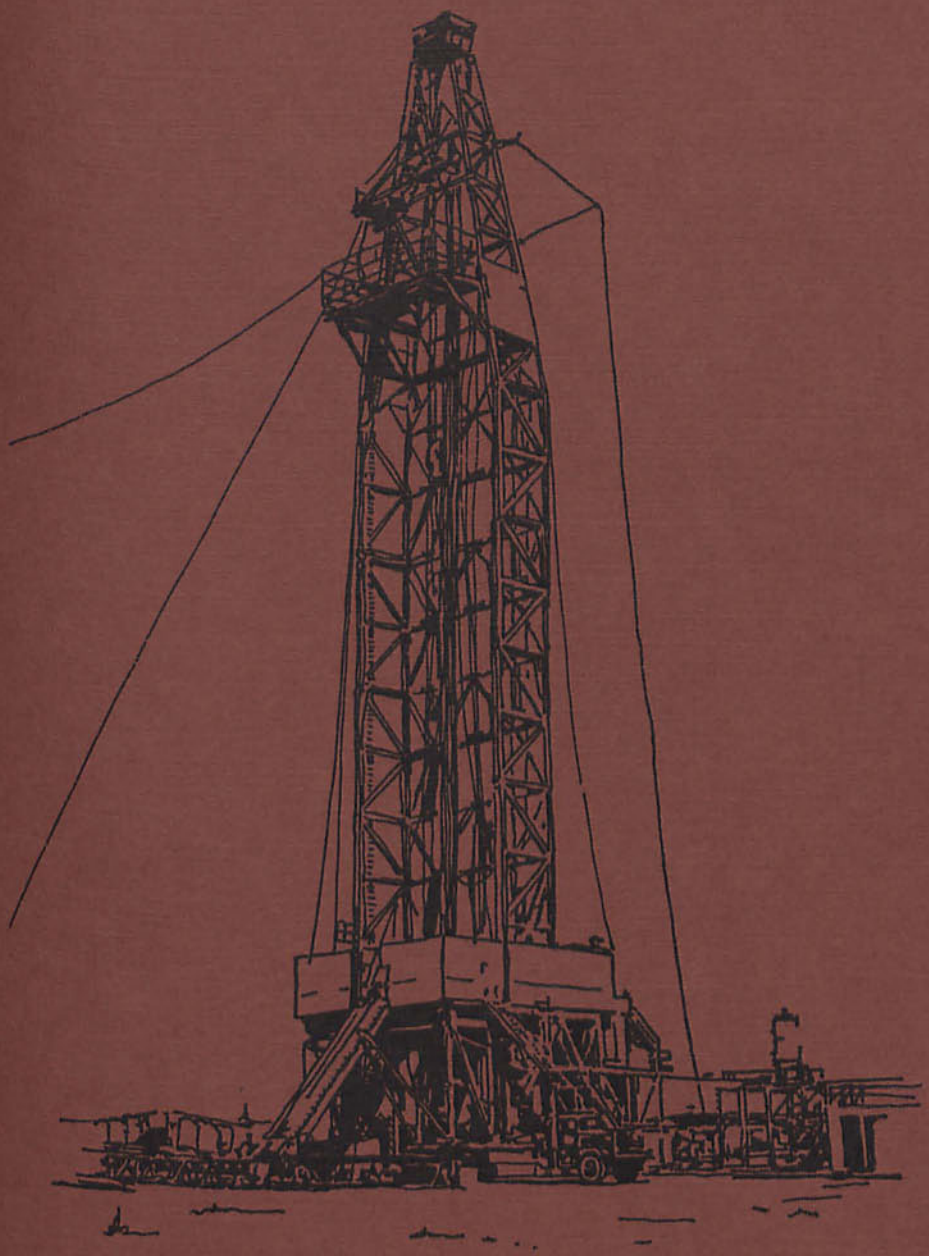
Federal Reserve Bank of Dallas

Business Review



Natural Gas–
Higher Prices Might Help Slow the Growing Shortage

March 1973

Natural Gas–

Higher Prices Might Help Slow the Growing Shortage

Just how critical the shortage in natural gas has become was amply pointed up this winter. Not only did prices move sharply upward but suppliers were simply unable to meet the demand in many areas, having to cut off the flow to some users. Plants and schools had to close, and hospitals and power plants had to shift to other fuels. This was true even in Texas, source of more than a third of the nation's natural gas.

If anything, with demand for this convenient, clean-burning fuel continuing to rise, the shortage is apt to become more acute. Consumption reached about 23 trillion cubic feet in 1971, for example, and with new discoveries totaling about half that, proved reserves fell to 279 trillion cubic feet–14 trillion less than four years before.

Drilling picked up somewhat last year. But it can take four or five years for new reserves to affect the market supply. By the time these new discoveries have been brought into actual production, annual consumption may be running more than 30 trillion cubic feet.

Other sources of gas are obviously required. For the near future, imports probably offer the only means of obtaining gas in sufficient volumes. Imported gas is expensive, however. The huge investments and costs required to liquefy and transport natural gas could push consumer prices for imports to more than $1 per thousand cubic feet–about twice the average price of gas now produced domestically.

Eventually, synthetic gas could be manufactured from other hydrocarbons. But without a major technological breakthrough, gas could not be manufactured from other fuels for sale at less than 70 cents per thousand and maybe as much as $1 or more. And even with technological advances, it would take years to build the plant capacity needed to provide an effective supplement to natural gas reserves.

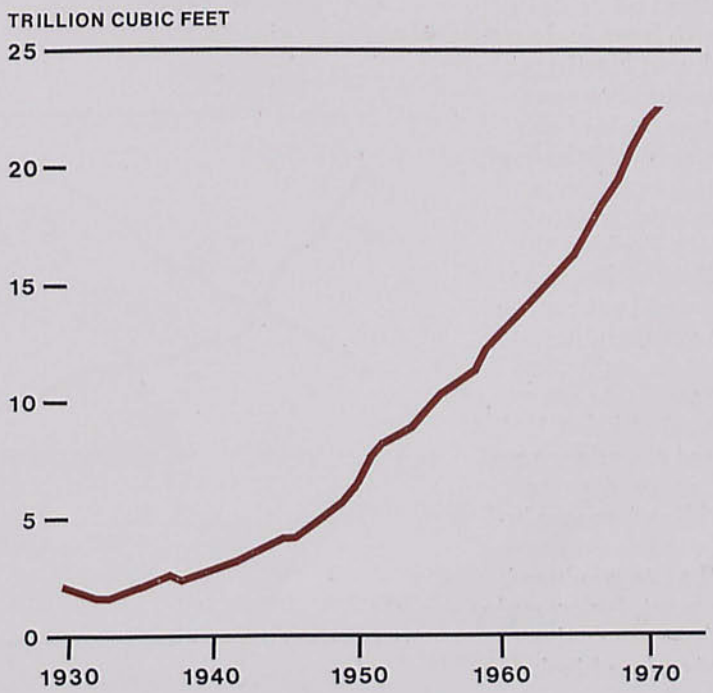
The most direct solution to the problem in the long run, then–barring adequate substitution–is an increase in the rate of discovery of new reserves. By all estimates, there are still ample reserves to be found in this country.

One industry estimate has fixed the nation's undiscovered gas at 1,178 trillion cubic feet–50 times more gas than is now marketed. Over 60 percent of this potential, however, is in areas that would be hard to explore and develop. About 14 percent is at depths of over 15,000 feet. About 20 percent is under waters offshore. And some 28 percent is in Alaska. But even so, the estimate is reassuring.

Some Government estimates are even more promising. One study sets the nation's potential for increasing its proved reserves at more than 2,000 trillion cubic feet.

Looking for further increases in exploration, the Federal Power Commission foresees a reversal in the downtrend that brought new discoveries in 1970 to only two-thirds of the 17 trillion cubic feet a

Development of pipelines sets off boom in use of gas . . .



SOURCE: U.S. Bureau of Mines

year averaged in the 1960's. The commission's projection shows discoveries returning to this average level by about 1980.

The problem, of course, is whether even that rate would ever be adequate again. Demand for natural gas has been going up sharply for 20 years. And with the increases in both energy needs and concern over pollution problems, the outlook is for demand to rise even faster.

Matter of incentives

Basic to the matter of increasing reserves, however, is the problem of providing incentives for bearing the high costs and enormous risks of exploring for gas. In a very real sense, there have never been many incentives to stimulate production of natural gas–and certainly not any long-term incentives.

Based originally on what was until very recent years a fairly low-value byproduct of the oil industry, natural gas did not emerge as a major industry in its own right until pipelines were laid to connect some of the world's largest oil fields in the Southwest with large fuel markets in the North and Northeast.

Until transmission lines were built, the enormous pools of gas being discovered in the oil fields of Texas, Oklahoma, Louisiana, and later New Mexico were isolated from large markets. Early in the development of these fields, gas was often flared or vented to the atmosphere simply to get rid of it.

Always a highly desirable fuel if it could be made available, some gas was sold to local utilities. But because of its great abundance and the small markets served, prices were cheap, providing far more incentive for people in the Southwest to consume gas than to produce it. Large quantities went, for example, into such low-value uses as the manufacturing of carbon black. And residential and commercial users in many local markets received unmetered service.

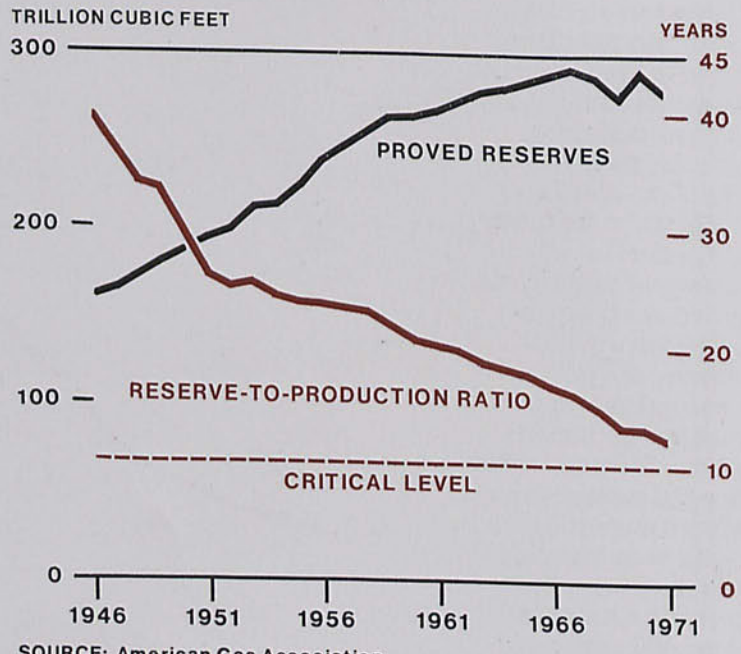
With construction of large interstate pipelines, the picture began to change–and rapidly. When lines laid during World War II to carry oil from the Southwest to the North and Northeast were converted to gas after the war, a vast new market was already waiting. Suppliers had only to capture an existing market from manufactured gas. Distribution systems were already installed to deliver manufactured gas, and users were equipped to burn gas. Before the advance of this inexpensive wonder fuel, other heating fuels rapidly retreated. The lower price of natural gas and the need to keep pipelines flowing at capacity even allowed suppliers to shoulder their way into the market for low-value boiler fuel.

By the midfifties, almost every major population center was connected with oil fields in the Southwest. And where as late as the start of the 1950's at least four out of ten of the nation's gas users received manufactured, mixed, or liquid petroleum gas through utility mains, by the midsixties fewer than one out of ten users was receiving anything but natural gas.

Even with this rapid expansion in the market for natural gas, however, there was still little need for incentive to explore for more gas. One reason was the vastness of the reserves built up in the search for oil at a time when there were still few opportunities to market gas. In 1946, for example–when demand for natural gas was already clearly on the rise–there were still enough proved reserves to meet production needs for at least 39 years.

Large reserves continued to hang over the market for several years. Even after reserves began nosing downward, putting upward pressure on prices, there was little concern over the incentives to look for new reserves. By the time the issue of incentives was raised, the gas industry was caught in a cost-price

. . . but reserves taper off, dropping relative to production



SOURCE: American Gas Association

squeeze that made interest in exploratory drilling hard to arouse.

Cost-price squeeze

Costs of drilling oil and gas wells in 1971, for example, averaged 85 percent higher than in 1956. But prices for natural gas were only 37 percent higher, and oil prices were up only 17 percent.

The result was a significant decline in drilling. By 1971, the number of wells drilled had dropped to less than half the number drilled in 1956. And with all the pressure for the discovery of new reserves, only a little more than half as many wildcat wells were drilled in the search for new fields.

With exploration being pushed into increasingly difficult locations, costs are bound to increase still further. Average drilling costs reached a record high of more than $19 a foot in 1971–48 percent more than in 1961. But that included only the ballooning costs of the drilling operation itself. Not included were leasing and rental costs and the cost of searching for suitable drilling sites.

Totally apart from matters of inflation, these costs relate to the problems of exploring and developing reserves far from established production areas, working in unfamiliar formations, and running the risks not only of finding no gas but of not finding enough gas to justify development of a field. Such conditions have always placed severe limitations on the production of natural gas. And they become more restrictive as an ever larger proportion of the nation's gas reserves are found at greater depths, in more remote areas, and offshore.

The severity of these restrictions is pointed up in the broadly accepted need to maintain a high reserve-to-production ratio. It is generally believed that a smooth flow of gas can be maintained only from proved reserves large enough for at least a ten-year supply. Reserves in the continental United States are rapidly approaching that level. From a total 14.6 times greater than production in 1968, reserves fell to 11.9 times production in 1970.

For more than two decades after World War II, additions to reserves usually exceeded the increases in consumption. But although reserves were rising, consumption was growing fast enough to force a continuous decline in reserves relative to the demands on them. And since 1968, reserves have been expanding only about half as fast as withdrawals, forcing reserve-to-production ratios in some areas below the 10-to-1 level.

There are several reasons for assigning crucial importance to a 10-to-1 ratio. For one thing, there is the problem of transporting gas. Pipelines are the only economical means of moving gas to market, and most of the nation's gas is produced thousands of miles from principal markets. To hold down the cost of tying a field into the nation's pipeline net, the field must be large enough to ensure capacity use of the new construction over the use life of the line. To spread out this fixed overhead, the Government requires at least 12 years' reserves before it will authorize extension of lines into new areas.

For another, there are the problems of pacing the withdrawal of gas. Some of these result from the complications of producing gas in combination with oil. About a fourth of the nation's gas is produced from oil wells, and its withdrawal is governed by the rate allowed for the production of oil. Because the gas in such a well is often highly important to the production of oil, providing the pressure that drives the flow to the well, its production must be tied to the production of oil. Although needs to increase oil production are also mounting, gas flows from these wells are still governed by considerations of conservation and market conditions totally unrelated to the demand for natural gas.

Other problems bearing on the rate of withdrawal grow out of the need to protect the rights of others to a share in the discovery. Because a productive field is ordinarily large enough to cross the land of many owners, withdrawals must be regulated to protect the interest of everyone with a property right in the underground reservoir. Without regulation, a well on one property might deplete the oil and gas under neighboring properties.

And still other withdrawal problems relate to holding back production to keep wells from choking up with sand. Often, when wells are produced too fast, sand begins blocking off the flow, creating the need for additional drilling either to reopen the well or to provide other wells that will allow withdrawal at maximum flow.

These factors creating the need for a high reserve-to-production ratio impact severely on the cost and availability of gas, complicating the task of expanding reserves by raising complex producer decisions to drill. Where producers are more familiar with underlying formations and the drilling problems to expect, they are better able to control their exploration costs. The 34 wells drilled in Alaska in 1971, for example, cost about three-fourths as much as the 834 drilled in New Mexico.

Costs of bringing gas to market also discourage exploration in areas far from pipelines. For producers to realize a profit in areas newly developed, their markets must be fairly close or their discoveries must be large enough to justify laying a pipeline.

Regulation of prices

With the costs of finding and producing natural gas rising along with demand for this fuel, the expectation would be that prices should rise apace, creating incentives to develop new reserves. That

prices have not kept up reflects a basic inconsistency. On the one hand, conventional public utility concepts have been used to regulate gas prices at the wellhead. On the other hand, gas production has characteristics that make it fundamentally different from transportation and distribution industries regulated as public utilities.

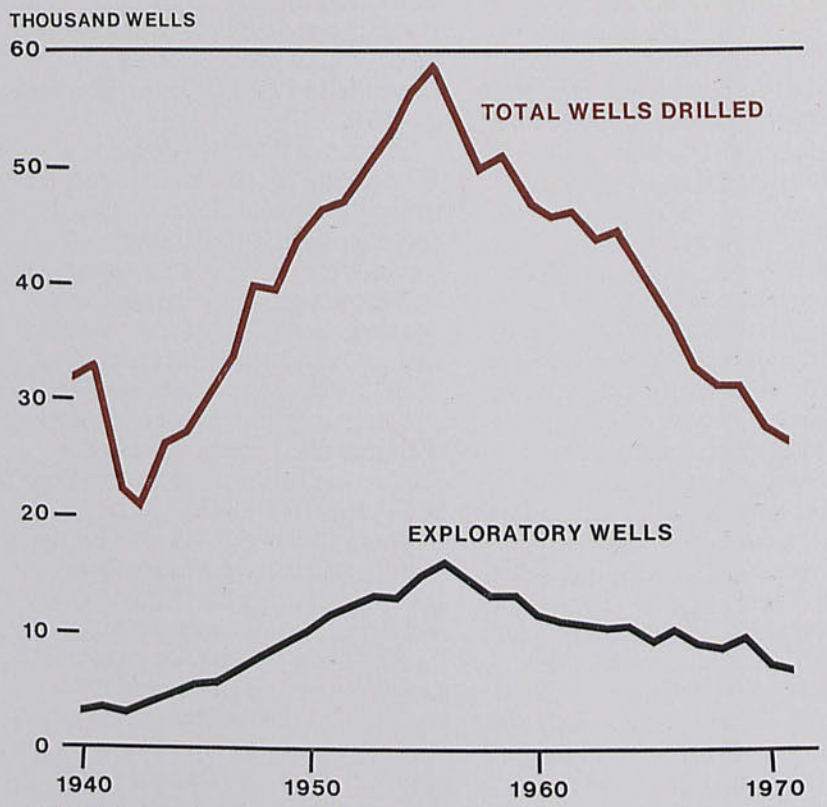
Unlike public utilities, for example, where each producer operates as more or less a monopolist selling a uniform service in a fairly risk-free environment, the gas production industry is made up of many competing units–each faced with the peculiar risks associated with finding and developing reserves. In pursuit of new discoveries, these units are highly mobile, operating wherever the possibility of a gas find may present itself.

Once a productive gas property has been developed, its producer must sell in markets that include not only gas from other fields but also other forms of fuel. And within this highly competitive framework, producers have broad latitudes in choosing the markets they may want to serve. They can sell their gas interstate or intrastate. Or they can withhold it from the fuel markets, selling it instead as an input to the refining and petrochemical industry.

These characteristics of a workably competitive industry are essentially out of phase with concepts used to regulate public utilities. And while these concepts are applicable enough to the transmission and distribution of natural gas (buyers of gas in the field are usually far less competitive than sellers), they cannot be easily extended to production.

The problem dates from 1954, when the Supreme Court required that the Federal Power Commission regulate wellhead prices of gas sold interstate. The commission had long regulated the interstate movement and sale of natural gas. Until 1954, however, it had exercised no jurisdiction over the prices producers received.

Drilling slows rapidly as prices come under regulation



SOURCES: American Association of Petroleum Geologists
American Petroleum Institute
Oil & Gas Journal
World Oil

With producers coming under regulation, the commission moved to extend the same principle of price setting to their operations that had applied to pipeline companies. Following lines laid down in conventional utility regulation, the commission tried to regulate field prices on the basis of the actual costs of production. Apparently, too little allowance was made either for the steep rises in exploration costs or for the risks involved in exploratory wells.

Since there were still large gas reserves in 1954, the matter of providing incentives for producers to undertake exploration was not an issue. The commission, nevertheless, soon ran into difficulties in applying conventional concepts. Since regulated industries had until then been monopolies serving particular markets, regulation was on an individual basis. But although no more than 30 large companies probably dominated the production industry, there were some 4,500 companies producing and selling gas across state lines–and all had to be regulated separately. Administratively, the task was almost impossible. Applications for rate increases were filed faster than they could be processed, and an unmanageable backlog built up.

These difficulties were further complicated by challenges to commission decisions in the courts.

Supplies in the Southwest

Although the rise in demand for natural gas is bound to keep pushing exploration into new areas, efforts to find new reserves will almost certainly continue in more developed production areas–all of which have pools that still go untapped. Some of the most important are in the prolific Southwest.

Together, Texas, Louisiana, Oklahoma, and New Mexico accounted for about 85 percent of the nation's gas produced in 1971 and more than half the new wells drilled. But if the past is any guide, much of the gas produced in these states will remain in the Southwest–and most of the production from new reserves.

Cheap fuel has been one of the essential components of the region's economic growth. The availability of gas to support development of these states has depended not only on their abundant reserves, however. Although these four states have about 75 percent of the nation's gas reserves, they have been able to use gas extensively for their own development for two reasons. First, federal regulation of field prices has kept interstate prices low, allowing local users to compete effectively for gas supplies. Second, the high cost of transporting gas to distant markets has helped attract users to these states.

Gas has been especially important in Texas, which produces over a third of the nation's supply. Although the largest producing state, Texas has also been the biggest consumer, using about half the gas it produces. Probably 90 percent of the new reserves being developed in Texas are dedicated to intrastate markets. It is the main feedstock to the state's chemical industry–its number-one manufacturing industry. And as in the other three producing states of the Southwest, natural gas is used to fire almost all the electric generating plants.

As in the rest of the nation, however, the southwestern states have begun to feel the gas shortage. In anticipation of higher gas prices, electric utilities have begun plans for building nuclear plants and plants fired by lignite. Other industries no longer able to buy the amounts of gas they once did are developing the capacity to substitute other fuels in times of peak demand for gas. As prices of gas rise, some of these industries may convert to other fuels altogether.

And further confusion and delays were added as the courts struggled to fit regulatory concepts to the realities of the industry.

Unlike typical utilities, gas producers can enter or leave an area of activity–in this case, a geographic area of exploration and development–as they please. Also, unlike typical utilities, they can leave the market altogether if the going gets rough. And many have, dedicating gas to intrastate pipelines instead of those selling between states.

The commission has jurisdiction only over producers selling interstate. And since prices of interstate gas have lagged behind those in intrastate markets (over which the commission has no control), many producers escape regulation by confining their operations to sales in the smaller but usually better-paying intrastate markets.

Regulatory changes

Seeking to reduce its backlog of cases, the Federal Power Commission changed the focus of its regulatory efforts in 1960, shifting attention from individual producers to the industry as a whole. The industry was divided into 23 major production areas, with all the producers in an area allowed the same prices, regardless of differences in their individual costs.

To improve incentives for exploration, the commission established two price ceilings for each area. A lower ceiling was set for gas sold under existing contracts. Many of these contracts were written long before gas was sold nationwide and reflected the lower cost of developing gas fields in those years. A higher ceiling was set for more recently discovered gas. To encourage exploration, the commission tried to take the higher cost of newly found reserves into account in setting this second price.

It was believed when these two price levels were formulated that the pricing difference would eventually disappear as older reserves were depleted and more of the nation's supply was taken from newer wells. Few doubted that once the huge reserves overhanging the market were eliminated, exploration would pick up again. And by

retaining the concept of prices that reflected the cost of finding and producing gas, the commission believed it could carry out its intentions of holding prices just high enough to encourage the production needed to maintain adequate gas supplies.

Reserves in excess of those needed to support adequate production might continue to drop. But the new pricing system would ensure a limit beyond which reserves would not fall. And when this equilibrium between production and reserves was achieved, gas production would be much easier to regulate.

But the problem was more serious than anyone imagined in 1960. When area pricing was adopted, the effective life of the nation's gas reserves had already been cut in half since 1946. By 1968–the year the possibility of actual shortages first became generally recognized–the effective life of reserves had contracted by a fourth since the initiation of area pricing.

Although area pricing eased some of the administrative problems ensnarling the industry, it did not succeed in providing the incentives needed to maintain an adequate level of reserves. There has, in fact, been a general feeling in the industry that area pricing added to the uncertainties of exploration, making new wells harder than ever to finance.

Much of this uncertainty is attributed to continued delays in regulatory decisions. The change has still left the industry with long waits for regulatory decisions. Once a price has been decided on, it is often challenged in the courts. Appeals to the court stretch out the decision process still further–sometimes for years. And while producers wait for a final determination of the prices they can receive, contested funds from the sale of gas are held back from use in further exploration.

Need for risk capital

The need to rely on internally generated funds for exploration has presented one of the most persistent problems in the development of a workable approach to the regulation of natural gas production. Utilities ordinarily have highly predictable costs, and regulation itself usually ensures them a fairly predictable income. As a result, equity and loan capital has been comparatively easy for them to raise.

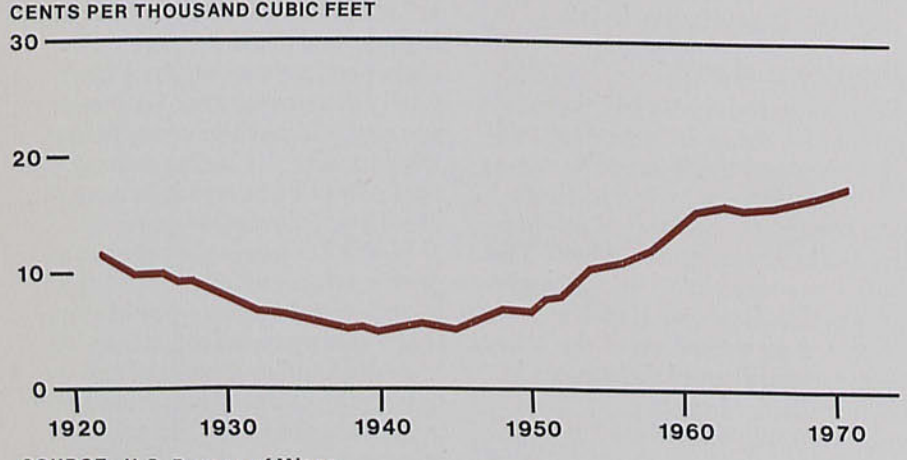
Gas producers, on the other hand, face boom or bust conditions, the difference depending on chance discoveries of new reserves. Nine out of ten wells are dry holes. And even among wells that are productive, the rates of flow vary widely, depending on the size of the pool and the myriad of other circumstances that can affect production. To these uncertainties of discovery and worth of the property are added, of course, the problems of dependence on transmission facilities and the possibility of disappointments in a system of administered prices.

The result has been that producers must look to gas sales for most of their risk capital. Banks will make loans to develop reserves already discovered. But exploration is too risky. And few other sources of funds are available to producers.

Some have been fairly successful in interesting individual investors in their ventures. This approach–use of what are called *drilling funds*–depends on a producer's ability to organize a group of individual investors with incomes in a tax bracket that encourages them to share the risk of an exploratory well. Even some very large producers have undertaken such arrangements, offering investors the benefit of their experience and equipment. The approach has not been altogether satisfactory, however, largely because the availability of investment capital of this kind is highly sensitive to changes in tax laws and credit conditions.

Pipelines and utility companies have also provided some capital for exploration. Some of this has been through loans. Most, however, has come through prepayments for production. Utilities, for example, pledged advance payments totaling an estimated $1 billion last year.

Average wellhead price shows only moderate rise



SOURCE: U.S. Bureau of Mines

Some utilities have undertaken exploration on their own, and others have started participating in exploration with producers holding exploratory rights that seem promising. But since participation of transmission and distribution companies affects the cost of their operations and, therefore, the cost of the gas they sell, this means of raising exploration capital is also subject to regulation by the Federal Power Commission.

New approaches

The Federal Power Commission recently announced that prices for new gas could move above the area ceiling when the sale was in the public interest. This move to make interstate gas more competitive with gas sold intrastate is in line with the commission's continuing search for flexibility in its response to the energy shortage.

The commission has already allowed considerable deviations in special circumstances. Where extra production has been needed to fill temporary gaps in interstate supplies, for example, intrastate producers have been allowed into the interstate markets at higher than area prices without committing their reserves to interstate pipelines. The commission has also considered allowing higher prices for gas from older fields that might otherwise be abandoned as unprofitable. And thought has been given to special prices for gas from wells with unusually costly production problems.

There is some belief that although such special allowances are intended only to help supply immediate interstate market demand, they might help spur exploration.

Regulatory decisions have not been the only Government policies affecting decisions to search for more gas. Considerable influence on incentive to explore can be exerted, for example, through tax treatment. Reduction of the depletion allowance has had a severe impact on the profitability of drilling–and, therefore, the ease of financing new wells.

Also, until recently, offshore lease sales–essential to further exploration of the continental shelf–were not held often. And when they were, final leasing was sometimes delayed by considerations of environmental impact and state-federal conflicts.

Although drilling picked up some last year, the lack of marked improvement in the number of wells drilled probably reflected the lack of offshore lease sales. Offshore wells are particularly important to the development of reserves committed to interstate markets. Since many promising offshore areas fall within federal rather than state jurisdictions, any gas they produce must be available for sale across state lines.

But here, too, there are signs that the situation might be improving. To increase drilling opportunities offshore, the Government has started holding lease sales more often. A large sale of leases off Louisiana was held late last year and drew record bids totaling more than $1.5 billion. Hearings are being held this year on the possible sale of additional leases off Louisiana and Texas.

A look at the future

The outlook is for continued improvements in drilling in 1973–which could be a pivotal year. With some easing in price regulations, drilling onshore is expected to pick up still more and, with the greater availability of leases, exploration offshore could pick up considerably.

Shipyards building offshore rigs, for example, are booming. Although many of these rigs are intended for use overseas, many will be used off the United States. And drilling contractors report that skilled rig workers are becoming hard to find. Producers and drilling contractors are beginning to face similar problems in building up crews and equipment to handle the increase in exploration ashore.

Having fallen so far behind in the development of reserves, the industry will probably not be able to close the gap between supply and demand. The only hope is that incentives can be created to help narrow the gap and prevent dislocations from massive shifts to other fuels. The recent increase in exploration could well be merely a response to the strengthening in prices of intrastate gas.

One way to improve the incentives for finding new gas–barring outright deregulation–might be to shift the basis of regulation from current costs of producing gas to the cost of replacing it. But whatever approach is taken, higher prices would most likely be in the public interest. They would not only help stimulate the search for new reserves but also help dampen demand and encourage more economical use of the gas consumed, such as better allocation of its uses. Higher prices would also be in line with the need to encourage development of substitutes for natural gas. This need is bound to increase in the years immediately ahead.

Some, taking issue with the need for higher prices and perhaps fearing that prices might get out of hand if regulation was eased, have advocated stronger regulation of the industry. They would like to see the Federal Power Commission given the means of assessing reserves itself. As things stand now, the commission must rely on the industry for an estimate of the reserves available. If the commission could make independent judgments, they say, it would be in a better position to analyze and administer interstate prices.

Others would like to see regulation strengthened by extending the commission's price-fixing authority to include intrastate markets. And still others would like

to see the Government undertake exploration on its own.

Just what changes are made in the nation's efforts to regulate the production and pricing of natural gas will depend on several factors. The cost of imported gas cannot be ignored. Nor can the costs and delays in developing a practical means of manufacturing gas on a large scale be ignored.

Government decisions, however –at state and federal levels–will be crucial to the matter of incentives to search for new reserves, as will decisions handed down by the courts. For regulation to be truly in the public interest, these decisions will have to be aimed at reducing some of the costs, delays, and confusion that have stymied exploration.

–Stephen L. Gardner

New member bank

The Texas National Bank of Baytown, Baytown, Texas, located in the territory served by the Houston Branch of the Federal Reserve Bank of Dallas, opened for business February 1, 1973, as a conversion of the Bank of Baytown, Baytown, Texas. The new member of the Federal Reserve System has capital of $200,000, surplus of $200,000, and undivided profits of $170,275. The officers are: Fred Hartman, Chairman of the Board and President; Stan Wallace, Executive Vice President; Harry F. Massey, Vice President; Linda Otis, Vice President and Cashier; and Linda Boyd, Assistant Cashier.

New par banks

The Bank of the West, Lubbock, Texas, an insured nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, February 9, 1973. The officers are: Willard Paine, President, and Billy J. York, Vice President and Cashier.

The Dickinson State Bank, Dickinson, Texas, an insured nonmember bank located in the territory served by the Houston Branch of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, February 12, 1973. The officers are: John C. Echols, Chairman of the Board and President; John T. Agregard, Executive Vice President; and Mrs. Martha M. Engleman, Cashier.

The Forum Bank, Arlington, Texas, an insured nonmember bank located in the territory served by the Head Office of the Federal Reserve Bank of Dallas, was added to the Par List on its opening date, February 20, 1973. The officers are: T. E. Jaeb, President; William P. Dunaway, Executive Vice President; and Mrs. Lou Luday, Cashier.

Federal Reserve Bank of Dallas
March 1973

Statistical Supplement to the Business Review

Total credit at weekly reporting banks in the Eleventh District expanded rapidly in the four weeks ended February 21, mainly reflecting a sharp increase in total loans. In line with the credit expansion, total deposits also rose sharply.

The strong demand for loans was broad based, with all major types of borrowers increasing their use of bank credit lines considerably more than at the same time in other recent years. Business loans were especially vigorous, as businesses continued to borrow heavily to finance inventory accumulation. With the sustained strength in housing starts and construction activity, real estate loans were notably stronger. Consumer loans also continued to rise, reflecting growing consumer optimism and a greater willingness to spend for automobiles and other durable goods.

To accommodate the heavy loan demand, the banks liquidated some of their investments in Government securities. Holdings of other securities rose, however.

Deposit inflows were considerably higher, as sharp gains were recorded in both demand deposits and time and savings deposits. A sizable increase in large negotiable CD's outstanding accounted for much of the advance in total time and savings deposits. With the ample inflow of deposit funds, these banks were able to reduce substantially their borrowings from nondeposit sources–particularly in the Eurodollar market.

Seasonally adjusted total employment in the five southwestern states continued its upward trend in January, rising to a level 3.3 percent above a year before. Nevertheless, the unemployment rate rose to 4.1 percent from 4.0 percent in December, as expansion in the labor force again outpaced growth in employment.

Both major industrial sectors–manufacturing and nonmanufacturing–shared in the January employment rise, each advancing 0.9 percent. Employment in nondurable manufacturing increased 1.5 percent, while employment in the manufacture of durables rose more moderately. In the nonmanufacturing industries, strong gains were reported in construction, trade, transportation and public utilities, and services. Only government posted a decline. All industry groups showed employment gains over January 1972 except mining, down 0.1 percent.

Registrations of new passenger automobiles in Dallas, Fort Worth, Houston, and San Antonio dropped 14 percent in January. This decrease was primarily seasonal in nature. Total registrations in the four centers were 29 percent greater than in January 1972.

The seasonally adjusted Texas industrial production index advanced in January to a level 8.7 percent above a year earlier. Both manufacturing and mining output rose over December, while utilities dropped slightly.

In manufacturing, total production of both durables and nondurables increased over a month before. The largest gain was in the output of electrical machinery, up 3.6 percent. Petroleum refining, fabricated metals, apparel, and nonelectrical machinery also showed significant production increases. Nevertheless, several industry groups reported declines in output, the largest being in textile mill products, transportation equipment, and leather and leather products. All industries reported gains over a year before.

Mining rose 0.4 percent in January, largely on the strength of significant advances in the output of natural gas and natural gas liquids and in spite of a slight decline in crude oil production. Utilities also fell in January, due to a decline in the distribution of electricity.

Department store sales in the Eleventh District were 13 percent greater in the four weeks ended February 24 than in the corresponding period a year earlier. Cumulative sales through that date were 9 percent higher than in the comparable period a year before.

Growth in cattle numbers in the five states of the Eleventh District continued to outpace growth in the nation in 1972. The inventory of all cattle on farms and ranches in these states was up 10 percent on January 1 over a year before, compared with 4 percent for the nation. Texas remained the number-one cattle state with an inventory of 15 million head at the start of this year, 14 percent more than a year earlier. Arizona's inventory was up 10 percent, and New Mexico's was up 7 percent. Oklahoma and Louisiana registered slight gains. Indications are for even greater increases in the future, as beef cow replacements increased nearly 13 percent last year in the District states.

Cattle feeding also is maintaining good growth. Texas reported 2.2 million head on feed at the

(Continued on back page)

CONDITION STATISTICS OF WEEKLY REPORTING COMMERCIAL BANKS

Eleventh Federal Reserve District

(Thousand dollars)

ASSETS	Feb. 21, 1973	Jan. 24, 1973	Feb. 23, 1972
Federal funds sold and securities purchased under agreements to resell	1,328,422	1,016,549	1,222,013
Other loans and discounts, gross	8,965,011	8,772,762	7,350,532
Commercial and industrial loans	3,977,578	3,886,326	3,411,347
Agricultural loans, excluding CCC certificates of interest	252,407	245,389	169,161
Loans to brokers and dealers for purchasing or carrying:			
U.S. Government securities	1,167	1,329	1,125
Other securities	73,691	79,371	51,142
Other loans for purchasing or carrying:			
U.S. Government securities	6,615	7,119	4,650
Other securities	507,203	504,608	445,404
Loans to nonbank financial institutions:			
Sales finance, personal finance, factors, and other business credit companies	174,777	137,275	121,278
Other	677,262	685,990	477,793
Real estate loans	1,252,785	1,226,186	912,421
Loans to domestic commercial banks	25,172	21,579	20,911
Loans to foreign banks	19,936	13,799	36,487
Consumer instalment loans	973,663	966,303	820,323
Loans to foreign governments, official institutions, central banks, and international institutions	0	0	0
Other loans	1,022,755	997,488	878,490
Total investments	4,031,402	4,077,891	3,372,420
Total U.S. Government securities	1,037,297	1,096,331	1,091,917
Treasury bills	237,365	262,634	124,750
Treasury certificates of indebtedness	0	0	0
Treasury notes and U.S. Government bonds maturing:			
Within 1 year	152,697	174,104	193,261
1 year to 5 years	479,356	461,349	586,355
After 5 years	167,879	198,244	187,551
Obligations of states and political subdivisions:			
Tax warrants and short-term notes and bills	267,465	258,203	69,314
All other	2,443,668	2,437,059	2,017,011
Other bonds, corporate stocks, and securities:			
Certificates representing participations in federal agency loans	13,503	13,603	16,640
All other (including corporate stocks)	269,469	272,695	177,538
Cash items in process of collection	1,736,762	1,453,649	1,490,549
Reserves with Federal Reserve Bank	552,131	912,442	929,926
Currency and coin	112,827	116,415	98,105
Balances with banks in the United States	461,540	387,693	470,981
Balances with banks in foreign countries	13,868	14,944	12,475
Other assets (including investments in subsidiaries not consolidated)	713,528	682,089	554,541
TOTAL ASSETS	17,915,491	17,434,434	15,501,542

LIABILITIES	Feb. 21, 1973	Jan. 24, 1973	Feb. 23, 1972
Total deposits	13,773,605	13,340,050	12,024,421
Total demand deposits	7,385,874	7,106,259	6,625,982
Individuals, partnerships, and corporations	4,893,952	4,960,061	4,534,081
States and political subdivisions	729,749	525,796	429,591
U.S. Government	269,413	248,491	161,153
Banks in the United States	1,344,994	1,211,951	1,364,476
Foreign:			
Governments, official institutions, central banks, and international institutions	5,677	3,815	3,335
Commercial banks	41,383	39,864	41,803
Certified and officers' checks, etc.	100,706	116,281	91,543
Total time and savings deposits	6,387,731	6,233,791	5,398,439
Individuals, partnerships, and corporations:			
Savings deposits	1,193,815	1,199,057	1,122,498
Other time deposits	3,274,666	3,220,098	2,781,515
States and political subdivisions	1,772,267	1,665,129	1,365,105
U.S. Government (including postal savings)	30,128	25,560	10,042
Banks in the United States	94,685	111,727	94,879
Foreign:			
Governments, official institutions, central banks, and international institutions	11,050	11,100	23,300
Commercial banks	11,120	1,120	1,100
Federal funds purchased and securities sold under agreements to repurchase	2,238,293	2,195,894	1,789,179
Other liabilities for borrowed money	93,516	109,763	39,703
Other liabilities	474,140	457,568	397,116
Reserves on loans	159,451	158,670	137,138
Reserves on securities	16,768	17,763	22,578
Total capital accounts	1,159,718	1,154,726	1,091,407
TOTAL LIABILITIES, RESERVES, AND CAPITAL ACCOUNTS	17,915,491	17,434,434	15,501,542

CONDITION STATISTICS OF ALL MEMBER BANKS

Eleventh Federal Reserve District

(Million dollars)

Item	Jan. 31, 1973	Dec. 27, 1972	Jan. 26, 1972
ASSETS			
Loans and discounts, gross	17,425	17,475	14,748
U.S. Government obligations	2,562	2,439	2,434
Other securities	5,793	5,548	4,636
Reserves with Federal Reserve Bank	1,484	1,449	1,708
Cash in vault	315	358	303
Balances with banks in the United States	1,360	1,550	1,257
Balances with banks in foreign countries[e]	16	14	14
Cash items in process of collection	1,753	1,973	1,525
Other assets[e]	1,345	1,356	860
TOTAL ASSETS[e]	32,053	32,162	27,485
LIABILITIES AND CAPITAL ACCOUNTS			
Demand deposits of banks	1,729	1,872	1,721
Other demand deposits	11,749	12,088	10,071
Time deposits	12,585	12,337	10,689
Total deposits	26,063	26,297	22,481
Borrowings	2,731	2,610	1,998
Other liabilities[e]	1,053	1,046	1,088
Total capital accounts[e]	2,206	2,209	1,918
TOTAL LIABILITIES AND CAPITAL ACCOUNTS[e]	32,053	32,162	27,485

e—Estimated

DEMAND AND TIME DEPOSITS OF MEMBER BANKS

Eleventh Federal Reserve District

(Averages of daily figures. Million dollars)

Date	DEMAND DEPOSITS			TIME DEPOSITS	
	Total	Adjusted[1]	U.S. Government	Total	Savings
1971: January	11,532	7,880	250	9,038	2,207
1972: January	12,313	8,510	300	10,607	2,528
February	11,983	8,382	281	10,864	2,552
March	12,118	8,515	300	10,978	2,430
April	12,470	8,696	314	10,938	2,640
May	12,268	8,530	384	11,075	2,660
June	12,320	8,553	280	11,233	2,688
July	12,529	8,694	289	11,304	2,714
August	12,420	8,824	226	11,441	2,717
September	12,619	8,933	254	11,492	2,744
October	12,866	9,034	264	11,618	2,770
November	12,844	9,321	222	12,009	2,786
December	13,439	9,688	289	12,261	2,812
1973: January	13,636	9,802	317	12,501	2,815

1. Other than those of U.S. Government and domestic commercial banks, les cash items in process of collection

RESERVE POSITIONS OF MEMBER BANKS

Eleventh Federal Reserve District

(Averages of daily figures. Thousand dollars)

Item	5 weeks ended Feb. 7, 1973	4 weeks ended Jan. 3, 1973	4 weeks ended Feb. 2, 1972
Total reserves held	1,770,428	1,712,981	1,847,435
With Federal Reserve Bank	1,472,926	1,411,830	1,570,756
Currency and coin	297,502	301,151	276,679
Required reserves	1,748,905	1,750,928	1,802,051
Excess reserves	21,523	—37,947	45,384
Borrowings	61,299	81,986	528
Free reserves	—39,776	—119,933	44,856

BANK DEBITS, END-OF-MONTH DEPOSITS, AND DEPOSIT TURNOVER

SMSA's in Eleventh Federal Reserve District

(Dollar amounts in thousands, seasonally adjusted)

Standard metropolitan statistical area	DEBITS TO DEMAND DEPOSIT ACCOUNTS[1]			DEMAND DEPOSITS[1]			
	January 1973 (Annual-rate basis)	Percent change from		January 31, 1973	Annual rate of turnover		
		December 1972	January 1972		January 1973	December 1972	January 1972
ARIZONA: Tucson	$10,939,680	—1%	28%	$325,596	33.9	37.5	28.8
LOUISIANA: Monroe	4,611,468	6	28	107,465	42.9	40.0	36.3
Shreveport	14,734,464	—2	32	300,759	48.0	49.6	40.5
NEW MEXICO: Roswell[2]	1,065,492	4	5	49,946	22.4	22.7	23.3
TEXAS: Abilene	2,768,640	—2	16	133,122	21.1	22.2	22.3
Amarillo	8,118,492	—3	20	206,705	38.2	40.8	38.6
Austin	13,972,548	15	—3	455,635	30.0	27.1	39.4
Beaumont-Port Arthur-Orange	7,641,660	9	6	274,895	27.1	25.2	27.2
Brownsville-Harlingen-San Benito	2,742,804	7	15	113,303	24.8	24.2	27.1
Bryan-College Station	1,318,860	2	13	56,038	23.2	23.7	24.8
Corpus Christi	7,751,316	—3	7	283,528	27.5	28.2	26.4
Corsicana[2]	646,620	15	32	37,650	17.7	15.8	14.6
Dallas	152,410,308	—15	8	2,884,227	52.3	62.8	56.0
El Paso	10,176,924	2	14	306,945	32.9	32.8	32.7
Fort Worth	31,262,244	8	14	838,555	37.6	35.2	37.2
Galveston-Texas City	3,515,436	8	12	128,706	27.8	26.3	25.4
Houston	159,006,768	6	25	3,321,755	48.6	46.7	44.2
Killeen-Temple	2,340,312	13	27	112,945	20.8	18.6	18.9
Laredo	1,335,288	12	11	57,610	23.1	21.8	26.1
Lubbock	6,137,760	13	15	210,531	29.9	27.9	30.8
McAllen-Pharr-Edinburg	2,842,248	3	9	156,162	18.5	18.8	19.9
Midland	2,327,700	—1	9	161,380	14.0	14.8	14.6
Odessa	1,882,932	—3	6	100,580	17.4	17.1	18.3
San Angelo	1,832,172	6	18	85,217	22.1	21.7	19.8
San Antonio	24,529,860	0	9	911,246	27.2	28.0	30.0
Sherman-Denison	1,311,840	4	8	80,607	16.5	16.4	17.9
Texarkana (Texas-Arkansas)	1,896,468	19	8	89,395	21.0	18.2	20.2
Tyler	3,547,680	—3	41	122,930	28.6	30.5	22.2
Waco	4,531,908	17	19	153,156	29.6	25.7	28.9
Wichita Falls	2,982,456	—6	4	139,741	21.7	23.8	22.5
Total—30 centers	$490,182,348	—2%	15%	$12,206,330	40.2	42.4	40.0

1. Deposits of individuals, partnerships, and corporations and of states and political subdivisions
2. County basis

CONDITION OF THE FEDERAL RESERVE BANK OF DALLAS

(Thousand dollars)

Item	Feb. 21, 1973	Jan. 24, 1973	Feb. 23, 1972
Total gold certificate reserves	13,535	559,203	390,426
Loans to member banks	15,885	51,250	200
Other loans	0	0	0
Federal agency obligations	59,311	57,258	33,706
U.S. Government securities	3,193,956	3,076,375	3,145,403
Total earning assets	3,269,152	3,184,883	3,179,309
Member bank reserve deposits	1,123,724	1,476,419	1,612,124
Federal Reserve notes in actual circulation	2,221,779	2,236,469	2,081,315

VALUE OF CONSTRUCTION CONTRACTS

(Million dollars)

Area and type	January 1973	December 1972	November 1972	January 1972
FIVE SOUTHWESTERN STATES[1]	945	874	775	845r
Residential building	455	392	445	416r
Nonresidential building	380	324	183	222r
Nonbuilding construction	110	157	148	207
UNITED STATES	6,795	6,464	7,248	5,977r
Residential building	3,195	3,120	3,663	2,649r
Nonresidential building	2,420	2,212	2,184	1,723r
Nonbuilding construction	1,180	1,132	1,402	1,605r

1. Arizona, Louisiana, New Mexico, Oklahoma, and Texas
r—Revised
NOTE: Details may not add to totals because of rounding.
SOURCE: F. W. Dodge Division, McGraw-Hill Information Systems Company

BUILDING PERMITS

Area	NUMBER	VALUATION (Dollar amounts in thousands)		
	January 1973	January 1973	Percent change January 1973 from December 1972	Percent change January 1973 from January 1972
ARIZONA	503	$25,280	135%	40%
Tucson	79	2,014	173	42
LOUISIANA	404	19,531	760	426
Monroe-West Monroe	48	5,046	599	723
Shreveport	109	7,066	115	214
TEXAS	417	15,404	—28	—9
Abilene	120	3,209	—34	147
Amarillo	90	1,073	—61	70
Austin	280	8,039	126	82
Beaumont	1,279	33,144	—94	0
Brownsville	13	620	605	93
Corpus Christi	497	11,137	2	—60
Dallas	285	7,280	—16	17
Denison	50	488	—82	95
El Paso	2,270	72,238	—12	89
Fort Worth	57	489	17	—68
Galveston	141	7,179	57	137
Houston	62	785	100	—52
Laredo	74	1,209	0	69
Lubbock	52	488	22	45
Midland	68	1,454	154	140
Odessa	1,300	20,250	37	76
Port Arthur	31	450	26	—10
San Angelo	42	294	5	—52
San Antonio	171	6,140	—4	341
Sherman	59	1,872	10	114
Texarkana				
Waco				
Wichita Falls				
Total—26 cities	8,501	$252,179	21%	41%

WINTER WHEAT

Area	ACREAGE SEEDED (Thousand acres) Crop of 1973	Crop of 1972	Crop of 1971	PRODUCTION (Thousand bushels) Crop of 1973[1]	Crop of 1972	Crop of 1971
Arizona	208	189	189	13,104	11,390	11,764
Louisiana	60	75r	75r	720	690	805r
New Mexico	390	378	347	5,850	4,335	3,840r
Oklahoma	6,000	5,700r	5,050r	126,000	89,700	72,000r
Texas	4,400	4,050r	3,512	70,400	44,000	31,416
Total	11,058	10,392r	9,173r	216,074	150,115	119,825r
United States	42,793	42,247r	38,060r	1,277,848	1,185,890	1,144,164r

1. Indicated December 1, 1972
r—Revised
SOURCE: U.S. Department of Agriculture

INDUSTRIAL PRODUCTION

(Seasonally adjusted indexes, 1967 = 100)

Area and type of index	January 1973p	December 1972	November 1972	January 1972
TEXAS				
Total industrial production	134.3	133.9	134.0r	123.6r
Manufacturing	137.9	137.3	136.4r	127.2
Durable	149.0	148.2	150.3	137.2
Nondurable	129.9	129.4	126.3r	119.9
Mining	119.6	119.2	121.5r	109.2r
Utilities	157.5	158.6	160.0r	145.8
UNITED STATES				
Total industrial production	119.8	119.2	118.5r	108.7r
Manufacturing	119.0	118.2	117.4r	107.1r
Durable	114.5	113.8	112.3r	100.4r
Nondurable	125.5	124.6	124.6	116.8r
Mining	108.3	109.2	110.5r	107.3r
Utilities	147.3	147.8	148.7r	137.4

p—Preliminary
r—Revised
SOURCES: Board of Governors of the Federal Reserve System
Federal Reserve Bank of Dallas

LABOR FORCE, EMPLOYMENT, AND UNEMPLOYMENT

Five Southwestern States[1]

(Seasonally adjusted)

Item	Thousands of persons January 1973p	December 1972	January 1972r	Percent change Jan. 1973 from Dec. 1972	Jan. 1972
Civilian labor force	8,801.0	8,719.3	8,516.5	0.9%	3.3%
Total employment	8,444.3	8,374.3	8,135.5	.8	3.8
Total unemployment	356.7	345.0	381.0	3.4	—6.4
Unemployment rate	4.1%	4.0%	4.5%	[2].1	[2]—.4
Total nonagricultural wage and salary employment	6,940.5	6,881.8	6,610.0	.9	5.0
Manufacturing	1,221.8	1,211.5	1,156.6	.9	5.6
Durable	669.8	667.7	625.5	.3	7.1
Nondurable	552.0	543.8	531.1	1.5	3.9
Nonmanufacturing	5,718.7	5,670.3	5,453.4	.9	4.9
Mining	231.8	230.1	232.1	.7	—.1
Construction	475.1	466.1	434.4	1.9	9.4
Transportation and public utilities	473.1	467.9	458.1	1.1	3.3
Trade	1,647.2	1,622.9	1,562.2	1.5	5.4
Finance	371.2	369.5	346.1	.5	7.3
Service	1,135.3	1,123.5	1,081.9	1.1	4.9
Government	1,385.0	1,390.3	1,338.6	—.4%	3.5%

1. Arizona, Louisiana, New Mexico, Oklahoma, and Texas
2. Actual change
p—Preliminary
r—Revised
NOTE: Details may not add to totals because of rounding.
SOURCES: State employment agencies
Federal Reserve Bank of Dallas (seasonal adjustment)

DAILY AVERAGE PRODUCTION OF CRUDE OIL

(Thousand barrels)

Area	January 1973	December 1972	January 1972r	Percent change from December 1972	January 1972
FOUR SOUTHWESTERN STATES	6,756.5	6,877.6	6,547.8	—1.8%	3.2%
Louisiana	2,400.9	2,529.5	2,542.4	—5.1	—5.6
New Mexico	295.0	295.9	310.5	—.3	—5.0
Oklahoma	517.8	534.9	570.0	—3.2	—9.2
Texas	3,542.8	3,517.3	3,214.9	.7	10.2
Gulf Coast	723.5	726.4	602.6	—.4	20.1
West Texas	1,764.7	1,739.6	1,629.1	1.4	8.3
East Texas (proper)	245.7	240.4	178.7	2.2	37.5
Panhandle	63.8	65.9	69.2	—3.2	—7.8
Rest of state	745.1	745.0	735.3	.0	1.3
UNITED STATES	9,359.3	9,467.3	9,114.9	—1.1%	2.7%

r—Revised
SOURCES: American Petroleum Institute
U.S. Bureau of Mines
Federal Reserve Bank of Dallas

start of this year, an increase of 26 percent over a year before. Arizona had 22 percent more cattle on feed, New Mexico 20 percent more, and Oklahoma 8 percent more.

Prices received for livestock in Texas were up an average of 8 percent in the month ended January 15, while crop prices held steady. As a result, the overall index of prices received by Texas farmers and ranchers advanced 4 percent in the month to a level 16 percent higher than a year before. Prices of meat animals and poultry were up sharply over both month-earlier and year-earlier levels. Among crops, only sweet potatoes, cotton, and cottonseed failed to post price gains over a year before.

Cash receipts from farm marketings in the District states totaled $7,252 million in 1972–up 15 percent from 1971. Livestock receipts were up 13 percent to $4,575 million, and crop receipts were up 19 percent to $2,677 million. Farm receipts in 1972 were boosted by both higher prices and increased production.