



Houston Business

A Perspective on the Houston Economy

Houston's medical quarter, located on South Main, is the largest concentration of medical facilities in the world, with 61,041 employees on campus and 5.4 million patient visits in 2000.

Economic Impact of the Texas Medical Center on Southeast Texas

Great cities share common features: powerful economic and political ties to the rest of the globe; world-class museums and cultural facilities to present the arts, music and entertainment to its citizens; great universities that participate in research and lively debate; and a fine medical quarter. The medical quarter typically provides three products: medical care, medical research, and training for doctors and other medical staff.

Houston's medical quarter is located just outside downtown on South Main and is dominated by the 42 member institutions of the Texas Medical Center (TMC). TMC's structure is very different from the usual cluster of university-affiliated schools, hospitals and clinics. It is the largest concentration of medical facilities in the world, with 61,041 employees on campus and 5.4 million patient visits in 2000.

This article reviews the history and structure of the Texas Medical Center. It is a unique Texas story. Our main purpose, however, is to look at TMC's economic impact on southeast Texas, in both dollars and jobs, and to provide some perspective on this impact relative to other institutions in southeast Texas and elsewhere.

HISTORICAL PERSPECTIVE

Monroe Dunaway Anderson built one of Houston's great fortunes early in the 20th century. Under Anderson's tight-fisted management and adept risk taking, he and his partner, Will Clayton, built their company, Anderson Clayton and Co., into one of the world's largest cotton brokerages at a time when cotton was the financial king.¹

A somewhat shy personality and lifelong bachelor who was generous to nieces and nephews, Anderson believed strongly that money, if used properly, could be a constructive influence.

When he died in 1939, Anderson left \$20 million—roughly the equivalent of \$141 million in today's dollars—to the M. D. Anderson Foundation. Rather than stipulate specific uses for the money—uses he thought might be bypassed by time and technology—he simply stated four broad goals for the foundation:

- Improvement of working conditions
- Establishment of institutions for the care of the sick, aged and incompetent
- Improvement of living conditions generally or for particular groups
- Promotion of health, science and education

The foundation's trustees gave money to Rice University and University of Houston but soon focused their efforts on the Texas Medical Center. Seeking to lure the University of Texas' new cancer research hospital to Houston, the trustees offered a \$500,000 grant, temporary quarters and land for a permanent hospital site. The trustees purchased 134 acres near Hermann Hospital to house the new M. D. Anderson Hospital for Cancer Research. They then used land and cash as incentives to attract other institutions. A state dental school and Baylor College of Medicine, in a dispute with the Dallas medical community, soon followed. By 1946, five hospitals had been approved for admission, and the U.S. Naval Hospital, later the Veterans Affairs Medical Center, was under construction. The foundation had been laid for the Texas Medical Center. TMC's formula for drawing medical institutions to a common campus may have been a bit unorthodox, but its success would continue for years to come.

THE TEXAS MEDICAL CENTER

TMC has grown to more than 700 acres and 22 million gross square feet of space in over 100 permanent buildings. In 2000, the campus had 6,014 licensed beds in 15 patient care facilities, including six general care hospitals and seven specialized hospitals.² There were 16,547 students attending regular classes in two medical schools, four nursing schools, a dental school, a college of pharmacy, various health science programs and a magnet high school.

Among the sponsors of the campus institutions are Texas A&M University, Texas Woman's University, University of Houston, University of Texas, Prairie View A&M University and Houston Community College System. Over \$573 million in research was conducted in 2000; \$2.2 billion in research has been carried out over the past five years.³

Since 1945, the Texas Medical Center has been chartered as a not-for-profit corporation. TMC serves as manager of the campus property, which, with its 12 miles of streets and 42,000 parking spaces, is a city within the city. Acting through a policy council made up of the chief executive officer of each institution, TMC serves as a moderator of campus-wide issues, such as strategic planning or master planning. Advisory councils and other groups consider more specific issues, such as security, volunteer services, government relations and information systems. Once consensus is reached among the members, TMC implements campus policy. The center finances its activities primarily through gifts, grants and campus parking fees.

TMC continues to encourage growth and development by buying or receiving gifts of land, which it makes available to member institutions for \$1 per year. However, the attractiveness of TMC almost certainly extends beyond free land. The complex has achieved many of the cost-reducing economies of scale that are inherent in any large cluster of common activity. First, TMC is squarely within the medical information loop—a critical feature to attract top researchers, academics and physicians. The proximity of Rice University, University of Houston and Texas Southern University provides cross-pollination of ideas and projects. Along with \$573 million in ongoing TMC research, 2,622 short courses, seminars and workshops were held on or near the campus in 2000.

Second, the 61,041 campus employees provide a large pool of local talent for employers. Likewise, employees feel comfortable moving to Houston and working in TMC, knowing there is a wide range of employers from which to choose. Finally, medical suppliers of every kind locate close to the medical center to be near customers. These characteristics all work to lower the cost of operating within TMC, increasing its attractiveness to member institutions.

TMC has further promoted low-cost operation by providing common services through

which significant economies of scale can be captured: a thermal energy cooperative, a hospital laundry cooperative, a graphics communications group, library facilities, a conference center and a campus newspaper. In several cases, these organizations have become TMC member institutions in their own right.

ECONOMIC IMPACT OF TMC

The model employed in this article to measure TMC's economic impact was developed in the 1970s by the American Council on Education as a conservative standard for colleges and universities to demonstrate their economic impact on the local community.⁴ It treats the university as if it were an export industry, like tourism or business travel, providing educational services to students drawn from outside the community. Because many medical centers are built around medical schools and their associated hospitals and research facilities and are often part of the larger university, the methodology has frequently been extended to concentrations of medical facilities as well. This supports not only the use of the methodology in this study but also our ability to find similar studies that provide meaningful comparisons of TMC's economic impact with that of similar organizations.

The model identifies four groups of spenders that together determine the institution's local economic impact: TMC and its affiliated members, which purchase equipment and supplies as corporate entities; faculty and staff, who spend part of their income in the impacted area; students, who spend locally; and visitors, who do likewise. To define the area affected by this spending, we selected a region comprising 38 counties in southeast Texas, with Harris County as an approximate center.⁵

We divide the expenditures of the four groups into two parts: those that occur within the region and those that occur elsewhere. The sum of the expenditures within the Houston region defines the direct economic impact of the institution. Table 1 summarizes the impact of TMC on the Houston area in 2000. Direct local expenditures by the four groups totaled \$2,635.3 million.⁶

This is only the first round of spending, however. As these dollars are spent locally, we can trace two continuing impacts on local business and local spending. First, as TMC (and its employees, students and visitors) spends, more goods have to be ordered and produced to

Table 1
Economic Impact of Texas Medical Center
(Year 2000 Operations)

	Millions
Direct local expenditures within region	
TMC and affiliates	\$2,063.6
Faculty and staff	\$409.1
Students	\$133.2
Visitors	\$29.4
Total direct expenditures	\$2,635.3
Secondary expenditures due to TMC	
Added regional production	\$1,581.2
Income-induced spending	\$1,607.5
Total regional expenditures	\$5,824.0
Direct and indirect personal income	\$3,861.0
Employment (number of workers)	
Direct	61,041
Indirect	81,560
Total	142,601

SOURCE: Texas Medical Center; authors' calculations.

replace what was removed from local shelves. Some part of the new orders will be directed to local companies, and more business-to-business transactions occur within the community, ultimately sparking several rounds of additional purchases. The value of these secondary purchases made to restore inventory is estimated at \$1,581.2 million.

Second, the initial expenditures by TMC, faculty, staff, students and visitors will generate new income. Part of this spending is used to pay wages and salaries, make rent and interest payments, and pay proprietors and stockholders for their investment. Each round of the business-to-business transactions described above generates income as well as additional final sales. As this extra income is earned, some is spent locally, inducing total additional expenditures of \$1,607.5 million.

Thus, after the initial direct expenditures take place, secondary, tertiary and continued rounds of spending will more than double the effect. Each dollar spent directly generates another 60 cents in final sales by local businesses, plus about 61 cents in sales induced by the expansion of regional income.

These additional multiplier effects cannot be measured directly, but instead are estimated from an input-output model. The estimates shown here rely on the Bureau of Economic Analysis and their Regional Input-Output Modeling System (RIMS II), a tool used widely to assess the economic impact of public and private projects.⁷ RIMS II is also commonly used in economic impact studies of universities or

Table 2
Construction Projects at Texas Medical Center
(In Progress 2000–01)

Sponsor and project	Space (square feet)	Cost (millions)
Baylor College of Medicine	70,000	\$40
Texas Heart Institute	327,000	\$86
Texas Children's Hospital	563,000	\$154
Texas Medical Center	908,000	\$54
UT–Houston Health Sciences Center	190,000	\$57
M. D. Anderson Cancer Center	1,486,000	\$540
Total building	3,544,000	\$931
Campus infrastructure		\$219
Total dollars		\$1,150

SOURCE: Texas Medical Center.

medical centers such as this one, and the multipliers used here fall well within the range of similar studies.

The RIMS II estimate of total personal income generated by TMC through direct and indirect spending totals \$3,861 million, about 2.2 percent of regional income generated in southeast Texas in 2000. When the expenditure multiplier is applied to employment, the secondary rounds of spending generate an additional 81,560 jobs. Combined with the 61,041 employees who work on campus, TMC accounted for 142,601 jobs in 2000, or about 4.3 percent of total employment in the 38-county Houston region.

FURTHER IMPACT OF CONSTRUCTION

Construction spending is yet another avenue for TMC to contribute to economic activity in Houston, particularly over the past decade. Direct expenditures, analogous to those for daily operations at TMC, are made by contractors purchasing materials for TMC-related building activity and by construction workers spending wages within the region.

Table 2 lists TMC construction projects under way during 2000–01. Taken together, over 3.5 million square feet was planned or under construction, with a project value of \$931 million. Another \$219 million was earmarked for construction of parking lots, garages, power facilities and other infrastructure.⁸

Unfortunately, we are unable to estimate the dollar spending on each project during the year 2000. If spread evenly over three or four years, the construction expenditures might be \$300 million to \$400 million, but because construction funds normally aren't spent evenly over time, we are reluctant to attribute any spe-

cific amount to a certain year. An expenditure of \$300 million to \$400 million in 2000 could ultimately have generated an additional \$800 million in regional spending, 10,000 new jobs and \$200 million in personal income in southeast Texas. In the comparisons below, however, we limit our focus to day-to-day operational expenditures.⁹

SOME PERSPECTIVE ON TMC ECONOMIC IMPACT

Comparisons with medical centers or other regional organizations can provide insight into the role of the Texas Medical Center and the size of its economic influence in Houston. In this section, we compare TMC with another major element of Houston's nonpetroleum economy, the Johnson Space Center; with major regional medical centers in Dallas and Galveston; and with two universities that are home to major medical facilities: Emory University in Atlanta and Johns Hopkins University in Baltimore. Using impact studies for each of these institutions similar to the one presented above for TMC, we can draw some meaningful comparisons.

Johnson Space Center. The National Aeronautics and Space Administration (NASA) formed the Space Task Group in 1958 to manage Project Mercury and put man into space. In 1961, the task group was reformulated to handle all manned projects, and the Manned Spacecraft Center was relocated about halfway between Houston and Galveston. Renamed the Johnson Space Center (JSC), it shares the status of other key NASA facilities, such as the Jet Propulsion Laboratory in Pasadena, Calif.; Marshall Space Flight Center in Huntsville, Ala.; and Goddard Space Flight Center in Greenbelt, Md. The role of these centers has shifted over time, but JSC remains responsible for planning, organizing and training for manned space flight.

The analogy to a college campus works well here, with a high proportion of JSC spending tied to wages and salaries for highly skilled personnel and local procurement largely tied to institutional expenditures for daily operations. Table 3 summarizes the impact of JSC on southeast Texas. Local expenditures by NASA employees and associated contractors¹⁰ are \$343.9 million, representing about 84 percent of direct expenditures by TMC faculty and staff. Direct expenditures by TMC institutions, however, are more than 10 times those of JSC, and the much larger overall impact of TMC in

Table 3
Economic Impact of Johnson Space Center
(Year 2000 Operations)

Direct local expenditures within region	Millions
JSC	\$190.0
Employees and contractors	\$343.9
Other local	\$2.5
Total direct expenditures	\$536.4
Secondary expenditures due to JSC	
Added regional production	\$332.5
Income-induced spending	\$321.8
Total regional expenditures	\$1,190.7
Direct and indirect personal income	\$2,203.3
Employment (number of workers)	
Direct	16,251
Indirect	11,538
Total	27,789

SOURCE: Center for Economic Development and Research, University of Houston—Clear Lake.

2000 stems primarily from this large volume of regional purchases. After all the secondary spending is accounted for, JSC showed less than \$1.2 billion in total regional expenditures in 2000 compared with TMC's \$5.8 billion. Similarly, employment totals 27,789 for JSC versus 142,601 for TMC, and the personal income difference is \$2.2 billion versus almost \$3.9 billion.

Regional Medical Centers. The traditional regional medical center consists of hospitals, laboratories and other research facilities built around a medical school. Two branches of the University of Texas—UT Southwestern Medical Center at Dallas and the UT Medical Branch at Galveston—provide examples. Table 4 summarizes the economic impact of these two medical centers. The data reflect operation of the medical centers only, with no construction data. Total regional expenditure impact is nearly \$1.3 billion for UT Southwestern and \$806.2 million for the Medical Branch at Galveston.¹¹ Direct employment is substantially smaller at UT Southwestern (5,146 versus 12,467 at Galveston) because Southwestern's affiliated hospitals are owned by other institutions; total employment impacts (11,969 for Dallas versus 23,701 for Galveston) reflect this initial difference in direct jobs.¹²

These regional medical centers are large and impressive concentrations of talent and capital. The major point here is that Houston's TMC is built on a different concept, and its success has placed it on a different plateau.¹³ As the history and governance described earlier make clear, the Houston institution clusters nonprofit

medical institutions in close proximity, some complementing each other and others actively competing against each other, using free land and other grants as the initial lure. Classic economies of agglomeration reduce operating costs for TMC institutions and stimulate further growth.

Other Major University Medical Centers. The comparisons in Table 5 take us away from TMC's concept of concentrating medical facilities on a single campus, but they provide economic impacts on a scale more comparable with the \$5.8 billion total expenditures generated by TMC. The two major universities studied—Emory and Johns Hopkins—have a major medical school on campus, along with associated hospitals, clinics and laboratories. The overall results include not only the entire university, medical and nonmedical, but also affiliated health care facilities located throughout the region. Emory operates hospitals and clinics across the Atlanta metropolitan area; the Johns Hopkins Health System does the same throughout the state of Maryland.

Emory University is the third largest employer in Atlanta, and the campus is home to well-known schools of law, business, public health and theology as well as a medical school, clinics and an acute care teaching hospital. A number of other hospitals and clinics in Atlanta also operate under Emory management. The data in Table 5 include both the medical and nonmedical parts of the university, plus the off-campus medical operations. The direct spending impact is estimated at \$1.3 billion in 1999 for the Atlanta metropolitan area,

Table 4
Economic Impact of Two Regional Medical Centers

	UT Southwestern at Dallas	UT Medical Branch at Galveston
Number of students	3,063	2,505
Funded research	\$206 million	\$102.7 million
Patient visits		
Inpatient	75,000	32,505
Outpatient	1.6 million	700,067
Region affected	North Texas	Southeast Texas
Year	1999	2000
Local expenditures		
Direct	\$406.1 million	\$366.4 million
Total	\$1,261.0 million	\$806.2 million
Employment impact		
Direct	5,146	12,467
Total	11,969	23,701

SOURCES: "Economic Impact of UT Southwestern," www.swmed.edu; Center for Economic Development and Research, University of Houston—Clear Lake.

Table 5
Economic Impact of Two Universities and Their Medical Centers

	Emory University	Johns Hopkins Institutions		
		University	Health System	Combined
Number of students	11,000	5,285	2,679	7,964
Funded research	\$217 million			\$1,023.9 million
Patient visits				
Inpatient	42,000	—	72,500	—
Outpatient	2.4 million	—	1.6 million	—
Region affected	Greater Atlanta	Maryland	Maryland	Maryland
Year	1999	1999	1999	1999
Local expenditures				
Direct	\$1.3 billion	—	—	\$3.0 billion
Total	\$3.4 billion	—	—	\$6.4 billion
Employment impact				
Direct	19,000	22,800	14,500	37,300
Total	45,447	59,490	37,833	97,323

SOURCES: "Economic Impact in Atlanta," www.emory.edu; Bay Area Economics, *Economic Impact of the Johns Hopkins Institutions in Maryland* (December 1999).

and the total impact was \$3.4 billion. Emory's direct employment was 19,000. Total employment, including secondary impacts, was 45,447.

The Johns Hopkins data include both the university and the separately administered and operated Johns Hopkins Health System, which shares close ties to the university. Together they make up the largest employer in Maryland. The health care system includes the medical school, three acute care hospitals, geriatric and home care centers, and a number of outpatient clinics throughout the state. About 40 percent of the health system's expenditures are in Baltimore, 25 percent in the rest of Baltimore County and 35 percent scattered within Maryland.

Johns Hopkins University had a budget of \$1.8 billion in 1999, supporting schools of arts and sciences, engineering, nursing, public health, international studies, business and education. The largest recipient of federal research funds among U.S. universities, it received over \$1 billion in research funding, including \$306.9 million for medical research, from all sources in 1999. Research grants support over 58 percent of the university's budget.

The table divides data between the university and the health system where possible. 1999 total direct expenditures by the combined Johns Hopkins institutions were \$3 billion, and the direct and indirect spending was \$6.4 billion.¹⁴ The combined direct employment was 37,300, and the total employment impact was 97,323. Of the total employment impact, about 39 percent comes from the health system. Although data were not available to divide expenditures between the university and the health

system, we would also expect close to 40 percent of expenditures to come from health care.

When we compare these results with TMC, we find TMC activities more heavily weighted toward patient care and education and less toward research. This is appropriate, given the medical focus of TMC activities. But in Johns Hopkins' combination of major university, renowned research institution and statewide health care provider, we have found regional economic impacts on a scale comparable with those of TMC in Houston.

CONCLUSIONS

The economic impact of the Texas Medical Center's operations is large. It accounts for nearly \$6 billion in regional spending, \$3.9 billion in regional personal income and over 140,000 jobs. TMC's impact is felt primarily through its regional purchases of goods and services—over \$2 billion in 2000. In contrast, while Johnson Space Center has nearly as big an impact as TMC in terms of local spending by its employees, its overall impact (\$1.2 billion in spending) is dwarfed by TMC because JSC's institutional purchases are only one-tenth of those made by TMC.

TMC is large compared with the typical university-affiliated medical center, a result of its unique concept. TMC is a collection of non-profit organizations brought together by the incentive of free land, some competing and others complementing each other, but all benefiting from internal cost economies generated by the campus's size. To find a comparable organization that provides such large-scale

economic impacts to a region, we had to range far afield. Emory University and Johns Hopkins University, when combined with their affiliated regional health care systems, provide such comparisons.

Finally, we have to note that economic impacts are a narrow window on the benefits the Texas Medical Center offers Houston. TMC brings to the city some of the world's finest medical talent. It draws foreign patients—nearly 20,000 in 2000. The center's research has given Houston a well-defined pathway into biotechnology and other high-tech industries, as the city seeks to diversify its economic base away from oil. TMC provides tens of millions of dollars in pro bono health care to the community. TMC employees serve the community as sports coaches, Scout leaders and civic volunteers.

There is little doubt that Monroe Dunaway Anderson would be extraordinarily pleased with the fruits of his legacy to the Houston community.

—Robert W. Gilmer
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NOTES

¹ For a complete history, see N. Don Macon, *Monroe Dunaway Anderson: His Legacy, A History of the Texas Medical Center* (Houston: Texas Medical Center, 1994).

² The six general hospitals are Methodist Diagnostic Hospital, Ben Taub General Hospital, Memorial Hermann Hospital (including Memorial Hermann Children's Hospital within its buildings), Lyndon B. Johnson General Hospital, The Methodist Hospital and St. Luke's Episcopal Hospital. The seven specialized hospitals are The Institute for Rehabilitation and Research (TIIR), Shriners Hospitals for Children—Houston, Texas Children's Hospital, The University of Texas M. D. Anderson Cancer Center, Harris County Psychiatric Center, Veterans Affairs Medical Center in Houston and Quentin Mease Community Hospital. The other patient care facilities are The Hospice and the Texas Heart Institute.

³ Most of these data come from *Texas Medical Center: Facts and Figures 2001* or *Brief Descriptions of Member Institutions: 2001*, published by TMC Public Affairs Office.

⁴ John Caffrey and Herbert H. Isaacs, *Estimating the Impact of a College or University on the Local Community* (Washington, D.C.: American Council on Education, 1971).

⁵ This is economic area 131 as defined by the Bureau of Economic Analysis in its regional modeling work.

⁶ These spending estimates were developed by the Texas Medical Center in conjunction with the Center for Economic Development and Research, University of Hous-

ton at Clear Lake. The Center for Economic Development and Research has extensive experience with these impact studies, and we rely on their results for comparisons made later in this report. A typical Caffrey and Isaacs study uses survey work to determine student and visitor spending. We combined basic data from TMC on number of students and their places of residence and on the number of visitors with rules of thumb on expenditures from the Clear Lake center's experience in past studies.

⁷ U.S. Department of Commerce, Bureau of Economic Analysis, *Regional Multipliers: A User Handbook for the Regional Input–Output Modeling System (RIMS II)*, 3rd ed. (March 1997).

⁸ These expenditures are independent of any renovation or repairs in the wake of Tropical Storm Allison.

⁹ In the comparisons below, no construction expenditure data were available for the UT Medical Branch study. The UT Southwestern Medical Center study mentioned FY 1999 expenditures of \$34 million and a five-year plan calling for \$392 million in new construction. Emory's five-year plan includes \$613 million in new construction. Johns Hopkins estimated \$172 million in 1999 expenditures, and its health system plans \$882 million in construction spending over the next five years.

¹⁰ About half the direct employment counted here is performed under contract to JSC by workers in the Houston–Clear Lake area. Among the recognizable company names are Boeing Co., Lockheed Martin Corp., Raytheon Co. and United Technologies Corp.

¹¹ The spending and employment impacts reported in the table are lower than those reported by the UT Southwestern study. The study assumed that the \$206 million in research expenditures generated \$618 million in additional spending and 8,600 jobs apart from the usual institutional, employee, student and visitor impacts. We removed these figures to make the results comparable with the other studies reported here.

¹² The differences are also reflected in direct expenditures by the two institutions—\$98 million for UT Southwestern versus \$249.8 million for UT Medical Branch.

¹³ It should be noted that TMC contains two medical schools that, if combined, would provide services roughly the same size as the two combined institutions in Table 4. Baylor College of Medicine has 2,379 students and residents, performs \$310 million in funded research, and has 131,000 inpatient and 2 million outpatient visits per year. The University of Texas Health Science Center at Houston Medical School has 1,568 students and residents, performs \$77.8 million in research, and has 263,000 inpatient and 969,000 outpatient visits. The medical school, however, is only one arm of the UT Health Science Center at Houston; its dental branch, Graduate School of Biomedical Sciences, School of Health Information Sciences, School of Nursing and School of Public Health are all located in TMC.

¹⁴ The other assessments of regional economic impact reported in this article look at an existing institution and its impact on a specific region. The Johns Hopkins report addressed the impact on Maryland of the university's health system, assuming other hospitals would have sprung up if Johns Hopkins did not exist; thus, the report assesses mostly health care impacts on out-of-state and foreign patients. This perspective is interesting for assessing the value of a proposed project that would displace existing institutions, but it is not the same question asked by other studies. To bring the Johns Hopkins study into line with other reports, we assumed that the proportion of health care system expenditures within the state was the same as that of the university. This switch in the report's focus increased the health system's direct spending by \$700 million and added 24,000 new jobs to the total employment impact.

Houston paused along with the rest of the world as the Sept. 11 tragedy unfolded. In the wake of the terrorist attack, the important economic results were largely played out in the press as travel and consumer spending ground to a halt. By early October, however, there were many indications that local economic activity was returning to normal and that the fundamentals—oil and gas, the national economy—were once again driving the Houston business cycle. Continued poor performance of the U.S. economy and continued declines in oil and gas drilling could leave Houston with virtually no momentum and with poor prospects for job growth as we enter 2002.

RETAILING AND AUTOS

Retailers across the board reported poor sales in September; Houston consumers spent several days at home, apparently glued to the television. However, early October results were surprisingly positive. A number of retailers reported business had snapped back to meet or exceed last October's.

The story was similar for autos, with September sales down by 13 percent. But the early results for October looked quite positive, with consumers responding strongly to low-cost financing, rebates and other incentives.

OIL AND NATURAL GAS

Oil and oil product prices were bullish before Sept. 11. OPEC had just implemented its third production cut of the year, and major refinery outages were supporting gasoline prices. After the attack, once it became clear no major oil-producing nation was involved, fears of global recession and reduced jet fuel consumption pushed crude prices downward. The price of West Texas Intermediate has since settled in a range of \$21–\$22, down from near \$30 before the attack.

Reduced jet fuel consumption has also eased concerns of a heating oil shortage this winter. Gasoline prices have dropped more

slowly than crude prices, partly because of continued refinery outages. For most of the last few weeks, refiner margins stayed fairly strong as product prices lagged the fall in crude, but margins are now weakening rapidly.

Natural gas prices, already dragged down by the summer buildup in gas inventories, briefly fell under \$2 per thousand cubic feet as oil prices collapsed. The natural gas price has since recovered to near \$2.50, but the decline has been a major factor in the domestic rig count falling by over 100 in six weeks. Day rates continue to decline, particularly large land rigs for deep gas drilling. Some respondents were forecasting a count of only 800–900 working rigs by early next year. As drilling slows down, the Houston economy is rapidly losing its only remaining source of momentum.

PETROCHEMICALS

Declining natural gas prices sharply reduced operating costs for petrochemical producers, and demand, particularly international demand, was reported to have moved up a notch. However, the global capacity glut continues to grow as a record amount of new capacity comes online in 2001. Falling feedstock cost is simply being passed on to downstream plastics customers or producers, and no one is holding on to improved profit margins. Plastic resin prices are stable or declining.

FINANCIAL INSTITUTIONS

Loan demand continues to weaken in all categories. Loan payoffs have accelerated sharply, leaving financial institutions flush with cash. This is a turnaround from 12 months ago, when depository institutions could not keep up with loan demand. Deposit growth reports are mixed, with larger institutions reporting a loss of deposits due to falling interest rates and smaller institutions seeing a dramatic uptick in deposits due to the uncertain environment.

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