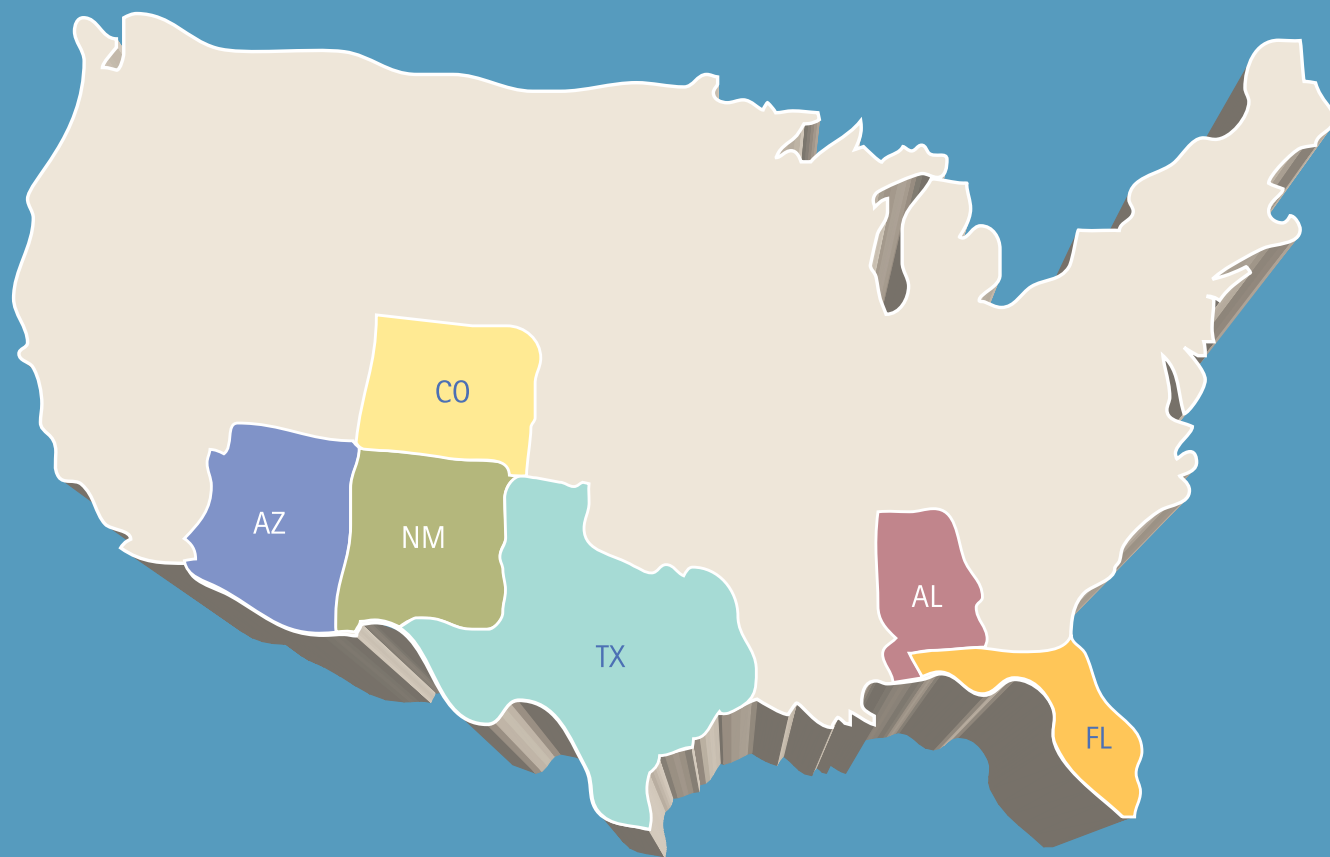


# US Regional Watch

Economic Research Department

Third Quarter 2008



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Closing date: August 29, 2008

## Third Quarter 2008

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## Letter from the Chairman

It is my pleasure to introduce to you the inaugural issue of the BBVA Compass *U.S. Regional Watch*.

As a quarterly analysis and forecast of the economies of the Sunbelt Region of the United States, the *U.S. Regional Watch* is intended to provide our customers—and our communities—with the kind of information necessary to make smart decisions in a competitive and increasingly complex global economy.

At BBVA, we believe that we grow along with the communities we serve through the creation of mutual value, that is, our successes are interconnected. With this in mind, we introduce this economic outlook publication as we begin to introduce the BBVA Compass brand throughout the Sunbelt region.

In what we call “blending the best,” we have merged BBVA’s four U.S. banks into one organization, combining the very best of the local banks with that of the BBVA Group to create one organization. The BBVA Compass brand signifies we are part of a global financial services leader with the strength, stability and capabilities to meet our customers’ needs at every stage of their business or personal life.

As a 151 year-old financial services company, BBVA first entered the United States more than 20 years ago by establishing a New York office to support the growth of our global businesses. Today, Compass Bank is a leading bank across the Sunbelt region with nearly 600 branches, more than \$61 billion in assets and regional leadership in the markets of Texas, Alabama, Arizona, New Mexico, Florida and Colorado.

The BBVA Group is recognized as one of the world’s strongest financial institutions, and our investment in research and analysis such as this *U.S. Regional Watch* is a cornerstone to our business strategy.

By sharing our research through this and many other publications produced by BBVA’s Economic Research department, we hope to give our customers valuable information that enriches and guides their business strategies. For example, in the “Regional Economic Outlook” section, we provide an in-depth look at the economic performance of each of the six states where you will find a BBVA Compass branch. The economies of these states continue to expand, with Texas leading the way, although the growth is at a generally slower pace than in 2007. On a macro level, we examine the role of renewable energy sources in meeting our long-term energy needs and evaluate the potential for these energy alternatives to be successful. These issues affect your business, and we are delighted to offer these insights to you for your consideration.

Again, I hope you find this first *U.S. Regional Watch* beneficial and will look to the BBVA Compass brand as your resource to help guide your business strategy and to deliver your financial services needs.

Sincerely,  
Jose Maria Garcia Meyer  
Chairman, BBVA Country Manager - U.S.

The Economic Research Team proudly presents the first issue of its newest publication, *U.S. Regional Watch*, which will be published on a regular basis. Our aim is to contribute to the debate on regional economics supported by strong analytical techniques. This follows the BBVA tradition of providing in-depth and thorough economic research to enhance the decision-making process in our communities.

Our goal is to recognize opportunities by analyzing those variables that determine economic performance within a geographical boundary, including urban centers, states and regions. These variables comprise industrial sectors as well as businesses, households, and government. Understanding the behavior of these agents and their interaction at local, regional and national level allows us to better forecast economic outcomes.

The scope of our analysis is the Sunbelt region, mostly in states that comprise the BBVA Compass footprint: Alabama, Arizona, Colorado, Florida, New Mexico and Texas. These states share strong fundamentals while they also show significant differences. As a result, the region has become one of the most attractive within the U.S., the biggest economy in the world. Since 1978, real GDP growth in the BBVA Compass Sunbelt has been positive every single year, averaging almost 4% per year, about 40% higher than in the rest of the country. In 2007, the nominal value of Sunbelt GDP was similar to that of France, the world's fifth largest economy.

Overall, this strong performance reflects solid productivity gains, ignited by significant improvements in the business environment, which were implemented in the mid-80's and 90's. These changes have boosted output in high-value added industries as well as increased demand for high-skilled workers. Some states have also managed to attract export-oriented industries which, over the last ten years, have benefited from increasing globalization. In addition, some western and southern states have enjoyed above-average population growth rates, supported by large net immigration inflows.

As part of our structural analysis, we include an article on renewable energy, which provides an overall perspective on the Sunbelt states. In addition, we analyze changes in the economic base during the last decade, using the traditional approach that computes location quotients with employment data.

Our analysis also covers short-term dynamics and in this occasion, we introduce to our readers the six BBVA Compass State Monthly Activity Indexes, with a detailed technical explanation on their construction and key results. These tools have been developed to track economic activity at the state level on a monthly basis and to capture turning points in the business cycle. In addition, we analyze several state indicators, which help us to explain recent economic trends and build our forecasts. Overall, the Sunbelt states will experience an economic slowdown although Texas will continue expanding at one of the fastest rates in the Nation. We hope our readers will find this publication useful and valuable.

## U.S. Economic Outlook

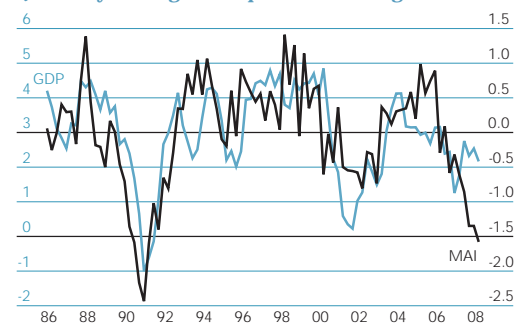
In 2Q08 quarterly real Gross Domestic Product (GDP) expanded at an unexpectedly high 3.3% seasonally-adjusted annual rate. This was mainly the result of strong net exports, which contributed with 3.1 percentage points to total growth. Solid demand abroad boosted exports while imports declined sharply. Personal consumption expenditures (PCE), which were temporarily heightened by tax rebates, increased 1.2%, following 0.6% on average during the previous two quarters. Consumers spent less than half of their extra income in both durable and nondurable goods, and the remainder was mainly used to pay down debt and increase savings. Non-residential investment continued softening as equipment and software declined for the second consecutive quarter. However, this was more than offset by strong growth in non-residential structures.

As suggested by BBVA U.S. Monthly Activity Index, GDP growth for 2H08 and 2009 will decelerate further, mainly as a result of weaker PCE. Ongoing job losses will dampen the pace of real personal income, while falling home and other asset prices are likely to reduce the value of household wealth. Non-residential investment will remain below trend as firms scale back production to cope with declining profits, on account of slower sales and higher input costs. Although tighter credit standards will exert additional pressures on capital spending plans, corporate balance sheets remain solid. Net exports' contribution to GDP growth will remain buoyant, though it will edge down as a result of global economic slowdown. As suggested by BBVA U.S. Housing Activity Index residential investment will continue to subtract from GDP growth but could bottom out by mid-2009. The main risk to our outlook is further deterioration of financial conditions.

In 1H08, headline inflation rose substantially due to a sharp increase in global commodity prices, which in turn pushed up short-term inflation expectations. However, core inflation—which excludes food and energy—remained contained as a result of decelerating shelter and medical costs, limited pass-through from higher non-labor costs, and relatively stable long-term inflation expectations. Going forward, we anticipate core inflation to gradually return to its long-term trend, as shown by BBVA U.S. Leading Inflation Index. This is the result of lower commodity prices and a decline in inflation expectations, both favored by weaker economic activity.

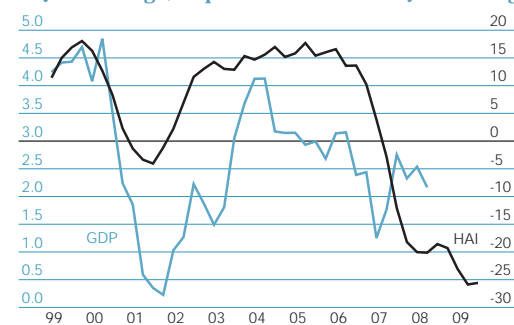
Since June 25<sup>th</sup> the Federal Reserve (Fed) has kept its target for the federal funds rate unchanged at 2%. This ended the rate cut cycle that started on September 18<sup>th</sup> 2007 when the Fed reduced the target rate to 4.75% from 5.25%. In just over seven months, the Fed cut rates by 325 basis points reflecting a high degree of uncertainty in the economic outlook derived from elevated risks associated with the financial turmoil. During 1H08, increasing concerns on the inflation outlook prompted the Fed to hold monetary policy steady and adopt a wait-and-see strategy. Going forward, the Fed will be cautious in raising interest rates anytime soon, mainly as downside risks to economic growth persist and inflationary pressures ease further. In fact, according to BBVA U.S. Recession Probit Model, the probability of an economic recession in the following six to nine months decreased throughout 1H08. Therefore, we expect the Fed to keep its target interest rate unaltered well into 2009.

**BBVA US Monthly Activity Index & Real GDP**  
Quarterly average & 4-quarter % change



Source: BBVA Compass and BEA

**BBVA US Housing Activity Index & Real GDP**  
4-Qtr % change, 4-quarters ahead & 4-Qtr % change



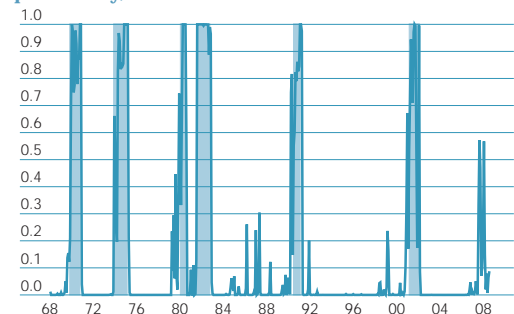
Source: BBVA Compass and BEA

**BBVA US Leading Inflation Index & Core CPI**  
12-month ahead, 12-month % change



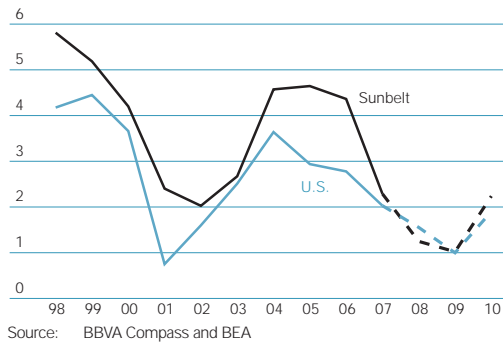
Source: BBVA Compass and BLS

**BBVA US Recession Probit Model**  
probability, shaded area = recession



Source: BBVA Compass and NBER

## Real GDP Growth Year-over-year % change



## Solid economic fundamentals will remain supportive of long-term growth

Economic growth in the states where BBVA Compass is present (AL, AZ, CO, FL, NM, and TX) will remain above the national average in the medium term, supported by solid fundamentals, such as population, income per-capita and output per hour. Productivity advances, that have taken place in the region over the past decade, have allowed some industries to improve their competitive position and to take advantage of globalization. In addition, growth has also been bolstered by a more favorable and flexible institutional framework. In the last ten years, economic growth averaged 3.8% for the six states, almost one percentage point higher than for the rest. As a result, in 2007 the economic weight of the region surpassed 18.5% of U.S. GDP, showing an increase of 1.5 percentage points in this period. The gain in this share is equivalent to 16% of the region's output.

However, from mid-2006 to 2008 the greater impact of the housing meltdown in some states has led to a sharper economic slowdown than nationwide. In fact, real GDP growth decelerated significantly in 2007 to 2.3% from 4.3% in the previous year. In the first half 2008, leading activity indicators pointed to an even lower growth rate which is likely to be slightly below the national average. We expect the region's GDP to grow 1.2% in 2008 and 1% in 2009. We anticipate a solid economic recovery reaching 2% in 2010. This is based on solid fundamentals which will support growth once the real estate market turns around.

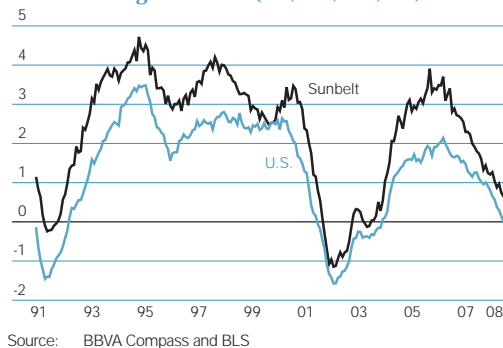
## Services are supporting employment growth in 2008

Since 2000, regional factors have played a key role in the expansion of certain industries, which explain why employment grew 50% over what it would have been under a productive structure similar to the national average. (See Box BBVA Compass Sunbelt Economic Base). In the current economic downturn, employment in the region continues expanding while it is already contracting nationwide.

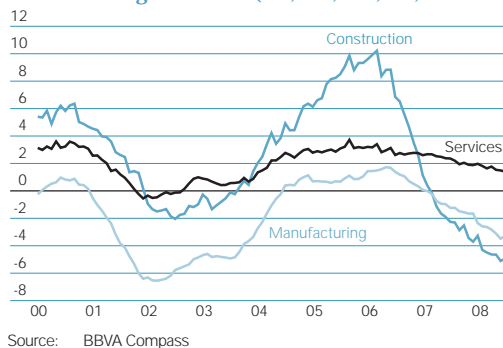
Since the beginning of 2007, employment growth has been supported by the services industry which has helped to mitigate the decline in both manufacturing and residential construction. These trends continued in the first six months of 2008, with 80,000 job cuts in manufacturing and construction, and almost 120,000 jobs created in the services sector, resulting in a net gain of roughly 40,000. By the end of June 2008, there were 26.5 million non-farm jobs in the region. This accounted for 19.2% of non-farm payroll, a 1.5 percentage points gain in total share since 2000. Despite positive job gains, at the end of the first half of 2008, the unemployment rate jumped 1 percentage point over the previous 12 months to 4.8%.

According to 2007 Census Bureau data, average personal income per capita in the BBVA Compass region was \$36,885, equivalent to 96% of national income per-capita. This is the result of outstanding economic performance which allowed the region to narrow the

## Non-farm Payroll 12-m % change. Sunbelt (AL, AZ, CO, FL, NM & TX)



## Non-farm Payroll 12-m % change. Sunbelt (AL, AZ, CO, FL, NM & TX)





income gap during the past decade. However, as economic growth slows down, the pace of personal income in the Sunbelt is leveling off. Indeed, in the first quarter 2008, personal income in the region increased 5.4% year-over-year, almost 1.5 percentage points below 2007's rate. These trends are likely to extend in 2H08 and probably throughout 2009.

### Region exports feature great dynamism

In the current decade, higher elasticity of exports to GDP in the BBVA Compass footprint reflects a greater export capacity. In fact, the region's share in total U.S. exports increased notably. Since 2002, regional exports expanded 10% per year on average, which was 1.5 percentage points above the national rate. In the first quarter 2008, regional exports increased 14.9% year-over-year and surged 21.1% in the second. Meanwhile, the share of the region's exports reached 22.4%, more than two percentage points higher than in 2000.

The surge in exports growth has been favored by a weak dollar and the solid economic expansion of the U.S. main trading partners such as Canada, Mexico, China and the European Union. In the first half 2008, one third of the region's exports were directed to Mexico and Canada. Meanwhile, exports to South America and Asian markets increased solidly and above average.

### The residential meltdown will extend until 2009

The higher growth rate in population and the existence of a solid tourist industry in the region, particularly in Arizona and Florida, attracted large capital inflows towards the real estate sector. This boosted housing construction above the national trend in the first half of this decade. In fact, from 2000 through 2006, housing sales in the six states rose annually at a 7.1% rate while residential construction increased 7.2%. These rates were significantly higher than those at the national level of 4.8% and 5.0%, respectively.

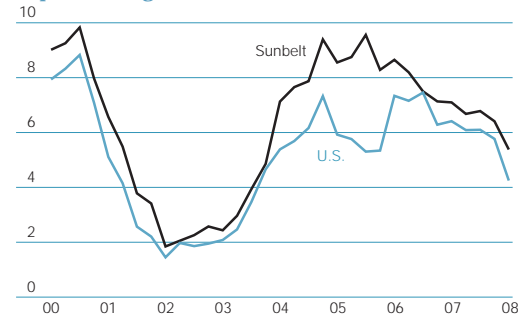
From 2000 through 2005, the construction industry contributed an average 0.5 percentage points to the region's annual economic growth, almost twice the national rate. However, starting in 2006, this trend reversed and turned negative, as both housing production and sales experienced a deeper adjustment than in other regions. As a result, in 2007 construction activity subtracted 0.6 percentage points to GDP growth. This was the first negative contribution since 2003.

In 2008, the residential market is not showing any signs of recovery, as both housing sales and building projects continued to decline. The current weakness in the labor market and the tightening of lending standards curb opportunities for a swift recovery, and suggest that activity will remain weak throughout 2009. Three conditions are crucial for a sustained recovery: an upturn in consumer expectations, more attractive housing affordability ratios, and the recovery of the financial system's solvency.

Despite the reduction in the supply of new homes, the number of houses for sale remains at a record high. This over-supply along with

### Personal Income

4-qtr. % change. Sunbelt (AL, AZ, CO, FL, NM & TX)



Source: BBVA Compass and BEA

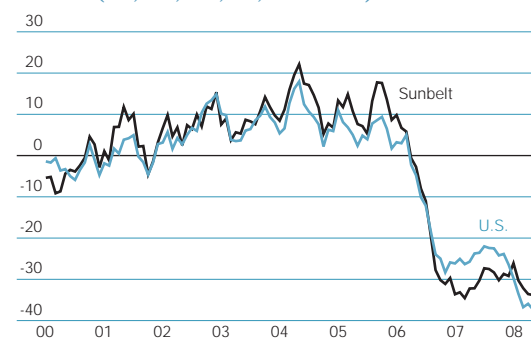
### Exports Elasticity to GDP Sunbelt/U.S.



Source: BBVA Compass

### Building Permits

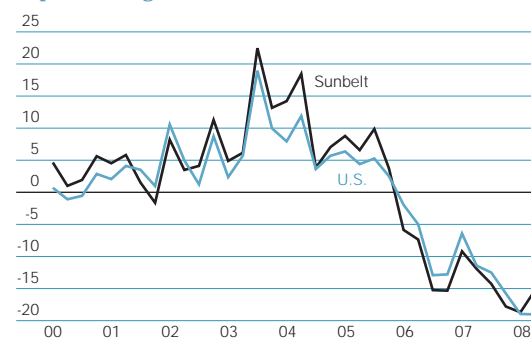
3-month moving average, 12-month % change. Sunbelt (AL, AZ, CO, FL, NM & TX)



Source: BBVA Compass and Census

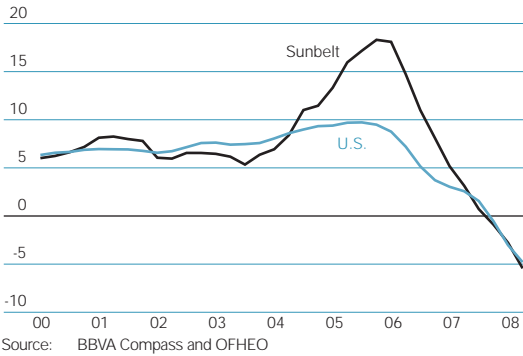
### House Sales

4-qtr. % change. Sunbelt (AL, AZ, CO, FL, NM & TX)

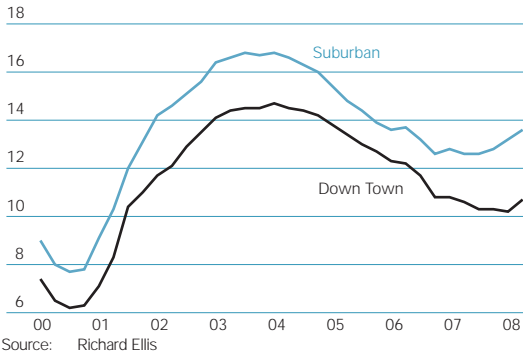


Source: BBVA Compass and NAR

**House Prices**  
**4-qtr. % change. Sunbelt (AL, AZ, CO, FL, NM & TX)**



**Commercial Real Estate**  
**Vacancy rate, %**



**Leading Commercial Real Estate Index**  
**4-quarter % change**



decreasing demand are causing home prices to drop substantially in some local markets, particularly in the major metropolitan areas of Florida and Arizona. In other cities, home prices experience lower gains and in some cases, they are stagnant or slightly declining. As a result, in the first half of 2008, the weighted home price index for the BBVA Compass Sunbelt dropped more deeply than the national average. This trend will continue throughout 2008 and it will probably not be until late 2009 when home prices stabilize. However, the situation of the housing market is far from being homogeneous in the entire footprint. Along with the volatile markets of Florida and Arizona, there are relatively stable markets in Texas and Alabama.

**First signs of weakness in non-residential real estate**

Despite diversity among metropolitan areas, commercial real estate in the region is following one common trend, which is characterized by a decrease in the vacancy ratio and an increase of leases above inflation. The latter has resulted in significant returns on commercial real estate assets. The increases in household consumption and service-related employment have supported retail and office markets. However, the current economic slowdown is increasing vacancy ratios in some local markets. Leases have stagnated, particularly in some metro areas of Florida and Arizona.

Even though there is a limited to the excess supply of commercial real estate, in the short term the recent decrease in demand poses an additional risk. However, in the medium term economic recovery will stimulate demand for commercial real estate and eventually will clear the market and stabilize prices. Given the high weight of commercial real estate financing in the portfolios of most commercial banks, further deterioration in the quality of these assets introduce new elements of stress to an already tense financial system. In fact, in June 2008, the national default rate for commercial property doubled from year end 2007, although it remains at historically low ratios.

**Financial sector still under pressure**

The ongoing deterioration of the residential mortgage crisis had a negative effect on the banking industry in the first half of 2008, as institutions faced lower income, higher delinquency ratios, increasing number of non-current loans, greater loan losses and higher loss provisions. These trends have led to lower earnings and a decrease in total assets. As a result, the percentage of non-profitable institutions increased significantly to 13% at the end of second quarter of 2008, from 4% in the previous year.

When adding commercial banking data for the six states of the BBVA Compass Sunbelt, industry performance and portfolio condition ratios were similar to the national trend: net operating income decreased while net interest margin remained stable. The percentage of unprofitable institutions reached 17% of total, reflecting a sharp increase in Arizona and Florida.

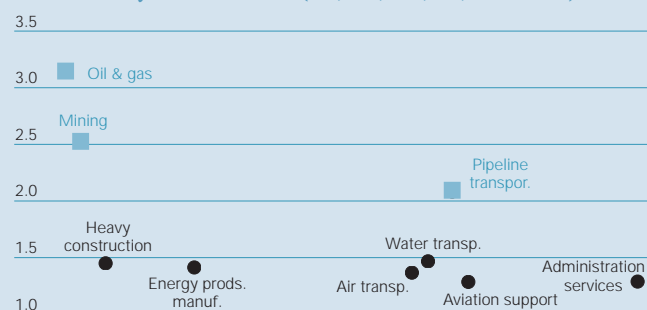


## BBVA Compass Sunbelt Economic Base

The BBVA Compass footprint (AL, AZ, CO, FL, NM and TX) can be seen as an economic region, with its own characteristics and peculiarities which are, to some extent, different from the national archetype. When analyzing the economic base of the region it is evident that the competitive advantages lie mainly in mining, energy, construction, real estate, administrative services and tourism. The location quotient of these industries was above 1.05 in 2006.<sup>1</sup>

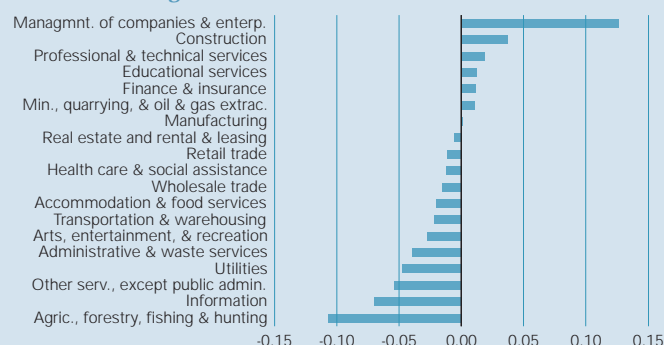
Relative to the industrial structure prevailing in BBVA Compass footprint at the beginning of this decade, the changes produced in the location quotients suggest that, during this 8 year period, these states have attracted high value-added sectors such as management of businesses, professional services, and insurance and finance. At the same time, some low value-added sectors gradually lost their relevance (commerce, transportation and warehousing, or administrative services). This shift in the regional economic basis, toward more dynamic industries, have improved potential regional economic growth.

### 1 Sunbelt Employment Location Quotients Industries LQ > 1.2. Sunbelt (AL, AZ, CO, FL, NM & TX)



Source: BBVA Compass

### 2 Sunbelt Location Quotients 2001-2006 change. Differences



Source: BBVA Compass

According to our calculations, over the past five years, individual features of the region such as vast natural resources, solid demographic trends, a favorable institutional framework, together with the change in the industry mix, allowed higher employment growth rates, that would have otherwise been if the industry mix had remained similar to the national pattern. In particular, since 2000 the dynamism in the national economy would explain the creation of 37.8% of the jobs generated in the BBVA Compass Sunbelt, while the specific characteristics of the region account for 52.7% of the total. The remaining 9.6% is attributable to the composition of the industrial mix. Health care, energy, tourism, and leisure related industries have benefited from the existence of industrial clusters located across the region. Meanwhile, industries such as finance and insurance, real estate, professional services and, company management have been more favored by distinctive local factors.

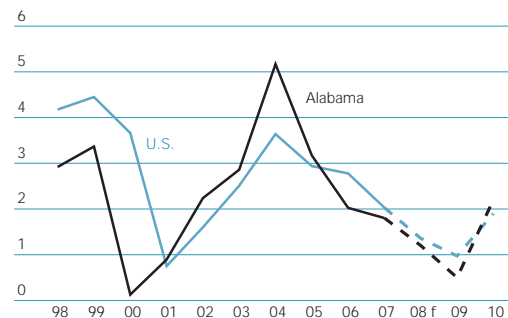
1 A location quotient above (below) one implies a higher (lower) share of the industry in the state economy than national average.

### 3 Sunbelt Employment Change (2001-2007). Shift Share Analysis

Industry	Employment change	Share	Mix	Shift
<b>Total, all industries</b>	<b>1,634,857</b>	<b>37.8%</b>	<b>9.6%</b>	<b>52.7%</b>
Mining, quarrying, and oil and gas extraction	43,981	14.4%	55.7%	30.0%
Construction	321,876	14.5%	42.3%	43.2%
Manufacturing	-205,974	-33.5%	182.6%	-49.1%
Information	-114,525	-18.3%	108.3%	10.0%
Finance and insurance	133,005	23.7%	25.3%	51.0%
Real estate and rental and leasing	47,305	29.3%	25.2%	45.5%
Professional and technical services	186,684	20.5%	29.2%	50.3%
Management of companies and enterprises	56,556	8.0%	2.3%	89.7%
Administrative and waste services	169,421	33.9%	43.9%	22.2%
Health care and social assistance	386,815	17.7%	58.4%	23.9%
Accommodation and food services	270,113	22.9%	51.4%	25.7%

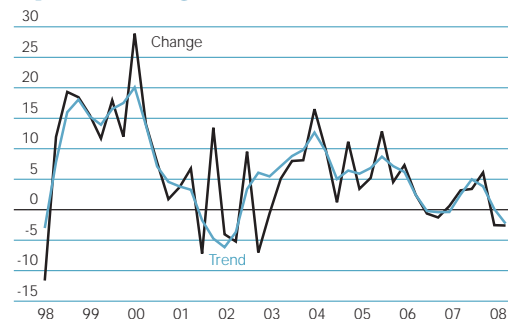
Source: BBVA Compass

### Real GDP Growth 4-quarter % change



Source: BBVA Compass and BEA

### Domestic Car Sales Excluding Big 3 4-quarter % change and trend



Source: Atlanta Federal Reserve

### Alabama Exports As % of total US



Source: BBVA Compass and WISER Trade

### Philadelphia Coincident Index 12-month % change



Source: BBVA Compass and Philadelphia Federal Reserve

## Alabama

### Economic growth will continue to decelerate

The current economic slowdown is having a greater impact on Alabama than in the U.S. We expect this trend to continue in coming quarters with GDP growth at 1.2% in 2008 and 0.5% in 2009, both below national average.

The shift toward manufacturing undertaken since the beginning of the decade, together with certain improvements in the industrial mix, which led to a higher export share, gave way to a faster growth rate than the U.S. between 2002 and 2005. However, in the next couple of years these shifts will not play out as well.

### Lower consumer demand weighs on the local manufacturing industry

The growing concentration in car manufacturing has increased the state's sensitivity to the global automobile cycle. Since 2006, GDP growth has been constrained by the considerable decline in domestic vehicle sales. The pressures intensified with the significant decline in exports that took place since mid-2007.

These developments continued in the first half of 2008, as output and employment in the manufacturing industry declined more than 2.5%. In addition, contrary to national trends, exports growth in Alabama decelerated from 9.5% to 6.4% year-over-year in the first two quarters of 2008. This moderation reflected a 5.5% growth rate in manufactured goods and 29% increase in non-manufactured products. Not surprisingly, since mid-2005 the State Coincident Index published by the Philadelphia Federal Reserve, has shown a deterioration in economic activity that has worsened in recent months.

Similar to the rest of the country, the decline in residential real estate activity has accelerated since 2006. This has been confirmed by the continuous reduction of building projects, which fell by an average rate of 30% in the first half of 2008. The decrease has been greater in single-family than in multi-family homes. Despite the residential slowdown, house prices have been increasing moderately statewide over the past couple of years. Overall, the national housing meltdown has had a lower economic impact in the local markets.

### Income per-capita increases faster than the national average

Interestingly, the residential building crisis is having a mild impact on construction employment, as activity in commercial real estate and infrastructure projects continue to add jobs. Together with a slight increase in employment in the services sector, job losses in the manufacturing sector are being offset. The unemployment rate has been increasing and at the end of the second quarter of 2008, it reach 4.7%, well below U.S. average.

Since 2000, the state income per-capita has risen more than the national average, due to structural improvements and solid job creation. In 2007, according to the Bureau of Economic Analysis,

income per-capita reached \$32,404. While it still stands at 86% of national average, it was 6 percentage points higher than in 2001. This improvement supports the stability of the regional economy.

### Changes in consumers' preferences generate new opportunities for the auto industry

The declining demand for vehicles poses a downside risk for Alabama in the near future. The high cost of fuel and the uncertainty of where prices will be in the long-term are two structural factors altering demand for automobiles as consumers are beginning to favor more fuel-efficient vehicles. Nonetheless, this also opens a window of opportunity if the local industry succeeds to focus on producing more efficient models.

## Arizona

### A more intense economic adjustment than in other states

Arizona's real economic growth has dropped severely from 9% in 2005 to just 1.8% in 2007, reflecting a sharp decline in local residential construction and lower manufacturing output. Available data for 2008 suggests that the slowdown will continue through the rest of the year and that the economy could decrease 0.1%. There is no recovery in sight as our estimates point to 0.3% decline in 2009 real GDP. Further deterioration of housing demand and the limited impulse from the national economy are the elements behind our forecast.

Weak economic growth in recent quarters was mainly due to a fall in residential investment. The adjustment in the housing sector has been greater in Arizona than in the U.S. Current building permits are half the level of 2006, and declined 45% year-over-year in the second quarter of 2008. This drop contributed to a 15.1% decrease in construction employment in July 2008.

### Housing weakness will continue throughout 2009

Over the past 20 years population in Arizona has almost doubled, mainly due to the attractiveness of the state as a retiree destination. On average, Arizona's population grew by 3.2% per year since the mid 80's, almost three times the U.S. rate. As a consequence, the share of residential construction in GDP rose to a maximum of 9% in 2006. This construction boom led to a high rate of employment growth, which averaged 3.9% over the past 20 years, and compares favorably to the 1.7% growth in the U.S. during the same period.

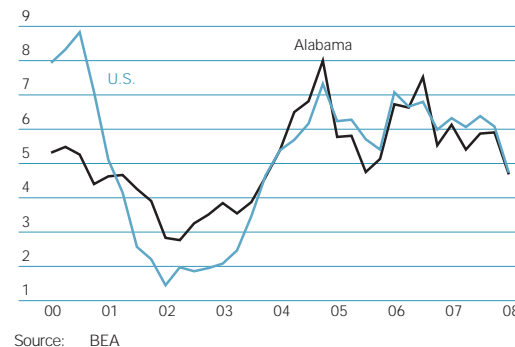
In 2006, these trends began to shift as housing demand weakened significantly and home sales declined sharply. During 2007 and the first quarter of 2008, the average number of existing homes sold was half of those in 2005. In the second quarter of 2008, extensive sales of homes in foreclosure, at significantly lower prices, helped to recover demand temporarily. Whether this is the end of the downturn remains uncertain and in any case, prospects are not bright for Arizona in 2009.

### The state's industrial mix is shifting toward low value-added sectors

Over the past eight years, the state's industrial mix has deteriorated slightly as some high-technology industries have lost footing while

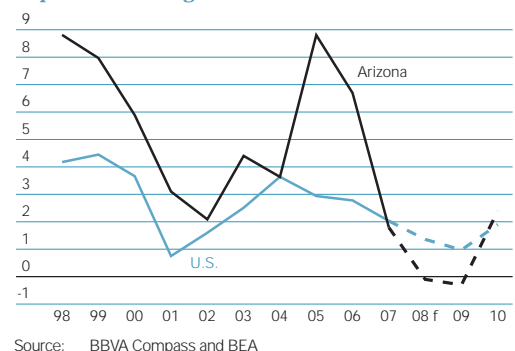
## Personal Income

### 4-quarter % change



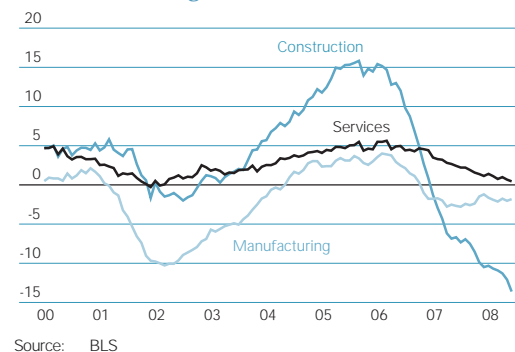
## Real GDP Growth

### 4-quarter % change



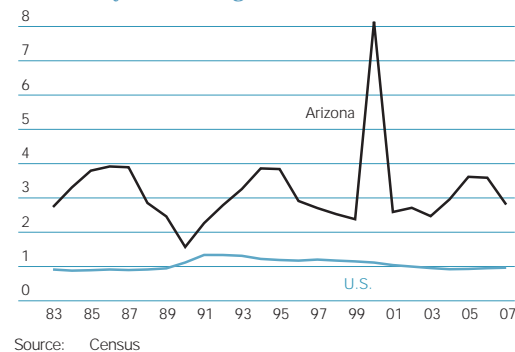
## Non-farm Payroll

### 12-month % change

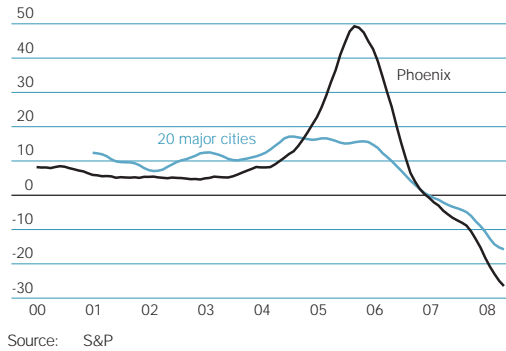


## Population Growth

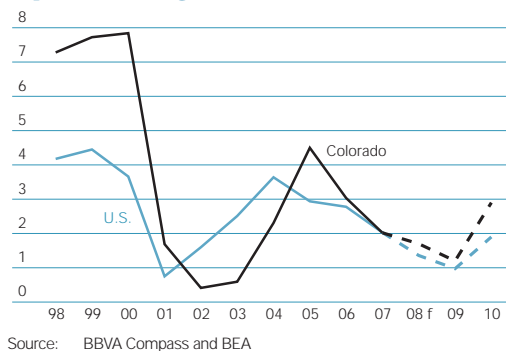
### Year-over-year % change



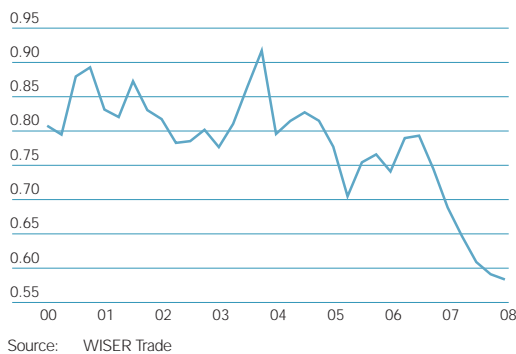
### House Price Index 12-month % change



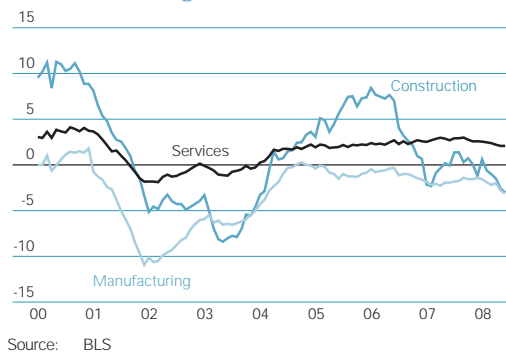
### Real GDP Growth 4-quarter % change



### Colorado Exports As % of total US



### Non-farm Payroll 12-month % change



lower value-added industries have increased their share. This has negatively affected exports growth and the state's relative importance in U.S. foreign trade. These developments, in addition to the significant impact of the housing meltdown, confirm that output will remain sluggish in the absence of a clear driver. Therefore, economic recovery will mainly depend on the upturn of the real estate market.

The sharper depreciation in residential prices in major metropolitan areas is likely to erode household wealth significantly, thereby restraining the recovery in private consumption. This risk is particularly significant in Phoenix, where existing home prices dropped 28% year-over-year in June 2008, according to the S&P Index. This metro area accounts for almost two out of every three state inhabitants. Moreover, as indicated by OFHEO, in the second quarter 2008 Arizona's home prices fell 9.2% vs. -1.7% in the US.

## Colorado

### Solid fundamentals and high potential economic growth

In recent years, the job market has gradually shifted toward high value-added industries like communications, information and energy. This has allowed the state to better absorb the current economic downturn. In fact, our forecasts indicate that economic activity will moderate to 1.7% in 2008 and 1.2% in 2009, after a 2% real GDP growth rate in 2007. This is significantly milder than most other states. Therefore, with a lesser impact from the housing crisis and good prospects for mining and energy, Colorado faces a more positive economic outlook than most other states both in the short and medium term.

Since 2001, the location quotients (the higher the location quotient, the more attractive the region is for the industry) of the more dynamic industries in the economy have improved, while industries such as construction, administrative services and wholesale sales have lost their relative positions. The shift in the industrial mix has improved regional economic resilience and increased the potential growth rate to a higher level than the national average. This will play out nicely in the medium term.

On the negative side, throughout 2007 and in the first half of 2008, Colorado's exports dropped slightly, reducing their share in U.S. total, particularly in non-manufactured goods, which are more dependent on market fluctuations. In addition, residential construction has weakened, although at a lesser degree than the national average.

### A solid labor market

The lesser impact of the real estate crisis, the dynamism in the energy industry and robust tourism are supporting the labor market. Employment growth was 1.3% in the second quarter 2008, boosted by solid gains in the services sector which offset the declining trend in manufacturing and the recent setback in the construction industry.

Despite solid job creation, the unemployment rate climbed above 5% at the end of the second quarter 2008, the highest in the last three years. This is partially explained by a 2% population growth

in 2007 and a rebound in the participation rate. However, the slack in the labor market remains well below the national average. These developments combined with a high-skilled workforce support solid income per-capita growth which stands 10% above U.S. average.

### However, residential market risks still on the run

Similar to other regions, one of the greatest risks in the short term is the potential collapse of the housing market. Ongoing declines in home demand could lead to further price depreciation, thereby reducing families' wealth and straining the state's financial system. An additional risk would be a bigger-than-expected economic slowdown in the U.S. which would trigger a drop in tourism and domestic demand.

## Florida

### The hardest regional economic downturn in the past 25 years

Florida is one of the regions most affected by the real estate melt-down. As a consequence of the quite intense decline in residential prices, a steep slowdown in income, and a rise in energy costs; consumers' real disposable income and wealth are weighing down consumer confidence. Not surprisingly, in the second quarter of 2008, consumption expenditures grew at the lowest rate in the past 25 years, according to the University of Florida Index.

The available economic data for the first half 2008 has shown an ongoing deterioration, and there is no evidence pointing to a change in trend. According to our estimates, real GDP in 2008 will decline 0.9% year-over-year. In 2009, we expect a smaller contraction of 0.1%, as the drag from the residential construction adjustment gradually fades away. This expectation foresees no rapid recovery in the manufacturing and services industries.

Although Florida was practically immune to the manufacture-driven slowdown at the beginning of the decade, its economy has been severely hit this time. The decline in residential construction has negatively affected its auxiliary industries. Overall, the outlook for industrial activity can hardly be sanguine in the next couple of years. The consequences for employment have been severe.

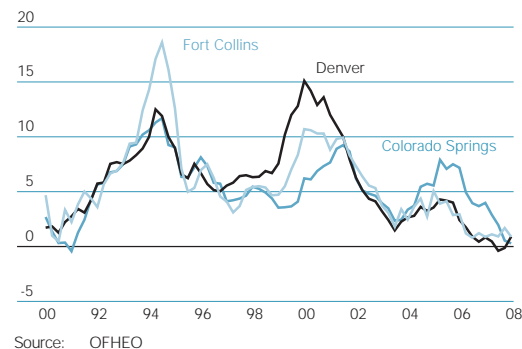
In 2Q08, employment in construction decreased at an annual rate of 13.5%. In addition, the deterioration in manufacturing and weakness in services sector reveals a lack of dynamism in the labor market. In the first half 2008, almost 80,000 jobs were lost; almost 20% of national job losses in the non-farm payroll. In this environment, the unemployment rate jumped to 5.5% in June 2008 from 3.5% in June 2007.

### Further declines in house prices will help to clear excess inventories

Throughout 2008, both construction and home sales remained quite fragile and have shown notable decreases in most metropolitan areas. Demand weakness, excessive supply, frail underwriting standards, and a high degree of speculation help to explain the strong downturn

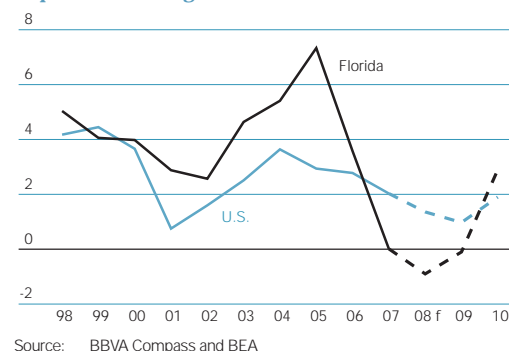
## Metro Areas Housing Prices

### 4-quarter % change



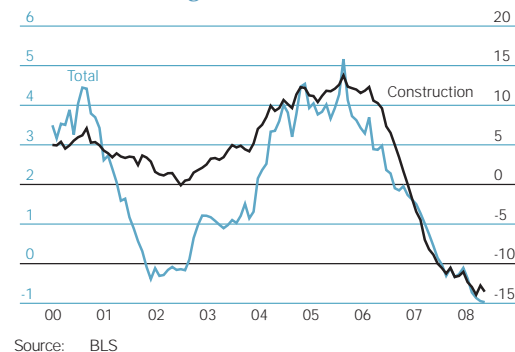
## Real GDP Growth

### 4-quarter % change



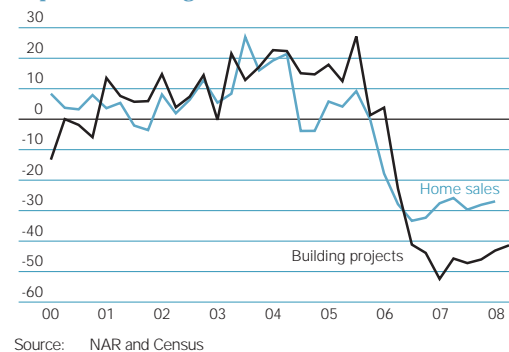
## Non-farm Payroll

### 12-month % change and rate



## Housing Market

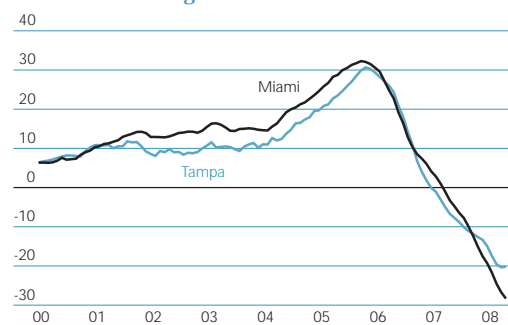
### 4-quarter % change





## Housing Price Index

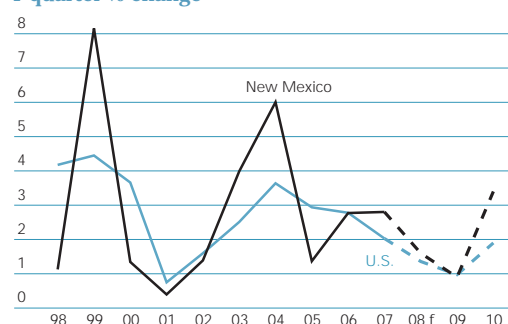
12-month % change



Source: S&P

## Real GDP Growth

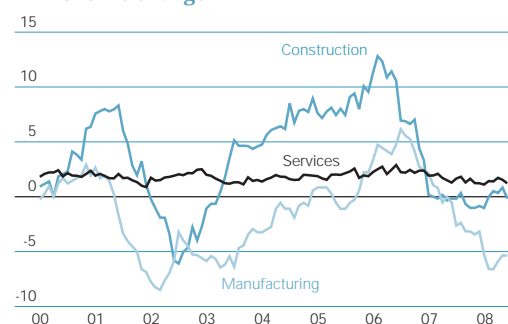
4-quarter % change



Source: BBVA Compass and BEA

## Non-farm Payroll

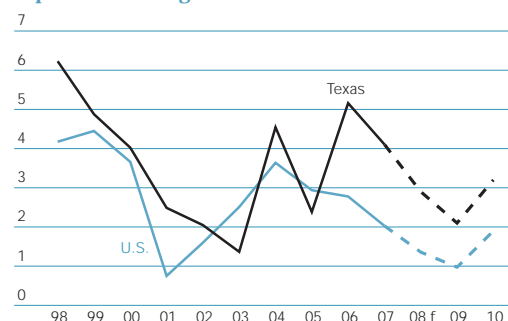
12-month % change



Source: BLS

## Real GDP Growth

4-quarter % change



Source: BBVA Compass and BEA

in residential prices. In fact, according to OFHEO, by mid-2008 home prices were 10% below their peak reached back at the end of 2006. In some cities, such as Tampa and Miami, the decline in prices has been even sharper, with year-over-year rates of -25% in the former and -28% in the latter, according to the latest S&P data.

One of the most pressing short-term risks is the potential deepening of the crisis affecting the commercial real estate segment, which would drive the sector to a much more delicate situation and would worsen the already high mortgage default rates.

## Long-term potential economic growth remains positive

Notwithstanding this gloomy short-term outlook, we should not lose sight of the solid long-term prospects. The demographic dynamism that has been driving long-term growth is unlikely to disappear, as the aging population process continues. In addition, the state benefits from an attractive geographical position. Moreover, Florida's fast growth in high-tech industries will improve productivity gains and thus, potential economic growth.

## New Mexico

### Slight economic moderation

Following two years of increasing economic strength, employment and activity indicators showed deterioration in early 2008, suggesting that the state economy will moderate during this year. In fact, our forecasts indicate that GDP growth will be slightly above 1.6% in real terms, and that it will reach 0.9% in 2009. The peculiar regional industrial mix, very much oriented to raw materials and energy, together with a high concentration of federal government employment (23% of total non-farm payroll), explains this better-than-average performance under current circumstances.

The rise in services employment has mitigated the losses in manufacturing and residential construction since mid-2007. The strength of services also explains why the labor market has been relatively dynamic and why the unemployment rate has remained below the national average.

Currently, there are two main risks for New Mexico's economy. First, a dramatic decline in commodity prices that would significantly reduce state income. Second, a deeper correction in the real estate market could harm job creation and household wealth.

## Texas

### Outstanding economic growth in the long-term

In 2007, Texas grew at a rate of 4.1%, which was 1.9 percentage points above the U.S. average. This dynamism has translated into robust job creation and personal income gains of almost 2 percentage points above the national average. Data for the first half 2008 suggests that Texas will continue to grow in the second half, although at a slower rate. We forecast real GDP growth of 2.9% in 2008 and 2.1% in 2009.



The rise in labor productivity and exports —slightly higher than the U.S. average—, together with the strengthening of the state's industrial mix and high commodity prices, have supported Texas stellar economic performance for almost two decades. We expect these trends to continue on a firm footing over the medium and long term.

### Solid labor market and strong demographics

In the first half of 2008, high energy prices provided a strong boost to the oil industry, acting as a shield against weakness in the rest of the economy. Additionally, moderation in real estate construction is having a lower impact than in other regions, and the deceleration in residential activity has not affected net employment in construction through the first half of 2008. Moreover, employment growth in services is helping to contain the moderation in other industries. In fact, in June 2008 non-farm payroll increased 2.4% year-over-year.

The state's industrial mix orientation towards high value-added industries has pushed up the demand for skilled workers. This will help to generate new jobs and prevent the unemployment rate from rising rapidly. In fact, at the end of second quarter 2008 the unemployment rate was 4.4%, more than one percentage point below that of the U.S.

### Residential prices show resilience

According to the Census Bureau, Texas population increased around 2.1% year-on-year to 24 million in 2007. This rate doubled national average and reflected the dynamism of large metropolitan areas. In fact, in the same period, four out of the ten most dynamic metropolitan areas in the Nation are located in Texas.

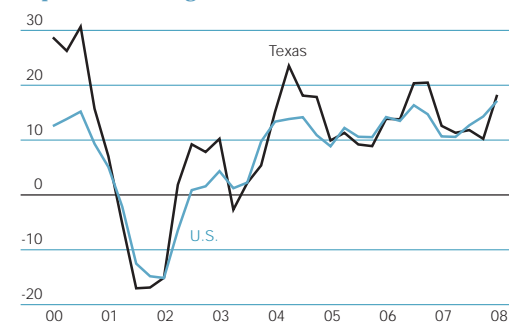
Increases in employment and population, together with solid gains in family income, continue to support demand in the real estate market. In addition, construction has kept pace with demand, thereby avoiding an excessive home oversupply. As a result, house prices have continued to increase at sustainable levels. According to OFHEO, in the second quarter 2008 residential prices increased by more than 3% year-over-year, while at a national level they declined 1.7%. An analysis of housing price data shows that these are much more stable in Texas than in the U.S. both in upturns and downturns.

### Short- and long-term risks remain well contained

Significant risks arise from further deterioration in the U.S. and the global economy, which could drag down manufacturing output and investment. In addition, a dramatic drop in energy prices, or even high volatility, could hamper prospects for the industry with potential spillover effects to other sectors. In any case, we expect Texas to outperform the U.S.

### U.S. and Texas Exports

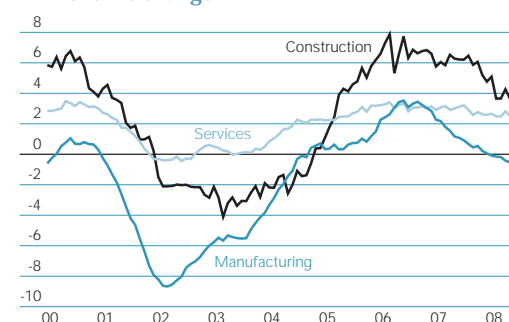
4-quarter % change



Source: WISER Trade

### Non-farm Payroll

12-month % change



Source: BLS

### Population Growth 2007/2006

	Number	%
Dallas-Fort Worth-Arlington, TX	162,250	2.7
Atlanta-Sandy Springs-Marietta, GA	151,063	2.9
Phoenix-Mesa-Scottsdale, AZ	132,513	3.3
Houston-Sugar Land-Baytown, TX	120,544	2.2
Riverside-San Bernardino-Ontario, CA	86,660	2.2
Charlotte-Gastonia-Concord, NC-SC	66,724	4.2
Chicago-Naperville-Joliet, IL-IN-WI	66,231	0.7
Austin-Round Rock, TX	65,880	4.3
Las Vegas-Paradise, NV	59,165	3.3
San Antonio, TX	53,925	2.8
<b>Total 10 Top</b>	<b>964,955</b>	<b>2.9</b>
<b>Total M.S.A.</b>	<b>2,653,960</b>	<b>2.3</b>

Source: Census

### Texas Location Quotients

2006 - 2001 change



Source: BBVA Compass

## BBVA Compass State Monthly Activity Indexes (SMAI)

### Motivation

In order to have an accurate and timely diagnostic view of macro economic fluctuations in the BBVA footprint, we developed a State Monthly Activity Index (SMAI) for Alabama, Arizona, Colorado, Florida, New Mexico and Texas. The SMAI is designed to capture a common underlying trend in a set of economic indicators. The index also allows us to identify turning points in the business cycle, and is a timely measure of current economic conditions—an important advantage compared with typical gauges like Gross Domestic Product, which is released on a yearly basis with a significant lag.

In addition, the BBVA Compass SMAI combined with out-of-state variables can be used to build models to better forecast state real GDP growth. Methodologically, this index follows BBVA US-MAI which is based on the Chicago Fed National Activity Index, which is in turn based on Stock and Watson (1999) methodology.<sup>1</sup> BBVA Compass SMAI adds to other state business cycle indicators, such as those developed within the Federal Reserve System, including the Philadelphia Fed State Coincident Indexes, the Dallas Fed Texas Business-Cycle Index and Texas Leading Index, and the Atlanta Fed Six District Common Economic Factor.

### Analytical Framework

To construct the BBVA Compass SMAI, we used a statistical technique known as Principal Components Analysis (PCA).<sup>2</sup> This approach is based on the idea that there is a common factor in the co-movement of several economic indicators. The PCA technique calculates  $n$ -linearly independent series that reproduce the variability of  $n$ -correlated indicators, and assigns a specific weight to each variable based on the information that it contains.

In addition, the PCA procedure eliminates linear combinations with the lowest explanatory power. Before using the PCA technique prior steps involve the transformation of data in order to correct for seasonality, render the series stationary, eliminate aberrant observations and standardize the resulting series. After obtaining the weighted series we re-normalize it to have zero mean

and a standard deviation of one, so that readings above/below zero imply that the economy expands above/below its long-term rate.

### Data

To render the indices comparable across states, we selected a set of common economic indicators. Given that data availability increases over time, we calculated the indexes using two sub-samples. The first tranche, which runs from 1976 to 1996, has a limited number of variables, but captures several business cycles. The second tranche, which runs from 1997 to 2008, includes three times more variables and thus covers a broader spectrum of economic activity. Data sources are: non-farm payroll employment, the unemployment rate, building permits, exports of goods, personal income, and home prices, estimated by OFHEO.<sup>3</sup> Personal income, exports and home prices were interpolated from quarterly data, while the remaining variables are available on a monthly basis.

### Main Results

**Alabama's** SMAI points to subpar growth in 2008 and 2009 following above-trend growth during 2002-2007, when the state had its best economic performance in at least 20 years. According to the index, the current deceleration appears considerably milder than that experienced at the beginning of the decade and much softer than that of the late '70s and early '80s, probably reflecting solid export growth and moderate fallout from the housing downturn.

**BBVA Compass Alabama Monthly Activity Index**  
3-month moving average



Source: BBVA Compass

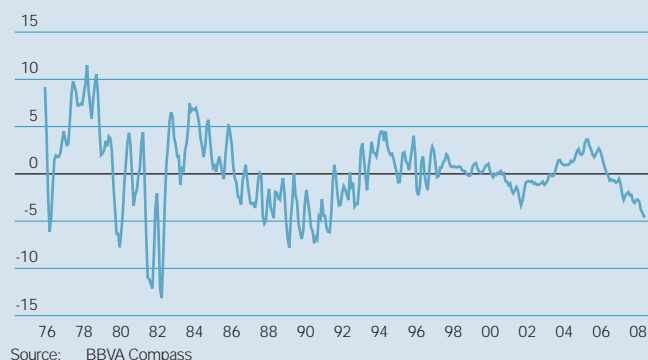
<sup>1</sup> James Stock and Mark Watson, 1999, "Inflation forecasting". Journal of Monetary Economics.

<sup>2</sup> The reader could find a comprehensive explanation of the PCA technique at Smith, Lindsay, (2002), "A tutorial on Principal Components Analysis", [http://csnet.otago.ac.nz/cosc453/student\\_tutorials/principal\\_components.pdf](http://csnet.otago.ac.nz/cosc453/student_tutorials/principal_components.pdf)

<sup>3</sup> Office of Federal Housing Enterprise Oversight

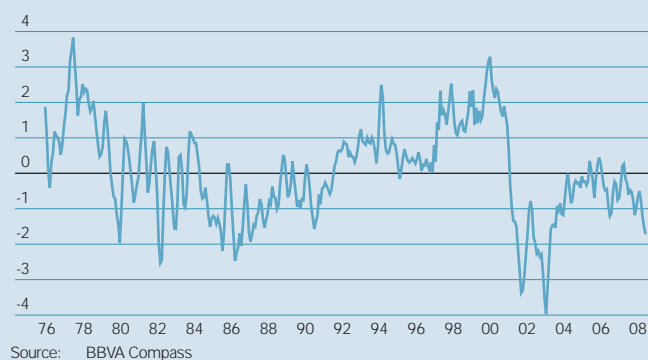
Economic activity in **Arizona** is decelerating sharply as suggested by the SMAI which has been in negative territory since mid-2006. Weakness largely reflects the housing meltdown which has been more severe than in other states. The index's performance could be anticipating low GDP growth or even a contraction in 2008 and 2009. However, the adjustment could be softer than in previous recession periods such as those of 1980-82 and 1989-91, given that the economy has become more mature and less volatile.

#### BBVA Compass Arizona Monthly Activity Index 3-month moving average



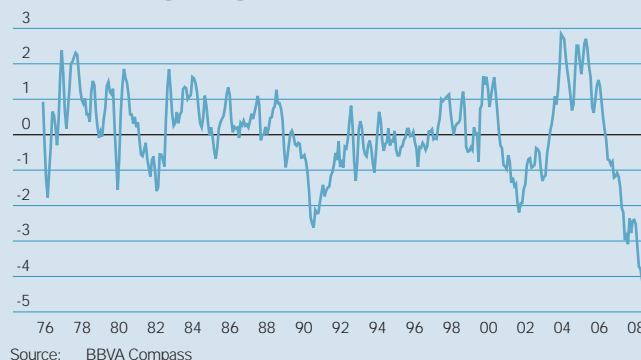
In **Colorado**, the SMAI suggests that economic expansion has been, on average, slightly below trend since 2004. Recently, weakness has intensified suggesting greater downward risks. However, the deceleration is occurring at a slower pace than in other neighboring states mainly because the housing meltdown started when the economy was still recovering from the sharp and prolonged downturn of 2000-03.

#### BBVA Compass Colorado Monthly Activity Index 3-month moving average



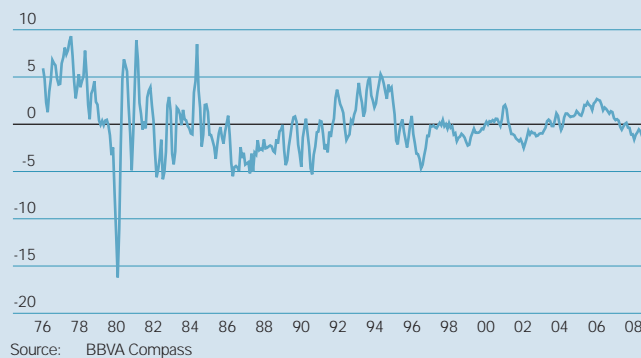
**Florida** is probably experiencing its worst economic downturn since the beginning of the index. This is not surprising considering the extent of the housing boom during the most recent expansion period. According to the SMAI, GDP growth for 2007 will very likely be revised to negative from positive while 2008 is likely to post an even bigger decline.

#### BBVA Compass Florida Monthly Activity Index 3-month moving average



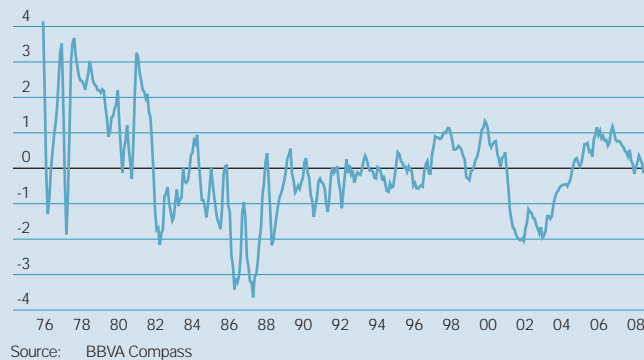
Economic growth in **New Mexico** is slowing down, though at a relatively slower pace than in other states. While the downturn is likely to continue and could even intensify, the economy seems better positioned to resist these pressures. In this regard, we expect the current deceleration to resemble that of the earlier 2000's, which was less severe than those in the late '70s and mid '80s.

#### BBVA Compass New Mexico Monthly Activity Index 3-month moving average



Following a four-year expansion above average, **Texas** economic growth is now moving below its long-term trend, though at a milder pace than in prior recessions and significantly softer than in most states. The SMAI suggests a very low probability of observing a sharp recession as those experienced in the mid '80s, related to the housing sector, and early 2000's, associated with the dot-com burst. In fact, its recent trend is still consistent with economic growth above the national average both in 2008 and 2009.

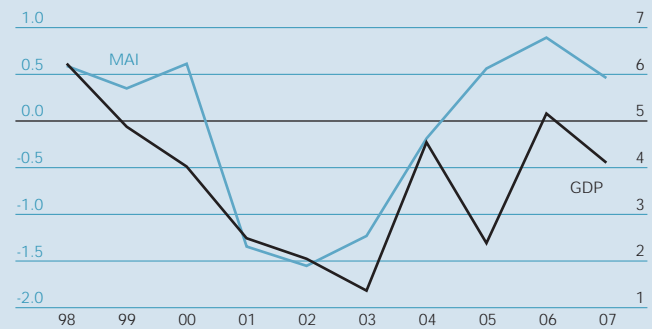
### BBVA Compass Texas Monthly Activity Index 3-month moving average



Using Texas as an example, BBVA Compass SMAI proves to be a good predictor of economic turning points. Between 1997 and 2007, the index accurately predicts above/below GDP growth in 9 of 11 years. Considering the sample beginning in 1979, the index identifies correctly above/below trend growth in 76% of the cases. Moreover, the worst performance of our index occurs in 1986 when the state experienced its worst recession in almost 30 years. Moreover, the SMAI-Texas captures the mild but prolonged recession experienced between 2001 and 2003, and the strong recovery thereafter.

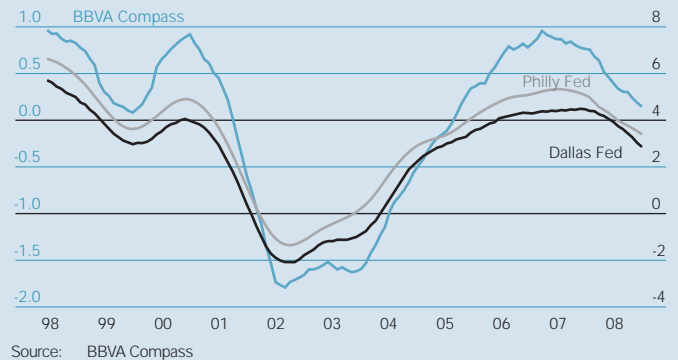
### BBVA Compass Texas Monthly Activity Index & Real GDP

Year-over-year % change



### Texas Activity Indexes, BBVA Compass, Dallas Fed & Philly Fed

12-month moving average & 12-month % change



### Conclusion

The BBVA Compass State Monthly Activity Indexes are useful to track turning points in the economic business cycle. They reveal important differences within states' dynamics that could be explained by the intensity of shocks and their ability to absorb them. According to the indexes, activity in five states —Alabama, Arizona, Colorado, Florida and New Mexico— is likely to grow below its ten year average, in large part due to the housing adjustment and spillover effects to the rest of the economy. In Texas, although growth is moderating, the pace of expansion continues close to trend and above national average.

# America's Energy Transition: What Role Do Renewables Play?

Tatiana Alonso

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## Introduction

Fossil energies are the backbone of America's energy system. (See figures 1, 2 and 3). During the last three decades they have been widely used for power generation due to their low cost and high reliability but now their competitiveness is being eroded on rising fuel costs and security of supply concerns. (See figure 4). At present, the US imports 70% of its oil needs (at a price of \$700 billion) and 20% of its natural gas. Coal is still abundant but reserves deplete quickly.

Moreover, mounting evidence on the global warming effect will increasingly drive the citizens and their leaders to support action towards dramatically reducing greenhouse gas (GHG) emissions. The US is, by far, the biggest per capita energy consumer and GHG emitter. Therefore, it is expected to play a part in any future global agreement aimed at combating climate change. Since 75% of GHG emissions come from energy combustion, a de-carbonization of the energy sector seems inevitable.

## Energy: future alternatives

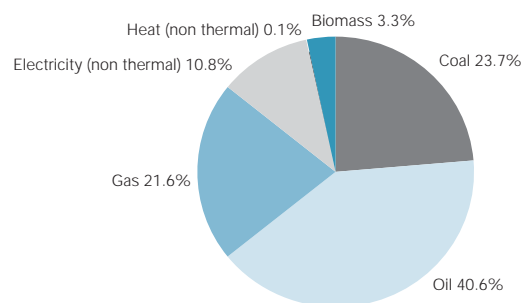
Any clean alternative to oil used for transportation involves the use of electricity, so the top priority will be to build a clean power sector. Alternatives are nuclear, clean coal or renewables. The US produces 20% of its power from nuclear power but no new plants have been built since 1980 due to high capital costs and public opposition. Now, political interest has revived due to its zero carbon nature but it is unlikely that more than a dozen new plants could be put in place before 2030.

Clean coal implies the use of carbon sequestration and storage techniques to bury the CO<sub>2</sub> deep underground. America has high hopes for this technology and is financing an extensive R&D effort. However, it has recently cancelled the only project being linked to a large scale power generation to date (FuturGen, in Illinois) because expected costs had risen from \$830 million to \$1.8 billion.

Renewable energies have the advantage of being clean, their supply is not depleted over time and they do not rely on fuel availability and low costs. At present they provide 8% of America's power, although the majority comes from big hydro. (See figure 5). The US was a world leader until the mid eighties when commercial interest peaked with the decline of oil and gas prices and the reduction or dismissal of most public support schemes. Since then, however, renewable energy production costs have been cut by 70%-80% and investor interest has rebounded thanks to more solid technological and regulatory foundations and strengthened market support resulting from record high oil prices.

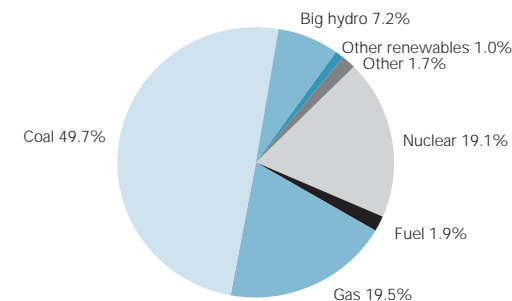
Some wind or solar projects are already cost competitive and the prospect of further cost reductions, together with carbon constraints, reveal that their position will continue to improve in the future. The US is one of the countries experiencing the biggest boom in the renewable energy industry. This is mostly due to the adoption of Renewable Portfolio Standards (RPS) by many states (25 plus DC), which require the utilities to produce or purchase a certain percentage

## 1 U.S.: Total Primary Energy Supply by Source 2006



Source: BBVA with data from Enerdata

## 2 U.S.: Gross Electricity Generation by Source 2006



Source: BBVA with data from Enerdata

## 3 Selected Electric Industry Summary Statistics by State, 2006

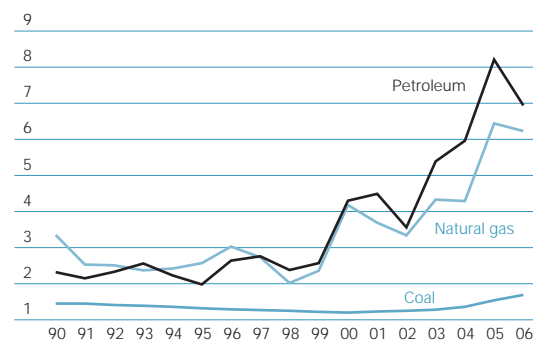
	PFS	Capacity (MW)	Rank	CO <sub>2</sub> emissions	Rank	ARP
Alabama	Coal	30,664	9	85,116	9	7.1
Arizona	Coal	25,608	15	53,353	17	7.6
Colorado	Coal	11,156	31	41,847	23	7.7
Florida	Gas	53,206	3	126,529	3	10.2
New Mexico	Coal	7,102	36	33,051	29	7.1
Texas	Gas	100,754	1	257,552	1	10.1
California	Gas	63,213	2	59,389	15	12.2
<b>U.S. Total</b>	<b>Coal</b>	<b>986,215</b>	<b>—</b>	<b>2,459,800</b>	<b>—</b>	<b>8.7</b>

PFS Primary Fuel Source  
 ARP Average Retail Price 2007, cents / kwh  
 Source: BBVA with EIA data



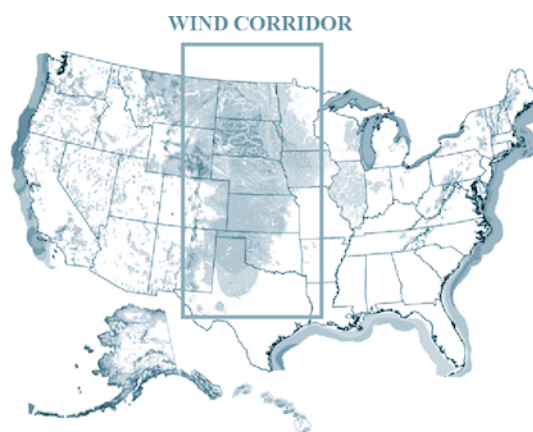
#### 4 Fuel Costs for Electricity Generation

USD/million BTU



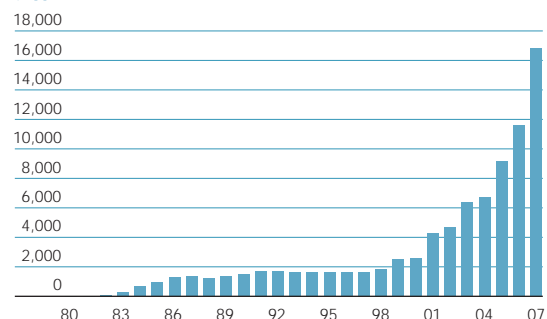
Source: BBVA with EIA data

#### 6 U.S.: Wind Resources



#### 7 US Cumulative Wind Power Capacity

MW



Source: BBVA with Earth Policy Institute data

of the power supplied to customers from renewable sources. (See figure 9).<sup>1</sup> In addition, current federal Law allows some tax credits to renewable facilities placed in service between 2006 and 2008.

#### Wind energy

Wind energy is the cheapest renewable source of energy and is currently competitive in many parts of the US. In particular, the "wind corridor", which stretches from North Dakota to the Texas panhandle is an outstanding wind resource.

By the end of 2007 the country had 18% of world's total wind power capacity, with 16,818 megawatts (MW). (See figure 7). 30% of it was installed in 2007, with an investment of \$9 billion. According to the Department of Energy (DOE), wind contributed to one third of the new US power generation capacity, making it the second largest source of new power generation after natural gas. From January to March 2008 some 1,400 MW of new wind power capacity were added (figure 8). If this trend continues, by 2010 the US could surpass Germany as the world leader in wind power capacity. However, this could be blocked if Congress does not approve the extension of the 2 cents/kwh federal tax credit before it expires in December 2008.

Texas surpassed California as the main national wind power in 2006 and is now the current focus of the wind power boom. With a quarter of the nation's total installed wind capacity, Texas powers more than 1 million homes using wind. This was made possible with the federal wind tax incentive and the Texas Renewable Portfolio Standard enacted in 1999. Initially set at 2,000 MW of new renewable capacity required by 2009, the RPS was then revised upwards to the present 5,580 MW by 2015, just 130 MW over current wind power capacity.

In 2007 Texas was selected by the DOE to be home to a large-scale wind turbine research and testing facility and in June 2008 Vestas, the world's largest supplier of wind turbines, chose Houston as the location for its new research centre in the US. Moreover, T. Boone Pickens has recently placed the largest ever order for wind turbines (667 wind turbines each costing \$3 million) to build the world's largest

<sup>1</sup> Studies show that well designed RPS can support renewables at a low extra cost (38 cents on a monthly residential electricity bill).

#### 5 Total Net Power Renewable Generation Capacity by Energy Source in Selected States, 2007

	Biomass		Geothermal		Hydro		Solar PV		Wind	
	MW	Rank	MW	Rank	MW	Rank	MW	Rank	MW	Rank
Alabama	581	4	—	—	3,271	5	—	—	—	—
Arizona	7	40	—	—	2,720	6	9	3	—	—
Colorado	10	37	—	—	660	22	8	4	1,064	6
Florida	999	2	—	—	55	43	—	—	—	—
New Mexico	6	42	—	—	82	41	—	—	494	10
Texas	201	20	—	—	680	20	—	—	4,006	1
California	1,007	1	2,032	1	10,088	2	403	1	2,318	2
Nevada	—	—	198	2	1,047	15	78	2	—	—
<b>Total US</b>	<b>10,313</b>	—	<b>2,294</b>	—	<b>77,833</b>	—	<b>498</b>	—	<b>15,616</b>	—

Source: BBVA with EIA data



wind farm in West Texas. The overall 4000 MW project is expected to be completed by 2014 and to cost \$10 billion.<sup>2</sup>

One of the main obstacles to wind power growth is transmission constraints. In 2006, the governor of Texas announced commitments of \$10 billion from private companies to increase wind generating capacity by 7,000 MW provided the Texas Public Utility Commission (PUC) approved the expansion of transmission capacity from the windy plains of West Texas to urban areas in the central and eastern parts of the state. Last month PUC finally voted to invest \$4.9 billion to this end.

### Solar power

One of the best places in the world to produce power from the sun is the southwestern US. In the past several years solar power has been rapidly growing. (See figure 10). The Solar Electric Power Association expects the top 10 markets in 2015 to be California, New Jersey, Arizona, New Mexico, Pennsylvania, Maryland, North Carolina, Nevada, Hawaii and Colorado.

California leads the way and its Solar Initiative intends to install 3,000 MWs of new PV solar electricity by 2017. In Arizona and Colorado, established Renewable Portfolio Standards mandate the generation of roughly 15% and 20% of the electricity from renewable sources.<sup>3</sup> Between 20% and 30% of that energy must come from solar or distributed generators. This, added to the federal investment tax credit of 30% of the cost of a solar energy system (capped at \$2000 for a residential installation) has the potential to create a huge market for solar PV and solar thermal water heating.

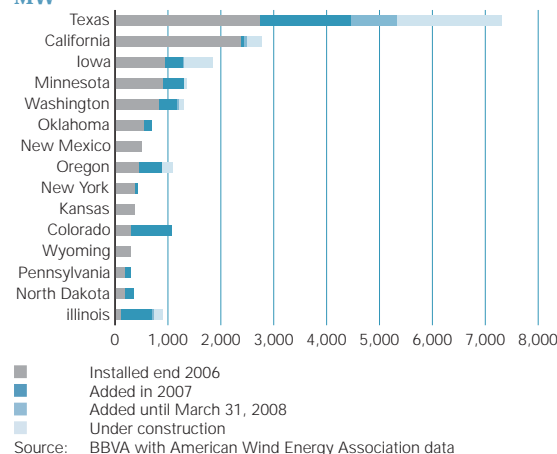
Both technologies have the big advantage of being modular and do not require additional investments in transmission or distribution lines nor licenses of environmental impact. Another significant saving these technologies offer is the possibility of net metering, which allows homeowners and businesses in 43 states to sell their excess electricity back to the utility at its retail approved rate (often with some restrictions). Although solar thermal water heating is already a proven and affordable technology, PV still has some way to go before becoming competitive, given the low efficiency and high cost of its cell panels. However, the DOE's Solar America Initiative has set a goal of bringing solar to grid parity by 2015 by reducing solar PV energy for residential consumers from the current 23-32 cents/kWh to 8-10 cents/kWh.

A different way of producing energy from the sun is through concentrated solar power (CSP), a large-scale, centralized power production technology that concentrates sunlight to generate heat that is then used to produce steam-generated electricity. An increasing number of experts think that CSP shows better long term cost prospects than PV. Equipped with storage appliances to maintain peak power even when the sky is overcast and the ability to generate power after nightfall, CSP can replicate the operation and output of fossil power plants.

<sup>2</sup> This is part of the "Pickens Plan" to reduce by 30% US dependence on foreign oil by replacing oil by natural gas in transportation and natural gas by wind in power generation. A \$1.2 trillion investment would be needed to build the new wind power capacity.

<sup>3</sup> The Arizona Corporation Commissioner has proposed to extend the 15% target to 25% by 2025. This could be approved during 2009.

### 8 Installed Wind Capacity in Selected States

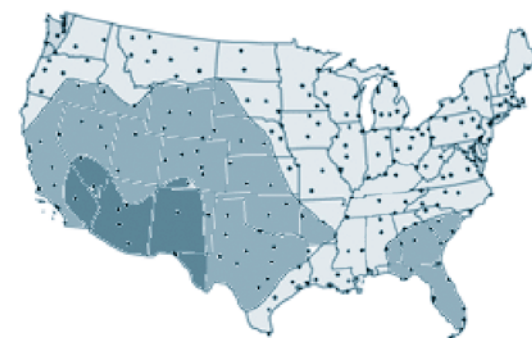


### 9 Requirements of Different Renewable Portfolio Standards in Selected States as of 2007

% renewable power required	
Alabama	No RPS
Arizona	15% by 2025
Colorado	20% by 2020
Florida	No RPS
New Mexico	20% by 2020
Texas	5580 MW by 2015

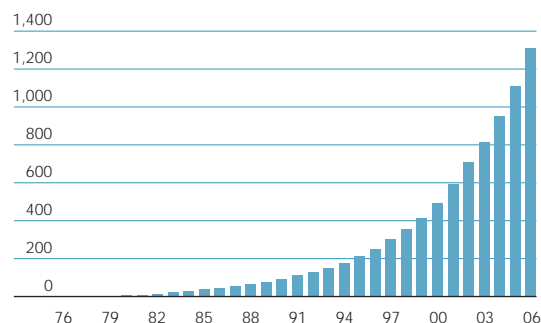
Source: BBVA with AWEA data

### 10 U.S.: Solar Resources



Note: Darker means greater solar resources

## 11 US Solar PV Power Cumulative Capacity MW



Source: BBVA with Earth Policy Institute data

Nine CSP plants with a total capacity of 354MW have been generating electricity since 1990 in the US and a new 64MW plant came online in 2007. The US and Spain are now leading the way in CSP investment. According to the Earth Policy Institute, 13 new CSP plants are being planned in the US, with more than 3,100 MW expected to come online by 2012. Most of them will be built in California but there are plans for a 300MW plant in Florida and a 280MW plant in Arizona. Worldwide, 5,600 MW could be in place by 2012 and some of the new plants will have thermal storage systems.

High cost and energy storability are still major challenges. However, the Western Governor's Association estimated that CSP could provide electricity at 80-100\$/MWh by 2015 if 4 GW are installed, making it competitive with gas fired generation. Interestingly, Arizona State University is establishing the Solar Power Laboratory, which will employ prominent scientists and engineers to conduct research aimed at improving the efficiency of solar electric power systems while making them more economically feasible.

### Conclusions

Fossil energy availability and high cost as well as environmental trends stress the need to transition towards a decarbonized energy system in which renewables could play a central role provided technology and costs evolve in the right direction.

The United States is endowed with huge renewable resources among which wind and solar seem particularly promising. In both cases, some southwestern states like California, Texas and Arizona are leading the way in new investments and future prospects look even brighter as long as federal and state regulations remain supportive.

In the future, technological advances, economies of scale and carbon prices should make new technologies and projects increasingly cost competitive without the need for public support. Until then, well designed regulations will be crucial to ensure the continued deployment of renewables.

# Forecasts

## Economic Structure

	U.S.	Sunbelt	Alabama	Arizona	Colorado	Florida	New Mexico	Texas
GDP (2007, \$ billions)	13,808	2,602	166	247	236	735	76	1,142
Population (2007, thousands)	301,750	48,041	4,628	6,339	4,862	18,251	1,970	23,904
Labor Force (2Q08, thousands)	154,390	29,909	2,194	3,071	2,760	9,250	951	11,682
Nonfarm Payroll (2Q08, thousands)	137,617	26,422	2,013	2,639	2,362	7,945	851	10,612
Income Per Capita (2007, \$)	38,611	36,885	32,404	33,029	41,042	38,444	31,474	37,187
Households (2007, thousands)	115,835	22,122	1,840	2,267	1,886	7,269	740	8,307
Houses/1000 Hab. (2007)	424.0	413.4	461.8	420.8	437.6	477.7	437.6	394.6
House Prices (2006, \$ thousands)	246.0	200.2	165.0	260.0	240.0	248.0	190.7	141.0
Home Ownership Rate (2006, %)	68.8	69.9	74.2	71.6	70.1	72.4	72.0	66.0
Exports of Goods (2007 \$ billions)	1,162.7	256.5	14.4	19.2	7.3	44.8	2.6	168.2

Source: BEA, BLS, NAR, Census and FHFB

## Economic Forecast

Year-over-year % change

	3Q08	4Q08	1Q09	2Q09	2007	2008	2009
<b>US</b>							
Real GDP	1.0	0.8	0.9	0.5	2.0	1.6	1.1
Employment	-0.2	-0.6	-0.6	-0.5	1.1	0.0	-0.4
Personal Income	4.9	5.1	5.3	5.4	6.7	5.2	5.4
Home Sales	-11.0	-9.3	-13.6	-17.4	-14.8	-17.3	-12.4
House Prices	-5.2	-3.0	-1.5	-0.5	1.6	-4.0	-0.4
<b>Alabama</b>							
Real GDP	—	—	—	—	1.8	1.2	0.5
Employment	0.5	0.4	0.5	0.8	1.3	0.6	0.7
Personal Income	4.0	4.2	4.5	4.6	5.8	4.4	4.7
Home Sales	-25.1	-16.9	-6.2	0.6	-6.9	-22.4	-2.3
House Prices	3.5	3.4	3.5	4.0	5.8	3.6	3.8
<b>Colorado</b>							
Real GDP	—	—	—	—	2.0	1.7	1.2
Employment	1.2	1.0	0.9	1.0	2.2	1.4	1.1
Personal Income	6.6	5.9	6.4	6.2	6.5	6.5	6.1
Home Sales	-5.9	-1.5	-5.7	0.4	-3.1	-6.7	-4.1
House Prices	2.0	2.0	1.7	1.8	2.5	2.0	1.8
<b>New Mexico</b>							
Real GDP	—	—	—	—	2.8	1.6	0.9
Employment	0.9	1.0	1.3	1.1	1.3	0.9	1.2
Personal Income	4.9	5.3	6.1	5.9	7.1	5.5	6.2
Home Sales	-29.9	-26.1	-27.8	-26.8	-23.0	-28.2	-29.0
House Prices	0.7	-0.2	-0.4	0.2	7.8	1.4	-3.0

Source: BBVA Compass, BEA, BLS, NAR, Census and OFHEO

	3Q08	4Q08	1Q09	2Q09	2007	2008	2009
<b>Sunbelt</b>							
Real GDP	—	—	—	—	2.3	1.2	1.0
Employment	0.6	0.4	0.3	0.5	1.8	0.7	0.5
Personal Income	4.9	5.1	5.3	5.4	6.7	5.2	5.4
Home Sales	-8.9	-3.3	-1.3	-2.2	-13.4	-11.8	-4.5
House Prices	-6.2	-6.9	-7.1	-6.7	1.7	-5.4	-7.7
<b>Arizona</b>							
Real GDP	—	—	—	—	1.8	-0.1	-0.3
Employment	-1.8	-1.9	-2.5	-1.9	1.2	-1.1	-1.8
Personal Income	3.6	4.4	4.3	4.3	6.0	4.1	4.5
Home Sales	19.6	37.0	24.9	6.3	-26.4	1.4	3.9
House Prices	-10.3	-11.2	-10.4	-8.3	0.6	-9.0	-7.9
<b>Florida</b>							
Real GDP	—	—	—	—	0.0	-0.9	-0.1
Employment	-1.1	-1.4	-1.4	-1.0	0.5	-1.0	-1.0
Personal Income	3.5	4.1	3.9	4.4	5.5	3.9	4.3
Home Sales	-11.5	-10.7	-7.6	-15.7	-27.9	-16.3	-15.7
House Prices	-14.4	-16.2	-17.4	-18.4	-0.8	-12.8	-18.6
<b>Texas</b>							
Real GDP	—	—	—	—	4.1	2.9	2.1
Employment	2.3	2.2	2.1	2.0	2.9	2.3	2.0
Personal Income	6.1	6.0	6.3	6.4	8.1	6.3	6.3
Home Sales	-8.3	-2.4	0.9	3.8	-2.6	-9.6	0.1
House Prices	3.8	3.8	4.1	4.4	6.3	4.0	1.0

## States in Figures

### Research and Development

	U.S.	Alabama	Arizona	Colorado	Florida	New Mexico	Texas
<b>Workforce indicators</b> (% share of workforce)							
Bachelor's Degree Holders (2005)	31.7	26.7	28.7	38.4	28.6	29.1	28.7
Individuals in S&E Occupations (2005)	3.7	3.1	3.4	5.3	2.8	3.4	3.7
S&E Doctorate Holders (2006)	0.4	0.3	0.3	0.5	0.2	0.9	0.3
Engineers (2006)	1.1	1.2	1.3	1.5	0.8	1.2	1.1
Life and Physical Scientists (2006)	0.2	0.3	0.2	0.6	0.3	0.6	0.5
Computer Specialists (2006)	2.1	1.5	1.7	3.0	1.7	1.2	2.1
<b>Financial Research and Development Inputs</b>							
R&D as Share of GDP (% , 2004)	2.4	2.0	1.8	2.8	0.9	8.0	1.6
Federal R&D Obligations per Civilian Worker <sup>1</sup> (2005)	753	1,361	981	836	262	3,781	467
Federal R&D Obligations per Individual in S&E Occupation <sup>1</sup> (2005)	20,396	44,596	27,741	16,150	9,120	100,808	12,806
Industry-Performed R&D as Share of Private-Industry Output (% , 2005)	2.0	1.1	1.6	2.3	0.7	0.7	1.4
Academic R&D per \$1,000 of GDP <sup>1</sup> (2005)	3.6	3.9	3.4	3.9	2.2	5.0	3.1
<b>Science and Technology in the Economy</b>							
High-Technology Share of All Business Establishments (%)	8.2	6.4	8.7	10.9	8.3	7.7	9.3
Net High-Technology Business Formation <sup>2</sup>	0.2	0.1	0.3	0.3	0.4	0.1	0.1
Employment in High-Technology Establishments <sup>3</sup>	11.6	9.8	11.7	13.9	8.6	10.5	13.6
Average SBIR Program Award Dollars per \$1M of GDP	161	244	149	414	68	346	89
Venture Capital Disbursed per \$1,000 of GDP	2.0	0.1	1.2	2.8	0.4	0.4	1.3
Venture Capital Deals <sup>4</sup>	0.5	0.1	0.1	0.5	0.1	0.2	0.4
Venture Capital Disbursed per Venture Capital Deal (\$ millions)	7.4	2.7	8.7	6.7	5.7	3.8	7.8

### Energy

	U.S.	Alabama	Arizona	Colorado	Florida	New Mexico	Texas
<b>Production</b> (Trillion Btu by Source, 2005)							
Total Energy Production	69,381	1,602	611	2,249	533	2,752	10,830
Coal	23,020	519	263	857	—	537	596
Natural Gas	20,989	425	0	1,221	4	1,850	6,936
Crude Oil	10,963	46	0	132	15	352	2,767
Nuclear Electric Power	8,149	330	269	—	300	—	398
Renewable Energy	6,261	282	78	38	215	14	133
<b>Consumption</b> (By Source and Total Consumption per Capita, 2005)							
Total Consumption per Capita, 2005							
Coal	22,795	890	428	387	672	318	1,628
Natural Gas	22,645	364	328	484	814	227	3,625
Petroleum	40,733	627	591	494	2,163	259	5,671
Retail Electricity Sales	12,491	304	237	165	768	70	1,141
Total Consumption per Capita	339	467	249	305	257	352	506
<b>Prices</b> (June, 2008)							
Regular gasoline prices through retail outlets <sup>5</sup>	354.3	348.9	359.2	350.0	348.9	354.9	349.0
Electricity All Sectors (cents/kWh)	9.26	7.42	8.59	8.62	10.32	7.65	10.55
Residential	10.97	9.7	10.01	10.09	11.27	9.4	12.43
Commercial	9.77	8.8	8.51	8.93	9.82	8.21	10.51
Industrial	6.71	5.2	6.23	6.44	7.91	5.71	8.83

1 Dollars  
 2 As % of all Business Establishments  
 3 As Share of Total Employment (%)  
 4 As % of High-Technology Business Establishments  
 5 Cents per gallon excluding taxes  
 Source: BBVA Compass, NSF and EIA

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