

Impact of the Earthquake on the Economy of Alaska

THE TOTAL ECONOMIC CONTEXT, 1950-1966

To assess the effect of the earthquake experience on the future of Alaska, one must see the disaster in a total dynamic economic context. The impact can then be weighed against the continuing force of other factors and some judgment formed as to whether it was sufficiently strong to have halted, altered, or otherwise affected the course of long-run developments, or whether it simply provided a dramatic but otherwise short-lived disruption.

During the 1940's and 1950's, Alaska had experienced a rapid and relatively large economic and population expansion as a result of its strategic location in World War II and the international aftermaths of that conflict. The official decennial census count of population rose from 72,524 on October 1, 1939, to 128,643 on April 1, 1950, and 226,167 on April 1, 1960 (U.S. Bureau of the Census, 1960). The narrow, specialized, and seasonal colonial economy of the prewar period, based primarily on gold and canned salmon, was overshadowed by a totally different economy based on construction and support of a major defense establishment. By the advent of the 1960's, this economy had leveled off and its employment and income-producing capacity began to decline. At the same time, Alaska was beginning to shift to another and entirely different basic economy resulting from the state's increasing international importance as a strategic link in intercontinental air travel and transportation, and as a source of a broad range of natural resources for domestic and foreign markets.

Table 1 indicates the general nature of this shift in economic base (Loll, 1967). From the peaks of expenditures for construction, procurement, and personnel during the mid-1940's and early 1950's, the annual expenditures of the U.S. Department of Defense have shown a steady decline from \$416.9 million in 1954 to \$315.3 million in 1966. The value of wood products rose from \$14.6 million in 1954 to

ABSTRACT: No lasting effects, either beneficial or detrimental, on Alaska's long-range economic future resulted from the 1964 earthquake. During the decade immediately preceding the disaster, Alaska experienced continuing growth in population, employment, and income, but the relative increase in all these indexes for the 10 years was below the national average and far below that of the Far West. Increases in rates of change of population and employment that might be attributed primarily to recovery activities were registered in the 1964-1966 period, but these were no greater, and in some comparisons considerably less, than those registered in response to past federal-spending and defense-policy changes. This past experience has also demonstrated that activity stimulated by such federal spending is not self-sustaining beyond the period in which the expenditure is made. The changes in transportation patterns (the shift of major freight movements from Seward and Valdez to Anchorage) and population distribution were all in progress when the disaster hit and were merely accelerated as a result of it. There is some danger that the hoped-for trend toward the fullest realization of statehood may be reversed and that continued federal aid and planning may emerge as a disguised form of territorialism.

\$67.8 million in 1966. There had been no production of petroleum or natural gas since the insignificant output of the small pioneering ventures in the 1920's and 1930's until the discoveries at Swanson River on the Kenai Peninsula in July 1957 ushered in the Kenai and Cook Inlet oil and gas booms. The value of petroleum and natural-gas production from these fields during 1966 was \$50.3 million. Other discoveries were made in this region, but the most spectacular was the discovery announced in July 1968 at Prudhoe Bay on Alaska's arctic slope. Initial estimates of reserves in this new field ranged from 5 to 10 billion barrels, and a rush of exploration and development activities spread over most of the north slope, with good prospects of further major discoveries. Fisheries production rose in value, reflecting some improvement in the salmon fisheries by the end of the period, but to a greater extent reflecting the expansion of new fisheries such as king crab. As the decade of the 1960's drew to a close, the future prospects of an expanding economy based on further development of Alaska's natural resources looked very promising.

From the figures in Table 1, it appears that the 1964 earthquake hit at a point in Alaska's development when the former defense economy was still declining and the newly emerging natural-resources economy was making its first encouraging advances. Most of the reconstruction had been accomplished by May 1966, with a total expenditure of \$321 million by federal agencies, of which \$188.9 million was for public facilities of the type that had been continuously replaced during the previous two decades as defense requirement and technological change dictated (Kunreuther, 1970, this volume). The nature of the impact on the total structure of the Alaskan economy and its influence on trends in its key factors and elements can be detected in the published estimates of annual population, monthly total civilian work force, and annual personal income received by Alaskan residents that is produced cooperatively by federal and state agencies. These statistical series are available from 1950 and are comparable to similar series produced for other states and for the United States as a whole.

Table 2 summarizes the annual estimates by the U.S. Bureau of the Census (1950-1966) for military personnel and resident civilians and presents the major components of change. The series indicates that the spectacular upsurge in population between the 1940 and 1950 census enumerations continued into the early 1950's, after which the rate of increase began to decline (in some years there appeared to have been an absolute decline). Military movements played the dominant role. During the 1950's military personnel were permitted and even encouraged to bring their dependents to Alaska, which resulted in a further influence from this source on the trends in civilian migration and natural increase. Migration followed no defined trend, alternating between net in- and out-migrations, but totaled a net

in-migration of 42,100 civilians in the 17 years between 1949 and 1966, and a net in-migration of only 2,500 military personnel over the same period.

Table 3 summarizes the total employed work force, which combines annual military-personnel data published by the U.S. Bureau of the Census with the total civilian-work-force data prepared and published by the Alaska Department of Labor (1966a and b) in cooperation with the U.S. Bureau of Labor Statistics. These data indicate the abnormally high dependence of the Alaska economy during the period on government programs, both military and civilian. Construction employment is almost entirely directly related to government programs, federal spending for defense facilities, and civilian-agency spending for highways and airfields. Within the private sector of the economy, commodity-producing industries (other than construction) declined until 1965, despite increasing employment in pulp and lumber manufacturing and in petroleum production and refining. This decline reflects the substantial loss of employment due to the decline in the salmon-canning industry, which has more recently stabilized. Most significant is the continuing increase in employment in distributive industries. In part, this increase reflects a changeover from military to civilian technicians in the manning of certain defense-warning and -communications facilities, but it principally reflects a change from growth to consolidation in the total economy.

Table 4 summarizes the total personal income received by Alaskans for the period 1950-1966 and shows the trend for the period, together with that of the Far West (the states of California, Washington, Oregon, and Nevada) and of the United States as a whole (U.S. Department of Commerce, 1967). The rate of income growth for Alaska continues to be above that for the nation as a whole, but in 1957 it dipped below that of the Far West and since has been slightly below or above this trend.

Table 5 summarizes the U.S. Department of Commerce's annual estimates of per capita income for Alaska, the Far West, and the United States (U.S. Department of Commerce, 1966, 1967). Although still above the national average, the trend toward increase in Alaska's per capita income has slowed in relation to both national and Far West trends. In 1959, Alaska actually dropped below the Far West averages and has since remained at approximately that level. Because Alaska's much higher cost of living has not been taken into consideration in these comparisons (they are all expressed in current unadjusted United States dollars), the real impact of this relative decline in per capita income is not fully revealed.

These tables give an indication of the broad economic context of the decade immediately before the earthquake (1954-1963). During that period, Alaska's population had grown steadily, but its increase of 15.1 percent had been

TABLE 1 Estimated Value of Selected Natural-Resources Products and Defense Expenditures in Alaska (Millions of Dollars^a)

| Year ^b | Department of Defense | Wood Products | Petroleum and Natural Gas | Other Minerals | Fisheries |
|-------------------|-----------------------|---------------|---------------------------|----------------|-----------|
| 1954 | 416.9 | 14.6 | — | 24.4 | 78.0 |
| 1959 | 375.4 | 36.7 | n.a. | 20.5 | 72.2 |
| 1964 | 327.9 | 61.0 | 35.5 | 30.6 | 140.9 |
| 1966 | 315.3 ^c | 67.8 | 50.3 | 34.7 | 174.5 |

^aCurrent unadjusted dollars.^bDepartment of Defense data on fiscal-year basis, all others calendar year.^cIncludes some earthquake-related reconstruction.

n.a. = not available.

Source: Loll, 1967.

TABLE 2 Estimates of Total Resident Population, State of Alaska, 1950-1966 (Thousands of Persons)

| July 1 | Total Population ^a | Population Composition | | Components of Change | | | Total |
|--------|-------------------------------|------------------------|----------|----------------------|----------------------------|----------|--------|
| | | Military | Civilian | Natural Increase | Net Migration ^b | | |
| | | | | | Military | Civilian | |
| 1950 | 138.0 | 26.0 | 112.0 | 2.5 | (4.0) | 9.5 | 8.0 |
| 1951 | 164.0 | 38.0 | 126.0 | 2.8 | 12.0 | 11.2 | 26.0 |
| 1952 | 196.0 | 50.0 | 146.0 | 3.8 | 12.0 | 16.2 | 32.0 |
| 1953 | 212.0 | 50.0 | 162.0 | 5.0 | — | 11.0 | 16.0 |
| 1954 | 218.0 | 49.0 | 169.0 | 6.1 | (1.0) | 0.9 | 6.0 |
| 1955 | 221.0 | 50.0 | 171.0 | 6.4 | 1.0 | (4.4) | 3.0 |
| 1956 | 220.0 | 45.0 | 175.0 | 6.5 | (5.0) | (2.5) | (1.0) |
| 1957 | 228.0 | 48.0 | 180.0 | 6.7 | 3.0 | (1.7) | 8.0 |
| 1958 | 213.0 | 35.0 | 178.0 | 6.5 | (13.0) | (8.5) | (15.0) |
| 1959 | 220.0 | 34.0 | 186.0 | 6.5 | (1.0) | 1.5 | 7.0 |
| 1960 | 228.0 | 33.0 | 195.0 | 6.3 | (1.0) | 2.7 | 8.0 |
| 1961 | 235.0 | 33.0 | 202.0 | 6.3 | — | 0.7 | 7.0 |
| 1962 | 243.0 | 33.0 | 210.0 | 6.4 | — | 1.6 | 8.0 |
| 1963 | 251.0 | 34.0 | 217.0 | 6.5 | 1.0 | 0.5 | 8.0 |
| 1964 | 256.0 | 35.0 | 221.0 | 6.5 | 1.0 | (2.5) | 5.0 |
| 1965 | 267.0 | 33.0 | 234.0 | 6.6 | (2.0) | 6.4 | 11.0 |
| 1966* | 272.0 | 31.0 | 241.0 | 6.7 | (1.0) | (0.7) | 5.0 |

*Provisional.

^aEstimates are 12-month moving averages at midyear.^bDecreases and net out-migrations shown in parentheses.

Source: U.S. Bureau of Census, 1966; earlier years from prior reports in same series.

lower than the 18.6 percent for the nation as a whole, and considerably lower than the 36.0 percent rate for the Far West. There had actually been a decline in employed-labor force, compared with a 7.9 percent increase for the nation and, again, spectacular growth in the Far West. Total personal income received by Alaskans increased by 42.9 percent between 1954 and 1963, but fell short of the 84.1 percent increase enjoyed in the Far West and 62.2 percent for all the United States in the same period. Per capita per-

sonal income had risen from \$2,272 in 1954 to \$2,862 in 1963, but again the increase had lagged behind the increases nationally and in the Far West. Although Alaska's per capita personal income in 1954 was above both these levels, the income for 1963 was below that for the Far West (\$2,910) and closer to the United States per capita income (\$2,455) than in 1954. Furthermore, these averages do not take into account cost-of-living differences.

These statements do not necessarily contradict those that

TABLE 3 Alaska Total Employment, 1950-1966 (Thousands of Persons, 12-Month Average)

| Calendar Year | Total | Military Personnel | Civilian Employment | | | | |
|-------------------|-------|--------------------|---------------------|-----------------|----------------------|--|---------------------------|
| | | | Government | | Private ^a | | |
| | | | Federal | State and Local | Construction | Other Commodity-Producing ^b | Distributive ^c |
| 1950 | 78.5 | 26.0 | 13.6 | 2.1 | 6.3 | 10.7 | 19.8 |
| 1951 | 99.7 | 38.0 | 13.9 | 2.3 | 11.5 | 10.4 | 23.6 |
| 1952 | 112.2 | 50.0 | 14.5 | 2.5 | 10.3 | 10.4 | 24.5 |
| 1953 | 110.9 | 50.0 | 15.9 | 2.9 | 8.8 | 9.1 | 24.2 |
| 1954 | 106.2 | 49.0 | 15.7 | 3.4 | 7.3 | 7.8 | 23.0 |
| 1955 | 108.8 | 50.0 | 15.7 | 3.7 | 6.4 | 8.4 | 24.6 |
| 1956 | 106.9 | 45.0 | 16.3 | 4.2 | 7.4 | 8.2 | 25.8 |
| 1957 | 109.9 | 48.0 | 17.4 | 4.6 | 5.9 | 8.0 | 26.1 |
| 1958 | 95.9 | 35.0 | 16.8 | 5.0 | 5.1 | 7.9 | 26.1 |
| 1959 | 96.9 | 34.0 | 16.8 | 5.6 | 4.8 | 7.7 | 28.0 |
| 1960 | 100.1 | 33.0 | 15.6 | 7.1 | 5.9 | 9.0 | 29.5 |
| 1961 | 99.0 | 32.0 | 15.6 | 8.2 | 4.1 | 8.4 | 30.7 |
| 1962 | 101.6 | 33.0 | 15.7 | 9.3 | 4.0 | 8.6 | 31.0 |
| 1963 | 105.7 | 34.0 | 16.6 | 10.5 | 4.2 | 8.8 | 31.6 |
| 1964 | 110.5 | 35.0 | 17.2 | 10.9 | 5.8 | 8.7 | 32.9 |
| 1965 | 114.0 | 33.0 | 17.4 | 12.3 | 6.4 | 9.2 | 35.7 |
| 1966 ^d | 113.2 | 31.0 | 17.6 | 13.4 | 6.0 | 9.7 | 35.5 |

^aIncludes estimate of agricultural workers, self-employed, and unpaid family workers.

^bOther commodity-producing industries: Agriculture, fishing, hunting, forestry, mining, manufacturing.

^cDistributive industries: Transportation, communications, public utilities, trade, finance, insurance, real estate, services.

^dPreliminary.

Source: Alaska Department of Labor, 1966a, b.

have claimed great growth in Alaska's economy and population since it attained statehood. Viewed in a context longer than a decade, Alaska suffered a severe business recession about 1958 and, following the granting of statehood, was in the process of recovery.

THE IMPACT — IMMEDIATE AND FUTURE

As in the case of any complex phenomenon, the causes of change in the indexes of economic activity are many and varied and the recorded results reflect crosscurrents as well as strong trends. But the impact of the 1964 disaster can be assumed to have affected the indexes for the years 1964-1966. The components of population change record a net civilian out-migration between 1963 and 1964 of 2,500 persons; there was a net civilian in-migration of 6,400 persons between 1964 and 1965 and another net out-migration of 700 between 1965 and 1966 (all dates as of July 1; see Table 2). Such changes in direction of migration are common in Alaska's experience. During the decade of the

1950's, there occurred three much larger annual net civilian out-migrations and four much larger in-migrations than those recorded between 1963 and 1966. Although the earthquake affected Alaska's population temporarily, the impact was so slight that the change would not have aroused much comment under less dramatic circumstances.

Civilian employment might also be expected to reflect the impact (Table 3). Average monthly civilian employment in Alaska in the calendar year 1964 rose by 3,800 persons, or 5.3 percent over the average for 1963, with construction employment exhibiting the most significant increase: 1,600 persons. A further large increase from 1964 to 1965—an average monthly increase of 5,500 persons—was accounted for primarily by 2,800 in distributive industries and 600 in construction. By 1966 the effects of the earthquake on employment appeared to be wearing off, as the increase was only 1,200 persons, with declines in both construction and distributive industries.

On a very small and temporary scale, therefore, the economic effect of the disaster during the year 1964 was comparable to the annual "shot in the arm" that successive

TABLE 4 Total Personal Income Trends — Alaska, Far West, and United States

| Calendar Year | Alaska | | Far West ^a | | United States | |
|-------------------|----------|--|--|--|--|--|
| | Millions | Income Trends ^b 1950 = 100.0 | Income Trends ^b 1950 = 100.0 | Income Trends ^b 1950 = 100.0 | Income Trends ^b 1950 = 100.0 | Income Trends ^b 1950 = 100.0 |
| 1950 | 319 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| 1951 | 439 | 137.6 | 107.6 | 107.6 | 112.2 | 112.2 |
| 1952 | 485 | 152.0 | 125.3 | 125.3 | 119.3 | 119.3 |
| 1953 | 506 | 158.6 | 132.4 | 132.4 | 125.6 | 125.6 |
| 1954 | 493 | 154.5 | 135.8 | 135.8 | 126.6 | 126.6 |
| 1955 | 500 | 156.7 | 148.4 | 148.4 | 136.0 | 136.0 |
| 1956 | 548 | 171.8 | 162.2 | 162.2 | 146.5 | 146.5 |
| 1957 | 537 | 168.3 | 172.3 | 172.3 | 154.7 | 154.7 |
| 1958 | 526 | 164.9 | 179.9 | 179.9 | 158.6 | 158.6 |
| 1959 | 555 | 174.0 | 196.7 | 196.7 | 168.7 | 168.7 |
| 1960 | 632 | 198.1 | 206.8 | 206.8 | 177.0 | 177.0 |
| 1961 | 628 | 196.9 | 218.9 | 218.9 | 184.1 | 184.1 |
| 1962 | 661 | 207.2 | 234.7 | 234.7 | 195.1 | 195.1 |
| 1963 | 704 | 220.7 | 251.1 | 251.1 | 205.4 | 205.4 |
| 1964 | 789 | 247.3 | 268.1 | 268.1 | 218.8 | 218.8 |
| 1965 | 851 | 266.7 | 283.1 | 283.1 | 235.2 | 235.2 |
| 1966 ^c | 890 | 279.0 | 309.6 | 309.6 | 254.6 | 254.6 |

^aCalifornia, Washington, Oregon, Nevada.

^bIncome received by residents of the state or region from business establishments; federal, state, and local governments; households and institutions; and foreign countries. All forms of income flowing to persons from these sources are included. In Alaska's case, estimates are made of the cash-value equivalent of food and clothing of the subsistence-hunting-and-fishing activities of Indians, Aleuts, and Eskimos.

^cPreliminary.

Source: U.S. Department of Commerce, 1967.

replacements of defense facilities had provided to keep the Alaska economy alive for the two previous decades. It appeared to be more a part of Alaska's recent past than of its future. Intelligent planning and scheduling of the reconstruction evidently assured the spreading of this beneficial effect over about 2 years, but in Alaska economic activity engendered by federal spending is not self-sustaining beyond the specific program or project for which the expenditure is made. The multiplier effect of public works and other construction is abnormally low in Alaska. With the exception of local sand, gravel, and stone quarried for aggregate, most materials used must be imported, and all equipment and most tools and supplies also come from outside Alaska, although some local resale activities are generated. Because of the limitations of local labor markets in terms of numbers and skills, the construction work force is largely non-resident, and many workers leave Alaska at the end of the season or when the project is finished. Any decrease in construction is immediately translated into the social and economic costs associated with unemployment, and the experience of the employment-security program reveals that even benefits paid at the end of periods of employment go

to addresses outside the state and result in a net negative impact on the level of income. Many of the multiplier effects of Alaskan construction are enjoyed outside Alaska where the equipment, supplies, materials, and workers originate. Because of this, Alaskans recognize that the defense and construction economy must be supplemented and increasingly replaced by an expanding natural-resources economy. Investment in such productive activities would result in continuing income beyond that generated by the initial undertaking and foster additional related productive and service activities.

The possible impact of the 1964 disaster on the long-range economic development of Alaska is more difficult to identify and define than the immediate effects registered in current economic indicators such as those presented here. The long-range effects strike more deeply into the mainstream of human activity and soon become hopelessly lost in the crosscurrents generated by events entirely unrelated to the 1964 disaster.

When the memory of the terror of the earthquake was fresher, it seemed that the resulting popular awareness of the natural hazards represented by earthquakes and tsuna-

mis might have adverse effects on people's plans to live and invest in Alaska. In his statement of May 1964, in support of extending the Alaska Omnibus Act transitional funds, Governor Egan projected a substantial increase in the budget of the Department of Economic Development. "It has the duty of overcoming detrimental publicity and to encourage capital flow to Alaska, encourage tourism and other business development" (Alaska Office of the Governor, 1964, p. 8). It also seemed that the destruction of private property could increase mobility of Alaska's population through the release of the individual from the ties of fixed equity in Alaska.

However, less than a year after the earthquake, most of the damaged communities had been substantially restored to their former condition, with only a few changes to indicate what had been learned about earthquake hazard—the relocation of the town of Valdez and portions of other coastal communities and shore-based facilities on safer ground, and attempts to stabilize soil in the major slide areas of the City of Anchorage. There was no evidence of changes in preearthquake investment-and-development decisions and plans, nor any major exodus of population. Construction of major facilities for further development of the Cook Inlet and Kenai Peninsula petroleum field, for exam-

ple, were carried out on schedule, and the development boom since reflects no adverse effects from the earthquake.

Also speculative were opinions as to whether or not progress toward optimal statehood, in fact as well as in name, may have been set back by the disaster. Statehood was sought originally as a means of fostering the transition of the Alaska economy from a dependent, federally oriented economy to a self-sustaining, locally oriented one. On the eve of projected full fiscal independence from direct federal support of purely state functions, Alaska was thrust back into its former condition of continued direct federal subsidy of its government. In addition to providing the relief and reconstruction funds, the Congress amended the Alaska Omnibus Act on May 27, 1964, to provide for continuation of transitional grants to Alaska for state functions until June 30, 1966, and extended programs of interim services and facilities by federal agencies for a similar period. The Federal Field Committee for Development Planning in Alaska, established October 2, 1964, has important planning and policy functions that are to be shared with state agencies (Office of the White House Press Secretary, 1964). If the Alaskans overstated their real need for relief or if they shirked their responsibilities of leadership and of sharing costs and efforts involved in rehabilitating and developing the state, these continuing programs could become mechanisms by which Alaska will revert to territorialism in disguised form. Most of these fears and doubts have been lifted by the continuing and growing flow of revenue into the state treasury generated by the petroleum industry. From the period of fiscal uncertainty immediately before the earthquake, the State of Alaska has since developed financial soundness and with this a greater spirit of independence in the management of its affairs.

Despite the frightening physical impact of the actual event, the earthquake left few lasting effects on the Alaska economy. At most, it accelerated changes in transportation patterns and caused a slight redistribution of population in south central Alaska. It also extended the federal transitional-grants program, which the state government needed even without the disaster, and provided a temporary rise in employment. The 1964 earthquake may be referred to as a benchmark in Alaskan history, but it is only one of a number of crises that will have to be faced and overcome as part of the continuing development of the State of Alaska.

TABLE 5 Per Capita Personal Income — Alaska, United States, and Far West (Current Unadjusted Dollars)

| Calendar Year | Alaska | United States | Far West ^a |
|-------------------|--------|---------------|-----------------------|
| 1950 | 2,231 | 1,491 | 1,788 |
| 1951 | 2,629 | 1,649 | 1,975 |
| 1952 | 2,487 | 1,727 | 2,068 |
| 1953 | 2,387 | 1,788 | 2,103 |
| 1954 | 2,272 | 1,770 | 2,089 |
| 1955 | 2,283 | 1,866 | 2,210 |
| 1956 | 2,491 | 1,975 | 2,326 |
| 1957 | 2,397 | 2,048 | 2,397 |
| 1958 | 2,469 | 2,064 | 2,430 |
| 1959 | 2,523 | 2,165 | 2,572 |
| 1960 | 2,760 | 2,217 | 2,625 |
| 1961 | 2,672 | 2,268 | 2,691 |
| 1962 | 2,731 | 2,368 | 2,789 |
| 1963 | 2,862 | 2,455 | 2,910 |
| 1964 | 3,082 | 2,579 | 3,038 |
| 1965 | 3,187 | 2,746 | 3,174 |
| 1966 ^b | 3,272 | 2,940 | 3,385 |

^aCalifornia, Washington, Oregon, Nevada.

^bPreliminary.

Source: U.S. Department of Commerce, 1966, 1967.

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