

AZB ARIZONA BUSINESS

ARIZONA STATE UNIVERSITY'S MONTHLY NEWSLETTER ON THE ARIZONA ECONOMY

High-tech manufacturing key economic activity in AZ

The most important economic activities driving the Arizona economy are two manufacturing activities: electronics (mostly semiconductors) and aerospace. Tourism, copper mining, and administrative support (such as call centers) are other activities that import monies into the Arizona economy.

This economic base study was undertaken as part of the statewide economic study (SES) commissioned by the Arizona Department of Commerce. The agency is charged with developing 10-year economic plans; the SES will update the last effort (Arizona Strategic Planning for Economic Development) conducted during the early 1990s. The economic base study is part of SES's Phase I, which is being conducted by the three state universities. Five phases of the SES are planned, with completion scheduled for this fall. The base study and related reports from Phase I are scheduled to be available on the web at <http://www.azcommerce.com/prop/ses.htm> beginning in August 2002.

BASE STUDY INTRODUCTION

Regional economic theory states that a local economy is driven by economic activities that import money into the region through the sales of goods and services to customers who do not live in the region. Such export activities differ from population-driven economic activities, which sell to and support the local population. "Export" in this usage is not limited to goods and services sold to customers from other countries, but includes all sales made to customers outside the local area — in other states, and at the county level, in other counties within the state.

The purpose of the economic base study is to identify an area's leading economic activities — export activities that are significantly larger in the county, region or state than in the nation. In order to identify these activities, location quotients are calculated by sector by comparing per capita economic activity (such as employment or earnings) in a local area to per capita figures in the nation. For example, if an industry's employment per 1,000 residents is 10 in an area, but 11 nationally, the location quotient (LQ) is .91 (10 divided by 11). A location quotient less than 1 indicates that employment in the local area is less than the national average. In contrast, if the location quotient exceeds 1, the activity is greater than average in the area. A location quotient

greater than 1 raises the possibility that the area may specialize in that activity by serving customers from outside the area to an extent in excess of the national average. However, an area can have above average levels of activity without any sales to non-residents if the purchasing preferences of residents vary from the national norm. In the Arizona desert, for example, activities related to air conditioners (purchase, maintenance and repair) have an excess component because of climate-induced high levels of expenditures by local residents.

To quantify activity for a sector that is larger than the national average, excess economic activity is calculated from the sector's location quotient and total activity in the county. For example, if excess employment is calculated to be 800 in an industry, it indicates that the industry employs 800 more than average, whether it is due to above average levels of export sales or to local conditions that cause above average sales to local residents.

Few activities wholly sell to customers outside the area or to the local residents, but many are predominantly one or the other. Classic export activities include most manufacturing, mining and agricultural activities, where a very high percentage of sales are made to customers from outside the region. Other activities that primarily import money into a region rather than sell to local consumers include tourism and some services, such as call centers of a national company serving a market area greater than that of the local area.

Economic activities whose market predominantly is the local population include retail sales, many types of services, and local government. In some industries, sales may be made primarily to local residents, but due to sales

Economic Base Study

INSIDE

| | |
|---|-----------|
| Economic Base Study..... | 1 |
| Building Permits: First Quarter..... | 6 |
| County Economic Review..... | 8 |
| Current Economic Conditions..... | 10 |
| Business Conditions Index: May | 10 |
| Leading Index: May..... | 11 |
| Arizona Economic Indicators..... | 12 |

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to outsiders, such as tourists or seasonal residents, the location quotient exceeds 1. Thus, the region's excess employment in this industry may be wholly due to that portion of sales made to outsiders. An example is retail trade, which has LQs slightly above 1 in parts of Arizona due to sales to tourists and/or seasonal residents.

Other activities are more evenly split between sales to residents and sales to outsiders. In addition, the differentiation sometimes is blurred between who is an outsider and who is local. For example, a newcomer who takes a job in Arizona and purchases a house may apply savings earned elsewhere to the home purchase, but most of the payments will be derived from their income earned in Arizona. In these cases, it can be difficult to determine how much of the activity helps to drive the economy and how much is responding to growth driven by another export activity.

Construction, real estate and other activities tied to population and business growth are unusually important in Arizona, frequently having a location quotient more than 1. Only a small portion of the excess activity can be considered to be export. For example, people who move to the state when they retire bring with them wealth and assets earned elsewhere as well as their retirement income, which also was generated by economic activities that occurred outside Arizona. This clearly meets the definition of importing money into the local economy that otherwise would not be present, thus construction, real estate and other growth-related activities have an export component. Similarly, construction and other activity related to a company that sells to a national or international market that moves to, or expands its presence in, Arizona imports monies into the local economy.

In contrast, a house built for a young couple born in Arizona who has derived all of their savings and income in Arizona is a non-basic activity. So is the expansion of facilities of a local firm that serves the local population. Similarly, sales of a home to a newcomer who joins the local workforce would not be considered an export activity if the presence of the new homeowner can be traced to another driving economic activity that ultimately is responsible for the ability of the migrant to get a job in Arizona. (If the newcomer is filling a newly created job in an exporting company, then this home construction and related activity could be considered to be part of an export activity.) Thus, the above average size of construction, real estate

and other activities only in part can be considered a result of export activities, with the proportion not easily determined.

If federal government's location quotient exceeds 1, it is assumed that this is a result of export activity. For example, the National Park Service has many sites in Arizona that attract tourists from outside the area. Military bases serve the entire nation not just the local community. State government at the state level is not an export activity. However, if state government has a location quotient greater than 1 in a county, this suggests that the local area is receiving more state funding than was contributed by its residents, thus meeting the criteria of importing money into the local area. In those counties where state government has a location quotient above 1, it nearly always is due to a state university or a state prison.

The Standard Industrial Classification (SIC) was for many years the way that business activity in the United States was sectorally categorized. The SIC currently is being replaced by the North American Industry Classification System (NAICS). The main source of data that already has adopted NAICS is an annual report (the latest for 1999) by the U.S. Department of Commerce's Bureau of the Census, *County Business Patterns* (which excludes farming and all government). The U.S. Department of Commerce's Bureau of Economic Analysis

(BEA) produces annual employment and earnings estimates by SIC; its farm and government employment for 1999 were used in this study. Since historical data are not available for NAICS and sectorally detailed employment data are not available from the BEA, earnings data from the BEA are used to analyze the change in industrial mix between 1989 and 1999.

ARIZONA

Adjusted for population size, overall economic activity in Arizona is less than the national average. Using BEA estimates of total employment in 2000 and 2000 census counts, per capita employment in Arizona was lower than the national average by 8 percent, a slight deterioration from being 7 percent below average in 1989. Only five states had lower figures in 2000: New Mexico and four states in the South. Arizona ranked 37th on per capita earnings at 16 percent below the national average in 2000. Most of the lower-ranking states were in the South. Arizona's per capita earnings ratio to the nation was the same in 1989 as in 2000.

Compared to the national average, a higher proportion of Arizona's residents were children and a slightly higher share was of retirement age. This age distribution contributes to Arizona's low per capita employment and earnings. Using only working-age (18 to 64 years of age) population, Arizona's per capita

TABLE 1
ARIZONA ECONOMIC BASE ANALYSIS BY SECTOR, 1999

| | <i>Location Quotient</i> | <i>Excess Employment</i> |
|--|--------------------------|--------------------------|
| Construction..... | 1.42 | 47,434 |
| Administrative Support, Waste Management, Remediation..... | 1.22 | 33,621 |
| Accommodation and Food Services..... | 1.11 | 19,399 |
| Real Estate and Rental and Leasing..... | 1.14 | 4,646 |
| Mining..... | 1.44 | 3,702 |
| Arts, Entertainment and Recreation..... | 1.08 | 2,489 |
| Transportation and Warehousing..... | .99 | 0 |
| Finance and Insurance..... | .95 | 0 |
| Retail Trade..... | .94 | 0 |
| Unclassified..... | .91 | 0 |
| TOTAL | .89 | 0 |
| Professional, Scientific and Technical Services..... | .89 | 0 |
| Utilities..... | .87 | 0 |
| Government..... | .87 | 0 |
| Information..... | .86 | 0 |
| Other Services..... | .82 | 0 |
| Auxiliaries..... | .81 | 0 |
| Management of Companies and Enterprises..... | .79 | 0 |
| Wholesale Trade..... | .79 | 0 |
| Health Care and Social Assistance..... | .77 | 0 |
| Manufacturing..... | .63 | 0 |
| Educational Services..... | .49 | 0 |
| Agriculture, Forestry, Fishing, and Hunting..... | .37 | 0 |

employment was 5 percent less, and its per capita earnings were 14 percent lower, than the national average in 2000.

Profile, 1999. Several economic activities drive the Arizona economy. Individually the most important are two manufacturing activities: electronics (mostly semiconductors) and aerospace. Tourism, copper mining, and administrative support (such as call centers) are other activities that import monies into the Arizona economy. The strong effects of growth are seen in several activities, most notably in construction and real estate, but only a small portion of these activities import monies from outside the state.

Six of 20 NAICS sectors had excess employment and excess payroll in 1999, led by construction. Real estate, the other sector especially affected by the state's growth, also was among the six. Administrative support provided the second highest level of excess employment, but only a portion of this sector imports monies into the Arizona economy. The tourism-related sectors of accommodation and food services and arts, entertainment and recreation also were among the sectors with excess employment. Mining, whose per capita employment in Arizona exceeded the national average by the greatest margin, also produced excess employment, nearly all of it related to export activity. However, since the total size of this sector is so much smaller than that of the other sectors, its excess employment was relatively little (see Table 1).

The industry groups with the most excess employment in 1999 are shown in Table 2. A number of other industry groups contributed smaller amounts of excess activity. The importance of high-technology manufacturing stands out in two high-paying export activities: semiconductors and other electronic components and aerospace. Copper mining, with a high location quotient in 1999, remained an important export industry and paid a high average wage.

Tourism is another large export activity. A few industry groups such as traveler accommodation cater almost entirely to tourists, but the effects of tourism also are seen in other activities that primarily serve the local population, such as restaurants. The size of air transportation also is due in part to tourists (and in part from the Phoenix airport serving as a regional hub). Most tourism activities pay low wages.

Administrative support, another low-paying activity, is larger than average in Arizona due to a variety of functions,

some of which qualify as export economic activities, such as "back-office operations" — most notably call centers — that serve a broader regional or national market. Other parts of this sector, however, merely reflect local preferences and conditions. For example, temporary workers and contract workers (the employment services industry group that had the greatest amount of excess employment) were more commonly utilized in Arizona than the national average. Services to buildings and dwellings, such as landscaping and pest control, had above average per capita employment because of climatic conditions that induce higher spending by the local population.

The "growth" industry, reflected particularly in construction (such industry groups as masonry, drywall, insulation and tile contractors), real estate, and some types of finance, largely serves the local population, but is in small part an export activity — particularly that part serving retirement migrants. Growth-related activities tend to pay average wages.

Trend, 1989 to 1999. At the SIC divisional

level, excess earnings and excess employment rose between 1989 and 1999 in construction and FIRE and fell a little in government, mining and agriculture. Mining's location quotients decreased from above to below 1. Electronics manufacturing led the excess earnings advances at the major group level (see Table 3). Aerospace manufacturing also experienced a big gain in excess earnings. Several of the major groups with the largest gains in excess earnings had significant components that serve the local population: real estate, special trade contractors, automotive dealers and service stations, financial institutions, and air transportation.

MARICOPA COUNTY

Economic activity in the Phoenix area in 1999 was substantially higher than in the rest of the state after adjusting for population. The level of activity did not change much between 1989 and 1999. Overall in 1999, there were 595 jobs per 1,000 residents, 2 percent more than the national average; jobs per 1,000 residents aged 18 to 64 numbered 969 — 3 percent higher than the U.S. average.

TABLE 2
ARIZONA INDUSTRY GROUPS WITH CONSIDERABLE EXCESS EMPLOYMENT, 1999

| | <i>Location Quotient</i> | <i>Excess Employment</i> |
|---|--------------------------|--------------------------|
| Employment Services | 1.27 | 19,316 |
| Masonry, Drywall, Insulation, and Tile Contractors | 2.65 | 16,232 |
| Semiconductor and Other Electronic Component Manufacturing ... | 2.57 | 16,142 |
| Aerospace Product and Parts Manufacturing | 2.59 | 14,807 |
| <i>Non-depository Credit Intermediation</i> | 2.11 | 13,038 |
| Traveler Accommodation | 1.36 | 11,049 |
| Carpentry and Floor Contractors..... | 2.45 | 8,649 |
| <i>Business Support Services</i> | 1.70 | 8,514 |
| Metal Ore Mining^ | 12.32 | 8,237 |
| Accounting, Tax Preparation, Bookkeeping and Payroll Services..... | 1.36 | 7,106 |
| Services to Buildings and Dwellings | 1.26 | 6,851 |
| Concrete Contractors | 2.35 | 6,634 |
| <i>Full-Service Restaurants</i> | 1.09 | 6,039 |
| <i>Scheduled Air Transportation</i> | 1.60 | 5,871 |
| <i>Travel Arrangement and Reservation Services.....</i> | 1.94 | 5,179 |

TABLE 3
LARGE GAINS OR LOSSES IN INFLATION-ADJUSTED EXCESS EARNINGS IN ARIZONA
1989 to 1999 (Dollars in Millions)

| | <i>Changes in Excess Earnings</i> | <i>Changes in Location Quotient</i> |
|--|-----------------------------------|-------------------------------------|
| Electronics Manufacturing | \$985 | .2 |
| Real Estate..... | 746 | .2 |
| Aerospace Manufacturing | 720 | .9 |
| Special Trade Contractors..... | 510 | .2 |
| Automotive Dealers and Service Stations..... | 274 | .1 |
| Financial Institutions..... | 243 | .1 |
| <i>Air Transportation</i> | 206 | .2 |
| Coal Mining..... | 165 | 2.0 |
| Metal Mining | -125 | -2.2 |

Expressed as a ratio to the national average, each measure was down about 2 points from the 1989 level. Per capita earnings were about equal to the national average in 1999 and rose about 2 points between 1989 and 1999 as a ratio to the national average.

Profile, 1999. Twelve of 19 sectors provided excess employment, indicating a relatively diverse economy. Twenty-four industry groups (the most of any Arizona county) produced excess employment of at least 0.1 percent of the county's total employment. The largest of these in terms of export-oriented excess employment was the high-paying, high-technology manufacturing group of semiconductors and other electronic components.

While per capita employment in the manufacturing sector was 22 percent less than the national average in 1999, several of its industry groups — all high-paying high-technology activities — had a strong concentration in the Phoenix area. Foremost was the semiconductors and other electronic components industry group (which includes bare printed circuit boards and printed circuit assembly). Excess employment also existed in the communications equipment group (mostly radio and television broadcast and wireless communications equipment but also telephone apparatus) and in the instruments group (with the majority in search, detection and navigation devices, but with some in industrial process controls). In addition, another high-paying high-technology industry group, aerospace products, had a significant level of excess employment, primarily in the aircraft industry. All of these activities are export oriented and thus drive the economy.

Another concentration of economic activity stretched across several industry groups related to business services and administrative support. Employment services (split between temporary help and employee leasing); accounting, tax preparation, bookkeeping and payroll services (primarily payroll services); and services to buildings and dwellings (boosted by landscaping, janitorial, and pest control services) primarily serve the local business community and thus are mostly non-export. All of these paid below average wages, generally about a third less than the county's overall figure of \$30,700. In other categories, export activities make up a higher proportion of the total, including business support services (largely telemarketing bureaus but also collection agencies and other industries); travel arrangement and reservation services; depository credit intermediation (com-

mercial banking); and telecommunications (primarily resellers). Payroll per employee was above average in the latter two industry groups. Part of the export activity results from the Phoenix area serving the rest of Arizona, which generally has little of these types of activities.

Tourism is another activity of relatively large size in the Phoenix area. Tourists and winter residents contribute to the excess employment in activities such as scheduled air transportation, traveler accommodation, and food services and drinking places. Other than air transportation, wages are quite low in most parts of tourism.

The Phoenix area also had a concentration in growth-related activities such as construction and real estate, which pay average wages. Rapid in-migration of individuals and businesses produces a significant demand for these services. In particular, special

trade contractors contributed a significant amount of excess employment, spread across a number of industry groups (see Table 4). Masonry, drywall, insulation and tile contractors and carpentry and floor contractors were most notable based on location quotients and excess employment. Building, developing and general contracting, particularly residential, also contributed significantly. Real estate also was bolstered by growth. A part of the non-depository credit intermediation industry group (consumer lending, sales financing, mortgage brokers, and real estate credit) is related to growth, but another part better fits under the business services categorization (credit card issuing). Automobile dealers provided significant levels of excess employment in part because of rapid growth: many migrants to the area purchase a vehicle upon arrival.

The excess activity in some of the other

**TABLE 4
MARICOPA COUNTY INDUSTRY GROUPS WITH CONSIDERABLE EXCESS EMPLOYMENT, 1999**

| | <i>Location Quotient</i> | <i>Excess Employment</i> |
|--|--------------------------|--------------------------|
| Employment Services | 1.79 | 34,526 |
| Semiconductor and Other Electronic Component Manufacturing | 3.96 | 18,184 |
| <i>Non-depository Credit Intermediation</i> | 3.30 | 16,188 |
| Masonry, Drywall, Insulation and Tile Contractors | 3.40 | 14,141 |
| Accounting, Tax Preparation, Bookkeeping and Payroll Services | 1.96 | 11,437 |
| <i>Scheduled Air Transportation</i> | 2.59 | 9,346 |
| Services to Buildings and Dwellings | 1.56 | 8,996 |
| Aerospace Products and Parts Manufacturing^A | 2.61 | 8,951 |
| Carpentry and Floor Contractors | 3.35 | 8,412 |
| Traveler Accommodation | 1.40 | 7,415 |
| <i>Business Support Services</i> | 1.86 | 6,325 |
| General Freight Trucking | 1.63 | 6,188 |
| <i>Travel Arrangement and Reservation Services</i> | 2.86 | 6,090 |
| <i>Full-service Restaurants</i> | 1.14 | 5,868 |
| Concrete Contractors | 2.89 | 5,548 |
| Telecommunications | 1.41 | 4,763 |
| Automobile Dealers | 1.33 | 4,280 |
| Depository Credit Intermediation | 1.20 | 4,193 |
| Other Special Trade Contractors | 1.61 | 3,912 |
| Plumbing, Heating, and Air Conditioning Contractors | 1.41 | 3,840 |
| Navigation, Measuring, Medical, Control Instruments Manufacturing ... | 1.71 | 3,734 |
| Professional and Commercial Equipment and Supplies Wholesale | 1.41 | 3,359 |
| Residential Building Construction | 1.41 | 3,303 |
| Electrical Goods Wholesale | 1.56 | 3,103 |

**TABLE 5
LARGE GAINS OR LOSSES IN INFLATION-ADJUSTED EXCESS EARNINGS IN MARICOPA COUNTY
1989 to 1999 (Dollars in Millions)**

| | <i>Changes in Excess Earnings</i> | <i>Changes in Location Quotient</i> |
|--|-----------------------------------|-------------------------------------|
| Real Estate | \$914 | .4 |
| Electronics Manufacturing | 853 | .2 |
| <i>Business Services</i> | 773 | .1 |
| Special Trade Contractors | 704 | .3 |
| Financial Institutions | 565 | .2 |

sectors, such as wholesale trade (which offers above average wages) and retail trade (below average payroll per employee), relate to the Phoenix area serving the rest of the state, parts of which are greatly deficient in some of these activities. Thus, these activities import monies into the Phoenix area even though no such importation occurs at the state level.

Trend, 1989 to 1999. Increases in excess earnings between 1989 and 1999 occurred in four divisions: construction; finance, insurance and real estate; wholesale trade; and retail trade. Most of these gains were associated with increases in the region's population base rather than from expansion of export activities. Construction and wholesale trade posted more than marginal increases in location quotients. Excess earnings fell in services. With the exception of electronics manufacturing, the major groups with the largest gains in excess earnings had significant components that serve the local population. Other groups than shown in Table 5 with a large change in location quotient included an increase in metal mining (due to headquarters or regional offices in the urbanized area) and a decrease in lodging places.

PIMA COUNTY

The Tucson area's per capita earnings and employment were considerably lower than the national average in 1999, though higher than in most of the 13 less populous counties. The relative level of activity hardly changed between 1989 and 1999. Overall in 1999, there were 509 jobs per 1,000 residents, 13 percent less than the national average; jobs per 1,000 residents aged 18 to 64 numbered 831 — 12 percent lower than the U.S. average. Per capita earnings were much further (27 percent) below the national average.

Profile, 1999. Aerospace manufacturing and state government (mostly related to the University of Arizona) are the most significant drivers of the Tucson area economy. A variety of other activities also play a role, including administrative support, copper mining, tourism, and the military. Excess employment existed in six sectors plus government, a larger number of sectors than in most of the less populous counties. However, payroll per employee was low in four of the six and high only in mining.

Though the overall manufacturing location quotient was less than .6, the aerospace products and parts industry group (split between aircraft and guided missiles and space vehicles) provided the greatest number of excess jobs of any industry group, almost

all of which were related to exports. State government provided nearly as many excess jobs, most of which act to import more monies into the Pima County economy than were contributed to the state by the county's residents, largely by offering higher education to non-residents of Pima County.

The impacts of tourists and seasonal residents are evident by the large number of excess employees in the accommodation and food services sector, most of whom work in jobs that import monies into the region. Amusement, recreation and gambling industries also had excess employment (mostly in casinos and fitness and recreation sports centers, which are not export activities), as did recreational vehicle parks and recreational camps. All are low-paying activities.

The low-paying administrative support sector, a portion of which imports monies into the local economy, also provided significant excess employment, particularly in business support services (dominated by telephone call centers but also including repossession services) and services to buildings and dwellings (mostly landscaping).

Copper ore mining, an export activity

which paid high wages, also was significant. Among other industry groups with significant export employment were the military (Davis-Monthan Air Force Base) and software publishers (see Table 6).

Construction had the greatest excess employment among the sectors in 1999, mostly in the special trade contractors subsector. Real estate also was among the sectors with excess employment, particularly in the "activities related to real estate" industry group, which was boosted particularly by real estate property managers.

Trend, 1989 to 1999. Location quotients at the divisional level hardly changed between 1989 and 1999, with a decrease in mining most notable. None of the divisions had excess earnings in either year. Two large changes in excess earnings occurred at the major group level (see Table 7): a big gain in "other transportation" manufacturing (aerospace in the Tucson area) and a sizable loss in industrial machinery manufacturing (which included computer equipment).

— Tom R. Rex
Research Manager

TABLE 6

PIMA COUNTY INDUSTRY GROUPS WITH CONSIDERABLE EXCESS EMPLOYMENT, 1999

| | Location Quotient | Excess Employment |
|---|-------------------|-------------------|
| Aerospace Products and Parts Manufacturing^A | 6.14 | 7,857 |
| <i>State Government</i> | 1.49 | 7,109 |
| <i>Business Support Services</i> | 3.02 | 4,067 |
| Masonry, Drywall, Insulation and Tile Contractors | 2.25 | 2,025 |
| Metal Ore Mining^A | 14.90 | 1,664 |
| Services to Buildings and Dwellings | 1.33 | 1,442 |
| Military | 1.21 | 1,294 |
| Traveler Accommodation | 1.25 | 1,247 |
| <i>Full-service Restaurants</i> | 1.11 | 1,236 |
| Hardware Manufacturing^A | 6.46 | 1,204 |
| Recreational Vehicle Parks and Recreational Camps | 11.48 | 1,166 |
| Software Publishers | 2.11 | 1,015 |
| Concrete Contractors | 2.17 | 947 |
| Repair and Maintenance | 1.35 | 896 |
| Vocational Rehabilitation Services | 1.91 | 854 |

TABLE 7

LARGE GAINS OR LOSSES IN INFLATION-ADJUSTED EXCESS EARNINGS IN PIMA COUNTY 1989 to 1999 (Dollars in Millions)

| | Changes in Excess Earnings | Changes in Location Quotient |
|---|----------------------------|------------------------------|
| Aerospace Manufacturing | \$359 | 2.6 |
| Military | 57 | .3 |
| Lodging Places | 45 | .3 |
| Industrial Machinery Manufacturing | -155 | -1.0 |

Notes (Tables 2 through 7): Those entries in bold have a high proportion of sales to customers outside the region; those in italics have a moderate proportion of sales to non-residents. ^A Data were imputed.

Source (all tables): Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University, from U.S. Department of Commerce, Bureau of Economic Analysis and the Census.

Building permit activity increases in first quarter 2002

For many months, the Arizona construction industry has struggled with the impacts from the events of Sept. 11, 2001, and a weak economic environment. However, it has begun to show some improvement, moving from \$2.5 billion in total building permits in fourth quarter 2001 to \$2.8 billion in first quarter 2002, but well below the \$3.4 billion recorded a year ago.

Despite the tumultuous times, the single-family market improved from last quarter's \$1.5 billion to \$1.8 billion, which is very comparable to last year. The commercial sector improved slightly from \$440 million in fourth quarter 2001 to \$445 million, but was well below last year's \$1 billion. Lacking any major projects, industrial development continues to represent only about 1 percent of the construction market.

Phoenix was the most active area of development, with nearly 20 percent of Arizona's construction market, while the 13 communities listed in Table 1 represented 75 percent of the state's recorded activity. The inclusion of unincorporated Pinal County and Avondale in Table 1 show the expansion of the market beyond the historical areas such as Tempe (\$28 million). Other areas of significant development included Glendale (\$62 million), Peoria (\$58 million), Lake Havasu City (\$45 million), unincorporated Yavapai County (\$42 million) and Prescott (\$39 million).

RESIDENTIAL

Home buyers remained the one bright light in the uncertain economic environment of early 2002. There are many reasons for strength in the current housing market, ranging from lingering vestiges of a prosperous economy with its commensurate consumer confidence, to home buyers taking advantage of the continued low mortgage rates.

Leading areas of single-family development were Phoenix (1,573 permits), Chandler (702) and Mesa (705). The West Valley communities of Surprise (596), Avondale (417), El Mirage (651) and Goodyear (433) now account for 26 percent of the new home market.

The single-family housing market also showed strength in Pima County (see Table 2). Tucson authorized 680 homes; unincorporated Pima County, 516; Marana, 232; and Oro Valley, 107. The average permit value in Pima County increased from last year's \$141,570 to \$143,190; while in Maricopa County it rose from \$142,720 to \$153,565.

Pinal County (929 permits) accounted for 7 percent of the state's new home market, while Mohave (605) had 5 percent and Yavapai (495) had 4 percent. In these counties the unincorporated areas are important markets, with 720 permits in unincorporated Pinal County, 219 in Yavapai and 107 in Mohave. Specific communities included Lake Havasu City (348), Casa Grande (138), Prescott (144),

and Yuma (160). Average permit values were \$173,610 in Prescott, \$179,500 in Sedona, \$137,930 in Flagstaff, \$110,080 in Casa Grande, and \$98,435 in Lake Havasu City.

COMMERCIAL

The primary commercial sectors showed improvement over the fourth quarter 2001, but did not approach the levels of a year ago (see Table 2). The struggling economy and increased competition from new projects has resulted in higher vacancies and slower

TABLE 1
REPORTING UNITS WITH GREATEST TOTAL VALUE OF BUILDING PERMITS
First Quarter 2002

| Reporting Unit | Value (in millions) |
|-------------------------------------|------------------------|
| Phoenix..... | \$542 |
| Chandler..... | 246 |
| Unincorporated Maricopa County..... | 199 |
| Scottsdale..... | 173 |
| Mesa..... | 172 |
| Gilbert..... | 119 |
| Tucson..... | 119 |
| Unincorporated Pima County..... | 115 |
| Avondale..... | 92 |
| Unincorporated Pinal County..... | 92 |
| Goodyear..... | 84 |
| El Mirage..... | 82 |
| Surprise..... | 82 |

Source: Arizona Real Estate Center, L. William Seidman Research Institute, College of Business, Arizona State University

TABLE 2
KEY SECTOR CONSTRUCTION ACTIVITY
First Quarter 2002, Fourth Quarter 2001 and First Quarter 2001

| | COMMERCIAL | | | | | | | | | |
|------------------------|-------------------|--------------------|-------------------------|--------------------|-------------------------------|--------------------|----------------------------|--------------------|-------------------|--------------------|
| | Single-family | | Apartments ^a | | Office Buildings ^b | | Retail Stores ^c | | Industrial | |
| | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) |
| MARICOPA COUNTY | | | | | | | | | | |
| 1st Quarter 2002..... | 7,980 | 1,225,456 | 1,006 | 59,087 | 93 | 88,644 | 115 | 103,589 | 36 | 34,993 |
| 4th Quarter 2001..... | 6,455 | 976,144 | 866 | 41,682 | 55 | 59,307 | 112 | 79,576 | 34 | 34,286 |
| 1st Quarter 2001..... | 8,951 | 1,277,493 | 3,518 | 183,684 | 134 | 208,699 | 125 | 195,145 | 36 | 18,079 |
| PIMA COUNTY | | | | | | | | | | |
| 1st Quarter 2002..... | 1,566 | 224,235 | 5 | 304 | 31 | 8,096 | 18 | 5,611 | 6 | 1,414 |
| 4th Quarter 2001..... | 1,359 | 204,029 | 507 | 18,965 | 16 | 7,003 | 14 | 6,454 | 10 | 2,812 |
| 1st Quarter 2001..... | 1,692 | 239,539 | 296 | 17,101 | 14 | 7,147 | 13 | 5,941 | 6 | 6,252 |
| REST OF ARIZONA | | | | | | | | | | |
| 1st Quarter 2002..... | 2,927 | 320,263 | 14 | 177 | 33 | 8,606 | 36 | 12,696 | 7 | 2,633 |
| 4th Quarter 2001..... | 2,564 | 282,988 | 192 | 9,560 | 29 | 5,785 | 31 | 10,040 | 14 | 4,416 |
| 1st Quarter 2001..... | 2,592 | 277,816 | 66 | 4,987 | 32 | 6,272 | 39 | 25,977 | 13 | 3,220 |
| ARIZONA TOTAL | | | | | | | | | | |
| 1st Quarter 2002..... | 12,473 | 1,769,954 | 1,025 | 59,568 | 157 | 105,346 | 169 | 121,896 | 49 | 39,040 |
| 4th Quarter 2001..... | 10,378 | 1,463,161 | 1,565 | 70,207 | 100 | 72,095 | 157 | 96,070 | 58 | 41,514 |
| 1st Quarter 2001..... | 13,235 | 1,794,848 | 3,880 | 205,772 | 180 | 222,118 | 177 | 227,063 | 55 | 27,551 |

^a Five or more housing units ^b Office, bank, medical and professional buildings ^c Shopping centers and other mercantile buildings

Source: Arizona Real Estate Center, L. William Seidman Research Institute, College of Business, Arizona State University

rent growth. Primary areas of office building development were Phoenix (\$45 million) and Scottsdale (\$19 million). The apartment market in Maricopa County has improved, but not to the levels of a year ago (see Table 2). Primary areas of activity were Phoenix at 256 units; Surprise, 256; Chandler, 240; and Avondale, 200. Retail activity also improved, with \$22 million in Phoenix, \$18 million in Glendale, \$14 million in Goodyear, and \$12 million in Fountain Hills. Remodeling of existing space totaled \$35 million, with \$15 million in Scottsdale and \$11 million in Tempe. Permits for development of parking garages totaled \$27 million, with \$14 million in Scottsdale and \$12 million in Phoenix.

Commercial development was extremely limited in Pima County and throughout the remainder of the state (see Table 2). Apartment activity was reported only in Sedona (8 units) and unincorporated Pima County (5 units). Office building activity was strongest in unincorporated Pima County (\$4.4 million), while Prescott reported \$3 million in new retail development.

The hotel/motel sector, heavily impacted by a weak economy and events of Sept. 11, has slightly recovered from \$4 million in fourth quarter 2001 to \$10 million, with \$8.7 million reported in Page.

INDUSTRIAL AND OTHER

Industrial development in Maricopa County has improved from last year's \$18 million to \$35 million (see Table 2). Phoenix led all areas at \$29 million, with \$15.8 million for a project in the Cotton Center, followed by Mesa at \$3.3 million.

Construction of educational and public

facilities stood at \$74 million, led by Phoenix (\$23 million) and Chandler (\$21 million). The single largest permit was issued by Phoenix, valued at \$12.5 million for the Roman Catholic Diocese of Phoenix followed by \$11 million in El Mirage for a wastewater treatment plant.

LOOKING AHEAD

It is becoming apparent that the Arizona construction market has come through the recession and the traumatic events of last September in better shape than expected. What does the future hold? A key element is the recovery of job growth. This is especially important for the single-family market to attract new residents to the area and to enhance the confidence of the home buyer. Further, job growth will benefit the office building and industrial sectors, where firms will need to increase their space needs. This will improve absorption, remove conces-

sions and allow rents to rise. Only when the market for existing structures improves will new projects be economically justified and construction activity begin to improve.

In recent years, the construction market has benefited from a strong economy and low mortgage rates. It is generally expected that rates will increase in response to a growing economy, a stronger stock market and potential inflationary conditions. However, mortgage rates are not expected to rise rapidly. While a rise to 8 percent could adversely impact housing affordability, this level is not expected in the coming year. Hence, a recovering economy and relatively low interest rates will continue to support an improving construction market.

— Jay Q. Butler
Director

Arizona Real Estate Center

TABLE 3
ARIZONA HOUSING UNITS AUTHORIZED
First Quarter 2002

| | One Family | Mobile Homes | 3-4 Duplex | 5 or More Family | Total |
|----------------------------------|---------------|-----------------|---------------|------------------------|--------|
| MARICOPA COUNTY..... | 7,980 | 284 | 30 | 84 | 9,384 |
| % Change, Previous Year | -11 | 0 | -42 | -10 | -27 |
| % Change, Previous Quarter | 24 | -2 | 200 | 65 | 22 |
| PIMA COUNTY..... | 1,566 | 160 | 52 | 18 | 1,801 |
| % Change, Previous Year | -7 | -14 | 225 | — | -18 |
| % Change, Previous Quarter | 15 | -57 | 44 | 125 | -21 |
| REST OF ARIZONA | 2,927 | 934 | 76 | 74 | 4,025 |
| % Change, Previous Year | 13 | -9 | 27 | 139 | 7 |
| % Change, Previous Quarter | 14 | -18 | 46 | 174 | 1 |
| TOTAL, ARIZONA | 12,473 | 1,378 | 158 | 176 | 15,210 |
| % Change, Previous Year | -6 | -8 | 23 | 42 | -19 |
| % Change, Previous Quarter | 20 | -24 | 61 | 105 | 9 |

Note: A dash indicates that a percent change could not be calculated because at least one period had no activity.

TABLE 4
ARIZONA BUILDING PERMITS
First Quarter 2002

| | Residential* | | Commercial | | Industrial | | Other | | Total | |
|----------------------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|----------------------|-----------------------|
| | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) | Number of Permits | Dollar Value (000) |
| MARICOPA COUNTY..... | 10,633 | 1,286,757 | 751 | 344,294 | 36 | 34,993 | 7,933 | 362,803 | 19,353 | 2,028,847 |
| % Change, Previous Year | -8 | -3 | -34 | -63 | 0 | 94 | -16 | -1 | -12 | -23 |
| % Change, Previous Quarter | 22 | 25 | -4 | 14 | 6 | 2 | 11 | 2 | 16 | 18 |
| PIMA COUNTY..... | 2,475 | 234,879 | 289 | 34,870 | 6 | 1,414 | 1,427 | 20,126 | 4,197 | 291,289 |
| % Change, Previous Year | -5 | -6 | -15 | -38 | 0 | -77 | 51 | -4 | 8 | -13 |
| % Change, Previous Quarter | 2 | 10 | -14 | -56 | -40 | -50 | 0 | -2 | 0 | -8 |
| REST OF ARIZONA | 5,872 | 378,687 | 429 | 65,639 | 7 | 2,633 | 1,973 | 51,295 | 8,281 | 498,254 |
| % Change, Previous Year | 8 | 13 | 5 | 25 | -46 | -18 | -1 | 30 | 5 | 16 |
| % Change, Previous Quarter | 6 | 11 | 12 | 12 | -50 | -40 | 20 | 11 | 9 | 11 |
| TOTAL, ARIZONA | 18,980 | 1,900,323 | 1,469 | 444,803 | 49 | 39,040 | 11,333 | 434,224 | 31,831 | 2,818,390 |
| % Change, Previous Year | -3 | -1 | -22 | -57 | -11 | 42 | -8 | 2 | -6 | -17 |
| % Change, Previous Quarter | 13 | 20 | -2 | 1 | -16 | -6 | 11 | 3 | 12 | 13 |

* Includes mobile homes

Source (Tables 3 and 4): Arizona Real Estate Center, L. William Seidman Research Institute, College of Business, Arizona State University

Prosperity remains a concern in most of Arizona

In most Arizona counties, per capita personal income and the average wage — the most common measures of prosperity — were far below average in 2000. Moreover, comparisons to national norms were worsening over time in most counties.

The U.S. Bureau of Economic Analysis (BEA) annually releases estimates of personal income and employment by county. The latest estimates, through 2000, were released in May. In this article, they are compared to figures in 1989, a similar year in the prior economic cycle.

AGGREGATE GROWTH

Personal income, a broad measure of growth, includes earnings of employees and proprietors, transfer payments such as food stamps, and dividends, interest and rent. Due to the state's rapid population growth, personal income rose much more than the national average between 1989 and 2000 (see Table 1).

Personal income growth in metropolitan areas was greater than in non-metropolitan areas nationally and in Arizona between 1989 and 2000. Gains in Maricopa County (the Phoenix area) greatly exceeded the national metro average, but the advance in Pima County (the Tucson area) was not as far above average. The federal government defines Coconino (Flagstaff), Mohave (Las Vegas), Pinal (Phoenix) and Yuma (Yuma) counties as metropolitan, though in most regards they are more similar to the non-metro Arizona counties than to Maricopa and Pima counties. Mohave had the greatest gains in personal income in the state, while advances in Pinal and Yuma counties barely exceeded the national metropolitan average.

Among Arizona's nine non-metro counties, increases in personal income between 1989 and 2000 exceeded the national non-metro average in all but La Paz County.

Nationally, earnings (the largest component of personal income) rose slightly faster than personal income over the 1989 to 2000 period. In non-metro areas, however, earnings growth was slower than personal income growth. In these less populous areas, gains from transfer payments and/or dividends, interest and rent were greater than the increase in earnings. In most of Arizona's counties, earnings grew less than personal income, in some cases by wide margins. The exceptions were Maricopa,

Pima, and Yavapai counties.

The BEA measures total employment, which includes proprietors as well as wage and salary workers. Most other employment measures are limited to the latter.

Total employment in Arizona rose more than twice as fast as the national average over the 1989 to 2000 period. Nationally, employment growth was barely higher in metro areas than in non-metro areas, but the differential was greater in Arizona. Employment gains between 1989 and 2000 were greater than the national average in all Arizona counties except Santa Cruz, though the advances hardly were greater in Pinal, Cochise, La Paz, and Apache counties.

The ratio of total employment to population was less in Arizona than the national average in 2000. Arizona's figure of 55 workers per 100 residents compared to 59 nationally. Over the 1989 to 2000 cycle, this ratio rose 3 percentage points in Arizona, and 4 points nationally (see Table 2).

The employment-to-population ratio was higher nationally in metropolitan areas than in non-metro areas; the differential was greater in Arizona. Among the metro counties, the employment-to-population ratio in Maricopa and Coconino counties equaled the national metropolitan average of 61 workers per 1,000 residents in 2000. Greenlee County had an even higher figure, but all of the other Arizona counties had ratios below, generally far below, the national norms. Pima County was next highest at 52 per thousand. Gains in the ratios between 1989 and 2000 were quite high in Greenlee and Coconino counties. In contrast, five counties, including three classified as metropolitan, experienced a decline in the ratio over the 11 years.

In most Arizona counties, a higher than national average proportion of children and/or senior citizens explains part of the low employment-to-population ratios relative to the nation. However, even among the working-age population (defined as 18 to 64), employment is quite low in most counties relative to the U.S. average. The employment-to-working-age population ratio in 2000 was above the national average only in Maricopa and Greenlee counties and was at least 20 percent below the U.S. average in all of the other counties except Pima and Coconino. The change in the ratio from 1990 to 2000 was greater than

the national average only in Greenlee, Coconino and (marginally) Pima counties.

PER PERSON MEASURES

Aggregate economic advances in Arizona exceed the national average because of the state's much faster population growth. Employment and personal income growth reveal little about changes in prosperity, but per capita personal income and average wage per job provide insight into personal economic well-being.

Nationally, the average wage was \$34,652 in 2000. Arizona's average wage of \$32,244 was 7 percent less than the national average. A gradual deterioration in Arizona's average wage relative to the national average has occurred since the early 1970s, when the Arizona figure was only 2 percent less than the national average. From 1969 (the first year of average wage data) through 1987, Arizona's average wage as a ratio to the U.S. average was not less than 94 percent in any year; it has not been as high

TABLE 1
AGGREGATE ECONOMIC GROWTH
1989 to 2000

| | <i>Personal Income*</i> | <i>Earnings*</i> | <i>Total Employ- ment</i> |
|-----------------------|-----------------------------|------------------|-----------------------------------|
| United States..... | 41% | 43% | 22% |
| Arizona | 67 | 79 | 50 |
| U.S. Metro | 43 | 45 | 22 |
| Arizona Metro | 69 | 82 | 51 |
| Mohave | 80 | 75 | 60 |
| Maricopa | 76 | 93 | 56 |
| Coconino | 60 | 57 | 49 |
| Pima | 50 | 56 | 38 |
| Yuma | 45 | 40 | 32 |
| Pinal | 45 | 20 | 23 |
| U.S. Non-metro | 34 | 30 | 21 |
| Arizona Non-metro ... | 52 | 44 | 41 |
| Yavapai | 75 | 95 | 77 |
| Santa Cruz | 56 | 52 | 19 |
| Greenlee | 48 | 36 | 57 |
| Gila | 46 | 33 | 41 |
| Graham | 45 | 40 | 49 |
| Navajo | 45 | 29 | 30 |
| Apache | 44 | 26 | 25 |
| Cochise | 37 | 27 | 24 |
| La Paz | 32 | 23 | 24 |

* Inflation-adjusted by U.S. GDP Implicit Price Deflator
Source: Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University, from data of the U.S. Department of Commerce, Bureau of Economic Analysis.



as 94 percent in any year since then. While the ratio in 2000 was up from the lowest point of 91 percent in 1993, improvement between 1993 and 2000 was modest.

The cost of living in Arizona is close to the national average and has not changed much over time relative to the U.S. figure. Thus, even on a cost-of-living-adjusted basis, Arizona's average wage is below average and declining slightly over time.

The average wage in 2000 was much higher nationally in metro areas (\$36,516) than in non-metro areas (\$24,796). The differential was not as great in Arizona. Part of the large difference between metro and non-metro areas nationally is mitigated by a lower cost of living in non-metro areas. In Arizona, this lower cost of living is not found in all non-metro counties. A substantial difference in the rate of growth in the average wage between 1989 and 2000 also existed between metro and non-metro areas.

The average wage in 2000 in five of the six Arizona metro counties was less than the national metro average by more than 20 percent; in Maricopa County, the differential was only 4 percent. While the cost of living in the Phoenix area is a little low for a major metro area, it is typical of all metro areas. Increases in the average wage in Maricopa County from 1989 to 2000 slightly exceeded the national metro average, but gains in Arizona's other metro counties fell far short. Even in Pima County the average wage was much lower than the metro (or U.S.) average in 2000, despite a cost of living not much less than the national metro average. The rise in the average wage between 1989 and 2000 in Pima County was considerably below the norm.

In four (Apache, Cochise, Greenlee and Santa Cruz) of the nine non-metro counties, the average wage exceeded the national non-metro average in 2000. The only non-metro county with a 1989 to 2000 increase in excess of the national non-metro average was Santa Cruz; among the metro counties only Maricopa and Pima (barely) had greater gains than the non-metro average.

In most Arizona counties (Coconino County was the only exception) in 2000, per capita personal income (PCPI) as a ratio to the national average was further below average than the average wage. While an important component, average wage is just one of many factors that affect PCPI. The employment-to-population ratio is another important factor.

Per person personal income was \$29,469

nationally in 2000. At \$24,988, Arizona's figure was 15 percent less. The gain in the state's figure between 1989 and 2000 was short of the national average. As a ratio to the national average, Arizona's PCPI has been cyclical, reaching 94 to 95 percent at the peaks of the economic cycles of the early 1970s, late 1970s, and 1980s and dropping a few percentage points during recessions. However, the decrease in the economic slump of the late 1980s and early 1990s was more severe, with the ratio falling from 94 percent in 1986 to 85.4 percent in 1992. Almost no recovery in the ratio occurred during the economic expansion of the 1990s, with the peak ratio only 86.5 percent in 1994. Slight declines in the ratio since then left the ratio in 2000 (still a strong growth year in Arizona) at 84.8 percent, nearly the lowest level since the beginning of the data in 1929. (The lowest was just over 84 percent in 1966; preliminary data for 2001 show a ratio of 84.2).

Thus, a substantial deterioration has occurred in Arizona in the broadest measure of prosperity relative to the national average. Substandard performance in the average wage, the employment-to-population ratio,

and other factors led to the decrease in the PCPI ratio.

Like the average wage, PCPI is much higher nationally and in Arizona in metropolitan areas than in non-metro areas. The increase in metro areas was slightly greater during the latest economic cycle. Coconino County's advance exceeded the national metro average, but gains in Maricopa and Pima counties fell short. PCPI in 2000 was 10 percent less than the metro average in Maricopa County and 24 percent lower in Pima County. The 1989-to-2000 performance in Mohave, Yuma and Pinal counties was very poor, ranging from no change to a loss of 7 percent (inflation-adjusted).

Of the nine non-metro counties, the 2000 PCPI did not exceed the national non-metro average in any, though the figure was close in Greenlee County. Only Apache County's gain exceeded the non-metro average from 1989 to 2000. Gains were between 7 and 16 percent in seven of the counties, but La Paz County's PCPI fell 7 percent.

— Tom R. Rex
Research Manager

TABLE 2
OTHER ECONOMIC MEASURES

| | <u>Employment-to-Population Ratio</u> | | <u>Average Wage</u> | | | <u>Per Capita Personal Income</u> | | |
|-----------------------|---------------------------------------|--------|---------------------|---------|--------------------|-----------------------------------|---------|--------------------|
| | 1989-2000 2000 | Change | 1989-2000 2000 | Change* | Ratio to U.S.** | 1989-2000 2000 | Change* | Ratio to U.S.** |
| United States..... | 59 | 4 | \$34,652 | 21% | | \$29,469 | 24% | |
| Arizona..... | 55 | 3 | 32,244 | 22 | 93 | 24,988 | 17 | 85 |
| U.S. Metro..... | 61 | 4 | 36,516 | 22 | | 31,332 | 24 | |
| Arizona Metro..... | 57 | 3 | 32,848 | 23 | 90 | 25,976 | 17 | 83 |
| Maricopa..... | 61 | 3 | 34,882 | 25 | 96 | 28,329 | 19 | 90 |
| Pima..... | 52 | 4 | 28,693 | 14 | 79 | 23,705 | 17 | 76 |
| Coconino..... | 61 | 11 | 24,529 | 10 | 67 | 21,918 | 30 | 70 |
| Mohave..... | 35 | -4 | 22,992 | 13 | 63 | 18,326 | 0 | 58 |
| Yuma..... | 42 | -8 | 22,495 | 7 | 62 | 16,002 | -7 | 51 |
| Pinal..... | 28 | -8 | 26,425 | 9 | 72 | 14,506 | -7 | 46 |
| U.S. Non-metro..... | 52 | 5 | 24,796 | 13 | | 21,847 | 21 | |
| Arizona Non-metro ... | 40 | 2 | 25,104 | 7 | 101 | 17,558 | 14 | 80 |
| Greenlee..... | 68 | 28 | 35,951 | 8 | 145 | 21,428 | 9 | 98 |
| Yavapai..... | 43 | 3 | 23,375 | 11 | 94 | 20,383 | 7 | 93 |
| Cochise..... | 42 | 1 | 26,689 | 9 | 108 | 19,153 | 13 | 88 |
| Gila..... | 40 | 3 | 24,698 | -2 | 100 | 18,375 | 13 | 84 |
| La Paz..... | 38 | -6 | 21,674 | 9 | 87 | 17,896 | -7 | 82 |
| Santa Cruz..... | 41 | -5 | 26,639 | 30 | 107 | 17,373 | 16 | 80 |
| Navajo..... | 35 | 1 | 24,538 | 0 | 99 | 14,105 | 14 | 65 |
| Graham..... | 33 | 5 | 21,384 | 1 | 86 | 14,071 | 13 | 64 |
| Apache..... | 33 | 3 | 26,745 | 7 | 108 | 13,440 | 27 | 62 |

* Inflation-adjusted by U.S. GDP Implicit Price Deflator
 ** In 2000; Arizona compared to national average; Maricopa, Pima, Coconino, Mohave, Yuma and Pinal counties compared to metropolitan average; and other counties compared to non-metropolitan average
 Source: Center for Business Research, L. William Seidman Research Institute, College of Business, Arizona State University, from data of the U.S. Department of Commerce, Bureau of Economic Analysis.

Economic recovery slow to start

Nationally, the economic recession probably ended in January 2002, but the recovery hardly had started by April. In Arizona, the economy still may have been in recession in April. However, leading economic indicators both nationally and in Arizona have signaled better economic conditions should ensue soon.

The National Bureau of Economic Research — the official arbiter of recessionary periods — declared that a recession began in April 2001, basing this decision on a broad range of economic indicators. The end of the recession has not yet been announced. However, gross domestic product (GDP), the broadest measure of economic growth, showed little sign of recession. Though gains were weak from mid-2000 through 2001, a decrease in GDP was measured only in third quarter 2001. A strong gain was registered in first quarter 2002.

Employment nationally fell substantially in each month from September 2001 through January 2002. Very slight losses were measured

in February and March, with a small gain estimated in April (still subject to revision). The national unemployment rate hit its highest level of the cycle in April, but the unemployment rate typically continues to rise into a recovery period. Other indicators also suggest a turn in the economic cycle in late 2001 or early 2002: the inflation rate bottomed out in early 2002, short-term and long-term interest rates stopped falling in late 2001 or early 2002, the stock market reached its low point in September (though it has posted a net loss in 2002), and retail sales began to grow more rapidly in October. While these indicators suggest an end to the recession, none were signaling much of a pickup in economic growth as of April.

In Arizona, the recession began at about the same time as nationally. The Arizona recession was a little deeper than the national average and seems to be lasting longer, though the latter conclusion is based on limited indicators that still may be revised. Year-over-year, the deepest employment decline was 1.7 percent

in Arizona and 1.0 percent nationally. Using seasonally adjusted monthly data, employment losses in Arizona began in April 2001 with more appreciable drops starting in September (the same timing as nationally). Monthly declines of about 3,000 employees in Arizona continued into the spring, while decreases had ceased nationally.

Retail sales in Arizona also continue to underperform the national average. Retail sales growth was weakest nationally from November 2000 through September 2001, with small declines year-over-year on an inflation-adjusted per person basis. Arizona's period of weakness began at the same time but continued into January 2002. Real per capita sales were down substantially during this period. While the figures for February and March were better, real losses continued on a per capita basis.

— **Tom R. Rex**
Research Manager

Arizona Business Conditions Index flat in May

The seasonally adjusted Arizona Business Conditions Index remained at 54.4 in May. An index reading over 50 indicates that the local economy is growing.

ANALYSIS

This marks the third consecutive month that the index has been over the critical 50-point level. An upward trend has been visible for seven months, driven mainly by a strong showing in production and new orders.

The sub-index of new orders had jumped to an astounding 64.9 in March, but since then it has given up some of that ground. In May it fell slightly to 55.0, which is still on the growth side of the fence. The production sub-index also fell, to 60.5 from 63.6 in April. This is still a very healthy showing.

The employment index leapt by seven points in May to reach 49.4. However, this is still slightly shy of the all-important 50-point mark, an indication that employment is not yet growing with the rest of the economy.

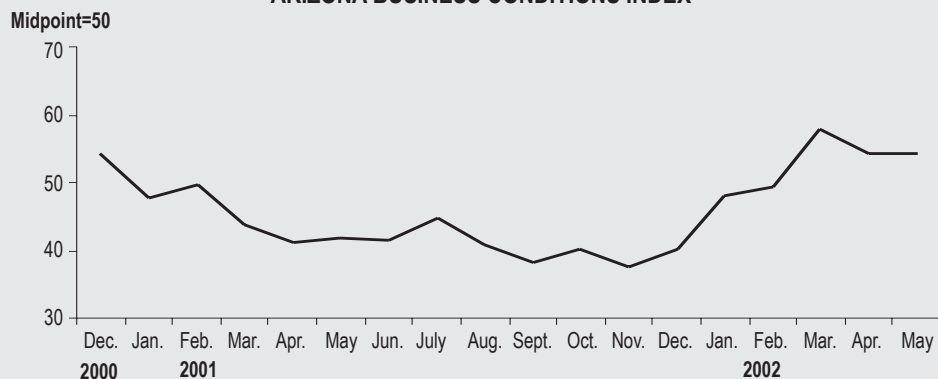
The Price Index rose to 54.2 in May from 50.3 last month. This moves prices from a neutral position into one in which there is upward pressure.

— **Dawn McLaren**
Research Economist
Bank One Economic Outlook Center

TABLE 1
ARIZONA BUSINESS CONDITIONS INDEX AND PRICE INDEX

| | Dec. | Jan. | Feb. | Mar. | Apr. | May |
|------------------------|------|------|------|------|------|------|
| Overall Index | 40.1 | 48.2 | 49.5 | 57.7 | 54.4 | 54.4 |
| Delivery Times | 48.7 | 56.9 | 56.2 | 58.5 | 54.6 | 54.6 |
| Purchased Materials | | | | | | |
| Inventory Levels | 26.7 | 37.5 | 35.5 | 48.3 | 46.1 | 46.5 |
| Purchases..... | 42.5 | 47.5 | 50.6 | 58.1 | 56.7 | 57.7 |
| New Orders | 42.6 | 51.8 | 49.2 | 64.9 | 57.5 | 55.0 |
| Production | 43.3 | 49.3 | 55.9 | 61.7 | 63.6 | 60.5 |
| Employment..... | 32.6 | 40.1 | 43.7 | 46.2 | 42.4 | 49.4 |
| Prices..... | 42.5 | 52.8 | 52.7 | 56.1 | 50.3 | 54.2 |

FIGURE 1
ARIZONA BUSINESS CONDITIONS INDEX*



*Excludes Price Index

Source (Table 1 and Figure 1): Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University.

Arizona Leading Index climbs in May

The Bank One Arizona Index of Leading Economic Indicators rose in May to 116.7. The index was above the revised 115.8 number for April and 5 percent above the May 2001 number of 111.1 (1987 = 100).

The inflation-adjusted value of the M2 money supply, employment from the Business Conditions Survey, the inflation-adjusted value of Maricopa County residential building permits, sensitive materials prices, and materials inventories were positive. Hours worked in manufacturing, new orders and production were negative. Delivery times were neutral.

The GDP figures for the first quarter of 2002 suggest that the economy clearly reaccelerated in the beginning of the year. The expectation is for the rate of growth for the remainder of the year to be more modest, in the 2.5 percent range. This is due primarily to the large impact of inventory resupply in the first quarter that will not be repeated in subsequent quarters. However, the economy may not be out of the woods. Business spending has yet to improve significantly and if it does not, the recovery could be in trouble. Employment growth has not recovered yet, but that is not surprising. Since 1970 employment growth has lagged improved GDP growth in all but one of the recessions. Employment growth can continue to fall for one or two quarters after GDP growth has resumed. Employment was still falling in the first quarter, and preliminary numbers suggest that the second quarter will also be negative.

Even with the uncertainties about the national economy, some people feel the nation's economic health is faring better than Arizona's. Employment is the only currently available statistic we can use to compare the two. Nationally, comparing month over the same month prior year, there have been job losses every month since September 2001. Arizona started losing jobs in November and has continued to do so through May. There are states that are doing better, and the percentage loss has been greater in Arizona than the national average since March — but it is clear that employment has not turned the corner, either nationally or locally. Arizona was hit hard by the slump in semiconductors and other high tech, but the economy benefited from the continued population growth and willingness of new residents to buy homes.

The impact of the fires in northeastern Arizona has not yet shown up in the num-

bers, but it will. In the short run, unemployment will increase and the state's already precarious budget situation will be made even worse. In the medium term, the money flowing from the federal government and insurance companies will fuel a boom in construction and help get the local economies going again. The net impact of the fires long term is going to be negative — perhaps a big negative. The forecasts that it will take 100 years for the stands of Ponderosa pine to recover suggests that forestry, which is a large part of the economy for the White Mountain Apache reservation and the surrounding area, may shrink dramatically in the coming years. Of

course, human beings are very adaptable and residents of the area have weathered tough times before.

None of the components of the Leading Index will be directly affected by the fires. The five components from the business index give some hope that because of increased demand, business spending will increase sufficiently to avoid a double-dip recession. The six-month positive run of sensitive materials prices also suggests that we will dodge the bullet.

— Tracy Clark
Senior Economist

Bank One Economic Outlook Center

TABLE 1

NET CONTRIBUTION OF INDIVIDUAL COMPONENTS TO THE ARIZONA INDEX OF LEADING ECONOMIC INDICATORS

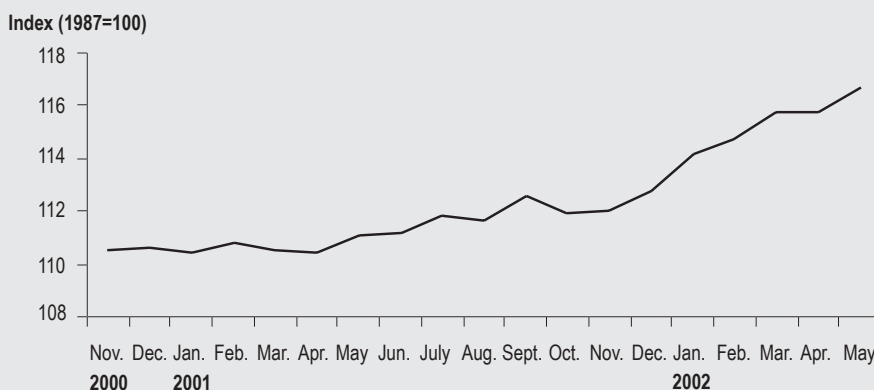
| | Net Contribution* | | | |
|--|-------------------|-------|-------|-------|
| | Feb. | Mar. | Apr. | May |
| Delivery Time* | -0.02 | 0.06 | -0.06 | 0.00 |
| Inventory Levels* | -0.04 | 0.25 | -0.02 | 0.01 |
| New Orders* | -0.04 | 0.20 | -0.05 | -0.05 |
| Production* | 0.10 | 0.10 | 0.07 | -0.05 |
| Employment* | 0.12 | 0.08 | -0.12 | 0.23 |
| Residential Building Permits | -0.20 | 0.05 | 0.11 | 0.21 |
| Average Workweek, Manufacturing | -0.04 | 0.07 | 0.14 | -0.07 |
| Money Supply | 0.23 | -0.20 | -0.36 | 0.43 |
| Change in Sensitive Materials Prices | 0.29 | 0.35 | 0.24 | 0.11 |
| OVERALL INDEX | 0.40 | 0.96 | -0.05 | 0.82 |

* The net contribution of each component is calculated by multiplying the monthly percent change in its index by its relative importance.

* Based on indicators from the Purchasing Management Association of Arizona, Purchasing Management Association of Southern Arizona and the Northern Arizona Group.

FIGURE I

ARIZONA INDEX OF LEADING ECONOMIC INDICATORS



Source (Table 1 and Figure I): Bank One Economic Outlook Center, L. William Seidman Research Institute, College of Business, Arizona State University.



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 Timothy D. Hogan, Center Director
 Nancy A. Maneely, Editor

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ARIZONA ECONOMIC INDICATORS

| | Month or Quarter | Current Value | Previous Value | Percent Change Previous Period | Percent Change from Year Ago | Year-to-Date | |
|--|------------------|---------------|----------------|--------------------------------|------------------------------|--------------|------------------------------|
| | | | | | | Value | Percent Change from Year Ago |
| LEADING ECONOMIC INDEX (1987 = 100) | | | | | | | |
| Arizona | May | 116.7 | 115.8 r | 0.8 | 5.0 | NA | NA |
| BUSINESS CONDITIONS INDEX | | | | | | | |
| Arizona | May | 54.4 | 54.4 | -0.1 | 29.6 | NA | NA |
| BUILDING PERMITS (Thousands of \$) | | | | | | | |
| Maricopa County | April | 684,997 | 728,012 | -5.9 | -4.4 | 2,713,844 | -19.1 |
| Pima County | April | 159,450 | 98,183 | 62.4 | 44.6 | 450,739 | 0.8 |
| Balance of State | April | 220,627 | 186,646 | 18.2 | 40.4 | 718,881 | 22.6 |
| Arizona | April | 1,065,074 | 1,012,841 | 5.2 | 8.2 | 3,883,464 | -11.5 |
| TOTAL HOUSING UNITS AUTHORIZED | | | | | | | |
| Maricopa County | April | 3,249 | 3,787 | -14.2 | -17.5 | 12,633 | -25.0 |
| Pima County | April | 913 | 591 | 54.5 | 36.7 | 2,714 | -5.7 |
| Balance of State | April | 1,785 | 1,434 | 24.5 | 42.8 | 5,810 | 15.7 |
| Arizona | April | 5,947 | 5,812 | 2.3 | 1.5 | 21,157 | -14.5 |
| HOME SALES | | | | | | | |
| Maricopa County - Number | April | 11,130 | 8,970 | 24.1 | 11.0 | 33,090 | 4.6 |
| Maricopa County - Median Price(\$) | April | 140,125 | 139,800 | 0.2 | 3.8 | 140,000 | 3.9 |
| HOUSING AFFORDABILITY INDEXES | | | | | | | |
| Metropolitan Phoenix - New Homes | 1st Quarter | 99 | 103 | -3.9 | 1.0 | NA | NA |
| Metropolitan Phoenix - Resale Homes | 1st Quarter | 112 | 117 | -4.3 | -4.3 | NA | NA |
| MORTGAGE RATES (30-year Fixed) | | | | | | | |
| Maricopa County | May | 6.5 | 6.7 | -3.0 | -4.4 | NA | NA |
| POPULATION ESTIMATES (Thousands) | | | | | | | |
| Maricopa County | 1st Quarter | 3,269 | 3,245 | 0.7 | 3.1 | NA | NA |
| Pima County | 1st Quarter | 881 | 877 | 0.5 | 2.1 | NA | NA |
| Balance of State | 1st Quarter | 1,286 | 1,277 r | 0.7 | 2.8 | NA | NA |
| Arizona | 1st Quarter | 5,436 | 5,399 r | 0.7 | 2.9 | NA | NA |
| RETAIL SALES (Millions of \$) | | | | | | | |
| Maricopa County | April | 2,618 | 2,739 | -4.4 | -1.3 | 10,122 | 0.0 |
| Arizona | April | 2,805 | 4,023 | -30.3 | -27.5 | 13,831 | -6.3 |

Note: The above figures reflect the latest data available as of date of publication and are subject to revision.

NA = Not Applicable r = Revised

Source: Center for Business Research, Arizona Real Estate Center, and Bank One Economic Outlook Center, affiliates of the L. William Seidman Research Institute, College of Business, Arizona State University. Retail sales data are from the Arizona Department of Revenue.