MONTHLY REVIEW

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FEDERAL RESERVE BANK OF MINNEAPOLIS

MARCH 1961

Current conditions . . .

The Ninth district economy has both an element of dependence on and independence from the national economy. Each of these elements is evident in the district's current economic situation.

The level of business inventories appears to be at the core of the current national recession. Last December, total business inventories in the nation were reduced by $450 million on a seasonally adjusted basis; $350 million of this was in stocks held by manufacturers of durable goods. Yet stocks of principal raw materials from this district, including iron ore, lumber and copper, remained high. The effects of these excessive stocks, together with high inventories of automobiles and other merchandise, are discussed below.

The district's relative independence from the economic factors of current national concern results from the predominance of agriculture in its economy. We have focused on farm inventories. The number of cattle on feed on January 1 was up 21 percent in the district from a year ago, as compared to 6 percent in the 26 major feeding states. Beef cattle inventories increased 3 percent in the district, although numbers of milk cows and hogs and pigs declined. District states reported substantial increases in stocks of corn and oats as of January 1, but the outlook for 1961 is clouded by the possibility of inadequate moisture.

District banking developments also reflect the regional situation. The relatively comfortable position of district city banks is revealed by the fact none of them borrowed at the Federal Reserve in the weeks ended January 25 and February 1. This liquidity continues to reflect larger payoff of loans than usual for the season, and a somewhat lesser deposit outflow.

The following selected topics describe particular aspects of the district's current economic scene:

BUSINESS INVENTORIES

The liquidation of business inventories, which has been the primary cause of the current recession, continued through the first two months of this year, it appears on the basis of preliminary information. Further liquidation depends in large measure on the level of final demand from consumers, business and government. When inventory liquidation has run its course, industrial production may pick up, resulting in a revival of business activity.

Last December, total business inventories in the nation were reduced by $450 million on a seasonally adjusted basis, according to the U. S. Department of Commerce. The reduction in stocks held by manufacturers and concentrated in durable goods amounted to $350 million. Wholesalers' stocks were reduced by $100 million; retailers' stocks remained unchanged, with increases in some lines offsetting decreases.

Inventories by stage of fabrication indicate that during the latter half of 1960 manufacturers of durable goods significantly reduced purchased materials and goods-in-process. However, stocks of finished goods continued to rise, enabling manufacturers to shorten delivery dates to their distributors. This in turn led distributors to reduce their stocks.

Informal surveys appearing in the business press in early February show that most manufacturers had either completed their inventory liquidation programs or expected to by spring. Inventories held by nondurable manufacturers changed little in total during 1960, indicating that the manufacturing sector may soon cease to be a drag on the economy.

Although stocks of raw materials held by manufacturers of durable goods have been reduced in aggregate, stocks of principal minerals produced in this district are still high. Iron ore accumulated at lower lake docks and in steel furnace yards at the end of December 1960 aggregated 74 million gross tons—about 10 million tons more than on the three preceding Decembers. Furthermore, low consumption during the winter will leave exceptionally heavy stocks next April when Great Lakes navigation opens.

In general, lumber stocks at the end of 1960 were still heavy. Stocks held by retail lumber yards in this district were reduced more than seasonally in the latter half of last year, but the supply of some items was still excessive in view of the low volume of home building and the poor demand from area farm communities. Only a small percentage of the mills in Montana and in other states along the Rockies have attempted to operate, and these have curtailed production.

Copper stocks in the nation rose quite steadily through 1960, exceeding 200,000 short tons in October compared with an average monthly stock of 172,200 tons in 1959, and of 169,500 tons in 1960. District production was high following the settlement of a strike in February 1960 but a slight cutback was made in both November and December.

In the nation, stocks held by retail outlets in December were $990 million above a year ago. There was little change from November. Most of the increase was in durable goods.

Since January the biggest drag on industrial production has been automobile stocks. New domestic cars on hand or in transit as of February 1, 1961 were estimated at 1,028,140 units, close to last summer's all-time high of 1,038,967. Dealers' inventories have reached a new high in terms of a 68½ day supply based on the January selling rate, which was the slowest in seven years for that month. Blizzards in the eastern United States slowed sales, but other factors such as recession psychology and the failure of the new compacts to excite buyers also contributed to a weak market. Used car stocks dropped sharply during January but were still considered rather heavy. On February 1, for the first time since October, used cars held by franchised dealers were below a 40 day supply.

Stocks of other types of merchandise are not as far out of line with sales as are cars. In two groups—furniture and appliances, and lumber, building supplies and hardware—retail stocks have been reduced, and last December were below the year-ago volume. However, retail stocks in the entire nondurable goods field averaged 2 percent above a year ago.

Retail stocks held by department stores have tended to be excessive. In the nation, stocks, seasonally adjusted, rose during the first eight months of 1960 and then turned down. Stocks at the end of December were still 4 percent above a year ago. In the Ninth district, adjusted stocks during the first eight months of 1960 rose more rapidly than in the nation—an increase of 10 percent as compared with 5 percent. Beginning in September, stocks were liquidated but were still 3 percent above a year ago at the end of December. Sales promotions during January were pushed harder than usual to liquidate inventories.

LIVESTOCK AND CROP INVENTORIES

Beef cattle inventories in the Ninth district were reported at 8,188,000 head on January 1, 1961, a 3 percent increase over the number reported on January 1, 1960, according to recent U. S. Department of Agriculture estimates. The only district state to show a decrease was Montana, down

PERCENT CHANGE IN LIVESTOCK AND FEED GRAIN INVENTORIES

(January 1, 1960 to January 1, 1961)

	Minn.	N.D.	S.D.	Mont.	District
Livestock					
Milk cows and heifers, 2 years and older	0	— 6	— 3	— 6	— 2
Beef cattle	+ 4	+ 8	+ 3	— 5	+ 3
Cattle and calves on feed	+19	+40	+17	+10	+21
Hogs and pigs	— 6	—14	— 5	0	— 6
Sheep and lambs	+ 5	+ 6	+ 2	— 7	0
Stocks of feed grain (all positions)					
Corn	+10	+18	+34	—12	+16
Oats	+18	+38	+78	— 1	+36
Barley	— 8	— 2	+75	—20	— 5

5 percent with one of the largest percentage declines reported for the United States. The 8 percent increase in beef cattle numbers in North Dakota, however, was the largest gain shown in the country.

The number of cattle on feed for market showed a decided increase. The district total was up 21 percent, to 1,056,000 on January 1, 1961 as compared with 858,000 a year earlier. The sharpest increase was in North Dakota, up 40 percent. The district increase, 21 percent, compares with a 6 percent increase reported by the 26 major feeding states. Of all the major feeding states, only Iowa showed a decline in numbers of cattle on feed for market.

Commercial cattle slaughter in the U. S. in 1960 was up 10 percent over 1959 and calf slaughter up 7 percent. Imports from Canada and Mexico during the first 11 months of 1960 were down 88,000 head from the same period in 1959.

The number of milk cows and heifers continued to decline in the district. While Minnesota dairy farmers maintained 1,407,000 head during 1960, numbers decreased in all of the other states. North Dakota and Montana each had 6 percent fewer milk cows and South Dakota 3 percent fewer. In all, the district total decreased 2 percent, from 2,080,000 head on January 1, 1960 to 2,049,000 head on January 1, 1961.

Hog and pig numbers in the district fell 6 percent, from 5,361,000 head on January 1, 1960 to 5,048,000 head on January 1, 1961. Minnesota, which accounts for the largest proportion of hogs produced, decreased hog numbers by a like percentage. Numbers of hogs under six months old increased 5 percent, reflecting the 3 percent increase in fall farrowings. The reduction in total hog numbers is due to a 20 percent cutback in hogs six months and older.

District farmers and ranchers indicated little change in the total number of sheep and lambs held on reporting dates. Total sheep held numbered 5,319,000 on January 1, 1960 and 5,328,000 on January 1, 1961. The percentage change among individual states did vary, however; a 7 percent decrease in Montana was offset by increases in the other states. North Dakota led with a 6 percent increase in sheep and lamb numbers. Sheep on feed in the district increased 3 percent while stock sheep declined less than 1 percent.

Total feed grain stocks in all positions in the United States were reported at record levels on January 1, 1961. Corn in all storage positions totaled a record 4,700 million bushels, 7 percent over the previous record, set last year. Disappearance of corn during the October-December quarter was slightly less than in the last quarter of 1959. Barley stored in all positions was off 10 million bushels from last year, and oat stocks were up 10 percent, although 6 percent less than the 10-year average.

District states reported substantial increases in stocks of corn and oats in all positions over last year. Barley stocks were down slightly. South Dakota increased stocks of all feed grains while Montana showed an overall decrease.

Earlier 1960 USDA estimates of the total U. S. cattle population indicated 101,520,000 head. Revisions of the inventory estimates to conform to the 1959 Census and other supporting evidence resulted in the current estimate of 96,236,000 head, or a 5 percent lower estimate. Percentage-wise, the revisions in total cattle numbers in the

district states were the same as for the U. S.; total cattle numbers in the district were revised downward from 11,835,000 head to 11,240,000 head.

Beef cattle numbers for 1960 were revised downward by 3.7 percent for the U. S. and 4.7 percent for the district. The importance in noting these revisions is that it indicates a slower build-up of cattle numbers than had been anticipated. Thus, the expected increase in cattle slaughter and the resultant downward pressure on prices should be less than expected earlier.

Other revisions made from the earlier estimates of 1960 year-end inventories are: milk cows down 8 percent; stock sheep down 2 percent; hogs and pigs up 1 percent.

WINTER DROUTH REDUCES SUBSOIL MOISTURE SUPPLY

Forecasts of drouth have been heard more and more frequently in recent weeks from Minnesota to western Montana. In Montana, for example, the present water supply outlook for 1961 is reported poor by U.S.D.A. agencies and the Agricultural Experiment Station at Bozeman, Montana. The snowpack in the mountains as of February 1 was reported much below average, and less than last year by 20 to 50 percent, depending on specific locations. In the Madison-Gallatin river basin the snowpack was officially put at 66 percent and in the Yellowstone river basin at 49 percent of normal. Furthermore, the subsoil moisture under the snowpack is deficient due to a dry late summer and fall. Stream flows this spring and summer are expected to be reduced as a result. Water storage in irrigation reservoirs is reported generally below average throughout Montana. A year ago, most reservoirs were brim full. Farmers in Montana depending on stream flows and irrigation have recently been asked to consider planting more early-maturing crops as a hedge against insufficient water to mature late crops. A few Montana moisture records for the period October 1960 through January 1961 are illustrative of the seriousness of the potential drouth problem.

	4 Months ending		Departure from long-term normal
	Jan. 31, 1960	Jan. 31, 1961	
	(Inches)		
Billings	3.60	2.12	—0.81
Miles City	2.09	1.13	—1.28
Glasgow	2.20	1.07	—1.18
Glendive	1.50	.93	—0.90

Precipitation as reported by seven federal stations spread across North Dakota for the 4 months ended January 31 was 55 percent less than in the same period the previous year. Moisture conditions in much of the Red River Valley is reported below normal, but the situation is not considered as critical as it is farther west, particularly along the Canadian border.

Precipitation records in South Dakota and Minnesota since last September also show sharp declines from normal and from the same period a year earlier in almost all sections of the two states. Aberdeen, South Dakota, for example, registered 4.13 inches a year earlier, 1.74 inches (1.46 inches below normal) this season. In Minneapolis, precipitation was recorded at 5.25 inches a year ago for this 4-month period and at 2.37 inches this year, which is 2.37 inches below the long-term normal. Snowfall in Minneapolis-St. Paul to mid-February this year totaled only 9 inches compared with about 32 inches last year and 40 inches normally. (10 inches of snowfall equal approximately 1 inch of rainfall.)

In general, this past fall and early winter may be recorded as one of the driest in weather history for much of the Ninth district. Subsoil moisture is generally inadequate. Heavy late winter snows and soaking rains this spring are needed to offset the dry situation and to insure a normal start for grass and early planted grains.

The winter—mild and free from snow thus far—has been favorable for livestock production. Nevertheless, ranges are tinder dry, and early growth and development of the important Western Bunch and Wheat grasses may be seriously re-

tarded unless generous moisture is received during March and April.

BANKING DEVELOPMENTS IN THE NINTH DISTRICT

Reflecting the relatively comfortable position of district reserve city banks recently is the fact that none of them borrowed at the Federal Reserve in the weeks ended January 25 and February 1. Such weeks of no borrowing by the city banks are rare; there were none in 1960 and only one in 1959. In the easy money year of 1958, there were seven weeks of no borrowing by the reserve city banks. The same pattern is visible in the market for federal funds, where district banks have been net lenders in every week of 1961; last year there were but four weeks of net lending. For the entire month of January, on a daily average basis, district city banks borrowed $315,000 from the Federal Reserve. This was less than in any month since March of 1958 and compares with borrowings of $19.2 million in January last year. In the first half of February, reserve city bank borrowing from the Federal Reserve averaged $271,000.

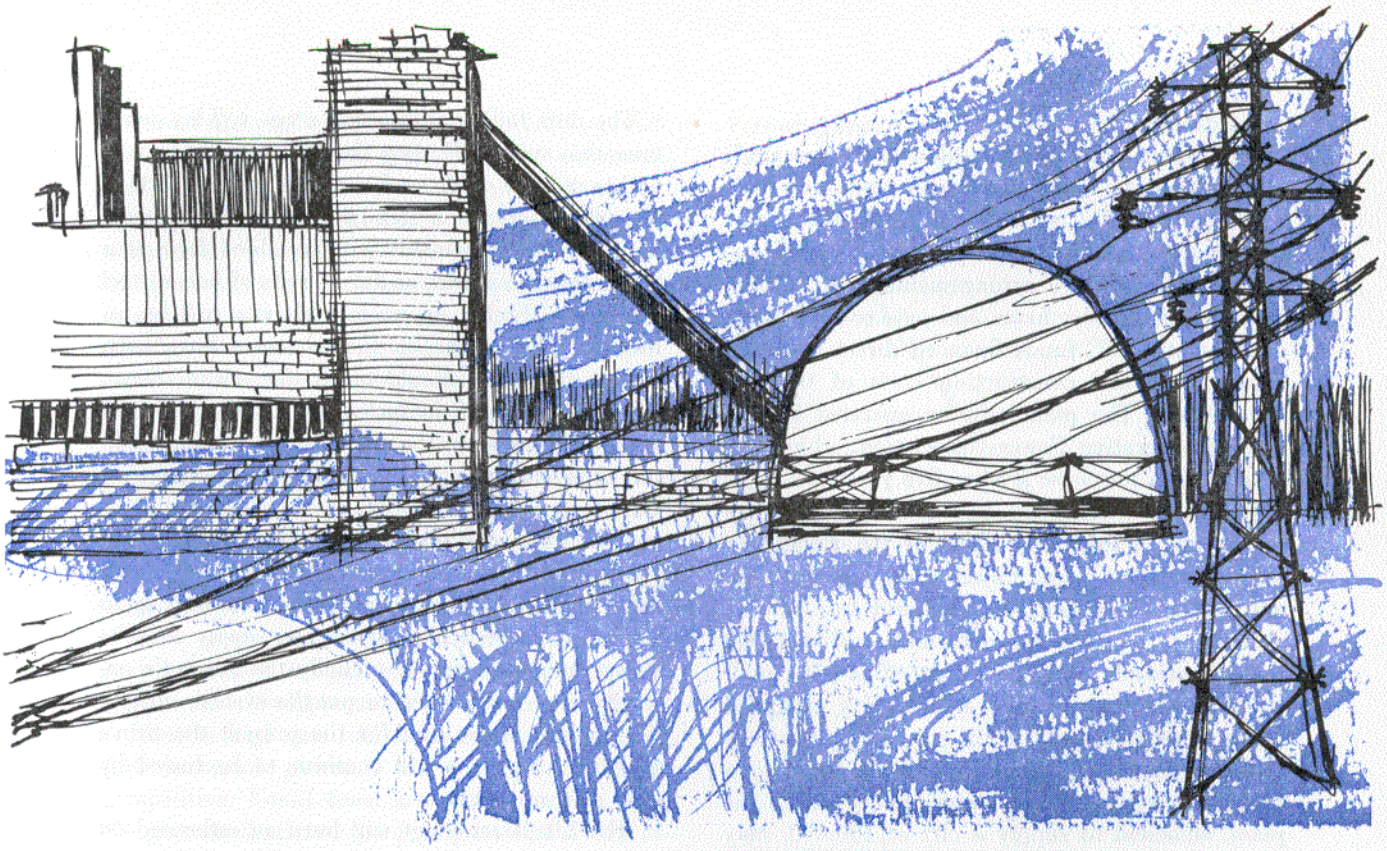
Our country banks borrowed $1.3 million in January. This was slightly more than in November or December but less than in any previous month since September 1958. It compares with $7.4 million of country bank borrowing in January of last year. In the first half of February, country bank borrowings averaged $1.9 million.

The liquidity of the city banks continues to reflect larger liquidation of loans than is usual for this season and a somewhat lesser than usual deposit outflow. The latter primarily reflects the behavior of deposits owed to others than banks or the U. S. Treasury. City bank loans fell $32 million in January; only once since 1947 has a larger decline been reported. The average decline for all Januaries since 1947 was $5 million. In the first week of February, the city bank loans declined further by $5 million in contrast to an increase of $5 million in the comparable week last year. District reserve city bank demand deposits in the reserve period ended January 25 averaged $12 million less than in the period ended December 28. This was a lesser decline than in the comparable weeks of any of the previous nine years, save one. City bank time deposits jumped $15 million in the first half of February to a new high. Total deposits on February 15 were $179 million, or almost 10 percent higher than a year earlier.

Country bank demand deposits in January fell by $24 million, which was twice the drop registered a year earlier but equal to the average decline for January in the previous nine years. Total deposits of the country banks at the end of January were $52 million, or 2 percent over the year-earlier level.

The loans of district country banks rose $3 million in January; in January of 1960 and 1959, country bank loans had declined by $6 million and $5 million, respectively.

Average daily debits-to-demand-deposit accounts at a large sample of district banks showed fairly substantial gains in January this year over last. The largest gain was reported in Montana, where debits were 18 percent over a year earlier. The smallest gains were registered by banks in South Dakota and Michigan, where debits exceeded the year-earlier levels by 7 percent and 8 percent, respectively.



Atomic power to flow in district

Two nuclear plants, 200 miles apart, will soon supply the Ninth district with its first atomic-generated electricity. And each of the plants can claim a few firsts of its own.

The Elk River, Minnesota plant, built at a cost of $9,300,000, will be the first in the nation to serve a rural constituency. It is the first atomic plant to be integrated into an existing conventionally-powered system, and it is the smallest utility power reactor to be constructed up to this time. It is also the first commercial power station to be completed which was jointly constructed by the Atomic Power Commission and a publicly-owned power group.

The $34 million Pathfinder plant now under construction near Sioux Falls, South Dakota, is the world's first completely nuclear generating plant. It will use nuclear energy not only as the primary source of fuel, but also to fire the superheater which steps up the temperature of steam leaving the boiler and entering the turbo-generator. In other plants, including Elk River, the superheater is fired by coal or gas.

Both plants were initiated under an Atomic Energy Commission program designed to demonstrate that atomic powered utility plants can be operated economically and — in time — competitively. This area was chosen as one of a few in the nation especially suited for atomic power development, because of the relatively higher cost of

conventional fuels.

Both plants will operate with a "boiling water" reactor, one of a half dozen major types, and both will supply the AEC with various kinds of cost and performance data. Under the program, the AEC enters into cooperative arrangements with utilities and nuclear industry firms, and pays some or most of the costs. AEC funds financed direct research, development and construction costs of the Elk River plant. The plant will be operated by the Rural Cooperative Power Association, which has an option to purchase it after five years.

The AEC contributed $10 million toward research and development costs of the Pathfinder plant. Northern States Power Company will own and operate the plant, having paid for its construction. In return for contributing $3,600,000 toward research and development, nine other midwestern utility companies will receive technical information developed in the project, and the opportunity to send personnel there for training in nuclear power plant technology. Energy from the plant, sufficient to supply a city of 130,000, may also flow into the lines of the participating companies after completion in 1962. The plant was 42 percent complete at the first of the year.

The Pathfinder plant will have a rated generating capacity of 66,000 kilowatts. The main building of the plant, which houses the turbo-generator and offices, is about three stories above ground level and measures 90 by 100 feet. The containment shell, a 120-foot-high dome-shaped structure characteristic of atomic plants, will house the reactor. About a third of the shell is above ground. The plant will be run by a staff of about 50 men.

Allis-Chalmers Manufacturing Company built both plants under contract with the AEC. The Elk River plant site is owned by the local cooperative, which also furnished the turbine-generator facilities for converting reactor-produced heat to electric energy. Allis-Chalmers personnel will remain at the plant, now constructed, for several months after its reactor "goes critical"—that is, achieves a self-sustaining chain reaction.

The date for this important stage will be sometime this spring. Putting the fuels—tubes packed with uranium oxide and thorium oxide pellets—into the reactor is a step-by-step process. Groups of tubes called elements will be added four at a time; between additions the 13 rods of boron steel used as a throttle on nuclear activity will be removed. When some 26 fuel elements have been added, the mass should reach the critical stage. Then fissioning of the fuel materials provides heat to boil the water in the vessel at the reactor's center, thus—through a secondary system—powering the plant.

The full power load will not be reached, however, until 148 fuel elements have been added. After more testing, the plant will be hooked up to the rural cooperative's system to supply half its power requirements. Eventually the reactor's capacity may be doubled to put the system entirely on nuclear power, but for the present the firm's two other turbines will continue to be fueled by coal and natural gas.

The Elk River plant will burn an estimated 60 pounds of atomic fuel a year, producing the same amount of energy as 80,000 tons of coal. It will supply homes in 21 central Minnesota counties.

Elk River will be the fifth utility power reactor to go into action in the United States since 1957. Its 22,000 kilowatt output compares to the 90,000 to 255,000 kilowatt range of the others.

Like the Pathfinder, the Elk River plant has special provisions for handling water used in the reactor before releasing it, in this case into the Mississippi River. Checking and treating excess water will be one of the safety precautions undertaken by the 14 man crew which will take over operations. Other tasks include watching the 20 monitoring devices in and around the reactor (which is shielded by eight feet of concrete) to make sure no radioactive gases escape the vessel. Two men will always be stationed in the control room, 480 feet from the reactor, surrounded by alarms.

Detailed arrangements are also necessary to re-

move a third of the fuel elements from the reactor vessel and replace them with new ones, an operation which must be repeated every 12 to 15 months. The removal will be done completely under water; workers fill the vessel with water, remove its 14-ton cover, and transfer the used fuel to a storage pit with handling tools. There the fuel "cools" for several months before being shipped out for reprocessing. Such problems are a sampling of the ones encountered by the new atomic plants.

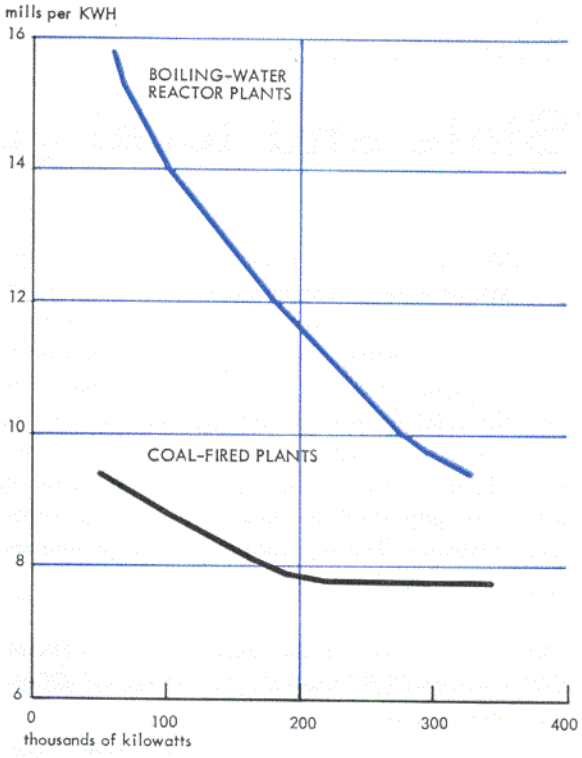
Outlook: sooner or later?

Nuclear reactor plants account for only a fraction of the 800 billion kilowatt hours of electrical energy now produced annually in this country. That this proportion will one day grow, perhaps even to outdistance the output of conventionally-fueled plants, is not seriously questioned. But how closely this development looms is open to debate.

Even in high-cost fuel areas such as the Ninth district, atomic power is a long way from being competitive. Fossil fuels are still abundant, and the growth of oil and gas pipelines, which tend to lessen the fuel cost differential between regions, has perhaps pushed this date even further into the future. Company officials estimate that electricity from the Pathfinder plant will cost about twice as much to produce as electricity from their coal and gas fueled plants. A guess as to when this cost line will cross that for coal: 15 to 20 years.

The AEC's goal has been to achieve competitive atomic power in high-cost areas by 1968; it has stated that after a shake-down period, a nuclear power plant of Elk River's capacity can be operated and maintained for about the same cost as a conventional plant of the same size, although construction and equipment come to much more. (The generator and its auxiliaries cost approximately 15 percent more than the equipment in a conventional plant, and the nuclear reactor costs four or five times more than the boiler it replaces.) But the AEC expects savings to result from lower fuel costs, as prices of conventional fuels rise (the likelihood of this is also in dispute) and as improved

Power generation costs, 1959



Source: U. S. Atomic Energy Commission

methods of fabrication and reprocessing lower the cost of atomic fuel. Nuclear reactors will also become much more efficient than they are, although this promising aspect also brings troublesome obsolescence. The Pathfinder plant, for example, includes such innovations as a nuclear superheater which allows for use of U235 with a low enrichment, and more efficient pumps. Yet, like the other atomic plants thus far constructed, it will tap only a bit of uranium's fantastic energy potential—some 3 million times that of coal, pound for pound.

In summary, it's clear that atomic power has not yet "arrived" competitively — and may not for many years. Yet its potentialities seem exciting, and of direct relevance to future energy economics of this district.

A further look at

State and local government finances

Sales and income taxes have replaced the property tax to a large extent as a medium of state and local revenues, as pointed out in the first article of this series. This change implies not only that the type of taxation has changed, but also that the level of government gathering the taxes has shifted. Property taxes are largely the province of local governments; the nonproperty taxes are more important as sources of state government revenues. The separation of revenue sources is presented in Table 1.

TABLE 1—PERCENT OF GENERAL REVENUES FROM OWN SOURCES BY COLLECTING LEVEL OF GOVERNMENT, 1957.

	State	Local	Total
General revenue from own sources	47.9	52.1	100.0
Taxes	50.4	49.6	100.0
Individual income	89.1	10.9	100.0
Corporation income	100.0	—	100.0
Sales and gross receipts	89.1	10.9	100.0
Property	3.7	96.3	100.0
Other taxes, including licenses	81.9	18.1	100.0
Charges and miscellaneous general revenue	34.9	65.1	100.0

State governments may collect the bulk of the nonproperty tax revenue, but much of it is transferred to local governments as grants-in-aid or shared revenues. During 1957, for example, the pattern of general revenues before and after intergovernmental transfer of revenues occurred looked like this:

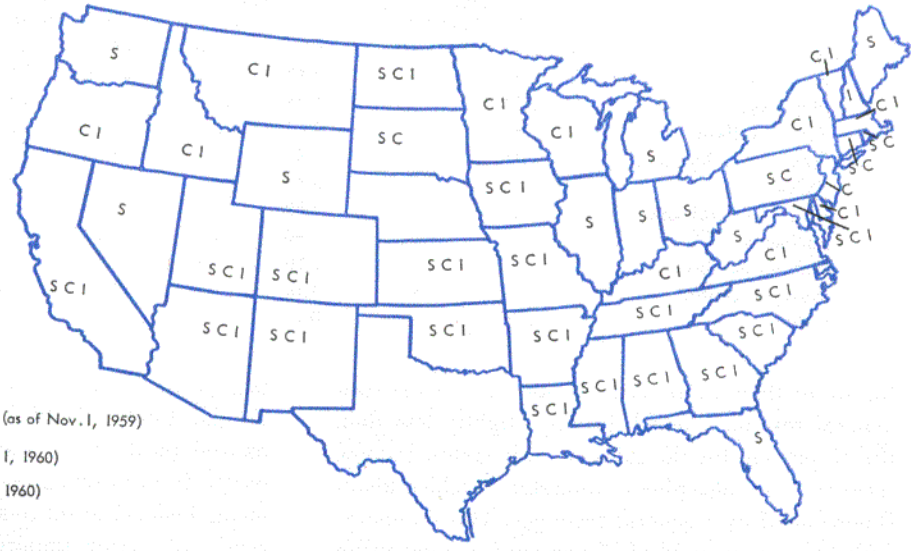
	Federal	State	Local
	(percent)		
Revenues by collecting level of government	10.1	43.1	46.8
Revenues by final recipient level of government	—	34.5	65.5

State sales and income taxes

This arrangement of revenue transfers and payments and the increasing use of nonproperty taxes has centered attention on the merits of the various types of taxes employed by state governments. This discussion has been concentrated around the general sales or gross receipts tax and the individual or corporate income taxes. To place the discussion in proper perspective, it should be noted that these taxes represent about a fifth (20 percent in 1957) of total state and local home general revenues, but that the states collect a third (36 percent in 1957) of their general revenues by these means. If selective sales taxes are included as well, total sales and income taxes were 36 percent of total state and local general home revenues and 67 percent of state revenues in 1957.

Most of the states with general sales taxes adopted them during the depression period, although a considerable number have done so since World War II. Corporate and individual income taxes have been adopted over a longer time period, but again the depression period was an important starting point for many. Table 2 provides a summary of the adoption time of these major taxes for the decades of this century. Only three states have inaugurated income taxes since the depression; no state has adopted an individual income tax since the 1930s. Rhode Island started a corporate income tax in 1947, and New Jersey and Delaware in 1958. These later enactments are important, since it has been politically difficult to inaugurate a corporate income tax in a period when there has been considerable discussion of the effects of interstate competition for industry

Chart 1—Selected state government taxes, 1960



and a lack of a "crisis" period to overcome opposition. These new sallies into the corporate tax field reflect the current strong demand for state revenues.

Chart 1 presents the geographical distribution of these taxes at the end of 1959. It is apparent that most states having a sales tax also used the individual and corporate income taxes. A major exception to this statement is the group of states in the lower Great Lakes area. The widespread use of both of these major tax gatherers emphasizes the fact that the general sales tax-income tax conflict is not an either/or proposition. It should also be noted from the map that states have seldom enacted a corporate or individual income tax separately. The more common practice is to use the two taxes in conjunction with each other.

TABLE 2—STATE GENERAL SALES AND GROSS RECEIPTS, CORPORATE AND INDIVIDUAL INCOME TAXES, BY PERIOD OF ADOPTION.

	General sales and gross receipts	Corporate income	Individual income
		(number of states)	
1901-1910	—	—	—
1911-1920	—	8	9
1921-1930	1	9	6
1931-1940	22	15	17
1941-1950	5	1	—
1951-1959	1	2	—
TOTAL	29	35	32

Sources: U. S. Treasury Department, **Overlapping Taxes in the United States**, 1954; C. Penniman and W. Heller, **State Income Tax Administration**, 1959; Council of State Governments, **The Book of States**, 1960-61.

To facilitate the analysis, the states can be grouped into three categories: sales tax only, sales-plus-income, and income tax only. The ten states which had only a general sales or gross receipts tax in 1957 received an average of approximately 18 percent of total state and local own general revenues from this tax. There was considerable variation in its yield, from a high of 31 percent in Washington and West Virginia, to a low of 11 percent in Maine.

Among the sales-plus-income group of states, the sales tax is considerably more important as a revenue source than the income taxes. For these twenty-three states the sales or gross receipts tax accounted

TABLE 3—PER CAPITA STATE AND LOCAL DIRECT GENERAL EXPENDITURE IN THE UNITED STATES, SELECTED YEARS, 1902-1957

	1902		1934		1944		1957	
	$	% of total	$	% of total	$	% of total	$	% of total
Total	12.80	100.0	56.82	100.0	64.04	100.0	237.09	100.0
Education	3.22	25.2	14.49	25.5	20.18	31.5	83.00	35.0
Highways	2.21	17.3	11.94	21.0	8.67	13.5	45.90	19.4
Public welfare	.47	3.7	7.03	12.4	8.19	12.8	19.99	8.4
Health and hospitals	.75	5.9	3.31	5.8	4.74	7.4	18.79	7.9
Police	.63	4.9	2.30	4.0	2.99	4.7	8.62	3.6
Local fire protection	.51	4.0	1.50	2.6	1.81	2.8	4.76	2.0
Sanitation	.64	5.0	1.40	2.5	1.77	2.8	8.48	3.6
Natural resources	.11	.9	1.26	2.2	1.68	2.6	6.05	2.6
General control	1.78	13.9	3.42	6.0	4.33	6.8	10.13	4.3
Other	2.48	19.4	10.17	17.9	9.68	15.1	31.37	13.2

for more than 15 percent of state and local own general revenues, which is only slightly less than the 18 percent for the sales-tax-only states. Income taxes in these sales-plus-income states yielded about 8 percent of own general revenues. This compares with an average yield of 17 percent for states using only some form of the individual and/or corporate income tax. These latter ranged from 22 percent of total state and local home revenues in Washington to 2 percent in New Hampshire. Two states—Nebraska and Texas—had neither a general sales nor income tax.

A half century of expenditures

The previous article indicated that significant developments have occurred during this century in the pattern of state and local expenditures as well as in their revenues. Table 3 indicates the general nature of these expenditure developments over the period. It will be noted that the largest expenditures are made for education, highways, public welfare, and health and hospitals. Except for natural resources, the remaining items comprise mainly expenditures for urban functions, e.g., police, fire protection, and sanitation. The largest percentage increase over the period has been for public welfare. This development has been largely the result of the various assistance programs begun during the 1930s: old age assistance, aid to the blind, aid to dependent children, child welfare programs and, in 1950, aid to the permanently and totaly disabled. These programs are financed partly from state and local revenues and partly from grants-in-aid from the federal government. Federal grant-in-aid payments are also currently of major importance in the financing of highway expenditures, although the proportion of total expenditures for highways has remained at a high level over the entire period.

State and local expenditures in Ninth district states

How do the levels of expenditures for particular functions in the Ninth district states compare with

This article is the second of a series discussing state and local government finances, using information contained primarily in the 1957 Census of Governments. An article in the February issue discussed the number and distribution of governmental units in the states, some developments in the sources of state and local revenues, and how these revenues compared with income levels in the various states. This article will concentrate on particular aspects of revenue patterns, as seen against the background of the previous article, and also on expenditure patterns in the states.

TABLE 4—SELECTED PER CAPITA EXPENDITURES OF STATE AND LOCAL GOVERNMENTS IN THE NINTH DISTRICT, 1957.

	Education								
	Local schools	Higher education	Total	Highways	Public welfare	Health and hospitals	Natural resources	Other	Total
Mich.	$79	$25	$106	$47	$16	$24	$4	$65	$262
Minn.	81	19	101	53	22	23	7	55	261
Mont.	79	20	101	79	21	13	15	53	282
N.D.	61	19	82	73	16	14	11	62	258
S. D.	65	18	85	79	16	8	11	45	244
Wis.	64	12	78	54	18	19	6	64	239
U. S.	70	11	83	46	20	19	6	63	237

each other and with the United States? Table 4 presents such a comparison of the per capita dollar expenditures in total and for some of the larger items. As the table shows, total per capita general expenditures in all Ninth district states exceed the national average, ranging from $2 in Wisconsin to $45 in Montana. Four of the six states spend more for education than the nation as a whole. All of the states spend more on higher education, but Michigan, Minnesota, and Montana also spend more for local schools. The comparison for highways and for natural resources shows that Montana and North and South Dakota spend larger than average amounts for these two categories, especially for highways, and that these same states spend less than the average for health and hospitals.

These differences result in part from the differing environments faced by the governments—environments both in terms of physical and human geography. They are also the result in part of differing valuations placed on particular goods and services by the public and their legislators.

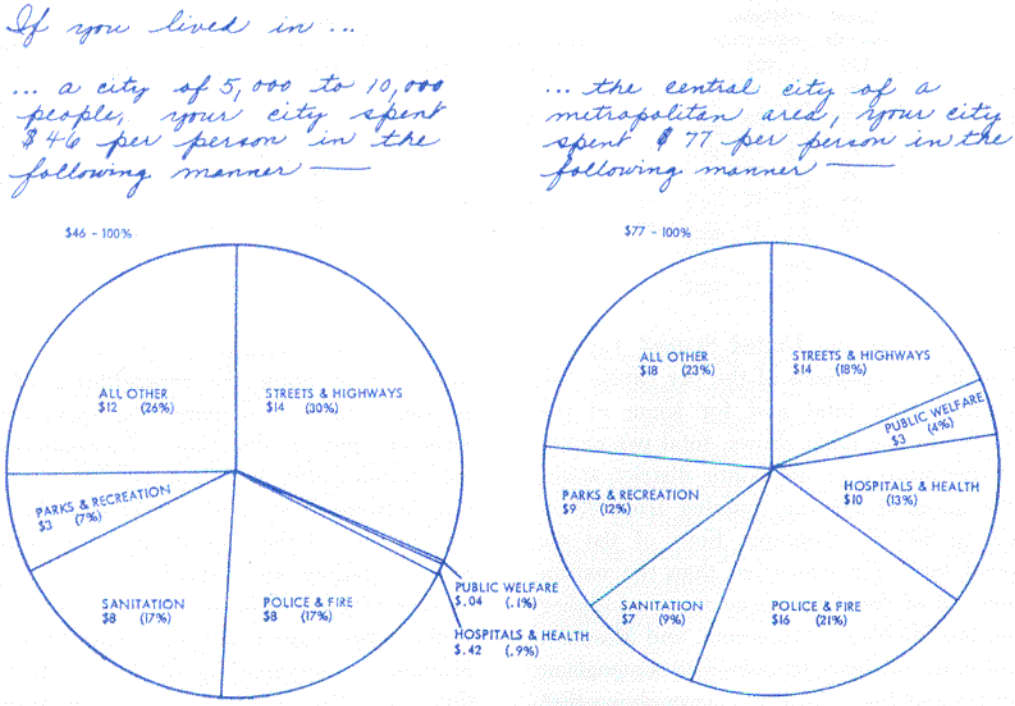
The effects of urbanization: Minnesota

A number of factors other than income influence the type and level of services provided by governments to their residents. One of the more important factors is the size of the community. Large metropolitan areas do not provide the same bundle of services as would a small village.

In order to obtain some notion of the effects of urbanization upon the expenditures of municipalities, Chart 2 compares the expenditure patterns (excluding education) of a composite "typical" municipality in Minnesota having a population between 5,000 and 10,000 with the expenditure pattern of the central city of a metropolitan area, excluding any suburban communities. The smaller city expenditure pattern is based on the median per capita general expenditures of 23 Minnesota municipalities of the specified population size. The latter pattern is an average per capita general expenditure for the three cities of Minneapolis, St. Paul, and Duluth. The result should not be interpreted as referring to any particular community, nor should the resulting patterns be interpreted as ideal expenditures patterns in any sense. Rather, the charts are meant to *illustrate* the direction and magnitude of the changes in types of expenditures which would be expected to occur between cities of these sizes.

The total general noneducation expenditure for a Minnesota metropolitan city was estimated at approximately $77 per capita, and at about $46 per capita for the smaller-size city. The difference between these figures is partially the result of greater expenditures for capital outlay during 1957 in the larger cities. If capital outlay expenditures are excluded from the totals, the large city general current per capita expenditures would be approximately $56. This compares with $35 for

Chart 2—Illustrative municipal noneducation expenditures for two typical Minnesota communities, 1957



the city in the smaller size group. Per capita expenditures in the smaller cities exhibit considerably wider variations than do those in the larger cities, occurring at levels above and below the latter's expenditure amounts. The estimates as given, however, are believed to reflect the more "typical" expenditure pattern.

Expenditures for streets and highways and for sanitation can be seen to take a smaller proportion of total per capita expenditures for the larger-size city. These reductions are not the result of lower expenditures, since the dollar amounts are nearly identical for both items, but rather because expenditures for the other categories substantially increased. Expenditures for police and fire for the large-size city are nearly twice as much as the expenditure for the smaller cities; expenditures for parks and recreation facilities are nearly three times as high. Public welfare and hospital and health expenditures are negligible for the smaller city, but constitute 15 to 20 percent of large city expenditures.

The underlying reasons for these differential expenditure levels are not entirely clear. On the basis of the previous comparison of revenues and income by states, it was to be expected that a higher-income area, such as the metropolitan cities, would spend more than their smaller, lower-income sister cities. However, differences in income would not appear to account for the entire difference in total expenditures. For particular functions, the larger cities appear to spend amounts substantially higher per dollar of resident income vis-a-vis the smaller cities. This is suggested in Chart 2 by the expenditure differences for police and fire protection, public welfare,

TABLE 5— SCHOOL ENROLLMENT AND SELECTED EXPENDITURES FOR INDEPENDENT SCHOOL DISTRICTS IN MINNESOTA, 1957.

Size of school district (pupils)	No. of school districts	Enrollment October 1956 (thousands)	Personal services expenditure per pupil (dollars)	Capital outlay per pupil (dollars)
6,000 or more	8	138	264	115
1,500-5,999	53	156	257	164
750-1,499	80	83	233	135
150-749	333	134	254	137
Less than 150	2,990	50	93	12

health and hospitals and parks and recreation. Furthermore, a recent study of expenditure levels of municipalities within Milwaukee County, Wisconsin, suggests that larger cities provide a wider variety of services at a higher level of quality per dollar of expenditure than those provided in smaller communities. That is, a dollar of expenditure may bring a better and larger variety of services in the larger cities because of the economies of scale and greater specialization which are possible in the larger municipalities.[1]

Education expenditures are not included in the above presentation, in part because education is usually a responsibility of the school district rather than the municipality, but especially because education expenditures are more clearly related to the number of school children than to all members of the population. The latter factor is particularly pertinent when using expenditures for central cities of metropolitan areas, because a large proportion of the families and children reside in the suburban areas surrounding the central city. Such is not the case in smaller cities. If education expenditures are included, there is a marked change in the resulting patterns. This can be seen from the following tabulation:

	Per cap. total expenditures	Per cap. total education expenditures	Per cap. total noneducation expenditures
Smaller city	$170	$124	$46
Metropolitan city	140	63	77

[1] H. J. Schmandt and G. R. Stephens, "Measuring Municipal Output," **National Tax Journal**, December 1960.

The smaller-size city spent almost twice the per capita amount on education as the metropolitan city. The towering importance of education in the smaller city overcomes its smaller noneducation expenditures to the point that its total expenditures are larger.

Available evidence does not indicate there are substantial differences in expenditures per pupil in various sizes of school districts. The tabulation in Table 5 is presented to support this statement.

The table indicates that expenditures for personal services per pupil are not much affected by the size of the enrollment except for those districts enrolling less than 150 pupils. Personal services represent by far the largest proportion of total current education expenditures. It might be expected that plant and equipment expenditures per pupil would decrease as the size of the enrolling district increased, because of economies available to the larger units, but the evidence presented in Table 5 does not clearly point to such a conclusion. Such economies may be operative at the level of individual buildings rather than at the school district level. It is suggested that the decrease in expenditure from the 1,500-5,999 category to the 6,000-and-over category is a result of family migration from the more urban to the suburban areas. This migration results in a lessened need for the expansion of school facilities in the community of origin. Both migration and the type of education plant in the smallest size school districts are probably important for this size group.

A final comment

The separation of the foregoing discussion into revenues and expenditures has an attached danger. It should be emphasized that revenues are the source of benefits to citizens, through expenditures for goods and services. In a market economy individual expenditures are specifically related to individual benefits. A portion of governmental activities do not always appear to have this immediate connection. The results of the revenue and expenditure process often come to the citizen as a "package deal," but the underlying connection between revenues and expenditures should be recognized.

The analysis of state and local government finance involves an additional danger. The differing responsibilities of the various governments have been emphasized at several points in the discussion. Less stress has been placed on the division of responsibility between the public and private sectors. However, the fact that major or minor differences may occur between communities in their use of the market vis-a-vis the budget principle should be recognized.

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