November, 1971 **PRODUCTION**® Founded 1934


# CAPITAL SPENDING TO TAKE A 21% JUMP!

**PRODUCTION's annual survey of capital investment plans by the production metalworking industries shows a $4-billion total for machinery and equipment in 1972, with almost half of the responding plants increasing their spending over their 1971 levels**

*Edward D. McCallum, Jr., Vice President-Research*

The production metalworking industries* will invest $4.01 billion next year in machinery and equipment—an increase of 21.5 percent over the 1971 projection. Furthermore, this dollar amount and percentage increase undoubtedly is ultra-conservative. Our survey to 6400 plants was in the mail to their key manufacturing executives three days before President Nixon announced his new economic policy containing many inducements for increased capital investment. Answers were requested returned before the full benefits of the President's proposals could be incorporated into many companies' 1972 investment plans.

Other major points registered in the survey:

- Cost reduction is the primary over-all motive for equipment expenditures, and is ranked as of first importance by 66.9 percent of the respondents. This is up 4 percentage points from those naming it as their No. 1 objective in their 1971 spending plans.
- A surprising number of plants—25.4 percent—cite as their primary objective an increase in capacity. This, despite the very slight general improvement for all respondents in their operating rate rela-

*Considered for the purpose of this survey to be plants reached by PRODUCTION in: Ordnance (SIC 19), Metal Furniture (SIC 25), Fabricated Metal Products (SIC 34), Machinery, except Electrical (SIC 35), Electrical Machinery (SIC 36), Transportation (SIC 37), Instruments (SIC 38), and Miscellaneous Manufacturing (SIC 39).

tive to capacity, 74.8 percent vs 74.2 percent a year ago. Reduction of direct labor remains the major target in cost-reduction efforts of the responding plants, but is not as prominent a target as it has been in previous years; emphasis, instead, is trending more toward reducing materials costs, with 51.9 percent citing this as a major objective for cost reduction.

- The average minimum first-year return-on-investment requirement in justifying new production equipment is 35.8 percent. And within certain industries, a substantially higher justification figure is required and is being obtained.
- Important shifts in the allocation of equipment dollars are noted: Assembly equipment which doubled its share of the capital spending dollar from 7.5 cents in 1969 to 15 cents in 1971 will, in 1972, be up to 16.8 cents of the total investment dollar; metal-cutting machine tools will improve their share from 29 to 29.6 cents; but metal-forming machine purchases as a percentage of the total will drop to 14.7 cents from 16 in 1971; plastic molding equipment will retain approximately the same share of the dollar it gained in 1971 even though a previously important buying industry, the automakers, are saying the purchase of this category of equipment will be at a slower pace. Other industries, obviously, are moving into "captive" molding operations and offsetting the auto industry's curtailment.
- There will be a drop-off in 1972 of the general trend toward more work in-house of operations done by contract suppliers and/or operations consolidated from other company-owned plants. Whereas in 1971's plans, 55 percent of the respondents were taking this action to occupy their available capacity, reduce costs, or improve quality, in 1972 a lower percentage of plants (51.8%) is making this move.
- A slightly higher percentage of respondents plan in 1972 to buy numerically controlled machines. The 27.3 percent compares favorably with last year's 26 percent. The vast majority of these buyers (86.5%) already uses NC machines.

**Capital Spending Goals.** Of the 47.4 percent of the responding plants that will increase their capital spending in 1972 (up 8.4 percentage points from last year), their primary motivations are: need for new machines to reduce cost (72.1%), need to increase machine/equipment capacity (51.6%), need to produce more good parts to present specifications or to produce to tighter specifications (42.2%), and need to accommodate new operations in the plant for parts/processes formerly obtained on the outside (37.3%).

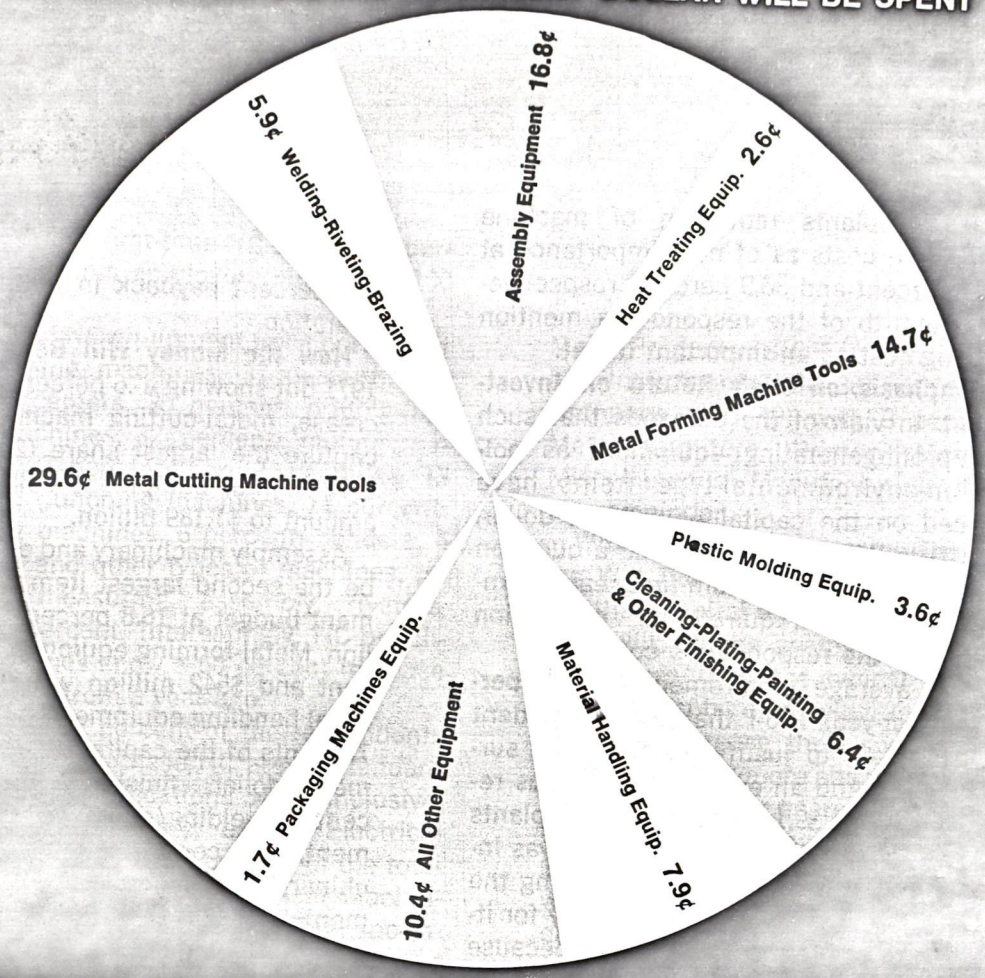
Of the 20.5 percent of the respondents that will reduce spending in 1972 (a reduction from the 29% in 1971), their reasons are: machine capacity adequate (52.4%), decline in sales (42.1%), decline in profits (27.8%). Thirty-two percent of the responding plants will keep their 1972 spending at the 1971 level.

Among all respondents to the survey, the actions to optimize cost-quality-capacity fall into these major categories:

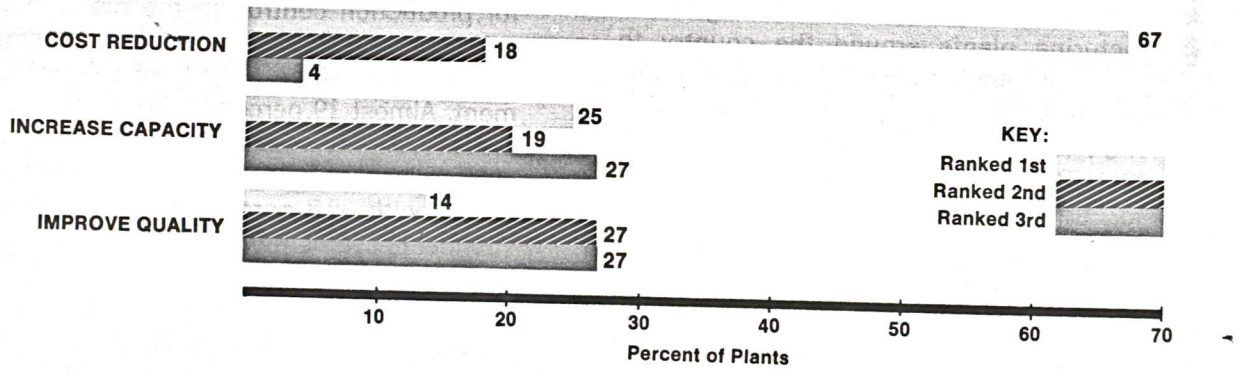
- Re-arranging operations to shorten supply lines, cut in-process inventory and material handling, 59.8 percent;
- Performing operations that previously were done outside, 51.8 percent;
- Adopting new processes/machines/materials that reduce process requirements, 44.1 percent;
- Setting up computerized production control systems, 35.5 percent;
- Establishing separate production areas to handle special or low-volume jobs, service parts, special orders, etc., 29.3 percent.

The specific targets for cost-reduction efforts by all responding plants are continuing to show variations as has been the case since 1969. Direct labor reduction is the goal for 72.7 percent of the responding plants (down from 75%); reduction of materials costs is sought by 51.9 percent (up slightly from 1971's 49%); material handling costs are being actively investigated by 33.7 percent of the respondents; and reduction of assembly

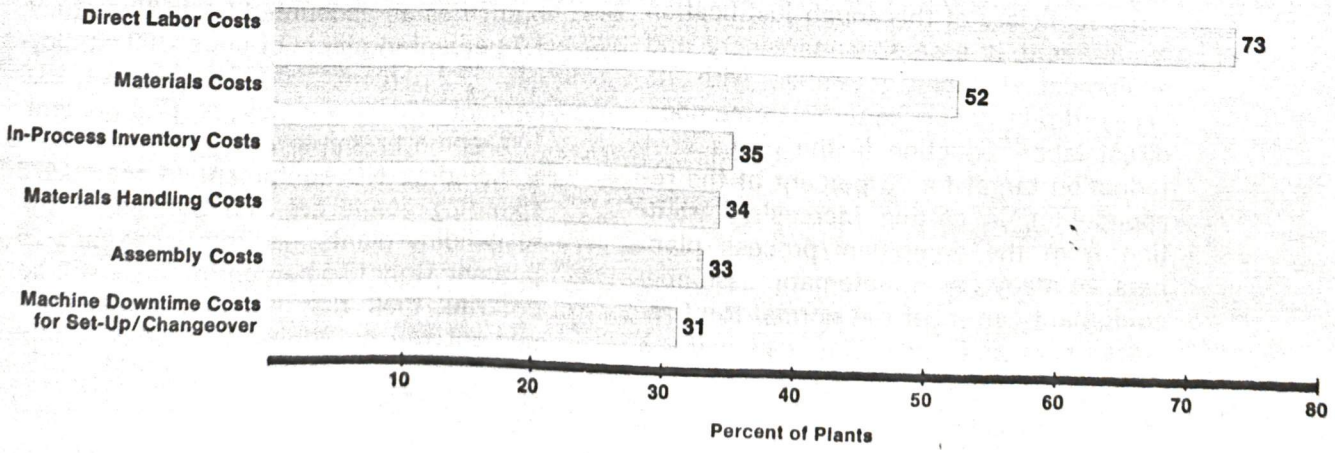
## HOW THE 1972 CAPITAL EQUIPMENT DOLLAR WILL BE SPENT




## PRINCIPAL MOTIVES FOR 1972 CAPITAL INVESTMENTS




## MAJOR COST REDUCTION TARGETS



costs supplants reduction of machine downtime costs as of next importance at 33.1 percent and 30.9 percent, respectively. One-fifth of the respondents mention tooling cost as an important target.

**Emphasis on High Return on Investment.** In view of the demands that such non-profit-generating equipment as pollution-environmental-type items have placed on the capital equipment dollar, PRODUCTION this year added a question on the average minimum first-year return-on-investment required for production items by the respondent's company.

The average requirement of 35.8 percent first-year R-o-I that the respondent must obtain to justify his purchase surprised us. And an even more rigorous requirement of 39.1 percent R-o-I in plants that employ 1000 or more persons was indicated. Because equipment meeting the 35.8 percent first-year R-o-I will pay for itself in approximately two years because many of its costs will be concentrated in the first year, certain types of equipment investments clearly are precluded.

We checked with several leading manufacturing plants around the country to learn the implications. Several sources indicated they would not be surprised if R-o-I requirements in the future will go higher! Their consensus of the reasons for this tough justification standard is that many profitable alternatives are available for the same money and the planners are forced to recommend only the most profitable equipment investments for their companies. These sources tell us they cannot or will not submit equipment proposals earning less than a 30 percent return the first year.

A beneficiary of this tough justification requirement is assembly machinery and equipment. Manual assembly, with its heavy direct labor content (remember, direct labor reduction is the prime cost reduction target for 73 percent of the respondents), is getting increasing attention from the equipment/process planners. In many cases, automatic assembly equipment can meet the normal R-o-I requirement, and, often, it can give a 100 percent payback in the first year of operation.

**How the Money Will Be Spent.** As in 1971 but showing a .6 percentage point increase, metal-cutting machine tools will capture the largest share (29.6%) of the 1972 capital equipment dollar. This will amount to $1.189 billion.

Assembly machinery and equipment will be the second largest item in the investment budget at 16.8 percent, or $696 million. Metal-forming equipment at 14.7 percent and $542 million will be next. Material handling equipment will account for 7.9 cents of the capital equipment investment dollar; finishing equipment, 6.4 cents; welding/riveting/brazing equipment, 5.9 cents; plastic molding machinery, 3.6 cents; heat treating equipment, 2.6 cents; and packaging machinery/equipment, 1.7 cents. The remaining 10.4 percent ($433 million) is budgeted for "safety" equipment, pollution control equipment, and computers for production control, in the main.

**NC Spending Plans.** The respondents report heavy usage already of NC equipment. Almost 19 percent (3741 machines) of all NC machines put in place since 1955 are accounted for in the respondents' plants, with 38.3 percent of the total respondents averaging 8.2 NC machines per plant.

The pattern of location of these NC machines contradicts a frequently made assumption that NC is favored mainly in small organizations because of flexibility needs. By plant size, here are the NC machines in production metalworking industries as accounted for in this study: 1.7 percent in plants of under-100 employees; 12.2 percent, 100-499 employees; 18.8 percent, 500-999 employees; 67.3 percent, 1000-and-over employees.

Including NC equipment in their 1972 spending plants are 27.3 percent of the responding plants, up from last year's 26 percent. Only 13.5 percent of these will be ordering their first NC machine(s); 86.5 percent will be adding to their NC cap-

ability. Of the first-time NC buyers, 86 percent are plants employing more than 100 persons.

Types of NC equipment to be purchased are: turning machines, 37 percent; machining centers, 35 percent; drilling-tapping machines, 32 percent; milling machines, 23 percent; boring machines, 13 percent; punching machines, 11 percent; profiling machines, 6 percent; benders, 4 percent; and other types of machines, including measuring, assembly, riveters, etc., 11 percent. Interestingly, NC punching machines show a 50 percent increase in demand from a year ago.

Ninety-four percent of the respondents planning to purchase NC are in Standard Industrial Classifications 34-38, inclusive. Of these, Machinery, except Electrical (SIC 35), leads with 44 percent of the total response, followed by Electrical Machinery (SIC 36) with 24 percent, Transportation Equipment (SIC 37) and Fabricated Metal Products (SIC 34) with 10 percent, and Instruments (SIC 38) with 6 percent. Ordnance (SIC 19) with 3 percent, and Metal Furniture, Primary Metals, and Miscellaneous Manufacturing make up the remainder.

**What the Plants Increasing Their Spending Will Do.** The plants that are increasing their capital equipment investment in 1972 will, on the average, spend 30 percent more than the typical respondent. Of the plants employing less than 100 that will increase their spending, they'll average $21,000 more spending than those holding the line or decreasing their spending. Plants employing 100-499 will average $53,000 more; plants employing 500-999 will average $106,000 more; and plants employing 1000 and over (12.8% of the responding total) will spend $157,000 more

How Production Metalworking Industries Are Shifting Their Capital Spending Patterns
1972 vs 1971

FABRICATED METAL PRODUCTS (SIC 34)

| | 1972 | 1971 |
|---|---|---|
| Metal Forming Equip. | 24% | 27% |
| Metal Cutting Machines | 17 | 20 |
| Assembly Machines | 14 | 10 |
| Material Handling Equip. | 10 | 11 |
| Welding/Riveting/Brazing Equip. | 9 | 10 |
| Finishing Equip. | 7 | 6 |
| Plastic Molding Equip. | 3 | 4 |
| Heat Treat Equip. | 3 | 4 |
| Packaging Machinery | 2 | 1 |
| Other | 11 | 7 |

MACHINERY, EXCEPT ELECTRICAL (SIC 35)

| | 1972 | 1971 |
|---|---|---|
| Metal Cutting Machines | 46% | 48% |
| Metal Forming Equip. | 11 | 12 |
| Assembly Machines | 10 | 9 |
| Material Handling Equip. | 8 | 8 |
| Finishing Equip. | 5 | 5 |
| Welding/Riveting/Brazing Equip. | 5 | 5 |
| Heat Treat Equip. | 4 | 4 |
| Plastic Molding Equip. | 2 | 1 |
| Packaging Machinery | 2 | 1 |
| Other | 7 | 7 |

ELECTRICAL MACHINERY (SIC 36)

| | 1972 | 1971 |
|---|---|---|
| Assembly Machines | 28% | 27% |
| Metal Cutting Machines | 17 | 15 |
| Metal Forming Equip. | 13 | 16 |
| Finishing Equip. | 8 | 7 |
| Plastic Molding Equip. | 7 | 6 |
| Material Handling Equip. | 7 | 8 |
| Welding/Riveting/Brazing Equip. | 5 | 5 |
| Packaging Machinery | 2 | 2 |
| Heat Treat Equip. | 1 | 1 |
| Other | 12 | 13 |

TRANSPORTATION (SIC 37)

| | 1972 | 1971 |
|---|---|---|
| Metal Cutting Machines | 35% | 31% |
| Assembly Machines | 14 | 15 |
| Metal Forming Equip. | 13 | 14 |
| Material Handling Equip. | 9 | 10 |
| Welding/Riveting/Brazing Equip. | 9 | 9 |
| Finishing Equip. | 6 | 5 |
| Heat Treat Equip. | 4 | 4 |
| Plastic Molding Equip. | 1 | 4 |
| Packaging Machinery | 1 | 1 |
| Other | 8 | 7 |

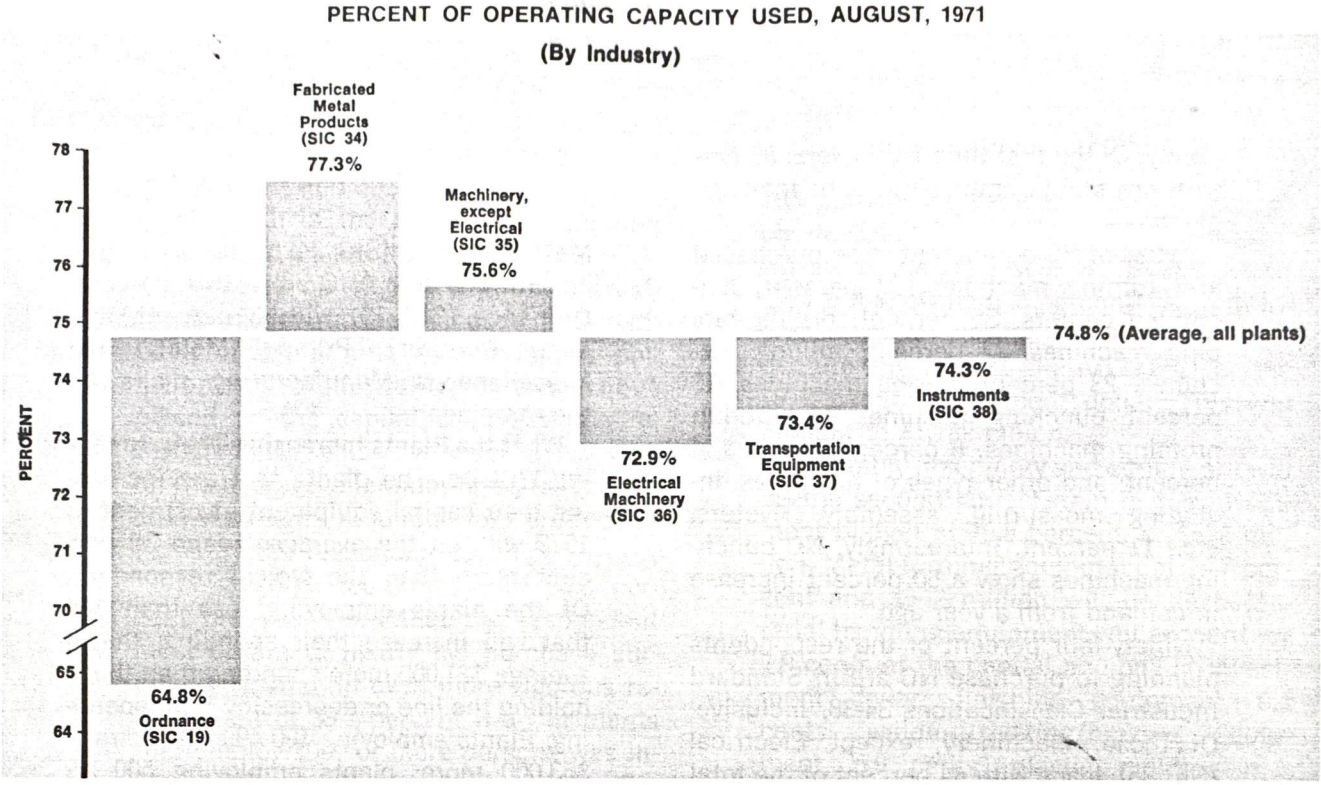
INSTRUMENTS (SIC 38)

| | 1972 | 1971 |
|---|---|---|
| Metal Cutting Machines | 29% | 27% |
| Assembly Machines | 25 | 24 |
| Metal Forming Equip. | 12 | 11 |
| Material Handling Equip. | 6 | 8 |
| Finishing Equip. | 6 | 7 |
| Welding/Riveting/Brazing Equip. | 5 | 4 |
| Plastic Molding Equip. | 4 | 3 |
| Packaging Machinery | 2 | 4 |
| Heat Treat Equip. | 1 | — |
| Other | 10 | 10 |

MISC. MANUFACTURING (SIC 39)

| | 1972 | 1971 |
|---|---|---|
| Assembly Machines | 30% | 27% |
| Finishing Equip. | 13 | 16 |
| Metal Cutting Machines | 13 | 6 |
| Metal Forming Equip. | 11 | 6 |
| Material Handling Equip. | 9 | 8 |
| Plastic Molding Equip. | 8 | 15 |
| Packaging Machinery | 2 | 5 |
| Welding/Riveting/Brazing Equip. | 2 | 5 |
| Heat Treat Equip. | — | — |
| Other | 12 | 12 |

—Indicates under 1%




*Ordnance* (SIC 19). Plants reflect, generally, the DOD and NASA cutbacks.

*Fabricated Metal Products* (SIC 34). Bright spots are Hardware plants with operating rate of 79.1%, Metal Sanitaryware (87%), Fabricated Structural Steel (78.4%), and Fabricated Wire Products (83.0%).

*Machinery, except Electrical* (SIC 35). The industries of Steam Engines and Turbines (85%), Internal Combustion Engines (83.0%), Oil Field Machinery (89.0%), Pumps and Compressors (79%), and Refrigeration Machinery, including air conditioning (78.5%), are out-performing the industry average.

On the downside, Metal-Cutting Machine Tool builders are operating at 68% and Metal-Forming Machine Tool makers at 66% of capacity.

*Electrical Machinery* (SIC 36). Switchgear and Switchboard Apparatus (79%), Household Appliances (80%), Lighting Fixtures (86%), and Engine Electrical Equipment (82%) are the bright spots.

*Transportation Equipment* (SIC 37). Motor Vehicle Manufacturers (83%) and Motor Vehicle Parts and Accessories (77%) almost offset Aircraft (51%), Aircraft Engines (65%), and Aircraft Parts (64%).

*Instruments* (SIC 38). Mechanical Measuring Devices and Automatic Temperature Controls operating at 80% are the strong performers.

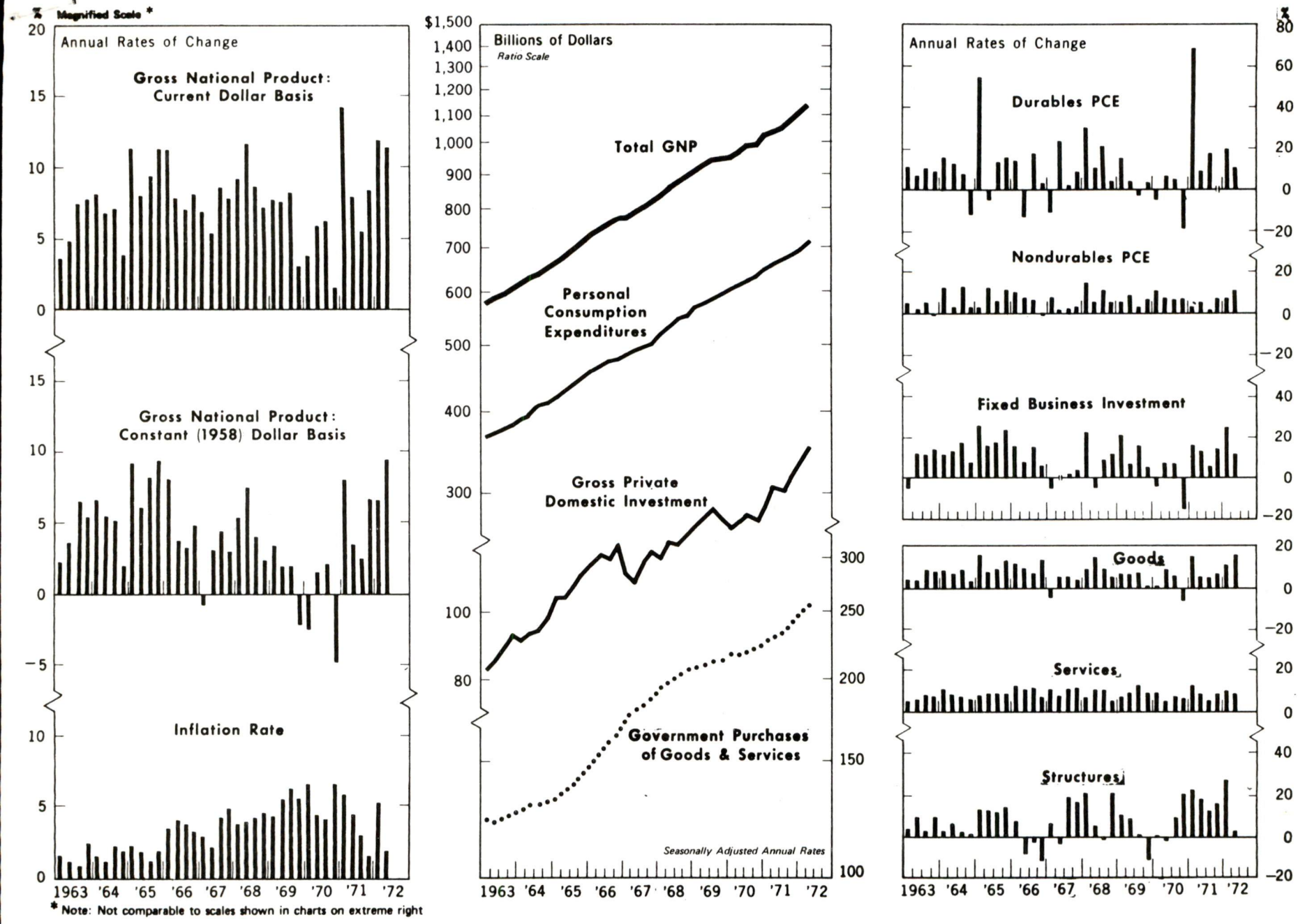
per plant, on the average, than plants of the same size that plan to spend the same or fewer dollars in 1972.

The plants employing 1000 or more and increasing their spending deviate from the total respondents in the following areas:

- They will spend more for increased capacity than the typical respondent—87.9% vs 71.6%;
- They are more interested in computerized production control than the typical plant—51.6% vs 35.5% is currently setting up or planning to set up such a system;
- Of these larger plants, 61.1 percent currently operate NC machines compared to 27.3 percent among the total respondents, and they operate 32.2 percent of the total NC machines reported in use by all respondents.
- Eighty-three plants in this total group of plants with over 1000 employees and planning spending increases will buy one-quarter of the production metalworking industries' NC machine total. And their participation in the anticipated purchases is as follows: 25.6 percent of the NC milling machines, 23.4 percent of the NC drilling-tapping, 27 percent NC boring, 17 percent of NC turning, 25 percent of NC profiling, 39 percent of NC punching, 14.4 percent of NC bending, 28 percent of NC machining centers, and 39.4 percent of all other NC equipment. ■

# THE COMPONENTS OF GROSS NATIONAL PRODUCT

Chart II




* Note: Not comparable to scales shown in charts on extreme right

Sources: Department of Commerce; The Conference Board

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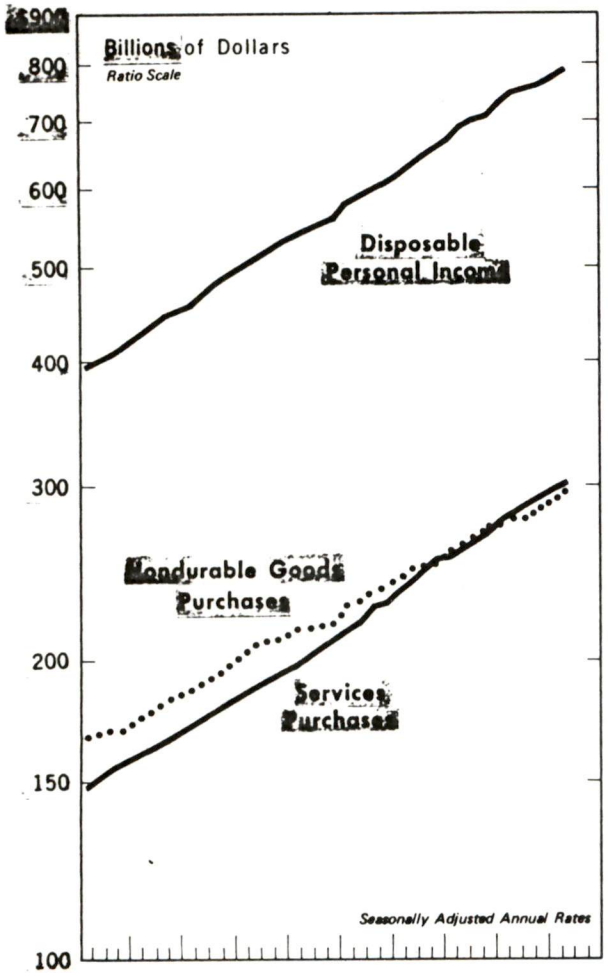
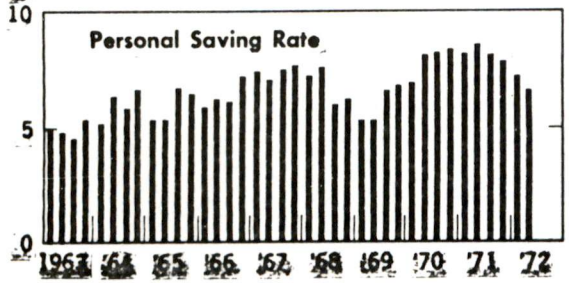
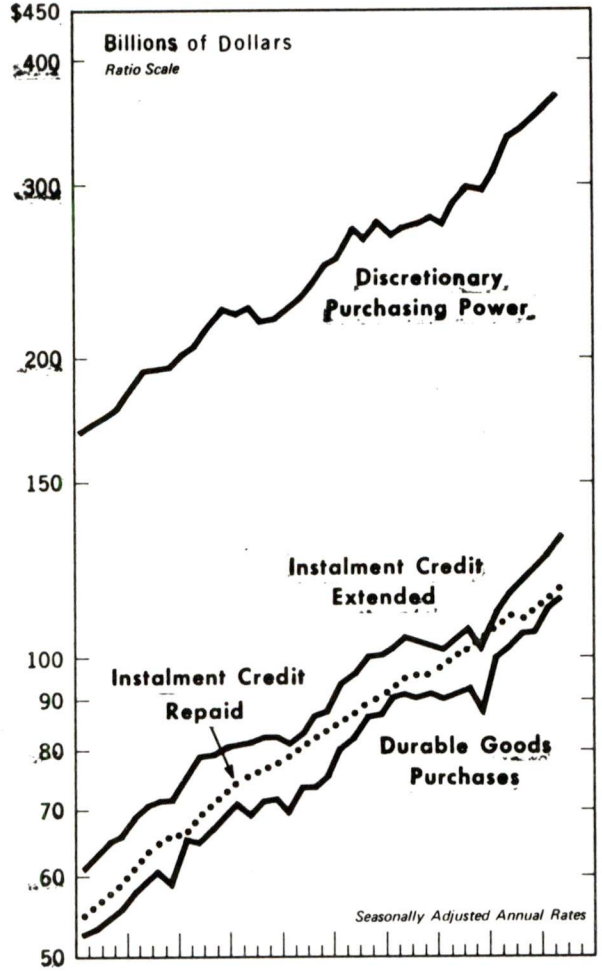
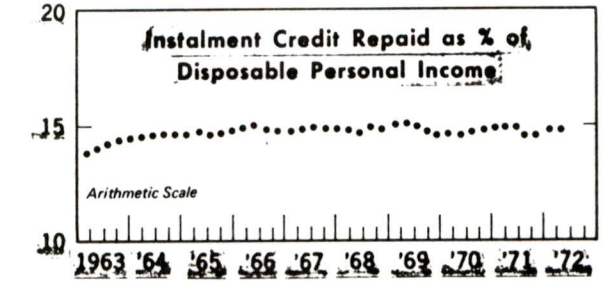
# THE PERSONAL SECTOR

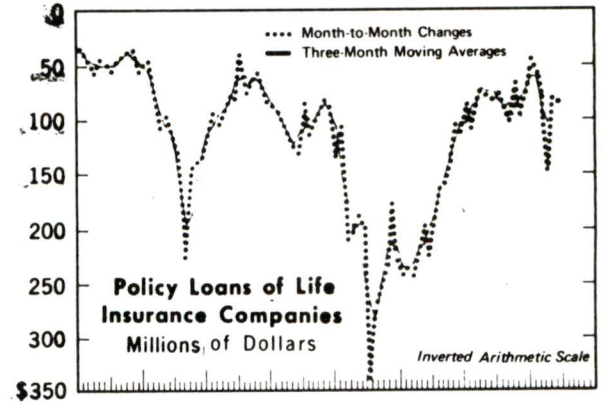
Chart VII

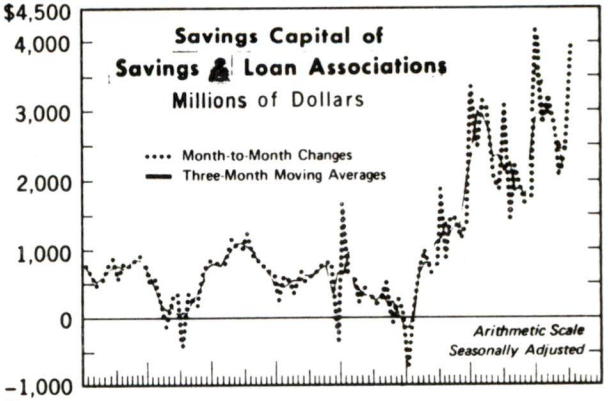


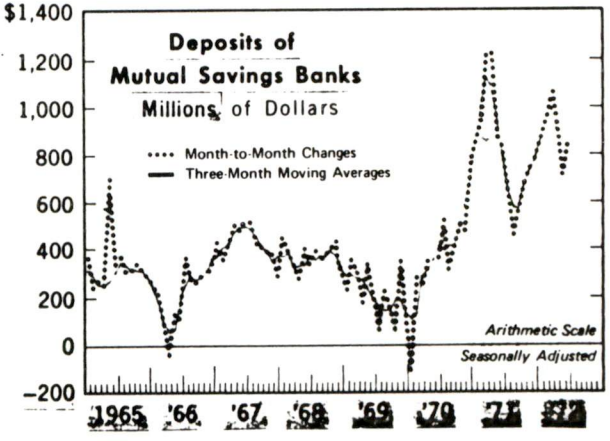



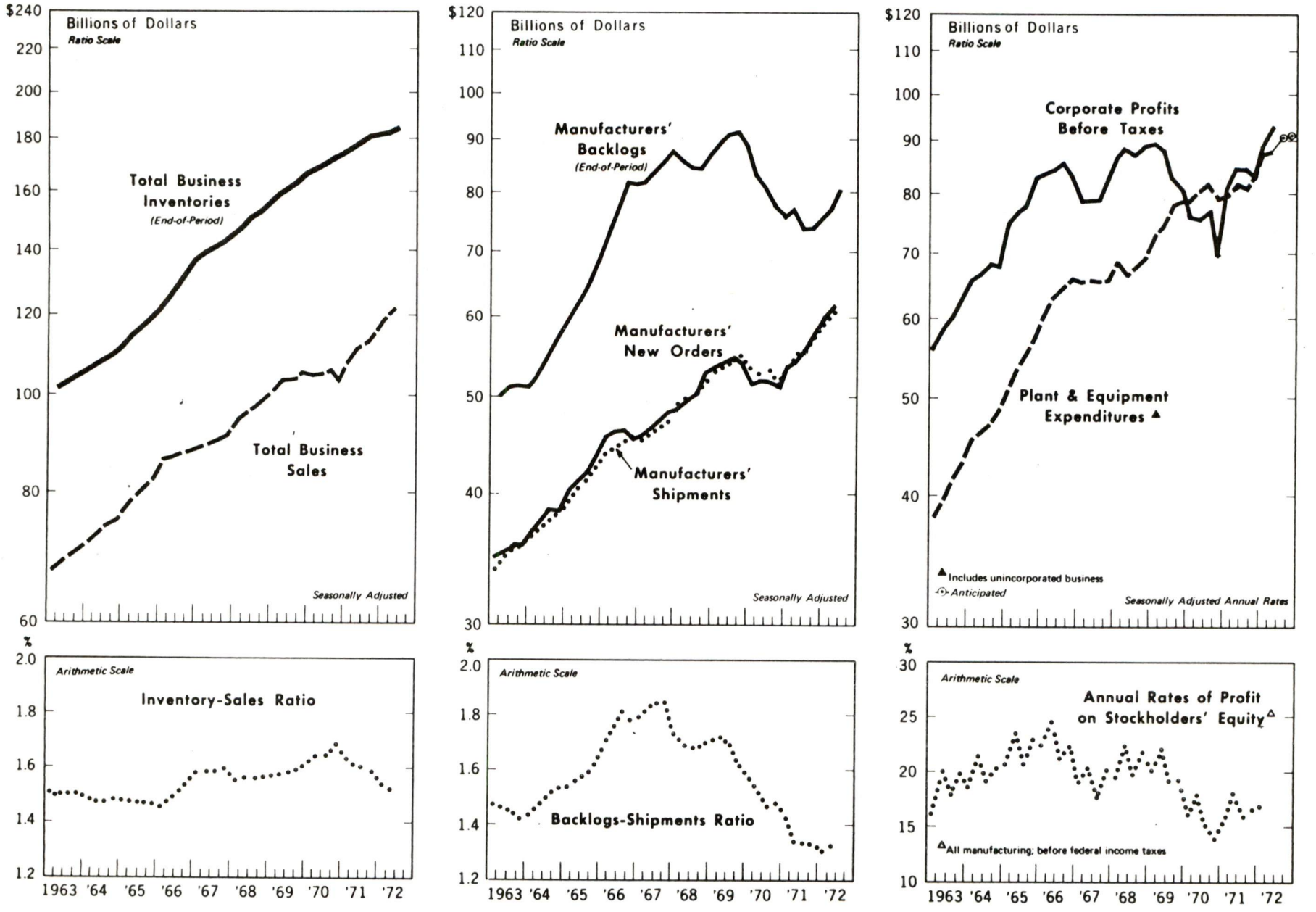




Sources: Department of Commerce; Federal Reserve; Institute of Life Insurance; Federal Home Loan Bank Board; National Association of Mutual Savings Banks; The Conference Board

# THE BUSINESS SECTOR

Chart VIII




Sources: Department of Commerce; Federal Trade Commission; The Conference Board

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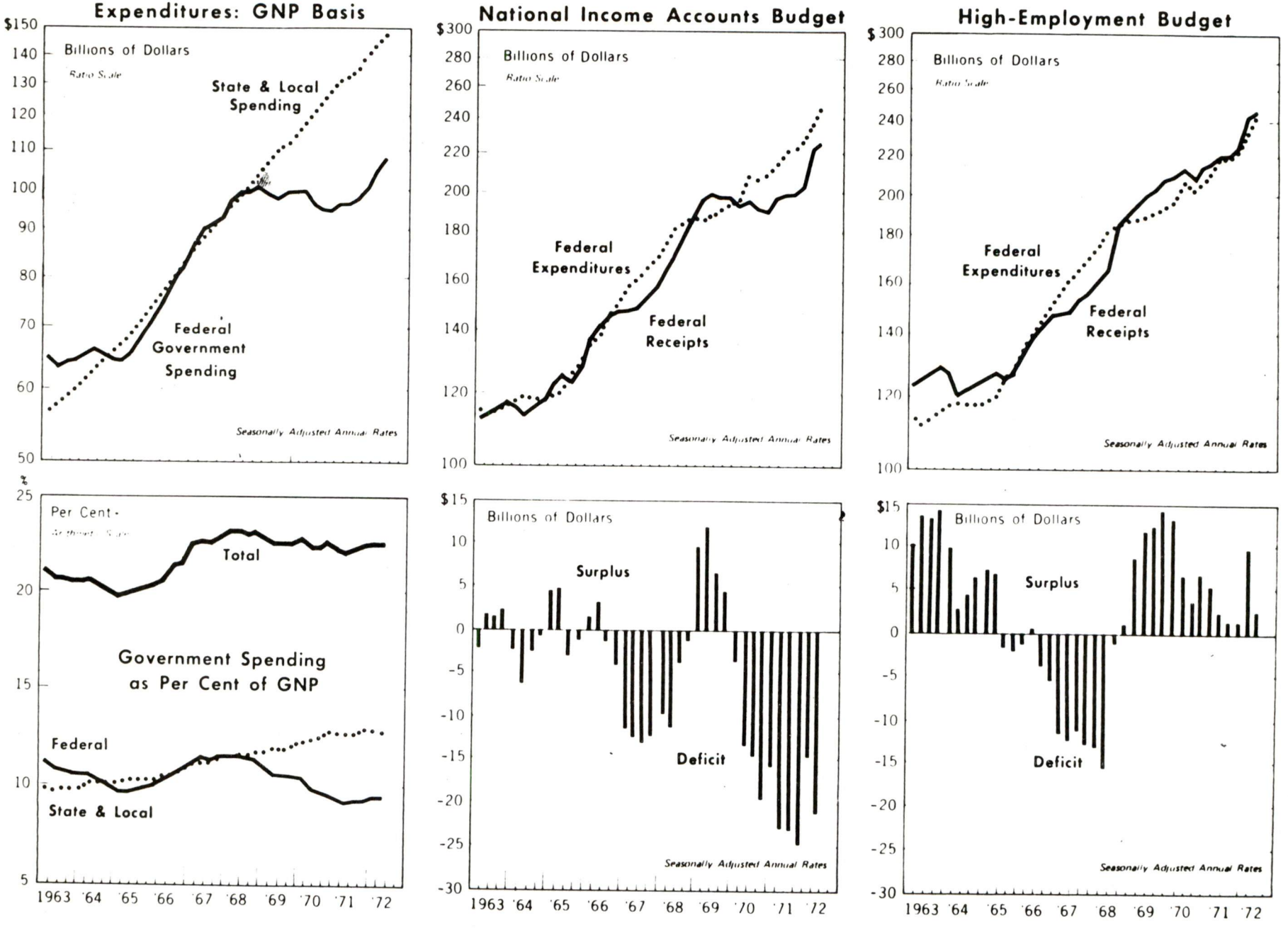
# THE GOVERNMENT SECTOR

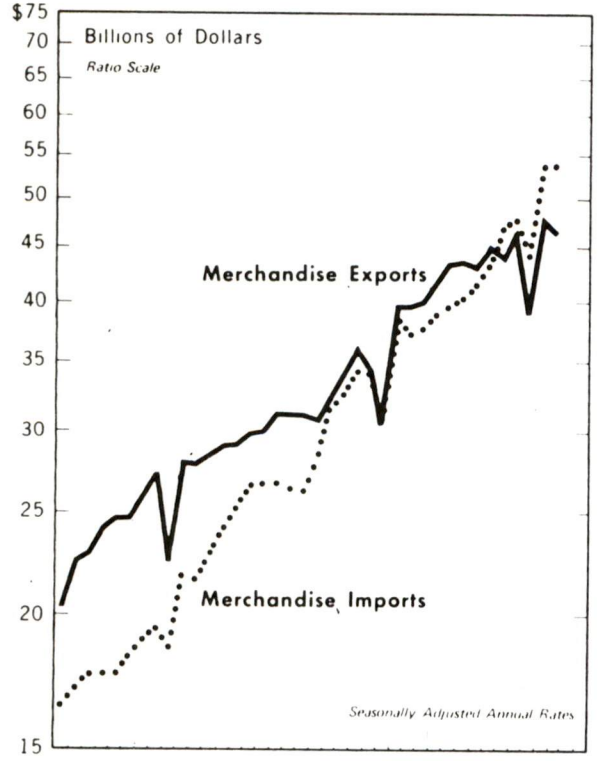
Chart IX

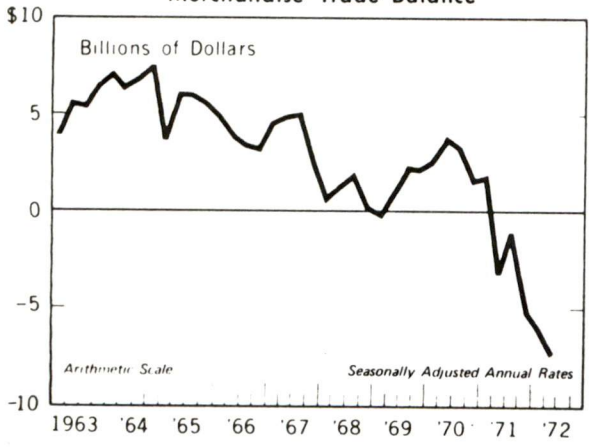


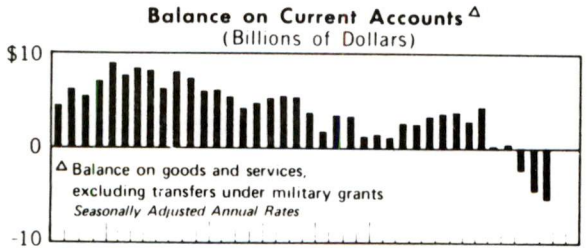

Sources: Department of Commerce, St. Louis Federal Reserve Board, The Conference Board

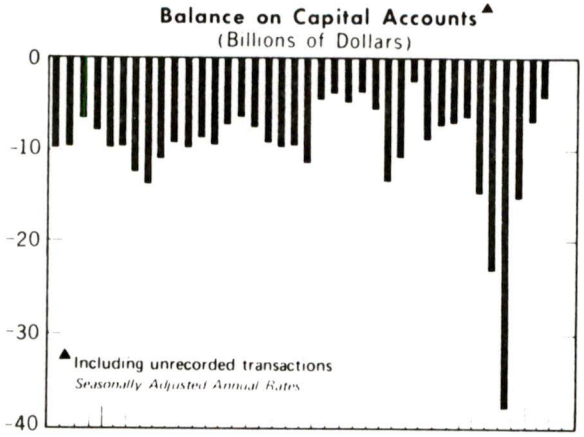
# THE INTERNATIONAL SECTOR

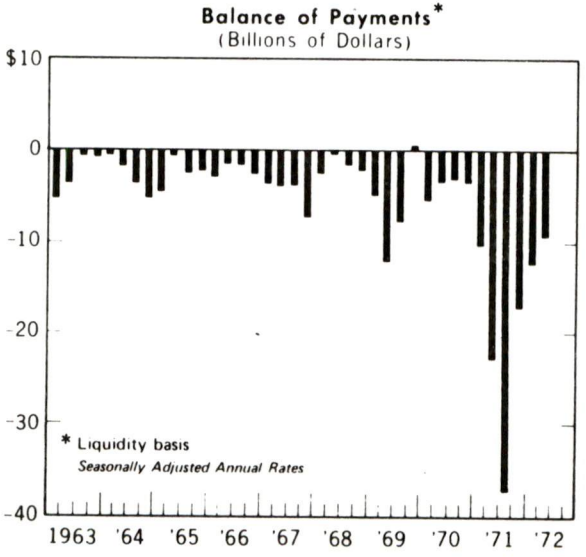
Chart X

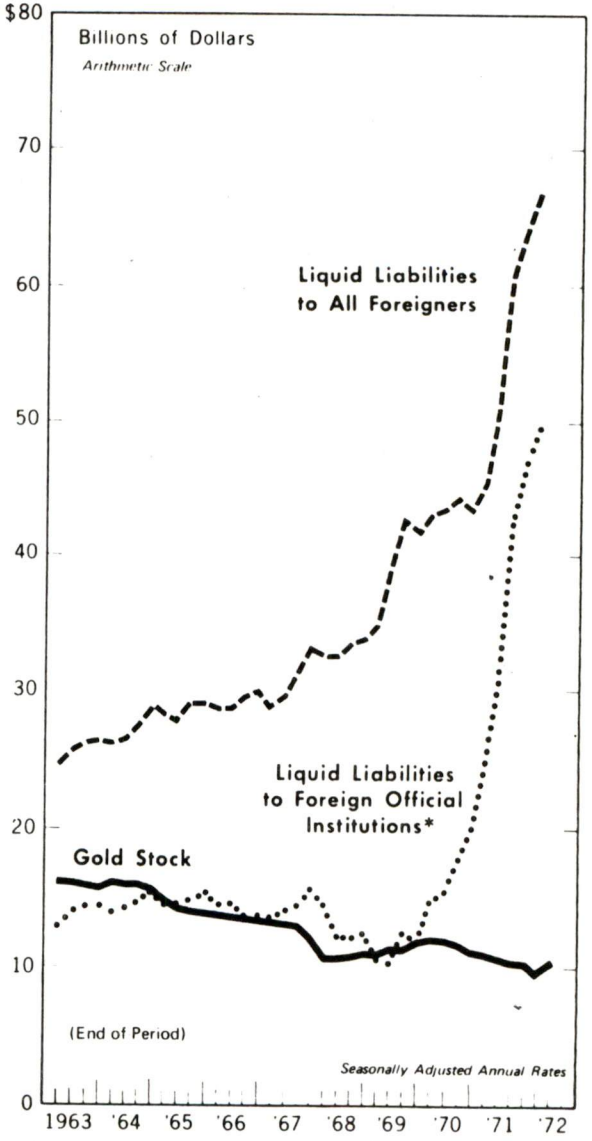


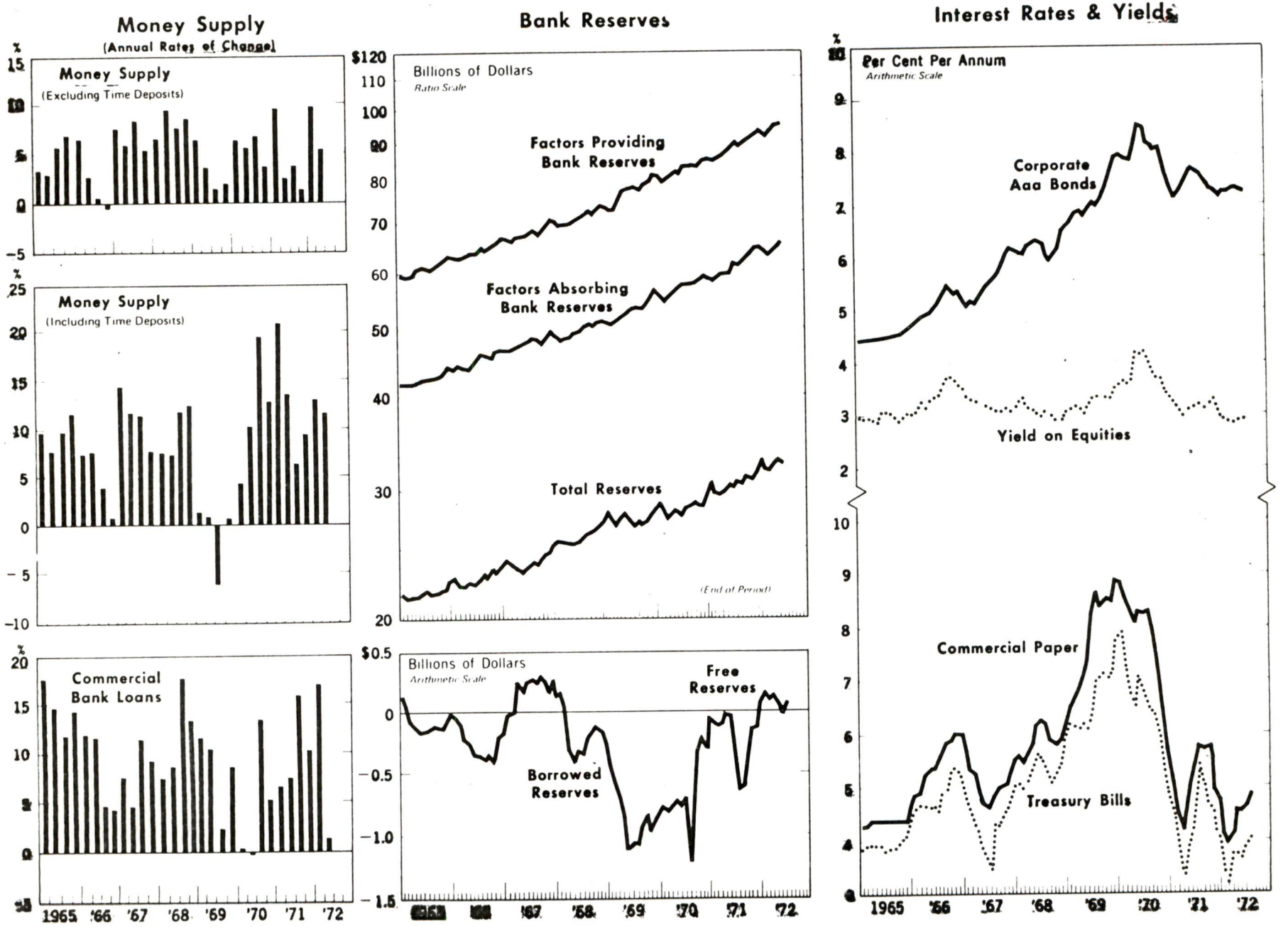




* Data represent short term liabilities to the official institutions of foreign countries, as reported by banks in the United States, and foreign official holdings of marketable and convertible nonmarket able U.S. Government securities with an original maturity of more than one year.

Sources: Department of Commerce; Federal Reserve; The Conference Board

# THE FINANCIAL SECTION

Chart XI




Sources: Federal Reserve; Moody's Investors Service; Standard & Poor's; The Conference Board

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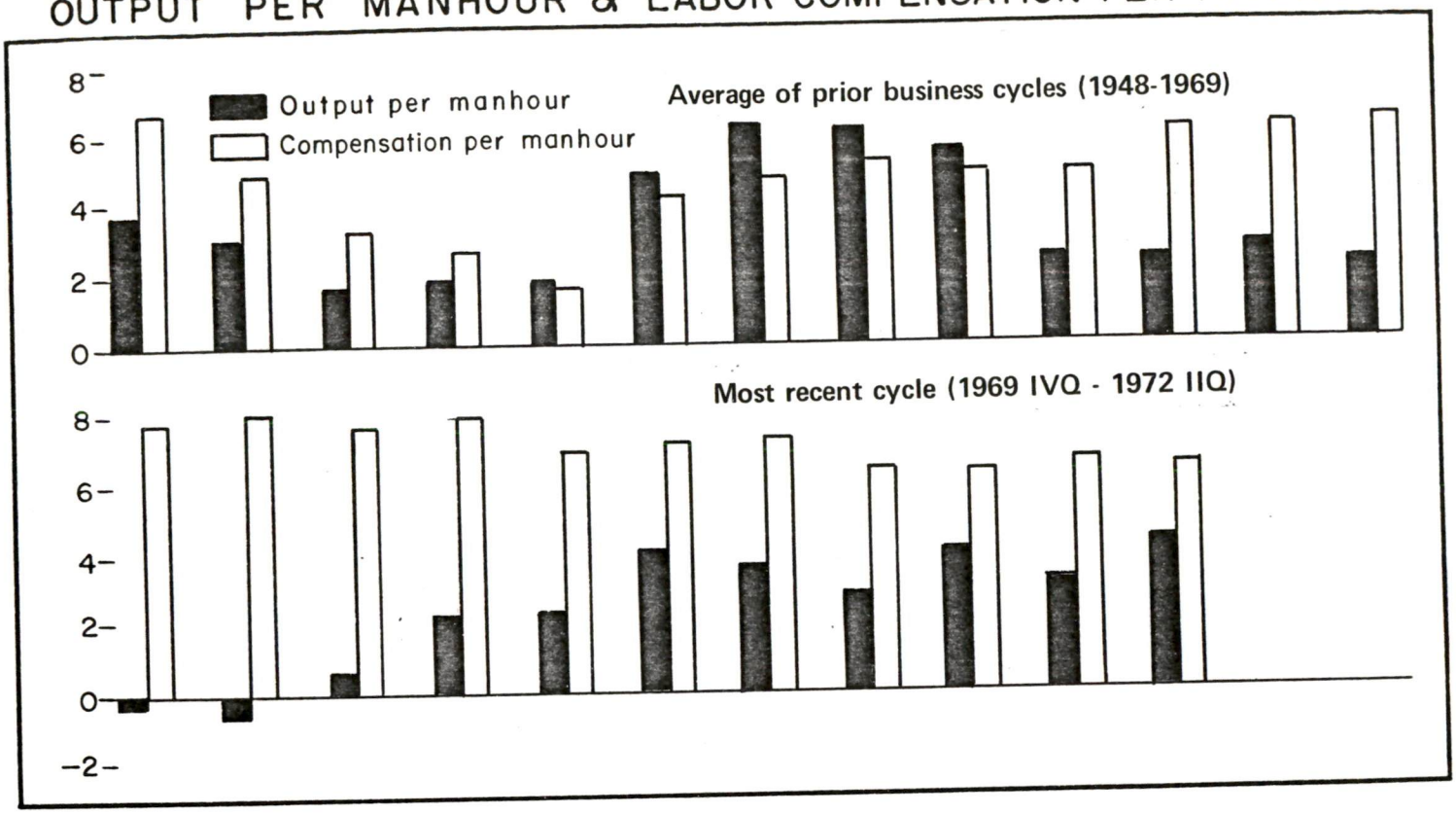
Chart 9

# Productivity, Wages, Unit Labor Costs, and Prices

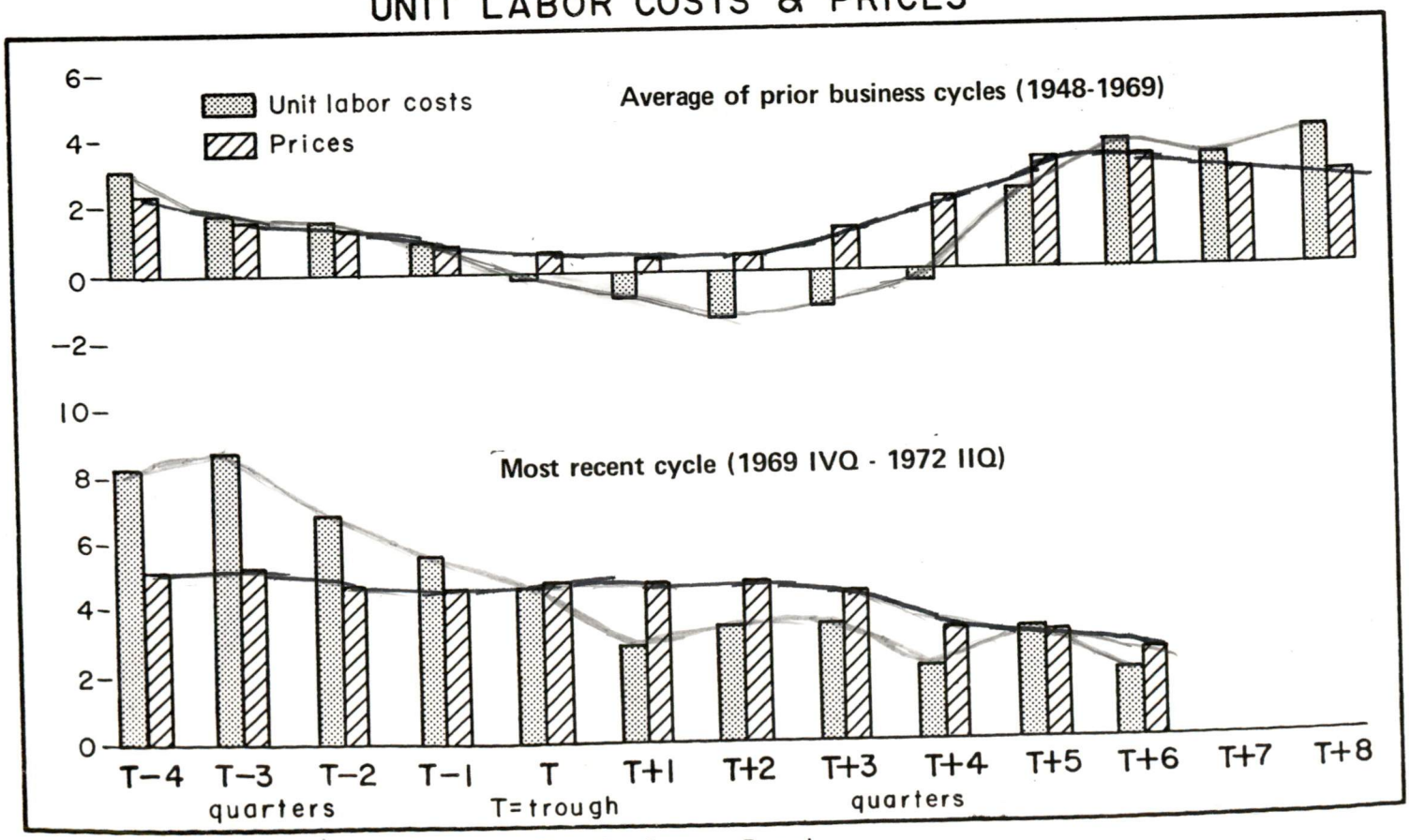
## U.S. Private Economy

Per Cent changes over same quarters of prior year; contractions and first two years of expansion.

### OUTPUT PER MANHOUR & LABOR COMPENSATION PER MANHOUR




### UNIT LABOR COSTS & PRICES




Sources: U.S. Bureau of Labor Statistics; The Conference Board

file: Productivity




# Can the U.S. Compete?

## A Tough, New Carrot-and-Stick Policy of Trying Harder

The Japanese official was politely regretful. "Raw materials, yes," he told the New York businessman, "we would very much be interested in buying more raw materials. But American manufactured products—well, if only the quality were more dependable . . ."

The British journalist snorted. "When did you last see a 'Made in America' sign?" he said. "Refrigerators, washing machines, freezers—the Italians have taken over."

"To a Detroit auto man, small means cheap," complained the California driver. "GM builds fine small cars somewhere else, like the Opel in Germany. But for some crazy reason, they can't *design* as good a car in America."

For a nation long conditioned to a comfortable economic edge in the world, such comments still come as a jarring shock. But they signal a new reality, forged in a hot new competitive fire and sealed by last year's dollar devaluation: the United States is no longer the unchallenged leader in the economic world. Even after the devaluation, the nation has been put on notice to pull up its socks, mend its wastrel ways and buckle down to genuine competition with the world's new commercial powers. And for all the proud U.S. history of financial innovation, technological superiority and entrepreneurial daring, there are experts who fear that America could fail the test.

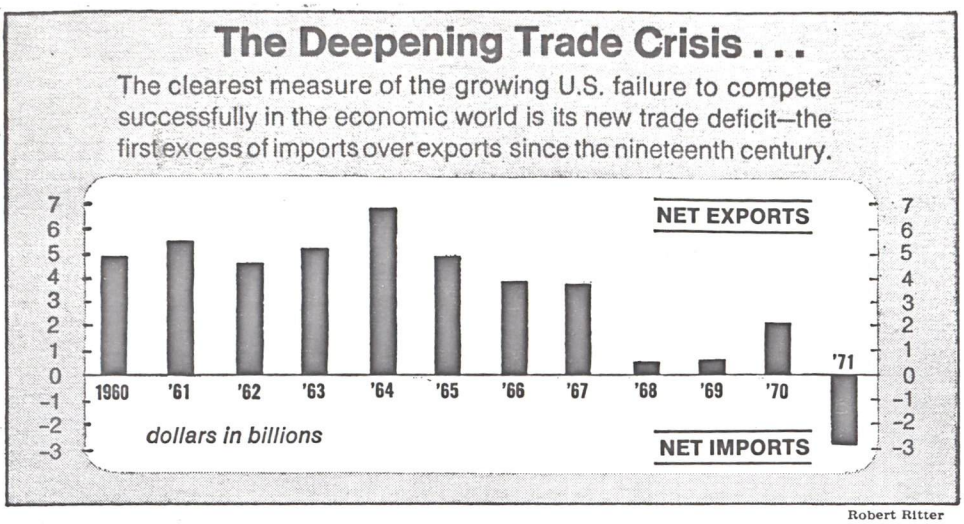
Chief among them are the men in the Nixon Administration. Indeed, Mr. Nixon's most influential aides seem committed to a twentieth-century version of mercantilism—the nationalistic policy of buttressing political strength with economic muscle by subsidizing production and exports, discouraging imports and hoarding the resulting trade surpluses. As far back as Adam Smith's day, mercantilism was exposed as a logical fallacy. But as Mr. Nixon's men see it, that in effect is the way the trading game is being played, and they will play that way, too—until everyone can agree to change the rules and behave sensibly.

Accordingly, the Administration has enacted a set of tax credits and subsidies for industry in an effort to stimulate American exports. It has moved to curb imports by persuading foreign countries to limit "voluntarily" their sales of textiles and steel in the U.S. It is increasing government support for civilian research and development. And above all, Mr. Nixon is moving the government into comprehensive, long-range economic planning. Henceforth, declared Treasury Secretary John Connally in a major policy speech in New York last month, foreign economic policy must receive "the same intensive effort which, until now, has been principally reserved for foreign military and political policies."

Can the U.S. compete successfully in the new trading world? The question is vast and complex, and final answers won't be in for a decade or more. But recent experience hasn't been encouraging. Between 1960 and 1970, the U.S. share of world exports actually declined, from 16 per cent to about 14 per cent. By 1970 this country was actually exporting a smaller percentage of its manufactures than it had ten years earlier, and West Germany had replaced the U.S. as the world's largest exporter of manufactured goods. At the same time, imports were skyrocketing, rising by 23 per cent between 1967 and 1968 alone. By the late 1960s, Americans were buying an unprecedented volume of their products from overseas suppliers. Almost 100 per cent of all tape recorders and 35-mm. still cameras, 70 per cent of the radios, 49 per cent of the sewing machines, 40 per cent of the glassware and more than 15 per cent of all the automobiles sold in the U.S. now come from abroad. And the U.S. balance of trade, reflecting all these trends, tilted from the hefty surpluses of the early 1960s to the $2.9 billion deficit recorded last year—the first American trade deficit since the late nineteenth century (chart, page 64).

### A Bid to Stop the Tide

To be sure, the huge trade surpluses of the 1950s and early 1960s were by definition abnormal, reflecting the postwar reconstruction of Europe and Japan. As vice president Edward Littlejohn of Pfizer, Inc., put the current case to NEWSWEEK's Stephen F. Cole, "You can't say that we've fallen behind but that the balance of the world is restored." Still, the newly feisty competitive forces tend to trigger explosive responses. In the U.S., for instance, the



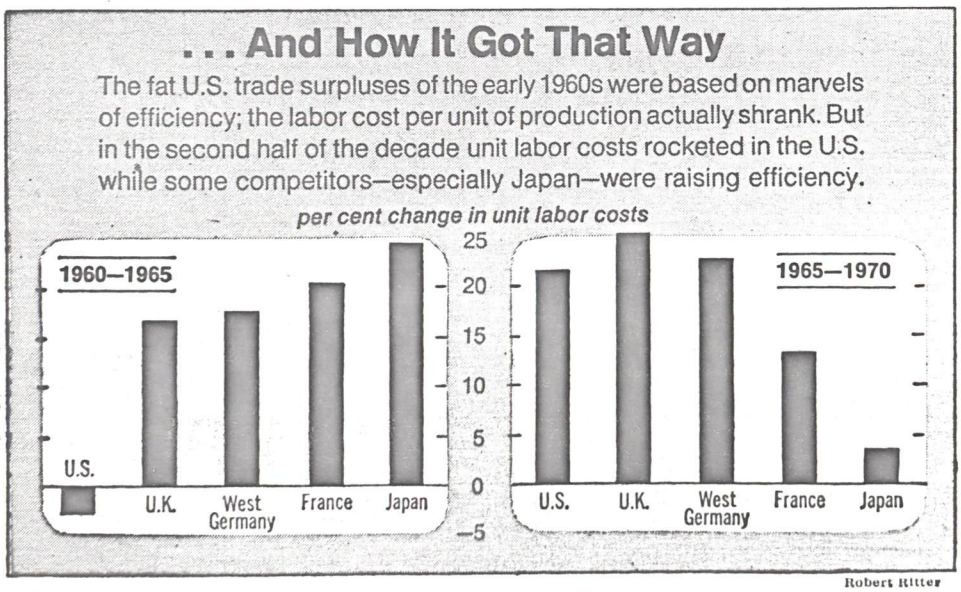

tide of imports has unleashed a wave of protectionism among threatened industries and organized labor, which argues that 1 million or more jobs have been lost to cheap foreign wage rates. At the extreme, such protectionist measures as the current Burke-Hartke bill could plant a forest of trade barriers around the U.S., touch off retaliatory measures by other nations and curb both the growth of world trade and the expansion of American industry abroad.

Not that the protectionist danger is one-sided. Commerce Secretary Peter C. Peterson is also worried that the European Common Market is becoming a protectionist bloc with an expanding set of preferential arrangements that will exclude U.S. goods from some of the world's major markets. And Peterson is concerned that the nation may not be able to pay for the massive imports of raw materials and fuel supplies that it will require in the not-so-distant future.

At bottom, however, Mr. Nixon's men see the need to compete as a political imperative. Without a solid source of income from trade, the U.S. might not be able to continue both its corporate investment overseas and its vast military expenditures all over the world—a combination that accounted for an $11.5 billion drain in the U.S. balance of payments last year. "If you're in a competitive decline, you can't go on splashing out that sort of money," warned one British economist recently, and the Administration clearly agrees. When friends ask CIA director Richard Helms whether he worries more about potential slippage in the American diplomatic or military positions, he answers: "I worry more about our economic position. If we can't hack it economically, we're not going to hack it any way." And Peterson reminded NEWSWEEK's Rich Thomas recently: "It is hard for any country without economic strength to have any political influence."

For all these alarms, it is far from clear that the U.S. is in any long-term trading trouble at all—and there is no lack of optimists to proclaim their faith. "I really feel there are lots of opportunities," says William P. Doolittle, vice president of Hewlett-Packard Co. in Palo Alto, Calif. "It's just up to American industry to accept the challenges. We haven't got a chance if we sit back and cry and say the other fellow has an advantage."

In this view, most of the deterioration of the American position came during the late 1960s—mainly because of the economic effects of the Vietnam war. The rapid escalation of 1965 overheated the economy, producing a burst of domestic demand and a steep rise in U.S. imports. And the wartime inflation coincided with a slowdown in other major countries that cut into the demand for U.S. exports, exaggerated the swing in the trade balance and kept a lid on wage demands by overseas workers. The impact of all this on U.S. labor costs was startling: while labor cost per unit of output had actually declined in the first half of the decade, it soared by 21 per cent in the next five years (chart, below), raising prices of U.S. products on the world's markets and paving the path for new waves of foreign imports.



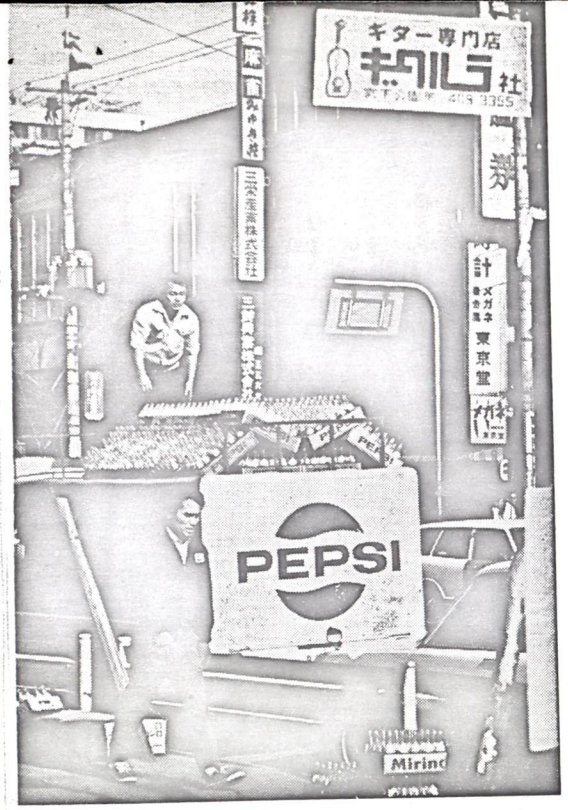

Hopefully, that burst of inflation is being checked by Mr. Nixon's wage and price controls—and if so, the normal pattern is that the U.S. has always run a slower rate of inflation than other major countries. Indeed, there are signs that the past is already reasserting itself. In Europe last year, unit labor costs rose from 6 per cent in France to 14.5 per cent in Italy, compared with only 2.5 per cent in the U.S., and German manufacturers have had to raise prices four times in the last two years just to keep up with rising wages. Ironically, cries are now being heard within Europe that the Europeans are pricing themselves out of world markets.

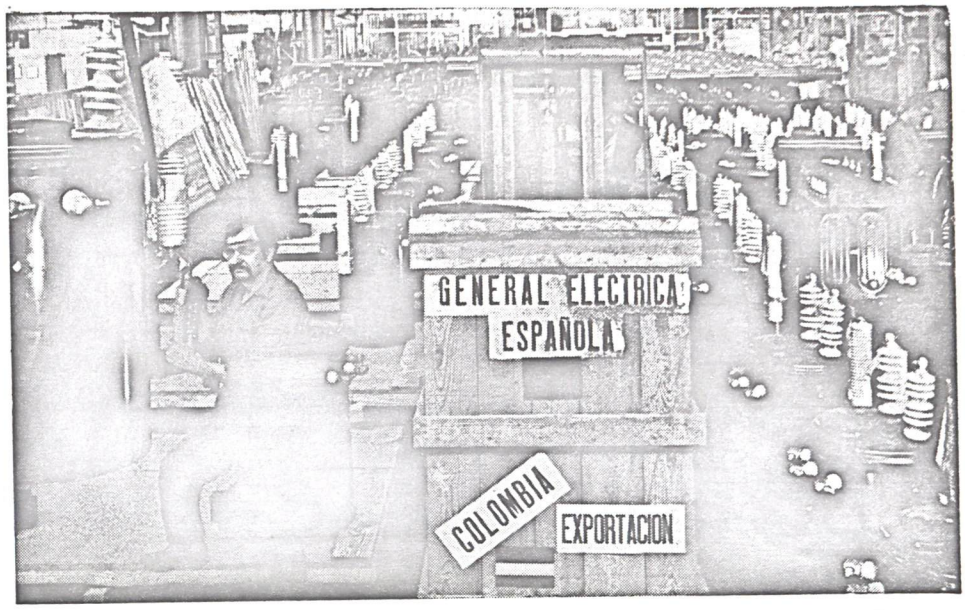
### The Blessings of Going Broke

In large part, the improving U.S. outlook reflects the effects of last year's devaluation—a move that makes U.S. exports cheaper in terms of foreign currencies at the same time it raises the dollar price of foreign goods on the U.S. market. Historically, it takes two to three years for a devaluation to have its full effect on trade. But U.S. export orders have already shown a decided rise. American companies have just edged out Japanese competitors for a power-generating contract in Guam, and in the Ivory Coast, U.S. interests outbid Japanese contractors three weeks ago to build a $63 million sugar-cane development project. Japanese television manufacturers say that U.S. demand for their products is declining because of their higher prices, and national forecasts indicate that European export growth will nose downward in 1972.

The narrowing gap in costs has also persuaded a leading Swiss company to consider manufacturing large electrical generators in the U.S., and American officials in Europe report a sharp upswing in inquiries about opportunities for foreigners to invest in the U.S. And in a startling reversal of recent history, American officials in Tokyo even see a market there for American consumer goods such as recreation equipment and kitchen appliances. Says one U.S. aide: "When you take a visiting American businessman through a department store here, his eyes light up when he sees some of the price tags." "The only problem," adds a Japanese economist, "is trying to inter-

(Continued on Page 66)




**The multinational corporations: More investments, fewer exports?**

*(Continued from Page 64)*

est these American firms in exporting."

The benefits of devaluation, however, are only one reason for optimism about long-term U.S. trading prospects. In truth, the U.S. has never competed primarily on prices, relying instead on unique products, quality controls and advanced technology to sell goods. And while there are signs that the technological lead is dwindling, there are still dozens of areas, from agriculture to nuclear generating plants, where the U.S. remains supreme. Indeed, U.S. technicians are mounting successful counterattacks to recapture lost markets. Several years ago, the Japanese seized upon U.S. transistor technology and used it to dominate the market in electronic calculators. But this month a small California company, Commodore Business Machines, will begin marketing a desktop calculator in Tokyo that undercuts Sony's price for a comparable model. And Hewlett-Packard's new battery-powered HP-35 pocket calculator, priced at $395 and built around miniaturized integrated circuits, is designed to compete with a desktop Japanese model priced at $1,500.

The U.S. also has a strong lead in the exporting of services, from banking and accounting to food handling, franchising and management consulting. And although these "invisible" exports don't show up on the usual trade-balance figures, they can be expected to grow increasingly important as the U.S. economy becomes less focused on physical production and more attuned to services.

In fact, the trend to service exporting may well be the U.S. path to long-term success. The trade balance itself is important largely by hallowed tradition, and a surplus there is useful mainly to offset red ink in other accounts. Barring a mindless return to mercantilism by all the world's nations, nobody really wants to pile up ever-increasing surpluses at the expense of others. The goal for all is a rough equilibrium in each nation's total balance of payments. And as many economists now see it, the U.S. is in the process of becoming a "mature creditor" nation that can finance chronic deficits in trade with its invisible exports of services and the dividends it gets from overseas investments. The U.S. is already earning more than $7 billion a year in investment income, and by 1975 this sum may grow to $17 billion in dividends, fees and royalties. Other nations argue that they will need to sell more than they buy from the U.S. if they are going to be able to pay that bill.

### Making Less, Enjoying It More

Although the trend implies a decline in many U.S. manufacturing industries, a number of economists argue that it will actually result in more jobs in higher-paying, more satisfying high-technology areas and in the services. "Of everything we consume," says economist Lawrence Krause of the Brookings Institution, "physical products are going to be a declining portion, imports or not." And in this view, it would be inefficient folly to spend U.S. money to subsidize the continued production of something that other nations could produce more cheaply. As Princeton economist William Bransen puts it, recalling the recent textile agreements setting "voluntary" quotas on imports from the Far East: "I hate to see our relations with Japan endangered to save an industry that ought to be phased out anyway."

But if this is the trend of the future, it is bound to be a long time ripening. In the real world, such theoretical truths tend to make slow headway against the realities of a domestic textile lobby, the strategic needs of the Defense Department and the shifting alliances of Presidential politics. Moreover, there is a nest of very real and intertwined uncertainties that makes forecasting more than usually hazardous. Until these questions are answered, it would be rash indeed to ignore the downward drift of the trade balance and assume that everything will somehow come out all right. The main unknowns:

■ **Trade barriers.** Although the U.S. probably has more tariffs, quotas and non-tariff barriers on industrial products than the Common Market has, the Administration complains that the European Economic Community's agricultural policy has resulted in a loss of $200 million to $400 million each year in U.S. agricultural exports. And Washington figures that the 1965 U.S.-Canadian auto agreement, which contains a number of "safeguards" to prevent Canadians from buying American-made cars, has turned a U.S. auto-trade surplus of $562.8 million in 1964 into an estimated deficit of $300 million in 1971. Even more irritating is the vast complex of protectionist devices surrounding Japan, which are especially rigged against imports of manufactured goods. Unless such trade barriers are lowered, they will continue to distort the world's trade figures—but the major nations have only recently agreed even to discuss the issue.

■ **Multinational corporations.** In the past ten years, major American corporations have focused less on exports than on building plants and producing goods overseas. Between 1960 and 1970, for example, the value of American investments abroad rose from $32 billion to $78 billion, and almost 3,600 American companies now have at least one plant overseas. According to AFL-CIO chief economist Nat Goldfinger, fully 25 per cent of all U.S. trade today consists not of transactions between a U.S. company and foreign nationals but transfers between divisions of these multinational corporations—with the type of goods and their

prices determined by the company's internal needs and tax considerations, rather than by the dictates of international competition.

The largest multinationals have recently publicized a torrent of studies, attempting to head off controls by proving that their investments actually stimulate American exports, but the labor unions and many economists are convinced that U.S. manufacturers abroad not only displace exports but export jobs as well. Until more is known about how multinational investment influences trade and productivity, long-range policy can't be set.

■ **Productivity trends.** Before the dollar devaluation, American workers still turned out at least 20 per cent more goods and services per man-hour than workers in other leading nations. But that gap had already narrowed sharply during the late 1960s. Some analysts argue that the relative decline was only a temporary result of the business cycle, as U.S. companies overinvested during the Vietnam boom and allowed their work force to swell and sag. They point out that productivity registered a strong 3.6 per cent increase last year and is expected to show another big advance as economic recovery continues in 1972. But pessimists fear that more basic structural trends are at work, reflecting a decline in high-productivity jobs and a new lack of will to work hard and compete (box, page 65).

■ **The technology gap.** Historically, U.S. manufacturers have competed successfully against cheaper foreign goods only by maintaining a constant flow of new, technologically advanced products, from the sewing machine to the computer. As Prof. Ray Vernon of Harvard has pointed out, America's trade problems center in older industries that have lost their innovative drive, such as clothing and steel, or in products like vitamins and transistors in which the U.S. has lost a technological advantage to foreign imitators. Yet he and many others see evidence that the time lag between the introduction of a new product and its diffusion to manufacturers around the world—the period in which innovators can exploit their lead—is growing shorter. "When I was in business in the early 1950s," an American official in London said recently, "we used to allow five years before the Europeans would catch us up. By 1963 it was about two years and now it might be less than one year in some cases."

Even worse, some experts believe that the traditional U.S. lead in advanced technology may be eroding. To be sure, the U.S. has spent hundreds of billions of dollars on research and development over the past twenty years, and total R & D expenditure today is close to $30 billion a year—three times that of Western Europe and eight times that of Japan. But the U.S. may be getting too little bang for its buck. Many research dollars, and most of the skilled manpower, have been devoured by the military for research with little practical application. And civilian R & D, as a percentage of GNP, lagged behind efforts of Western Europe and Japan in the last decade.

Given all these worrisome unknowns, the dominant forces within the Administration have begun a major new drive to make sure that, whatever the ultimate answers, the U.S. will not fritter away its economic muscle. And entirely apart from the trade issue, some of the steps they are taking will clearly be beneficial to the nation.

The Commerce Department, for example, is trying to anticipate the long-range economic future by projecting U.S. raw material and fuel requirements over the next fifteen years and planning ways to insure that those needs will be met. The Administration also plans to invest in the future with its "technology-enhancement" programs, which include $40 million in seed money for civilian research and development, a re-examination of U.S. patent policy to encourage

Photos by Wally McNamee—Newsweek

**Connally, Peterson: One in the eye for the State Department**

# WHO RUNS U.S. TRADE POLICY?

The question of whether the U.S. can compete not only divides the nation's experts but underlies a sharp new rift within the Administration itself. Under the aggressive leadership of John Connally, supported by Secretary of Commerce Peter G. Peterson, the Treasury Department is trying to gather all of the tangled reins of foreign economic policy into its own hands for the long, tough drive to restore America's competitive superiority. The principal object of Connally's wrath is the State Department, which he has publicly implied is a nest of "ponderousness" and "in some sectors, innocence," and the antagonism has grown so hot that Connally has told colleagues that he would like to cut State entirely out of the crucial trade and monetary talks that lie ahead.

Some coordination of the foreign economic policy apparatus is clearly necessary; Harald Malmgren, one of the two newly appointed U.S. trade negotiators, estimates that there are now at least 60 conflicting authorities in that field. But as State sees it, Connally's move is a naked power play. "Let's face it," says one senior diplomat, "Connally is trying to dominate U.S. foreign economic policy. He is a very strong man, but he has tunnel vision. Economic policy is just one aspect of over-all American relations abroad; it is not an end in itself." Connally's rough handling of traditional European allies has these officials particularly incensed. "All this talk that we've been taken in by our allies, all this behavior as if we're blind adversaries, is just unprofitable posturing. It's worse, because it gets everyone mad," snaps a former State official.

Still, Connally and Peterson insist that State is soft on trade issues. One high Administration source close to Commerce recalls that some of State's commercial attachés, asked to send in detailed reasons why U.S. industry was not selling more to their countries, sent elaborate explanations and defenses of all the foreigners' nontariff barriers. "You know in your heart that the State Department is on your side," he comments, "but sometimes you just have to wonder."

**Wrangle:** At the moment, the focus of the battle is the Commerce Department's effort to assume new authority over the commercial attachés in U.S. embassies abroad. This wrangle has now gone to a special committee headed by President Nixon himself, and it seems that State will probably retain nominal control of the attachés, although they will report directly and continuously to Peterson as well as to State.

On the negotiating front, Connally has succeeded in bringing both trade and monetary policy under his own command. Temporarily at least, the State Department is maintaining a discreetly low profile, and even such a notable bureaucratic infighter as Henry Kissinger has agreed that Connally should carry the ball in economic negotiations. Barring an upset, he will get his way.

## WALL STREET

# MAKING IT OVERSEAS

BY CLEM MORGELLO

If American industry is becoming less competitive, can investors capitalize on that trend?

It may sound unpatriotic, but there are numerous ways it can be done—and, in fact, is being done—although they present problems of their own.

One obvious way is to buy the stock of a company that is giving its U.S. competitors a hard time. And, judged by American standards, there are tempting bargains overseas. Focusing on Japan, cause of a great portion of U.S. trade woes, Arthur Lipper Corp. comes up with these interesting comparisons: Eastman Kodak's earnings have risen 21 per cent during the past five years and its stock sells for 45 times earnings, but Fuji Photo's profits have jumped 199 per cent and it sells for only ten times earnings; Caterpillar's net has gone down 15 per cent and it sells at 24 times earnings vs. a 48 per cent gain in net and eleven times earnings for Komatsu, a comparable Japanese firm; and General Motors, with an 8 per cent profits gain in five years, sells at thirteen times earnings while Toyota, with a 160 per cent rise in profits, sells at an only slightly higher fourteen times earnings.

### LACK OF INFORMATION

Some foreign stocks are available in the U.S.—listed on the exchanges or sold over-the-counter—but investors must buy them overseas in most cases. Either way, notes Dimitri Villard of Havenfield Corp., "American investors won't get the same degree of information that they're used to in this country." This handicap is compounded if the trading is done in overseas markets, Villard adds, because they aren't nearly as liquid as the U.S. market and they are more vulnerable to sharp declines on bad news. In addition, notes Alexander Schwartz of Bache & Co., an American who buys a foreign stock pays a price penalty. If he buys it from a foreigner, he must pay the interest-equalization tax of a bit more than 11 per cent. And if he buys it from an American owner, he pays a premium price. Last week, for example, American-owned shares of Matsushita closed at $27.50 on the New York Stock Exchange while foreign-owned shares went for only $25.

If these problems deter an investor, there's another tack that he can take: buy the stock in American firms that have import and distribution agreements with foreign companies. For example, Amco Industries is the exclusive distributor of Toyota cars and trucks in fourteen states; Geon Industries distributes replacement parts for 95 per cent of the foreign cars in the U.S. and Telecor, Inc., has exclusive marketing rights to Panasonic products in twelve states. Many of these stocks have performed very well. For example, Telecor is selling at more than three times its 1970 low and Amco is selling for almost five times its 1970 low.

### RENEWAL PROBLEM

But there's a problem, here, too, notes Leo Lancer of Bruns, Nordeman: distribution contracts expire, and there's always the chance that they may not be renewed. Lancer cites the case of Superscope, a onetime hot stock that is sole U.S. distributor for much of the Sony consumer electronics line (but not its TV sets). Superscope took on the Sony line when it was little known in the U.S., but it's now tangled up in lawsuits with Sony, raising doubt that its distribution agreement will be renewed before it expires at the end of 1974.

There are still other ways to try to capitalize on the competitive gains and faster growth rates of foreign companies. The Lipper Corp.'s Arthur Lipper III suggests "the portfolio route"—investing in mutual funds or closed-end funds that hold foreign securities. There are many mutual funds in Japan, his area of prime interest, but Lipper is not impressed with their performance. So he suggests funds based outside Japan—such as this country's Japan Fund and Canada's CSM Fund. On still another tack, Maurits Edersheim of Burnham & Co. believes "multinational companies are the way to go . . . the best way to play growth abroad." Firms such as IBM, National Cash Register and CPC International have, indeed, taken advantage of overseas expansion and now receive 50 per cent or more of their net from abroad.

The ultimate insult, of course, is to try to capitalize on the growing uncompetitiveness of U.S. industry by selling short the stock of a company that is suffering from foreign competition. But luckily for such companies, short selling goes against the grain of most investors.

**THE WEEK'S ACTION** — APRIL 10-14

| | Close | Point change |
|---|---|---|
| DOW JONES Industrials | 967.72 | +5.12 |
| NYSE Composite | 61.28 | +.20 |
| AMEX | 28.53 | +.22 |
| NASDAQ Composite | 133.88 | +2.08 |

Volume in millions of shares

NYSE 99.5 AMEX 31.4 NASDAQ 55.2

private exploitation of government-owned patents and a search for foreign patents that could be adapted here.

Commerce has also embarked on a massive export-promotion drive, aimed primarily at the small and medium-sized U.S. companies that have never been export-minded. Overseas sales promotions have intensified, and Peterson has launched an intensive research program to produce solid information as to which American goods have potential export markets. The Administration has also increased the lending authority of the Export-Import Bank, and according to Harold Scott, Assistant Commerce Secretary for International Trade, the U.S. can now match "the commercial credit provided by our major competitors."

### The Controversial Counterattack

To hold the outright protectionists at bay, the government has also revitalized its enforcement of the Anti-Dumping Act, designed to prohibit foreign manufacturers from selling their products at lower prices here than in their home markets. And to soften the blow of import competition, the Nixon group is preparing a long-overdue bill that would make it easier for injured communities, companies and workers to receive adjustment assistance, such as job retraining or aid in obtaining a new industry to fill a vacant plant.

So far, so good. But other weapons in the Administration's arsenal are far more controversial, and could wind up being costlier than any C-5A. Last year's investment tax credit, the acceleration of depreciation and a new law that allows companies to defer taxes on their export income will cost the Treasury an estimated $6.2 billion in lost revenues, with no assurance at all that the measures will actually increase either exports or productivity. Many experts believe that such programs simply amount to enormous giveaways, draining public funds that are badly needed for pressing domestic problems. "What we are doing is economically wasteful," says economist Lawrence Krause. "This crazy export-promotion business can only benefit the shipping business."

Moreover, the Administration's insistence on lumping together negotiations on trade liberalization and world monetary reform, with the aim of using the reform issue to extract more trade concessions, has isolated the U.S. from all of its major allies. Last week, for example, Under Secretary of the Treasury Paul Volcker was bluntly told in Tokyo that the Japanese and Europeans agree that the trade talks should be conducted separately. Nonetheless, Connally is holding firm. "We did all right with parities last fall but we did not do well in the other areas," says one of his aides. "Ultimately, we simply have to have an over-all forum in which trade, monetary reform, aid and defense are all considered as one."

Government spokesmen defend these

controversial tactics by insisting that "the law of the marketplace is the law of the jungle," as Scott puts it. "It doesn't do any good for us to say to our competitors, 'Stop cutting your prices'," he says. "While we talk, they will go on doing all the business. We have to become idiots like them, and give tax concessions on exports like they do. At some point, they may be willing to agree that we're both idiots and then agree to cut it out."

"That is just no sensible way to run international affairs and policy," replies Krause. "The U.S. has to provide the leadership away from this nonsense, not toward it." Economic nationalism, as Krause and others see it, can only injure the world's consumers; for the U.S. to take up that cudgel now would be to fight a futile delaying action against its own economic trends. If the nation is indeed becoming a "mature creditor country," it will more than ever need a cooperative world with free flows of goods and capital.

In logic and sense, of course, free trade has been the best possible answer ever since Adam Smith's day—and it has always been shunted aside for military or diplomatic reasons. Its time may be coming, but it will be hard for any U.S. Government to divorce the economics of trade from the Pentagon's requirements or, say, from the power of Arab nations to shut off the oil faucet if they don't like U.S. policy in the Middle East. In the meantime, whether the U.S. can compete will continue to depend on a host of unpredictable factors, ranging from the mood of Japanese bureaucrats to the price of corn in Iowa—and the only real way to measure the net total lies in the marketplace. "Are we competitive? Only the market can tell you that," says a former State Department official. "We've just had a big exchange-rate change; now let's see what the market tells us." Adam Smith himself couldn't have said it better.

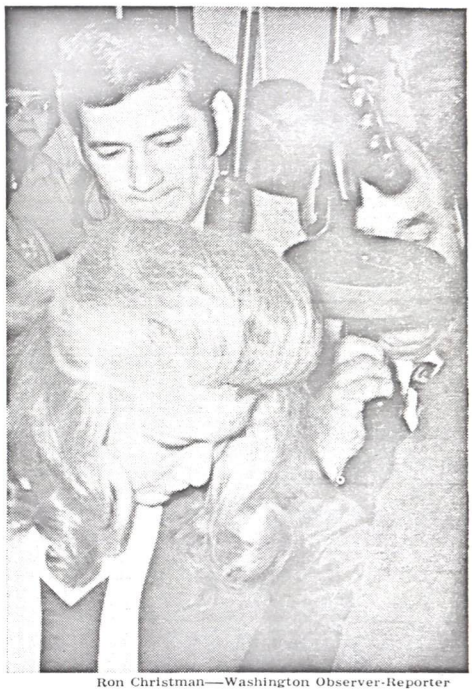
## LABOR:

## Again, the Coal Murders

Who put up the money for the killing of Jock Yablonski?

More than two years after the insurgent United Mine Workers leader and his wife and daughter were murdered in their beds and almost a year after a scruffy small-time hood confessed to the crime, the question still hung over the Appalachian coal fields. For Claude Vealey's confession, in addition to implicating two other gunmen, Paul Gilly and Aubran Martin, had told of a $5,200 payoff for the slaying and hinted vaguely that it came from a man named "Tony." Yablonski had been running to oust W.A. (Tony) Boyle from the union's presidency, but the connection stopped there —and Boyle indignantly denied that he had had anything to do with the crime or the killers.

The next step came with dramatic suddenness last week. In a decaying, 100-year-old courthouse in Washington, Pa., a tiny coal town only a few miles from the Yablonskis' old stone farmhouse in Clarksville, Paul Gilly's wife, Annette, pleaded guilty to charges that she had conspired in the slayings. A day later, FBI agents arrested William J. Prater, 52, a field representative for the UMW's District 19, on charges in connection with the killings. But it wasn't until the following day that special prosecutor Richard Sprague set off the biggest stick of dynamite in the case thus far by producing a sworn, 22-page statement, given to FBI agents by Annette Gilly during



Ron Christman—Washington Observer-Reporter

**Mrs. Gilly: A line to 'the big man'**

nine days of interrogation earlier this month, that linked the murder of Yablonski to still higher levels within the UMW hierarchy—possibly to Boyle himself. "My father [Silous Huddleston, a former minor UMW official who goes on trial this week as a conspirator in the affair] told me that the Yablonski murder had the approval of the 'big man'," the hard-faced, 32-year-old blonde said in her statement to the FBI. "To me, that meant Tony Boyle, president, United Mine Workers."

**Final Link?** Much of Annette Gilly's statement was based on hearsay from her father and husband, and the union high command, meeting in New York, promptly denied her allegations. But investigators said they had given Mrs. Gilly a lie-detector test on virtually every line of her statement, and she apparently passed with flying colors. For turning state's evidence, she has been promised immunity from the electric chair—a tactic that Sprague hopes to pursue along the chain of conspiracy until he finds the final link. "The death penalty does have some effect," he said wryly.

In her statement, read in open court

# TOO MANY U.S. WORKERS NO LONGER GIVE A DAMN

In assessing America's faltering competitive stance in the world, one disturbing conclusion stands out: a prime reason for the U.S. troubles is that all too many American workers—particularly young ones, who are supposed to be bubbling with energy and ambition—no longer give a damn. Whether they are overworked or overprivileged, pampered or oppressed, dehumanized by the demands of their jobs or just plain bored —whatever the reason—the evidence is strong that the traditional work ethic of the U.S. is showing signs of senility.

This worker malaise has resulted in absenteeism rates as high as 20 per cent on Fridays and Mondays in some automobile plants, forcing management to rustle up part-time student help to keep the assembly lines going. Quality suffers and costs soar with inexperienced help —or due to outright sabotage by angry workers. Blue-collar workers are not the only ones affected; as just one example, until it took steps to correct the situation, McDonald Corp., the Chicago-based fast-food outfit, was experiencing a 100 per cent turnover in its office force every two years.

**Dropouts:** The problem traces to two main factors: a younger work force—25 per cent of which is under 25 years old—and the nature of work itself in a highly industrialized society. "It's mainly a problem of this younger worker," said Benjamin Aaron, director of the Institute of Industrial Relations at UCLA. "He doesn't want to work to get ahead; he wants to work to get enough money for a while and then he wants to drop out." Or, as Jerry Wurf, president of the American Federation of State, County and Municipal Employees, put it: "The Depression is something they learned about in a history class."

Once on the job, workers all too often find that, however good their wages and working conditions, work is a totally unsatisfying experience. "People my age don't take much pride in this work," says Victoria Bowker, a 27-year-old blueprinter at Lockheed Aircraft. "In the old days, you used to start a job and you used to finish it. Now things have become so diversified you can't see your product; you start something and it goes through 50 million other hands before it's completed." Mike Eckert, a longtime Lockheed employee twice Miss Bowker's age, agrees that things have changed. "Today's management doesn't have any compassion for the person that's down the line," he says. "They treat you like a machine . . . and you can't treat human nature that way." And when a worker begins feeling like a machine, he'll probably resort to one of two alternatives: goldbrick, or start looking for another job. "I'll tell you how attitudes are," UAW vice president Ken Bannon summed up last week. "You will find people who say they would rather work in cleanup and take a cut of 15 cents an hour than work the assembly line. At least on cleanup you have the choice of sweeping the pile in the corner or sweeping the pile by the post."

Alan Dunn; © 1968 The New Yorker Magazine, Inc.

**Your office won't take 'the general malaise' as an excuse**

College students rarely face such unpleasant alternatives—and yet many of them, too, are thumbing their noses at traditional work values. "You talk to almost any graduating senior in college today, and one of the first things he says to you is that he doesn't want any of those 9-to-5 jobs," says UCLA's Aaron. "They're not afraid to work; if they get enthusiastic about something they'll work like hell. But there's this feeling that the old way just isn't the best way any more." "There is no nationwide pattern on campus," according to Richard Gummere, a Columbia University counselor. "There are as many conventional middle-class types who are just as interested in upward mobility as there were ten, 50 or 100 years ago. It's simply more fashionable to challenge it today." But a survey for the John D. Rockefeller 3rd Foundation recently turned up the fact that only 39 per cent of a national sampling of students believe that "hard work will always pay off," compared with 69 per cent who felt that way just four years ago. Moreover, only 36 per cent of the students said they wouldn't mind being bossed around on the job; in 1968, 56 per cent said they were willing to submit to authority.

What's to be done? "I think the key is involvement in work," says Arnold Judson, an organizational behavior specialist with Arthur D. Little, Inc. "This ranges from keeping the worker informed of what's going on to actual participation in decision making. It's a lot of crap to say that workers are slothful and indifferent today. It's just the opposite; they want to do satisfying work. Why otherwise would you see people going into craftwork and learning skills that involve pride in workmanship?"

**Blues Beaters:** But such an approach cannot be the whole answer in mass-production industries where, after all, it is impossible to stay competitive without mass-production methods. Yet even here efforts are being made to wipe out the blue-collar blues. Ford Motor, for example, is experimenting with a "team" approach to building some auto components with workers moving along the line and handling the project from start to finish. Chrysler Corp. has a similar job-enrichment program under way. Workers in one plant were allowed to run their own department while the foreman was on vacation; at another location workers themselves test-drove cars they had built. In the white-collar area, Chicago's McDonald Corp. has sharply slashed its turnover rate since moving into its ultramodern new headquarters in Oak Brook, Ill., which features such fringe comforts as a "think tank" where harassed executives (or their secretaries) can take time off the job to relax on 700-gallon water beds.

Such innovations are difficult to make, if only because managers hate to give up the illusion that they control the workers under them. But as General Motors learned in its automated plant at Lordstown, Ohio, the benefits of efficiency can vanish quickly in strike losses when the workers are unhappy. "In terms of international competition," sums up U.S. Labor Department manpower-expert Neal Herrick, "we've ridden technology as far as it will carry us. Now we need to apply some more human methods of management if we are to improve our productivity."

DISCUSSION DRAFT

May 5, 1971

# ON INCREASING NATIONAL PRODUCTIVITY THROUGH EDUCATIONAL AND TECHNOLOGICAL CHANGE

REPORT BY

SUB PANEL ON RESEARCH AND EDUCATION
SCIENCE AND TECHNOLOGY POLICY PANEL
PRESIDENT'S SCIENCE ADVISORY COMMITTEE

Members: Michael Boretsky
Arthur M. Bueche, Chairman
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Michael Ference
John Kendrick
*Richard R. Nelson
Chauncey G. Starr
Edward F. Teller

OST Representative: Carl H. Savit

*Resigned March 5, 1971

## Introduction

It is now generally accepted among economists who study influences on the rate of advance of national productivity in the U.S. and in other countries that among the significant factors are the rate at which educational attainments of the work force increase, and the rate at which technological change is adopted by the manufacturing and services sectors of the economy, and by government. While the absolute values of the influence of these two factors may be the present subject of some debate in economic circles, and while the techniques of study used by various investigators may differ significantly, nevertheless there is general agreement that these two factors are qualitatively important.*

While this report was in preparation, a document was issued by the National Science Foundation [ see Lederman (1971)] containing four research papers commissioned by the Foundation on the "..... relationship between research and development and economic growth/productivity." The major and overriding conclusions are so relevant to the basic premises of the present paper as to merit their being briefly paraphrased here. These are:

(a) The nature of the relationship between R&D and productivity is not well understood, but all available evidence indicates R&D is an important factor whose contribution is positive, significant and high.

* There is a considerable current literature dealing with the evidence for the effect of work force educational attainment and technological change on the rate of productivity advance. The reader is referred to the published works of those members of this Sub Panel professionally engaged in these studies - namely, Boretsky, Denison, Kendrick and Nelson, the National Science Foundation study referred to in the next paragraph, as well as to relevant work by such investigators as Block, Fabricant, Fellner, Griliches, Kiesing, Mansfield, Mossell, Salter, Stewart, Shef and Solow (see bibliography at end of paper).

(b) Differences concerning the adequacy of present research findings affect only the degree of confidence in estimates but not the near-unanimity on the direction and rough magnitude of the effect of R&D on productivity advance.

(c) There is good reason to expect that well-diversified incremental R&D expenditures in the civilian sector will result in high pay-offs in economic growth/productivity.

(d) Not enough research attention has been paid to the relationship between R&D and productivity advance.

With the caution about the lack of general agreement on absolute values, it may be noted that, for a period of many decades, at least a tenth of the growth of national income per person employed has been estimated as being the result of improvements in educational attainment, while at least one-third and perhaps much more has been estimated as the result of the introduction and adoption of technological change and improved technical management. The rate of advance of productivity has slowed significantly since 1966 [Kendrick (1971)]. Among the reasons suggested for this decline, which has exceeded that expected on a cyclic basis, are diminished support of research and development, dilution of the labor force due to the inclusion of less well-trained people, and the effects of new trends and attitudes in society toward growth and productivity.

As we have said, one of the clear and significant contributions to productivity advance is improvement in the educational attainment and job

skills of the work force. Clearly the more nearly increased educational attainment matches the functional demands of jobs, the greater the productivity improvement. However, it is also clear that there are no quantitative measures of the productivity of education itself; such measures will require at the very least that the purposes and motivation of the educational process are defined. In this report we make some recommendations concerning changes in education directed specifically toward the goal of productivity growth, but, and perhaps equally important, we urge that educational goals be defined and that measurement techniques be developed for evaluating the efficiency and performance of educational systems with respect to defined goals. While such measures may be difficult to develop and not analytically definable, nevertheless it is essential that ways be found of determining if and when the goals of education are being achieved more efficiently. In addition to measures of educational output, we make some recommendations for providing added incentives for the educational system. Hopefully, these will motivate development of increased educational productivity, just as the profit motive is important in motivating individual businesses to improve their productivity. Of our specific recommendations in the area of education, we suggest the main ones to be establishing proper soci[illegible]prestige and recognition for all vocations, and developing open-ende[illegible] continuing education, both for the more mature members of the working force and also for those whose previous educational exposure did not provide a command of basic skills. Finally, it must surely be so that the problem of increasing educational attainment and skills will be eased by any amelioration in the "culture of poverty."

The problems with stimulating technological change are somewhat different. There is at present no real dearth of new knowledge being generated --- knowledge which will lead to new or improved technology in the long run. At least until very recently a significant driving force for technological change in the private sector has been the urgent needs of space and military development programs. The commercial spin-offs from these programs range from semiconductor technology, integrated circuits and advanced computer capabilities to improved communications and transport aircraft. Certainly the rate of supply of new knowledge must be a matter of concern in the future. But of more immediate interest is the continued growth of technological applications in government and in the manufacturing and services sectors to increase the growth of productivity. Consequently our principal recommendations for improving the contribution of technology to productivity advance lie in the area of removing barriers to and stimulating the rapid diffusion and utilization of technological changes which are recognized as being desirable or at the very least not harmful for society. Indicators of such advances will be cost reductions in existing goods and services, the appearance of new products, new processes, new services, and additional capital investment in plant and machinery.

Action Items in Education to Promote Productivity Growth

There are two principal considerations behind recommendations in the field of education to increase the growth rate of national productivity. One is recognition of the fact that increasing the educational attainment and on-the-job skills of the working force historically has promoted the growth

of productivity significantly and can be expected to continue to do so. The other is that education is in itself a major American enterprise, and therefore changes should be sought which will stimulate increased productivity in that enterprise. In suggesting changes we must recognize that in our society education is in fact the output of a tremendous multiplicity of school systems which are primarily responsive to local pressures and which, therefore, do not necessarily operate efficiently and with properly motivated educational processes. (One may, for example, question the motivation, common in suburban high schools, for preparing such a high fraction of students for college entrance.) We must also recognize that our educational system serves a number of purposes, including instilling in the entering student basic skills in communication and citizenship and generally preparing students for entry into the work force, providing career options for students, providing occupational, pre-professional and professional training, providing for continuing education and the increase of occupational skills, generating new knowledge through research and, perhaps inadvertently, delaying the flow of people into the work force. With these things in mind we make the following recommendations:

1. We support the concept and implementation of a National Institute of Education reporting to the U.S. Commissioner of Education, and recommend that it and the U.S. Office of Education:

   A. Support the development of definitions of educational goals and of measures of educational efficiency, performance, and productivity in the achievement of those goals.

B. Support research and development programs directed toward increasing the performance and productivity of our educational systems and the efficiency of educational manpower through changes in organization and administration, and through new technology and educational concepts, with emphasis on programs such as open schools which will increase the acquisition of basic skills as well as recognize and encourage the development of excellence.

C. Take the responsibility for the prompt dissemination, implementation and adoption of measurement techniques, new educational technology and concepts, and other results of studies on the educational system. Rapid response to societal changes and innovation are very much needed. (Such diverse concepts as open schools, open-ended schools, the on-campus TV system at McGill University, The University of the Air, and The Open University of the United Kingdom should become more widely understood and adopted, at least experimentally, in our educational system.)

2. The U.S. Office of Education should support programs for updating educational attainment and job skills to continuously improve the work force.

3. The Department of Labor, in collaboration with the Office of Education, the National Science Foundation and other agencies with relevant interests, should take the responsibility for establishing

and updating occupational supply and demand data, particularly in those fields where there is a "pipeline" effect; that is, where there is a significant time lag between the onset of specialized education and entry into the working force. Such data are basic to national planning in education.

4. The Department of Labor and other involved agencies should explore with representatives of labor the feasibility of removing barriers to upward job mobility which now exist in the form of various work and seniority rules [Matthews (1970, Venn (1970) ]. Suggested changes include, first, relating the pay of a worker on a given job to whether and how satisfactorily he completes a stage of relevant education or training as well as on-the-job performance; and, second, calculating seniority as a basis for promotion in terms of both time on the job and also educational or skill attainment.

5. We strongly support the recommendations of the Carnegie Commission (1971) concerning open-ended educational systems with their implication for continuing education. Continuing education should provide remedial training for those whose previous educational exposure failed to provide basic skills, opportunities for the updating of education and skills rendered obsolete by advances in knowledge, broadened career training choices for present or anticipated employment, and for employment after retirement (coming earlier and earlier) and, finally, optional courses for cultural enrichment. The efficacy with which these are provided should be enhanced by

the open-ended educational concept, which would permit students to enter or leave essentially at their convenience and, further, would permit student progress to be tied to real achievement rather than time in residence or other arbitrary standards. This concept should be particularly useful with respect to job-related education and training, and ought to mitigate against the tendency of present school systems to concentrate on preparation for the next level of the system.

6. Many who now go through college would in the end be happier and more productive had they chosen careers in the "practical service" or paraprofessional occupations requiring either less training or a different and more practically-oriented training. They do not choose these options because of the relatively lower "prestige" assigned to them by society. To alleviate this, the U.S. Department of Labor and Office of Education should develop campaigns through the various media for upgrading the public image of all career options. In particular the "practical service" and paraprofessional occupations should be identified as productive vocations with reasonable rewards which should be judged in terms of the skill with which they are performed, rather than being denigrated with respect to occupations requiring more formal and more abstract training. (For example: the intrinsic dignity and perhaps some of the rewards in our society of the career of a skilled auto mechanic should more nearly equal that of the automotive engineer than is now the case.) It is recognized that the major need for such upgrading, and one

which will be most difficult to accomplish, is at the family level, where the relative worth of various careers frequently is instilled in children at an early age. A possible added benefit of success in this upgrading endeavor might well be a change in the present value system which forces a number of young people into post-secondary education which they find neither relevant nor meaningful, and whose presence on campuses therefore tends to be counter-productive with respect to the goals of such education.

An avenue for increasing the "service" career prestige and quality may well be licensing and certification, such as is now done by appropriate governmental agencies for careers involving public risk (electrician, plumber, practical nurse, etc.): New licensing and certification procedures must where possible emphasize upgrading rather than limitation of freedom of entry into these fields. Nor should barriers be raised against entering a second career option after experience in a first, whether by licensing and certification, or because of the public image of such changes. Another avenue for enhancing prestige might be periodic awards by unions, trade organizations, or governmental agencies as appropriate for excellence in performance in service occupations.

7. The U.S. Office of Education should sponsor the development and testing of new concepts for career-oriented schools [cf. also Carnegie Commission Report (1971) ]. Such experiments should be clearly separated from or even outside the structure of existing

school systems, in which vocational and career training are frequently looked down upon as an alternative path for those who cannot succeed with the traditional academically-oriented curricula. Sponsorship and operation of such schools by unions, industry and trade associations should be explored, with the end view of removing this kind of training from existing schools.

8. To provide an incentive for increased educational productivity and quality at all levels of education, the U.S. Office of Education should support experiments in which increased choices of accredited educational institutions are made available by attaching the funding of education to the student. (The educational voucher concept, for example. See National Goals Research Staff Report, 1970.)

9. An expanded program of Federally-guaranteed loans should be developed -- loans to be available for education beyond the primary level, including continuing education, for all socio-economic classes, with repayment keyed to future income generally or reduced for persons going into vocations of critical national need. (An expansion of the recommendation of the National Goals Research Staff, 1970.)

10. Existing national programs of training and education for the urban disadvantaged are directed toward entry into the labor market or first jobs with meaningful pay, but have not provided for the continued growth of these members of the work force in skills, education, and social adjustment as required to meet increasing aspirations beyond the entry job and its immediate rewards. We recommend that the concepts of the Manpower Development and

Training Act of 1962, which was developed to offset structural unemployment, be extended to include on-the-job education and training and social adjustment of the urban disadvantaged after first meaningful entry into the work force. (For example, a frequent problem with first-job workers is that their home and neighborhood environment, i.e. the poverty culture in which they live, does not encourage the necessary personal disciplines incident to successful employment. Specific Federal assistance should be considered to provide appropriate alternative environments such as foster homes in such cases.) The need for redirection and expansion of programs for the urban disadvantaged is clear and urgent.

11. It is inevitable that shifting priorities and business cycles in America will cause local pockets of poor utilization of productive facilities and working force. The Manpower Development and Training Act of 1962 should be amended and strengthened so that the need for retraining at all levels is anticipated and provided not only for those actually unemployed but also for those furloughed for lack of work or employed in industries which are declining. Clearly such training should be oriented toward the functional demand of those jobs which are or will be available. Where need and justification exist, help should be provided for relocation of individuals in the working force.

12. We recommend that the National Science Foundation foster research and development in the social sciences directed toward understanding recent changes in the value systems held by society, the effects of

these changes on the advance of productivity, and developing remedies where such changes adversely affect productivity advance.

13. We submit that increased productivity at all levels of government would result from increased skills among managerial personnel. In particular we recommend that a significant factor in the career development of managers in government service be formal completion at appropriate times of courses in optimization theory, including decision making under uncertainty and management of resources. In addition, consideration should be given to a much-expanded program of management internship exchange between government and industry, so that individuals having management responsibilities in each sector may understand better the problems and motivations of the other sector. Finally, where appropriate, Federal agencies should consider setting up within their own organizations competitive teams attempting to reach the same goals by different means. Well-managed parallel competing programs in the industrial context frequently have led to shortened time-scales and optimal solutions.

Action Items to Accelerate Productivity Growth Through Technological Change

Our recommendations on steps to be taken to promote the growth of national income through the acceleration of technological change are based on the premise that major gains can be achieved by the successful application of the results of technology. Underlying this premise and the items recommended for action is the need for monitoring in a fairly detailed way the state of technological

health in the industrial and services sectors, as well as determining that particular technological changes are on the whole desirable for society. Such monitoring should be an on-going function of a Federal agency such as the Department of Commerce, the National Science Foundation, or the President's Office of Science and Technology. The following items are proposed with this in mind:

1. Federal agencies funding technological development should be encouraged:

   A. To accelerate technological development by risk sharing in the funding of very large development programs, programs of overriding national urgency, and programs in which delays are causing or may cause bottlenecks in the economy. Some of these high-yield programs are high risk, or are too large for single industrial concerns. However, when the development of a final marketable product is imminent, risk-sharing should be avoided. (Examples include the breeder reactor, fusion power, applications of superconductivity, environmental protection and pollution abatement, and advanced transportation concepts.)

   B. To increase support in non-agricultural industries composed of large numbers of small firms which characteristically exhibit low rates of productivity advance, such as construction and services. Firms in these industries should be encouraged to develop technological institutes, possible through their trade associations, which could receive Government funding on some kind of matching basis. (In developing such institutes, one

should understand the reasons for the lack of success in similar ventures in other countries. Examples of successful American cooperative institutes include the American Portland Cement Association and the American Gas Association.)

C. To favor support in the industrial sector which builds on existing strengths rather than attempting to rejuvenate weak industries. The leverage with given funding will be greater for those industries whose technologies are internationally competitive as compared to inefficient industries which lag considerably in technological development. (For example, Keesing (1966) found that where R&D intensity is high and the labor force good, exports are high, while industries with low R&D levels and with a second-rate labor force export little. Good technology stimulates a favorable trade balance and rate of productivity growth.)

D. To recognize the value of technological developments which lead to cost reductions and to reduced dependence on material resources other than American. (For example, the nuclear power program ultimately should lead to more abundant power at lower cost, with reduced dependence on overseas oil supplies. The substitution of titanium carbide for tungsten carbide in some tool applications has reduced dependence on overseas sources of tungsten and at the same time increased machining productivity.)

2. Federal regulatory policies for regulated industries, and for industries which operate where institutional or political barriers exist, should

be such as to encourage the appropriate direction and speed of technological development and risk taking. (For example, the mineral depletion allowance encouraged technological development and exploration in the oil industry; rate structures have led to research and development of the wrong kind in civil aviation, and caused faster-than-economic obsolescence of piston engine equipment. On the other hand, rate structure and overregulation appear to have stifled innovation in railroads, and to have discouraged exploration and technology in natural gas. Institutional and political barriers have delayed technological advances in such areas as utilizing the continental shelves, or developing power generation from thermal gradients in tropical oceans.)

3. Federal laws, particularly those in the antitrust area, should be examined to make sure that they do not inadvertently erect structural barriers to the organization and/or operation of industries which are focussing on difficult problems of national concern. Such focussing, which clearly must be done in public view, can lead to economies of scale and pooling of scarce technological skills and resources, and need not necessarily reduce competition in the market place. We suggest that the stimulation of domestic competition, which certainly in turn stimulates technological changes, should be joined by the explicitly recognized need to promote national productivity and to improve U.S. standing in international competition as criteria for antitrust considerations.

4. Independent research and development (IR&D) funds in the past have been provided as a part of Department of Defense contracts to enable contractors to carry out self-initiated programs with the goal of better future performance on DOD problems. A civilian equivalent of IR&D funding should be developed by other Federal agencies to fund programs in the private sector as a means of stimulating technological change; it may be necessary to focus on specific areas so as to fund those programs which are large enough to be viable.

5. We recommend that broad policy guidelines be set for all affected Federal agencies to promote the development and particularly the transfer of technology to and within industry. For example, the charter of AEC has enabled it to develop an excellent near-symbiotic relationship with the nuclear industry and to be successful in effecting technology transfer in that field. Agencies such as HUD and NIH, however, appear to have been considerably less successful in promoting technological change and technology transfer.

6. The Congress should alter its criteria for t[illegible]f and import quota adjustments so as to stimulate technological [illegible]velopment and improve productivity in American industry, and, at the same time, decrease the protection of inefficient industries which lag considerably in technological development. (One suggested course of action would be to announce the gradual removal of tariffs and import quotas over a five year period with the intention of giving non-competitive industries this time to adopt more efficient and technologically

advanced practices.) This trend toward free trade will, in the long run, be useful in increasing overall national productivity by improving the technological health of the industrial sector.

7. We recommend that the U.S. ratify the International Patent Treaty, and that the U.S. Patent Office establish standardized levels of invention meriting protection, relax the drive toward narrow patent breadth which stifles the desire to disclose, and reverse the trend toward discretization of patent claims. Continued improvement in U.S. patent policy will stimulate the diffusion of technology and consequent productivity growth.

8. We approve of the current plans of the Office of Management and Budget, the Civil Service Commission, and the General Accounting Office to expand programs of productivity measurement and analysis throughout Federal agencies.

9. Those Federal agencies concerned with management-labor relations should reduce the adverse effect on the advance of productivity of restrictive work rules and practices that retard innovation. It should be against public policy to permit restrictions on the introduction of technology into manufacturing or service industries, or to accept any hiring practices which require employing workers whose skills are not at the highest level among those available for employment.

R.A. Alpher:eg

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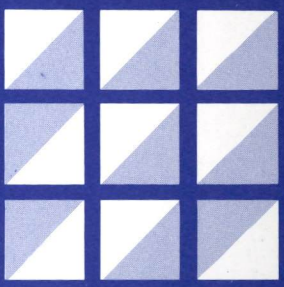
# First Annual Report of the NATIONAL COMMISSION ON PRODUCTIVITY



March 1972

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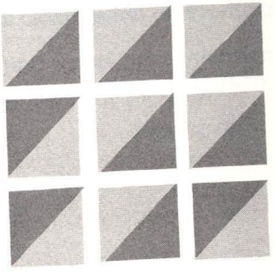

March 1972

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## Letter of Transmittal

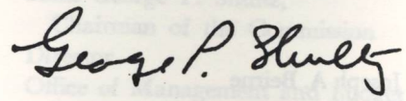
MARCH 1, 1972.

To the PRESIDENT AND THE CONGRESS OF THE UNITED STATES:

I have the honor to transmit herewith the first Annual Report of the National Commission on Productivity, pursuant to Public Law 92–210.

This first report covers the significant activities of the Commission for the 20-month period from July 1970 through February 1972.

(Signature)



GEORGE P. SHULTZ
*Chairman, National Commission on Productivity*

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*Government*

Hon. Beverly Briley
Mayor of Nashville

Hon. John B. Connally
Secretary of the Treasury

Hon. James D. Hodgson
Secretary of Labor

Hon. Virginia Knauer
Special Assistant to the President for Consumer Affairs

Hon. Arch A. Moore
Governor of West Virginia

[2] Hon. Peter G. Peterson
Secretary of Commerce

[2] Hon. George P. Shultz,
Chairman of the Commission
Director
Office of Management and Budget

Hon. Herbert Stein
Chairman
Council of Economic Advisers

[1] Harlee Branch, Jr., former chairman of the board of the Southern Co., and Edward J. Dwyer, former chairman of the board of the National Association of Manufacturers served until Dec. 31, 1971. Jerome M. Rosow, former Assistant Secretary of Labor, served as Vice Chairman until July 23, 1971. Hon. Maurice Stans, former Secretary of Commerce, served until Feb. 29, 1972.

[2] The President designated Hon. Peter G. Peterson as Chairman of the National Commission on Productivity to succeed Hon. George P. Shultz, effective Feb. 29, 1972. This annual report is the last official act by Mr. Shultz as Chairman.

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# STATEMENT BY THE CHAIRMAN

The productivity of the American economy over the years has been a vital factor in enabling us, as a Nation, to enjoy and share with others the greatest prosperity known to man.

Our record of continuing progress in this field came under challenge in the 1960's, and now we recognize that we must build again if we are to improve the quality of life in the future.

Central to such progress is a fuller public understanding of and support for increased productivity, which until recent years received close attention only from a relative handful of technical experts. Better public perception and support are essential if the absolutely vital concept of productivity is to become a conscious and continuing motivation for the American people.

The National Commission on Productivity was created by the President in June 1970 to insure a new national concern with the importance of continued productivity improvement to our economic strength. At the time he announced formation of the Commission, the President outlined its challenge as follows: "In order to achieve price stability, healthy growth and a rising standard of living, we must find ways of restoring growth to productivity. The task of this Commission is to point the way toward this growth in 1970 and in the years ahead."

The role and responsibilities of the Commission were broadened with the advent of the new economic policies announced by the President on August 15. Members of the Commission were consulted in the process of designing the post-freeze economic stabilization program and the full Commission was briefed on that program before it was formally announced. Under that program, the Commission was formally given the role of consultant to the Cost of Living Council in recognition of the fact that productivity growth is a key to long-run economic stability and should be both reflected in and fostered by the decisions of the various boards and commissions administering the programs.

The Economic Stabilization Act Amendments of 1971 formalized this role and called upon the Commission to undertake a much expanded program to foster productivity growth. Specifically, the Congress set forth a National Productivity Policy which authorized the Commission to organize regional

and local councils, undertake an expanded research program and develop a stronger program to foster public understanding of the meaning and importance of productivity growth. The President's 1973 budget provides over $5 million for these activities.

The need for renewed national attention to the productivity improvement which has been so much a fact of American life was pointed out most dramatically by trends which emerged in the late 1960's. In the 4 years ending in 1970, output per manhour rose at an annual rate of only 1.7 percent as compared with a 3.1 percent rate for the preceding 16 years. This rate was far slower than the rate of increase in wage rates over the same 4-year period and fell considerably short of the rates of productivity growth among our major foreign competitors. The implications of this poor performance for domestic economic stability and international competitive strength are now all too painfully clear.

The productivity record of the late 1960's was due in part to changing economic conditions as we dealt with the dual problems of controlling an accelerating inflation and making the transition from a wartime to peacetime economy. With these problems largely behind us, even stronger productivity gains can be expected—in fact, such gains started to become evident as the economy expanded in 1971 with output per manhour rising 3.6 percent.

The 1971 productivity record is encouraging and the prospect of continued gains as we take up the remaining slack in the economy offers further hope for success in the effort to bring inflation fully under control. However, neither of these developments should be cause for complacency. The demands of the American people for continued improvement in the quality of life whether in the form of cleaner air and water or in more and better community services exert powerful pressures on our resources. Productivity gains are vital to our ability to satisfy these demands at the same time that we meet the demand for greater private consumption and investment.

The stakes here are high. If we could, for example, increase the average annual rate of productivity growth over the 1970's by one-tenth of 1 percent a year, and if this were translated into output, we could produce $15 billion of additional real output per year by 1980. Over the decade, the total gain would amount to about $60 billion.

If we are to approach this potential, concerted action by all groups is needed. The President recognized the need for a cooperative search for consensus on matters in which various segments of our society may sometimes have divergent interests and included leading representatives of business, labor, the public, and government on the Commission at the outset. Since that time, he has acted to make the Commission even more broadly representative by adding representatives of farmers, consumers, and State and local government to the membership of the Commission.



In pursuit of its objectives, the Commission has met six times. The highlights of these meetings are discussed in chapter I. Research on some of the major economic, social, and technological factors influencing the rate of productivity growth has been initiated. Specialists have been invited to prepare research studies—many of which are described in chapter II—for information and guidance. Finally, the Commission has approved a program of activities to meet the responsibilities assigned to it under the Economic Stabilization Act Amendments of 1971. This program is discussed in some detail in chapter III.



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CHAPTER I

# HIGHLIGHTS OF THE COMMISSION'S ACTIVITIES—1970–72

In opening the first meeting of the Commission on August 7, 1970, the President stated that productivity growth is the key to the continued improvement in the quality of life for all Americans, to the satisfaction of urgent domestic needs, and to the maintenance of the competitive position of the United States in world trade. This theme has become a unifying and stimulating element for subsequent activities of the Commission.

The President stressed, in announcing the Commission, that "productivity in the American economy depends on the effectiveness of management, the investment of capital for research, development and advanced technology, and most of all on the training and progressive spirit of 86 million working Americans." This charge to the Commission provided the framework for its initial activities and organization.

The first session of the Commission was concerned with developing a common understanding of the background for the Commission and an organizational framework for its activities. The Chairman reviewed the basic trends in productivity, wages, and costs and their economic implications. The meaning and measurement of the terms were also discussed. A working agreement on these matters was considered central to the effectiveness of the Commission.

In this setting the Commission organized itself into four working groups each composed of members representing labor, business, the public, and government. The titles of the working groups are sufficiently broad to permit a wide range of inquiry and still to focus on topics of immediate concern. The four groups and questions they were to consider are:

*Labor and Management Policies and Practices.*—What type of labor relations climate is most conducive to improved productivity? How are the costs and benefits of change to be distributed? What is the appropriate role of the firm, the union, the government in the adjustment process?

*Education and Research.*—How can we improve the input of basic research to technological innovation and productivity? How does the education system feed into this process and how can it be improved?

*Government Activities.*—In what way can the government influence productivity in the private sector of the economy by improving practices in such areas as procurement, and construction regulations? How can productivity in government at all levels—Federal, State, and local—be measured and improved?

*Management Organization and Capital.*—How can management improve its organization for productivity gain? Are there impediments to diffusion of technological knowledge—can the adoption of new technology be accelerated? Is the rate of investment adequate for desired productivity goals?

The second session, in November 1970, continued the process of developing mutual understanding of basic factors and problems. As the working groups progressed on their investigations, reports of their findings became the main topics of the agenda of Commission meetings. At its April and June 1971 sessions, the Commission reviewed the conclusions and recommendations of various reports submitted to it and made suggestions for refinement and extensions.

## Policy Statement of September 7, 1971

On September 7, 1971, the Chairman of the National Commission on Productivity released a statement, entitled "Productivity and the National Interest," which had been approved by the members of the Commission (app. B). This statement expresses the consensus of business, labor, public, and Government representatives as to the importance of policies and programs to foster productivity growth and as to the general structure and thrust of such policies and programs. In several areas—most notably, research and development and government productivity—the consensus expressed by the Commission has served as a catalyst for the development of concrete programs.

In substance the statement underscores the importance of maintaining our historic rate of productivity increase as vital to employment growth, curbing inflation, meeting international competition, abating pollution, eliminating deprivation, and improving services at the local level. Productivity is seen to depend upon the optimum combination and development of human, capital, and natural resources in harmony with our traditional values of opportunity, work, and reward.

The Commission stated that "the first and basic prerequisite" for productivity improvement is an "expanding economy, with maximum employment and maximum utilization of plants and machines . . . . In the absence of such economic expansion, there is lagging productivity, usually accompanied by increasing unemployment and underemployment." Noting that "a high level of economic activity is a necessary but not sufficient condition for the



realization of our full productivity potential," the statement identified six "targets of opportunity," on which the Nation must consciously focus.

The first is *productivity bargaining* which features the specific discussion of productivity in the collective bargaining process. The potential is far greater than the current scope of bargaining practices. "Work rules, training and upgrading workers, group incentives, job redesign and enrichment, workplace participation and communication, safety and work scheduling are all areas that deserve close attention."

Complementing the first, the second target is the *strengthening of manpower adjustment policies* to meet the human costs of change where such costs exist. This can be done by such means as avoiding worker displacement, mitigating financial loss to individual workers, and assisting workers to find alternative work. Both private and government sectors must provide programs to avoid adverse effects.

The third target involves selective stimulation of *education and research and development*. The Commission finds a need for "further active experimentation, with government support, in development of new and more flexible institutional and financing arrangements as well as improved educational content and instructional methods." Since the benefits of basic research are broadly diffused, the Commission found that the Federal Government has a special responsibility to assure an adequate and sustained level of funding and the private sector might be given incentives to invest more in applied research and development.

*Improvement of productivity of government* is the fourth target. The Commission found that there is considerable scope for applying the productivity bargaining approach in the public sector. Also, there should be efforts to identify emerging ideas to improve local government productivity.

The fifth target is the urgent need to assess the extent to which business, government, and other institutions will have access to an adequate *supply of capital funds* in the 1970's and to identify the means of correcting any deficiencies.

Finally, the Commission recognized the importance of timely *identification of industries with lagging productivity growth* and practical measures for improvement. This involves more adequate productivity measurement of such major sectors as construction, services, and government.

The Commission agreed that public awareness of the importance of productivity must be promoted through the widest possible dissemination of information.

## Activities Under the Stabilization Program

Following the freeze on wages and prices, the attention of the Commission shifted to the design of the economic stabilization program. Members of the

Commission, a cross section of eminent representatives of business, labor, the public, and government, were consulted during the formulation of the post-freeze program plans. New members were added to give additional representation to business and labor, and to provide representation for the farm sector, State and local government and the consumer. The entire Commission was convened in October 1971 for a preview of the decisions on the structure of the post-freeze economic stabilization program, and members were given an opportunity to express their views. It was also noted that the Commission would be called upon to consult with the Cost of Living Council as the stabilization program progressed.

Plans for expansion of the Commission's work as provided by an amendment to the Economic Stabilization Act were reviewed at a session convened in February 1972 (these are covered in chapter III). Members also heard about several new initiatives to enhance productivity growth: the proposed new Federal programs for research and development and innovations in labor-management relations, in the steel and construction industries. Finally, progress of the economic stabilization program was discussed with officials of the agencies involved.

## Public Information Activities

The President's initiative in bringing together outstanding leaders of labor, business, the public and government had the effect of focusing nationwide attention on the economic importance of productivity, a subject that normally had interested only a few specialists. The first year and half of the Commission's life, therefore, saw growing popular interest in information about productivity. Public leaders, the communications media, and professional and trade groups dealt with the issue, highlighting the changing position of the United States in its relations with the major economic blocs of the world, and the Executive Director was invited by a number of professional groups to discuss the objectives and work of the Commission in relation to trends in productivity and the economy.

Several national periodicals, including Time, Business Week, Fortune, U.S. News and World Report, and Newsweek, featured stories about the domestic and international conditions that gave rise to the establishment of a National Commission on Productivity. An example of the interest of the trade press was the special 16-page section featuring statements by the President, Secretary of Labor, and Commission members on the productivity problem in the April 1971 issues of four trade journals published by Cahners Publications. These journals have a circulation of over 250,000 among plant engineers, managers, and purchasing agents in different industries. Copies of the productivity section were also sent to 12,000 leading officials of industry and government.



Many members of the Commission cited the urgent need to promote a better public understanding of the relationship of productivity change to the rate of inflation and to the economy's long-term growth capacity. One of the first steps in this direction was taken when the Commission lent its support to the preparation by the U.S. Bureau of Labor Statistics of a Chartbook, *Productivity and the Economy* (Bulletin 1710), which has proved highly useful in increasing public awareness and appreciation of the productivity issue.

In an effort to broaden its educational activities, the Commission contracted with the Smithsonian Institution to prepare a popular exhibit tracing the productivity theme in American history. This exhibit will be shown beginning about June 1972 in the National Museum of History and Technology, which is visited by about 6 million people each year. Plans were also being made for smaller traveling exhibits to permit wider public exposure.

The Commission is planning to hold a national conference of leaders of labor, industry, agriculture, education, government, and the public in the spring of 1972 to consider policies and programs for promoting long-term growth in productivity. In addition, Commission staff will be working with other individuals and organizations who have indicated a desire to sponsor regional or industry conferences on productivity. The resources of the Federal Regional Councils composed of representatives of the principal grant-making domestic departments and agencies in each of the 10 standard Federal regions will be available to support Commission staff in this effort.

# REPORTS, PAPERS AND STUDIES

Experts in government and universities prepared under contract a number of papers, reports, and studies to help the Commission members in their consideration of various substantive issues. A list of the Commission's publications available to the public is presented in appendix C. This chapter briefly summarizes the findings and conclusions of the most important papers and studies and relates them to the problems considered by the Commission.

## Meaning and Measurement of Productivity

The importance of clarifying the meaning of the term "productivity" for the general public was stressed at the first meeting of the Commission. Statistical measures of productivity vary and misunderstanding about the meaning of trends in productivity often arises because of the plausibility of different concepts and the use of different data sources. Members of the Commission, therefore, invited leading experts to explain the meaning of the terms and methods used in measuring productivity.

### Meaning of Productivity

In a brief paper on the meaning of productivity, Dr. Herbert Stein, now Chairman of the Council of Economic Advisers, dealt with the most commonly used definition—real output per man-hour. Productivity in this sense is a rough measure of the effectiveness with which we use our most important productive resource—labor. This concept has significant social and economic implications. It takes account not only of the chief means of satisfying individual and social wants, i.e., output of goods and services, but also of the major real cost of getting the output, namely, man-hours of work. Moreover, the trend in output per man-hour has a direct bearing on the movement of labor costs, prices, and real earnings of workers.

While the simple index of output per man-hour serves many analytical and policy purposes, Dr. Stein believes additional measures are needed. When we measure output per unit of capital and labor combined and adjust for



quality change, we have another useful measure of the efficiency of resource use. In short, a family of measures is needed to provide better understanding of our economic problems.

### Concepts and Measurement

The concepts and data used in available indexes of productivity together with some problems of measurement, were the main issues considered in a paper by Jerome A. Mark, Assistant Commissioner for Productivity and Technology, Bureau of Labor Statistics, of the U.S. Department of Labor. Measuring trends in output, labor input and capital input in a highly diverse and ever-changing economy involves many complex statistical problems.

A fundamental problem of measurement is the difficulty of obtaining directly quantitative measures of output and input, consistent in scope and coverage. Hence, substitute measures or approximations must be used. Within these general constraints, however, productivity measures for the total private farm and nonfarm sectors of the economy, for some major groups, such as manufacturing, transportation, mining and utilities, and for many key industries, such as auto, steel, coal and airlines, are considered reliable and useful for economic analysis.

Reliable measures for construction and service industries, however, are not available. To improve these series, more accurate data on price changes in these sectors are needed. There is also a need for more comprehensive estimates of industry man-hours, including better measures of the hours of supervisory workers and changes in the "quality" of labor. Measures of output per capital input and total factor productivity, based on the flow of services as well as the stock of capital, would significantly enhance our knowledge of productivity change.

### Statistical Research

The Commission granted funds to the Bureau of Labor Statistics to expand its research work to improve data on productivity and related trends. The number of individual industries for which indexes of output per man-hour is available is being increased. However, the BLS is devoting special attention to developing measures for industries in the service sector where the concept of output is more difficult to quantify than in manufacturing. Only a few new productivity series may be produced, but it is hoped that the effort will lead to a better knowledge of trends in the important service sector. Price indexes for individual industries are also being developed by the BLS. This expansion of statistical information about productivity will provide a firmer basis for economic policy decisions.



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## Activities of Working Groups

A significant part of the work of the Commission was carried out by the four working groups which met frequently during 1970 and 1971 to choose alternative topics, to direct inquiries for background papers or research, to deliberate over policy and program, and to develop the issues for presentation to the full Commission. The findings of these working groups are currently under final review and will shortly be considered as policy recommendations by the full Commission. The reports, papers and studies that were prepared for the working groups are summarized below.

### A. Labor and Management Policies and Practices

The potential contribution of cooperative action by labor and management to improving productivity was recognized by the Commission at the outset. It was agreed that productivity advances generally have been accompanied by rising employment and real wages, but the possibility of labor displacement in particular instances could not be overlooked. The Commission, therefore, arranged for the preparation of a series of reports or working papers on various aspects of collective bargaining experience with productivity improvement and on the related subject of manpower adjustments to technological change, both in the United States and abroad. These working papers provide a factual basis for recommendations on productivity bargaining and manpower adjustments by the working group on labor and management policies and practices for consideration by the full Commission.

#### *Examples of Labor—Management Practices*

The Bureau of Labor Statistics prepared for the Commission a report, entitled "Improving Productivity: Labor and Management Approaches," which described cases of "good" practice in industry. Thirty-one examples of special efforts in different industries were analyzed in terms of their benefits and problems.

One section of the report dealt with cases of collective bargaining settlements in which work rules were revised to permit the use of labor-saving technology in return for job or income security. This type of "productivity bargaining" included the agreements setting up trust funds for musicians affected by mechanical recording; the protective arrangements for butchers with the introduction of centralized meat cutting in retail food chains; the settlements to eliminate "bogus" typesetting in the printing industry; agreements to facilitate prefabricated housing construction; and the mechanization and modernization agreement in West Coast longshoring.



The report also described the application of various collective bargaining agreements to cushion the impact of technological change such as the attrition arrangements in the railroad industry; interplant transfers in autos; relocation allowances in steel; early retirement plans; and the Armour automation fund for plant shutdowns. Closely related to these protective approaches are the extensive efforts in manpower planning in the telephone industry and the Internal Revenue Service to avoid adverse effects among workers.

In addition to work rule changes and manpower adjustments, the BLS report described a broad range of joint labor-management actions for productivity improvement, many outside the collective bargaining table: union sponsored retraining programs to upgrade plumbers, printers, hospital, steel and maritime workers; the Scanlon and other plantwide productivity incentive plans; the TVA and similar programs to use the know-how of workers to improve operations. Experiments with job redesign, human engineering, and the 4-day week were also described as ways of influencing worker attitudes, absenteeism, and motivation.

#### *Productivity Bargaining*

Special attention was devoted by the Commission's working group to an examination of potentialities of "productivity bargaining." The term is defined as a process which seeks to treat production as a central collective bargaining consideration and explicitly recognizes the trade off between measures to improve labor productivity and the sharing of resulting benefits. A few U.S. examples were summarized in the Bureau of Labor Statistics report, but the Commission also contracted with Prof. Robert B. McKersie, dean of the New York School of Industrial Labor Relations, for a detailed study of productivity bargaining in Great Britain, with special attention to its relevance for the United States.

Professor McKersie found that the British experience, though not easily transferable, had some useful implications for the United States. First adopted at the Fawley Oil Refinery in 1960, productivity agreements were introduced in a wide range of industries where they often resulted in elimination of restrictive work practices and modified manning scales and lower unit labor cost. In return, workers received higher earnings, more fringe benefits, and job security. The report concluded that the most significant result of productivity bargaining in the early stages of its development in Britain was to encourage acceptance of union-management negotiations as a useful device for accomplishing change and to focus attention on improving labor productivity to justify wage changes.

The establishment of a statutory "incomes policy" aroused great enthusiasm for productivity bargaining in 1967 and 1968. Wage increases over the norm were permitted only if warranted by productivity gains in the individual firm. Although many bona fide agreements were made, a great number of requests based on spurious productivity gains resulted in a general upward push on wages. The report attributed the decline in productivity bargaining after 1968 to such factors as the limited content, exhaustion of possible gains, and growth of unemployment and resistance to change in the late 1960's.

Reviewing the limited experience with productivity bargaining in the United States, Professor McKersie concluded that the concept has promising results, similar to those in Britain, in industries based on the craft system such as longshoring, printing, railroads, airlines, and construction. Because of differences in general attitudes toward technological change, there is less scope in manufacturing where productivity agreements have been prominent in Great Britain. The British experience in service industries, however, may have some lessons for the United States. Also, greater emphasis on worker consultation and participation on a continuous basis may be applicable.

To foster productivity bargaining, Professor McKersie suggested greater planning by management and the need for the education of union leaders by first hand observation of successful cases. The impetus for this type of bargaining, however, must come from the parties at the local level.

### *Worker Protection in Western Europe*

The policies of Western European governments in protecting workers affected by technological change were the subject of a brief study by the Bureau of Labor Statistics. In these countries, a policy of full employment is considered the best setting for dealing with problems of labor adjustment. They have gone beyond the policy of providing unemployment compensation and place emphasis on maintaining existing jobs and creating new jobs for redundant workers by subsidies, loans and credits to industry; by regulation of labor migration and other labor market controls; by financial aid and guidance, especially to older workers, in transfer, relocation, training, and retraining. In general, the report concluded that measures to prevent redundancy have been effective in Western Europe.

### *Private and Public Manpower Programs*

An assessment of the whole range of private and public manpower policies that could facilitate productivity improvement was undertaken by Prof. Eli Ginzberg with Prof. James W. Kuhn, and Beatrice G. Reubens of the Conservation of Human Resources Project, Columbia University. Their brief



report, "Private and Public Manpower Programs for Adjustment to Productivity Change," reviewed policies in the United States and Europe.

The principal directions where new initiatives, according to the authors, hold promise of constructive advances were as follows: Emphasis in public policy on the twin objectives of productivity improvement and worker protection against adverse effects; the institution of a technical assistance service to facilitate adjustment; compulsory vesting of private pensions after a qualifying period of 10 years or so; liberalization of social security to permit earlier pensions for displaced workers; more liberal mobility allowances; greater coordination among government procurement, regional development, and manpower policies; and efforts to improve Employment Service assistance to displaced workers. Above all, the report concluded, "the sine qua non for a conducive environment for stimulating productivity changes is a high level of continuing employment for the economy."

## B. Education and Research

Economists in the past decade have devoted much study to the role of intangible investments in education and research in improving productivity and have found that the growth of human capital has contributed significantly to economic progress. The Commission, therefore, invited several outstanding researchers to evaluate these studies and to draw implications for national policy.

### *Education and Productivity*

In a paper on "Education and Productivity," Prof. Theodore W. Schultz, of the University of Chicago summarized his own studies and those of other researchers on the return on investment in education, both to the worker and to the economy as a whole.

It is generally agreed that the cost of education includes not only the cost of such things as teachers' salaries and physical facilities, but also the individual's earnings he had to forego by continuing his schooling instead of taking a job. When the extra income earned through finishing school is considered against the total costs of elementary school, high school, college, and post-graduate study, the rates of return on investment are high, compared with the average rate of return on investment in the private business economy. As might be expected, the biggest gains come from elementary education when the child is acquiring basic skills in reading, writing, and the ability to do arithmetic.

While the return on investment at all levels of education appears to be high, it is not certain that our educational system at present is structured to obtain the maximum return for the student and for society. On this important

issue, the experts are divided on how to take account of differences in the quality of the services and of the outputs.

### *Research and Development*

Expenditure on research and development is another key factor affecting the growth of productivity. In support of the Commission, the National Science Foundation invited four outstanding economists to prepare papers reviewing the research studies on the impact of R. & D. The papers by Charles T. Stewart of George Washington University, Edwin Mansfield of the University of Pennsylvania, William Fellner of Yale University, and Zvi Griliches of Harvard University, with a summary by Leonard L. Lederman, were published February 1971 by the National Science Foundation, in a report entitled, "A Review of the Relationship Between Research and Development and Economic Growth and Productivity."

The authors considered the return on investment in research and development in such widely diverse fields as agriculture, machinery, chemicals, and petroleum. They concluded that despite the lack of definitive measures of the relationship, research and development has been one of the major sources of economic growth and improvements in productivity. Measurement of the relationship between R. & D. and productivity growth involves many complexities of isolating R. & D. contribution from that of many interacting factors such as organizational and managerial progress and economies of scale.

The authors agreed that the evidence suggests that "the United States is probably underinvesting in civilian sector research and development from a purely economic growth/productivity point of view." One reason for this underinvestment is that the private firm which pays for the R. & D. cannot capture all the benefits accruing from it. Because of inadequate patent protection, widely dispersed markets, and failure to exploit the innovation, other firms are able to copy or to follow the innovator. Since other firms obtain benefits without having to pay for the cost of research and development, more benefits are achieved in the economy than can be measured by the firm which pays for the initial expenditures. Also, a distinction must be made between basic research which has a long lag-time before payoff is realized, and applied research and development for which the returns may be realized very quickly. Hence, private underinvestment is likely to be greater for basic than for applied research.

One conclusion shown from the studies was that nothing can be said about where particular R. & D. investments should be made, but "there is good reason to expect that a well diversified incremental R. & D. investment will result in high payoffs similar in magnitude to those of the past."



### *R. & D. in the Federal Budget*

As the competitive position of the United States in world trade became more critical during 1971, members of the Commission along with government officials and many private individuals became deeply concerned about the loss of exports in the field of high technology. Also, economists projected a lag in national productivity over the decade because of the increasing importance of service industries with low levels of productivity. Many experts attributed this situation to the relatively low level of support for research, especially applied research in these fields.

This issue was discussed with the President in several Commission meetings and the President ordered a complete review of Federal research and development programs to assess the need for new programs to open up opportunities for technological innovation. A task force of technical experts from various government agencies, with the assistance of scientific and industrial leaders, conducted a comprehensive review of opportunities to advance technology. The result of this review was a major presidential initiative in the field of R. & D. for fiscal year 1973.

The budget for fiscal year 1973 provided an increase of $1.4 billion in scientific research and development funds and a number of important policy trends. Among the objectives of the new budget were closing the gap between the United States and its world competitors in productivity growth rates and improving the efficiency of some basic services of the economy. Civilian oriented programs, including energy, health, education, environment, urban problems, transportation, and other areas were increased significantly. Also, funds were provided for experiments in stimulating innovation and productivity in the private sector.

## C. Improving Government Productivity

The sharp growth of public employment relative to private jobs has been one of the most significant trends in the structure of the economy over the past decade. In 1970, nearly one out of every five wage and salary workers was a government employee. Experts project continued increases as our urbanized population seeks more and better education, health, police, and sanitary services. As government regulations and the demand for reports proliferate, overhead staffs in government and business are significantly enlarged. Since government services are still largely labor intensive, the growth of government employment has involved greatly increased costs. The Commission's working group, therefore, gave special attention to seeking ways of improving productivity in government operations. As a first step, it supported efforts to improve measurement of change in output per man-hour at both the Federal and local levels.

### *Measurement of Productivity in the Federal Government*

There has been considerable dissatisfaction with measures of Government productivity based on national income concepts. Because labor input is used to measure output, indexes of output per man-hour for Government activities cannot show any change. While this statistical convention is useful in fitting Government activities into the national income accounting framework, it is often misconstrued to mean that there has been no improvement in actual Government productivity. A study of selected activities in five Federal agencies by the Bureau of the Budget in 1964 demonstrated the possibility of developing indexes based on actual physical output, a more appropriate concept. The derived series, however, were not maintained or extended.

As a first step in a Government-wide approach, the General Accounting Office, together with the Office of Management and Budget and the Civil Service Commission and with support from the Commission, initiated a study of productivity trends in Federal agencies. The background and objectives of the study were reported to the Commission in a paper, "Productivity in the Federal Service," by the Office of Management and Budget.

A preliminary review by the GAO of 17 major Government agencies found that some agencies maintain data that could be useful in measuring productivity change. Such data are used by the agencies for manpower planning, work measurement, cost control and, in a few cases, for productivity measurement by the agencies themselves. This survey reported that approximately 500,000 employees, most of them in the Post Office, are directly covered by existing productivity indexes, and measures may be feasible for an additional 750,000 employees.

The study group, with technical assistance of the Bureau of Labor Statistics, is now collecting data from various Government agencies on real output and man-hours. These data will be used to prepare indexes of output per man-hour for broad functions of Government rather than for individual agencies. The study group plans to work with agencies to improve reporting systems and basic data and extend the coverage of productivity measures.

### *Productivity in State and Local Government*

Since 10 million persons—about 80 percent of all government employees—work for State and local governments, prime targets for productivity improvement are the major functions performed by these units such as law enforcement, sanitation, and education. The Commission, therefore, asked the Urban Institute to undertake an exploratory study of the status of productivity measurement and its feasibility.

In their report, "Improving Productivity and Productivity Measurement in Local Governments," Dr. Harry P. Hatry and Mr. Donald M. Fisk of



the Urban Institute, reviewed major conceptual problems and current measurement practices. They found little factual data readily available, either for measuring trends or for comparing levels among localities. However, they concluded that data which could be useful for productivity measurement of specific functions are collected by some localities and there are many technological opportunities for improving productivity that should be evaluated and disseminated.

A brief paper on "Productivity and Technology in Law Enforcement," by William M. Spreches and Edwin L. Golding, of the Department of Justice provided some illustrations of the possibilities of measurement and the role of science and technology in improving productivity of police departments. Computers, communication systems, helicopters, and electronic alarm systems are being used increasingly to improve the performance of law enforcement officers.

Following these exploratory studies, the Commission in October 1971 contracted with the Urban Institute to undertake further research on the improvement of productivity in local government. This decision followed a review of the exploratory report by several public interest groups, including the National League of Cities, the U.S. Conference of Mayors, the National Association of Counties, the International City Management Association, the National Governors Conference, and the Council of State Governments. The Urban Institute's study will deal with measurement and improved practices in two functions: law enforcement and refuse collection. The study will examine different types of measures to determine the most appropriate indicator, taking account of any special circumstances. For example, more frequent garbage collection might result in reducing productivity if measured in tons removed per man-hour, but could result in a more sanitary community. An alternative measure might cover not only the quantity removed but also the degree to which a desired level of service is achieved.

Another objective of the study will be to identify and report on outstanding "success" stories in improving productivity in local functions. These reports would describe managerial and organizational as well as technological innovations in city government. The dissemination of success stories might encourage others to use the latest ideas.

## D. Management Organization and Capital

The availability of capital for investment at reasonable interest rates affects productivity in two ways. First, investment in labor or material-saving devices leads directly to increased productivity. Second, the availability of capital has a significant effect on the steady growth of the economy and the close relationship between increasing output and increasing productivity is well established.

Because of its critical importance, the Commission requested the Department of Commerce to study the factors influencing the availability of capital throughout the 1970's. The study, "Capital Requirements for the Seventies," generated estimates of capital requirements by considering the factors involved in the supply and those involved in the demand for capital, independently. While the initial intent of the study was to indicate whether potential supply and demand would be in balance, and whether capital would be available through traditional sources at reasonable interest rates, the results were particularly useful in indicating the necessary policy objectives to assure that adequate capital would be available.

## E. Industry Studies

The special problems of specific industries in improving productivity were another area of research. The Commission contracted for studies of two key consumer goods industries—the food and the footwear industries—to determine where obstacles to productivity improvement exist and how they might be overcome.

The study, "Productivity in the Food Industry: Problems and Potential," by Prof. Gordon Bloom of the Massachusetts Institute of Technology, reviewed a wide range of institutional, legal, labor, and systems problems affecting productivity in food manufacturing, wholesaling, and retailing. The report found that there are numerous opportunities to improve efficiency in food distribution by considering the entire process from the farmer to the consumer. Standardization of shipping methods and hardware, for example, could produce sizeable gains in productivity. Also, more extensive use of unit trains for food could improve output per man-hour in transportation, the cost of which significantly affects food costs to the consumer.

The study of the footwear industry, by Prof. Stanley Jacks of the Massachusetts Institute of Technology, covered a labor-intensive industry where negligible productivity gains in recent years have contributed to capture of a large part of the domestic market by overseas producers. Additional research and development in machine and materials technology is needed to maintain the domestic shoe industry competitive with foreign producers. Although shoe machinery suppliers are engaged in substantial R. & D. programs, rising costs and decreasing markets may cause difficulty in obtaining capital needed to support expansion. The report recommended that indirect support to the footwear industry might be provided under such programs as the trade adjustment assistance program. While government programs to assist noncompetitive companies are not widely favored in the United States, the report pointed out that many countries are subsidizing footwear firms producing for the export market.



### *Industry Efforts*

The need for productivity improvement and innovations in practices was considered by two key industry groups represented on the Commission—construction and steel. Leaders of the Building Trades Council of the AFL–CIO took up the issue at their convention and industry, labor and government members of the Commission have formed a group to pursue this issue in conjunction with the Construction Industry Stabilization Commission. Considerable attention was also devoted to the need for productivity growth by the United Steelworkers of America AFL–CIO. The 1971 Basic Steel Collective Bargaining Agreement provided for the establishment of joint union-industry committees on productivity at the plant level.

# FUTURE PLANS UNDER THE NEW PROGRAM

Under Section 4 of the Economic Stabilization Act Amendment of 1971, entitled "National Productivity Policy," (approved Dec. 22, 1971), Congress declared that "it is the policy of the United States to promote efficient production, marketing, distribution, and use of goods and services in the private sector, and improve the morale of the American worker, all of which are essential to a prosperous and secure free world, and to achieve the objectives of national economic policy."

Relating productivity improvement to the price and wage stabilization programs, Congress finds that "management and labor have a strong mutual interest in containing "cost-push" inflation and increasing output per man-hour so that real wages may increase without causing increased prices, and that, without in any way infringing on the right of management or labor, machinery should be provided for translating this mutuality of interest into voluntary action."

The act declares that "it shall be the objective of the President's National Commission on Productivity . . . to enlist the cooperation of labor, management, and State and local governments in a manner calculated to foster and promote increased productivity through free competitive enterprise."

The act lists several additional objectives, including promoting the improvement of worker motivation and community interest in reducing waste; the more effective use of labor and management personnel; policies to insure the competitiveness of U.S. products in world markets; and programs to deal with problems of workers adversely affected by automation and other technological changes or the relocation of industries.

A substantial increase in funds for the Commission was authorized and over $5 million has been requested in the President's fiscal year 1973 budget. These funds will be used to expand the staff, to enhance informational activity, and to contract for research and other services.

Under this legislative mandate, the Commission will extend its activities in several directions. First, the Commission plans to expand its substantive program of policy research and development needed by the working groups



to formulate recommendations. Most of this basic work will be done by the Commission staff. They will enlist the aid of outside consultants, provide background papers, arrange for seminars and conferences, and draft recommendations for the Commission.

Special attention will be given to work on the opportunities and obstacles to improving productivity in important industries which have been lagging. In this effort, the Commission will strive to be responsive to the needs and suggestions of the agencies involved in the economic stabilization program. In this context, the studies of productivity in the Federal Government and in local government described earlier will be continued, with the staff working with interested organizations such as the U.S. Conference of Mayors and the Council of State Governments. Also, work will be undertaken on several other key industries, including construction and health, where costs have been rising sharply.

Another broad area of examination by the Commission will involve factors that affect productivity generally. Alternative approaches to pollution control will be analyzed in terms of both relative efficiency in achieving goals and implications for productivity growth. Studies will be made of the influence on productivity of workers attitudes and motivation, and the possibilities of improvement through group incentive plans, job redesign and related techniques. The contribution of R. & D. programs to productivity enhancement will also be covered. These areas will be explored with the assistance of leading experts in government, universities, and private industry who are already giving attention to these problems.

Second, the Commission has been charged under the act with the task of fostering attention to productivity improvement on a regional and local basis throughout the Nation. In order to meet this challenge, the regional representative of the Secretary of Labor will be given responsibility for development of a coordinated Federal effort to promote greater awareness of productivity at the local level and in specific industries at the regional level. These representatives will receive technical assistance from the Commission's national office and will draw on the work of the Commission to promote the objectives of the act. With the regional councils as their base, the regional representatives will be able to utilize the resources of a wide range of domestic departments and Federal agencies who have close working relationships with State and local governments and broad contact with all sectors of the public.

Finally, the Commission will enlarge its information program to improve public understanding of the issues and its program. Workers, managers, and consumers will be given more information about the meaning and importance of productivity and its relationship to jobs, income and living standards. The Commission's studies, reports, and recommendations will be

disseminated widely. National, regional, and local conferences, meetings, workshops and seminars with a wide range of participants will be held. Special pamphlets, speeches, and other educational materials will be prepared. The Commission will continue to develop recommendations for private and public policy to encourage productivity improvement in the decade of the 1970's.

In addition to activities under the section on "National Productivity Policy," the Economic Stabilization Act Amendments of 1971 seek to enhance productivity growth through provisions of the pay stabilization program. Section 2 precludes from control by the Pay Board any increase in wages "paid in conjunction with existing or newly established employee incentive programs which are designed to reflect directly increase in employee productivity." The types of employee incentive plans intended to be covered by this provision "are mainly those known as productivity sharing plans," e.g., bona fide programs of "productivity bonuses on a plant-wide basis to reward workers for achieving established productivity goals."

Section 2 also provides that rules, regulations, and orders issued under the pay and price stabilization programs "insofar as practicable be designed to encourage labor-management cooperation for the purpose of achieving increased productivity, and the Executive Director of the National Commission on Productivity shall when appropriate be consulted in the formulation of policies, rules, regulations, orders, and amendments under this title."

These provisions specifically recognize the importance of productivity growth in maintaining cost stability and are likely to provide additional stimulus to the progress of the productivity improvement programs. The Commission and its staff will work closely with the economic stabilization program agencies to see that these provisions and the importance of productivity to long-run economic stability are given full consideration.



# Appendix A

The President's action establishing the National Commission on Productivity was set forth in a statement issued on July 10, 1970.

## THE WHITE HOUSE

The President today announced the appointments of members of the new National Commission on Productivity. The Commission includes six representatives each from business, labor, and the general public, and five members from government.

The President announced his intention to establish such a commission in his speech on Economic Policy and Productivity on June 17. At that time, he described productivity as "a measure of how well we use our resources. . . . In particular, it means how much real value is produced by an hour of work." The President pointed out that productivity "depends on the effectiveness of management; the investment of capital for research, development, and advanced technology; and most of all on the training and progressive spirit of 86 million working Americans."

In the last 2 years, productivity has grown at a much slower rate than usual. It will be the task of the National Commission on Productivity to find ways in which that rate of growth can be increased—in 1970 and in the years beyond. Greater growth in productivity is essential if the Nation is to achieve price stability, health, economic expansion, and a rising standard of living.

The Commission's first priority, as the President said, will be "the problems we face now; we must achieve a balance between costs and productivity that will lead to more stable prices." The Commission will begin its activities immediately. It is the President's intention that the Commission sponsor a special President's Conference on Productivity that will bring together leaders of business, labor, government, and the general public.

# Appendix B

# POLICY STATEMENT OF SEPTEMBER 7, 1971

## Productivity and the National Interest

The ability of our Nation to produce efficiently—our high level of productivity—has been the source of our high and rising standard of living and the key to achievement of many of our basic national goals. Since 1966, however, the rate of productivity increase in the United States has fallen well below the average of the last 20 years and, more importantly, has fallen short of our domestic economic needs and of the growth rates of our major foreign competitors. This shortfall in productivity growth is due in part to the economic slowdowns of 1967 and 1969–70, accompanied by a substantial increase in idle productive capacity.

The National Commission on Productivity was appointed by President Nixon as an instrument of economic policy to address this issue and to recommend ways to further productivity improvement.

The roots of our past productivity accomplishments are no mystery. They are to be found in a vital free-enterprise economy, which offered challenges to both labor and management to produce more in exchange for a fair share of increased output. If we are to maintain and build upon our tradition of high productivity, we must strive to sustain full utilization of our productive capacity, to improve the organization of our human, financial and material resources and to exploit fully our unparalleled reservoir of skill, technology, and managerial talent.

The maintenance of our historic rate of productivity growth is a vital element in our broader task of improving the quality of life for all Americans.

—It is vital to a sound economy which can provide more and better jobs for everyone who wants to work.

—It is vital to our efforts to curb inflation and protect the real take-home pay of workers and the well being of those on fixed incomes. Only by increasing production per unit of resources, can we expect to achieve both rising real incomes and stable prices.



—It is vital to our ability to compete in world markets and preserve job opportunities. Foreign competitors aided by the export of our technology and capital have greatly enhanced their role in both domestic and world markets formerly dominated by the United States.

—It is vital to our ability to pay for clean air and water, without an intolerable sacrifice in other facets of the quality of life.

—It is vital to freeing the resources necessary for elimination of hunger and deprivation, and to aiding underdeveloped countries of the world.

—It is vital to more and better community services without backbreaking taxes. Productivity increases in the public sector are a partial answer to the fiscal crisis in the cities.

## Sources of Productivity

*Human resources* are first and foremost. They are the fountain of energy, skills, organization talent and ingenuity, which must be fully and effectively utilized if we are to realize our productivity goals. Productivity is the basis for progress. Human beings have the life force to make it possible.

*Natural resources* are our heritage in land, water, air, and energy. These resources are limited. Their intelligent and prudent utilization in the production of goods and services is a core factor in the quality of life for all Americans.

*Capital resources* are the funds, facilities, equipment, and technological tools which are an indispensable ingredient in our production potential. A strong, expanding economy, with attractive returns to capital under relatively stable prices, insures a willingness to invest in new technology and serves as a stimulus for efficient growth.

*Educational resources* represent a most critical investment—in human beings. Expanding educational opportunities enlarge the pool of national talent and enable our citizens to realize their full potential as productive members of society. We have led the world in opening and expanding educational horizons—we must continue to lead.

*Research and development resources* have applied the results of scientific investigation and knowledge with vast benefits to all mankind. The long lead times and unpredictable results inherent in research could weaken our commitment to investment in it. Neither government nor the private sector can afford to falter in its support of these activities.

*The unique resource—The American Spirit.* As a young Nation, we have grown and prospered in an economic climate which rewards good work, which motivates the individual man to improve himself and to take pride in the product he produces. We have searched eagerly for new worlds to conquer—in space, under the sea, in medicine, in education, and in the problems of our urban, suburban, and rural life. This youthful spirit, which

thrives on hope, is the root source of change. It has been our trademark since colonial days and it remains a national heritage, in combination with our commitment to the basic value of freedom and human dignity.

We must rekindle this American spirit and not be content with the status quo, nor be complacent about our society and the inevitability of continued progress. We must reappraise our attitude and mobilize our resources to close the gap between actual and potential national product.

## Areas of Improvement

Rising productivity in an expanding economy means high levels of employment for American workers, optimum utilization of plant capacity for business and industry, and a better standard of living for all Americans.

The first and basic prerequisite is an expanding economy, with maximum employment and maximum utilization of plants and machines. Such an expanding economy is essential for efficient economic operations, productivity growth and increasing business investment in new plant and equipment. It is also essential to provide the needed expansion of job opportunities for a growing labor force and for those workers who may be displaced by technological changes. In the absence of such economic expansion, there is lagging productivity, usually accompanied by increasing unemployment and underemployment.

A high level of economic activity is a necessary but not sufficient condition for realization of our full productivity potential. We must also consciously focus on identifiable targets of opportunity.

1. *Productivity bargaining* can constitute an important avenue to increased production, profits, and wages. It involves conscious attention to the trade-off between progress for the enterprise, for large groups of employees and for the consumer, and costs which may be incurred by individual groups of workers.

Our potential is far greater than the current scope of bargaining practices and goes far beyond the limits of current production goals. Work rules, training and upgrading workers, group incentives, job redesign and enrichment, workplace participation and communication, safety, and work scheduling are all areas that deserve close attention in the interest of increased productivity.

2. *Manpower adjustment policies* should be strengthened and refined to assist in meeting the human costs of change, where such costs exist. Although total productivity growth and job growth tend to move together in an expanding economy, adverse effects occur in some situations. A society that seeks the benefits of productivity growth is obligated to safeguard those who would otherwise suffer from these adverse effects. This can be done by such



means as: avoiding worker displacement, mitigating financial loss to individual workers, and assisting workers in securing alternative work.

The private sector should initiate or continue programs for manpower planning, advance warning systems, internal workforce adjustments, dismissal pay policies, and retirement and separation programs which provide benefits in case of involuntary early termination.

Government must also join in by providing appropriate manpower readjustment programs and improving labor market machinery.

3. *Education and Research and Development.* Education provides both direct benefits to the individual and long-range benefits to the society in which he lives. Our public commitment to financial support of education recognizes the returns of education to society as a whole, both in its contribution to national economic growth and its broader contribution to the quality of life. There is reason for concern as to whether rigidities within the institutional structure of education are handicapping opportunities for its proper growth and orientation. There is need for further active experimentation, with government support, in development of improved educational systems, including new and more flexible institutional and financing arrangements, as well as improvements in educational content and instructional methods.

Basic research, much of which is centered in our higher-education institutions, is also essential to long-range productivity improvement. Our future depends upon continuously advancing the technological frontier. This ultimately rests upon the vigor and scope of our research efforts and on the effectiveness of the coupling of basic research to the productive mechanisms of society, through applied research and development. Since the benefits of basic research are broadly diffused, the Federal Government has a special responsibility to assure an adequate and sustained level of funding of such research.

The private sector, too, should be encouraged to invest more of its own resources in applied research and development. This requires a close look at institutional arrangements outside and inside the Government which may need to be modified and an appraisal of tax or other possible fiscal incentives for additional private investment in research and development.

4. *Government Productivity.* Government has been and will continue as an employment growth sector providing almost 4 million new jobs by 1980, primarily at the State and local levels. Efficient government services depend very heavily upon human resource management. In the absence of increased efficiency, higher wages and pensions will increase the costs of providing government services, and contribute to the fiscal crises of our cities.

There is considerable scope for encouraging and facilitating the application of productivity bargaining in the public sector. The Commission should

also lead in efforts to identify and evaluate emerging ideas to improve local government productivity, including development of procedures for measuring the relative efficiency of States and cities in performing similar services.

5. *Capital requirements for the 1970's.* One of the basic problems related to the process of economic growth is the demand for and the supply of funds in the capital markets. For some time now there has been a spirited public discussion of the possibility that there may be a capital shortage in the 1970's. Thus, it is imperative that we assess the extent to which individuals, businesses, governments, and other institutions will have access to an adequate supply of funds in this decade to realize their investment plans and identify means to assure that any deficiencies in the supply of capital required to promote adequate economic growth are corrected.

6. *Industries with relatively low productivity improvement.* While some sectors of the economy have high and rapidly rising productivity, there has been lagging productivity growth within other sectors. Moreover, adequate measurement of productivity is lacking for major and growing parts of the economy—such as government, the various services, construction, trade, finance, insurance, and real estate.

Adequate measurement and better information are needed on actual productivity trends and developments in each sector of the economy, so that lagging sectors can be more clearly identified and practical efforts can be made to improve their productivity growth.

The Commission must promote public awareness of the importance and desirability of productivity growth—that we can have more only if the Nation produces more. This is clearly not an easy assignment. But we know this: Every effort made to increase American productivity will be repaid many times over in a higher standard of living and a better quality of life.



# Appendix C

# NATIONAL COMMISSION ON PRODUCTIVITY

## Selected Reports, Papers, and Related Reference Materials [1]

*Productivity and the National Interest,* September 1971

A statement approved by members of the Commission stating the need for productivity improvement, sources of productivity and areas of improvement (13 pages).

*The Meaning and Measurement of Productivity,* September 1971

Two papers by Herbert Stein and Jerome A. Mark on the meaning, concepts, and measurement of productivity (15 pages).

*The Need for Productivity Growth: The Work of the National Commission on Productivity,* September 1971

Talk by Leon Greenberg, Executive Director of the Commission, before the National Association of Business Economists on recent trends, the importance of growth and the role of the Commission (11 pages).

*Improving Productivity: Labor and Management Approaches,* September 1971

A report by the Bureau of Labor Statistics presenting case study examples of formal efforts by labor and management to improve productivity (35 pages).

*Private and Public Manpower Policies To Stimulate Productivity,* June 1971

A working paper by Eli Ginzberg, with James W. Kuhn and Beatrice G. Reubens, Columbia University, presenting a roundup of methods followed by companies or government in the United States and other

[1] Prepared by or for the National Commission on Productivity. Some of them are background, working papers relating to topics under discussion by the Commission and do not necessarily reflect the views of the Commission members. All items listed are available on request.

countries for preventing or mitigating the adverse manpower impacts of technological change (22 pages).

*Has Productivity Bargaining a Future in America,* October 1971

By Robert McKersie, Laurence Hunter, and Werner Sengenberger, describing British and American experiences with productivity bargaining and factors relating to the outlook (available about March) (50 pages).

*Public Employment Characteristics, Trends, Outlook,* September 1971

A brief informational report by the Bureau of Labor Statistics (14 pages).

*Improving Productivity and Productivity Measurement in Local Government,* June 1971

By Harry P. Hatry and Donald M. Fisk, The Urban Institute. Problems and practices in the measurement of productivity in local governments and illustrative local productivity improvement possibilities (57 pages).

*Education and Productivity,* June 1971

Two papers by Theodore W. Schultz, University of Chicago, dealing with the role of education in productivity and economic growth and allocation of investment resources (19 pages).

*The Relationship Between Research and Development and Economic Growth/Productivity,* February 1971

Four review papers by Charles T. Stewart, George Washington University; Edwin Mansfield, University of Pennsylvania; William Fellner, Yale University; and Zvi Griliches, Harvard University; prepared for the National Science Foundation. They cover information on the relationship between R. & D. and growth and whether it is possible to arrive at conclusions about further investment in R. & D. (75 pages).

*Productivity and the Economy,* 1971

Description: Bulletin 1710, U.S. Department of Labor, Bureau of Labor Statistics—tables, figures, and text on trends in productivity, unit costs and related factors in the United States and other countries. Available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, at 50 cents per copy.

*Productivity Issues in the Domestic Shoe Industry,* August 1971

A report by Stanley M. Jacks, Massachusetts Institute of Technology. Prospects and problems of high productivity systems of production in the shoe industry.



# NATIONAL COMMISSION ON PRODUCTIVITY

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U.S. GOVERNMENT PRINTING OFFICE: 1972 O—459-873

DEC 9 1971

# Inter-Office Memorandum • McGRAW-HILL, INC.

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| TO | PUBLICATIONS COMPANY<br>Executives<br>Publishers<br>Regional Vice Presidents/Managers<br>Advertising Sales Managers | FROM | John R. Emery |
| DEPT. OR PUB. | | DEPT. OR PUB. | Executive |
| FLOOR OR BRANCH | | FLOOR & EXT. OR BRANCH | |
| SUBJECT | cc: Editors-in-Chief | DATE | September 30, 1971 |

p5Ae file on productivity

U. S. BUSINESS COMPETITIVENESS

By this memo, I am calling your attention to a document (attached) which I hope you and every manager in McGraw-Hill Publications will study closely. The reason is compelling: it deals with a subject of vital importance to this nation and to this company.

It was prepared at my request and presented for discussion on September 21 before a special meeting of the Editorial Board. At that time, I asked Chief Editors if each could intensify his editorial efforts -- in whatever ways he considers most appropriate and most effective -- toward helping U. S. business overcome some of these serious problems. Of course each publication will deal only with the problems characteristic of its field and espouse only the solutions appropriate to its convictions; there is no official McGraw-Hill "line" or "position" in either respect. I was most encouraged by the positive and enthusiastic support which I received.

I am also convinced that all McGraw-Hill managers can contribute, personally or professionally, toward this objective of helping to revive the productivity and world-wide competitiveness of U. S. business, industry and the professions.

And so I earnestly invite you to join the crusade!

Sincerely,

John

50-12600

Enc.

FOR: JOHN R. EMERY
EDITORIAL BOARD

SEPTEMBER 21, 1971

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

It has become evident in recent years that U. S. products and services are losing much of their competitive edge in world markets.

The symptoms of lost leadership, although showing up pretty much across the business spectrum, are most acute in specific areas such as electronics, automobiles, steel, textiles, optical equipment, shoes, heavy construction, chemicals. In these and other fields, U. S. firms show a growing inability to compete with foreign producers on a price or quality basis, and at times in both.

Many causes lie behind this trend; some are historic and others recent, all are complex. They stem from many sources: the attitudes and actions of American labor and labor unions; our own government and its policies; foreign governments and their business-labor relationships; and of course the weaknesses in U. S. business itself (see attached checklists of factors and causes). Most of these fall within four basic causal clusters: (1) lagging productivity and efficiency; (2) a decline in technological leadership; (3) an anti-business bias in government and labor; (4) discrimination in international trade.

The consequences, unless checked and reversed, could be disastrous for the U. S. economy and for the nation: loss of foreign markets and eventually much of the U. S. market itself; further weakening of the dollar; serious imbalances in international trade; higher unemployment, especially in manufacturing and heavy industry; rising cost of welfare; continued high taxes; chronic inflation; an erosion of the American standard of living and a weakening of the fabric of the entire nation.

We hold the consequences so serious we believe McGraw-Hill Publications should plan a continuing effort to contribute its prestige and its influence, its creative talents and editorial resources, toward reversing this decline in U. S. productivity and competitiveness. The challenge presents a rare opportunity for McGraw-Hill; it represents a moral obligation as well.

All McGraw-Hill publications could contribute editorially -- some far more so than others -- but each in its own way, on its own schedule and always in close keeping with the characteristics and problems of its own audience and field.

Optimum effectiveness calls for a maximum of editorial freedom, individuality, imagination and creativity.

We therefore recommend a coordinated McGraw-Hill program -- one involving editorial, promotion, advertising and public affairs -- structured around helping this nation attain four basic objectives: (1) greater productivity, cost effectiveness and efficiency in business, government, services and the professions; (2) renewed leadership in research, technology and management methods; (3) less anti-business posture in government at all levels; (4) fair practices in international trade.

John R. Callaham

JOHN R. CALLAHAM, CHAIRMAN

AD HOC COMMITTEE ON
U.S. BUSINESS COMPETITIVENESS

Attachments

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

## INDEX OF ATTACHED OUTLINES



This material is not intended to be definitive nor all-inclusive, and its organization was an arbitrary decision by the Chairman of the Committee. Nor does it necessarily represent a consensus, since each section was written independently by one committee member, with an associate, as indicated. It was prepared with U. S. industry primarily in mind, but much of it could apply equally to U. S. businesses and services of all types.

It represents a broad-brush overview, a suggestive outline, a first set of guidelines, a plateau of departure from which editors and others in McGraw-Hill Publications hopefully can find a stimulus and ideas to develop their own convictions and to flesh out their own positions.

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

## (A.) LAGGING PRODUCTIVITY: CHECKLIST OF FACTORS AND CAUSES

I. Technology (improvements in design, material, function of product)
- Lack of sufficient R&D and clear-cut R&D objectives.
- Limitations imposed by old and outdated facilities.
- Consumer preferences that prevent maximum utilization of technology and facilities.
- Management inertia and decline in competitive spirit.
- Short-range view of hired managers.
- Lack of sufficient incentive for creative people.

II. Facilities
- Output rates less than capacity because of breakdowns, or lack of demand, or inadequate distribution.
- More rework or losses from aging equipment and processes.
- Lack of investment in more productive equipment available.
- Failure to develop new equipment (limited R&D by small firms producing capital equipment, lack of manufacturing R&D by industry, decline in government sponsored manufacturing research).

III. Management
- Declining competitive edge in arrangement of facilities, work scheduling, inventory control, marketing efficiency.
- Scale of operations not at optimum (too big or too small).

IV. Labor -- Skills and Education
- Lack of basic literacy of some workers.
- Lack of training in manual or manipulative skills.

-- Motivation and Effort
- Loss of pride in work and product excellence.
- Adversary relation with management.
- Growing absenteeism.
- Featherbedding and restrictive work rules.
- Less interest of some in material rewards.

-- Wage Rates
- Industry-wide bargaining.
- Competition between unions.
- Escalator clauses in contracts.
- Revolt of rank and file.

V. Environment
- Extra costs of congestion.
- New costs of pollution control.
- Reduction in output because of guards and safety devices.
- Increased cost because of safety devices in product.

## (A.) LAGGING PRODUCTIVITY: MAJOR PROBLEMS AND POSSIBLE SOLUTIONS

Problem 1: Production facilities are relatively obsolete in the U. S. In Japan, for example, the most recent census shows 64% of machine tools are less than ten years old, compared with 36% in the U. S. The difference is even more marked in the automotive industry (69% in Japan, only 33% in the U. S.).

Short-term solution: Use incentives to stimulate modernization. The most effective stimulant so far devised is the investment tax credit (job development credit) which has been used by the U. S. twice in the past decade. It increases cash flow without diminishing the capitalized value of equipment. Frequent manipulation of the credit to "control" business cycles has been so badly timed as to augment rather than smooth these cycles and has cast doubt on its use in the long run.

Long-term solutions: Although incentives are needed to offset the anti-capital bias of high corporate income tax rates, a more neutral form of taxation, such as the value-added tax (as a partial or complete substitute for the present corporate income tax) offers advantages that merit careful study.

Capital equipment producers have often followed a "better mousetrap" approach to marketing. Aggressive product development and marketing efforts would be healthy for both the equipment producers and for the plants thus induced to become more productive.

Problem 2: Development of an adversary position between the worker and his company. Partly because of the dulling routine of many factory jobs, of union power with its anti-management bias, and of less personal contact and communications between management and workers, many U. S. workers have lost pride in their work, try to outwit the company instead of trying to help it.

Solutions: Intensify motivational research and the application of known results. In many cases jobs can be made more challenging, new schedules (such as the four-day week) can be tried, new incentives may be found.

Eliminate restrictions from union contracts that restrict productivity, either by negotation or by making such restrictions illegal as being in "restraint of trade".

Problem 3: Reduced manufacturing R&D. Much of the American productivity growth of the past two decades grew out of R&D sponsored by the Federal government (such as numerical control developed out of research sponsored by the Air Force at MIT). Government R&D directed at increased productivity has virtually ceased and private industry is not filling the gap.

Solutions: Stimulate R&D both in the technology of productivity and in the motivational aspects of productivity, either by public grants for such research or by incentives such as tax credits for industry. Explore the possibility that the results of R&D for which special tax credits were given would have to be freely available to all U. S. industry.

Problem 4: Closing of the management gap. To a greater extent than realized, the U. S. margin over other industrial nations has been in the efficiency with which work is organized and managed: work is scheduled better, in-process inventory levels are lower, there is less delay in assigning work. This management edge is fast disappearing because of the spread of U.S.-trained managers, the growing acceptance abroad of U. S. management methods and training, and the equalizing effect of computers and numerical control.

Solution: It is hard to make good management systems better. It is not impossible. But the closing gap between management skills in the U. S. and those in Germany and Japan means that the bulk of productivity growth must come in other ways.

Problem 5: Industry-wide bargaining has made wage rates immune to the moderating influences of normal market forces. Thus where wages were once the result of the interaction of productivity and market demand they are now one cause of the lagging U. S. productivity in relation to that of other countries.

Short-term solution: Some lid on wage increases is needed. Thus a wage control plan of some type much follow the freeze.

Long-term solution: The legal basis for industry-wide bargaining needs to be adjusted to make the negotiations between a single union and an entire industry more responsive to market forces.

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

## (B.) U. S. GOVERNMENT ATTITUDES AND ACTIONS: CHECKLIST OF FACTORS AND CAUSES

I. General
- Inflationary bias in monetary and fiscal policies.
- Failure to protect public interest in labor-management contract negotiations.
- Arbitrary and unpredictable antitrust policy.
- Unreasonable safety requirements in some industries (e.g., shipping, railroads).
- High standards of product safety (e.g., automobiles, drugs).
- Rising standards for protection of environment -- pollution.
- Costly requirements for reporting and record keeping.
- Disinterest and red tape.

II. Taxes
- Excessive reliance on corporate income tax.
- Inadequate allowance for depreciation and obsolescense.
- Frequent changes and increases create uncertainty.
- On-off use of investment tax credit as a short-term "control" device.

III. Trade policies
- Tolerant attitude toward tariff and non-tariff barriers abroad.
- Antitrust restrictions on U. S. companies abroad.
- Policy of encouraging imports.
- Failure of U. S. officials overseas to promote export business.

IV. International currency problems
- The dollar as reserve currency -- cannot change parities of other currencies.
- Successive devaluations of weak currencies -- gives them an advantage in relation to the dollar.
- Slow revaluation of undervalued currencies (e.g., the mark and the yen).
- Speculative movements of capital.

## (B.) U. S. GOVERNMENT ATTITUDES AND ACTIONS: MAJOR PROBLEMS AND POSSIBLE SOLUTIONS

Problem 1: Inflationary bias in monetary and fiscal policies. This is the basic, underlying cause of much of our trouble. At least since 1966, both fiscal and monetary policy have erred repeatedly on the side of inflation. Although President Nixon attempted to check inflation with more restrictive fiscal and monetary policies, he was forced to abandon them and adopt stimulative policies while prices still were rising as fast as ever.

Solutions: Recognize that goal of 4% unemployment is unrealistic for an economy as big and diversified as the U. S. under present circumstances. Strengthen unemployment insurance and welfare programs to make joblessness less painful to those involved. Enlarge and strengthen retraining and relocation programs to help unemployed workers qualify for work available in other industries and other areas. Amend the Employment Act of 1946 to give maintenance of stable prices equal ranking with maintenance of maximum employment as a national goal.

Problem 2: Failure to protect public interest in labor-management negotations. Excessive wage increases have been the mechanism for cost-push inflation, at least since 1969, and the rise in labor costs has been the primary reason for the decline of competitiveness of U. S. goods in world markets. Between 1965 and 1970, unit labor costs in U. S. manufacturing rose 21%. In 10 other major trading nations, they rose no more than 15%, and this increase applied to a substantially smaller base. These nations account for four-fifths of U. S. imports of manufactured goods. Until the wage-price freeze, neither the Nixon Administration nor the Johnson Administration took any effective action to stop the increase in U. S. labor costs.

Short-term solutions: After the wage price freeze, there must be some sort of incomes policy. Its objective should be to relate wage increases to increases in productivity. This is the only way the U. S. can stop the cost-push inflation and keep its competitive position in world markets in the immediate future.

Long-term solutions: U. S. labor law should be carefully reviewed and amended to remove features that contribute to inflationary settlements. For example, present law allows the union rank-and-file to repudiate a contract agreement reached by union leadership, and this has been used as a device to extract still more concessions from management negotiators who thought they had obtained a firm contract. Authorized union leaders should be given the power to

make binding contracts without rank-and-file veto. Authority of locals to reject national contracts should be removed; right to negotiate for output limitations (as distinct from work conditions) should be revoked. This should not be allowed to turn into a union-busting movement. The U. S. like any democracy, needs a strong, responsible union structure. The object should be to remove features of the present law that allow unions to act irresponsibly or to ignore the public interest.

Problem 3: Excessive reliance on the corporate income tax. The U. S. tax system weighs heavily on corporations because corporate taxes are comparatively easy to collect and because corporations do not vote whereas individual taxpayers do. Corporate income taxes supply 15% to 20% of total federal revenues, and they consume about 45% of total corporate income. It is generally assumed that these taxes are largely passed on to the consumer in the form of higher prices, but most consumers are unaware of the tax component of the prices they pay. In overseas trade, the tax puts U. S. companies at a disadvantage in competition with foreign companies, which usually pay little or no direct income taxes. Both at home and abroad, the tax discourages efficiency and cost-control by absorbing half of the income realized from increased efficiency.

Short-term solutions: A case can be made for introducing the value-added tax in the U. S. as a substitute for part of the present corporate income tax. However, this should not be done until the current price inflation clearly has been brought under control. The value-added tax has distinctly inflationary effects because it raises prices to consumers. (Even though the tax is separately stated on the sales ticket, few consumers will look at anything but the total). In the U. S. system where goods pass through several levels of distribution, the tendency will be to apply customary markups to total price, including the tax. This will multiply the inflationary effect. Also, some sort of exemption should be allowed for new companies and for companies attempting to launch new products. Otherwise, the value-added tax would discourage the formation of new enterprises (which usually make no more than very small profits in the early years of the operation).

Long-term solutions: The only real answer is to reduce the corporate tax over a period of years, with the object of eventually bringing it down to a level no higher than the first bracket of the personal income tax. This should be a slow process because any sudden big reduction in corporate taxes would generate a bonanza for stockholders and cause a loud political outcry. As the tax came down, it would be possible to eliminate most of the present loopholes and special privileges (such as the percentage depletion rule for oil). The final result would be a relatively simple tax at a moderate rate.

Problem 4: Tolerant attitude toward tariffs and non-tariff barriers to U. S. goods in foreign markets. The thinking of U. S. officials, especially in the State Department, still is colored by the idea that this country is so strong and so rich that it must make all the concessions in trade and tariff bargaining. As a result, we have not made aggressive attempts to break down the barriers to U. S. goods that still remain. We encouraged the formation of the Common Market, even though this created a major trading area in which U. S. producers are at a disadvantage. We have allowed the Japanese especially to use various non-tariff devices to limit imports from the U. S.

Solutions: The U. S. must take a tougher attitude toward rules, taxes, and restrictions that put American producers at a disadvantage in world markets. It must also be quicker to react to dumping or the establishment of two-price systems that work to our disadvantage. Where possible, the U. S. should work through the General Agreement on Tariffs & Trade, but it should not hesitate to take unilateral action to protect itself.

Problem 5: The status of the dollar as a reserve currency has put the U. S. at an increasing disadvantage. Under the terms of the Bretton Woods agreement of 1944, the U. S. stated the price of the dollar in gold and all other participating nations then stated the parities of their currencies in terms of the dollar. This means that the U. S. cannot change the value of the dollar in terms of other currencies whereas all other nations can establish new rates when they see fit. This system was well adapted to a time when the U. S. had practically all of the free world's gold and was by far the strongest trading nation in the world. In the modern world, it puts the U. S. at a great disadvantage because other nations can devalue or refuse to revalue and thus obtain or maintain a trading advantage for their producers against U. S. producers.

Short-term solutions: President Nixon's decision to embargo gold and let the dollar float is the first step toward establishing new exchange rates for major currencies against the dollar. Both the mark and the yen should be revalued substantially, other currencies somewhat less. The effect will be to make imports more expensive to U. S. purchasers and U. S. goods cheaper to overseas buyers. This will help bring our balance-of-payments deficit under control.

Long-term solutions: The U. S. dollar no longer should bear the burdens of a reserve currency. The Bretton Woods agreement should be replaced with a new system using International Monetary Fund credits to make international payments. Permissible ranges of fluctuation for exchange rates should be widened. There should be machinery for readjusting rates frequently and more or less automatically to reflect changes in the relative trading strength of different nations.

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

## (C.) U. S. BUSINESS ATTITUDES AND ACTIONS: CHECKLIST OF FACTORS AND CAUSES

I. Declining technological and research leadership
- Development of the multinational company and philosophy.
- Transfer of U. S.-based R&D to overseas subsidiaries.
- Transfer of technology abroad via sale, licensing, affiliation, free.
- Relative decline in R&D spending and effectiveness in U. S.
- Relative decline in U. S. capital spending for new plants and facilities.
- Increasing age and/or obsolescense of manufacturing facilities.
- Decline in product control and product excellence.

II. Inability to impress government and labor with its problems and needs
- A better tax structure to give more incentive.
- Restraints in labor practices and wage rates.
- Importance of permanent investment incentives.
- Seriousness of declining productivity and efficiency.
- Importance of profits and ability to reinvest.
- Concern for sociological and environmental problems.
- And most of its other major problems and needs.

III. Management policies and practices
- Overstaffing and inefficient staffing (especially during Sixties).
- Deterioration of management standards over past decade.
- Failure to respond properly to shifts in consumer needs and attitudes.
- Insufficient planning to detect growth or decline in product lines.
- Overemphasis on the conglomerate path to diversification.
- Failure to capitalize on spin-offs from government R&D.
- Lack of emphasis on management efficiency and innovation.
- Failure to utilize fully available investment incentives (tax credit, rapid depreciation,etc.).
- Frequent emphasis on short-term profits vs. long-term growth/ profits.

## (C.) U. S. BUSINESS ATTITUDES AND ACTIONS: MAJOR PROBLEMS AND POSSIBLE SOLUTIONS

Problem 1: U. S. industry has allowed itself to lose its technological lead over foreign competitors. The development of the multinational company with interests widely spread around the world (and U. S. operations only considered as a regional part of the business) has often led to the rapid transfer to overseas subsidiaries and affiliates of U. S.-based research and development work in new techniques, new machinery and new products. U. S. industry, at the request of the Federal government, has frequently allowed foreign competitors, particularly Japanese, to observe and borrow most of our modern technology without a quid pro quo. Via the multinational company, U. S. industry has resorted to relatively lower cost overseas operations instead of maintaining technological superiority at home in the U. S. -- thus, in effect, exporting manufacturing jobs from the U. S. Industry has also at times suppressed or discouraged innovative new products in razor blades, tires, and electric bulbs by saying the American market was not yet ready for them. U. S. business often has not lived up to the high quality control standards it set for itself. And it is spending less, relatively, on R&D and on capital investment than its leading foreign competition. Overall, it has let its facilities become more and more obsolete both in age and technological obsolescence. Industry has not taken complete advantage of the rapid depreciation methods available nor of other investment incentives, such as tax credits, when they were made available.

Problem 2: Business has failed to communicate its problems and needs to government and labor. Only recently did it indicate to the government the need for the wage-price guidelines or for an incomes policy. It has not yet taken a strong stand on the need to overhaul the international monetary system. It has not availed itself of all the technological help it could have had from government in the way of spinoffs from government financed R&D. It has not received all the help it could use from government on finding out about foreign markets or new products for foreign markets. It has not communicated to labor the real need to improve the quality of workmanship, eliminate featherbedding and to tie wages to productivity gains. Business and individuals have not fought for a tax structure or wage and salary incentives which would reward excellence of performance.

Problem 3: U. S. industrial management standards were allowed to deteriorate. U. S. industry allowed itself to get too fat in the long 1961-69 upsurge. It took the recession of 1969-1970 to make most companies realize they were not operating efficiently. Far too many were overstaffed, and not only overstaffed in numbers but in inefficient workers from the management level down to the sweepers. Tolerating featherbedding contributed

to this. Also, the Federal government's emphasis on industry employing underprivileged trainees did not contribute to productivity gains. Many managers of U. S. industrial companies have failed to act quickly or sensitively enough to shifts in consumer demands. The life-style of consumers is changing drastically. The small, simple, less complex, high quality, non-polluting goods are the ones large numbers of consumers -- particularly young people -- now prefer and buy. Thus, small cars, radios, and television sets, produced by foreign companies rather than U. S. companies, took over large shares of our markets and practically eliminated the U. S. as exporters of these goods. Business has failed to identify and crystalize its basic problems and needs so that it could do a better job. It has too often followed the conglomerate path to diversification rather than horizontal or vertical integration. This development helped to make us less competitive and less efficient since managements of conglomerates generally are more interested in financial assets than in production and quality of goods.

For short-run solutions, U. S. business must ...

1. ...take the lead in developing better managers and advanced management techniques.

2. ...communicate and work more closely with labor and government to help solve its problems.

3. ...take full advantage of the various incentives to invest in new plant and equipment and in research and development.

4. ...insist on some permanent form of incomes policy -- wage gains tied to productivity gains.

5. ...back the government action on import tax, floating dollar and elimination of dollar-gold convertibility.

For long-run solutions, U. S. business should ...

1. ...help organize for policy purposes more tripartite groups representing industry, labor and government.

2. ...take the lead in promoting innovation and cost-savings at all levels.

3. ...insist on wage-price productivity guidelines on an industry-by-industry, region-by-region basis.

4. ...urge the elimination of the dollar as the key reserve currency and insist on equal treatment on imports, exports and capital investment throughout the free world.

5. ...do more detailed and better planning for the short-and long-term.

6. ...work toward easing of present anti-trust laws and interpretations on mergers, joint ventures and joint projects in order to facilitate coordinated and more efficient operations.

7. ...improve its image to government, labor and the general public through substantive educational programs.

# WHY U. S. BUSINESS HAS BECOME LESS COMPETITIVE

## (D.) FOREIGN GOVERNMENTS ATTITUDES AND ACTIONS: CHECKLIST OF FACTORS AND CAUSES

I. General

- Posture of foreign labor unions towards competitiveness and sense of responsibility for economic policy.
- Strengthening of local industry by mergers to obtain economics of scale.
- Importation of cheap foreign labor to do menial work.
- Modern facilities built from scratch to replace those destroyed in World War II.
- Debt financing of Japanese companies.
- High productivity in Japan and many European countries.
- Consortium structure of business to do big jobs (e.g., design of aircraft, computers, autos).

II. Trade policies

- Restrictions that keep out foreign producers until local companies are strong.
- Subsidies to export.
- Government financing of credits.
- Government aid in soliciting business through trade missions, promotion, etc.

## (D.) FOREIGN GOVERNMENTS ATTITUDES AND ACTIONS: MAJOR PROBLEMS AND POSSIBLE SOLUTIONS

Problem 1: Foreign labor unions' posture towards competitiveness. In Japan and West Germany, labor leaders worry about how competitive their industries are in world markets and moderate their wage demands with this in mind. In West Germany, a formal policy of concerted action, established by law, brings labor unions into the procedure that sets wage and price guidelines.

Short-term solution: See Problem 2 under (B.) U. S. Government Attitudes and Actions.

Long-term solution: New leadership for labor, attuned to the problems of the 70's rather than the present leadership which still remembers the economic battles of the Thirties.

Problem 2: Consortium structure to allow business to tackle large projects. This used to be a technique used widely by the U. S. construction industry but it has been curbed by a hostile attitude of the U. S. Department of Justice, Antitrust Division towards such structure. In Europe, such consortium can even cross national boundaries.

Short-term solution: The President can urge the Attorney General to instruct the Antitrust Division to moderate hostility to consortium structure to accomplish big manufacturing projects, particularly areas of high technology. For example, could the Supersonic Transport (SST) become a viable commercial project if it were the product of a consortium of Boeing, McDonnell-Douglas, and Lockheed -- instead of being a government-sponsored project at only one of them?

Long-term solution: Legislation that would encourage consortium structure in high technology areas that require large investments to start.

Problem 3: Government financing of credits. Most foreign governments help their commercial interests by extending long-term credits to foreign customers, particularly to pay giant projects such as power plants, turnkey factories, etc. The U. S. government has always done this on a very limited basis -- except for foreign aid which has been general support rather than specific for a finite project.

Short-term solution: Give the export-import bank more money and greater flexibility to make these kinds of loans. In the past the export-import bank has too often made only sure loans, the kind a commercial bank might make, instead of the more risky ones a government agency should make.

Long-term solution: Granting of large credits to buy American products has to be made part of our foreign policy, with such credits coming from the Treasury. For example, when Willy Brandt visited Moscow earlier this year, one of the subjects he discussed with Kosygin was West German financing of credits for Russian purchases of West German machinery.