

The Capital Needs and Savings Potential of the U.S. Economy

Projections Through 1985

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OF THE U.S. ECONOMY

PROJECTIONS THROUGH 1985

New York Stock Exchange, Inc.

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INTRODUCTION

As the twin ogres of escalating inflation and soaring interest rates have tightened their grip on the U.S. economy, leading business, government and academic economists have made some dire predictions about what lies ahead for American business if the nation fails to develop and implement adequate corrective measures. Those predictions have flowed from a number of diverse statistical estimates and projections -- some of them based on solid, authoritative research, others seemingly no more than guesses and intuitive musings. One thing is certain; the problems are real. President Ford has identified inflation and its attendant ills as the nation's major domestic problem, and has made the fight against inflation the highest priority task of the new national Administration.

At the New York Stock Exchange, we have become increasingly concerned about the supply and allocation of investment capital. And our concerns have deepened with the realization that a capital shortage is no longer a threat for the future, but a fact of the present, as inflationary pressures come to bear on the capital markets.

To develop a clearer understanding of the dimensions and implications of this problem, our research economists undertook a broad survey and study of the capital needs and savings potential of the U.S. economy through 1985. The study sought to develop realistic projections of capital supplies and demands in the economy over the next dozen years.

The basic findings can be expressed in this very simple bit of arithmetic:

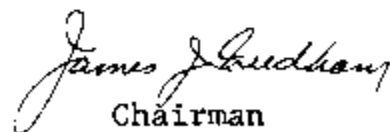
$$\begin{array}{r} \$4,050,000,000,000 \\ - \underline{4,700,000,000,000} \\ \$ (650,000,000,000) \end{array}$$

Stated plainly, this means that the present estimated saving potential in the U.S. economy through 1985 -- from all domestic sources -- is something over \$4 trillion. Over the same period, capital demands are likely to reach a cumulative total of \$4.7 trillion. That leaves an estimated capital gap of \$650 billion.

Those figures are not very reassuring. They confirm the apprehensions of others, and they underscore the urgency of the problems confronting the American business community and the American people.

But it is our hope that while these projections present a harsh and disturbing picture, they also give us a clear opportunity to assess the prospective implications of the emerging capital problem -- and to do something about it before it is too late.

The degree of intensity with which American business, American labor, American government -- and the American people -- attack this problem really holds the key to whether or not today's projections will become tomorrow's disruptions.


Chairman

THE CAPITAL NEEDS AND SAVINGS POTENTIAL OF THE U.S. ECONOMY

PROJECTIONS THROUGH 1985

This report of the Capital Needs and Savings Potential of the U.S. Economy Through 1985 is divided into three sections. Section I presents the New York Stock Exchange's "Base Case" projections of investment and saving flows for the period 1974-1985. Section II develops alternative scenarios to test the sensitivity of the base case conclusions to changes in parameter values. Section III discusses the implications of a major investment capital shortfall and offers a number of general policy recommendations for bridging the gap.

METHODOLOGY: AN OVERVIEW

To assess the adequacy of future saving to finance anticipated investment, separate projections were made of gross private domestic investment, business and personal saving, and net government requirements for funds. These estimates took the form of ex ante forecasts of saving and investment flows -- i.e., the projected values represent desired levels of investment and saving rather than actual or (ex post) values of those flows. This distinction is of critical importance. Ex post saving and investment must be equal at every point in time. Ex ante, the flows need not be equivalent, since corporations, households and other sectors of the economy carry out investment and saving planning independently of one another.

The study's emphasis on ex ante saving and investment requirements precluded the use of econometric models, in which saving is always equated with investment, primarily through changes in interest rates.

The need to use non-econometric techniques sacrifices some rigor. This is especially true in gauging the impact of alternative assumptions of investment demand and government budgetary policy on the economy as a whole. Economic variables are linked together in a complex pattern of multiple feedback loops, and it is difficult to trace the interactions among the variables without a well-specified model of system behavior.

To help overcome this difficulty, a scenario approach was used to assess the impact of changes in key parameters on the balance between the demand and supply of funds. A "base case" scenario was constructed, in which a "most likely" projection of investment and saving flows was detailed. Alternative scenarios were then developed to test the stability of the "base case" conclusions. The emphasis was placed, not so much on the precise values of saving and investment flows but on the more important issue of the relationship of those flows to each other -- and, inferentially, to the economy as a whole.

I. BASE CASE SCENARIO

A. THE DEMAND FOR FUNDS

General Methodology

Gross Private Domestic Investment (GPDI) and net government financing operations (deficit financing and net borrowing from the public) comprise the total domestic demand for funds in the economy. The value of Gross Private Domestic Investment in the 1974-1985 period was derived by aggregating estimates of business plant and equipment expenditures, residential construction and investment spending by farms, non-business and non-profit institutions (including investment in inventories.) Estimates of the government sector were broken out between state and local government deficit financing and the net financing needs of the Federal government. It should be borne in mind that these projections represent desired levels of capital spending -- what industry and knowledgeable observers believe will be required in the 1974-1985 period.

The projections are consistent with an 8.6% annual rate of growth in Gross National Product, (5% annual rate of inflation, 3.6% annual rate of real growth).

1. The Components of Gross Private Domestic Investment

a) Plant and Equipment Spending

The "base case" projection of plant and equipment spending (which includes outlays for modernization and new capacity) was de-

rived from specific industry forecasts and from projections made by other respected research organizations.^{1/} The various estimates were adjusted to insure comparability, and then consolidated to form a consensus projection of future capital requirements.

The industries selected were those included in the Department of Commerce series on new plant and equipment spending. For projection purposes, the industries were grouped into five broad categories:

- 1) The energy sector -- mining,^{2/} petroleum, electric and gas utilities.
- 2) Basic material processors -- iron and steel, non-ferrous metals, stone, clay, glass, rubber, paper, and chemicals.
- 3) Transportation and transportation equipment manufacturers.
- 4) Communications and services.
- 5) All other.

Table 1 provides the consensus projection of growth rates in each of these categories. These rates (computed using 1973 as a base, the latest year for which complete data are available) reflect an assumed slowdown in the pace of new plant and equipment spending

^{1/} Sources will be furnished upon request.

^{2/} The Department of Commerce does not break out mining data by commodity category. It is assumed that mining plant and equipment spending relates solely to the energy sector.

during the latter part of the estimating period, as it is unlikely that any investment boom would continue at a constant rate over a twelve-year interval.

Table 1

| <u>Average Annual Rate of Growth in New Plant and Equipment Spending</u> | | |
|--|-----------------------|-----------------------|
| | 1961-1973 (actual) | |
| | 1973-1985 (projected) | |
| | <u>1973- 1985</u> | <u>1961- 1973</u> |
| Energy Sector | 12.7% | 9.4% |
| Basic Materials | 10.7 | 9.0 |
| Transportation & Transportation Equipment | 9.6 | 7.3 |
| Communications & Services | 8.4 | 8.8 |
| Other | 9.9 | 9.4 |
| <u>Total Plant & Equipment Spending</u> | <u>10.3%</u> | <u>8.9%</u> |

As Table 1 indicates, the energy and basic materials sectors will account for the greatest increase in capital spending.

On a cumulative basis, the energy sector will require roughly \$820 billion in the 1974-1985 period. Electric utilities alone will require approximately \$400 billion between 1974 and 1985 for increased generation, transmission and distribution facilities (assuming present environmental regulations).^{3/} The other energy industries (including gas utilities, petroleum, coal, synthetic fuels and nuclear) will need to spend in the range of \$420 billion for primary energy needs, downstream petroleum investment (including

^{3/} "24th Annual Electrical Industry Forecast," Electrical World, September 15, 1973, p. 53.

tankers and environmental protection equipment) and developmental costs for full-scale synthetic gas and oil shale production.^{4/} The likely imperatives of "Project Independence" suggest, however, that the latter estimate is probably conservative.

The basic materials industries will spend nearly \$330 billion through 1985. The huge increase in capital spending will be needed to overcome the serious shortages of capacity now limiting output in the iron and steel, aluminum, paper, cement, glass and other industries.

The transportation sector (including transport equipment industries) will require \$225 billion through 1985. This sum reflects growing concern over the nation's mass transit needs. High energy costs and public concern for improvements in environmental quality have prompted proposals to upgrade the nation's aging railroad system and to develop viable alternatives to highway transportation.

Significant increases in capital outlays will also be registered by the communication and services sector and by "other" manufacturing industries (including electrical and non-electrical machinery, food, textiles, and miscellaneous durable and non-durable manufactures). These sectors will require approximately \$770 and \$420 billion, respectively, in cumulative capital outlays to 1985.

^{4/} Forecasts for the petroleum and related energy industries vary widely. The figures used in this report are derived from "Energy Financing," a March 7, 1974 research study issued by Irving Trust Company; a revised National Petroleum Council estimate of future capital needs (released in 1973); and projections of electric utilities capital requirements presented in Electrical World, September 15, 1973.

b) Residential Construction

The expected demand for new housing is related in large part to demographic factors. In the 1974-1985 period, the distribution of the U.S. population will shift toward a greater concentration in the 20-35-year age bracket, a group which has the highest rate for marriages and household formation. Conservative estimates suggest that by 1985, 3 million housing units a year may be required to meet the increased demand for housing. Included in this total are single-family and multi-family dwellings and mobile homes. An annual rate of 3 million housing starts by 1985 implies a 3.3% annual growth rate in housing starts over the period -- somewhat higher than the 2.6% annual growth rate during 1962-1973.

In terms of dollars, assuming that construction costs advance in line with general inflation rates,^{5/} nearly \$1.1 trillion will be required to meet America's housing needs.

c) Capital Spending on Inventories and by Farm and Non-Profit Institutions

Investment spending in this sector should amount to \$850 billion in the 1974-1985 period. This total includes \$206 billion in cumulative farm expenditures (based on historical rates of investment), \$83 billion in inventory investment (based on recent average values of the change in inventories of \$6.9 billion per year), and \$562 billion in capital spending by private educational institutions, hospitals and related non-profit organizations (again, predicated

^{5/} Five percent per annum, except in the case of multi-family units, where costs were assumed to rise at a 4% annual rate, reflecting greater use of modular construction techniques and related innovations.

on historical data, modified to allow for reduced capital demands by colleges and universities, and a slowdown in the rate of hospital construction during the estimating period). This estimate should not be regarded as anything more than an order of magnitude projection, based on the diverse elements included within this "catch-all" category.

* * * * *

Aggregating the components of Gross Private Domestic Investment indicates that \$4.5 trillion in private investment will be required over the 1974-1985 period (Table 2). The percentage of Gross National Product devoted to capital formation would rise from 15.6% in 1973 to an average of 16.4% over that period. The average over the preceding 12 years was 15.3%. In constant 1973 dollars, cumulative Gross Private Domestic Investment equals approximately \$3.2 trillion. This sum is still roughly 1.5 times the \$2 trillion spent in the preceding twelve-year period (also stated in terms of 1973 dollars). Thus, even abstracting to account for the effects of inflation, the projected volume of domestic investment will clearly be enormous.

Table 2

Projections of Gross Private Domestic Investment
Cumulative, 1974-1985

| | <u>Current \$</u> | <u>1973 \$</u> |
|---|-------------------|----------------|
| <u>Plant and Equipment Spending</u> | \$2,568 | \$1,799 |
| Energy | 824 | 571 |
| Basic Materials | 328 | 230 |
| Transportation and Transport Equipment | 225 | 158 |
| Communications and Services | 772 | 548 |
| Other | 419 | 292 |
| <u>Residential Construction</u> | 1,085 | 771 |
| <u>Non-Profit, Agriculture, and Change in Inventories</u> | <u>850</u> | <u>601</u> |
| <u>Total Gross Private Domestic Investment</u> | <u>\$4,503</u> | <u>\$3,171</u> |

2. Government Financing Requirements

a) The Federal Sector

The Federal government's demand for funds is far too erratic to permit meaningful projections. Existing studies offer little practical guidance. For example, a recent study by the Brookings Institution projected the Federal budget to be in surplus by \$93 billion (assuming a 5% rate of inflation and no new spending plans) in 1980.^{6/} However, as new programs and changes in existing programs appear quite likely -- especially in the energy sector and for a national health insurance program -- the actual 1980 surplus could be far less than \$93 billion. Indeed, the Federal budget may even be in deficit, depending on Congressional and Executive action --

^{6/} Barry M. Blechman, et. al., Setting National Priorities, The 1975 Budget, The Brookings Institution, Washington, D.C., 1974, p. 253.

a possibility noted in the Brookings analysis. Historical experience shows government surpluses to be a rarity and to assume a surplus in the years ahead would be overly optimistic.

In view of these considerations, and with full recognition of the uncertainties involved, the Federal deficit is assumed to average \$3.5 billion a year over the 1974-1985 period. This rather conservative assumption is based on the average Federal deficit during the non-war years of 1954-1963. The relatively large deficits during the late 1960s cannot be viewed as "most likely," as they reflect U.S. involvement in Viet Nam.

In addition to budgetary deficits, the off-budget demands of sponsored credit agencies have been growing apace in recent years, exceeding \$19 billion in 1973.^{7/} This borrowing competes directly with private sector demands and represents a significant share of total credit market borrowing (10% in 1973). A Federal Financing Bank has recently been established to coordinate agency borrowing. And while it is too early to judge its impact, this new institution does offer the possibility of more rational government use of the credit markets. Again recognizing the substantial element of uncertainty involved, agency borrowing is assumed to average \$8.6 billion a year during 1974-1985. This figure represents the average of such borrowing during the 1968-1973, prior to which credit agency borrowing was not a significant factor.

^{7/} To some extent, Federal agency borrowing substitutes for private borrowing. This, however, does not materially affect our conclusions. Even if all Federal agency borrowing were excluded, the projected savings gap would still be huge.

b) State and Local Government Financing Requirements

State and local governments have been running a sizeable surplus recently, but have been borrowing heavily (to the tune of \$10-15 billion a year) to finance capital projects. Their net demands on the credit markets are assumed to average out to \$2.5 billion a year over the next ten years. This estimate is based on a Tax Foundation study^{8/} which estimated that state and local governments will run a cumulative surplus of about \$78 billion in the 1974-1980 period, or approximately \$11 billion a year, while debt requirements in the same period are expected to average under \$14 billion a year. The difference of about \$2.5 billion represents net credit demands. The 1974-1980 forecast is assumed to hold through 1985.

* * * * *

Table 3 indicates that combined Federal and state and local financing requirements will cumulate to \$175 billion over 1974-1985.

Table 3

| <u>Governmental Demand for Funds</u> | |
|---|--------------|
| <u>Cumulative, 1974-1985</u> | |
| <u>(Billions of Dollars)</u> | |
| Financing Federal Deficits | \$ 42 |
| Net Federal Credit Agency Borrowing | 103 |
| Net State and Local Government Financing Requirements | <u>30</u> |
| <u>Total Governmental Demands for Funds</u> | <u>\$175</u> |

8/ The Financial Outlook for State and Local Government to 1980, Tax Foundation, Inc., New York, 1972, p. 96

B. THE SUPPLY OF SAVINGS

Business saving (capital consumption allowances and retained earnings adjusted for changes in inventory valuation), personal saving, and net foreign investment inflows constitute the sources of savings available to the economy.^{9/}

1. Business Saving

The projected value of business saving was derived from a regression of such saving on gross national product, using data from 1950-1973 (in order to provide sufficient observations over all phases of cyclical activity). The estimating equation is provided below:

$$\text{Business Saving} = 3.52459 + .10498 \text{ GNP}$$

The coefficient of the GNP variable was highly significant ("t" value = 29.775) and the coefficient of determination (\bar{R}^2) was an encouraging .976. For forecasting purposes, GNP was assumed to grow at 8.6% per annum, consistent with the GNP growth rate used in the projections of capital spending. It was also implicitly assumed that profit margins would not increase much beyond present levels, that accounting procedures (especially treatment of depreciation costs) would not change significantly and that corporation taxes would remain essentially unchanged.

^{9/} The national income accounts do not include net increases in the money supply as a source of saving, as saving is defined in the accounts to equal income less spending.

The regression-based forecast indicates that more than \$2.9 trillion will be saved by the business sector over the 1974-1985 period.

While any assumption that historical trends will continue should automatically be suspect, the stability of the relationship between business saving and GNP is quite pronounced. It has never fallen below 9.9% (reached only in the recession years of 1953 and 1970) and has only risen above 12% during the early years of the Viet Nam War (1964-1966).

Capital consumption allowances will account for the major portion of the nearly \$3 trillion in business saving, cumulating to about \$2.4 trillion over 1974-1985. The significant increase in the stock of capital projected for the period would necessarily generate large additional depreciation charges. The actual value of these write-offs was estimated by assuming that the capital consumption allowance/GPDI ratio would average 51.75% over the period. This percentage is below historic levels and reflects the assumed higher rate of growth in GPDI relative to the growth in depreciation charges.

Retained earnings were treated as a residual element in this analysis and are expected to accumulate to more than \$560 billion. The relatively low growth rate projected over the period reflects the downward adjustment for inventory profits in the historical data. It should be noted that retained earnings in 1973 (even

after adjustment for inventory profits) should not be used as a base for future projections. Cyclical factors and dividend controls made total retentions in 1973 far higher than would ordinarily be the case (i.e., if corporate retentions are viewed over the entire business cycle).

2. Personal Saving

Personal saving represents a sizeable flow of funds to the capital markets -- nearly \$55 billion in 1973. As a percent of GNP, personal saving ranged between 3.4% and 5.8% during 1960-1973. At the close of 1973, however, the personal saving rate was 4.25%, well below the 5.0% average of the preceding five years.

Personal saving is expected to rise from \$54.8 billion in 1973 to \$135 billion by 1985, a cumulative total of more than \$1.1 trillion. These projections assume that the ratio of personal saving to GNP will decline smoothly over the period -- from 4.25% in 1973 to 3.9% in 1985 (based, in part, on shorter-term projections made by the Brookings Institution). The expected decline in the saving/GNP ratio is predicated on: 1) the shifting age distribution of the U.S. population toward the low-saving 20-35 age bracket, 2) mandated increases in social security contributions, which tend to be regressive, and 3) the possibility that the present high levels of inflation may change the historic propensity of consumers to maintain a constant real level of savings in relation to income. This does not imply an expectation that current rates of inflation will

persist but, rather, that traditional consumer saving habits may be altered by the recent severe erosion of real household wealth.

3. Foreign Investment Flows

In addition to domestic sources of savings, an increasing flow of funds should become available from foreign sources. The greatest potential for such inflows clearly lies with the Arab states, which are expected to accumulate more than \$500 billion as an investable surplus in the 1974-85 period. While a major portion of these funds will no doubt be recycled to other nations to finance their oil purchases, a significant volume should still be available for investment. The size and liquidity of the New York capital markets should attract a large share of these oil revenues, with investment probably being concentrated in government and high-grade corporate debt securities.

Unfortunately, however, no realistic basis exists from which to project the future volume of net foreign inflows of capital. Political considerations alone make projections extremely unreliable. Thus, while it may be hoped that sizeable foreign inflows can add to the pool of available savings, prudence dictates against relying on them.

C. A CAPITAL SHORTFALL

When the projections of ex ante demand and supply of capital funds are offset, it is clear that a cumulative saving gap of nearly \$650 billion is in prospect. This capital shortfall, aver-

aging \$53.8 billion a year over the 1974-1985 period, represents approximately 13% of the average demand for funds over the period (Table 4).

Table 4

Sources and Uses of Funds
Cumulative, 1974-1985
(Billions of Dollars)

| | | |
|---------------------------------------|---------|-----------------|
| <u>Sources of Funds</u> | | |
| Business Saving | | \$2,923 |
| Capital Consumption Allowances | \$2,359 | |
| Corporate Retained Earnings | 564 | |
| Personal Saving | | <u>1,109</u> |
| <u>Total Sources of Funds</u> | | <u>\$4,032</u> |
| <u>Uses of Funds</u> | | |
| Gross Private Domestic Investment | | \$4,503 |
| Plant and Equipment | \$2,568 | |
| Residential Construction | 1,085 | |
| Other | 850 | |
| Financing Federal Deficits | | 42 |
| Net State and Local Government | | |
| Financing Requirements | | 30 |
| Net Sponsored Credit Agency Borrowing | | <u>103</u> |
| <u>Total Uses of Funds</u> | | <u>\$4,678</u> |
| <u>Saving Gap</u> | | <u>(\$ 646)</u> |

It should be stressed that this "base case" scenario presents a "most likely" outcome, based upon reasonable assumptions of future capital demands and savings availability.

However, from a policy viewpoint, the precise dimensions of a saving gap is not the issue. Whether the cumulative gap is \$400 billion or \$600 billion or \$800 billion, the problem -- and the policy implications -- remain the same.

It is more important to know whether a different set of "reasonable" assumptions would develop projections that would eliminate the prospective gap, or reduce it to inconsequential or manageable proportions. The following section of this report demonstrates that this does not appear to be possible.

II. ALTERNATIVE SCENARIOS

The alternative scenarios presented here assume no shifts in tax policies and no major changes in the general business climate over the 1974-1985 period.

A. Alternative #1: Higher Saving Flows

This scenario assumes that the base case projections may have underestimated business and personal saving. To adjust for this possibility:

- 1) Corporate capital consumption allowances were assumed to equal 54.25% of GPDI (based on the average percentage during the major expansions of the 1962-73 period) as opposed to the base case level of a 51.75% average.
- 2) Retained earnings (adjusted for inventory valuation) were assumed to equal 10% more than base case estimates (an arbitrary, but sizeable shift).
- 3) Personal saving rates were assumed not to fall, as in the base case, but to remain at the 1973 level of 4.25% of GNP. The rate of growth of nominal GNP was assumed to be 9.2% rather than the 8.6% rate used in the base case. This higher rate reflects the possibility that the projected levels of GPDI are consistent with a substantially higher rate of real economic growth than the 3.6% rate assumed in the base case scenario.

With these modifications (all other factors remaining the same) a sizeable, albeit reduced saving gap of \$396 billion is still projected for the 1974-1985 period (Table A1).

Table A1

Alternative #1 - High Saving - Base Case Investment
Cumulative, 1974-1985
 (Billions of Dollars)

| | <u>Base Case</u> | <u>Alternative #1</u> |
|-----------------------------------|------------------|-----------------------|
| Gross Private Domestic Investment | \$(4,503) | \$4,503 |
| Add | | |
| Depreciation Allowances | 2,359 | 2,443 |
| Retained Earnings | 564 | 620 |
| Personal Saving | <u>1,109</u> | <u>1,219</u> |
| <u>Private Saving Gap</u> | <u>\$(471)</u> | <u>\$(221)</u> |
| Add | | |
| Government Demand for Funds | <u>(175)</u> | <u>(175)</u> |
| <u>"Total" Saving Gap</u> | <u>\$(646)</u> | <u>\$(396)</u> |

If cumulative governmental demand for funds is assumed at 50% of base case levels (i.e., at \$87.5 billion) a saving gap of more than \$300 billion still occurs.

In this scenario, the private saving gap is less than 50% of the base case projection. However, the assumptions upon which this "revised" gap is based are not particularly realistic. While the adjusted retained earnings projections appear to be reasonable, the depreciation to GPDI ratio is unlikely to remain constant at 54.25% when capital expenditures are increasing at a faster rate than depreciation charges. It is also doubtful, based upon previously noted demographic factors, that the personal saving/GNP ratio would

remain at current levels. The 9.2% growth rate assumption is similarly extreme, given the general agreement in long-term econometric models as to the relationship between levels of capital expenditure and gross national product. Similarly, it is unlikely that government demands would total only \$87.5 billion through 1985 -- an eventuality for which there is simply no historical precedent.

B. Alternative #2: Lower Investment and Higher Saving

This scenario goes one step beyond Alternative #1, assuming that the base case projections of aggregate GPDI were overstated, while saving flows were understated, as in the previous scenario. To show the implications of such a set of assumptions:

- 1) The GPDI/GNP ratio was assumed at a constant rate of 16% in the 1974-1985 time-frame (it should be noted that every econometric model reviewed in the course of this study assumed a GPDI/GNP ratio above 16%). GNP was assumed to increase at 8.6% per annum, as in the base case (even though a lower GPDI/GNP ratio suggests that a slower rate of growth would be more appropriate).
 - 2) Capital consumption allowances were computed at 54.25% of the lower GPDI estimate.
 - 3) Retained earnings were assumed to cumulate to \$620 billion, based on the Alternative #1 assumptions.
 - 4) Personal saving was computed at 4.25% of nominal GNP.
- The lower level of investment spending assumed in this

scenario suggests that the Alternative #1 assumption of a 9.2% rate of growth in nominal GNP would be too high. While econometric studies suggest that the base case rate of 8.6% would also be excessive, this rate is used for this scenario.

Table A2 shows that even with these assumptions, a significant saving gap of \$404 billion develops. Again, even if the base case assumption regarding government spending is halved, the projected saving gap is still of major proportions.

Table A2

Alternative #2 -- Low Investment and High Saving
Cumulative, 1974-1985
 (Billions of Dollars)

| | <u>Base Case</u> | <u>Alternative #2</u> |
|-----------------------------------|------------------|-----------------------|
| Gross Private Domestic Investment | \$(4,503) | \$(4,406) |
| Add | | |
| Depreciation Allowances | 2,359 | 2,388 |
| Retained Earnings | 564 | 620 |
| Personal Savings | 1,109 | 1,169 |
| <u>Private Saving Gap</u> | <u>\$(471)</u> | <u>\$(229)</u> |
| Add | | |
| Government Demand for Funds | (175) | (175) |
| <u>"Total" Saving Gap</u> | <u>\$(646)</u> | <u>\$(404)</u> |

C. Alternative #3: High Investment and High Saving

The base case scenario was somewhat conservative in its projections of Gross Private Domestic Investment. For example, a number of respected research groups have estimated that the energy sector would require \$900 billion in capital funds in the 1974-85 period, as compared with the \$820 billion used in the base case

analysis. (This higher estimate assumed the same rate of inflation -- 5% per annum -- as the base case study.) To adjust for any possible underestimation of capital demands, the following assumptions were made:

- 1) Energy investment was assumed to cumulate to \$900 billion in the 1974-1985 period.
- 2) Base case projections for other plant and equipment sectors were increased by 5% in each year (a relatively small upward adjustment).
- 3) Residential construction expenditures were recalculated assuming 3.2 million housing starts by 1985 instead of 3.0 million as in the base case. In addition, the 1% "technology" factor used in computing the inflation rate in residential construction costs was not applied here (all costs were postulated to increase at 5% per annum).
- 4) Non-business, non-profit capital investment was also increased by 5% in each forecasting period.

With these new assumptions, Gross Private Domestic Investment rises from \$4,503 billion in the base case to \$4,785 billion (Table A3).

Table A3

Alternative #3 -- Gross Private Domestic Investment
Cumulative, 1974-1985
(Billions of Dollars)

| | <u>Base Case</u> | <u>Alternative #3</u> |
|--|------------------|-----------------------|
| <u>Plant and Equipment Spending</u> | \$2,568 | \$2,731 |
| of Which Energy | (824) | (900) |
| Transport | (225) | (236) |
| Basic Materials | (328) | (345) |
| Communication & Services | (772) | (811) |
| Other | (419) | (439) |
| <u>Residential Construction</u> | 1,085 | 1,161 |
| <u>Other</u> | 850 | 893 |
| <u>Gross Private Domestic Investment</u> | <u>\$4,503</u> | <u>\$4,785</u> |

On the saving side, it was assumed that:

- 1) Depreciation allowances would be calculated using the higher (and somewhat unrealistic) rate of 54.25% of GPDI.
- 2) Retained earnings would be computed assuming a 10% increase over base case levels (higher plant and equipment investment being associated with higher levels of retentions).
- 3) Personal saving would be estimated as in Alternative #1, on the basis of a 9.2% annual rate of growth in nominal GNP, with the personal saving/GNP ratio assumed at 4.25%. As previously indicated, this percentage probably overstates the volume of personal saving that will accumulate in the forecasting period.

Offsetting the projections of GPDI with estimated saving flows provides a saving gap of \$525 billion (Table A3a). As before, changing assumptions regarding governmental financing needs will increase or reduce the total saving gap.

Table A3a

Alternative #3 -- High Investment, High Saving
Cumulative, 1974-1985
 (Billions of Dollars)

| | <u>Base Case</u> | <u>Alternative #3</u> |
|-----------------------------------|------------------|-----------------------|
| Gross Private Domestic Investment | \$ (4,503) | \$ (4,785) |
| Add | | |
| Depreciation Allowances | 2,359 | 2,596 |
| Retained Earnings | 564 | 620 |
| Personal Savings | 1,109 | 1,219 |
| <u>Private Saving Gap</u> | <u>\$ (471)</u> | <u>\$ (350)</u> |
| Add | | |
| Government Demand for Funds | (175) | (175) |
| <u>"Total" Saving Gap</u> | <u>\$ (646)</u> | <u>\$ (525)</u> |

D. Alternative #4: Increased Inflation

The base case scenario assumed a 5% annual rate of inflation in the 1974-85 period. To test the impact of higher inflation on the saving gap, the base case estimates were recomputed assuming a 6% rate of inflation (the rate of growth of nominal GNP increasing from 8.6% to 9.6%). The results of this computation are provided in Table A4.

Table A4

Alternative #4 -- Increased Inflation
Cumulative, 1974-1985
 (Billions of Dollars)

| | <u>Base Case</u> | <u>Alternative #4</u> |
|-----------------------------------|------------------|-----------------------|
| Gross Private Domestic Investment | \$ (4,503) | \$ (4,833) |
| Add | | |
| Depreciation Allowances | 2,359 | 2,536 |
| Retained Earnings | 564 | 609 |
| Personal Savings | 1,109 | 1,182 |
| <u>Private Saving Gap</u> | <u>\$ (471)</u> | <u>\$ (506)</u> |
| Add | | |
| Government Demand for Funds | (175) | (186) |
| <u>"Total" Saving Gap</u> | <u>\$ (646)</u> | <u>\$ (692)</u> |

As shown in Table A4, higher inflation rates would only serve to widen the saving gap, though saving flows would also rise, based upon increases in the capital base and in the level of nominal income.

E. Other Scenarios

The preceding four scenarios illustrate that the base case conclusion of a sizeable cumulative saving gap stands up to fairly severe changes in parameter values. While it would certainly be possible to construct sets of assumptions that would eliminate the gap, the alternative scenarios presented here suggest that the reasonableness of more extreme scenarios would be open to serious question. And while it might be argued that the majority of business economists have overstated the nation's capital needs, it is extremely unlikely that the best-informed experts have seriously erred in their own areas of expertise.

The most reasonable conclusion from the alternative scenarios presented here is that they confirm the reasonableness of the base case projection of a sizeable capital shortfall over the period to 1985.

III. IMPLICATIONS AND POLICY RECOMMENDATIONS

The saving gap or capital shortfall projected in the base case scenario represents a theoretical imbalance between investment capital demand and investment capital supply. The gap itself will never actually show up; rather, it will be evidenced ex post, or after the fact, by high interest rates -- brought about by intensified competition for an inadequate supply of savings -- and reduced credit availability. The projected shortage of capital will have a particularly severe impact on domestic business activity, on the position of the U.S. in international economic affairs and, ultimately, on the standard of living and quality of life in America.

A. IMPLICATIONS OF A CAPITAL SHORTFALL

1. Domestic Business Implications

Housing and other construction will be particularly hard hit by a capital shortfall. Skyrocketing interest rates have already severely constrained new housing starts. If present trends continue, the likely results may include decreased square footage in new homes and apartments and lower construction standards. Millions of Americans who dream of a home in the suburbs will have to forego their hopes and aspirations. Indeed, the very quality of life may be impaired, as the lack of suitable housing facilities leads to even more urban congestion and decay.

Small and medium-size businesses will find it increasingly difficult to obtain necessary financing. High interest charges will

often preclude the possibility of long-term financing, forcing them to rely on short-term borrowing -- primarily through commercial banks -- to finance capital investment. But borrowing short for long-term purposes is not normally advisable, and bankers and other lenders are unlikely to continue to satisfy the demand -- at any price -- over an extended period. Moreover, as credit availability declines, lenders will increasingly put their funds with larger, "safer" borrowers with whom they have long-standing customer relationships. The largest and safest borrower, of course, is the Federal government. To the extent that funds are directed into government issues, additional strains will be placed on the private sector (as interest rates increase because of the flow of funds into such issues). The government could even become a center for the allocation of funds to business and consumers if Federal borrowing increased significantly beyond expected levels.

Even larger companies will feel the pinch. This is especially likely in the utility sector, where expansion plans are already being cut back because of financing problems. In addition to raising the possibility of frequent brownouts and blackouts, reduced capital spending in the energy sector would soon impact on other areas of the economy, notably in the construction and electrical machinery industries.

Overall, the capital markets may be unable to meet the essential financing needs of American industry. Along with a decline in bond financing, commercial paper may become unavailable as a source of

funds to all but the major Aaa corporations. As lenders become increasingly wary, they will be likely to shy away from buying "high risk" paper unless the creditworthiness of the borrower is beyond question. High rates of interest may adversely affect stock prices as investors shun equities because of the higher returns available elsewhere with less risk. Price-earnings ratios would continue under pressure. And since, with low P/E ratios, corporations cannot float new stock without diluting the earnings of existing shareholders, it would become increasingly difficult to market new equity issues. (At a P/E ratio of 5, for example, a company would have to earn 20% on new equity capital to prevent earnings dilution.) If inflationary fires are dampened, a new equilibrium should be achieved between return on equities and interest rates, permitting stock values to resume their historic upward pattern. But the adjustment period could be prolonged.

Slow growth in stock prices could also increase pressures for higher dividend payouts. The danger here, of course, is that higher payouts would reduce retained earnings which constitute an important part of the internal funds available for corporate reinvestment.

2. International Implications

Reduced levels of capital investment, necessitated by a shortage of investment capital, may impede both the growth of the U.S. capital base and the corporate sector's ability to produce. America's position as the major world economic and military power could

be endangered -- particularly vis-a-vis the Eastern-bloc nations where government can tightly control the allocation of resources.

If investment projects are delayed or scrapped because of the unavailability of capital funds at reasonable rates, the nation's over-all productivity may decline, placing American exports at a marked disadvantage in world markets. Competitors with more efficient plant and equipment will be able to underprice U.S. goods. The impact on the nation's balance of payments would be particularly grave in light of the anticipated need to import substantial amounts of energy resources (and without sufficient energy resources, U.S. industry may be unable to produce up to expectations).

If stock prices remain depressed because of high interest rates and sluggish growth prospects, there may be increasing foreign interest in acquiring U.S. corporations. While this need not be alarming (especially as U.S. companies have invested heavily overseas, often by purchasing foreign facilities) domestic security and related implications must be considered. Especially in an era of capital scarcities, foreign investors, consistent with the national interest, should be accorded a welcome reception.

3. Implications for the American People

Slower growth at home, because of decreased investment spending, will mean higher levels of unemployment and reduced potential for advancement. This will place greater strains on already over-burdened social service facilities, particularly in the central cities. Minority groups will be particularly affected, as upward mobility

becomes more difficult in a constrained economic environment.

Increased unemployment may permanently drive many skilled workers out of their specialties, reducing the available pool of skilled labor. Educational attainment may also decline, with dim economic prospects deterring millions from seeking college educations and advanced training. The long-term implications here are literally incalculable.

Declines in productivity, resulting from a shortage of capital, may further fuel inflationary fires. Prices will continue their upward climb as demand presses against inadequate supply capabilities.

The personal financial security of millions of Americans may also be endangered. Today, billions of dollars in pension funds are invested in common stocks. The recent malaise in the equity markets has reduced the value of pension fund portfolios so that employers are being forced to increase their contributions significantly above planned levels. Continued sluggishness in stock prices could exacerbate the drain on existing pension fund reserves.

In sum, the social fabric of this nation may be weakened if the economy cannot rise to meet the expectations of the American people. Fewer job opportunities, increased pressure on social services, reduced housing activity, and continued inflationary pressures will combine to lower standards of living and the overall quality of life. The Federal government may be unable to fill the vacuum. Declining tax revenues (resulting from reduced economic growth) will hamper the ability of government to meet the needs for mass transit,

public housing, health care, urban renewal, energy research, and a host of other high-priority programs. The squeeze on Federal revenues will tighten as reduced levels of economic activity require increased expenditures for income maintenance programs.

B. POLICY RECOMMENDATIONS

While the purpose of this report is to identify the dimensions of the prospective capital shortfall, rather than to suggest ways of avoiding it, a number of observations may still be appropriate.

The prospect of a savings shortfall suggests two distinct policy alternatives. One, which could be labeled a policy of benign neglect, would allow the economy to adjust to the shortage of capital through higher interest rates and slower economic growth. The implications of such a policy have already been discussed. The second option envisages the market mechanism playing a major role in closing the prospective capital gap in an environment of brisk economic activity -- by encouraging saving and productive investment, discouraging excessive current consumption, and reducing existing roadblocks to foreign capital investment in the United States, subject to appropriate safeguards with respect to ownership of U.S. productive facilities.

Obviously, the first step in stimulating an economic environment in which saving flows will be adequate to meet projected investment needs, will be for government to bring inflation under control. To begin with, Federal expenditures should be significantly cut back;

non-essential spending should be deferred, and marginal programs should be eliminated. These reductions should apply across all sectors of the budget, including non-essential defense spending. If inflation is not brought under control, rising prices will continue to eat away at the purchasing power of available savings.

To increase the flow of saving, especially by the business sector, a sweeping reform of U.S. tax laws is essential. Specifically, corporate tax rates should be adjusted to permit increased accumulation of funds for capital purposes, and current capital gains taxation should be modified by:

- 1) Creating incentives for individuals to realize -- and reinvest -- gains that are now "locked in" by tax considerations.
- 2) Liberalizing the entire capital gains tax structure to promote risk-taking and to stimulate additional saving.
- 3) Eliminating the distinction between long-term and short-term capital losses, and providing unlimited deductibility for losses.
- 4) Allowing for complete tax exemption for reasonable amounts of capital gains.

The double taxation of dividends should be ended. As a first step, the dividend exclusion from Federal income taxes should be increased.

The treatment of depreciation should be modified to reflect higher replacement costs resulting from inflationary trends, and

to encourage quicker replacement with more efficient equipment. By using an "original cost" basis, depreciation charges cannot be sufficient to provide for the replacement of existing capital. As a result, the capital base is eroded as business ends up paying a higher effective tax rate because corporate profits are artificially bloated by the understatement of depreciation expenses.

The investment tax credit should not be used as a counter-cyclical control device, but should be incorporated into the tax structure as a permanent incentive for capital investment. Further, the allowances granted under the program should be raised to provide additional after-tax dollars for investment purposes.

It is fully recognized that these tax changes may reduce the revenues available to the Federal government in the short run. But higher investment spending and national output will, in turn, generate additional tax revenues. Moreover, if public expenditures are cut back to match any reduction in taxes, there is no reason to expect that the shortfall in tax receipts would result in increased deficit financing.

Business and government must also cooperate to use what capital is available more efficiently. To this end, excessive regulation and restrictive controls (especially in the utility industry) should be relaxed. If necessary, environmental standards should be modified, with target dates deferred, so that capital funds may be used temporarily to increase productive capacity.

To attract additional foreign capital, the withholding tax on income from foreign-held securities should be repealed. This particularly applies to the Arab states, with which the U.S. does not have tax treaties. While increased inflows of foreign capital would help bridge the saving gap, such flows require continual monitoring to insure compatibility with domestic economic objectives.

Clearly, national policy must be directed toward increasing the ability of the economy to generate higher rates of saving. But this cannot be accomplished without at least some discomfort. Americans must be willing to make some relatively small sacrifices today -- chiefly by cutting back somewhat on current consumption -- to help assure that future generations will enjoy higher living standards and a better quality of life.