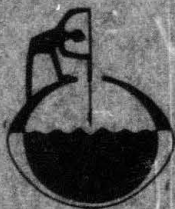


THINKING ABOUT ALASKA'S FINANCIAL FUTURE



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Draft

prepared for the
House Finance Committee
Alaska State Legislature

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I. THE FISCAL CONDITION OF THE STATE

A. Petroleum Revenues

The largest source of state revenues for the foreseeable future is the petroleum industry. The Department of Revenue October 1979 forecast of petroleum revenues from royalties and severance taxes estimates that between 1980 and 1994 the state will be the recipient of about \$47 billion from these two sources.¹ By way of contrast, at current rates, the largest nonpetroleum revenue source--the personal income tax--might generate \$6 billion over the same period. The state government--and local government which depends heavily on state assistance--is clearly dependent upon petroleum revenues.

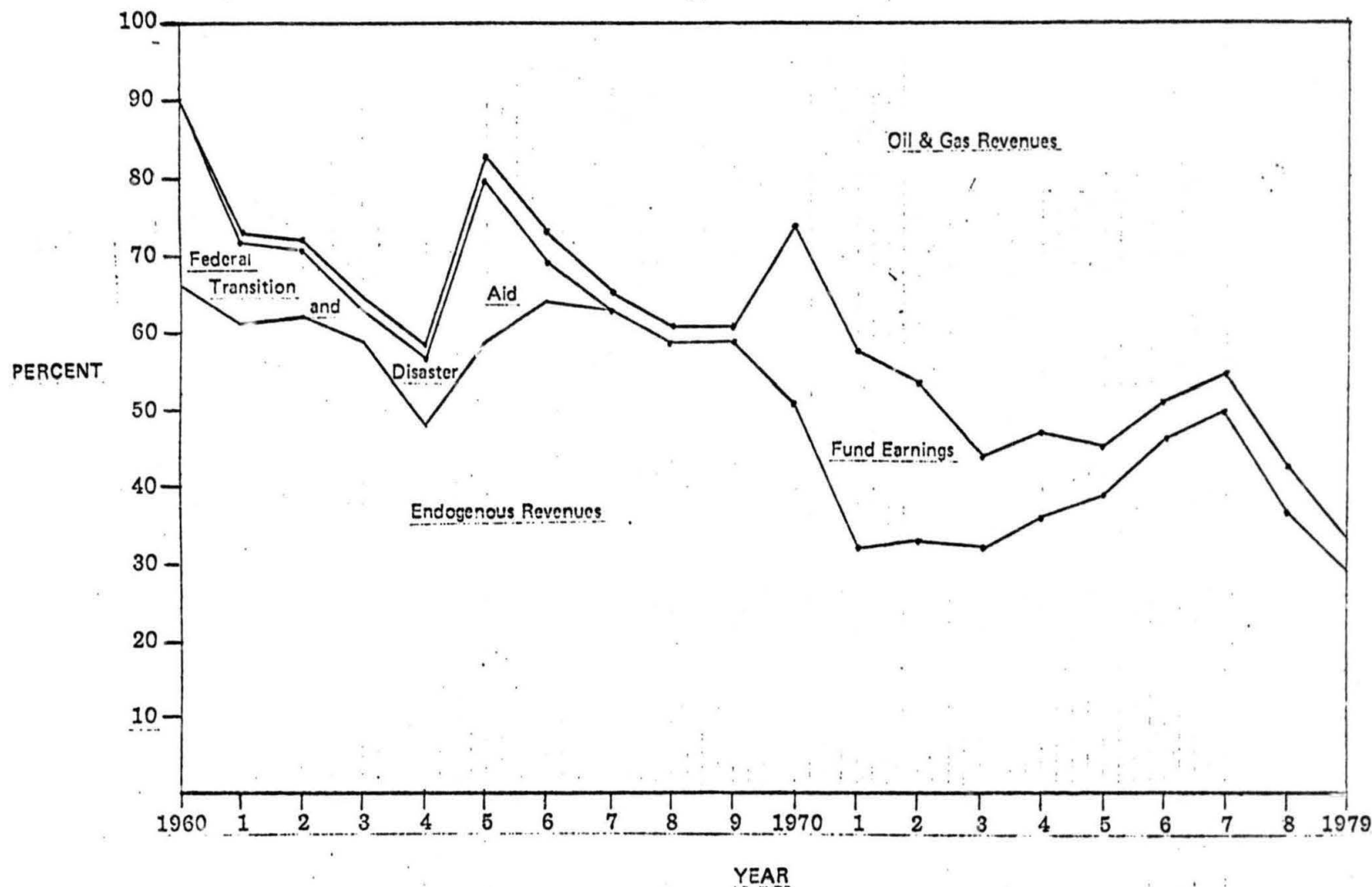
Dependence upon petroleum revenues is not new for the state, but it has increased dramatically in the last two decades. The shift in the historic pattern of sources of state finances represented in Figure 1 reflects the dual facts that Alaska has always been dependent upon petroleum revenues and that economic growth in the state has closely paralleled growth of oil and gas revenues.

The concern with dependence upon a single source of revenue is that it may be unstable and this instability may carry over into inability of government to fund a stable and balanced program for needed goods and services. Recent events such as the temporary suspension of the Veterans' loans program have shown that revenue instability can be a real problem.

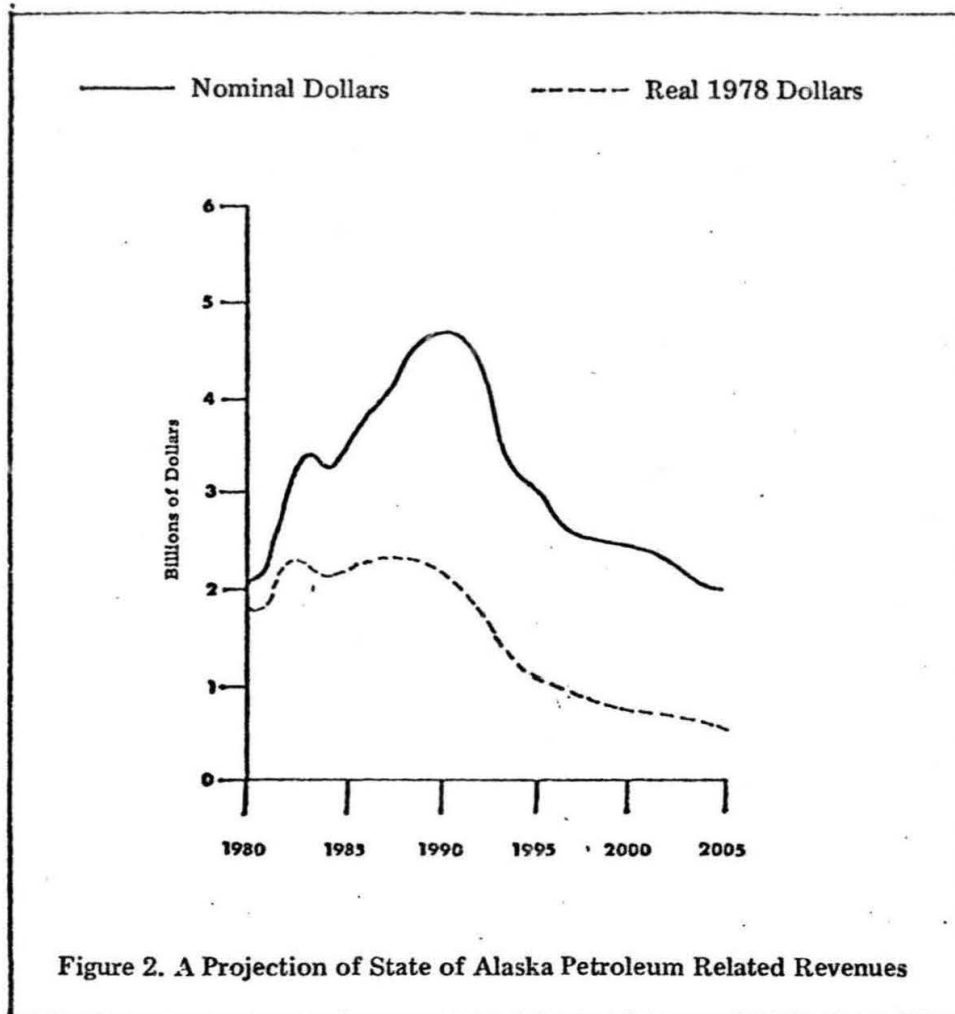
The flow of total petroleum revenues over the next 25 years might take the shape depicted in Figure 2, where the October 1979 Department of Revenue projections of royalties and severance taxes have been extrapolated forward and separate estimates of petroleum corporate income and petroleum property taxes have been added.²

Two aspects of Figure 2 are important. First, the shape of the total petroleum revenue curve indicates an unmistakable peak followed

Figure 1. Percentage of General Fund Appropriation from Various Sources



Source: Alaska Department of Revenue, *Revenue Sources*, annual, and Division of Budget and Management data on annual appropriations.



by a long decline. The exact shape depends upon the total amount of petroleum found on state lands, the rate of production, the market price for the production, and the state share of the value of that production. Projections of the height and width of the curve change constantly, but the basic shape does not vary. Petroleum revenues cannot continue to increase indefinitely. At some time, they must peak and begin a decline. Whether this means they should be treated as recurrent revenues, since the decline is presently not projected until the 1990s, or as nonrecurrent, since total possible revenues from petroleum are limited by the finite resource, remains a debatable question.

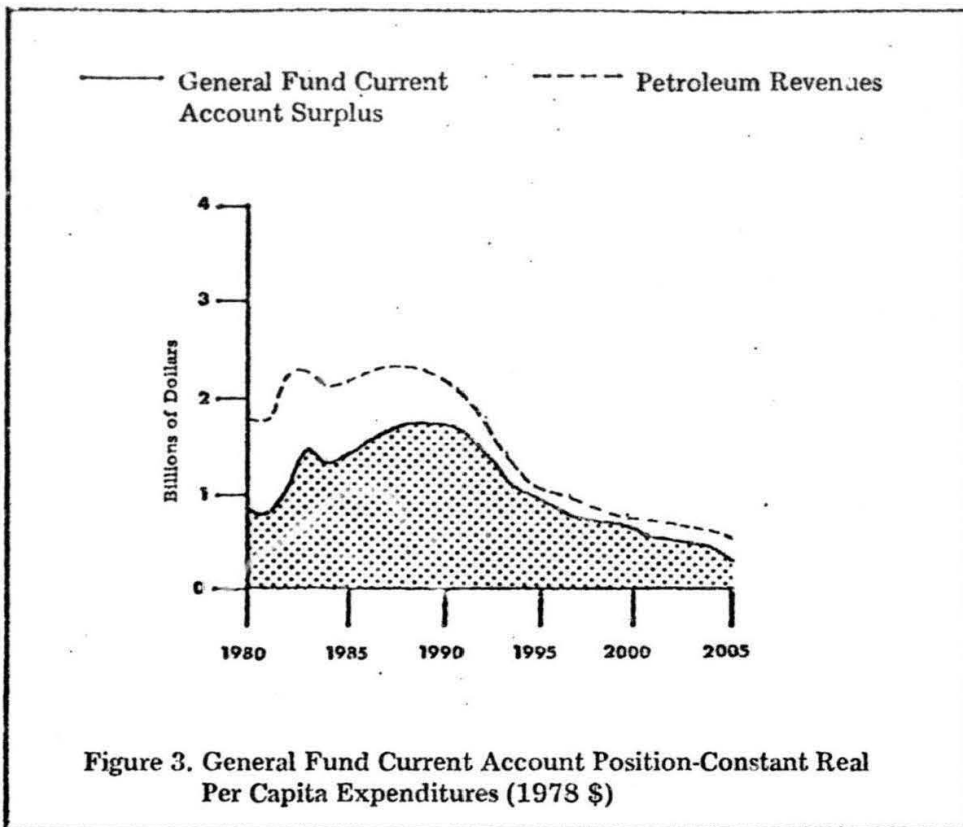
Second, when petroleum revenues are deflated to be consistent with the value of 1978 dollars (real dollars), their magnitude is reduced by a substantial amount. In 1991, when revenues are projected to peak at \$4.8 billion, their value in 1978 dollars is only \$2.1 billion and well below the peak of \$2.3 billion in real dollars reached in 1988. In fact, the \$47 billion projected between 1980 and 1994 by the Department of Revenue is about \$27 billion in present value equivalent, that is, if the State were to receive it all today in a lump sum payment (discounted 8 percent annually). In real terms, it is still a substantial amount of revenue; but future revenues must pay for inflated future expenditures and, thus, the real amount is less than the perceived amount.

Within broad limits, it is difficult to be very specific about the ultimate amount of revenues the State will receive from petroleum because the rules of the game will constantly be changing. With literally billions of dollars at stake, the three main beneficiaries of the distribution of the proceeds--the oil companies, the federal government, and the State of Alaska--will continually be attempting to improve their own position. Thus, we can expect to see continuing dramatic changes both up and down in petroleum revenue projections in future years, and placing reliance upon a particular set of projections for planning purposes should be avoided. It is important to understand this and the implications of this variability for decision making.

A significant portion of projected petroleum revenues has already effectively been spent on existing government programs projected to continue into the future. If state government expenditures grow only because of population increases and inflation, then the amount of petroleum revenues annually available for discretionary spending is illustrated in Figure 3 as the shaded area, an amount significantly less than total revenues, particularly in the early years.^{3,4}

Although a large portion of projected petroleum revenues has effectively been spent, the amount available for new programs, investment, or distribution is substantial. At this point, it may be instructive to recall the situation the state was in as it entered the 1970s. Figure 4A illustrates what a projection in 1970 of no growth in real government spending during the decade would have produced. General fund appropriations would have grown 11 percent annually, while the general fund balance would have increased from \$800 million to \$3.1 billion by 1979, a level in that year of seven times appropriations. Figure 4B shows in contrast what actually occurred. Appropriations grew 22 percent annually and at the close of the decade real per capita spending was twice the level it had been in 1970. In spite of the petroleum reserves tax, the general fund balance was substantially below the level of current appropriations. Thus, if past events are any indication of future behavior, growth of government will substantially reduce the amount of petroleum revenues available from the level depicted in Figure 3.

However, if it were possible to hold the line on spending in the operating budget and also to maintain only moderate growth in the capital budget, then a healthy fiscal position for the state such as is illustrated in Figure 5 could result. The state would experience large current account surpluses in real terms throughout the 1980s, which would only begin to taper off gradually in the 1990s and remain positive long beyond the 1990s. The general fund balance could grow to nearly \$16 billion in 1978 dollars. Subsequently, it would begin to decline



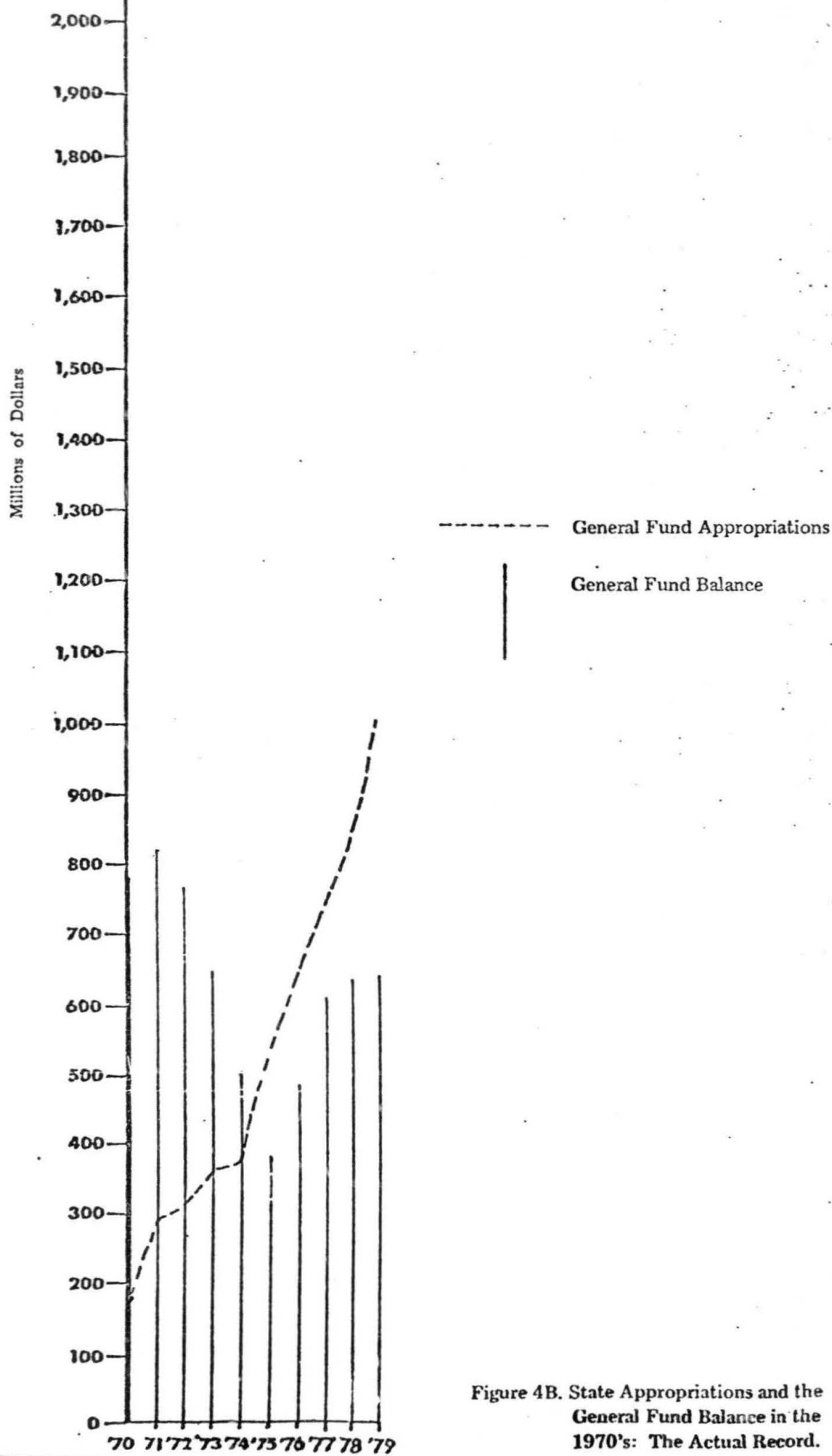
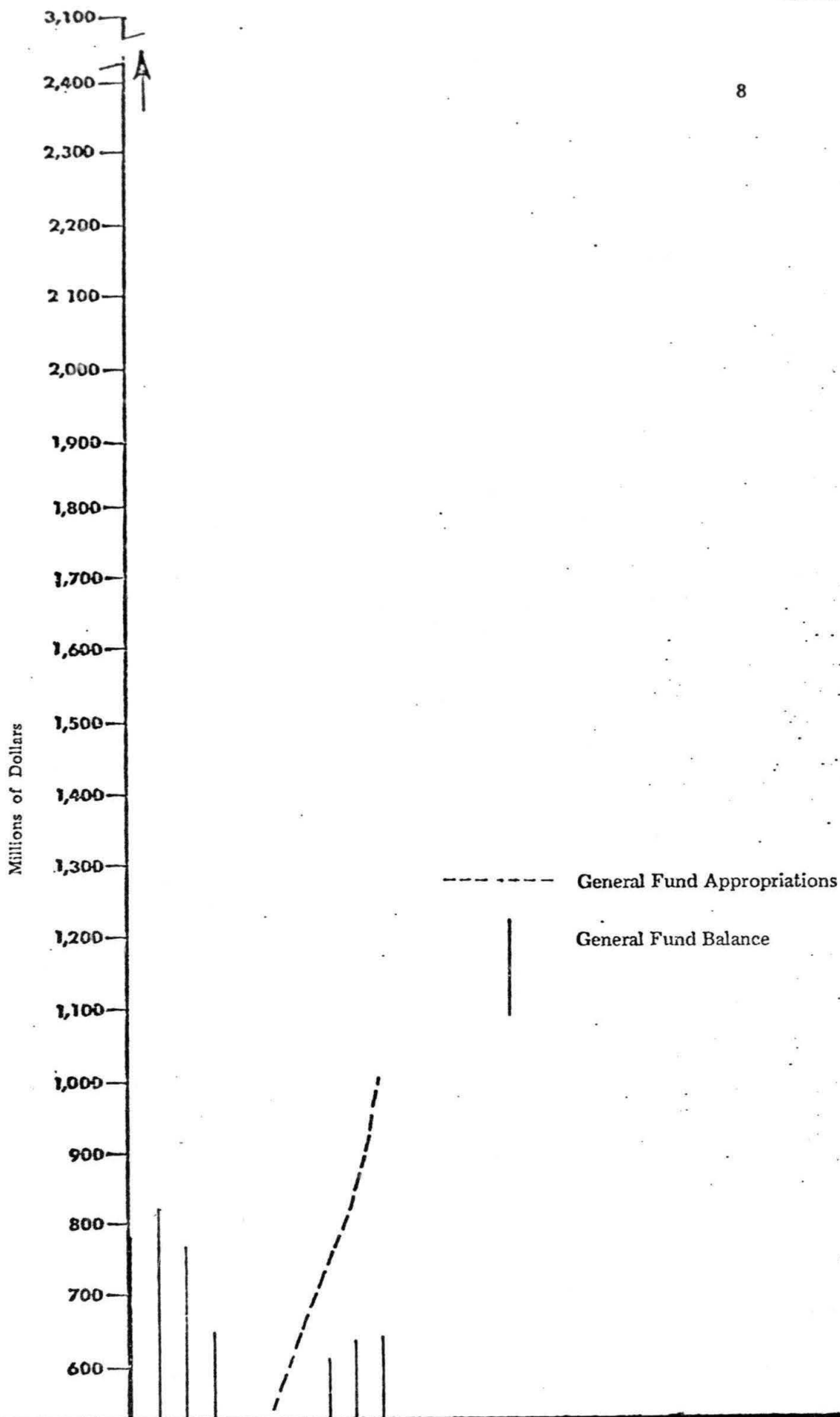


Figure 4B. State Appropriations and the General Fund Balance in the 1970's: The Actual Record.



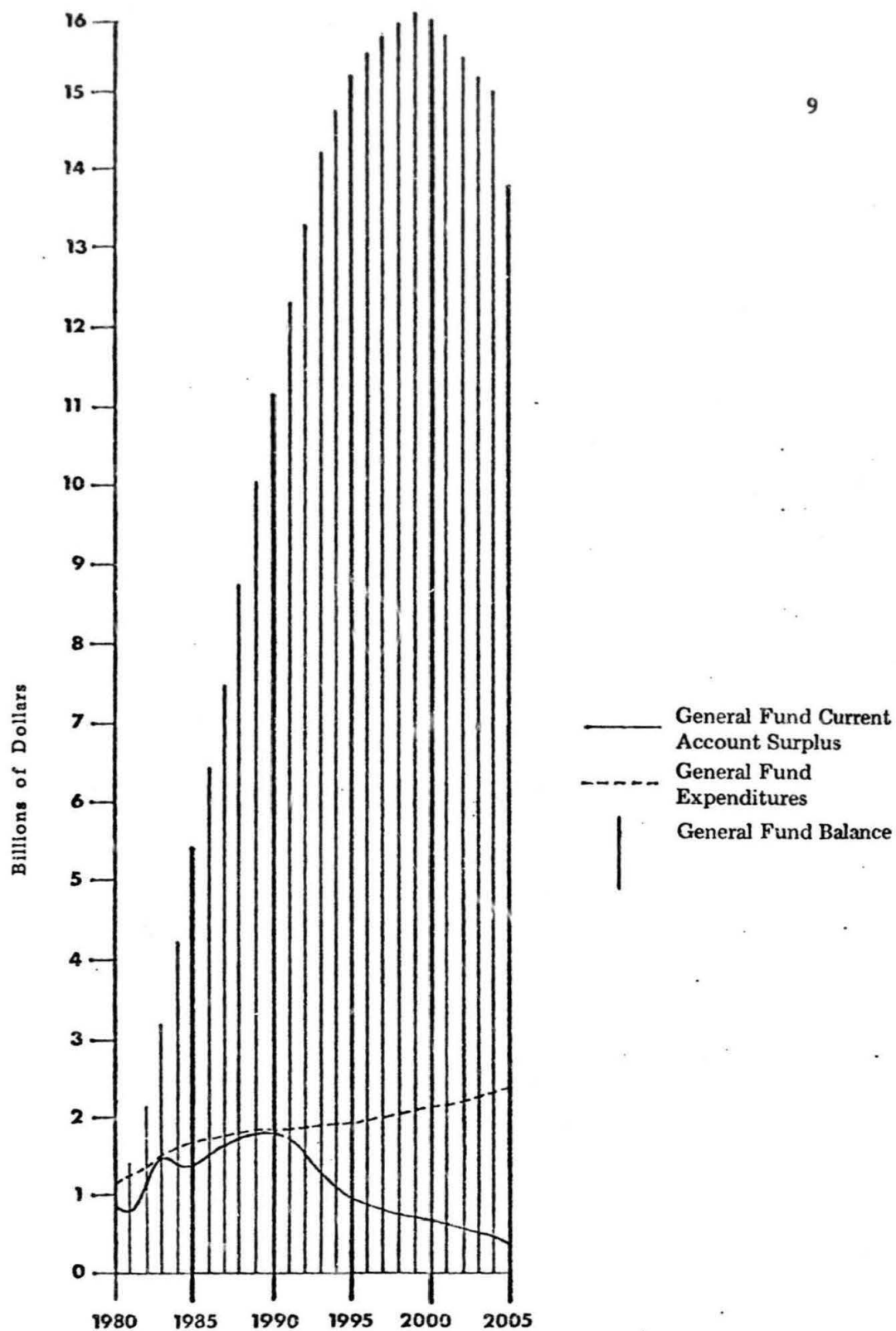


Figure 5. State Fiscal Pattern-Constant Real Per Capita Expenditures (1978 \$)

very slowly as growth of the economy outstripped growth in the earning capacity of the accumulated fund balance. This would necessitate withdrawals of general fund principal to meet current expenditures. The permanent fund would accumulate \$2.6 billion in 1990 and \$3 billion by 2000.⁵

B. Continued Expansion of Government Service Levels

A plausible scenario of government spending increases combined with the petroleum revenue projections discussed above would result in the fiscal situation depicted in Figure 6A.⁶ The surplus on current account is large during the 1980s, during which time the general fund balance grows rapidly. Subsequently, the continued growth of expenditures causes the current account surplus to fall to zero in 1994. The general fund and permanent funds must then be drawn upon to sustain government spending, which they do through the 1990s. Shortly thereafter, these funds are used up.

Since the dollar amounts involved are so large and difficult to comprehend, the same fiscal situation is portrayed as ratios in Figure 6B. During the current fiscal year (1980), the state is experiencing a very significant current account surplus (including the Beaufort lease sale bonuses as revenues), which may exceed 100 percent of expenditures. This ratio remains high in the 1980s and drops below 50 percent in 1991. In that year, the ratio of the combined funds (general plus permanent) to expenditures peaks at six times. That is, using these funds alone, expenditures could be sustained for six years.

C. Scenarios Under Different Conditions

The situation depicted in Figure 6A is only as accurate as the assumptions underlying it. Both the pattern of government expenditures and of petroleum revenues may very well be quite different than assumed. The operating budget, for example, may grow somewhat faster in the early years, resulting in an expenditure path illustrated in Figure 7. (The

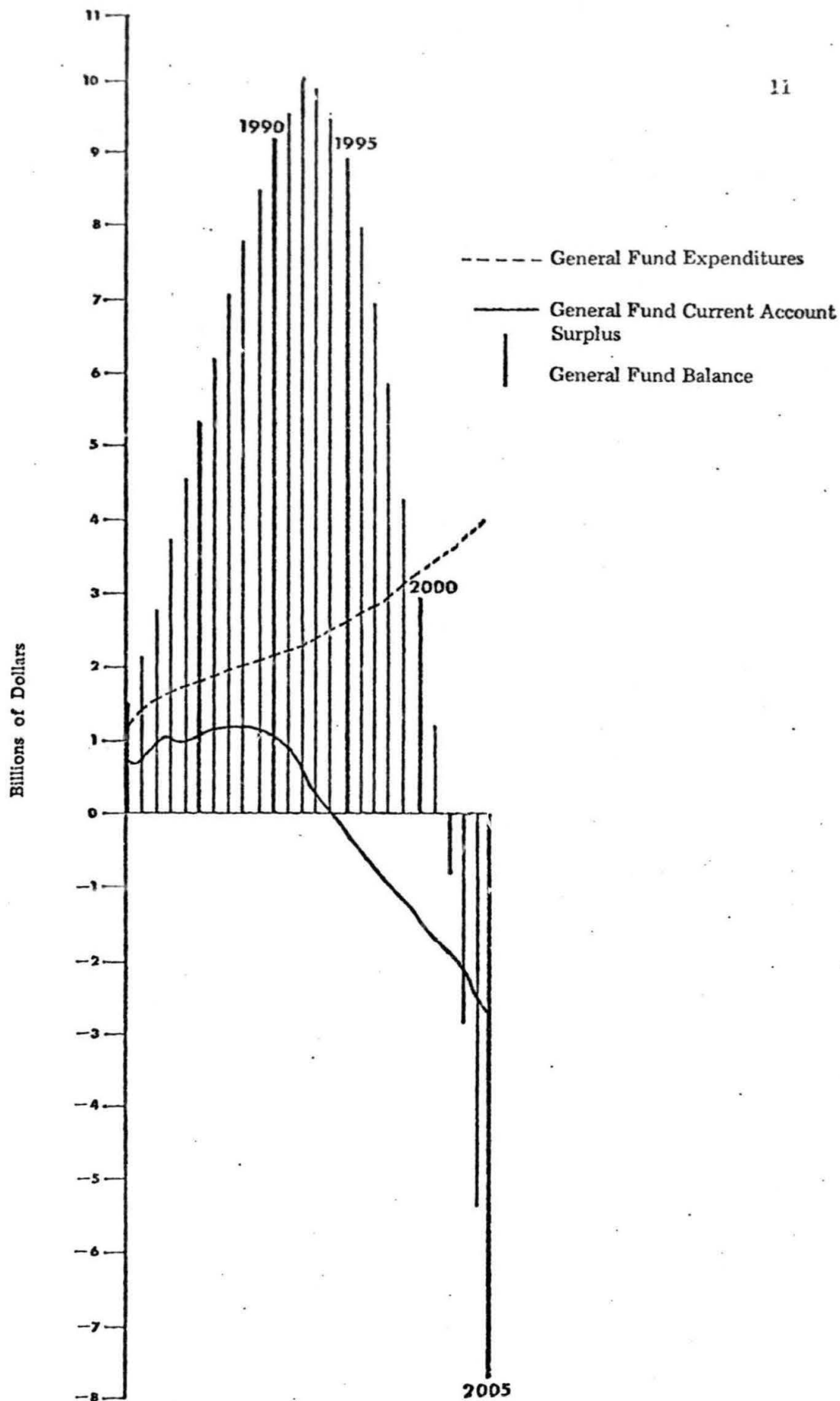
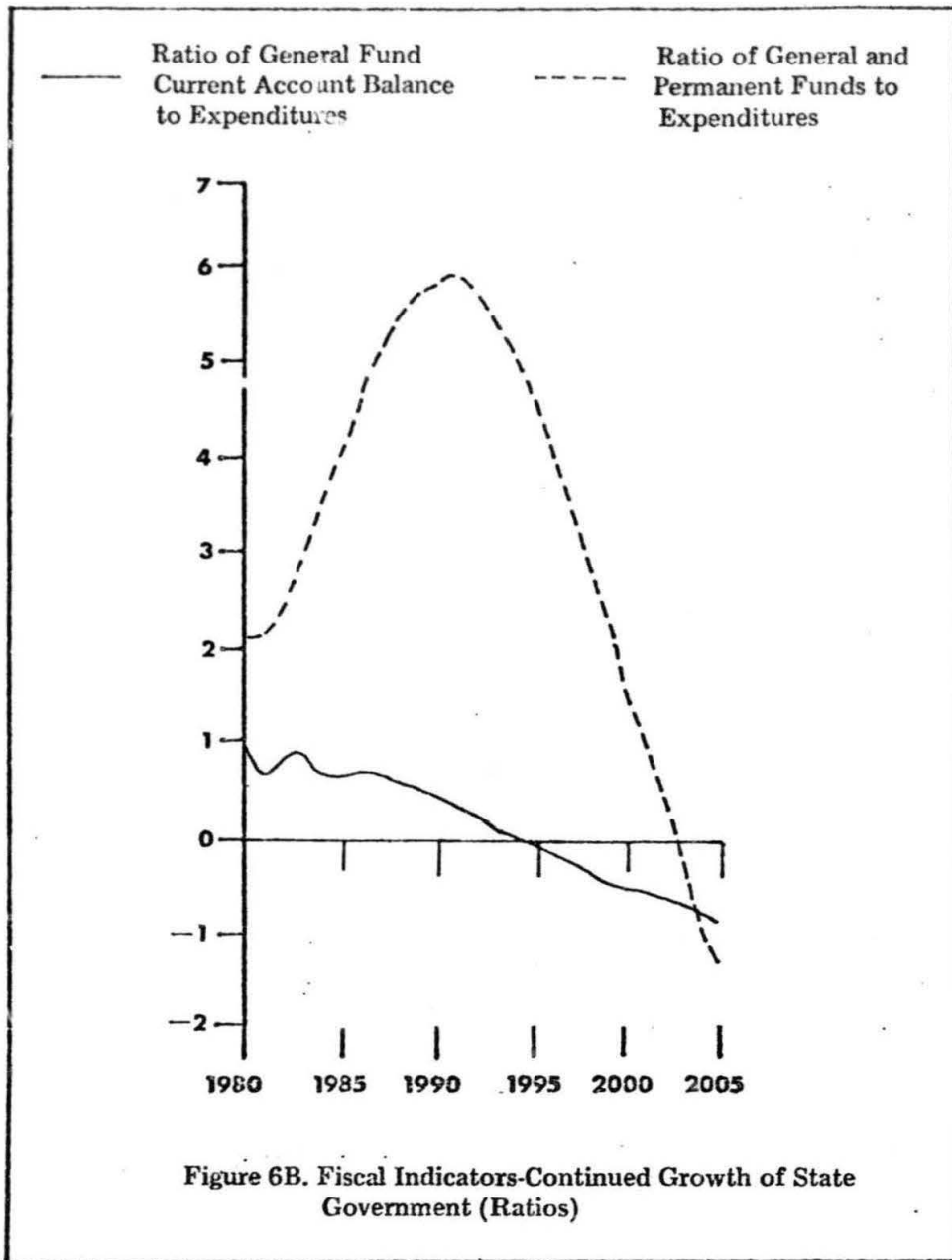
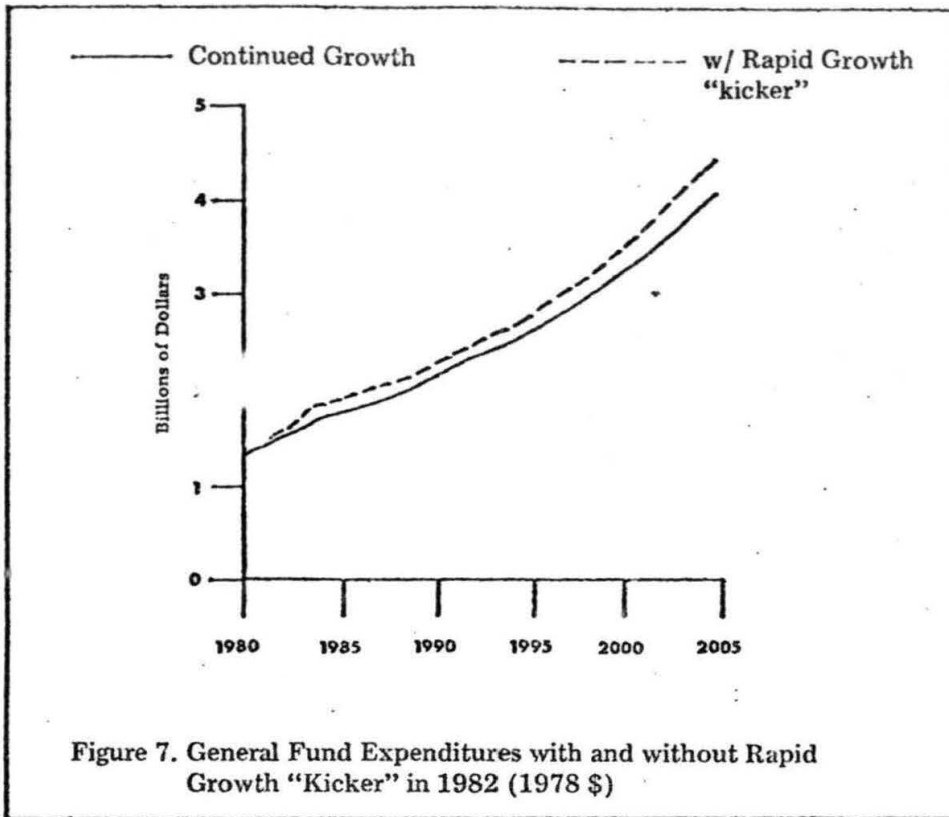


Figure 6A. State Fiscal Pattern-Continued Growth of State Government (1978 \$)





expenditure path for the previous case is included for comparison.)⁷ Here, expenditures are expanded to a slightly higher level and then continue to grow at the same rate as previously. Figure 8A illustrates the fiscal situation which results, while Figure 8B allows comparisons of the ratios of current account and combined fund balances to expenditures in this case with that of the previous scenario. A modest budget increase that is sustained in future years reduces the maximum ratio of fund to expenditures from 6 to about 5, a significant reduction in the financing cushion for the state, given the apparent innocuous nature of the increases in expenditures.

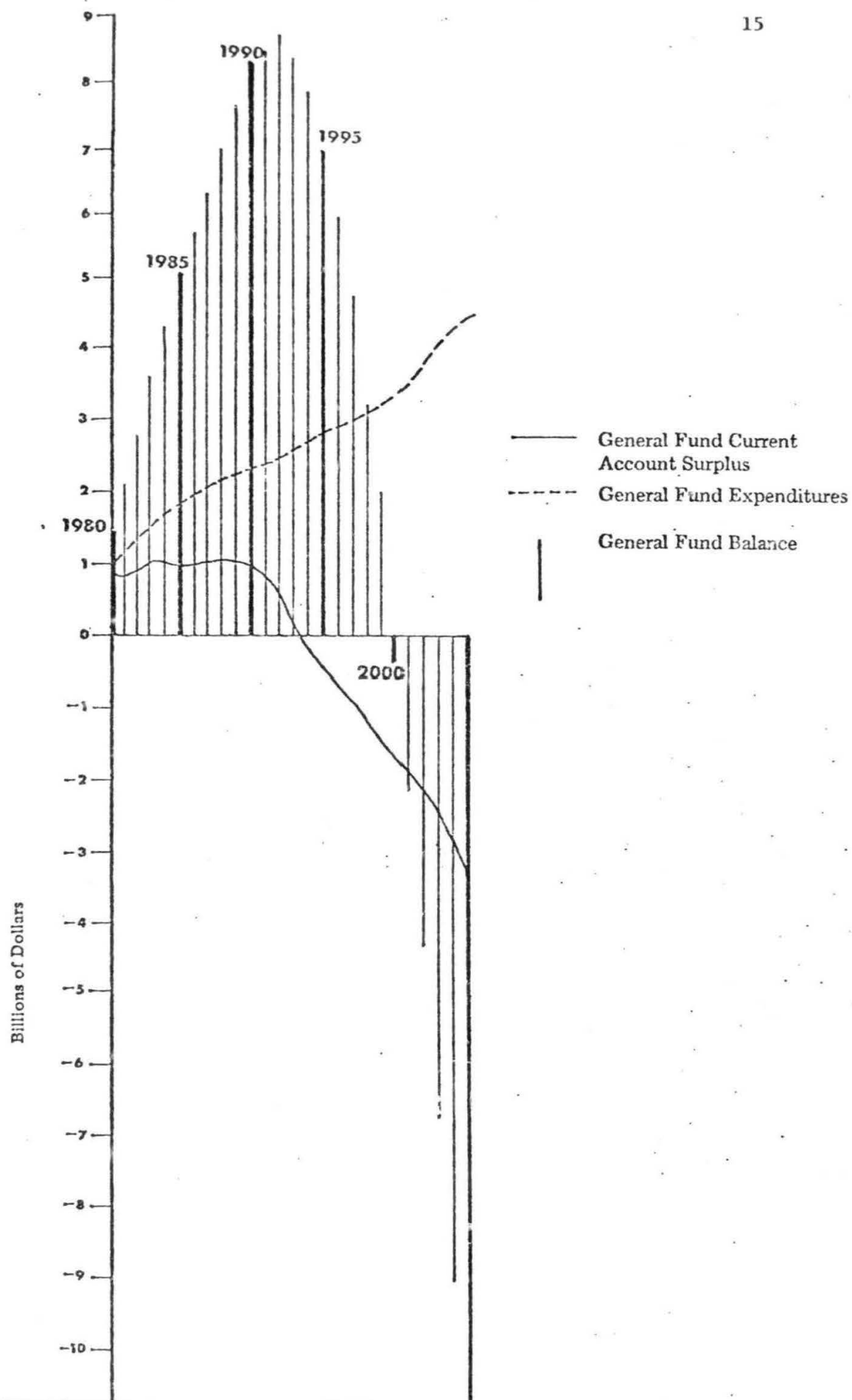
Petroleum revenues reduced after 1982 by a 25 percent reduction in royalties and severance taxes beginning in 1983 (Figure 9) result in the fiscal situation depicted in Figures 10A and 10B. Because petroleum revenues are "leveraged" dollars, a 25 percent reduction in the larger portion of them⁸ reduces the maximum size of the cushion of fund balances by 33 percent, to four times expenditures. It also reduces by about 20 percent the number of years that the state enjoys a positive fund balance supported by petroleum revenues.

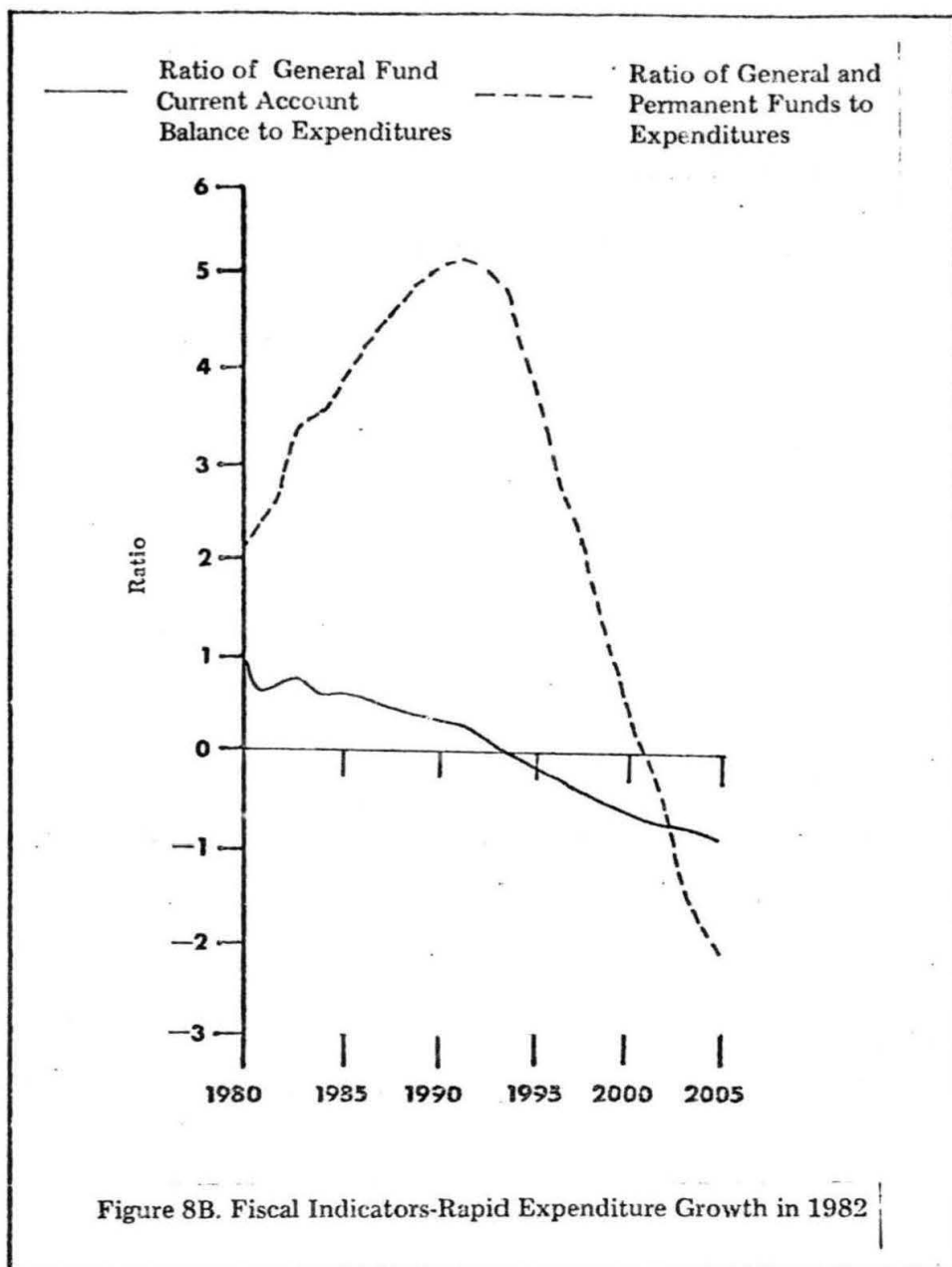
Altering the assumptions in the opposite direction would have symmetrical results.

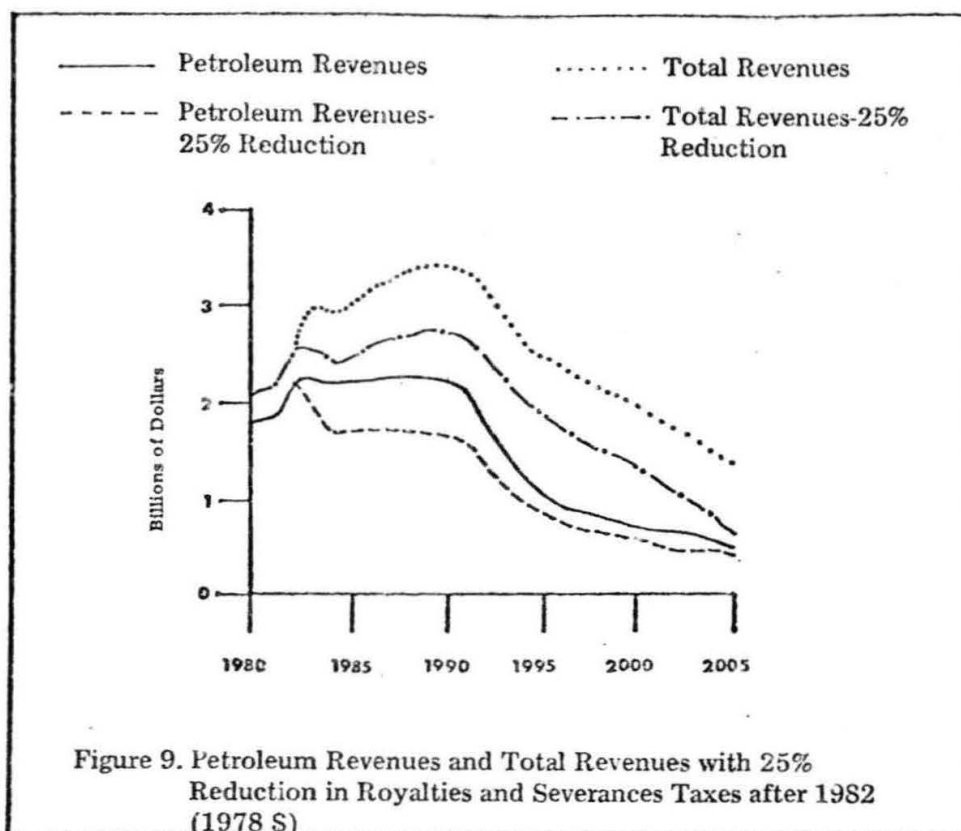
D. Conclusion

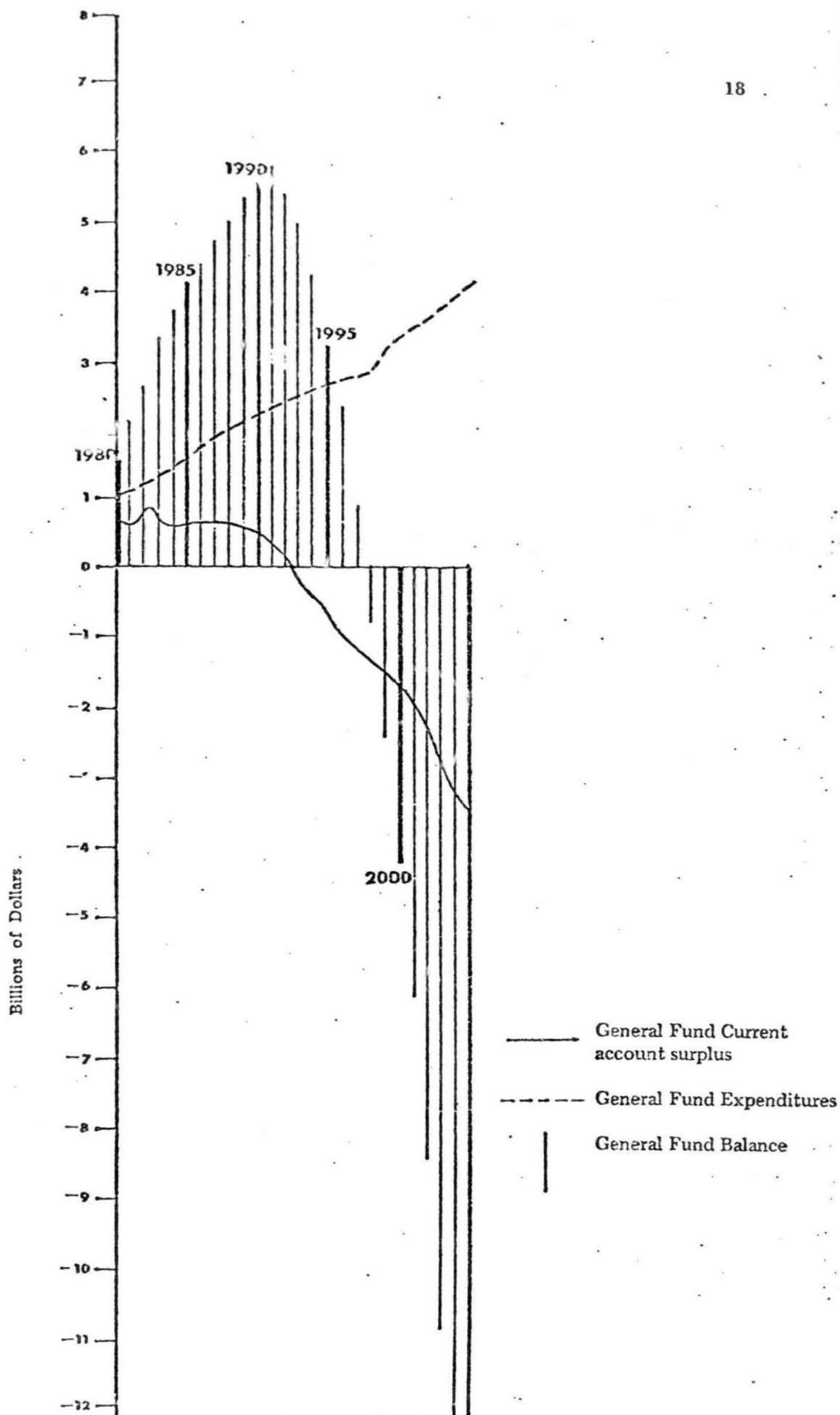
If current forecasts of petroleum revenues prove to be accurate, government capital and operating expenditures could continue at their current level almost indefinitely since earnings on the permanent and general fund could provide a substantial revenue source after petroleum revenues begin to decline.

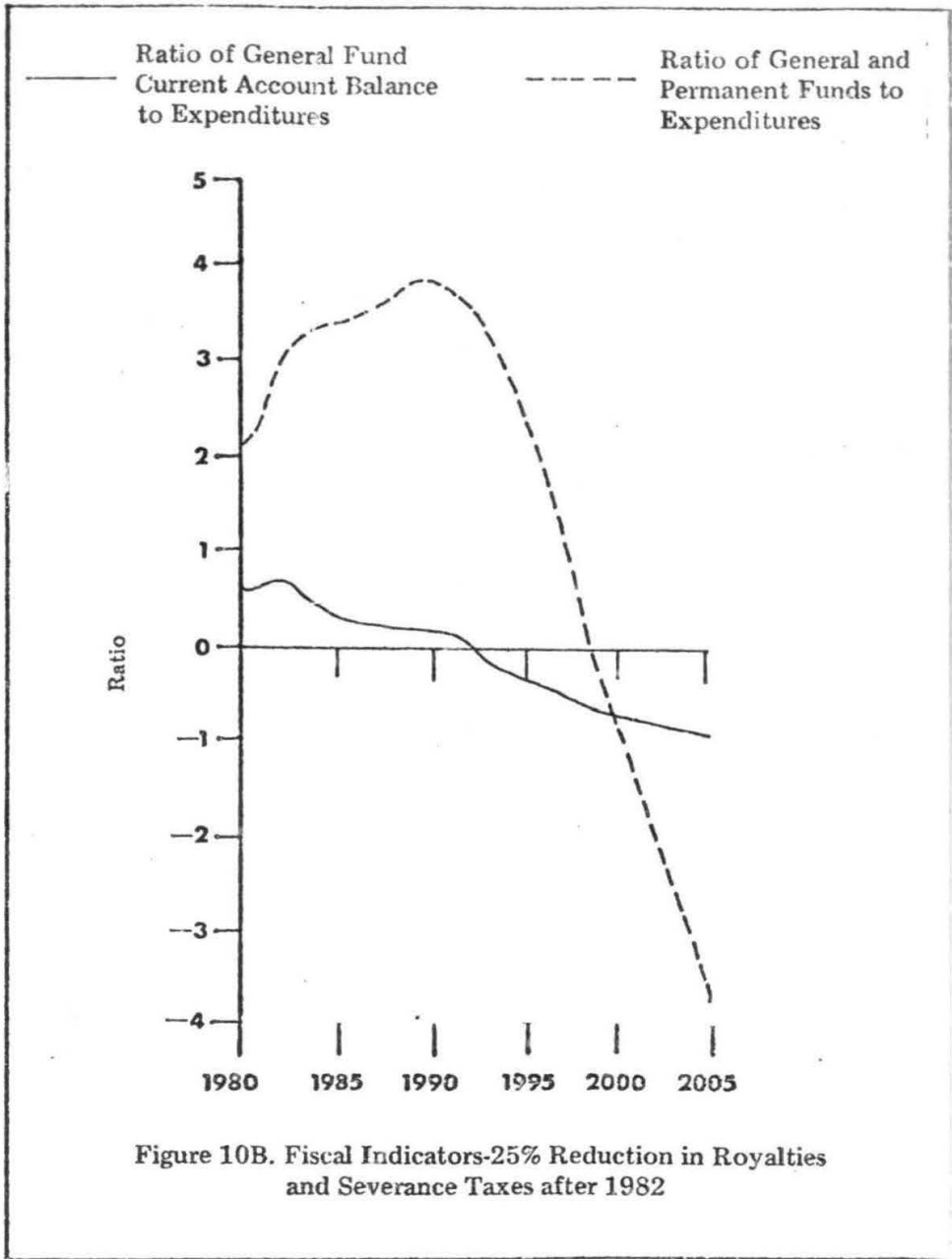
Substantial increases in government programs are possible during the 1980s, coincident with current account surpluses and increases in the general fund balance. This growth makes both new and existing government











programs potentially vulnerable to cutbacks in the 1990s as current account balances decline and the funds are drawn down to pay for government.

The fiscal future of the state will continue to be subject to an extraordinary amount of uncertainty because of the potential for variability in petroleum revenues and the growth in government expenditures.

II. RECYCLING ALASKA'S PETROLEUM WEALTH

The question of how to manage Alaska's petroleum wealth will, if current petroleum revenue projections prove accurate, be one of the continuing problems of the new decade. Since the source of the wealth is a finite natural resource, it is proper to look at the problem of wealth management as if the petroleum revenues were an inheritance. The first question is how much of the inheritance should be spent and how much should be saved, and the second question is what things should be bought and into what assets should the savings be put.

The problem is relatively simple for an individual if he has some idea of how long he will live and how much he would like to leave for his descendants. But for a government, the problem is much more difficult because it is not clear what life span or number of descendants should be considered, or what the size of the inheritance is. In addition, the distinction between saving and investment, on the one hand, and spending, on the other, is not well defined.

In this section, a simplified version of wealth management is examined in which the objective is the provision of income to provide a capability for continued funding of government. Present services are financed by withdrawing a portion of the "inheritance," and future services are financed by earnings generated from the portion of the

"inheritance" which is not spent. For simplicity in this section, no assumptions are made concerning the form in which the inheritance is held except that whatever it is, the real rate of return is positive, averaging about 2 percent. It could be a savings account held by the state or investments owned by the state or with state participation, or it could be in the form of investments made by private citizens as a result of receiving a distribution from current surpluses.

With petroleum revenues viewed as an inheritance, a logical way to organize government spending would be to calculate an annuity, a constant real dollar amount which could be annually drawn from the inheritance and spent. For illustrating the idea, we can examine the implications of annual spending of \$1.4, \$1.6, \$1.8, and \$2 billion from petroleum revenues. We are not only interested in the resulting levels of government services which these annuities provide, but also in the ability of state government to finance programs in the future from earnings generated by the monies invested rather than spent.

Figure 11 illustrates the distribution of future sources of state revenues with continued growth of state government. Fund earnings are a major source of revenues into the 1990s and beyond. If the state were interested in attaining a desired level of income in the future from investments, there is a necessary level of investment in the present to meet that goal and, with it, a possible annual annuity out of the "inheritance."

In Figure 12, we have plotted the percentages of total expenditures which could be provided by investment earnings for the four spending programs (\$1.4, \$1.6, \$1.8, and \$2 billion) mentioned above. In all cases, 1995 is the year in which investment earnings account for the largest percentage of total expenditures. Figure 12 and Table 1 indicate that there is a dramatic reduction in the ability of government to pay for services out of earnings in the future as the level of spending out of petroleum revenues rises in the present.

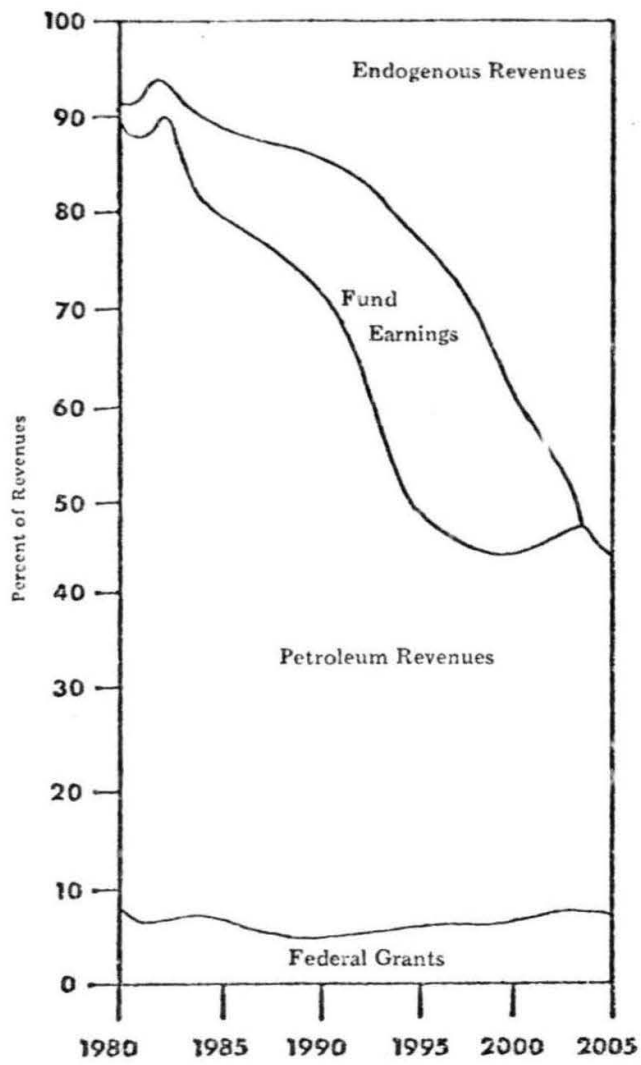


Figure 11. The Sources of Future State Revenues
(% Distribution)

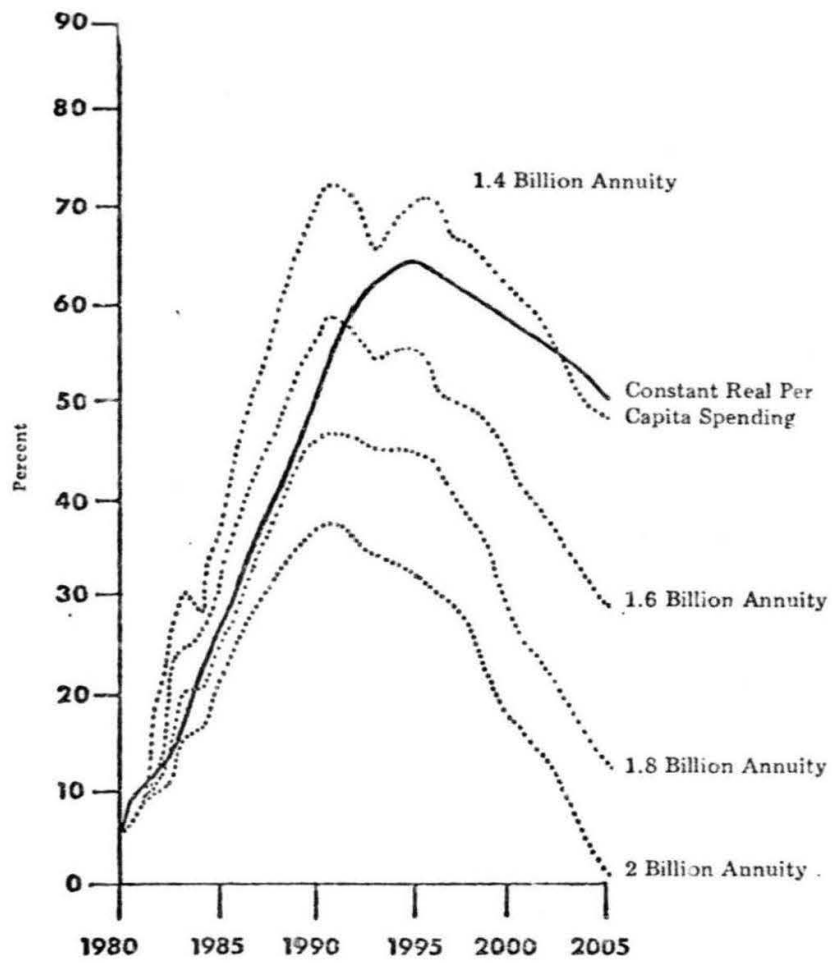


Figure 12. Proportion of State Revenues from Earnings under Various Investment Strategies (Percent)

TABLE 1. THE PROPORTION OF EXPENDITURES IN 1991
FINANCABLE OUT OF EARNINGS UNDER VARIOUS
ANNUITY SPENDING PROGRAMS

Real Annual Spending From Petroleum Revenues (billion \$)	Earnings/Expenditures (percent)
1.4	72
1.6	58
1.8	46
2.0	37

For example, if annual spending out of petroleum revenues were \$1.4 billion in real terms, earnings from investments could fund as much as 72 percent of government expenditures in 1991. If spending were \$1.6 billion, the maximum contribution of earnings would fall to 58 percent.

The annual level of investment necessary to achieve these earnings profiles is shown in Figure 13. For example, to achieve a maximum earning capacity of 72 percent of expenditures, it would be necessary to invest in some form of income-earning assets about \$1.5 billion annually during the period 1980 to 1985 and nearly \$2 billion annually during the second half of the decade. To achieve a maximum of 37 percent contribution of earnings to fund expenditures, it would be necessary to invest about \$1.1 billion annually during the 1980s.

If government expenditures were not to grow in the future and all excess revenues were invested in earning assets, then earnings from those assets would be able to provide at a maximum about 64 percent of revenues. This means that the \$1.4 billion annual spending rule, which results in a maximum earnings potential of 72 percent, would be accompanied by a decline in the real level of government services with time.

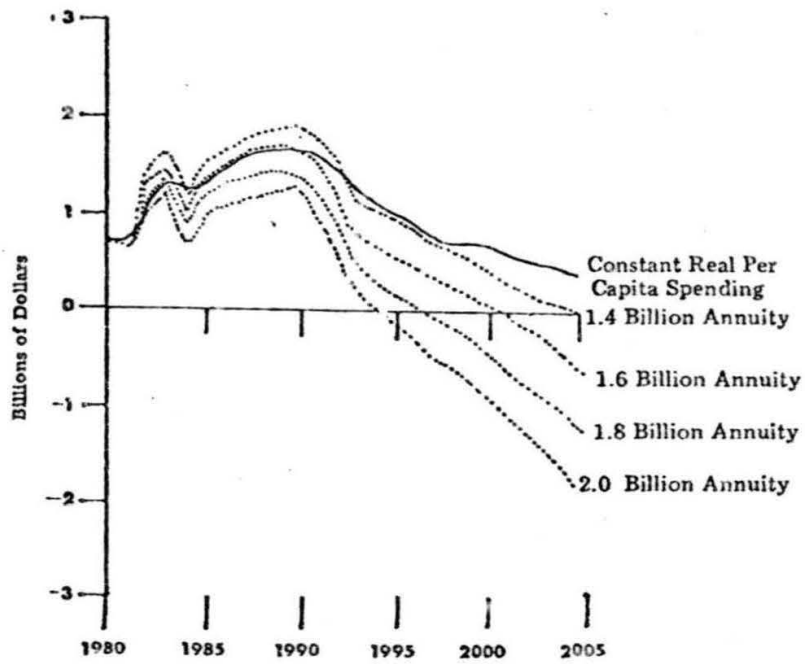


Figure 13. Annual Investment Levels under Various Investment (Spending) Strategies (1978 \$)

The shape of the lines in Figure 12 illustrates one of the major problems confronting Alaska during the coming years. In each case, the proportion of government expenditures that can be financed out of earnings rises for a number of years but inevitably begins to decline in succeeding years. This results from the eventual growth of demand for government services exceeding the rate of growth of earning capacity of the state assets when a portion of those assets are annually withdrawn for consumption.

In order for fund earnings to contribute a constant proportion of revenues to the funding of expenditures, fund earnings must increase at the same rate as state expenditures. At a minimum, this will be the rate of inflation plus that rate of population increase. The rate of inflation in the government sector may well be higher than in the private sector because of the relative importance of services as a component of government (where productivity gains may lag). Obtaining a portfolio of investments that yields such a high return will be a difficult task, and it seems clear that the state will need to assume some risk in its investments. It is only by accepting risk that significant positive returns can be achieved over the long run.

This analysis also illustrates the fact that government spending, like any type of infusion of money into an economy, has a stimulative effect on employment and, in the case of a regional economy, on population. Approximately half of the increase in population in Alaska which occurred during the 1970s was the result of new migrants coming into the state (roughly 6,000 annually). Figure 14 illustrates the fact that the higher annuity spending plans initiated in 1982 have both an immediate, positive effect on population and a continuing effect because of the compounding of growth from a higher base.

The conclusion of this section is that future earnings capacity is the result of present investments and that the amount of potential future earnings depends upon both the level of investments made in the

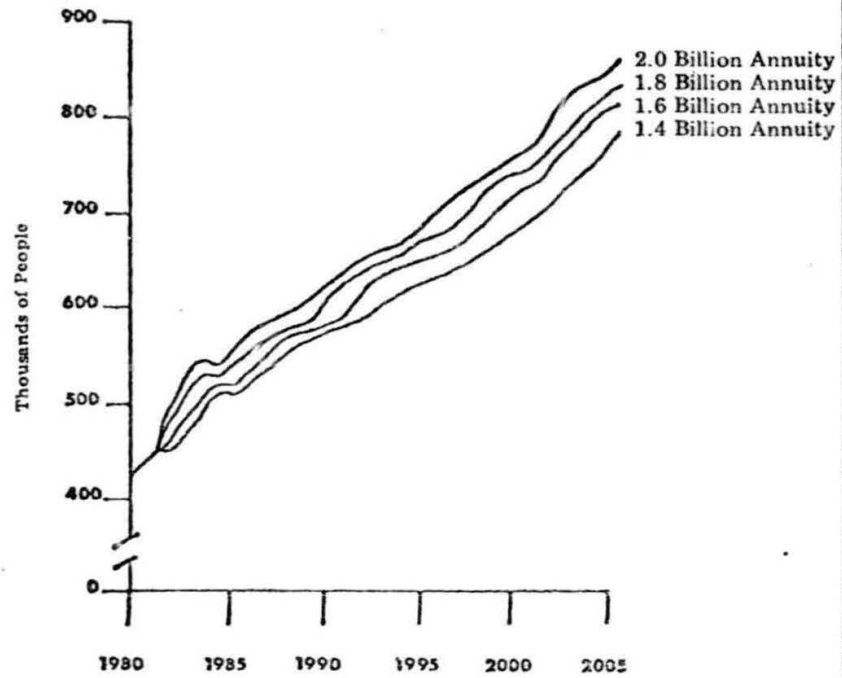


Figure 14. Population under Various Investment (Spending) Strategies

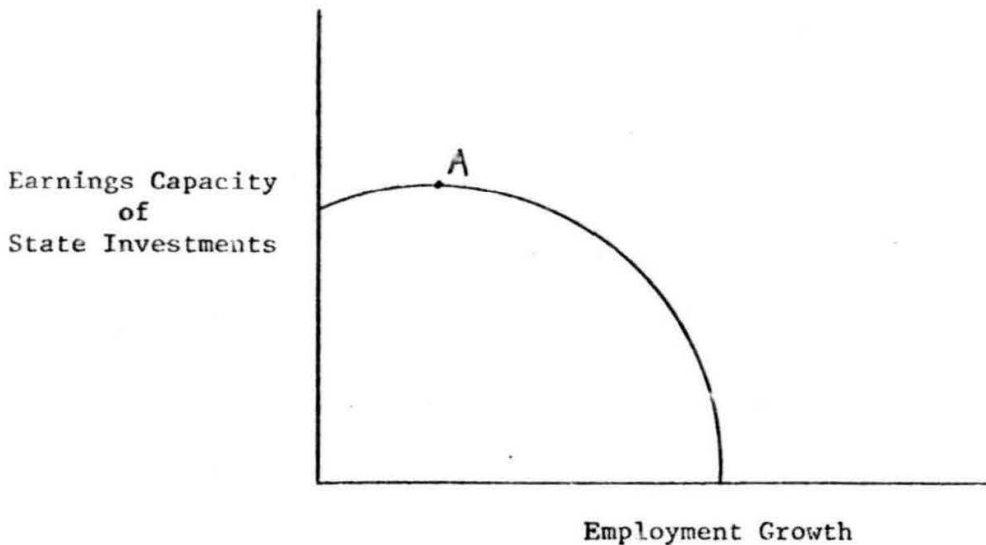
present and the rate of return on those investments. In order to achieve substantial earnings capacity relative to expenditures in the 1990s, present investment levels must exceed \$1 billion annually.

III. RECYCLING ALASKA'S WEALTH WITH EMPLOYMENT GROWTH AS A CONSIDERATION

Employment growth may be an objective of wealth management in addition to the availability of future revenues. When employment is considered, the distinction between savings and consumption in wealth management begins to blur. Expenditures which involve employment generation may result in a positive return to the state in the form of taxes or some other type of revenues. Some of these "investments" may generate employment but not a monetary return on the investment. These expenditures may be called investments; but in reality, they consume the earnings power of the fund and should properly be identified as consumption--consumption with the objective of generating employment. At the same time, however, they do represent the creation of a capital investment with some possible earnings potential.

If employment growth and earnings capacity are dual objectives of wealth management, a tradeoff as illustrated in Figure 15 exists. The state must choose a combination of employment-creating investments and other types of investments. Each combination will result in some level of earnings capacity for the fund and some rate of employment growth such as point A. The shape of the curve illustrates two facts. First, government-initiated investments can stimulate employment growth. Second, as the result of some employment-creating investments (those to the left of A), the total earnings capacity of the state will increase. For other employment-creating investments (those to the right of A), the creation of employment is at the expense of earning power for the state, and a tradeoff exists between earning capacity and employment.

Figure 15. The Jobs/Earnings Tradeoff



Wealth management with this dual objective requires a two-step process. The first is the ranking of potential investment projects by employment-generating potential within a broader ranking by return on investment. Thus, of two projects with an expected 15 percent rate of return, the one which generates the larger quantity (and quality) of employment per investment dollar would get the higher rank of the two. This would define the curve shown in Figure 15. The second step would involve deciding at what point on the curve to locate. Clearly, those investments represented by the portion of the curve to the left of point A should be undertaken because they result in both a positive return on investment and a positive increment to employment. To the right of A, greater stimulation to employment can be generated only with a decline in the ability of the government to finance programs out of services. As points further to the right are reached, the ability of the government to fund programs must be reduced by larger amounts to get the same increment to employment.

In this section, we examine a hypothetical example of an investment policy associated with job creation to isolate some of the important elements involved. We look at an investment policy which, starting in 1981, adds 200 new jobs annually to the Alaska economy under three sets of conditions. The jobs are in high-salaried manufacturing industries. In all cases analyzed, the nominal return on the investment is 7 percent, which is assumed to be the equivalent return which could be obtained on a nonemployment-generating investment. In other words, the state collects 7 percent on its investment.

The assumptions of the first case are that:

- a. the initiation and operation of the program are costless,
- b. there is no government spending increase associated with economic growth derived from employment stimulation,
- c. the personal income tax schedule is unchanged, and
- d. the approximate annual corporate income tax per new employee is \$5,000.

Under these assumptions, by 1985 employment has grown by 2 thousand due to the multiplier effect. State revenues have risen by \$12 million with half of the increase attributable to the corporate income tax and one-fourth accounted for by the personal income tax. Clearly, the total return to the state on the investment in this case is most sensitive to factors causing variation in the level of corporate tax receipts derived from the project. Since expenditures are unchanged, the general fund balance increases. It accumulates an additional \$27 million by 1985 as the result of the positive revenue flows of the previous years.

In a second case, a further assumption is made that the employment increase creates an influx of migrants into the state to fill a portion of the openings, and the demand created by these individuals causes an increase in government expenditures to the extent that these new migrants receive the same level of services as present residents.

This results in slightly higher employment increases (2.2 thousand in 1985), and the added employment generates additional revenues of \$.5 million by 1985. This increase in tax revenues is offset, however, by a decrease in general fund earnings of \$.8 million. The decline in general fund earnings occurs because a portion of the fund must be cashed in to help pay the cost of the increase in government services. The result is that the general fund grows by only \$6 million in 1985 in this case.

In a third case, an additional assumption is made that the investment program producing the 200 jobs annually has a cost associated with it which is \$50 thousand (1981 dollars) per job created.⁹ This does not affect the number of jobs created, but it does significantly alter the economics of the investment. The revenues which are attributable to the income generated by the jobs created will not change, but total revenues to the state will decline. This is because the state will pay for the \$10 million job-creation program out of the general fund, and the \$10 million thus expended will not earn interest to be collected in the next year. This decline in revenues will not appear to be substantial by 1985 when current account revenues are \$9.7 million above the base, but the negative effect on the general fund is significant. By 1985, it has declined below the base case by \$59 million. These effects are summarized in Table 2.

This hypothetical example is meant to illustrate a simple point rather than to present an analysis of particular employment-generating investments. It demonstrates that the income-generating capability of employment-generating investments depends importantly upon a few factors. These include:

- a. the revenue-producing power of the project itself through income taxes or resource royalties (as opposed to secondary effects which are relatively minor),
- b. government spending in response to the project and population-generated demands, and
- c. the cost of the employment-creating investment.

These factors dominate the analysis; and, consequently, any potential investments must be analyzed in terms of these revenues and costs. Each must then be compared to other potential investments on the basis of income and employment-producing capabilities.

TABLE 2. 1985 IMPACTS OF HYPOTHETICAL
EMPLOYMENT-GENERATING INVESTMENTS

	Case I	Case II	Case III
Employment (thousand)	2.0	2.2	2.2
Population (thousand)	2.4	2.7	2.7
State Revenues (million \$)	12.1	12.1	8.6
Personal Income Tax	2.7	3.0	3.0
Corporate Income Tax	6.1	6.2	6.2
General Fund Earnings	1.0	.3	-3.2
State Expenditures	0	12.7	12.7
General Fund Balance	26.8	6.3	-59.3

See text for case explanation.

Notes

1. More recent estimates, based upon domestic deregulation of crude oil and higher OPEC prices, are considerably higher. The analysis in this report adopts a conservative approach to the probability that the State of Alaska will actually be the financial beneficiary of these developments.
2. The severance tax and royalties comprise about 80 percent of petroleum revenues thus defined.
3. This and all succeeding analyses assume a 25 percent contribution rate to the permanent fund with no reinvestment of earnings.
4. With minimum earnings growth of government, general fund and permanent fund soon became a substantial source of state revenue. This allows larger amounts of petroleum revenues to be surplus on current account as time goes by.
5. All permanent fund earnings go into the general fund, so inflation begins to eat away at the value of the fund as fund additions decline with declining petroleum revenues.
6. The main assumptions of this scenario are as follows:
 - a. The operating budget grows as follows:

FY 1981	+20 percent
1982	+15 percent
1983	+15 percent
1984+	+10 percent
 - b. The capital budget from all sources and for all uses is \$550 million in 1981 and grows subsequently with the growth in personal income.
 - c. The personal income tax schedule is reduced by 50 percent in 1981.
 - d. Strong economic growth (including that of government) causes employment to grow by 57 percent over the decade of the 1980s and population to increase 44 percent over the same period. (In the 1970s, employment increased about 78 percent; and population, 40 percent.) In the 1990s, growth moderates to 30 percent for employment and 26 percent for population.

7. Operating expenditure growth assumptions:

FY 1981	+20 percent
1982	+20 percent
1983	+15 percent
1984	+15 percent
1985+	+10 percent

8. Corporate income and property taxes are assumed unchanged.
9. This is the present value of the future stream of direct government costs associated with this job-creation program.

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