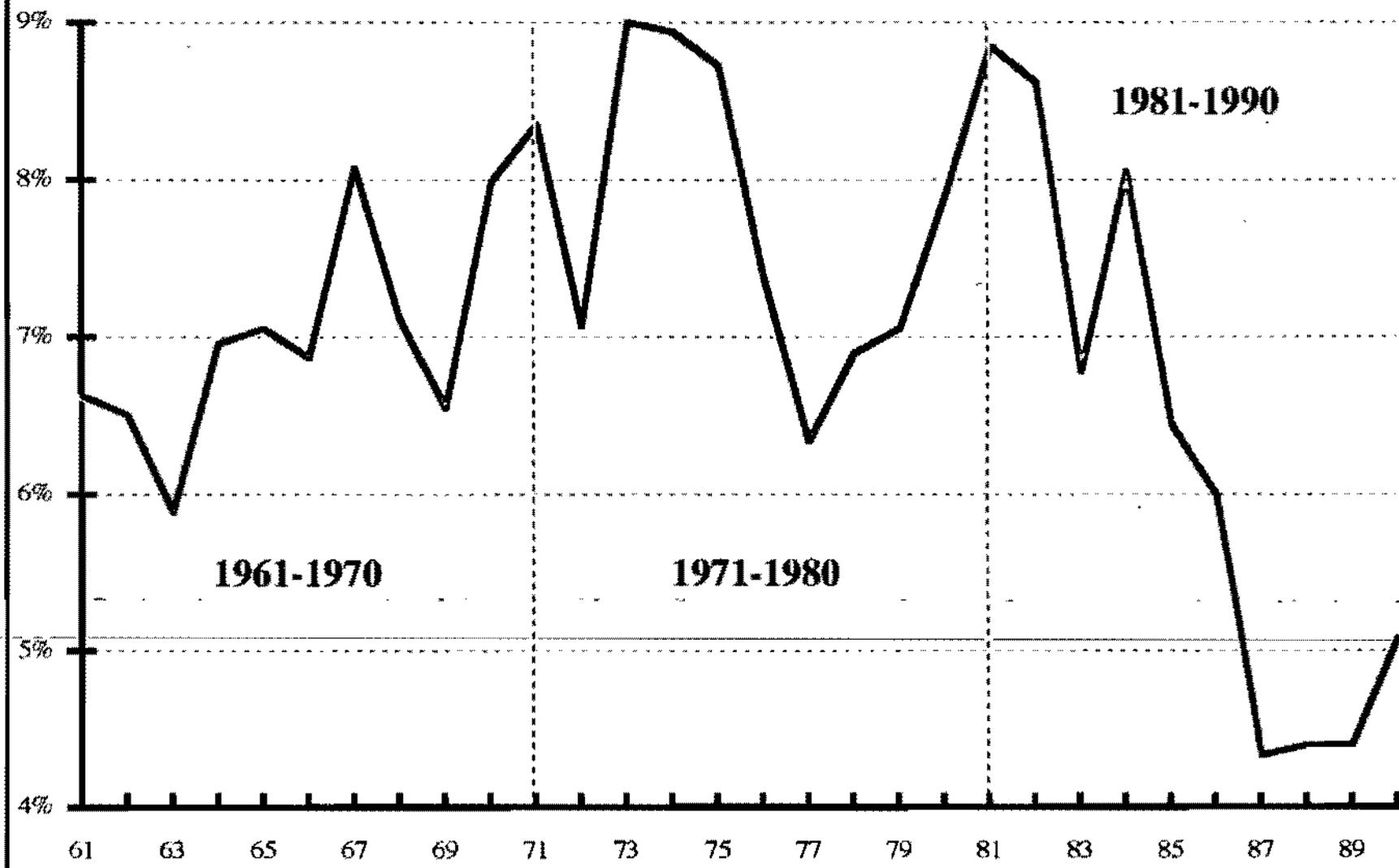


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

AVERAGE HOURLY WAGE RATE

- Improvement in the real hourly wage rate leads to a growing standard of living. A well run economy can be expected to show improvements in both the real wage rate and the standard of living.
- The graph shows that the real hourly wage rate (adjusted for inflation) for the total private sector averaged \$7.71 during the decade of Reaganomics. Over the prior three decades the real wage rate had increased as the standard of living improved.
- Reagan policy maker's like to point out the large number of new jobs created during the 1980s. However, the rate of job creation was similar to that experienced over the prior decades. The difference was that during the 1980s many low paying service jobs were created at the same time that there was a decrease in high paying manufacturing jobs which has contributed to the falling real wage rate.

AVERAGE HOURLY WAGE RATE

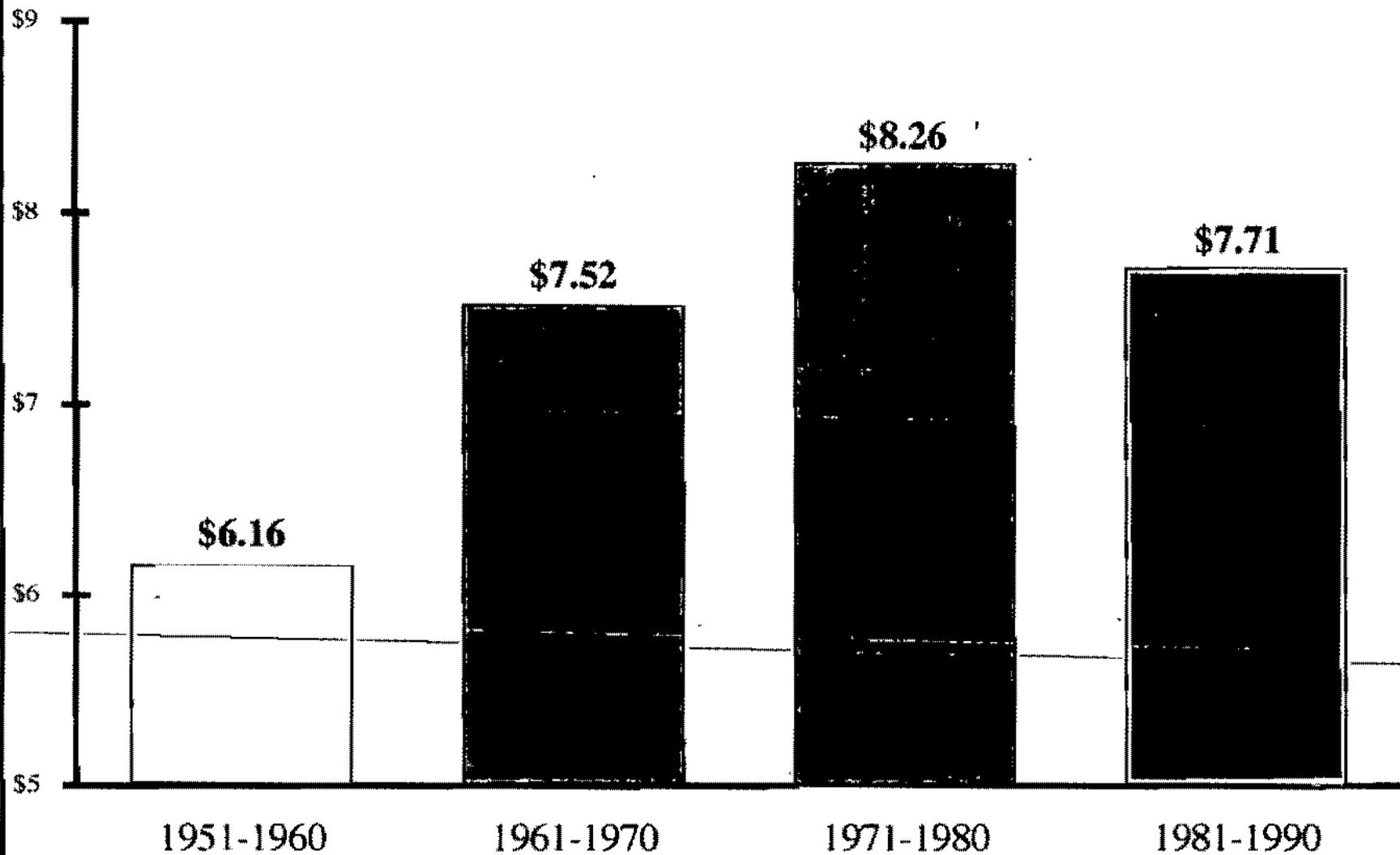


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CONSUMER AND MORTGAGE DEBT AS A PERCENTAGE OF DISPOSABLE INCOME

- A measure of the individual indebtedness is the level of personal debt (consumer credit and mortgage debt) expressed as a percent of disposable income.
- There are three primary ways that the public can increase the amount of money it spends - growth in real income (increase in standard of living), lower savings rate, and increase borrowing. The most desirable way to increase spending is through growth in personal income. For a while, spending can be increased by saving less and borrowing more.
- The Personal Debt Ratio increased rapidly during the 1980s, averaging 102 percent of disposable income. The ratio grew nearly twice the rate of the prior decade (13% increase from the 1970s to the 1980s vs. 7% increase from the 1960s to the 1970s) as consumers went further in debt in order to buy what they needed.
- Reagan's Economic Recovery Program was intended to increase the savings rate, but instead savings fell and the public borrowed more.

CONSUMER AND MORTGAGE DEBT AS A PERCENTAGE OF DISPOSABLE INCOME

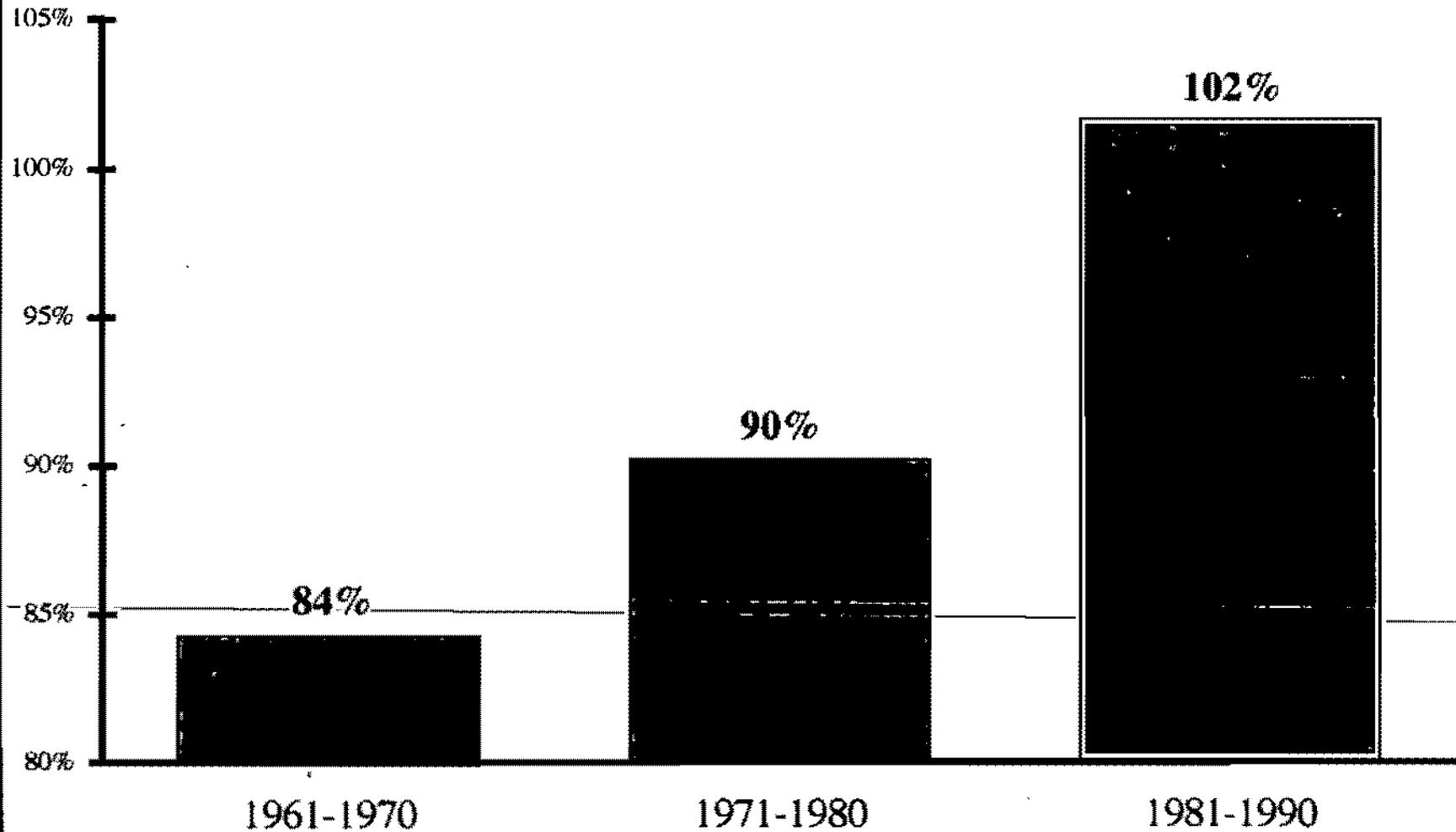


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

AVERAGE FAMILY INCOME

- This chart shows the distribution of family income divided into quintiles (20 percent segments) for 1980 and 1990. One can evaluate who benefited from Reagan's Economic Recovery Plan by considering the shift in family income from 1980 to 1990.
- The income distribution for the lowest fifth through the next to the highest fifth all decreased from 1980 to 1990. For example, the income of the middle fifth decreased from 16% of total income to 15% of total income.
- The richest fifth of the population was the only group to experience a gain in personal income from 1980 to 1990. The income share for the upper 20% increased from 45% to 50%. Actually, most of the gain was enjoyed by the upper 5%.
- Reaganomics was a 'trickle down' approach where tax cuts first benefited the rich. However, the money never trickled down and the lower and middle classes are poorer as a result of Reagan's economic policies.

AVERAGE FAMILY INCOME, 1980-1990

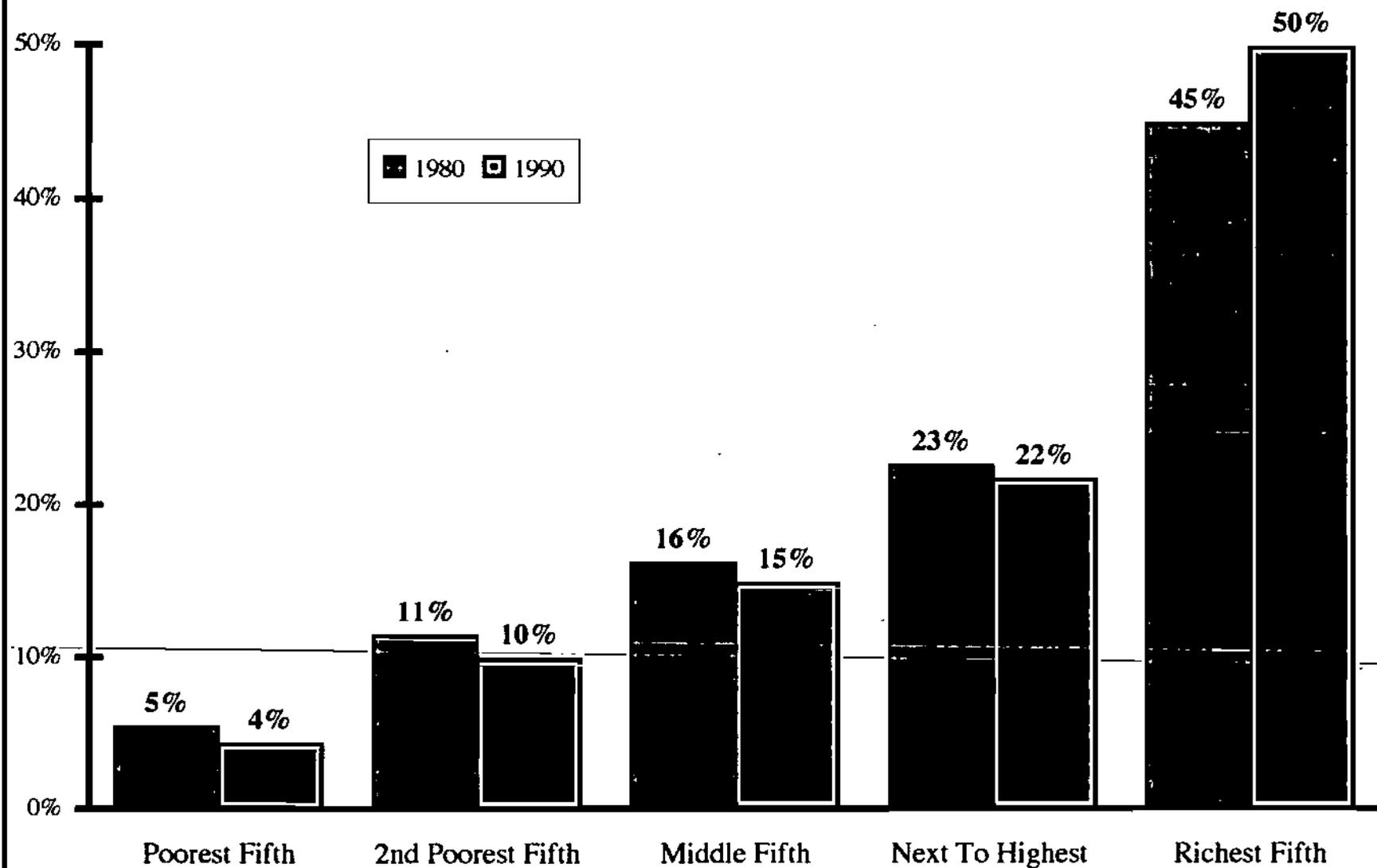
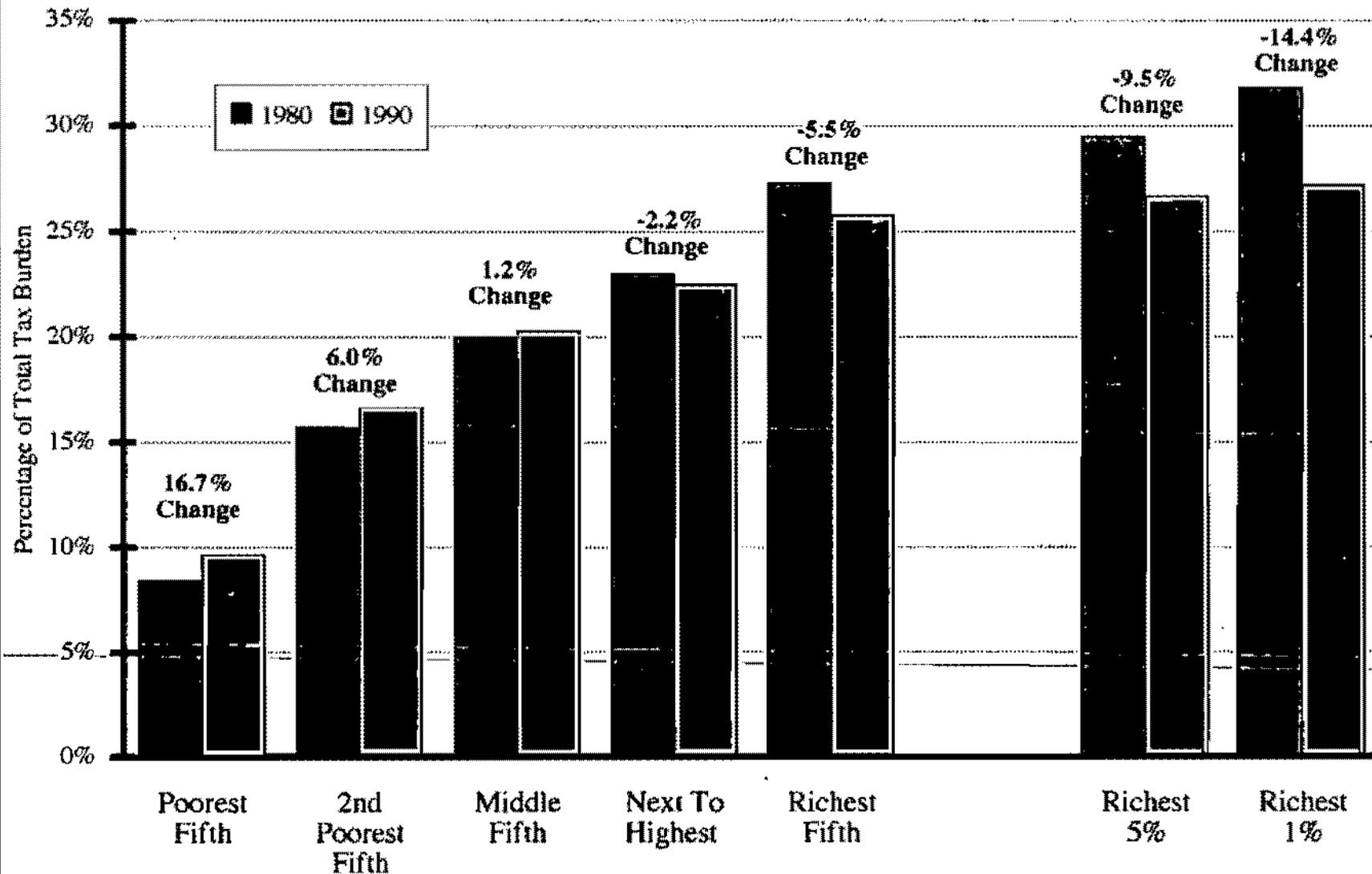


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CHANGE IN AVERAGE TAX BURDEN

- A key aspect of Reaganomics was a reduction in personal income taxes. The chart shows who gained and who lost from the reduction in personal taxes in the early 1980s.
- Changes in the tax code in the early 1980s resulted in the tax burden increasing for those with incomes in the lowest fifth, second poorest fifth, and the middle fifth of U.S. income distribution.
- The tax burden decreased for the those families with incomes in the second to the highest and the highest fifth. Those who benefited the most by the changes in the tax code were the upper 5% and the highest 1%. Their tax burdens respectively decreased by 9.5% and 14.4%.
- Reagan's Economic Recovery Program only benefited those receiving the highest incomes. While he convinced the lower and middle income classes of a brighter future, his policies made life for these classes harder financially. Again we raise the question, "Are you better off...?"

CHANGE IN AVERAGE TAX BURDEN, 1980-1990



WORK FORCE PARTICIPATION RATE

- The work force participation rate measures the number of people employed divided by the number of people eligible to work.
- One way families can increase their incomes is to increase the number of working members of the family.
- During the 1980s, the work force participation rate increased sharply to the highest level of the last four decades. More wives entered the work force since U.S. families were experiencing increasing financial pressures.
- The high work force participation rate is just another symptom of the poorly performing economy of the 1980s. The goal of Reagan's Economic Recovery Program was to stimulate a higher rate of economic growth. However, most families experienced financial distress during the 1980s and that is why the worker participation rate increased, the savings rate fell, and family borrowing increased.

WORK FORCE PARTICIPATION RATE

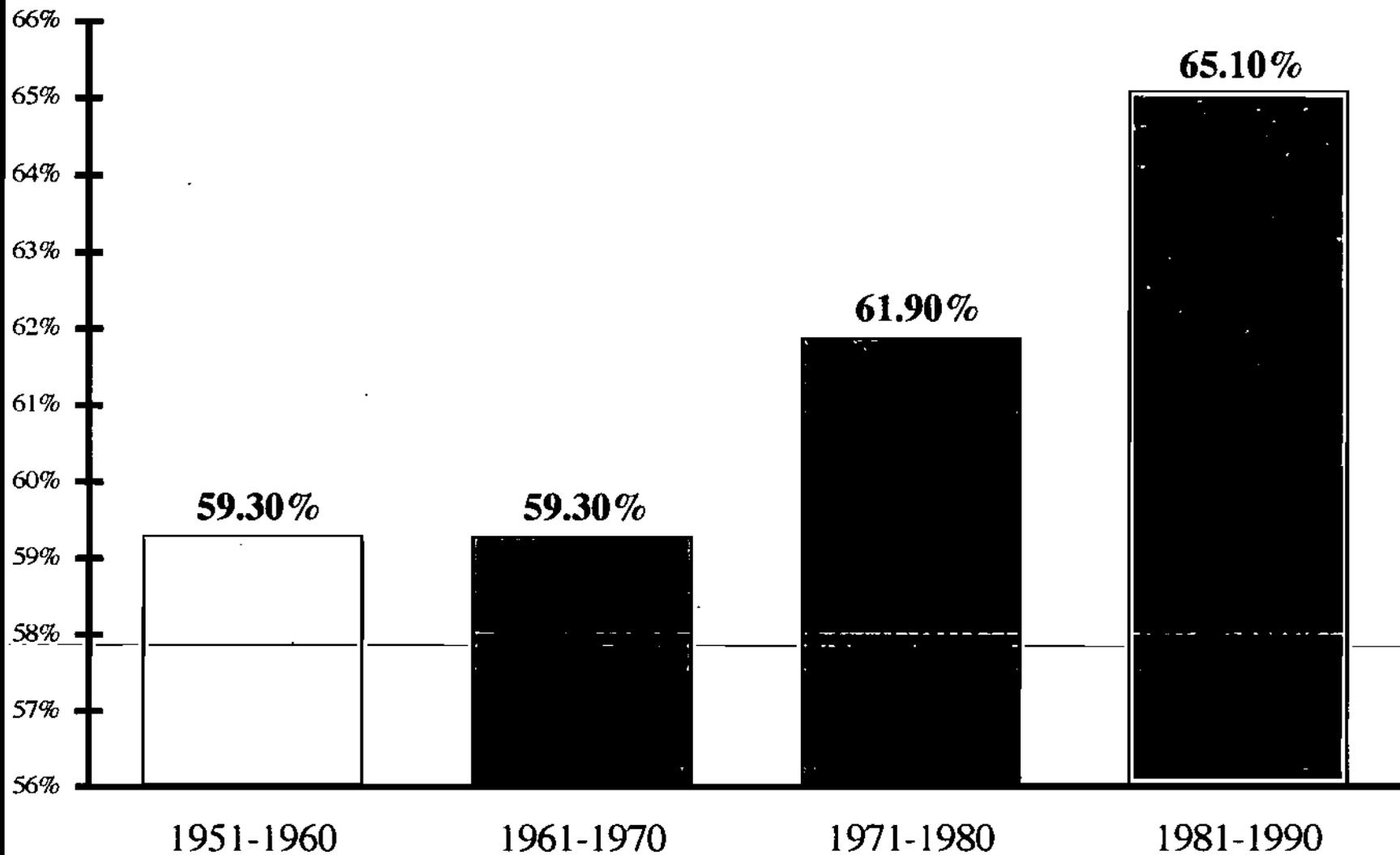


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

MACRO ECONOMY

PERSONAL CONSUMPTION AS A PERCENTAGE OF GNP

- The four components of Gross National Product are personal consumption, businesses, government, and the international sector. The four components add up to 100 percent. If there is an increase in the size of one or more components, there has to be an offsetting decrease in one or more of the remaining components.
- From 1981 to 1990, personal consumption increased from 63% to 68.5%. Over the same period of time federal government expenditures rose from 20 to 24 percent. As a result, the two remaining components of GNP – gross investment and net exports – both declined during this period.
- Personal consumption as a percentage of GNP increased as a result of Reagan's individual tax cuts. The tax cuts were intended to increase the savings rate and in turn increase capital investment. Unfortunately, Reagan's economic policies (based on 'supply side' theory) were faulty and caused consumption to increase and America's investment and trade balance to decrease.

PERSONAL CONSUMPTION AS A PERCENTAGE OF GNP

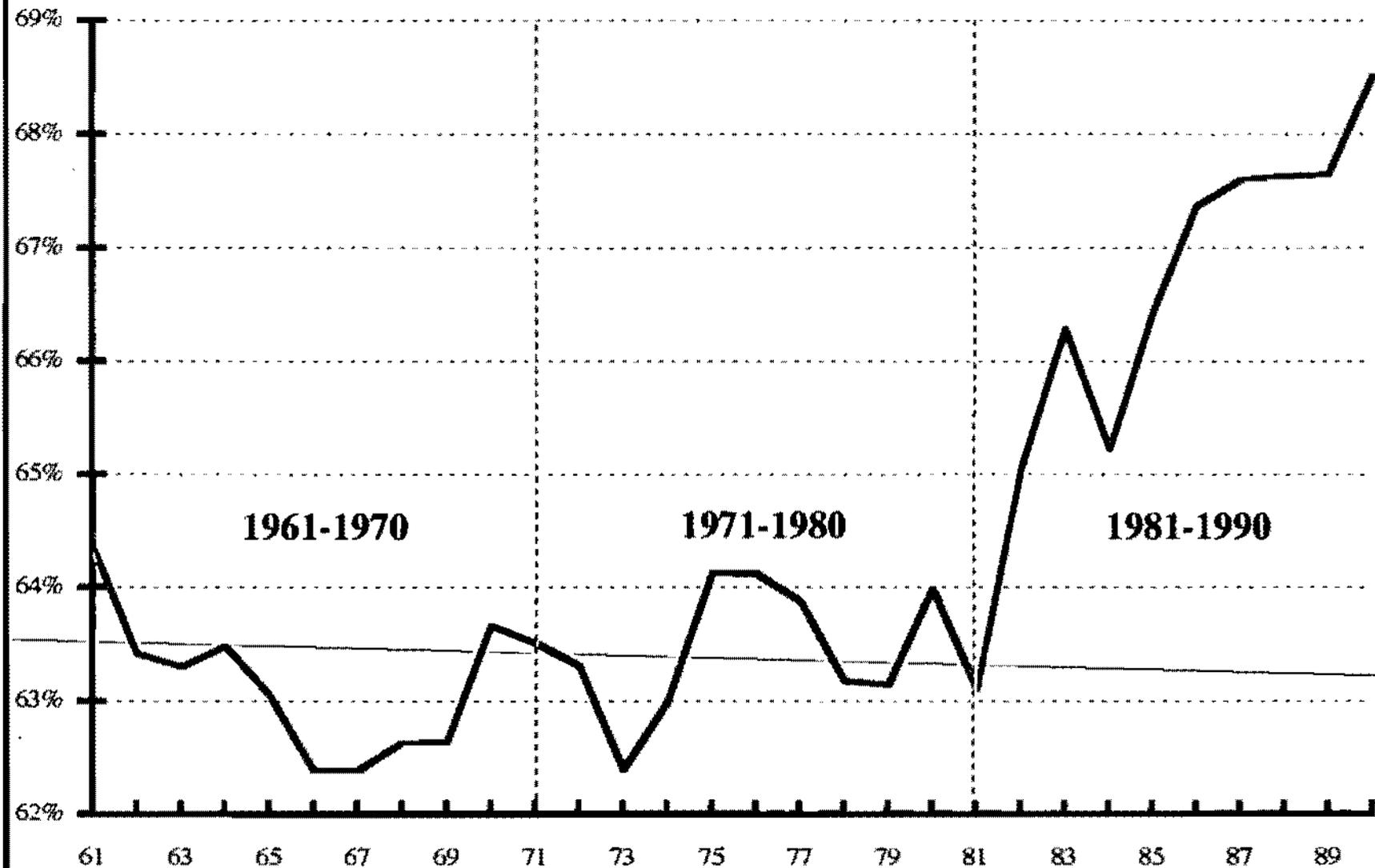


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

GROSS SAVINGS RATE

- The gross savings rate includes savings by households as well as business and government savings. Gross savings is a proxy for gross investment.
- The gross savings rate decreased during the 1980s. In 1981 it was near 17% and fell to 13% by 1990.
- Reagan's individual tax cuts, corporate tax cuts and government deficits each played a role in decreasing the gross savings rate.
- There were several problems with the tax cuts. First, they were naively implemented (the cuts were unrealistically large) and taxes had to be increased several times during the 1980s to keep from bankrupting the country. In addition, the business tax cuts primarily benefited yesteryear's industries, and did nothing to encourage tomorrow's industries on which the future of the country is so dependent.

GROSS SAVINGS RATE

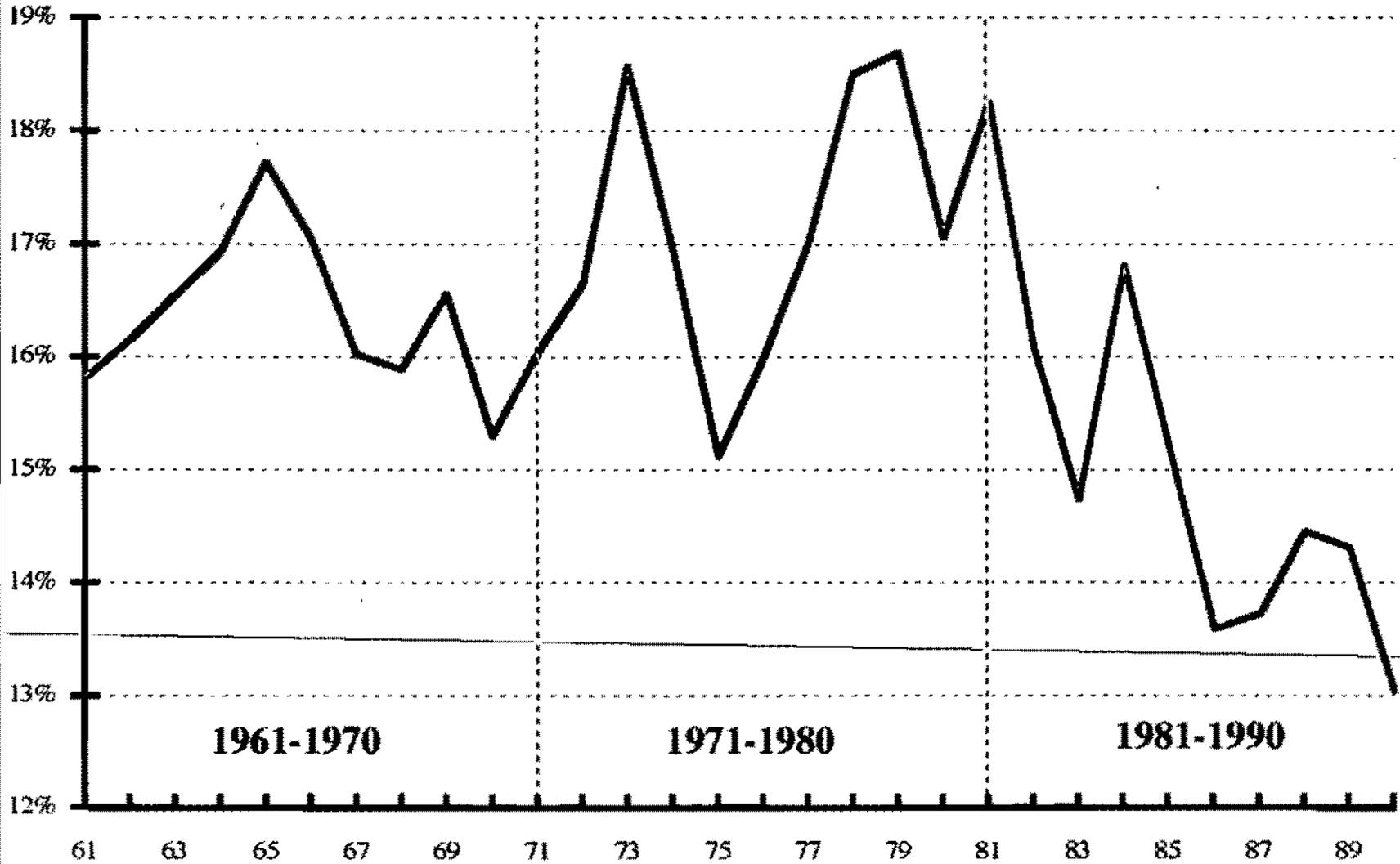


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

INTEREST RATE ON TREASURY BONDS

- Increased savings and lower interest rates were two of the goals of Reaganomics during the 1980s. The lower borrowing cost was to play a vital role in rebuilding the U.S. economy. However, this did not happen since the federal budget was not restrained. As a result of the huge budget deficits, the national debt exploded during the 1980s.
- The rapid growth in government debt during the 1980s forced up the cost of government borrowing. The yield on the 30 year bellwether bond did not decrease during the 1980s. Instead, it climbed to the highest level of the last four decades and averaged 11.3%.
- The interest rate on Treasury bonds has a critical effect on both corporate and household investment. As the interest rate on Treasury bonds increases, other credit instruments such as the prime rate, the corporate bond rate, and the mortgage rate increase because of the growing competition for funds.

INTEREST RATE ON U.S. TREASURY BONDS

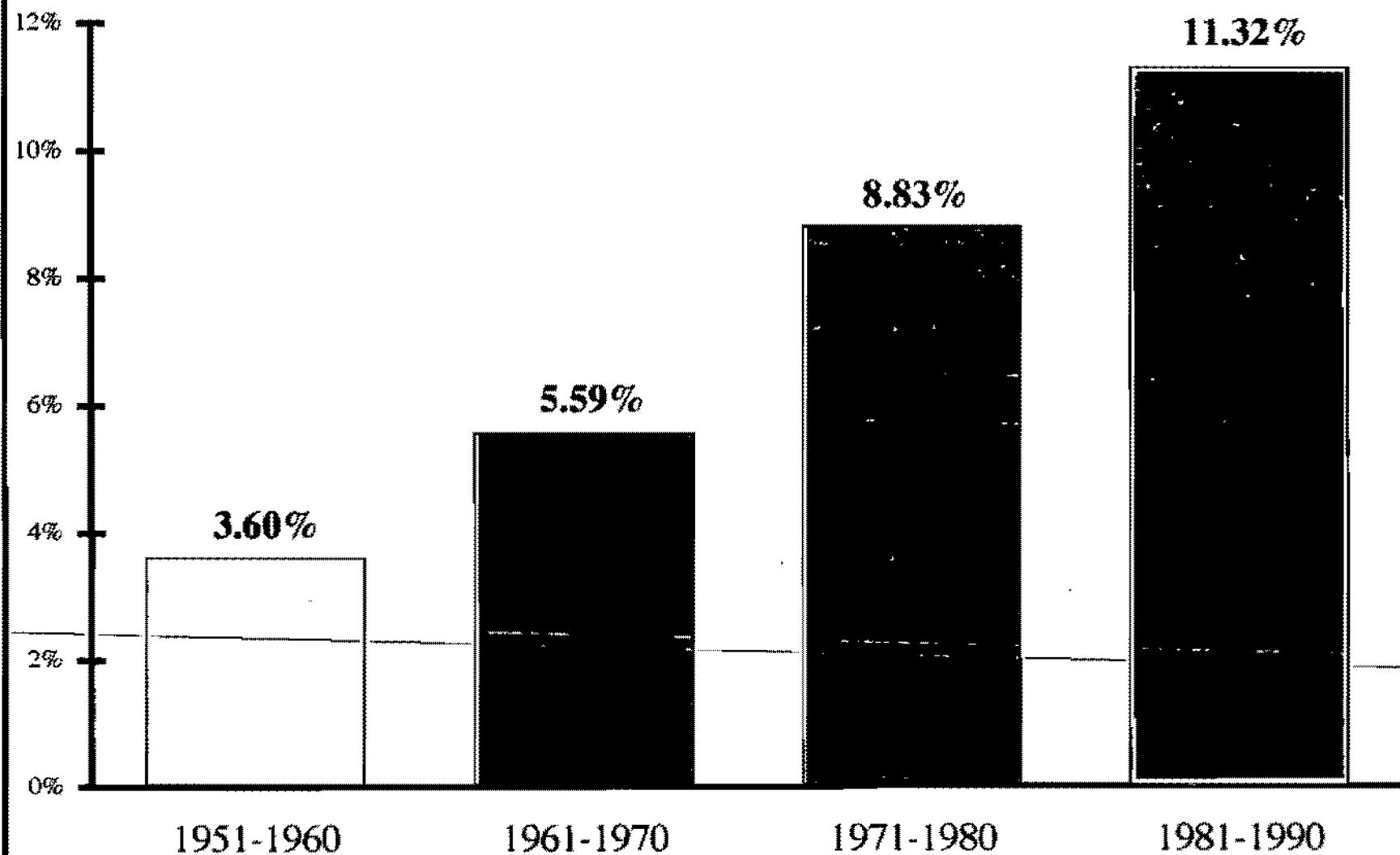


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

PRIME RATE

- The prime rate is the interest rate that banks charge their most credit-worthy business customers to make loans. Lesser business customers pay the prime rate plus two or three percentage points. The prime rate also influences the rates charged on consumer loans.
- The prime rate averaged 10.2% from 1981-1990 — the highest level of the past four decades.
- The huge federal government deficits in the 1980s not only affected long term rates, but also short-term rates. As the prime rate increased, the cost of business borrowing increased.
- While Reaganomics was designed to stimulate the private sector, the results were disappointing due to high interest rates. The high prime rate reduced the level of business borrowing since many projects could not earn such a high return.

PRIME RATE

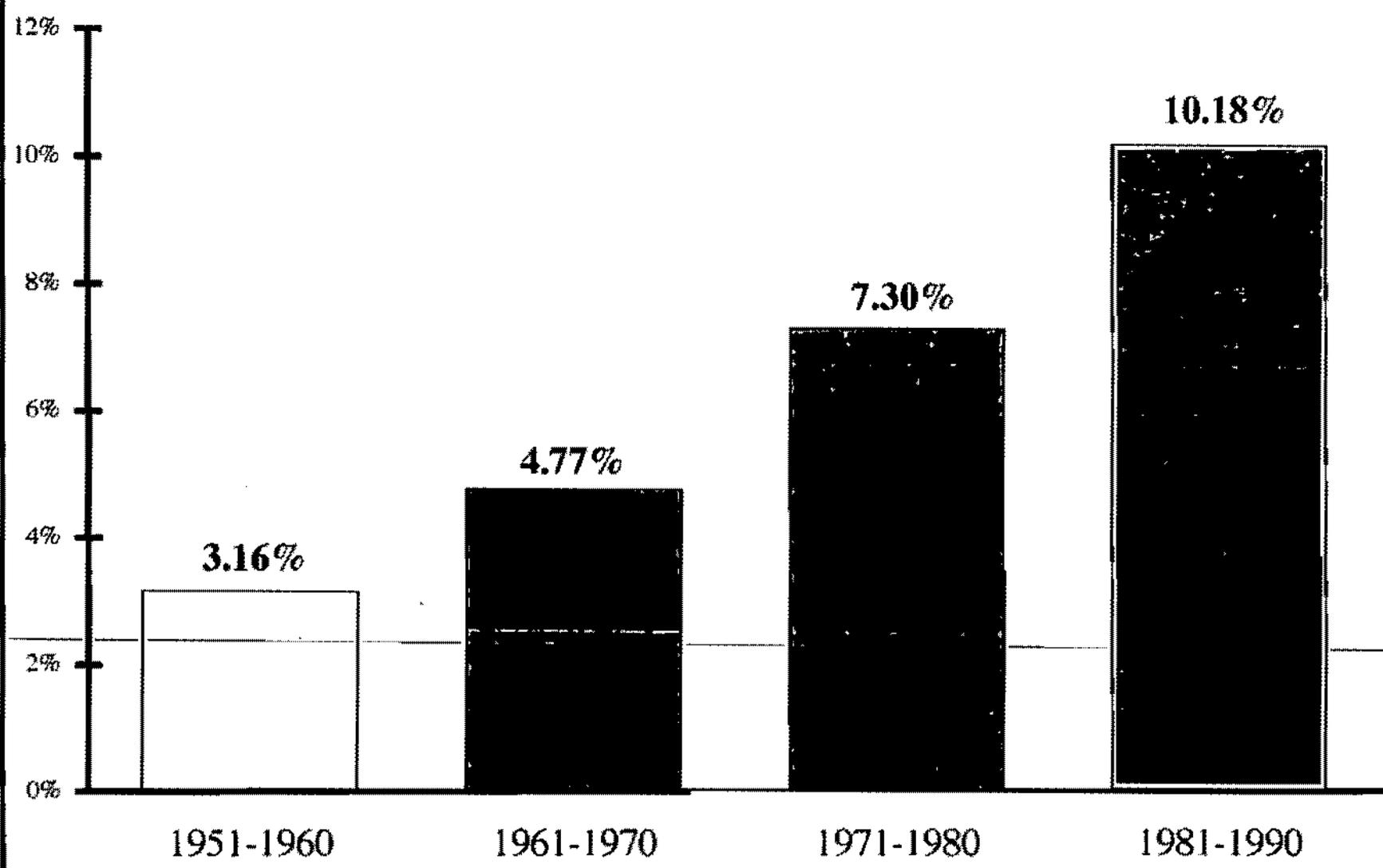


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

UNEMPLOYMENT RATE

- The unemployment rate is an important indicator of how well the human resources of a society are being used. The unemployment rate is calculated by dividing the number of people unemployed by the civilian labor force.
- The unemployment rate averaged more than 7 percent from 1981 to 1990. This was the highest unemployment rate of the past four decades, and was largely due to the high interest rates during the 1980s.
- Reagan's Economic Recovery Program was designed to stimulate the economy and provide improved opportunities for workers and businesses. However, this did not happen given several faulty assumptions of Reaganomics.
- The failure of Reaganomics was that the incentives designed to stimulate the economy were ill conceived. What it did, however, was to encourage short-term consumption. The consumption binge caused savings and capital investment to decrease, which is critical to sustained growth and lower unemployment.

UNEMPLOYMENT RATE

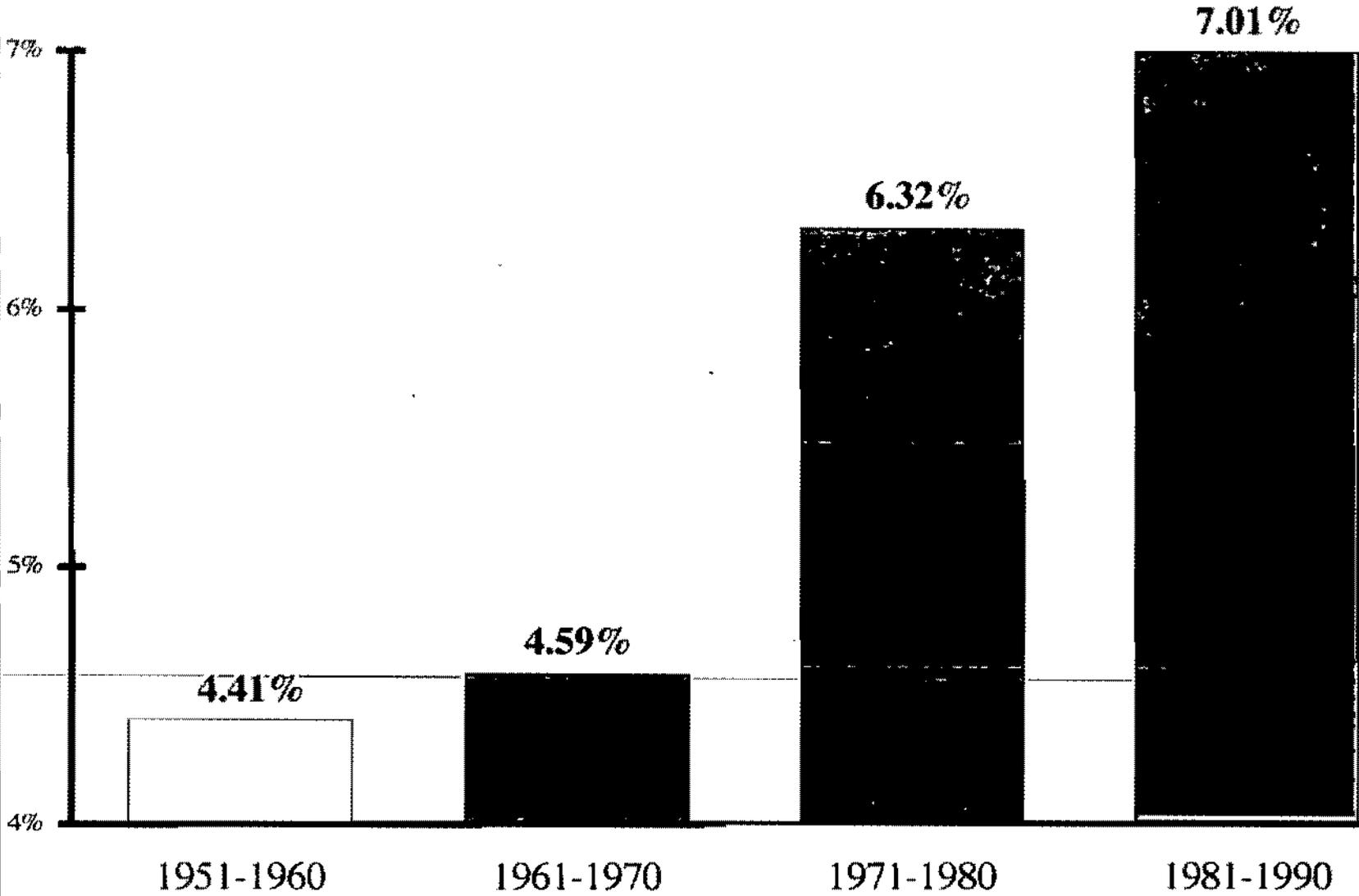


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

BUSINESS

NEW BUSINESS FORMATIONS

- A major goal of Reaganomics was to improve the business climate and to stimulate business activity. One measure of how well this objective was achieved is to consider the growth of new businesses on a decade by decade basis.
- The growth of new businesses was slower during the 1980s than it had been over the prior three decades. New business formations during the 1980s occurred at one fourth the rate of the prior decade.
- While Ronald Reagan's Economic Recovery Program was supposed to revitalize businesses, the goal was not achieved. His programs benefited older businesses with strong lobbies, and were not beneficial to the formation of new businesses which have historically been one of the strengths of the U.S. economy. Instead of stimulating the growth of new businesses, Reagan's policies stimulated a merger mania that resulted in reshuffling of older assets. In addition, the incentives of Reaganomics contributed to a boom and bust real estate cycle.

NEW BUSINESS FORMATIONS

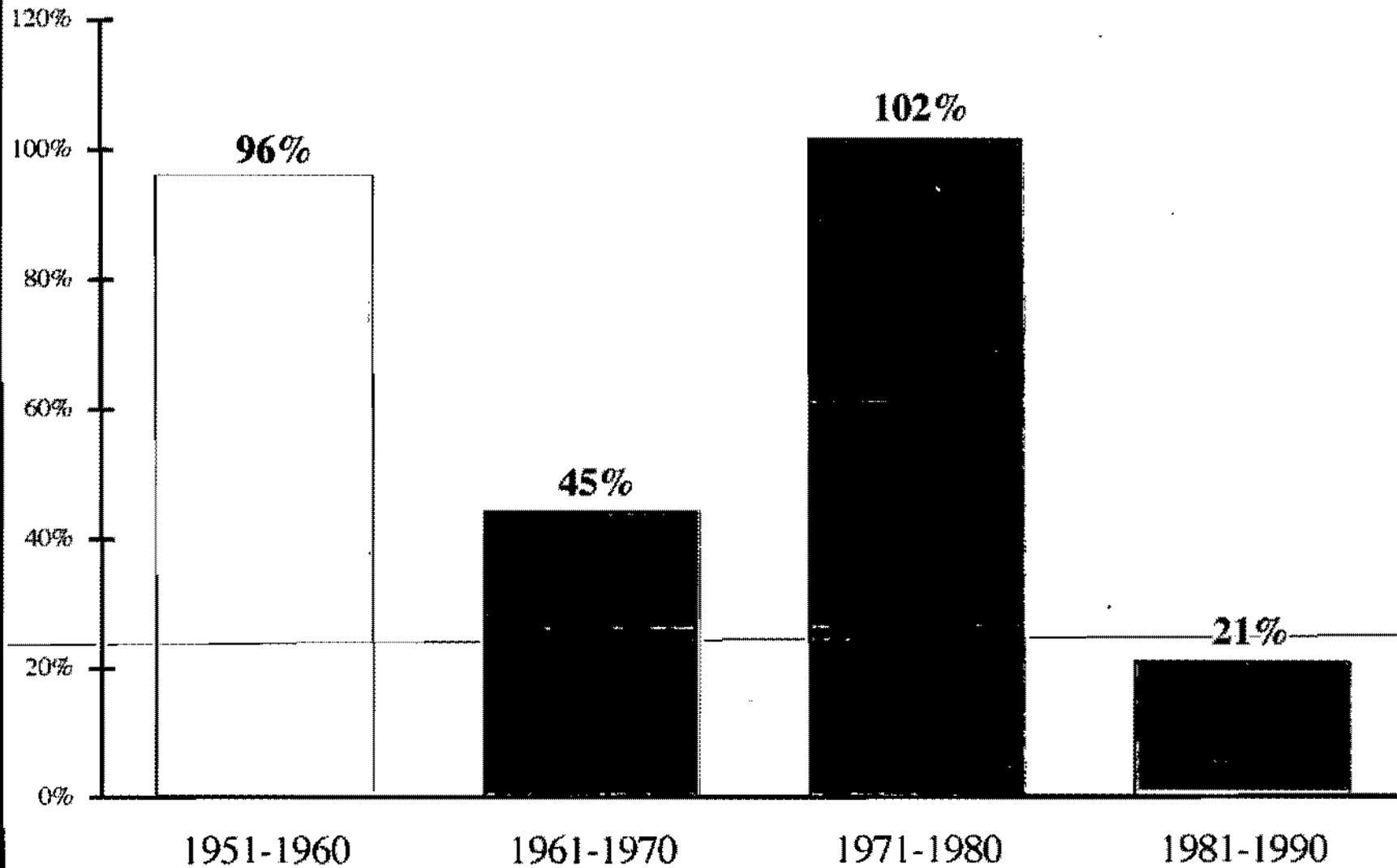


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

BUSINESS FAILURE RATE

- One can consider the failure rate of businesses as well as new business formations (previous chart) in assessing the health of the business environment. The business failure rate is the number of business failures a year per 10,000 businesses.
- The business failure rate from 1981-1990 averaged 94 per 10,000 businesses. In 1986, the business failure rate reached 120 which was the highest one year rate recorded during the 40 years studied.
- The 1980s were supposed to be a time of great business opportunities, but this was not the case. The bankruptcy rate increased due to the failure of Reaganomics to create the much talked about improvement in the business environment. Reagan's policies created too much borrowing by the Federal government which drove up interest rates making it harder for businesses to succeed.

BUSINESS FAILURE RATE

Per 10,000
businesses

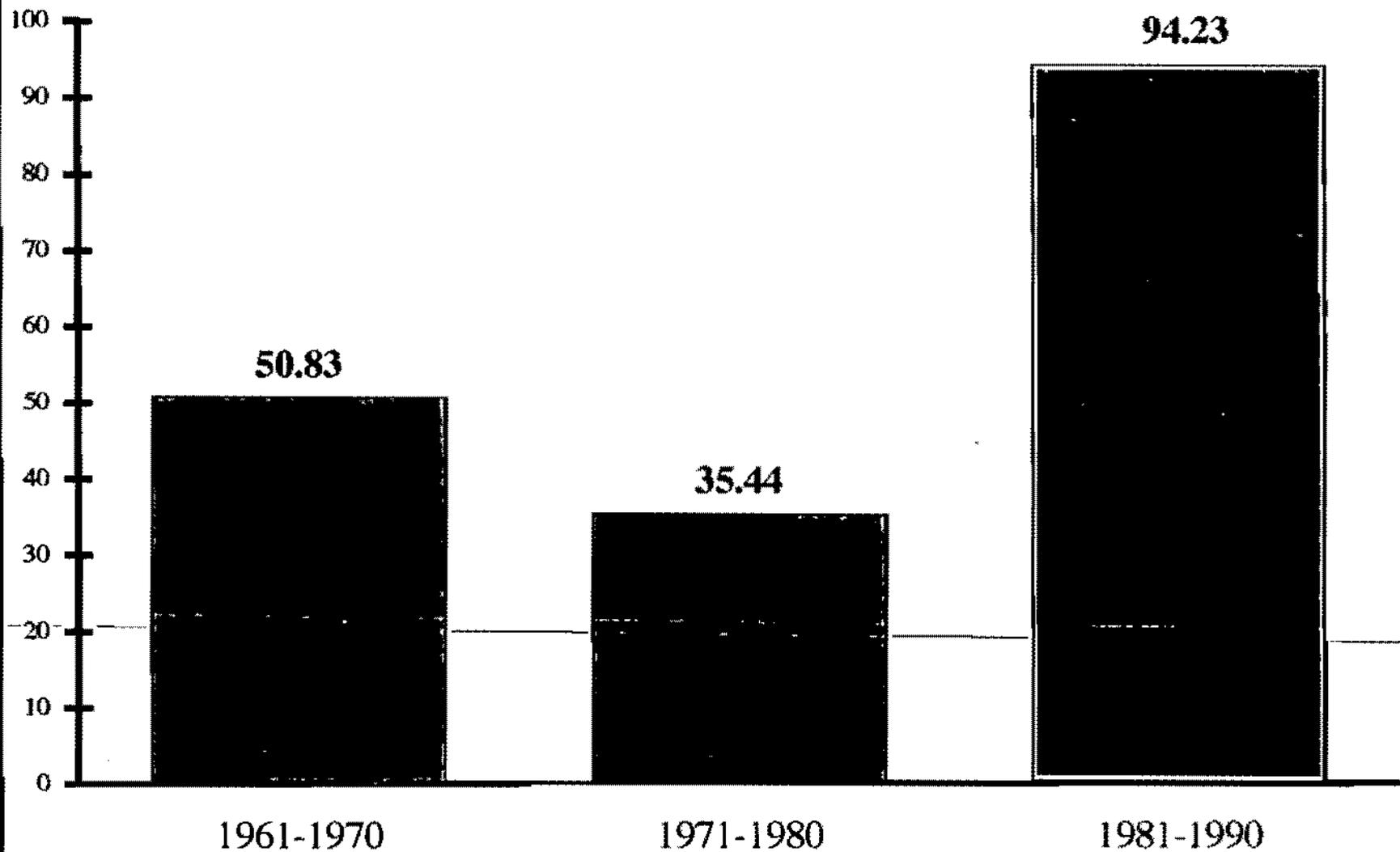


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CORPORATE PROFIT

- A third measure of how well businesses performed during the 1980s is the level of real corporate earnings. Real corporate earnings are earnings adjusted for inflation.
- Given the growth in business volume from one decade to the next, one would expect corporate earnings to be trending upward over time. However, real corporate earnings peaked in the latter part of the 1970s at over \$210 billion and never climbed back to that level during the 1980s.
- Real corporate earnings averaged \$150 billion during the 1970s, but only averaged \$135 billion during the 1980s. The decrease in corporate profit during the 1980s is another indicator of the failure of Reaganomics. Reaganomics was based on untested supply-side economics which did not live up to its promises.

CORPORATE PROFIT

Billions
of dollars

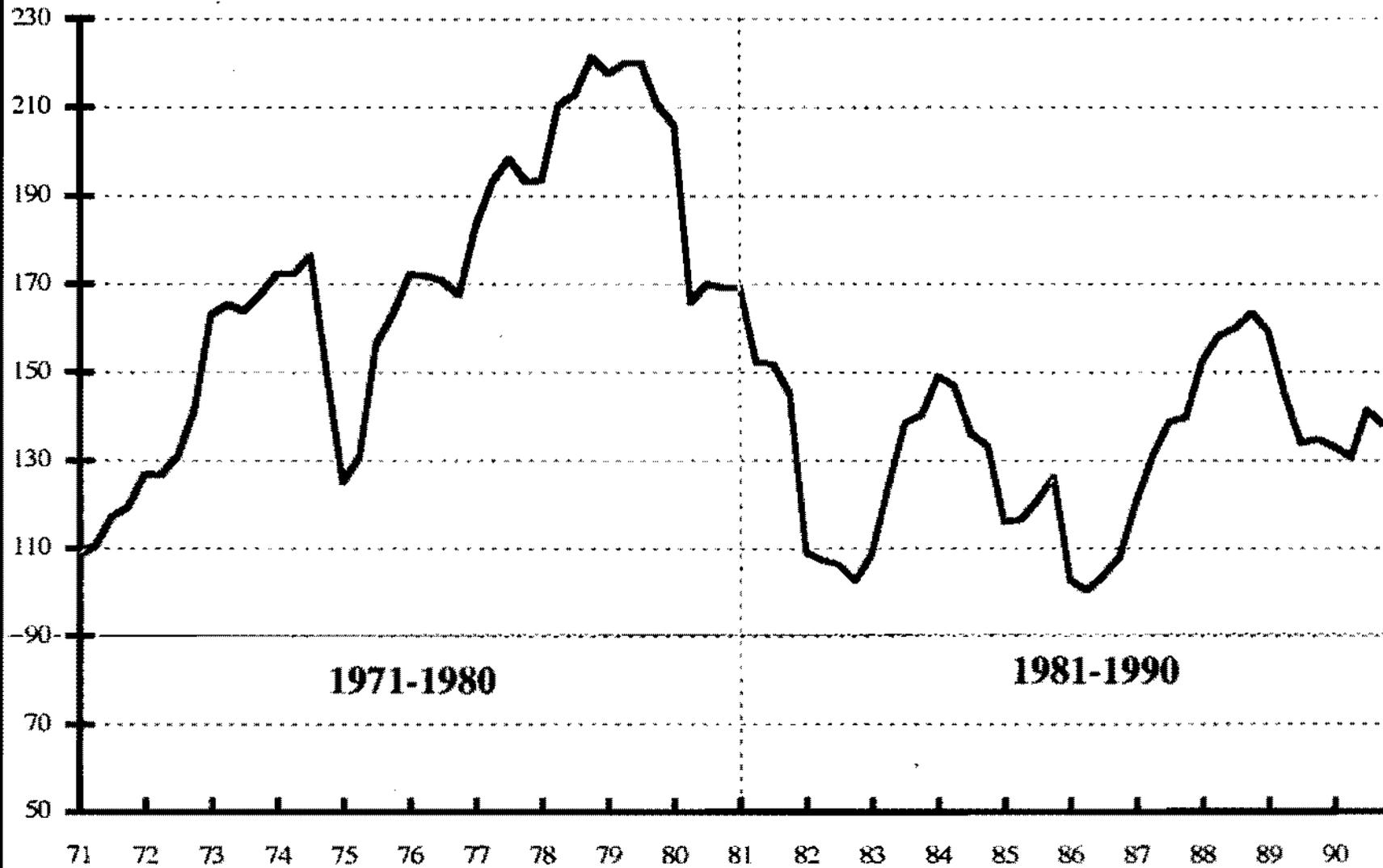


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

MANUFACTURING
& PRODUCTIVITY

TOTAL EMPLOYMENT IN MANUFACTURING

- One of the major goals of President Reagan's Economic Recovery Program was to strengthen the manufacturing sector of our economy.
- According to the MIT Study *MADE IN AMERICA*, a country must produce well in order to live well. If the U.S. is going to be competitive, and have a rising standard of living, it is essential to have a healthy manufacturing sector.
- One measure of the health of the manufacturing sector is the number of jobs that are involved in producing goods. As the chart shows, the number of manufacturing jobs decreased during the 1980s while they had increased over the prior three decades.
- As a result of Reagan's Economic Policies, the U.S. lost many high paying manufacturing jobs and gained many low paying service jobs. Reagan's policy advisors like to point to the rapid improvement of manufacturing productivity from 1982 to the end of the decade. That statement is very misleading since it uses as the beginning point the recession of 1982 which was the worst downturn since the end of World War II and a low point for the economy.

TOTAL EMPLOYMENT IN MANUFACTURING

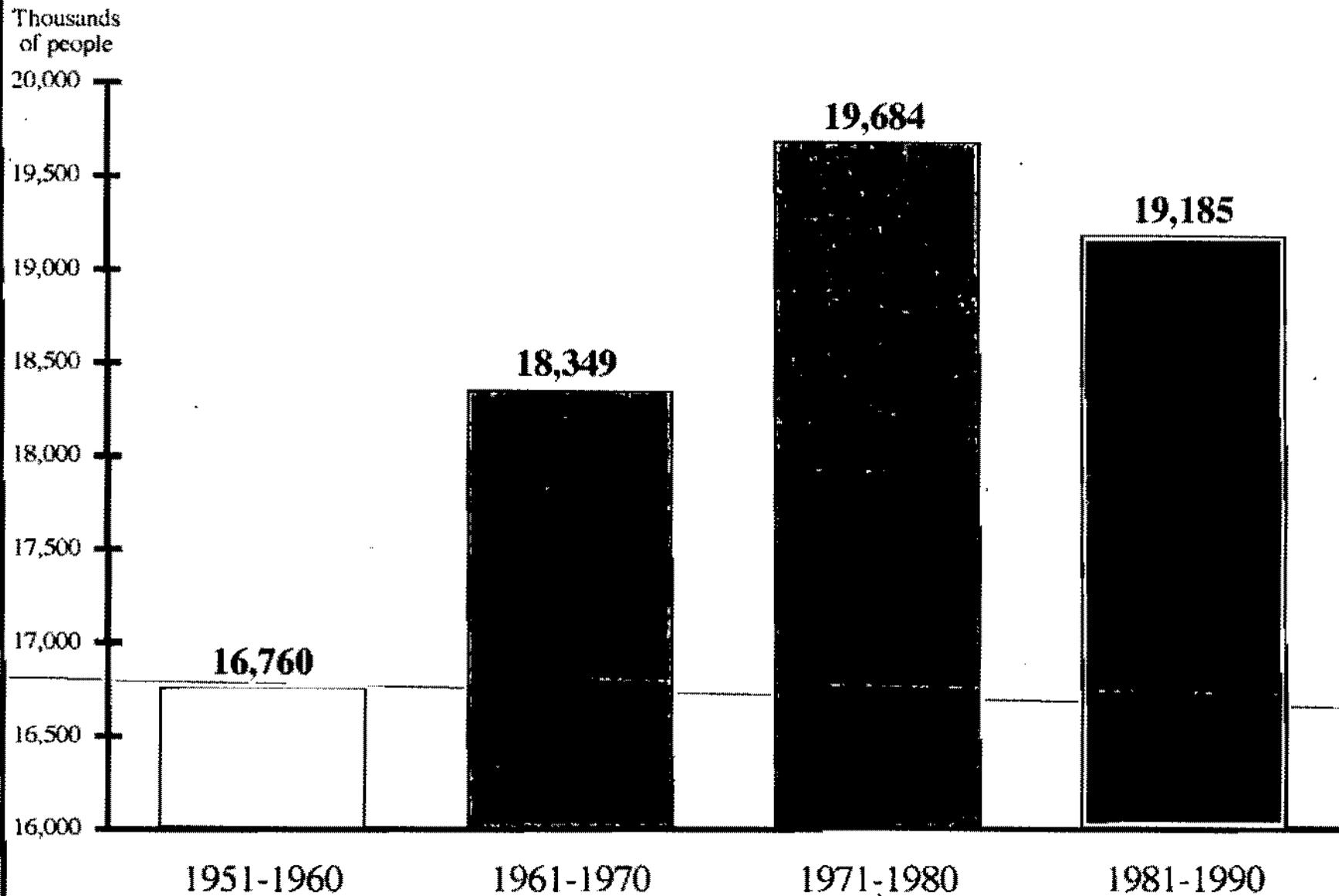


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CAPACITY UTILIZATION

- Capacity utilization measures the percentage of U.S. manufacturing that is being used to produce goods. A high level of capacity utilization is a sign of strong demand for U.S. produced goods. A high level of capacity utilization is normally associated with a strong and expanding manufacturing sector, while a low level of utilization is a sign of weakness.
- Capacity utilization only averaged 79% during the decade of Reaganomics in the 1980s. The level of capacity utilization was lower than the level of the prior three decades.
- The low level of capacity utilization during the decade of the 1980s and the falling manufacturing employment (prior chart) are two signs of the weakness of manufacturing associated with Reaganomics.

CAPACITY UTILIZATION

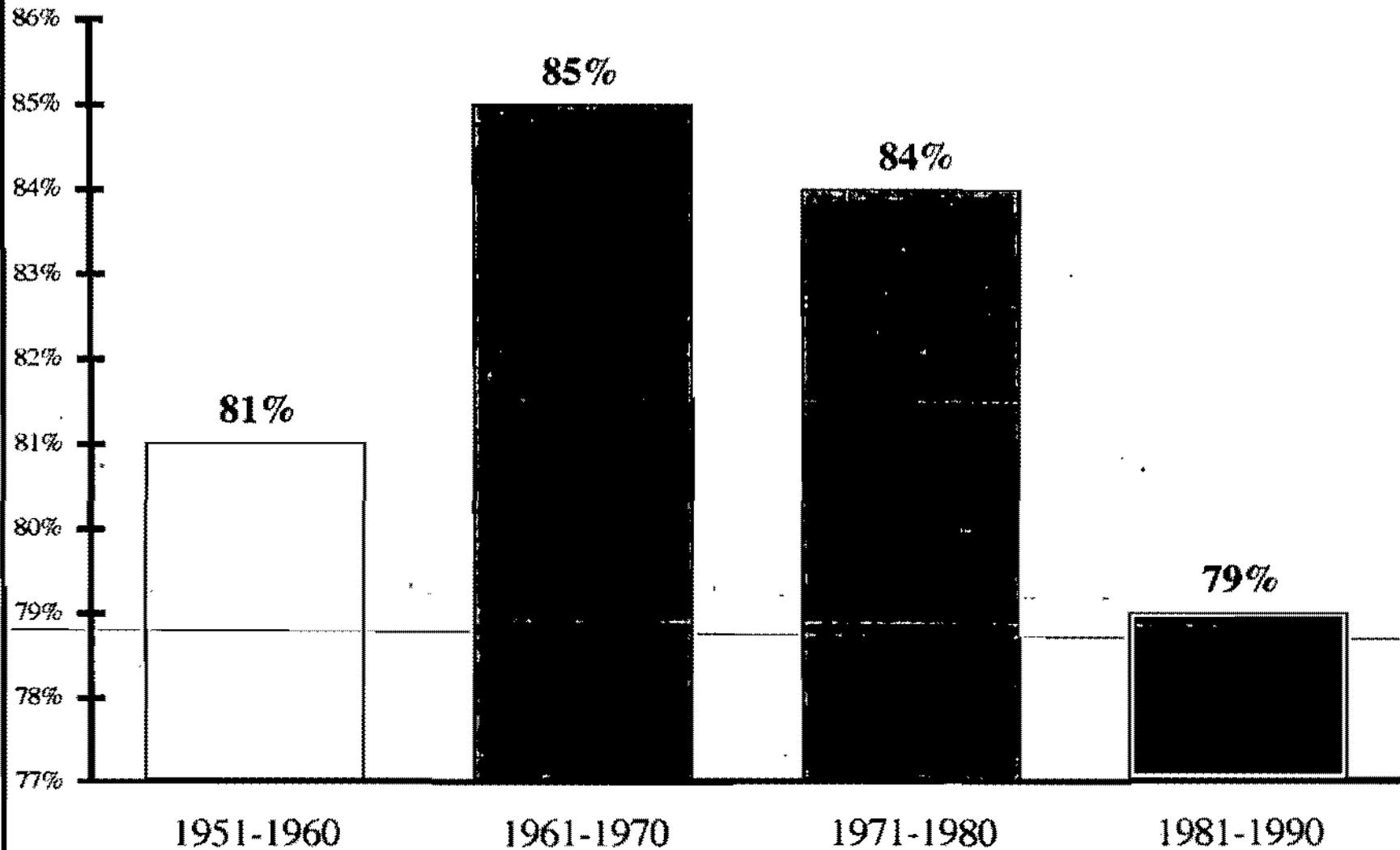


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

INDEX OF OUTPUT PER HOUR

- One measure of a country's productivity is output per hour. When labor is working more efficiently, output per hour increases and the standard of living improves. Labor productivity rises due to increased capital per worker, improved worker skills, investment in high growth/high technology industries, and better management methods.
- Output per hour only increased by 12 percent over the decade of the 1980s which was less than the improvement of the previous three decades.
- A key goal of President Reagan's Economic Recovery Program was to significantly improve the productivity and competitiveness of the U.S. economy. Unfortunately, the huge tax cuts and rapid increase in borrowing did little to improve productivity. The problem was that the tax cuts failed to increase savings and capital investment that were needed to improve output per hour. A further problem was that the tax cuts favored old industries and real estate investments which did little to improve productivity.

INDEX OF OUTPUT PER HOUR

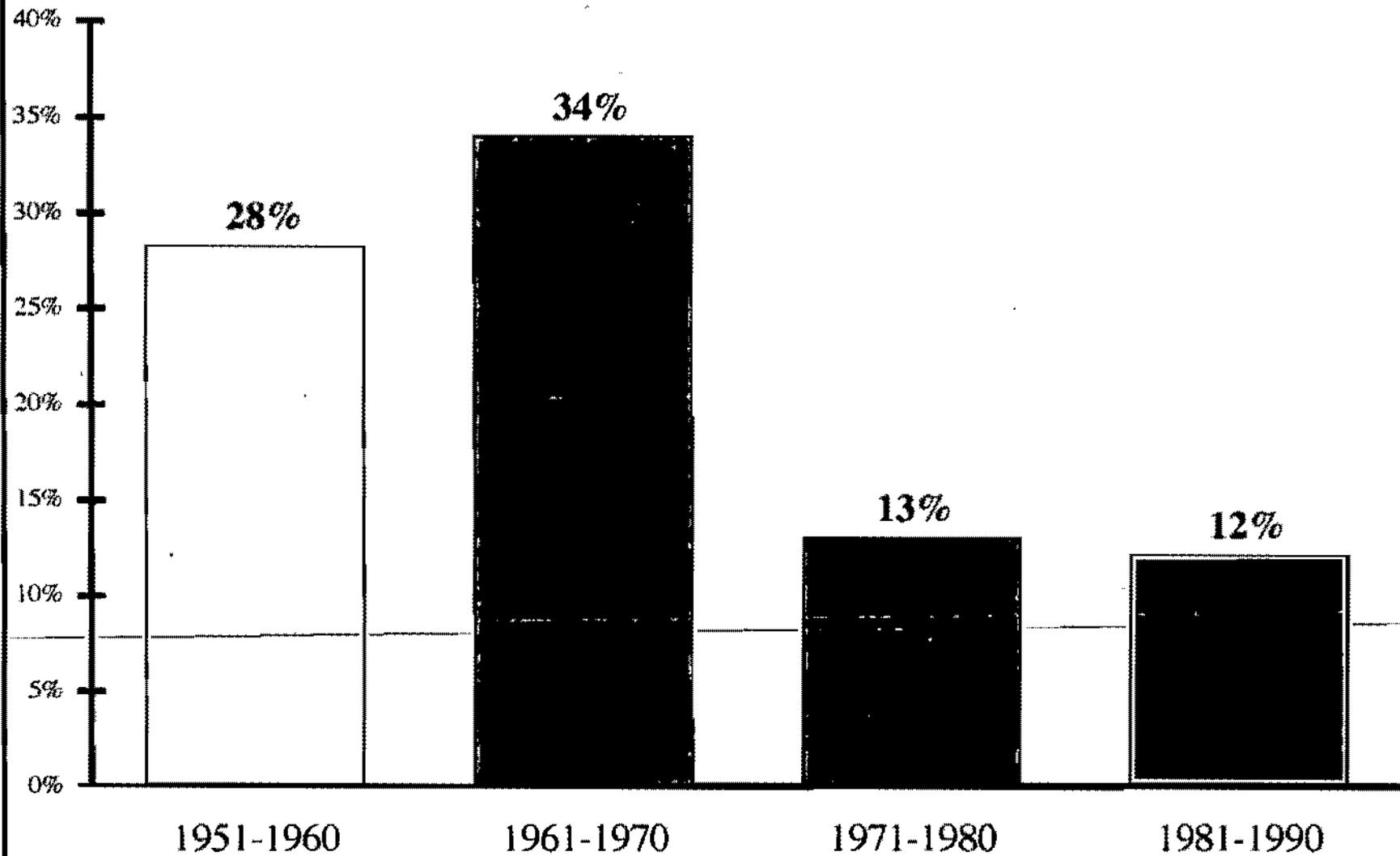


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

LABOR-PRODUCTIVITY COMPARED TO OTHER NATIONS

- Reagan campaigned in 1980 on the basis that he would improve the competitiveness of the U.S. Major tax cuts were devised for business and individuals based on the untested 'supply side' argument that they would cause increases in productivity and competitiveness. The justification for the personal tax cut was that it would encourage people to work harder. The reason for cutting business taxes was that it would supposedly increase the level of capital investment.
- The prior chart showed that productivity did not improve in the U.S. during the 1980s as Reaganomics had promised. This chart shows that our change in productivity on an international basis was also poor. The U.S. ranked last among nine industrialized countries in productivity improvement from 1979 to 1990.
- The deep tax cuts did not cause the improvement in productivity as Reagan proclaimed that it would. What happened was that Reagan's program failed to control expenditures, and he tried to have more guns and butter simultaneously. (Professor Samuelson warned that this was impossible). Cutting taxes and increasing expenditures at the same time created a devastating federal debt, but no improvement in productivity.

LABOR PRODUCTIVITY GROWTH

1979 to 1990

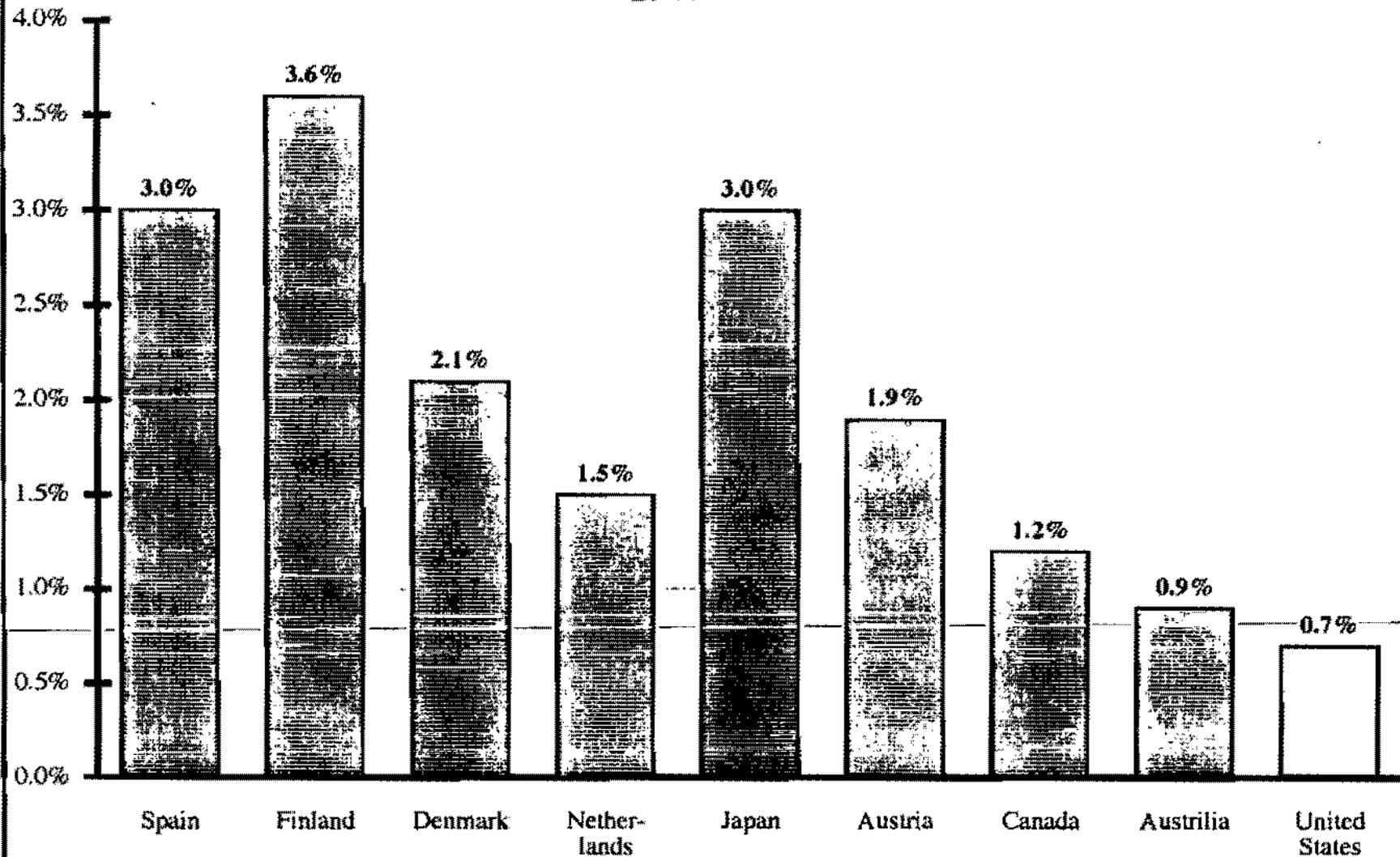


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

INTERNATIONAL

MERCHANDISE TRADE BALANCE AS A PERCENTAGE OF GNP

- Another of the major objectives of Reagan's Economic Recovery Program was to improve the U.S. competitiveness. One way to measure how well this objective was achieved is to consider the balance between exports and imports. If a country's competitiveness is improving, one would expect exports to be growing relative to imports, and for the merchandise trade balance to be positive.
- The merchandise trade balance fell sharply during the 1980s as the U.S. imported more goods than it shipped abroad. As with most of the other measures, the trade balance registered its poorest performance of the last four decades during the 1980s.
- The deterioration in our trade balance to a deeply negative level meant that we were exporting valuable manufacturing jobs abroad. The negative trade balance is a reason for the high level of unemployment experienced during the 1980s and on to the present.

MERCHANDISE TRADE BALANCE AS A PERCENTAGE OF GNP

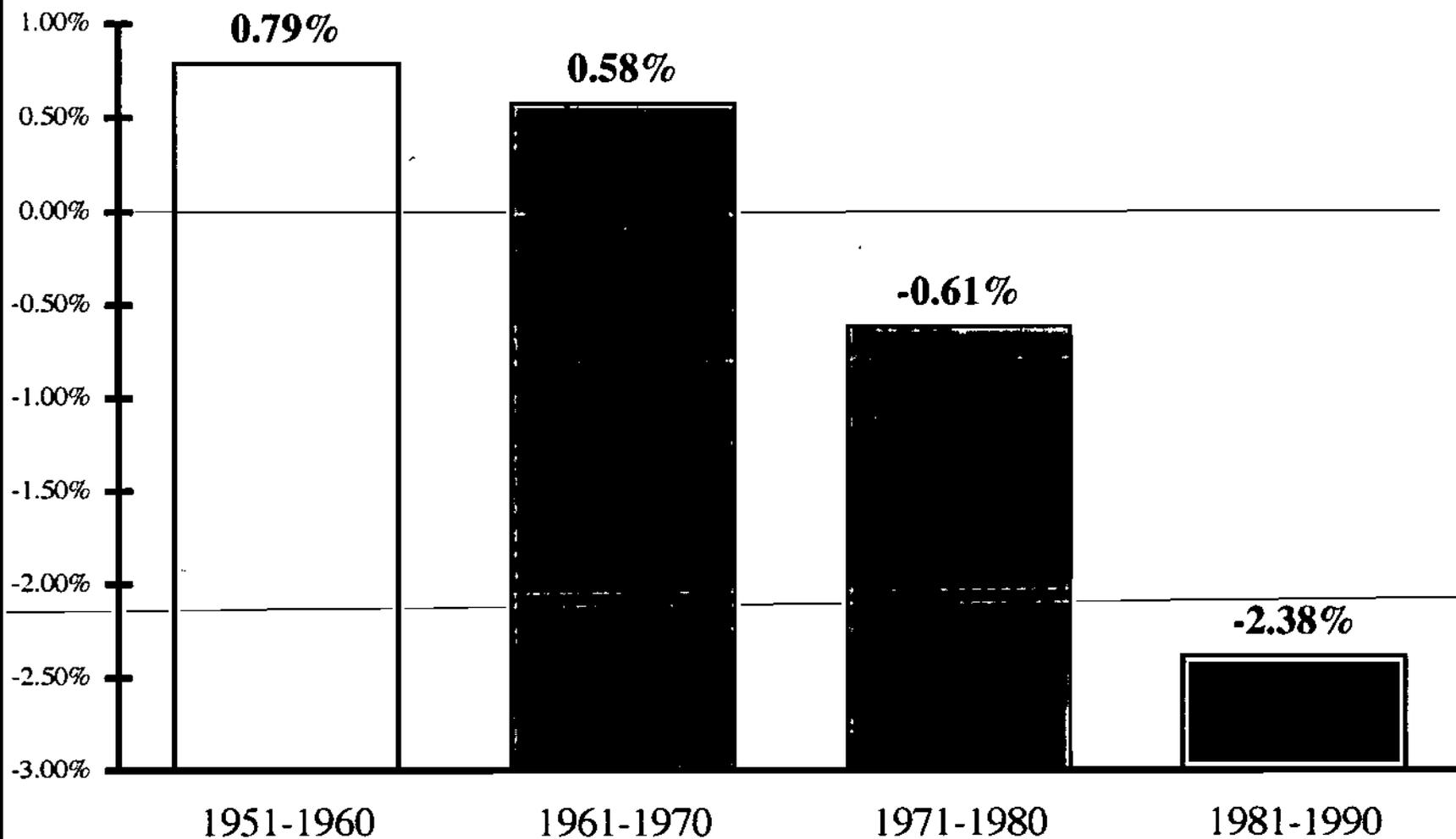


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

MERCHANDISE TRADE BALANCE

- While Reagan's Economic Recovery Program was undertaken on the basis that it would increase U.S. competitiveness, the merchandise trade balance deteriorated as the competitive position of U.S. firms declined. The chart below examines the merchandise trade balance in greater detail and the decline in U.S. competitiveness in the 1980s.
- The trade balance averaged \$25.4 billion from 1975 to 1980. As tax cuts were implemented in the early 1980s and federal government expenditures increased, the trade deficit climbed from \$25 billion in 1980 to \$160 billion in 1987 - an increase of 540 percent.
- The value of the U.S. dollar rapidly increased from 1980 to 1985 as the federal government spent more and borrowed more from other nations. The rapid increase in the value of the dollar made imports cheaper relative to domestically produced goods and accelerated the purchase of imports. This was a major reason for the decline in manufacturing jobs during the 1980s.

MERCHANDISE TRADE DEFICIT

Billions
of dollars

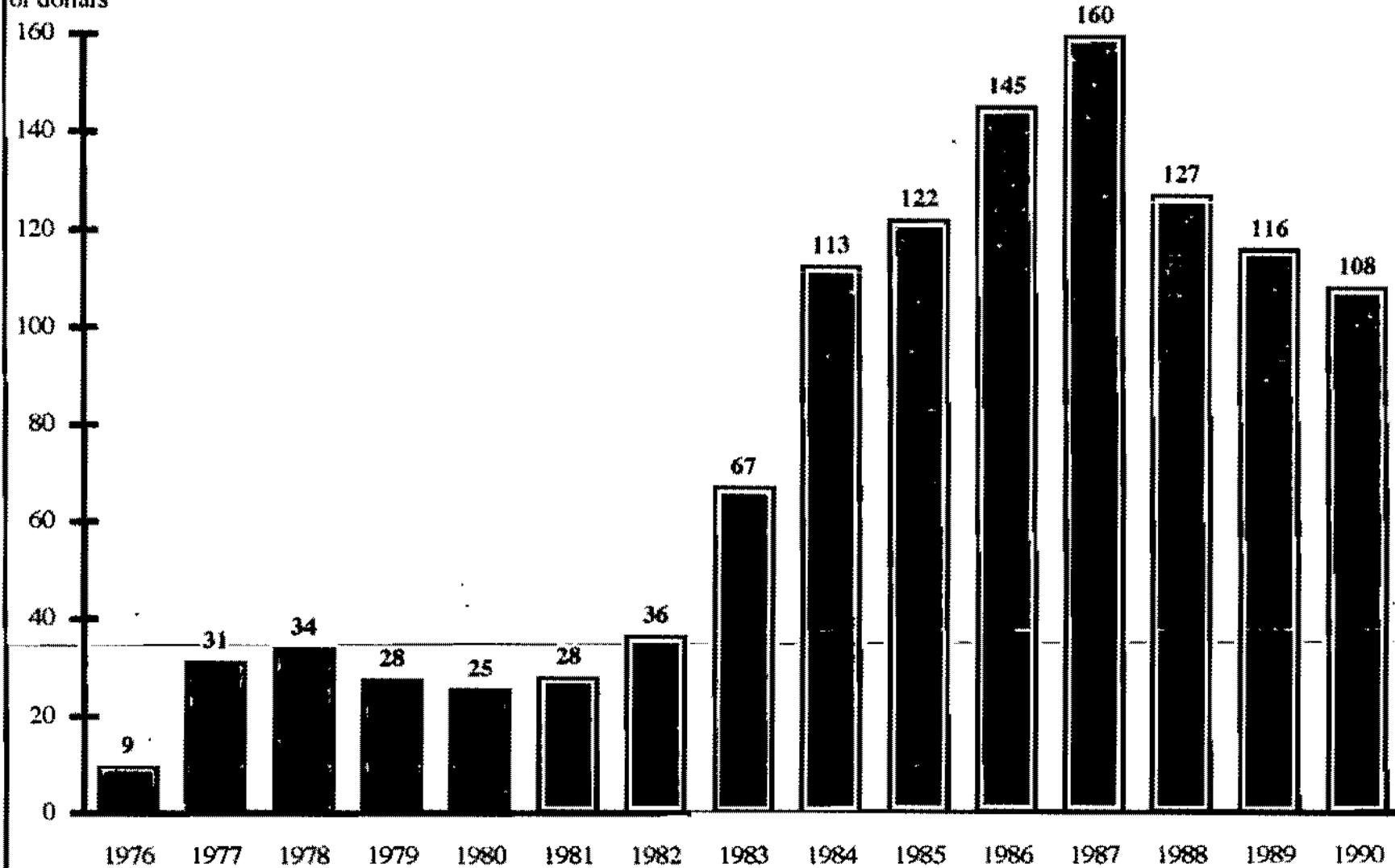


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

CURRENT ACCOUNT AS A PERCENTAGE OF GNP

- The current account is a broader measure of international transactions than the merchandise trade balance. It includes the trade balance, net services, net investment income and unilateral transfers. The current account balance is presented as a percentage of GNP to reflect its size relative to the overall economy. Like the merchandise trade balance, the current account balance is an indicator of U.S. competitiveness.
- The current account to GNP ratio was positive over the three decades before the 1980s. However, during the 1980s the Ratio became very negative. From 1981 to 1990, the Ratio was a negative 2.01 percent.
- The Current Account to GNP Ratio explains why the U.S. went from being the world's largest creditor nation to the world's largest debtor nation during the 1980s. During most of the 1950s, 1960s, and 1970s, the U.S. enjoyed a positive current account balance. However, the current account has been negative since 1983, and at incredibly high levels. Meanwhile, the U.S. has become the largest debtor nation in the world.

CURRENT ACCOUNT AS A PERCENTAGE OF GNP

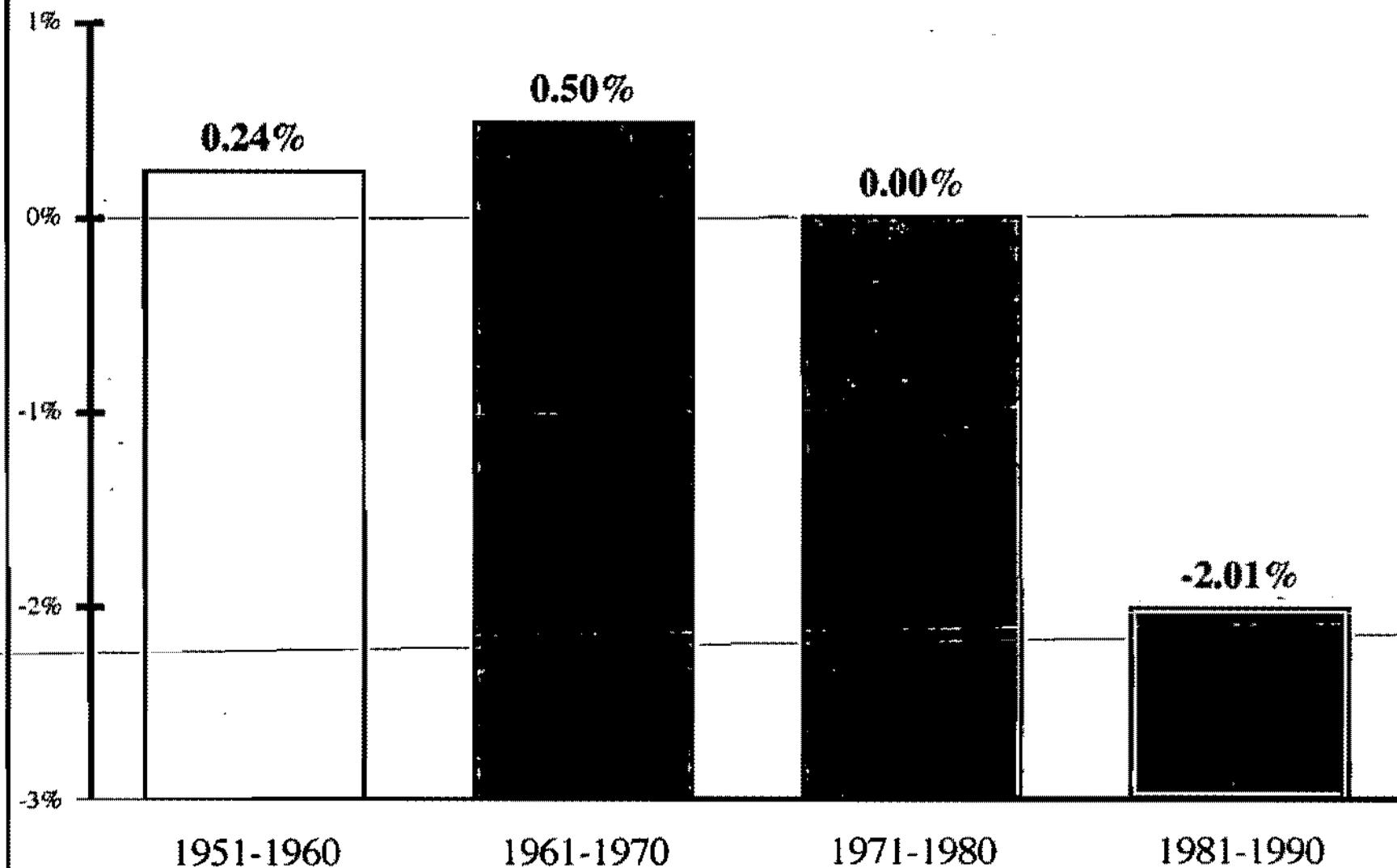


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

GROWTH-IN-U.S.-EXPORTS-COMPARED TO OTHER NATIONS

- A major objective of Reagan's Economic Recovery Program was to improve U.S. competitiveness. We have already reviewed the deterioration of the merchandise trade balance and the current account balance during the 1980s versus the decades. A further way to review the poor performance of Reaganomics is to consider the growth of exports during the 1980s in comparison to the other major industrial nations.
- The growth of exports of ten countries is shown in the chart below. The U.S. ranked last of ten major industrialized countries registering an annual growth of exports of only 2.3% from 1980 to 1989.
- The problem with Reagan's Economic Recovery Program was that it was based on the untested and theoretical 'supply side' economics advocated by Congressman Jack Kemp and Senator William Roth and a few economists. Federal taxes were cut while government expenditures were increased. This created huge annual budget deficits and soaring federal government debt. The high level of debt drove up interest rates and reduced capital investment. In turn, the low level of capital investment hurt productivity and worsened rather than helped U.S. competitiveness.

GROWTH IN EXPORTS

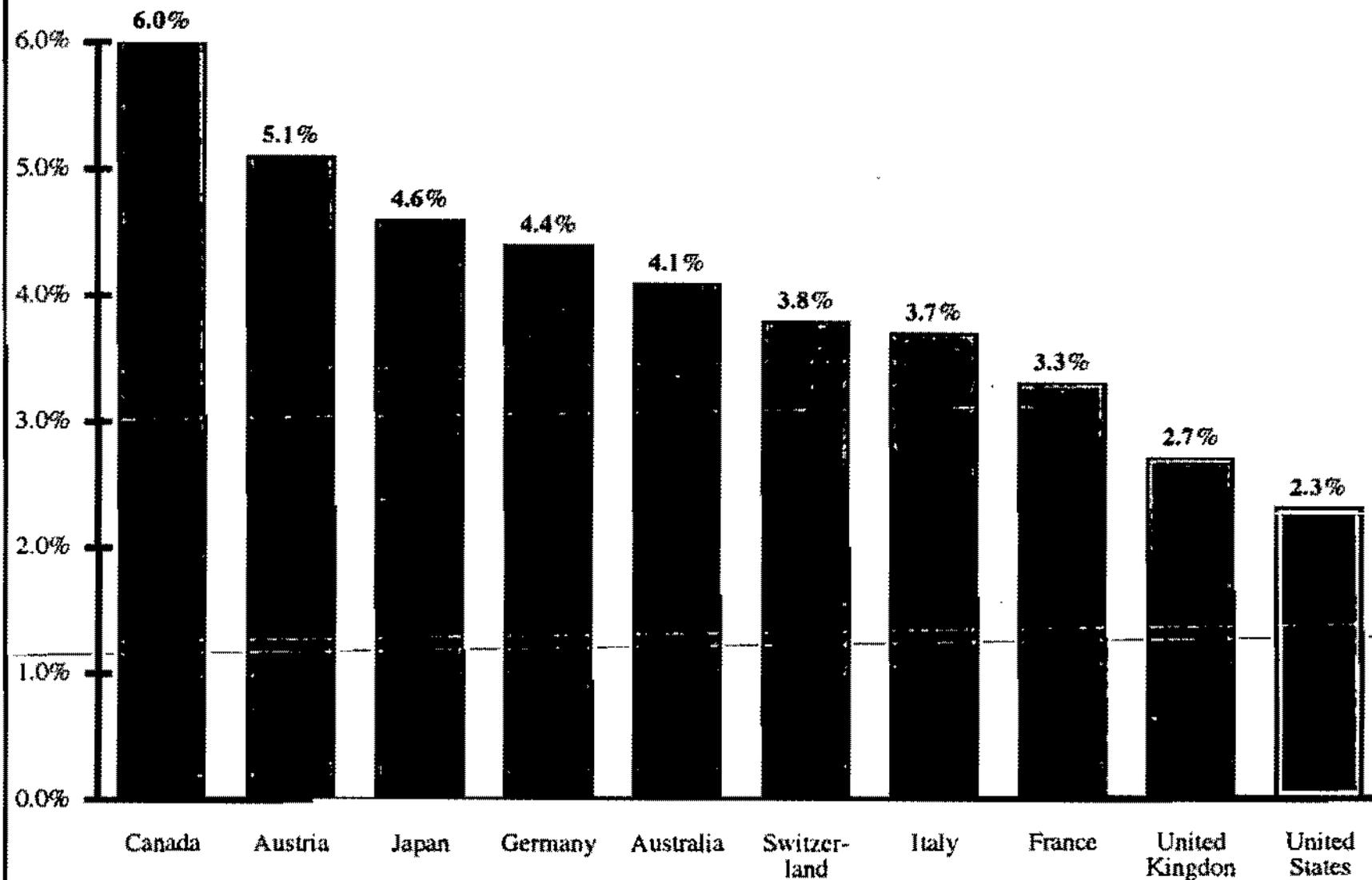


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

NET CAPITAL INFLOW

- Net capital inflow measures the difference between U.S. assets owned abroad and foreign assets owned in the U.S. The Net Cash Flow is negative when the U.S. invests more abroad than foreigners invest in the U.S. When foreign countries invest more in the U.S. than the U.S. invests abroad, the cash flow is positive.
- For most of the 1960s and 1970s, the U.S. invested more abroad than foreign countries invested in the U.S. In 1975 the U.S. invested over \$64 billion in other countries while foreign countries invested only \$39 billion in the U.S. The net capital inflow was near -\$26 billion for 1975.
- As the trade and current account balances became negative during the 1980s, foreign countries acquired more dollars. They put the dollars to work by buying U.S. assets including real estate, bonds, and businesses. Because of the persistent negative trade and current account balances, the U.S. dollar was devalued and the foreign nations were able to buy U.S. assets more cheaply.

NET CAPITAL INFLOW

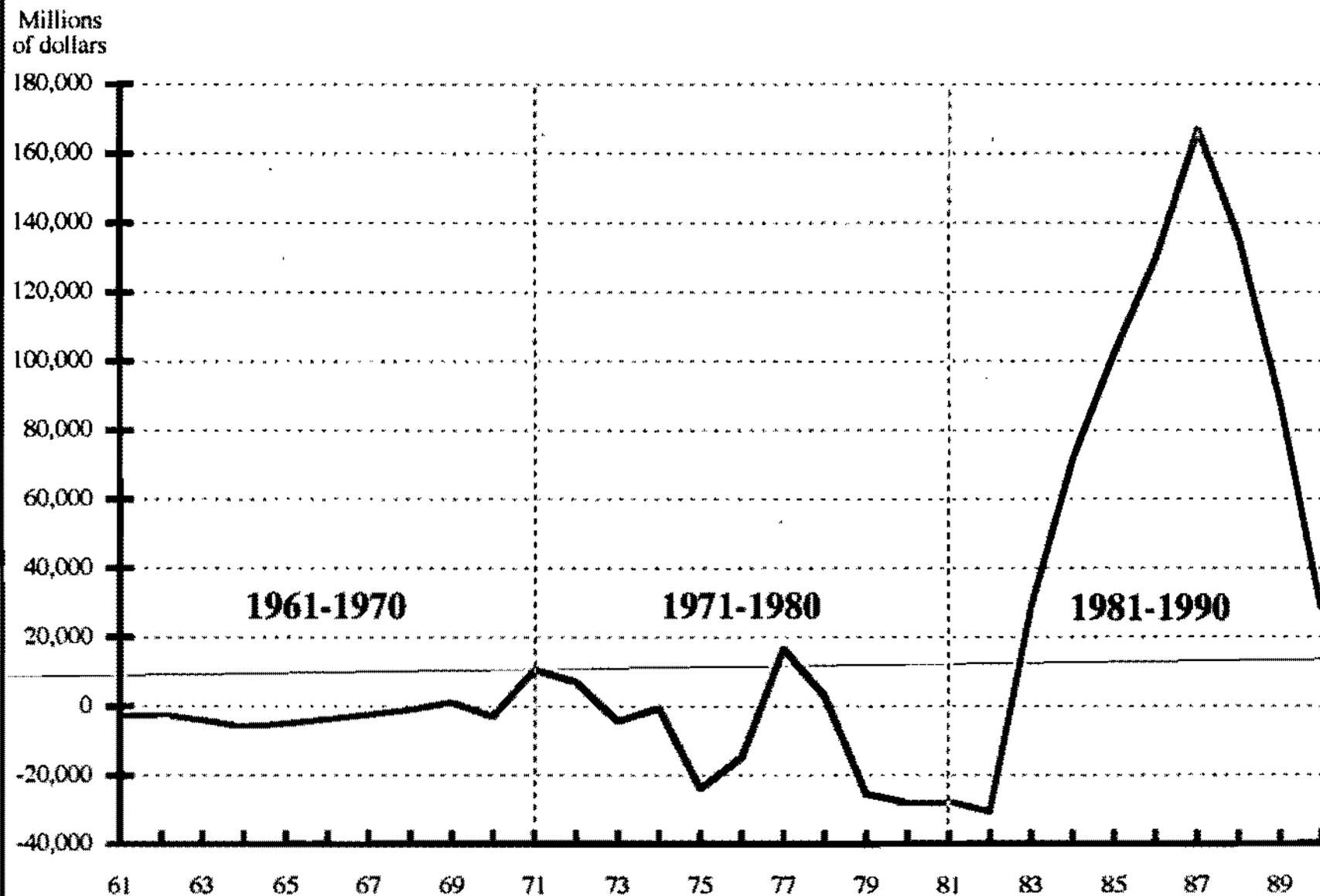


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

NET INVESTMENT INCOME

- Net investment income includes interest, dividends, and other forms of income that a country receives from its investments abroad. Net investment income is the difference between America's investment income from foreign countries, and foreign countries' investment income from the U.S.
- Growing net investment income is generally considered a sign of strength for a country since it is investing and earning more abroad. Declining net income is an indication of foreign countries earning more dollars and making more investment in the U.S. It is another consequence of a declining merchandise trade balance and a falling current account balance.
- Net investment income gradually rose during the 1960s. Over the 1970s, net investment income rapidly increased. However, as Reaganomics was implemented during the 1980s and foreigners bought more and more U.S. assets, net investment income fell sharply.

NET INVESTMENT INCOME

Millions
of dollars

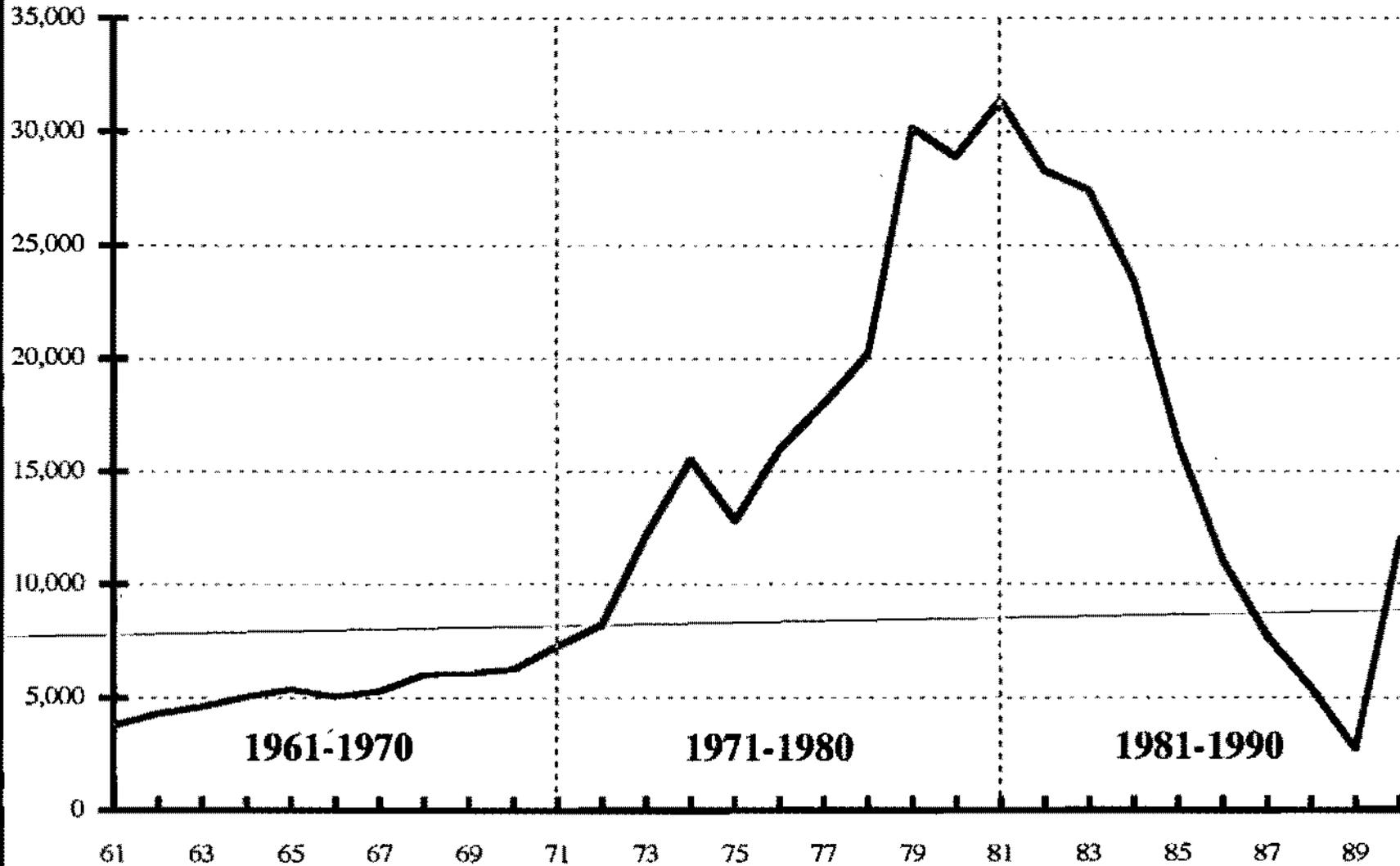


Chart Portfolio Series: ARE YOU BETTER OFF AFTER A DECADE OF REAGANOMICS?

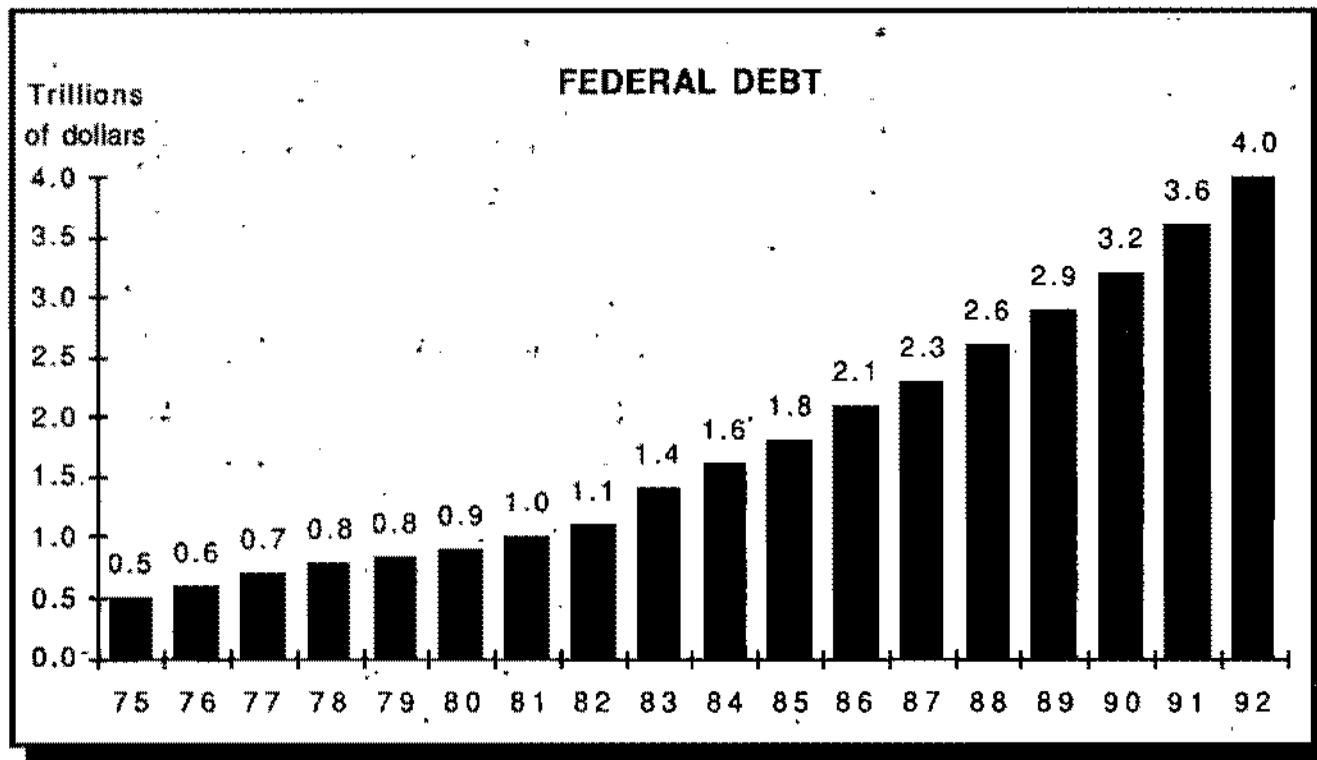
SUMMARY

Ronald Reagan raised the question during the 1980 presidential campaign when he ran against Jimmy Carter "Are you better off today than you were four years ago?"

It is now appropriate to ask the question "Are you better off after a decade of Reaganomics?" (which includes 2 years of Bush). The answer to this question only gets worse if you include the entire four years under President Bush.

Reaganomics was an economic policy based on an untested theory of supply side economics. Reaganomics had four primary aspects: 1. Cut private and business tax, 2. Increase military and federal government expenditures, 3. Increase government revenues (due to the theoretical stimulus of the tax cut), and 4. Balance the budget. If it sounds like a fairy tale — it was. In prior military build-ups taxes had been increased (not decreased) to offset the growing cost of federal government.

As a result of the experimental nature of Reaganomics which eventually failed, the federal debt has ballooned from less than a trillion dollars in 1980 to four trillion in 1992. All of this borrowing has shifted demand from the future (1990s) to the past (1980s). This is the reason that the U.S. economy has grown so slowly during Bush's four year term.



Six sets of statistics were reviewed for the decade of Reaganomics and they were compared with the performance of the economy over prior decades. In all cases the performance of the economy did not measure up to the performance of the country during prior decades.

Debt: Debt soared as a percentage of gross national product during the 1980s. The federal government, businesses, and consumers all went further in debt to keep expenditures high since the economy was performing poorly. Over the 1980s, the U.S. changed from being a creditor nation (other countries owing us more than we owe them) to a debtor nation. Now instead of funds flowing to the U.S. the reverse is happening. As a consequence we must ship more of our output abroad to pay for our borrowing, which translates into a lower standard of living for Americans.

Consumers: Ronald Reagan campaigned on increasing savings and capital investment in order to improve the standard of living over the long run. However, just the opposite occurred as the personal savings rate fell to its lowest level in decades. The public saved less and consumed more of our national output and consumers went further in debt. The rich in our society benefited from Reaganomics while most Americans

~~experienced a decline in their standard of living. Reaganomics was in~~
essence a trickle down theory (cut the taxes of the rich) that never
trickled down. The tax cuts of 1982 to 1984 primarily benefited those in
the upper five percent of income distribution.

Macro Economy: Interest rates on government and business loans
reached their highest level in decades during the 1980s. The high
interest rates were associated with a low level of gross savings (consumer,
business, and government) and the high levels of borrowing during the
1980s. High interest rates reduced the level of capital investment, hurt
gains in productivity, and slowed the rate of economic growth.

Business: A key to Reagan's plan to rebuild our economy was to
strengthen business, but this did not happen. New business formations
declined, the business failure rate increased, and real corporate profits
declined. Instead of being good years for business, it was a period of
financial manipulations with a huge quantity of resources in the form of
junk bonds being devoted to management takeovers and buybacks.

Manufacturing: Reagan campaigned on rebuilding the manufacturing capability of this country. During the 1980s manufacturing jobs contracted, capacity utilization fell, output per hour decreased, and the labor productivity in the U.S. was poor relative to other industrialized nations. Instead of re-industrializing the country and improving our competitiveness, we imported more manufactured goods from abroad and exported quality jobs to other countries.

International: One of Reagan's 1980 campaign promises was to improve U.S. competitiveness, but the opposite occurred. The trade deficit soared to record levels as U.S. imports climbed relative to exports. The current account (a broader measure of international transactions) became negative for the first time in four decades. Instead of the United States lending capital abroad, there was massive inflow of capital from other countries to the United States to meet our borrowing needs. The inflows resulted in the U.S. changing from being a creditor to a debtor nation during the 1980s.

WHAT WENT WRONG? HOW DID IT HAPPEN?

President Reagan and his administration were warned in 1981 that the budget numbers did not add up by David A. Stockman who was none other than President Reagan's own Director of the Office of Management and Budget.

The following quotes are from an article by William Greider, "The Education Of David Stockman", The Atlantic Monthly (December 1981 pp 27-54).

1. In addition to Presidential Candidate George Bush, there were others who questioned early on the logic of Reaganomics and feared what it would do to the country.

... John Anderson, running as an independent candidate for President in 1980, had asked the right question: "How is it possible to raise defense spending, cut income taxes, and balance the budget, all at the same time?"

Henry Kaufman, of Salomon Brothers, ... delivered a sobering speech that ... said the same thing that John Anderson had said in 1980: cutting taxes and pumping up the defense budget would produce not balanced budgets but inflationary deficits.

2. The Office of Management and Budget computer warned that the numbers did not add up, and that Reaganomics could cause massive federal budget deficits.

An OMB computer, programmed as a model of the nation's economic behavior, was instructed to estimate the impact of Reagan's program on the federal budget. It predicted that if the new President went ahead with his promised three-year tax reduction and his increase in defense spending, the Reagan Administration would be faced with a series of unprecedented peacetime federal deficits - ranging from \$82 billion in 1982 to \$116 billion in 1984.

The final tax legislation would yield, in total, an astounding revenue loss for the federal government of \$750 billion over the next five years.

~~3. Ignore the facts and tell the public that 'all is well!'~~

Reagan's policy makers knew that their plan was wrong ... but the President went ahead and conveyed the opposite impression to the American public. With the cool sincerity of an experienced television actor, Reagan appeared on network TV to rally the nation in support of the Gramm-Latta resolution, promising a new era of fiscal control and balanced budgets, when Stockman knew they still had not found the solution.

4. Another time around for the old fashioned 'trickle down' program of the Republicans.

A Trojan Horse?

... the supply side theory was not a new economic theory at all but only new language and argument to conceal a hoary old Republican doctrine: give the tax cuts to the top brackets, the wealthiest individual and largest enterprises, and let the good effects "trickle down" through the economy to reach everyone else.

5. Haste Makes Waste.

"The reason we did it wrong, not wrong, but less than the optimum ... we have to get a program out fast. And when you decide to put a program of this breadth and depth out fast, you can only do so much. We were working in a twenty or twenty-five-day time frame, and we didn't think it all the way through. We didn't add up all the numbers." David Stockman



WAKE UP AMERICA: YOUR ECONOMY IS BURNING

Outline Of Chapter Titles

Introduction

"Wake Up America!" The U.S. economy is in a state of decline. The primary problem is that economic fundamentals that were the basis of our success changed in the mid-1970s. Unfortunately, few economists and policy makers clearly recognize what has happened. As a result, the appropriate policies for renewed growth have not been implemented. Instead short-sighted policies have been introduced that have worsened the situation. As a result, we are a society that consumes too much and our standard of living is declining because of it. The money we are investing is too often on yesteryear's industries. We are not saving and investing in tomorrow's industries.

The book is not simply about the problems, but also on solutions. Fortunately, America is a wealthy nation based on the free enterprise system that is well endowed in human and nature resources. The decline can be reversed if (1) we unify the nation regarding the need for change and (2) sound economic policies are introduced. Change is not easy and that is why the future of the U.S. economy remains in jeopardy.

1. "Rise And Fall Of The U.S. Economy" The conditions that supported economic growth for the thirty years after World War II are addressed. We also discuss how those conditions have changed. This chapter explains that the failure to

make adjustments to our economy has contributed to an unnecessary decline of our standard of living.

2. **"The Decline of Great Britain"** There are frightening parallels between the failure of Great Britain in the 1800s to make the adjustments necessary to remain a strong economic power, and what is happening in the U.S. today. We should not be so smug in believing that we are destined to have a strong economic future. We will receive what we earn from skillfully redirecting our economy.
3. **"On Change and Effecting Change"** Explains the need for economic changes and why change is often difficult to achieve. A new bipartisan Federal government agency should be created to help us move in the direction of positive change. The alternative is stagnation and continued decline.
4. **"Rise And Fall Of Auto And Oil"** America's expansion for thirty years after WWII was closely tied to these two industries, and the decline of America over the last twenty years is similarly tied to these industries. The failure to implement the needed changes involving these industries is a major contributing factor to our declining standard of living. Detroit is on its knees, and should be given another chance to rebuild a healthy and competitive domestic automobile industry. Part of the problem is self-inflicted, and the other part is the unfair competition it faces from the Japanese.
5. **"Feeble Response To Automobile Fuel Efficiency Is Costing America Its Future"** While Detroit needs to be given another chance, it must also learn how

to produce more fuel efficient and competitive cars. Since 1982 little progress has been made in the fuel efficiency of the American fleet, and over the past five years fuel efficiency has declined. America has no choice but to give up its love affair with big gas-guzzling cars and light trucks.

6. **"Losing The American Dream"** We are building a great deal of expensive housing that is contributing to the wealthy becoming over-housed and leaving the less fortunate unable to afford decent housing. We need to quit federally subsidizing housing and shift building incentives to rebuilding of our deteriorated manufacturing industry.
7. **"Crisis In The Medical Field"** Costs are spiraling out of control, yet a large portion of the public is not covered by medical insurance. The industry needs to be reorganized from top to bottom to provide broader based medical service at lower cost. Again, this will not be easy given the political influence of this very well-heeled industry.
8. **"Defense Spending"** Excessive military spending is a major reason our Federal Deficit is ballooning and U.S. competitiveness is declining. We can no longer afford to be the world's protector unless other nations are willing to assist in paying part of the cost. Other countries helped us pay for the Iraq War, and this was not a sign of our weakness as some have suggested. Instead, it was a realization that others must help pay for our costly military program that benefits the rest of the world. If the Japanese want us to buy their cars while we defend the pacific for them then they should have to pay for our military services.

9. **"Reaganomics - The Problem Not the Solution"** The "let the good times roll policy" of the Reagan Administration was the wrong prescription for this country. Instead of re-industrialization, it led to de-industrialization and diminished competitiveness. The over-zealous belief in the free market mechanism hurt the domestic economy and has contributed to a huge trade deficit that is costing the U.S. jobs.
10. **"Unfair America"** We have lost the philosophy of fairness and equity that was responsible for building American economic greatness. The system is becoming more responsive to those who buy favorable treatment in the laws and in the courts. Parity no longer exists between effort and reward.
11. **"Japanese Military Imperialism"** During the first half of the twentieth century, Japan used military force to conquer one Far Eastern nation after another to provide it with natural resources. Its involvement in World Wars I and II was to further this purpose. The plans for expansion of its empire by military conquest ended with its loss of World War II.
12. **"Japanese Economic Imperialism"** What the Japanese were unable to do militarily they are achieving economically. Japan continues to implement a set of policies that results in unfair international competition. These policies contribute to low unemployment in Japan and higher unemployment elsewhere. Japan is an unfair trading partner, and we can no longer afford to be their dumping ground. They are

destroying many of our industries and contributing to the high unemployment level of this country.

13. "Education: Solution If Changed - Catalyst for Decline if Ignored" The U.S. is falling further behind other nations in developing a high-quality work force. Like so many other things in this country, the nature of the educational system needs to be dramatically changed to make the country more competitive. Our primary and secondary education is ineffective. We must emphasize math and science and teach things that will be important in the changing work place that our students will face. Furthermore, we are selling our knowledge at the college level cheap to students from other countries like Great Britain did early in the century.

14. "Economic And Political Reform" The situation of the U.S. is by no means hopeless. With the right government policies the U.S. economy can be revitalized and our competitiveness greatly improved. The economic incentive system must be changed to help the country rebuild its industrial base. In addition, the political system is going to have to be altered so our politicians can become statesmen who lead the nation rather than servants of well-heeled vested interests. The question is whether we are willing to make the short term sacrifices to rebuild our economy.

15. "Ten Societal Recommendations For Restructuring the American Economy"

Our decline is self-imposed. It is due to our failure to restructure the U.S. economy when important economic fundamentals change in the mid-1970s. The U.S.

economy can be revitalized and remain the strongest economy in the world if we adopt ten simple societal recommendations for revitalizing our economy.

- 16. "Recommendations For All Americans Regarding How To Rebuild The U.S. Economy"** The challenge of rebuilding our economy is not going to be solved by well-designed economic policies alone. The challenge needs to be taken to the people. The final chapter provides a list of things that all Americans can, and must, do to revitalize the economy.

Investing In Our People A National Economic Strategy

	1993*	1994	1995	1996	1997
Putting America to work	28.3	34.9	36.4	36.9	38.5
Rewarding work	15.5	19.0	21.6	24.6	27.3
Lifetime learning	8.1	12.25	15.27	18.5	21.4
Health care for all	5.0	20.0	19.0	13.0	13.0
Total	56.9	86.15	92.27	93.0	100.2

Worksheet

	1993	1994	1995	1996	1997
Putting America to work					
Fund for 21st century	20.0	20.0	20.0	20.0	20.0
Community dev banks	0.1	0.2	0.2	0.2	0.2
Entreprise zones	0.5	0.5	0.5	0.5	0.5
50 percent exclusion	0.0	0.0	0.0	0.0	0.9
net investment tax credit	3.3	5.9	7.2	7.5	7.8
r & d tax credit	0.8	1.4	1.6	1.8	2.1
civilian r & d agency	2.4	5.0	5.0	5.0	5.0
small business conversion	0.1	0.1	0.0	0.0	0.0
community policing	1.0	1.5	1.5	1.5	1.5
community boot camps	0.1	0.3	0.4	0.4	0.5
— total	28.3	34.9	36.4	36.9	38.5
Rewarding work					
earned income tax credit	2.5	2.5	3.0	3.0	3.0
middle class tax relief	12.0	14.5	16.1	18.6	20.3
welfare reform	1.0	2.0	2.5	3.0	4.0
— total	15.5	19.0	21.6	24.6	27.3
Lifetime learning					
national service trust fund	2.0	4.0	5.0	6.5	8.6
Head Start	1.1	2.0	3.5	4.5	5.0
WIC	0.4	0.65	0.87	1.3	1.3
Chapter One for schools	1.5	1.5	1.5	1.5	1.5
Parenting	0.2	0.5	0.5	0.5	0.5
Apprenticeships	2.0	2.5	2.6	2.8	3.0
Safe schools	0.3	0.3	0.3	0.3	0.3
Youth opportunity corps	0.5	0.6	0.7	0.8	0.9
Adult literacy	0.1	0.2	0.3	0.3	0.3
— total	8.1	12.25	15.27	18.5	21.4
Health care for all					
cost control savings	0.0	10.0	25.0	35.0	40.0
expanded coverage and longterm care	5.0	30.0	44.0	48.0	53.0
— total	5.0	20.0	19.0	13.0	13.0

— total/putting to work	28.3	34.9	36.4	36.9	38.5
— total/rewarding work	15.5	19.0	21.6	24.6	27.3
— total/lifetime learning	8.1	12.25	15.27	18.5	21.4
— total/health	5.0	20.0	19.0	13.0	13.0
Total	56.9	86.15	92.27	93.0	100.2

Investing In Our People Revenues

	1993*	1994	1995	1996	1997
Spending cuts					
Defense cuts (beyond Bush)	3.0	10.0	12.0	18.0	22.0
Intelligence cuts	1.5	2.5	3.0	3.0	3.5
Administrative savings*	2.0	4.0	6.0	8.0	10.0
100,000 federal workers	2.0	4.1	4.3	4.5	4.7
Cut White House staff by 25 percent	0.01	0.01	0.01	0.01	0.01
Cut Congressional subcommittees by 25 percent	0.05	0.1	0.2	0.2	0.3
Line-item veto to cut pork barrel projects	2.0	2.0	2.0	2.0	2.0
Reform Defense Department procurement management	3.0	3.0	3.0	3.0	3.0
Reform Defense Department inventory system	2.5	2.5	2.5	2.5	2.5
Create comprehensive federal agency energy conservation program	0.85	0.85	0.85	0.85	0.85
Reducing overhead on federally-sponsored university research	0.73	0.76	0.79	0.82	0.85
Superfund reform	0.45	0.47	0.50	0.37	0.32
Streamline USDA field offices	0.035	0.075	0.13	0.14	0.14
Eliminate HUD demonstration projects	0.12	0.12	0.13	0.13	0.14
Reduce subsidies for commercial use of public land	0.025	0.09	0.105	0.11	0.11
Index nuclear waste disposal fees for inflation	0.02	0.04	0.06	0.08	0.1
Eliminate price subsidies for wool and mohair	—	—	0.19	0.19	0.2
End taxpayer subsidies for honey producers	0.02	0.02	—	—	—
Consolidate overseas broadcasting system	0.08	0.18	0.26	0.27	0.28
Consolidate social service programs	—	0.27	0.27	0.27	0.28
Reform foreign aid pipeline	2.0	—	—	—	—

Entitlement reform

—

Tax 85 percent of Social Security benefits of those with incomes of \$100,000 or more	0.6	1.8	1.8	1.9	2.0
Increase Medicare-B costs for those with incomes of more than \$125,000	0.6	1.0	1.0	1.8	3.0
Tax equity					
Reform of tax rates, alternative minimum tax, surtax on millionaires	16.8	20.5	21.6	22.0	23.5
Prevent tax fraud on un-earned income for the wealthy	2.0	2.2	2.3	2.3	2.4
Closing corporate loopholes					
Limit corporate deductions at \$1 million for CEOs	0.1	0.4	0.4	0.4	0.4
End incentives for opening plants overseas	0.3	0.4	0.4	0.4	0.4
Insurance company amortization reform	3.0	3.2	4.5	5.7	6.2
Close estate and gift tax loopholes	1.5	1.6	1.9	2.0	2.0
Prevent tax avoidance by foreign corporations	4.0	8.0	9.5	9.5	11.0
Increased fines and taxes for corporate polluters	1.8	2.5	2.9	2.9	2.9
Refinancing the debt					
Total					

Blancuz Plan

CLINTON TOY
P.L.K.
Tuesday
June 23
1972

WASHINGTON EDITION

Los Angeles Times

Southern
California
Newspaper

Clinton's Economic Plan Affirms Democratic Roots

By DAVID LAUTER
and SAM FULWOOD III
TIMES STAFF WRITERS

HOUSTON—By unveiling his updated plan for revitalizing the economy, Bill Clinton has settled a series of long-running arguments within his presidential campaign and made clear the ground the presumptive Democratic nominee intends to claim—that of a traditional Democrat seeking to create jobs through federal spending.

The heart of Clinton's plan—in essence his platform for the fall—is a proposal to spend \$80 billion over four years on projects such as roads, bridges, mass transit and environmental cleanup, which he would pay for by a combination of defense cuts and increased taxes on corporations and those earning over \$300,000.

And that proposal, in turn, forms part of a broader attempt by Clinton to appeal to his party's traditional urban and working-class base and to counter the growing appeal of Ross Perot's still-undeclared independent candidacy in these voters.

Over the months that he has campaigned, Clinton has attacked several themes—from education to personal responsibility to a broad promise to "reinvigorate government."

Monday, however, as he took his revised economic plan before a convention of cash-starved mayors here, Clinton attacked a single word: jobs.

His plan would "create 1 million jobs a year for the next four years," Clinton told the U.S. Conference of Mayors meeting. "Driving funds into your cities, it will help do the things you said you wanted."

Please see CLINTON, A3

Continued from A1

At the same time, Clinton explicitly accepted the fact that his spending plan portions the goal of a balanced federal budget.

"People ask, 'Why don't you take all this money and reduce the deficit?' I'll tell you why," he said. "We have two deficits: a budget deficit and an investment deficit."

The long-term health of the economy requires increased public investment, even at the cost of continued deficits, Clinton said, rebuffing arguments from several liberal economists whose works have influenced him.

An idea concrete Clinton's campaign expects to take heat from both the Bush Administration and the Perot campaign over its acceptance of continued deficit spending. Indeed, within hours of the plan's release, White House spokesman Martin Fierstein was saying Clinton's platform "basically gives up on balancing the budget."

Clinton also drew fire from Housing Secretary Jack Kemp, who spoke to the mayors earlier in the day. Kemp blasted Clinton's proposal to raise some taxes. "I noticed that Bill Clinton was talking about spending money and . . . raising taxes," Kemp told reporters. "We're talking not about big spending programs. We're talking about cutting taxes."

"I think the American people will understand that raising taxes

in a very dynamic economy is an answer to getting the economy going again," Kemp argued.

Within Clinton's campaign, several advisers have argued that for political reasons, whatever economic plan he produced had to show a balanced budget by the end of his first term. Clinton, however, eventually rejected that position, believing that the fact neither Bush nor Perot has yet come up with a balanced-budget plan should limit the political harm.

At the same time, said one longtime Clinton adviser, "what the people want to hear is not 'balanced budget.' What they want to hear is that you're going to get the government working again. Voters will accept the idea of deficits so long as they see the money being put in good use, the adviser argued.

That was certainly the case among the mayors, who generally gave Clinton's plan a warm reception.

Atlanta Mayor Maynard Jackson led a delegation of his colleagues in a news conference that resembled a pep rally after Clinton spoke.

"Bush does not care, Perot does not know," Jackson said during the news conference. "Bill Clinton has got his eye on the future of America."

Sharpe James, the bombastic mayor of Newark, N.J., said he had fast "eyeball to eyeball" with each of the presidential hopefuls. "One has a plan," he said of Clinton.

dental College professor; and Rob Shapiro, a former staff member of the Democratic Leadership Council, which Clinton once headed.

At the same time, Clinton has

hired several new key staff members, including Gene Sperling, a former top economic adviser to New York Gov. Mario M. Cuomo, who did much of the economic

work for the new plan, and speech writer David Kusnet, who recently wrote a book arguing that to win in the 1980s, Democrats need to ap-

"One talks about one America. One talks about empowering the people of the cities. We have a man with a plan."

Boston Mayor Raymond L. Flynn, the outgoing president of the conference, was met earlier this month with Perot, president of the group of predominantly Democratic mayors would embrace the Clinton proposal.

"I think the national campaign just began today," he said in an interview. "As far as I'm concerned, that is the first substantive issue that's on the table now in this presidential campaign."

Jobs and economic development "are the keys to the election," which could be decided by urban voters, Flynn said. "That's where the voters are who have not come out to vote for the last two elections because nobody had a message for them."

Clinton's plan reflects weeks of intensive debate within his camp. The debate covered specific issues, such as the deficit and the proposed middle-class tax cut, which Clinton drastically scaled back, but also the broader question of how to position the campaign for the fall.

The essential precedent reflects the views of several longtime friends and advisers, including Robert Reich, a Harvard professor; Magaziner, a Rhode Island businessman and economic consultant; Derek Shearer, an Occ-

Bush Signs Urban Aid Bill, but Obstacles Loom

■ **Government:** Congressional Democrats are balking at quick action on the President's other proposals.

By DOUGLAS JEHL
TIMES STAFF WRITER

WASHINGTON—President Bush on Monday signed a \$1.1-billion urban aid bill forged in the wake of the Los Angeles riots, but the White House could not obscure a mounting confrontation with Congress that threatens its election-year agenda.

Even as they convened a Rose Garden ceremony to draw attention to the modest accord, White House officials acknowledged that final action on Bush's more ambitious urban proposals almost certainly would be delayed until after next month's Democratic convention.

In one sign of progress, Administration and House leaders appeared to have reached agreement on a second-round package that would provide \$5 billion over five years for urban enterprise zones and more traditional job-training and social-welfare programs.

But amid other frustrations, the White House also voiced its pique at maneuvering by fellow Republicans that threatens to delay passage of the Russian aid package that Bush has called his top priority. And in a sign of an impending return to business as usual, senior Bush aides were preparing a series of vetoes to turn back legislation that would extend jobless benefits, voter registration and fetal tissue research.

"I am not in any respect suggesting that it's become easier to work with the Congress," Office of Management and Budget Director Richard G. Darman said in an interview. But he echoed Bush in stressing that the White House remains "very happy" to have the urban-aid bill become law.

The compromise measure signed by Bush provides \$500 million for more than 400,000 summer jobs for American youths this year. About \$16.4 million of that total is destined for Los Angeles, enough to provide for an estimated 13,500 jobs.

The bill also provides \$495 million to replenish federal emergency-assistance accounts drained as the Administration sought to respond to the riots and to an earlier flood in downtown Chicago. An additional \$170 million is designated to fuel new loans by the Small Business Adminis-

tration to businesses in the two cities.

After being delayed by a monthlong stalemate, the signing was the product of a rare congruity between a White House and Congress determined to be seen as active in addressing urban problems. That the White House went to unusual lengths to highlight the success, however, reflected its recognition that such occasions are likely to become increasingly rare.

"The longer it waits, the more political turmoil it gets caught up in," White House Press Secretary Martin Fitzwater said, as he expressed concern about the fate of the broader urban-aid package.

To underscore the fact that a Bush proposal had secured a tangible result, the White House scrubbed at the last minute to organize the high-profile Rose Garden ceremony.

"This is what the election is all about," a senior Bush adviser said. "Good politics makes good policy."

But the short-notice event had the awkward air of an occasion convened less for purpose than show. Only Republican lawmakers showed up, and a late-arriving group of youths did not arrive until after Bush had thanked them for coming.

The President called the \$1.1-billion measure a way to restore Federal Emergency Management Agency and Small Business Administration funds depleted by efforts to aid "victims of the lawless violence in Los Angeles and the flood in Chicago."

Bush rushed through a signing ceremony script that hailed bipartisan support for the measure, emphasizing instead that Congress should "put an end to the delays" and take action on his additional urban aid package.

In what could break a deadlock on that plan, Democratic sources said the House Ways and Means Committee would begin Wednesday to take up the compromise proposal agreed to by Administration and congressional negotiators.

But a White House effort to secure final passage of the plan by July 4 has been dealt a blow by a decision by Sen. Lloyd Bentsen (D-Tex.) to delay Senate consideration of the plan until after the Democratic National Convention.

That postponement is only one in a series of potentially embarrassing new legislative

Southern
California's
Newspaper

Los Angeles Times

Washington Edition
Tuesday
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1992

obstacles now confronting the White House. Both the House and Senate are nearing passage of new unemployment-benefits bills despite a threatened veto.

And Bush is expected this week to veto two other measures—one permitting fetal tissue research, the other making it easier for citizens to register to vote—in a show of defiance that could prove controversial for the Administration.

Another hurdle facing the White House has been erected by Republican Sen. Phil

Gramm of Texas, who has sought to link the proposed Russian aid package to a Senate vote on a balanced-budget constitutional amendment.

White House officials said Bush tried and failed to persuade Gramm to abandon the tactic, which has forced postponement of the Russian aid measure.

Times staff writer William J. Eaton contributed to this story.

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January 13, 1992

VIA FEDERAL EXPRESS

Fred Putney
Brownson, Rehmus & Foxworth
777 Post Road
Darien, CT 06820

Dear Fred,

Enclosed is the most recent version of the book which Stewart has helped create. We are still editing and rewriting portions of it, especially the first and last chapters. I think it fits very closely with Bill Clinton's program and if, after you read it, you would like to give me some feedback and send it along to him I would appreciate it.

Kind personal regards,



William H. Davidow
General Partner

WHD/JY

Enc:



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American Business Conference

NewsRelease

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DATE RECD
NATION'S LEADING ENTREPRENEURS SEE RECOVERY
IN SECOND QUARTER OF 1992
DATE ANSWERED 2-6-92

For Immediate Release
April 1, 1992

CONTACT: Mary Lou Mc Donald
(202) 822-9300

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S.P. INITIALS
S.P. INITIALS

America's leading entrepreneurs foresee unmistakable signs of economic recovery in the second quarter, according to a survey of members of the American Business Conference (ABC).

Asked to compare prospects for their companies in the second quarter of 1992 to results from the first three months of this year, ABC members, chief executive officers of fast-growing midsize firms, anticipate growth in sales, margins, investment, and wages. This is important because ABC members represent the midsize sector of the business community, the sector that is typically the bellwether of recovery.

"I am particularly gratified to see strong numbers relating to new investment," said Barry Rogstad, president of ABC. "New investment is the best leading indicator for gauging business confidence in the existence of a recovery. Happy days aren't here again, but they may be on the way."

In every key area, ABC members show greater optimism regarding the second quarter of 1992 than they did regarding the first quarter. Three months ago, a net 20% of the membership predicted higher sales for the first quarter of 1992 over the fourth quarter of 1991. Only 6% predicted higher margins, and just 4% anticipated greater investment outlays. And, most important, there were more ABC executives predicting a decline in employment for their firms than those predicting greater job creation.

In contrast, in the survey released today, a net 76% of ABC members see greater sales for the second quarter over the first quarter. A net 51% predict higher margins, and 45% plan greater investment spending. And more ABC members will be adding to their payrolls than cutting employment.

- More -

The fundamentals also look good. The cost of capital continues to drop. Inflation, measured by the cost of materials and by product prices, is not in evidence. Capital availability is improving. And a net 37% of ABC members foresee higher wages for their current employees -- a sign both of productivity improvement and a precursor of new job growth.

"The data we are reporting today cannot tell us how strong the economic recovery will be in 1992," Rogstad said. "But we have dodged the double-dip recession bullet and are embarked on a recovery of yet undetermined dimensions."

####

Founded in 1981, the American Business Conference is the only business organization that focuses its attention solely on midsized, high-growth companies -- the companies that create jobs and raise America's standard of living.

ABC members -- a select group of CEO-entrepreneurs with outstanding track records of success -- represent American business at its best.

ABC supports public policies designed to promote economic growth and a higher standard of living for all Americans.

FEDERAL BUREAU OF INVESTIGATION
 DEPARTMENT OF JUSTICE
 CHICAGO, ILL.

NAME	ADDRESS	CITY
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ABC ENTREPRENEURIAL SURVEY

*CEO'S Assess Outlook for their Firms
in 2nd Qtr. 1992 v. 1st Qtr. 1992 Results*

	CEO Expectations for 2nd Qtr 92 v 1st Qtr 92	Previous Survey (1st Qtr 92 v 4th Qtr 91)
Sales/Shipments	76%	20%
Net Margins	51%	6%
Product Prices	-4%	-12%
Employment	9%	-12%
Wages	37%	29%
Cost of Materials	-5%	-12%
Investment Outlays	45%	4%
Cost of Funds	-11%	-62%
Capital Availability	19%	7%

Note: Data represent net shift of opinion of ABC CEO's.
For example, the 76% for Sales/Shipments equals the difference between those ABC CEO's Who Anticipate higher Sales (80%) and Those Who Anticipate Lower Sales (4%). For a complete breakdown of survey responses, see next page.

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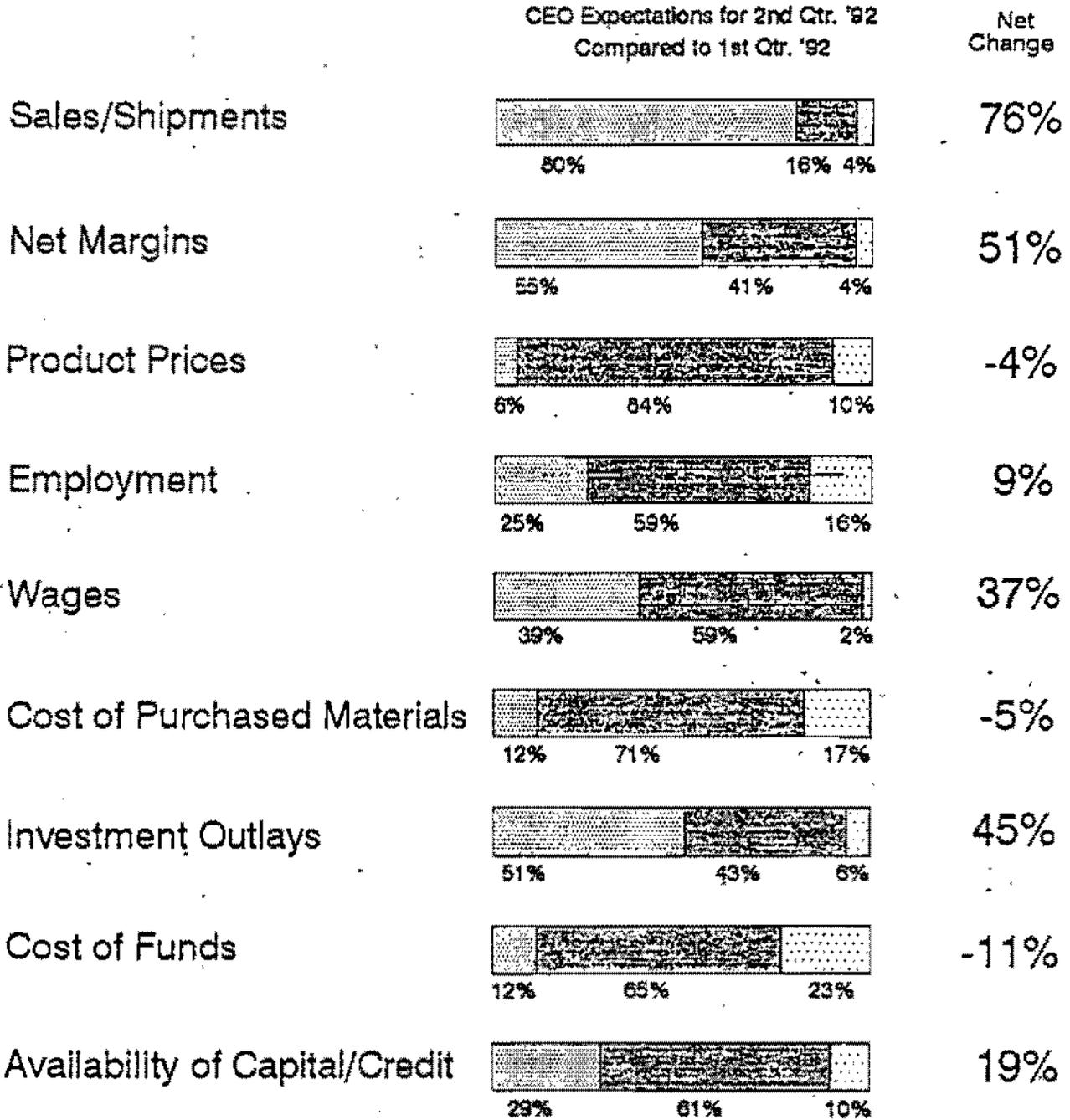
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ABC ENTREPRENEURIAL SURVEY

CEO'S Assess Outlook for their Firms In 2nd Qtr. 1992 v. 1st Qtr. 1992 Results



0 20 40 60 80 100

Percent ABC Members Responding to Survey

Higher than Previous Quarter
 Same as Previous Quarter
 Lower than Previous Quarter

~~Hanna~~

HANNA

Estimates on job creation and economic growth from physical infrastructure investment vary:

- * The House Committee on Public Works and Transportation has been using an optimistic estimate of approximately 65,000 new jobs created for every \$1 billion of infrastructure investment.

- * In May of this year, Lane Kirkland gave a more conservative estimate before the Public Works Committee:

"... the fact that every billion dollars spent on public works spending will create between 15,000 and 22,000 jobs -- half of them in construction and half in other industries such as manufacturing, mining, transportation and services."

(A cornerstone of any effort to create jobs is the) "critical task of rebuilding the nation's badly deteriorated highways, bridges and mass transit facilities."

In order to spend down the surplus funds in the Highway and Mass Transit Trust Funds, Congress and the President should spend about \$20 billion in Fiscal Year 1992 and almost \$30 billion by FY 1997.

Using the range of estimates explained above, if we begin spending down the Trust Funds immediately, we can create somewhere between 500,000 and 1.2 million jobs in 1992.

THE VIRTUAL CORPORATION

**William H. Davidow
Michael S. Malone**

Third Draft
January 21, 1992

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Chapter 1: A New Kind of Business

By the year 2015 the United States either will have a virtual economy or it will be a developing country. It will be a nation of independent knowledge workers or a colony of economic serfs. It will enjoy a high standard of living or suffer increasing impoverishment.

We are not alone. These same conflicting scenarios are true for all economically advanced nations. All are in the midst of a business revolution, at a point of inflection, that will redefine the meaning of work, products, services, the very nature of the corporation -- and ultimately, the economic structure of nations. The survivors will ride this economic wave. The losers will be inundated by it.

Virtual economies will produce goods and services in any variety, any time, and anywhere. They will deliver instant customer gratification in a cost-effective way. Evidence of this revolution is all around us. It is happening in factories, where we can't see it; at other times unrecognized right before our eyes.

For example, prescription eyeglasses lenses are "instantly" ground and placed in custom frames by Lenscrafters and Pearle VisionCare in sixty minutes. Polaroid gave us sixty second photography years ago, but even it has now been largely replaced by one-hour developing and printing of high-quality conventional photographs. Electronic cameras play pictures on a TV set a moment after they have been taken or print them in a few seconds at our desks. Camcorders create instant movies. Personal computers and laser printers have made desktop publishing a reality in millions of offices and homes around the world. Some of the world's most sophisticated products, electronic gate arrays, can now be designed and

produced on an engineer's desk in minutes on systems costing less than \$10,000 instead of taking months of fabrication in \$100 million factories.

In industry after industry, producers are demanding their suppliers respond to their needs just in time. This requires suppliers that operate with little or no inventory and with short manufacturing cycle times. Their factories must be flexible as well, capable of switching from producing one product to another in hours, sometimes minutes. For example, each morning at Badger Meter Inc. in Milwaukee the production manager simply keys into the computer which of more than 100 different product combinations he wants automatically fabricated that day.¹

Instantaneous services are available, too. We can get the oil changed in our cars in ten minutes. Travel reservations are made with electronic speed. We can obtain cash instantly at ATMs and transfer millions of dollars over telephone lines in microseconds. The thought of waiting days for international checks to clear, a fact of life just a few years ago, is now all-but inconceivable. Federal Express carries documents and packages across the country for us in hours -- and even its speedy document transportation service has begun to look slow with the advent of the fax machine. Taco Bell's new Express fast food stores aim at fulfilling a customer order in less than 20 seconds.²

These isolated changes are occurring in businesses, both high tech and traditional, young and old, throughout the world. They are beginning to merge and combine and take on speed. By the second decade of the 21st century this revolution will be pervasive in the economies that have pursued it -- and those economies will have pulled away from the rest at an astonishing rate.

This book is a portrait of the emerging virtual corporation, the institution that will be central to this business revolution -- what it is, how it will function and why it is important. It is a vision of the future that offers a message of hope; a path for restoring prosperity to our economy. In most ways, daily life will be better in this new environment, but the transition to the new institutions and the new ways of operating will be difficult for some, painful for others, and catastrophic for many.

The virtual revolution is coming because there are no viable alternatives. It is emerging in the corporate trenches out of pragmatic necessity, the product of a collision between aggressive international competition and breathtaking advances in technology. Soon, advanced economies will be unable to compete in world markets using non-virtual methods of

production. Therefore the economies of the United States, Europe, Japan and others must proceed down this path. If they fail in their efforts, they will be deprived of the wealth needed to improve and maintain their standard of living. That erosion has already begun in the United States, where the middle class is shrinking and the underclass growing.

As Roger Nagel and Rick Dove of LeHigh University have written, "The standard of living Americans enjoy today is at risk unless a coordinated effort is made to enable U.S. industry to lead the transition to [this] new manufacturing system."

The Age of the Virtual Product

That instantaneous products and services are becoming pervasive, a regular part of our daily lives, in no way diminishes their importance. On the contrary, it underscores their effectiveness. They are so remarkable, so distinct from anything that came before as to deserve a special name. In this book they are referred to as *virtual products*.

Traditionally, 'virtual' meant to be possessed with the powers or capabilities, but not necessarily the form, of a known entity. In the late 1950s, 'virtual' came to technology through 'virtual computers': machines so quick they could handle several users sequentially while giving the impression of being completely dedicated to each person. This added the connotations of interaction and adaptability to the term -- and in time led to the phrase 'virtual reality.'

We have carried the idea one step further to reflect what is going on around us today in business and society: an industrial revolution in which well-defined structures will begin to lose their edges, and what seemed permanent will start to continuously change, often to match our desires.

The target, and the cornerstone, of this revolution will be the virtual product, a industrial creation unlike any we've known in the past:

The ideal virtual product or service is one that is produced instantaneously and customized in response to customer demand.

A virtual product mostly exists before it is produced. Its concept, design, and manufacture are stored in the minds of cooperating teams, in computers and in flexible production lines.³

While the perfect virtual product (the term will be used to mean both physical products and services) can never exist, there is little doubt that many will come close. For example, the Japanese are striving to virtualize the production of automobiles by putting in place systems to produce cars to order in just 72 hours.

These virtual products will not only have great value to the customer, but their creation will be the defining activity for successful corporations of the 21st century. The new business entities producing virtual products will be *virtual corporations*.⁴ Again, such a firm in its purest form will never exist. But the advantage will lie with those firms that pursue such a goal. The closer a corporation gets to cost-effective instantaneous production of mass customized goods and services, the more competitive and successful it will be.

The virtual corporation began as a vision of futurists, progressed to possibility for business theorists, and has now become an economic necessity for corporate executives. . . all in little more than a decade.

In 1980, when Toffler first talked of 'prosumers' (consumers that produced what they consumed) and of 'de-massified' production, it seemed more wishful thinking than vision.⁵ Too many pieces were still missing.

For example, few people in this country understood the "lean production" technique of Toyota's Taiichi Ohno with its ability to combine the benefits of mass production with quick market response. Just as significant, much of the technology required to virtualize most products had yet to be created.

Perhaps most important, the information processing power needed to make these products and services a reality would remain too expensive for years to come. In particular, the price per mip (million instructions per second) of computer power would have had to drop from \$__ million on mainframe computers to about \$100 before wide-spread virtualization could occur.

The price did fall; today it is plummeting downwards past \$500. It will reach the \$100 milestone sometime in this decade. As a result, the virtual corporation, once just a specter upon the horizon, is now hurtling towards us. The virtual revolution has begun.

This revolution will occur broadly as well, because the United States, the European Common Market countries and Japan all depend upon exports. In order to successfully export, a nation must build products competitive on the world market. This has become increasingly difficult in recent years because the rapid global diffusion of technology has enabled many developing countries to compete head-on with economically advanced countries. The virtual product offers the solution to this challenge.

For years the United States built most of the cars, steel girders, radios, and televisions it consumed not only because the Americans built them better and more cheaply, but because few other countries built those items at all. As we ruefully know, times have changed. We are losing industry after industry in competitive battles with foreign producers. What many do not realize is that the Japanese and Europeans are losing those battles as well to the likes of South Korea, Taiwan, India, and Brazil. For example, Japan is no longer a major supplier of small radios, black and white televisions, and very low-priced personal computers. Its ship building industry has essentially disappeared and its steel industries are threatened. In fact, many of the products we think of as Japanese are now simply Japanese designs produced in Third World countries.

There are two ways to defend against this low cost competition. One is to keep foreign competitors on a technological treadmill. That can be achieved by developing and inventing products that can only be designed and fabricated by the world's most advanced economies. Intel has done this in microprocessors. Since it introduced the microprocessor in 1971, the company has managed to outrun a host of competitors by timely introductions of new generations of devices.

The Japanese have followed a comparable strategy in DRAMs (dynamic random access memory computer chips). Japanese chip makers are currently working on 64 million bit devices while most newly industrialized countries struggle to manufacture chips with less than one-tenth the capacity. Similarly, the Japanese are engaged in a race to develop high-definition television systems that will require many advanced semiconductor and display technologies only available in Japan.

An alternative strategy to add value and preserve a competitive edge is to become more market responsive. This involves tracking the changing tastes and desires of the market place and responding more quickly to customer needs. It is an extremely effective strategy because it requires the supplier to be in perpetual touch with the market, is dependent upon the

national infrastructure, and requires advanced technology -- advantages not readily available in most developing countries.

Companies pursuing this technique, such as textile maker Milliken & Co., gather data in real time about shifts in demand in their markets. That requires sophisticated communication networks and information processing systems. It also demands the ability to make rapid shipment from suppliers to producers in a predictable fashion. That means reliable delivery services, quality roads, state of the art telecommunications and a trustworthy banking system. Such infrastructures do not exist in many countries. Neither do the methodologies needed for quick design and short manufacturing cycle times. This kind of production also requires a workforce educated to a level found in only a few countries of the world. Combine these features and you get a very formidable competitor, a company moving so fast as to be difficult to pace by competitors in advanced economies; impossible to catch by firms in countries lacking such sophisticated corporate life support systems.

The virtual corporation will bring together these two competitive processes, technological advance and customer responsiveness, into a single integrated operation. It is very difficult to build such an entity. But, the significant barriers to competition enjoyed by such a virtual corporation justify the effort.

A Virtual Necessity

In the United States there is a creeping sense that there is something terribly wrong with our economy. The uneasiness comes from the intuition that the problem cannot be solved simply by another tax reform or shift in monetary policy. Working harder and longer does not appear to be the solution to individuals either unable to find work or already holding down two jobs. The economy itself seems in some way terribly disoriented and misdirected. We know the commercial environment is evolving around us, but we don't understand how.

The fact is, much of what we consider modern business organization is obsolete. Many of its organizational and managerial concepts are a century old and no matter how carefully dressed in modern jargon have grown anachronistic, even malignant. Relationships founded on distrust between managers and workers, suppliers and customers, retailers and consumers --

and often on a presumption of incompetence about the other parties -- are not only archaic, but reckless and destructive.

Furthermore, our government is not confronting the economic problems of the future. It is attempting to drive the country into the next century while still clinging to outdated beliefs of the last. It is attempting to cope with a new world competitive order by re-building a society capable of dealing with the environment of the 1950s.

As a result, much of the restructuring going on in business and most of the machinations in Washington are sadly superficial. They attempt to deal with the problem by confronting only the symptoms. Instead, the country must push, through a process of virtualization, towards a vision of economic success in the 21st century.

A painful example of this vision-bereft business style was the late 1991 announcement by General Motors, in the face of losses that amounted to \$1,500 for every car it built in the North America, that it would lay off 74,000 workers and close 21 plants over the next four years.

One cornerstone of the virtual corporation of the future is a high level of trust and teamwork between employees and management. In one stroke, GM destroyed what little trust employee trust it had left. The announced restructuring, which did not identify the jobs that would be eliminated; could only build divisiveness. Until the middle of the decade, GM employees will live every day under a sword. Making matters worse, within hours after the announcement, industry observers and pundits were predicting these cutbacks to be only the beginning. How, in this charged environment, can General Motors ever hope to regain lost ground against other automakers, foreign and domestic, that are racing to break down the barriers between employees, managers, suppliers and customers?

GM's problems were a long time coming. Employing nearly a half-million people, depending upon 30,000 suppliers, spending \$77 billion on new plants and equipment despite running at only 80 percent of capacity, taking twice as many worker hours to build a car than Ford, and suffering from a staff bureaucracy that was in many places twice-redundant, General Motors has come to symbolize the bloated inefficiency of a contemporary corporation trapped in the rules of the past.

By comparison, there is Xerox, a company that just a few years ago was suffering a business malaise comparable to GM's. But instead of blaming its workers or foreign predations for its dwindling market share, Xerox set

about re-inventing itself. Recent moves by Xerox have reduced design cycles, improved quality, empowered workers, shrunk the manufacturing cycle, made the company more responsive to customer needs, and dramatically reduced costs. Unlike GM, Xerox entered the 1990s with a vision of itself and a renewed sense of purpose. The ride will be bumpy, and there will no doubt be setbacks, but Xerox has made dramatic progress in regaining lost business and is well on its way to securing its future.

Why will one corporate restructuring be successful and the other not? Because Xerox, though it did not use the term, comprehended the long term goal of becoming a virtual corporation. GM did not understand the future. Its actions appeared to be driven more from management's desire for self-preservation through cost-cutting than from a sincere interest in market responsiveness, customer needs, or the company's own employees. Where GM's restructuring was aimed at improving on an obsolete management system, Xerox realized that the world had changed and that to survive it must abandon the past and take bold steps forward.

The Past as Prologue

Much of what we think of today as modern business practice is merely a dressed-up version of the management styles of post-Civil War America. Hierarchical management systems were developed to provide management control over the railroads. They served as an information network that gathered data, summarized it, fed the results up the management chain so decisions could be made, and then relayed the decisions back down the organization so they could be carried out. It was a management technique ideally suited to an era when distant communications were difficult and computers did not exist.⁶

That was more than a century ago and it seems almost insulting to point out that much has changed in the interim. Computers can gather most information more accurately and cost-effectively than people, they can produce summaries with electronic speeds, and they can transmit the information to decision makers at the speed of light. Most interestingly for our purposes is that frequently that information is so good and the analysis so precise that an executive decision is no longer required. A well-trained employee dealing directly with the situation can now make the decision faster and in a more responsive fashion than the manager miles away. Anyone restructuring a company that does not take this new employee

empowerment into account is not dealing with the future, but is merely streamlining the past.

The production systems used in many of our manufacturing and service companies are as well based upon hundred year-old technology. They are an extension of the concepts of Fredrick Winslow Taylor, inventor of scientific management⁷, and Henry Ford, perfecter of mass production.⁸ In those days, the best way to produce goods cost-effectively was to build them in rigidly tooled, mass production facilities. Those facilities operated best if work was systematically analyzed and reduced to its most predictable steps. This in turn led to a production system that produced one best product in one best way. Rigidity was the key to amortizing investment in single purpose factories and effectively using de-skilled workers in the production process. Change merely raised cost.

The advent of computers, new forms of organization, flexible automation, design automation, and numerous other technological advances have made it possible for companies to be market-responsive and cost-effective at the same time. Rigidity no longer works in advanced economies. Flexibility and responsiveness, once a threat to efficiency, is now the key to competitiveness.

As a result of these developments, by the beginning of the next century the 'traditional' corporation as we have known it for eighty years will have largely disappeared, its few survivors mostly huddled in dwindling market niches. Those in competitive markets that refuse, in some cases even delay, the creation of virtual structures, will wither away, their remnants seized, reorganized properly, and absorbed by fast-moving virtualized competitors.

Unfortunately, in the United States, the very success of the last great economic revolution created certain well-entrenched myths that now must be abandoned if the nation is to move toward virtuality. One of these is the belief, promulgated since the Second World War, that manufacturing is not important. A number of leading intellectuals have argued that the future of advanced economies lies in de-industrialization; in becoming 'service' economies. In this view, manufacturing and production wither to unimportance in the bright light of brain work.⁹

Exacerbating the problem, standard textbook business histories only reinforce this myth. As every educated person 'knows', the United States was originally an agricultural society. America became industrialized in the middle to late-19th century. As it did, farm employment fell from 80

percent of the working population to just 3 percent. Meanwhile, employment in industry experienced a commensurate increase.

But, as Cohen and Zysman have eloquently shown in Manufacturing Matters, while farm employment dropped, farm *productivity* grew at an even greater rate.¹⁰ The industrial revolution didn't replace farming, it transformed it. In the process, the United States became the most important agricultural producer in the world, far more vital than any of the current so-called agrarian societies. By that measure, America is more an agricultural country now than it was in Jefferson's day.

This would suggest what really happened is that the United States never stopped being an agricultural country. What did occur is that the country became an agricultural *and* industrial economy.

A similar transition occurred in the middle of this century. As the United States became more and more productive industrially, the service industries that supported those manufacturers began to grow as well. As Chandler noted in The Visible Hand, the increasing complexity of manufacturing equipment and their surrounding bureaucracies demanded a growing army of people to maintain them.¹¹ That meant lawyers, accountants, insurance, land and sea transportation, construction workers, a postal service and, in time, air transportation, telecommunications, software engineers and on and on in the panoply that constitutes the structure of the modern state. Moreover, the wealth generated by the industrial sector created a population that had money to purchase services. It could buy meals in restaurants, go on vacation and pay for health care and the college education of its children.

Meanwhile, just as in agriculture, industrial productivity increased and fewer people were required for the same task. Employment in the services grew, partly because it was less susceptible to automation. Not surprisingly, by the 1970s, as employment in the services grew to more than 50 percent of the workforce, pundits began to proclaim that the United States had become a 'service economy'.¹² In fact, America at its zenith became the world's leading *agriculture, industrial and service economy*.

There is a danger to believing that a large economy such as ours can exist without a manufacturing base. The competitive troubles of the last two decades are evidence of this. With legislators, educators and market watchers emphasizing a new society built around the service industry, with the top business school graduates gravitating towards the more glamorous,

non-industrial firms, America's production skills began to decline. More and more executives came to believe they could exist by creating companies that were empty marketing shells -- businesses that purchased products from low cost off-shore suppliers and resold them into the domestic market.

With the loss of production skills it became increasingly difficult to build products that were competitive in the United States. Return on investment in plant and equipment declined. In many cases the captains of industry accepted defeat passively; as if this industrial decline was preordained. Dertouzos, Lester and Solow have commented on one of the best-known victims in this tragic cycle:

The history of consumer electronics is a history of successive retreats by American firms, with the result that foreign manufacturers have won an entire market without ever having to fight a pitched battle. The American companies may never recover the lost ground

They conclude:

The loss of the consumer-electronics industry will have wider consequences. Autos and consumer electronics are places where companies learn mass manufacturing. They are, for example the major customers for robots; without consumer electronics it is more difficult to have a successful robot industry. Consumer electronics also buys nearly half of all the semiconductors sold in Japan, a market not available to American producers.¹³

Those authors point out that in industry after industry, as America has conceded the manufacture of products, the industries directly supporting those products withered as well. With the loss of consumer electronics, the suppliers of components to that industry declined. As the consumer electronic and components industry decayed in the United States, the suppliers of capital equipment lost their home markets and the customers that would help them design the next generation of equipment. Entire industry segments were lost -- a scenario repeated with varying severity in automobiles, steel, textiles, and numerous others.

The result can be seen in the figures on world trade. The USA went from a trade surplus of \$40 billion in 1976 to a staggering deficit of \$130 billion in 1989.¹⁴ In the process the United States shrank from the world's biggest creditor to the world's largest debtor nation. This in turn had devastating secondary effects. For example, lost industries hurt government tax revenues and contributed to the country's budget deficit. The deficit in turn stressed the capital markets, drove up interest rates and forced

companies to look for higher rates of return. That helped drive more manufacturing out of the country. As manufacturing left, more people began seeking jobs in the service industries, which generate fewer dollars of output per employee than does manufacturing. One result of this shift, beginning as early as 1960, was to slow the growth in output per employee in the United States until it consistently lagged behind that of Japan, West Germany, France, Italy, and the UK.¹⁵ This alone would be troubling enough, but with it came a flat, if not declining, standard of living for most Americans between 1971 and 1990.¹⁶

The reality of the decline in our manufacturing base has begun to sink in not only within academic institutions but with leaders in government and, most importantly, with the citizenry. One need only look at the problems plaguing our mature industries in the Rust Belt, view the end of the economic miracle in Massachusetts, or watch the agony of mass lay-offs within the computer and semiconductor industries to realize the nation is confronted with a serious systemic problem.

Perhaps these historic missteps might be more bearable if only the myth of a service-only economy were true. Unfortunately for us all some disturbing trends are now taking place within service industries as well. The terrible truth is that the service economy is *not self-contained*. In fact, it is profoundly dependent upon manufacturing -- not only as a consumer of the offered services, but as a generator of the wealth to purchase those services.

Thus, at the beginning of the 1990s, the cost of believing the service society myth has been a hollowing out of the U.S. economy towards a rickety structure decaying at its center.

When one accepts the importance of manufacturing, as well as the interdependence of service *and* manufacturing for a healthy society, the virtual corporation takes on new significance. It becomes the best hope for a strong, value-added manufacturing base to maintain -- and even improve -- our standard of living in an increasingly competitive world. Whether it is producing a product or a service (and they become increasingly synonymous in our information-based age) the virtual corporation alone has the speed and flexibility to cope with a business environment of custom mass-produced products and services and a pace of change that will make contemporary business life seem glacial.

Just as corporate restructurings have little meaning when they are not inextricably linked to a broader goal, the efforts of our government to revive the economy will fail as well if it does not adopt policies to re-industrialize America around a virtual model. It will end up defending and supporting the wrong industries. It will make the wrong investments in the national infrastructure. It will fail to produce a properly educated citizenry. It will defend the automotive industry while it ignores the electronics that will create future generations of computers. It will build improved highways for cars while not coming to grips with the needs for highways for data. It will produce high school graduates incapable of becoming the knowledge workers of the future.

Certainly defending the automobile industry, improving highways, and assuring basic literacy are important goals, but they are not enough. The virtual revolution will require much more.

In our interdependent society almost anything the government does in some way affects the business climate. If the Federal government does not help to move the U.S. economy towards virtuality, then no amount of change by individual business will be enough to produce an enduring revolution.

The virtual corporation, a matter of speculation just a few short years ago, has now become an economic necessity. That is why new government policies must be created to nurture it. To restore prosperity to our country, we must agree upon a new vision of the future. A virtual future.

Revising the Organization

The virtual corporation requires new processes, organizations and relationships. To do all of these things, the contemporary corporation will have to completely revise itself. There is no intermediate step: the only way to build a virtual product is to bring virtuality to R&D, personnel, manufacturing, marketing, sales, service, distribution, information systems, and even finance -- all must metamorphize.

Building virtual products will require taking a sophisticated information network that gathers data on markets and customer needs and combining it with the newest design methods and computer integrated production processes.

Why? Because the only way to give a customer a truly virtual product, one that adapts in real time to his or her changing needs, is to maintain integrated and ever-changing data files on customers, products, and production and design methodologies. That means new and more sophisticated forms of market research and/or new product designs that enlist and empower the customer in the design and production process itself. For many companies, one of the primary tasks will be developing systems and software to enable the customer to take on design responsibilities heretofore reserved by the company.

Profound changes also are in store both for the company's distribution system and internal organization as they evolve to become more customer-driven and customer-managed. On the upstream side of the firm, supplier networks will have to be integrated with those of customers often to the point where the customer will share its equipment, designs, trade secrets and confidences with those suppliers. Obviously, suppliers will become very dependent upon their downstream customers; but by the same token the customers will be equally trapped by their suppliers. In the end, unlike its contemporary predecessors, the virtual corporation will appear less a discrete enterprise and more an ever-varying cluster of common activities in the midst of a vast fabric of relationships.

For many firms the challenge of all of this change will prove too great. For some employees, the experience will be more traumatic than that of the changes demanded by past industrial transformations -- though the threat this time won't be regimentation, exploitation or dehumanization, but unpredictability, lack of comfortable structure, and, simply, too much responsibility. Executive careers spent building power and influence may turn out to be superfluous. Workers content to put in their hours, do their work and go home, may suddenly find themselves saddled with responsibility and control they never desired. And companies content to maintain the status quo indefinitely may not only encounter change, but be forced to endure continuous, unremitting, almost unendurable transmutation.

Says manufacturing expert Earl Hall¹⁷, "This change in the nature of 'product' will cause blurring of functions which are now understood to be manufacturing, design, delivery, finance, marketing -- indeed, a new meaning of 'company'."

Hall adds: "The complex product markets of the 21st century will demand the ability to quickly and globally deliver a high variety of customized products. These products will be differentiated not only by form and

function, but also by the services provided with the product, including the ability for the customer to be involved in the design of the product" and that "a manufacturing company will not be an isolated facility of production, but rather a node in the complex network of suppliers, customers, engineering and other 'service' functions."

Virtual corporations will require large numbers of highly skilled, reliable, and educated workers. That means not only the ability to read and write and perform simple arithmetic, but to analyze and engineer. Virtual corporations also will need advances in the telecommunication and transportation infrastructures in the 21st century of the same magnitude as the U.S. interstate highway system was to the 20th and the intercontinental railroads were to the 19th century. Most of all, the virtual corporation will thrive only in an environment of teamwork, one in which employees, management, customers, suppliers, and government all work together to achieve common goals.

Obviously, none of this characterizes the business environment in the United States today. Nevertheless, we are seeing just such structures emerging in our most progressive companies and factories. Hewlett-Packard Co., for example, is famous for employee teamwork. The General Motors NUMMI plant has shown how even the most traditional corporation can make great progress towards virtualization.¹⁸

The Race to the Future

The purpose of this book is to expose the reader to the details of the virtual process. To do this it will examine what businesses are currently doing to dramatically improve their responsiveness to markets. It will project where it can a vision of how these processes might evolve. The primary focus in all of this will be to develop for the reader the basic concepts underlying the evolution of the virtual corporation.

This first portion of the book (Chapters 1-4) will look in some detail at how industries have evolved to create virtual products and services. Some of these examples will be missing key ingredients because many businesses that have progressed down the path to virtuality have yet to make all the key changes that will be required of them in the future. This section will

also examine the role that the information revolution is playing and will play in the development of the virtual corporation.

The second part of the book (Chapters 5 & 6) will examine the processes which are making it possible to create virtual products and services. It will explore the impact of invention, review how virtual products are designed and delve into the way they will be produced.

The third section of the book (Chapters 7-9) will deal with organizational issues. It will look at the new types of relationships which must exist between management, employees, customers, and suppliers. It will examine the redistribution of functions between these groups and the structural changes that must take place within organizations to make the virtual corporation possible.

The book will close (Chapter 10) with a commentary on the changes that must be made in government policy and in the U.S. economy to foster an environment in which virtual corporations can prosper.

There is an urgency to all of this. An ever-advancing standard of living has not been vouchsafed to any of the industrialized countries of the world. There is no manifest destiny, only a critical choice. If these countries are to maintain and improve their standards of living as well as solve their social problems, they must find a new dynamo to create wealth. We believe the virtual corporation will be that engine.

Currently many of the world's most brilliant economists are struggling to understand the industrial trajectories advanced economies will follow as they battle to remain industrially competitive. The researchers at the Berkeley Roundtable on the International Economy (BRIE) are engaged in a study of successful industrial models throughout the world -- the General Motors NUMMI production process, the industrial districts in Northern Italy, the lean manufacturing systems of Japan--in an attempt to discover the genetic code that drives success.¹⁹ It is our feeling that underlying many of these systems are the elements of virtuality; and that success will most often occur where these industrial models have found a means to reconcile virtualization with the unique character of their society.

When he learned of this book, Benjamin Coriat of the University of Paris explained the need to begin "thinking in reverse" in order to discover the essence of the virtual corporation. He stressed that companies would have to begin with the customer and then determine how the virtual corporation

should be structured. In other words, one could only discover the future by backing into it.

Coriat was right. To become a reality the virtual corporation will require a different perspective, one that to our untrained eyes at times may seem illogical. Without a doubt, the virtual revolution will be a shock to the system, a blow to our sensibilities. But we have no choice. The virtual corporation stands before us. If we don't walk through its doors, our competitors certainly will.

¹See Badger Meter example in Chapter 6.

²"Taco Bell Express Offers Fast Food at a Frantic Pace," by Louis Trager, San Francisco Examiner, November 10, 1991. pg. E-1

³We thank Earl Hall for this elaboration of the definition.

⁴We note that the only other published appearance of the phrase "virtual company" that we have found is in 21st Century Manufacturing Enterprise Strategy, published by the Iacocca Institute of LeHigh University in November 1991. The authors, Roger Nagel and Rick Dove, apparently came to the phrase (and a number other similar notions about the future of manufacturing) independently and their use is somewhat different. For Nagel and Dove, a 'virtual company' is created by "selecting organizational resources from different companies and then synthesizing them into a single, electronic, business entity." While this is an appealing idea, we believe it will be an uncommon business structure for many years to come.

⁵Alvin Toffler, *The Third Wave*, Morrow 1980, pp 271-273, 282-305

⁶Chandler

⁷Taylor

⁸Ford

⁹ See Robert Reich, *The Work of Nations*, Alfred A Knopf 1991, pp 81-86. See also *Microcosm* by George Gilder, Chapter 1 "The Message from the Microcosm".

¹⁰Stephen S. Cohen and John Zysman, *Manufacturing Matters*, Basic Books Inc. 1987, pp. 12-13.

¹¹*The Visible Hand*, pg 110.

¹²for example Prof. Gary Becker, as quoted in *Business Week*, January 27, 1986, pg. 12

¹³Michael L. Dertouzos, Richard K. Lester, Robert M. Solow, *Made In America*, pg. 12-14 .

¹⁴Paul Krugman, *The Age of Diminished Expectations*, MIT Press, 1990, pg. 3

¹⁵*Made In America*, pg 29

¹⁶ We need a source on this. I heard Reich make this statement or something like it.

¹⁷Earl Hall, personal interview

¹⁸Lowell Ralph Turner, *The Politics of Work Reorganization: Industrial Relations under Pressure in Contemporary World Markets*, Doctoral dissertation, UC Berkeley

¹⁹BRIE Globalization and Production, conference report, April 15 & 16, 1991.

Chapter 2: An Emerging Idea

Business revolutions are rarely the result of the pull of new ideas alone. They also require a push from the fear of business annihilation.

One such impetus driving companies towards virtual products is profitability...or rather the life-threatening lack of it. As Glenn Haney¹, former CEO of electronics research firm Dataquest, has noted, modern business has grown so competitive that any interesting new product is quickly beset by a host of competitors that rapidly turn that product into a commodity, drive down prices and squeeze out profit margins. Any hope of regaining an edge through innovation is doomed, Haney adds, because "technology itself has become a commodity that crosses engineering disciplines and political boundaries with increasing ease."

Combine this commoditization, Haney continues, with growing cost of innovation, and suddenly manufacturers face a new reality that they might not see any return on their new product lines until the third or fourth product generations. Thus, they risk "fatal success", as he calls it, the tragedy of going broke with a wildly popular invention.

Faced with this paradox, the only way out, Haney believes, is for companies to bind customers to them for those three or four product generations needed to turn a profit. Increased responsiveness to customer needs -- virtuality -- will be one of the best ways to do this. For the consumer, it means quick delivery of the desired product. That is one reason why the Japanese are pursuing the 72 hour car.² For industrial companies it means letting customers participate in the design of needed products and then quickly producing them to meet their needs. This is precisely the program upon which chip-maker LSI Logic Corp. has embarked. In doing so, the company has had to take some unanticipated paths.

Consider for example the rigid contractual procedures that used to govern its relationships with customers. LSI Logic discovered that it was capable of manufacturing and delivering new products to customers faster than those customers could move the contracts through their own legal departments. Says company chairman/CEO Wilf Corrigan: "Our most aggressive customers said to us, 'Look, stock the product on our verbal order because we can't process the paper to you and you can't process the paper internally fast enough for the time window we have to operate in.'"³

LSI Logic chose to forge ahead with production and let the paperwork follow weeks or months later. This policy certainly undermines the spirit in which most contemporary business contracts are written: that of protecting the parties against the failure or bad faith of the other. However, those matters will have long since been resolved by the time LSI Logic and its customer put ink to paper. So, America's leading gate array producer now enters business relationships based upon trust, on the assumption that the other side is equally responsible and fair-minded. LSI Logic assures that fact by developing long-term relationships built on a shared and interdependent future.

Needless to say, this is not the typical way that American companies do business; and many would be ill-advised to move away right now from their rigid and legally secure environments. But the LSI Logic example shows that firms are willing to take risks to engender customer and supplier loyalties, and to achieve faster design and shorter time-to-market cycles. This important strategic move should not be lost on competitors doing business in traditional ways who believe they are protected by the old rules and ponderous legal documents.

The Value of Time

A second impetus propelling the virtual revolution is the extraordinary acceleration of time taking place thanks to technology. We live in an era when even nanoseconds, billionths of seconds, have become too slow a measure of some computer operations and the talk has now turned to picoseconds — *trillionths* of seconds.

Businesspeople have long appreciated the value of time. Customers are always frustrated with waiting and want things 'yesterday'. By the same token, every company wants to get its product or service to the market first. Alfred Chandler argues for the importance of such "economies of

speed".⁴ He notes that, historically, "Increases in productivity and decreases in unit cost (often identified with economies of scale) resulted far more from the increases in the volume and velocity of throughput than from a growth in the size of the factory or plant."

Hewlett-Packard has conducted studies which demonstrate that, while a engineering cost overrun of 50% impacts overall profitability just 4 percent, a time delay of six months in project completion can result in a 32 percent loss in after tax profit.⁵

The book The Machine that Changed The World provides startling data on the speed of development of Japanese auto manufacturers.⁶ Typically, from the design to the first delivery of a car takes 46 months and 1.7 million engineering hours in Japan versus 3 million engineering hours and 60 months in the USA and Europe. The Japanese have used this time advantage to design cars that more closely track the ever-changing desires of customers. In recent years they have become the world's leading new car innovators, one model of which, the Honda Accord, has become the best-selling car in the United States. Because car designs produced by the Japanese have such a short life time, the Japanese in fact produce less of every model on the average than either the Europeans or Americans; 500,000 versus nearly 2 million.⁷ Thus, by focusing upon time in their race to dominate markets, the Japanese car manufacturers have managed to be both industry leaders and speciality suppliers at the same time.

An emphasis upon time also has been the key to success for Germany's thousands of mid-sized (*Mittelstand*) companies. Using computers and other forms of automation, these firms, despite their size, have become major global players by targetting high-profit niche markets and keeping competitors away with high-speed, virtualized production. "I can switch production to a different product in seconds," claimed one maker of motors and gearboxes for cranes.⁸

Perhaps the most comprehensive study of time-based competition has been done by George Stalk and Thomas M. Houk of the Boston Consulting Group.⁹

While looking into firms, non-manufacturing as well as manufacturing, that had given 'responsiveness' equal value to cost and quality in their philosophy--that is, companies beginning to virtualize -- Stalk and Houk discovered some startling statistics:

"During these investigations many closely held assumptions as to how costs and customers behave have been altered. Instead of costs going up as run-lengths are reduced, they decline. Instead of costs going up with greater investment in quality, they decrease. And finally, instead of costs going up with increasing variety and response time, they go down. Further, instead of customer demand being only marginally affected by expanded choice and better responsiveness, it is astoundingly sensitive to this better service-- with the company that is able to set customers' expectations for choice and response very quickly dominating the most profitable segments of demand."¹⁰

The magnitude of this dominance is a clue to the impact of the virtual revolution. Stalk and Hout studied five companies -- the Wal-Mart discount store chain, Atlas industrial doors, Ralph Wilson Plastics, Thomasville furniture, and the mortgage department of Citicorp. What they found was stunning:

- A responsiveness to customers in one third the time of their nearest competitors;
- A rate of growth at least three times as great as the industry as a whole;
- Profitability at least twice, and up to five times, as great as the competition.

Meanwhile, despite this explosive growth, Wal-Mart, for example, was still able to maintain the same service levels with one-fourth the inventory investment -- one reason being that it empowered individual stores to order directly from suppliers, even overseas, thus reducing restocking time from an industry average of six weeks to just 36 hours¹¹. Atlas could fill an order for an out-of-stock door in three to four weeks, compared to the industry average of three to four months. Most remarkable of all, Citicorp Mortgage had reduced the time for a loan commitment from the industry average of 30 to 60 days down to 15 days or less . . . and then to as little as fifteen *minutes* in some cases. ¹²

Given these facts was it any wonder that these time-based, virtualized, corporations were leaving the competition behind? The time-based competitors, said the authors, "are literally running circles around their slower competitors."

And what was the reaction to the non-virtualized competitors of these firms? 'Bafflement', according to Stalk and Hout. Trapped in traditional organizations and strategies, these firms watched helplessly as their virtualized competitors:

- Increased customer dependence;

- Skimmed off the most attractive customers [that is, impatient customers willing to pay a premium for promptness];
- Set the pace of industry innovation;
- Grew faster with higher profits;
- And left the competition to try to catch up in a less supportive business environment.¹³

During the virtual revolution this time-centered scenario will play itself out in industry after industry, not always in the same way, but always with the same result.

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All of this suggests a vision of a prosperous future. That means there *is* a way. We are not doomed to recapitulate the failures of the recent past.

But to this one must add that the path to virtuality will be far more difficult than the old way of doing business. It will demand changes both of rules and of heart. But it also offers a way to break out of the inertia, the Sargasso Sea, that seems to have engulfed our society and economy. The virtual revolution offers a new purpose, a new goal, and most important, a way to regain the economic leadership in a fashion that is both exciting in its style and humane in its manner.

This new business revolution may be a virtual necessity for our society's survival, but it is also an enthralling opportunity. After all, America's history, more than any other nation, has been one of setting off into unexplored territory in search of a better life.

A number of businesses and industries already are heading down the path to virtualization and in the process experiencing enormous changes. None have proceeded far enough to come to grips with all of the difficult organizational and relationship issues. But even now, their unfinished stories, a sampling of which are offered in the rest of this chapter, give a clue to the extraordinary effect of 'going virtual.'

The Arms Race

It is a measure of the harsh nature of business that few even well-known firms survive more than a few decades. Those that have endured from the Renaissance amount to no more than a handful.

By reviewing the business transformations that have taken place in such a firm one can learn much about how virtualizations occurs over time. It is fortunate to have, in the work of Prof. Ramchandran Jaikumar of the Harvard Business School, the recorded history, spanning 500 years, of Beretta, the Italian small arms manufacturer.¹⁴ The types of transformations that have taken place at Beretta over the course of a half-millennium now must occur in just a decade for modern firms racing toward virtuality.

Founded in 1492, Beretta has been run by the same family for fourteen generations. This stability, combined with a product that has changed little in five centuries (there is little fundamental difference between a harquebus of 1675 and 9mm automatic of 1975), makes Beretta an almost ideal test case for the impact of new manufacturing technologies, management techniques and, ultimately, virtualization over the history of corporate enterprise.

In his research Jaikumar identified six epoches in the story of Beretta. Each took approximately ten years to assimilate, and it was during those few distinct decades that the company made most of its gains in productivity and quality. Furthermore, Beretta invented none of these new programs, but learned quickly from its competitors, so that, in Jaikumar's view, "All of the changes were triggered by technology developed outside the firm."

This is perhaps the most important point to be gleaned from the Beretta example. One of the great weaknesses of Western businesses is the Not-Invented-Here attitude, an unwillingness to accept new ideas from beyond the company walls. By the same token, the willingness of Japanese companies to do just that has been one of their greatest strengths. The race toward virtuality will require the assimilation of a broad range of technologies and techniques invented and developed by others. In the future it will be important to search the developed world for new ideas and capitalize on them quickly as Beretta has throughout its history.

The story of Beretta begins with almost three hundred years of unchanging manufacturing techniques. All the company's guns were made by hand, by master gun-makers who typically worked without plans from a basic model using a caliper. Apprentices watched the process and learned. All the

activities in the company revolved around the notion of 'fit': parts were made and modified to fit tightly with other parts. Every gun was unique, parts could not be interchanged between different guns.

Three centuries of complacent inertia were shattered by the rise of scientific engineering at the end of the eighteenth century. Since then, Beretta has raced to stay abreast of each new wave of industrialization, Jaikamur's six 'epoches.'

1. The English System (1800) -- The Industrial Revolution reached Beretta during the Napoleonic Wars. The English System centered on the notion of *tools*. Until then, Beretta had built its weapons by hand using various jigs, clamps and files. But the English System separated the production's function from the processes used to make it. The result was universal fabrication tools such as metal lathes. Apprentices now were taught proficiency on a particular tool rather than a particular product -- and that meant in turn that, says Jaikamur, "process took on a life of its own, enabling process improvements to be made independently of product constraints."

The English System marked the arrival, though still halting, of mass production. Workers were now expected to have fewer universal skills and more specific, tool-centered, ones. In time, this would lead to industry built upon fully-interchangeable, deskilled workers. The lean manufacturing facilities of the virtual corporation of the 21st century will reverse that trend, as they will depend on skilled workers with intimate knowledge of the process -- just as Beretta did before the 19th century.

2. The American System (1850) -- The Industrial Revolution in the United States brought with it the need for the high-volume production of products with interchangeable parts. Fittingly for a firearms maker like Beretta, the story began with Eli Whitney's contract to produce rifles for the U.S. Army in 1798. Beretta itself was impelled to use the American system after seeing the success of the Colt factory in London. In 1860 the firm acquired a complete American style manufacturing system from Pratt & Whitney.

The primary impact of the American System was the mechanization of work, with interchangeability only a by-product. With it came product specialization. After 350 years of being able to produce a theoretically infinite array of products, under the American System, Beretta was reduced to just three models.

By adopting the American System, Beretta also accepted a rigid production process that still characterizes most modern mass production. The efficiencies that resulted have served many industries for more than century as a rationale for avoiding product customization.

3. Taylor Scientific Management (1900) -- Fredrick Taylor set out to do with labor what had already been done with machine tools; that is, make it efficient, specialized and interchangeable. This was accomplished through the redesign of factory floors and machine tools according to time-motion studies of individual laborers. The new role of management was to scrutinize the equations produced by this worker-machine-process interaction and determine the most efficient organization to deal with it. Interestingly, this greater efficiency (and product shift) also allowed Beretta to increase its product offerings from three to ten.

Traditional job responsibilities were broken down and given to multiple specially trained workers, worker discretion was replaced by the 'one best way' to perform a task, and management controlled all aspects of work, comparing it with a predetermined standard.

Taylorism widened the gulf between labor and management and ingrained in management the notion that direct laborers had little to contribute to the running of the corporation; that their role should be to take directions quickly, precisely and in silence. As such, Taylorism represented a new mindset, a corporate ethos that has led to generations of labor-management confrontation, institutionalization of the status quo, and an increasingly unskilled workforce. The residues of Taylorism, more than any other business philosophy, have to be eliminated before a company can successfully virtualize itself.

4. Statistical Process Control -- In the 1950s, Beretta was licensed by the newly created NATO to manufacture the Springfield M-1 Garand rifle, the mainstay of the U.S. Army in World War II.

With that license came the demand that the Beretta M-1s not only achieve parts tolerances greater than the company had ever known, but also that the rifle parts have perfect interchangeability. What this meant was not only that Beretta would have to build new manufacturing equipment for the task, but develop a means of regularly sampling the output of these machines to assure they didn't deviate beyond proscribed limits. Thus,

Beretta would have to implement some form of statistical management over its production output.

Statistical quality control radically altered the organization of work at Beretta. Accurate performance by the machines was assumed, and only deviations were scrutinized; unlike the Taylor model, there was now no one best way to operate, but only a series of new problems to be detected and solved. With the machine running on its own, the operator was free to manage long-term performance. Quality engineering had arrived. The automaton worker of the Taylor era was now working with others in problem-solving teams monitoring machine performance.

The era of worker involvement so essential in virtual corporation had begun. Perhaps even more important, the notion of quality control was introduced. As we shall see later, virtuality is impossible without "perfect" quality.

5. Numerical Control (1976) -- This epoch marked the arrival of information processing, first by computers then by microprocessors, to the arms industry.

Numerical control machines, which could automatically perform in sequence tasks that before had taken multiple pieces of equipment, completed the 150 year progression from manipulation of a physical product to the processing of pure information.

Numerical control continued the retrograde labor movement away from Taylorism. Now, line workers were just half the total company employment. But, since the total number of machines had fallen to just 50, their span of control was much (up to five times) greater, encompassing several machines at once in what might be called a 'cellular' organization of the manufacturing floor. That in turn demanded a much better trained worker than at any time since the eighteenth century.

Beretta's 9mm Parabellum won the biggest plum of all, the contract to replace the United States Army's Colt 45. Beretta won the contract because the new equipment allowed for a bid price half that of the nearest competitor, and because the transportability of numerical control programs enabled the company to meet the Army's stipulation of full U.S. production.

With numerical control, Beretta evolved from a user of information to an information-based corporation where much of the data required to manufacture products was stored in digital form on computers rather than on blueprints and in dies and molds.

One of the keys to the virtual revolution in manufacturing is the integration of production processes with suppliers producing perfectly interchangeable products. A good example of this occurs in the industrial districts of Italy where manufacturers have successfully distributed component-making to scores of smaller contractors by making sure those suppliers use identical pieces of capital equipment that, when run with identical software programs and tooling, produce identical results. The introduction of numerical control enabled Beretta to export production processes in a similar fashion.

6. Computer Integrated Manufacturing (1987) -- About the time of the Army contract, Beretta was engaged in its most recent epochal transformation. This was the linking together of the entire company into a computer network to perform computer-aided product design in engineering and a so-called flexible manufacturing system (FMS) on the factory floor.

In practice, this meant that a company factory became a computer controlled team of semi-independent work stations connected by automated material handling systems of looped conveyors that carried pallets bearing the individual workpieces. A supervisory computer, carrying information about these workpieces, directed their progress through the manufacturing process, assigning priorities, queuing them, reacting to changing situations, assuring that all the necessary tools were on-line, loading the right numerical programs in the proper machines, monitoring the resulting work as it occurred.

What has been the impact of CIM at Beretta? For one thing, a three-to-one jump in productivity. The number of machines now required to produce a single product has now fallen to just thirty; the lowest in 150 years. The minimum number of people for efficiency is now just thirty as well, less than was needed at the end of the seventeenth century. Meanwhile, rework has been reduced to zero and staff positions represent two-thirds of Beretta's employment. Manufacturing is now treated as a service, customizing its products to the desires of special market segments. That in turn demands highly skilled 'knowledge workers.'

Within a few years, Beretta expects the process to be so totally automated that, like some current Japanese factories, it will operate without human participation -- in the dark, as it were.

What is perhaps most interesting about the current CIM epoch is that, for the first time since the guild days of the company three hundred years ago, Beretta is again theoretically capable of creating numerous different products. With virtualization, customization and craftsmanship have returned. Beretta has come full circle.

Virtualizing the Past

An example of how virtualization can cost-effectively restore craftsmanship to manufacturing, and how technology can be put to the service of a long-established wisdom of the market, is be found at Beretta's competitor, Remington.

Like Beretta, the story of Remington, though three and a half-centuries shorter, is one of adapting to one industrial innovation after another. Gun-making at Remington, from the Civil War to the middle of the Twentieth Century, was a story of increasing, but limited, refinements on the mass-production of machined interchangeable parts. Said one observer, "The steam engine was replaced by the dynamo and overhead belt drives by electric motors, but methods of making guns remained remarkable unchanged. If you could have visited the Colt or Remington or Winchester factories in 1870 and then returned in 1950, you would have been astonished at how little their methods of manufacture had changed."¹⁵

Remington knew it had to modernize to survive -- and that meant finding some way to cut the cost of machining. One way the firm did so was to simplify its designs. Another was to use numerical tape-controlled machines which Remington put them in place on the manufacturing floor.

These machines taught Remington about the power of automation, and so, in the mid-1980s, the firm jumped on the idea of computer-controlled machining, building a complete, hands-off factory for the job.

As one might expect, the results were stunning: "In the recent past, it took 24 machining operations to make a Remington shotgun receiver. That meant the part had to be manually positioned in separate holding fixtures and manually moved from cutting machine to cutting machine. Because of

all of this cutting and shifting, it took six days to convert a block of steel into a finished receiver. . .it now takes only about *four hours!*"¹⁶ New models that used to take 18 months to bring to production, now take just six, and the manufacturing floor can be quickly shifted over for short runs of popular products.

So far, this is yet another positive story about the use of computers to improve productivity. But what makes the Remington story special is what the company did next.

A complaint of gun lovers is that modern rifles just aren't made like they used to be. The demands of modern manufacturing have resulted in simplified, spartan designs. Receivers and other parts just didn't have the fit and feel of those in older, hand-machined and fitted guns. An entire market of collectors was created to buy and trade these older weapons, the participants so precise as to demand items like *pre-1964 Model 70* Winchesters.

Remington saw this market as an opportunity that, for the first time, could be tapped using its new computer-controlled machines. Said H.K. Boyle, Remington's plant manager, ". . .We can reintroduce some of the old favorite models enjoyed by hunters and target shooters in the past, models that we stopped producing because they were too expensive to manufacture on standard machinery equipment."

Remington began this program of mining its own past, by making original Parker shotguns again for the first time in decades. It has proven to be a success. Other classic models are in the works. As pleased gun lovers have noted, these new/old weapons aren't reproductions, but continuations of the original production. As illustrated by this example, the virtual revolution need not be a way of only producing the new and revolutionary products of the future. It can be used in its own unique way to bring back the past in response to demands of customers.

From Monastery to Desktop

The virtual revolution in the printing industry has taken more than a half-millennium, from monks carefully coloring the last Medieval illustrated texts to modern color laser printing.

The famous transition point in printing from the laborious handmade text to the low-cost mass production of the printed word is, of course, the Gutenberg moveable type press of 1440. It is important to note that this technological breakthrough was itself the product of several other technological breakthroughs -- notably low-cost paper and ink production, and (by Gutenberg himself) reusable molds for the type elements.¹⁷

The next five hundred years essentially were refinements of the Gutenberg process, such as the arrival of mechanical power and of new alloys making possible high speed hot-type presses. This in turn created a revolution in information distribution, as the economies of print made it possible to produce books, magazines, and newspapers affordable to a growing percentage of the population.

The on-rush of technology began to force a trade-off between efficiency and aesthetics. The advantages of the technology were obvious: the average person could now own a library greater than any Renaissance Prince, and could obtain in a single daily newspaper more information about the world than a Roman Caesar would have learned from a year's worth of dispatches. The words of great writers and statesmen could now reach out to more than just a favored few.

Lost in the process, however, was a certain control of result. One immediate victim of industrialized printing was an element of beauty. No published book of the 17th, 18th or 19th Centuries could compete for beauty with hand-illustrated works like *Les Tres Riches Heures* of the Duc du Berry or with the *Book of Kells*.

Not that these losses were overly missed in the explosion of print that began in the mid-1700s. The sheer volume of printed matter overwhelmed most such considerations. Furthermore, printing technology itself continued to advance, notably with the addition of black and white, then color, photographs with the printed text. High speed printing also allowed for multiple daily editions of a single paper; and an efficient national postal system made possible the weekly newsmagazine.

The next advance came with the arrival of photo-typesetting, first introduced by Photon Inc. in 19___. Phototypesetting was important because it began the shift of printing away from the purely physical process to an informational process. Now the typesetter could sit at, say, a Mergenthaler machine and type copy, choosing from scores of typefaces stored on sheets of film and then photographically print out the result for stripping into the lay-out. Thanks to this greater speed of production,

lower costs, and vastly larger inventory of type fonts, control and creativity began to return to the printing business.

The next great change, beginning in the 1930s and reaching the small print shop by the 1960s, was a shift from mechanical to photographic technologies. Now a single typesetting machine might store hundreds of different typefaces. The result was not only a slashing of the time from typeset to paste-up to print, but much greater flexibility in the use of type and imagery. Costs fell too, such that short runs of sophisticated printing became reasonably affordable to even the smallest clients. Print shops soon found that offering in-house graphic design was both a useful marketing tool and a profit generator.

As important as these 20th century inventions were to the profession of printing, they were minor compared to the arrival of computer technology -- microprocessors -- beginning in the mid-1970s:

The effect of this new technology was profound and nearly complete, from the replacement of typewriters with word processors at the low end of the market to the actual destruction of print shops by turn-key systems at the top.

The arrival of computers also signalled the advent of nearly instantaneous printing. Suddenly, print was no longer constrained by physical blocks of type or even strips of film. It was now encoded into bits of data that could be easily stored, manipulated and transmitted to diverse locations.

The most striking effect on the printing industry came with the digitalization of the typesetting machine and the graphics department. Like many such paradigm shifts, this one began on the periphery and, as if from nowhere, suddenly and unexpectedly overturned the status quo.

The shift began with the Apple Macintosh personal computer. The Mac was an attempt by Apple to stave off the juggernaut of giant IBM by playing off Apple's image of being 'user friendly'. The Macintosh was designed to be the most transparently operable computer of its time, and would include the use of a crisp 'bit-mapped' display, mouse-driven cursor, and, to spare the new user the need to memorize a vocabulary of keyboard commands, graphic command icons that could be manipulated directly on the screen.

The Mac lived up to its goals, becoming one of the most successful personal computers ever built. Consumers loved it, but even more importantly,

software designers became intrigued with this new graphical user interface as a way to explore applications impractical with cryptic keyboard commands. Within a few years, third-party designers were offering elementary programs for mixing text with images directly on the Mac screen for print-out on dot matrix and, as they became affordable, laser printers.

Who was suddenly doing all this desktop publishing? Laypeople. With the Mac, virtuality had come to publishing. The average computer owner no longer had to contract publishing work to a printer, inspect lay-outs, edit bluelines and then wait weeks for the printed results. Now, for many applications, the same steps took minutes. Certainly -- and this is an important point about virtualization -- desktop publishing demanded a greater participation and understanding by the user. But, as billions of dollars in sales proved, the typical user was willing to make that sacrifice in exchange for control, speed and lower cost.

Needless to say, some of the traditional bread-and-butter revenue sources for many printing houses began to disappear. But the desktop publishing industry did far more than steal existing business. Even more important to the rise of this market was the proliferation of new applications the desktop publishing had made feasible, such as the subsequent explosion in corporate, institutional and personal newsletters.

Technological transmutations, however, are rarely confined to a single market segment. As the printing industry was losing some of its market at the low end, new technologies were enhancing its appeal at the top. The same microprocessor driving a personal desktop publishing system also could be used to build powerful new typeset/layout machines. Those systems could run sophisticated software from firms such as Scitex and Hell Graphics to produce high volume, magazine quality printing with much the same speed and facility of their PC counterparts. With these programs, images could be cropped, modified, color balanced and adjusted in tone to correspond with their neighbors, and entire publication issues could be laid-out on the computer screen, stored and then transmitted for printing.

Where did this printing take place? Anywhere. By the late 1980s, it was not unusual for a publication to be prepared in, say, California, then printed in Taiwan and distributed in Europe. These new technologies made it possible as well to target mass market magazines and newspapers for ever-smaller regions until they approached perfect user-configurability. It is easy to see that process already beginning with such publications as USA Today.

Even that won't be the end of the virtualization in the printing industry. Why print at all? With broadband telecommunications, image compression, full motion video transmission and storage on CD-ROM and laser disk, and portable color liquid crystal displays, within a generation it probably will be cheaper to receive all this information from a hand-held terminal than it will from newsprint -- information that is not only fully customized to the particular interests of each consumer, but backed by libraries of supporting material for curious minds. Hints at what is to come can be found in Apple's promotion of just such a terminal, to be called the Knowledge Navigator, and Knight-Ridder's current investigations into videotext and non-print newspapers.

The direction then for the printing industry is toward consumer choice. The consumer will be able to obtain information matched to his or her needs faster, and in the format desired. Newspapers and books will never go away -- they are, after all, in Borges' words "mankind's imagination" -- but many will soon move away from paper and print the way they once did from Sumerian clay and Egyptian papyrus scrolls.

There are several insights into the virtual process that we can draw from the history of printing. The first is that virtuality will result from combining numerous and diverse technology advances. For example, the new printing processes are dependent upon lasers, xerography, integrated circuits, the microprocessor, high-speed communication processes, display technology, and advances in software.

The role of the author as a co-producer is also evident. He or she can not only create the content but also can control the presentation of what is printed. To do that the author must not only be skilled in language, but also be computer literate. That is the new trade-off: greater control demands a corresponding extension in skill.

History Etched in Silicon

The semiconductor industry created the modern computer industry, then fed on its dynamics. Therefore, any story about the virtualization of the semiconductor industry should begin with the history of computers. The interaction of the two industries is also a reminder that virtualization is usually the result of the interaction between multiple, often unrelated, technological advances.

Computation machines, notably the abacus, have been around since prehistory. But the world's first electronic computer, the legendary ENIAC of 1945, is the standard by which all subsequent computers are measured. It also exemplifies the physical obstacles to building the early computers. The challenge lay in the most elementary component of all computers: the switch. In the binary code of computers, all information is stored as a 1 or a 0; or on and off. Hence the usefulness of the switch.

The trick is making those switches reliable, small and fast enough to keep up with the demands of high-speed computation. To do this, the designers of ENIAC were prepared to use vacuum tubes, which were essentially electrical switches with no moving parts. Even then, as writer Dirk Hanson described it in The New Alchemists, ENIAC was an unwieldy beast:

The common legend, no doubt apocryphal, but nonetheless telling, is that the lights of Philadelphia dimmed when ENIAC was switched on. For ENIAC was truly an electronic monster, an engineer's nightmare that was more room than a machine. . . ENIAC had eighteen thousand tubes, seventy thousand resistors, ten thousand capacitors, six thousand assorted switches, and a maze of connecting wires. It measured one hundred feet long, ten high and three feet deep, and weighed in at thirty tons.

. . . Tube reliability proved to be every bit as difficult as the engineers had figured. They rigged all manner of fans and blowers to carry off the tremendous heat generated by eighteen thousand vacuum tubes crammed in behind the metal panels, and still the temperature in the ENIAC room soared to 120 degrees F.¹⁸

In computations for atomic research, meteorology and ballistics, ENIAC more than proved the value of computers; but it also convinced designers that they needed a more efficient type of switch to move the technology much further.

The answer was already being found at Bell Laboratories in New Jersey, where John Bardeen, Walter Brattain and William Shockley in 1947 used the new science of semiconductors to build the first transistor.

By the mid-1950s, the transistor had begun to revolutionize electronics, including computation. It then fell to two scientist, Jack Kilby at Texas Instruments, and former Shockley protege Robert Noyce at Fairchild Semiconductor, to determine that the transistor could not only be lithographically printed and etched onto a flat surface, but that this process could be miniaturized to produce ever-larger 'integrated' transistor arrays. The result was the integrated circuit, perhaps the most important invention of the 20th century.¹⁹

In retrospect, one can see the integrated circuit as perhaps *the* major step in the transformation of the information industry. It was very small, extremely reliable, consumed almost no power, and could be produced in great quantity for almost nothing. Thus, it could not only bring new levels of price and performance to computers, but reduce their size so they could fit almost anywhere without expensive power and cooling apparatus.

The early 1970s saw the introduction into the market, most notably at Noyce's new Intel Corp., of the microprocessor, an integrated circuit that brought together on its surface a computer built from logic, memory and communications functions previously found only on collections of discrete chips. Putting a computer on a chip enabled the semiconductor industry to bring a new level of convenience to its customers. Now the actual performance of the device could be customized via programming. Engineers could 'change' electronic systems merely by rewriting their programs, rather than by redesigning the hardware.

So, by making at least a partial shift from hardware to software dependency, the microprocessor increased customer participation, and in the process, strikingly reduced the time between need and fulfillment.

Still, even this wasn't enough, especially as increased competition in the computer and other electronics businesses was leading to ever-shorter product generations -- and greater demand for new state-of-the-art chips. This pressure quickly exposed the primitive nature of the chip making business.

In essence, until the early 1970s, the semiconductor industry was more a chemical business than electronics. The extraordinarily complex designs for new circuits were commonly drawn by hand like blueprints on wall-sized sheets of paper -- a process that often took months. Then, these drawings were converted to photographic masks by cutting their design into rubyolith and then reducing the image for printing on a silicon wafer. In many ways, the rubyolith mask designers of the early semiconductor industry were the equivalent of the medieval monks to printing.

By the end of the 1970s, with the demand for semiconductor devices reaching hundreds of million units each year, it was obvious that such primitive design techniques were wholly inadequate -- and the process began to evolve at every step.

The biggest bottleneck by far, however, lay in the design process. Here the problem was the most challenging: how do you enhance human capability

to reduce the design of million transistor arrays from decades to weeks, while retaining the underlying creativity that makes the device useful?

The answer is encompassed in the currently popular terms, Computer Aided Design and Computer Aided Engineering. They have not been as simple to implement as the names might suggest; it was not enough just to give an engineer a computer and expect overnight breakthroughs. Rather, the virtualization of engineering took place in a series of steps, each resting upon the ones before it.

The first of these steps was to computerize the creation of the rubylith artwork. This was done first through digitizers, and later, by companies such as Calma, through powerful (and expensive) computer lay-out systems that featured large displays, extensive disk-based memory, and complex languages and programs to convert operator commands into lay-out geometries.

The wonder of the interaction of computers and the semiconductor industry was that its effects were cumulative. Computers made it possible to create ever more complex integrated circuits that could be used to build more capable and less expensive computer systems -- which in turn accelerated the process and reduced the cost of engineering more complex and cost-effective integrated circuits.

The software progressed as well; the cryptic early languages were replaced by English language-type instructions. Also, the software could constrain the operator from straying beyond the capabilities of the circuitry. Best of all, the newest workstations could actually simulate the operation of the circuit under design, thereby allowing for real-time modifications and obviating the need for multiple expensive prototype production runs. Suddenly, getting million transistor devices to work the first time went from an impossibility to an everyday occurrence -- and then to a competitive necessity. [These design processes that enable to designer to simulate, test and experience the products in use will be referred to as *virtual design processes*. These methodologies are probably more advanced in the semiconductor industry than in any other. The virtual design of semiconductors is a harbinger of what is to come in many mechanical design processes used in the designs of automobiles, airplanes, and buildings.]

By the mid-1980s, so many product designs had been run on such CAD/CAE systems that it was possible to begin developing libraries of circuit designs. Now, when a designer went to develop a new device, he or

she didn't have to start with the basic switch elements, but could work with a handful of building blocks and mix and match them to best fit the application.

The impact of these new design methodologies and equipment was striking. Design cycles for new chips dropped from years to months, even though the newer products were often hundreds of times more complex than their predecessors.

But this was only the beginning. As competition heated up between users of semiconductors, these firms increasingly demanded proprietary products from the chip houses. Not only did they want these devices to have performance characteristics different from the off-the-shelf versions sold to their competitors, but they also often wanted to design these custom products quickly and with minimal expense.

Custom chips, however, were an expensive proposition and required great skill to design. Even with CAD/CAE and automated fabrication techniques, producing just a few prototypes might cost more than a million dollars even before volume production. In response to this need, new companies sprung up to provide 'application specific integrated circuits', ASICs, based on new types of design methodologies called gate arrays and standard cells.

The goal of these companies was to provide mass-customized products to customers quickly in response to their demand. Some of the first virtual suppliers began to appear -- Silicon Valley's LSI Logic and VLSI Technology being two prime examples.

ASICs combined two trends. One was, as noted, the need to find a middle ground between stock and custom circuits to save on design/prototype costs. The other was the rapidly declining cost of integrated circuits. The reasoning behind these new devices was straightforward: if silicon circuits were cheap, why not be a little sloppy in the efficient use of a chip's surface in exchange for a radical reduction in design cost and quicker time to market?

Much of the production of these new ASIC companies was based on gate array technology. The trick here was that companies found ways to build custom circuits using standardized lower layers on the chip surface. They then customized the last few layers to generate the specific devices the customer wanted. What this meant was that wafers could be preprocessed and then warehoused awaiting the final customizing steps. Since it only

required a few more processing steps to finish the circuit, much of the processing time to customize the circuit was eliminated for the customer. Furthermore, the cost of customizing the circuit was greatly reduced because the customer only had to pay to tool the final few layers.

Suddenly the cycle time to produce a custom part dropped from four to five months to as little as two weeks. Meanwhile, the cost of tooling custom circuits fell from hundreds of thousands of dollars to under \$20,000 -- so cheap that ASICs manufacturers frequently gave away the tooling costs in their rush to capture business.

Many of these new ASICs firms were also as customer responsive as any companies in the world. Customers not only defined the products they wanted, they designed them, using workstations armed with intuitive high level languages. Design cycles and simulations were becoming so efficient that some daring customers began to eschew test runs and ordered full-scale production from the start to pare Time-to-Market to the minimum.

As the Eighties ended, an even newer generation of chip companies had begun to appear on the scene. The latest advances in information technology had now made it possible for firms like View Logic Systems to offer CAE software that could be run on top-end personal computers. That meant the designer could now create a new device on his or her desk. A new generation of ASIC firms, including Xilinx and Actel, developed integrated circuits to match: field-programmable gate arrays (FPGAs) -- to take advantage of this capability. By using FPGA, an engineer could 'write' ASICs at his desk, the same way a fellow-employee down the hall might write the corporate newsletter.

Thus, in just two decades, the creation of integrated circuits passed from teams of trained specialists working months plotting out new designs to be fabricated in \$100 million laboratories to a virtual product that could be designed in hours and 'built' in minutes by an engineer who never had to leave the office, using a desktop 'factory' costing less than \$10,000.

The story of the integrated circuit industry illustrates many points about the virtual revolution. One is the role of invention: virtuality in this field would not have been possible without the invention of the gate array. Just as important has been the transformation of the design process and the role of the computer in creating tools. The process is highly automated, designs can be accurately simulated, tooling can be computer-checked to eliminate errors, much of the engineering is reusable, and the process has become so efficient as to consistently make extraordinary complex devices work