BBVA | RESEARCH

Economic Watch

U.S.

Houston, December 9, 2011
Economic Analysis

Jason Frederick
jason.frederick@bbvacompass.com

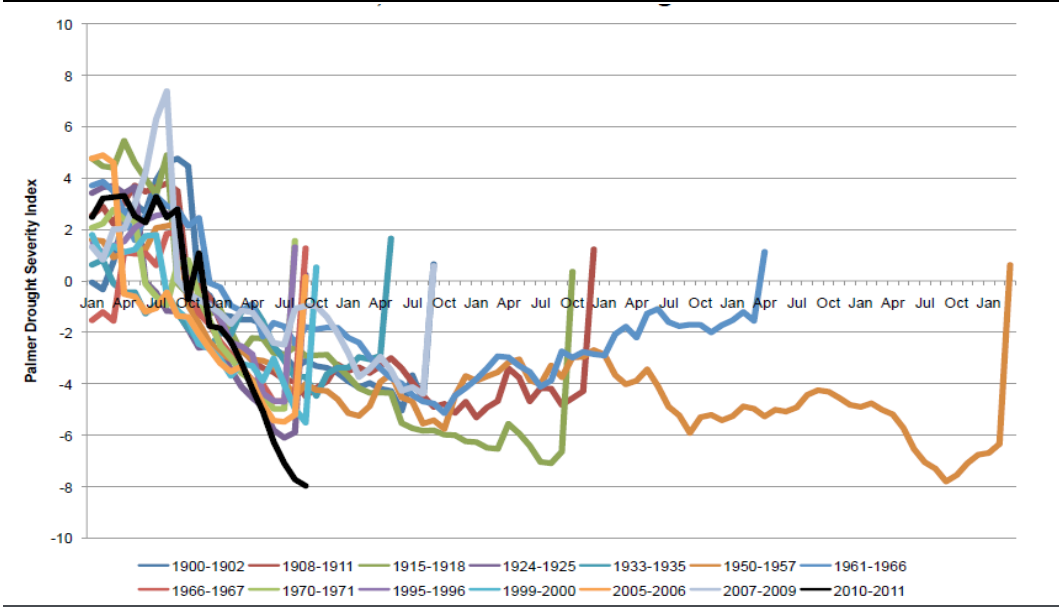
Boyd Stacey
boyd.stacey@bbvacompass.com

Texas Drought Impact

- 81.1% of Texas was in exceptional drought as of September 2011
- Direct agricultural losses are estimated to exceed $5.2bn, while indirect losses to secondary market participants will be close to $3.5bn
- Risks to potential GDP will rise in accordance with the drought's duration and shift the burden to urban populations and industrial producers
- Price and income effects will likely be small in the short-run, however persistent drought conditions could intensify demand effects

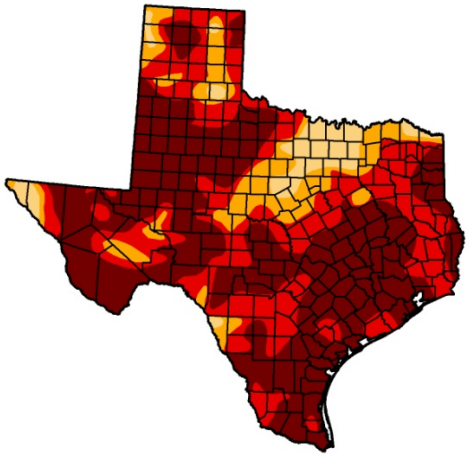
Texas experienced its worst one-year drought on record with 81.1% of the state categorized in exceptional drought as of September 2011. Cooling temperatures and winter rain have eased the state's drought situation and statistics now suggest that only 52.7% of the state remains in exceptional drought. However, uncertainty remains high. For example, some research climatologist's believe that the La Niña weather pattern will promote a drying influence over the gulf region throughout the decade. Conversely, Palmer Drought Severity Statistics (PSI) for Texas suggest possible a turning point in the weather pattern. The PSI—displayed in chart 1— shows the deviation from historical trend, or in other words a normalized measure of drought intensity for each of the state's most severe droughts. As seen by the dark line in Chart 1, the current drought showed rapid deterioration but in October showed a slowing or possible reversal of trend. Moreover, approximately 70% of previous "extreme" droughts returned to normal precipitations levels in less than a year. Thus, there is the possibility this historic drought will abate in 2012.

Chart 1
Extreme Texas Droughts Since 1895(Palmer Drought Severity Index (PSI))



Source: The Office of the Texas State Climatologist

Chart 2
Texas Drought Map (brown= exceptional drought)

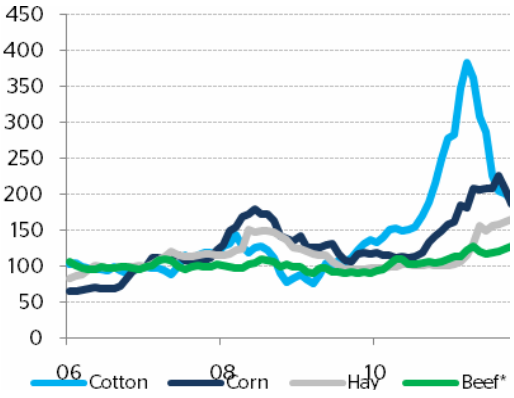


Source: National Drought Mitigation Center

Even so, the high level of uncertainty is forcing state, municipal and local governments to prepare for drought in 2012. If necessary, the Texas Commission on Environmental Quality (TCEQ) and Lower Colorado River Authority (LCRA) has policies that will regulate and divert water distribution to urban centers or keystone lakes. The current drought is markedly more intense than previous Texas' droughts and therefore agricultural producers have been disproportionately affected. This is common to extreme droughts largely due to urban areas resiliency in adjusting water consumption and industrial producer's access to private water sources. However, if the drought persists the burden will shift to urban areas and industrial production such as oil and gas exploration. Furthermore, water curtailment will influence industrial output, and could decrease potential GDP. Latent price effects, decreased productivity, and compressed agriculture margins could compound investment declines and production increase the droughts impact on the state's long-run potential.

Thus far, agricultural communities have felt the greatest impact. According to Agrilife, the direct impact to agriculture in 2011 could exceed $5.2bn. Projections suggest that cotton will bear the majority of the crop contraction, with losses expected to exceed $1.8bn. The spike in cotton prices in 2011 enhanced economic losses as Texas farmers were unable to capitalize on robust emerging market demand. Given that emerging market demand is likely to endure amidst global rebalancing, the opportunity cost to cotton exporters will remain high. Other key agricultural losses include $750mn, $327mm, $243mm, and $63mm for hay, corn, wheat, and sorghum, respectively. In addition, livestock production, which is the state's largest agricultural output, lost $2.1bn and could experience latent supply effects over the decade. Indirect agriculture market participants including grain elevators, fertilizers suppliers, and transporters were also impacted by the states drought.

Chart 3
Commodity Prices(Index, January 2007=100)



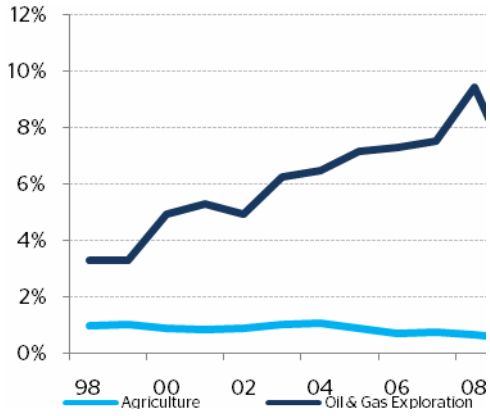
*Choice Beef
Source Haver Analytics & BBVA Research

Furthermore, factors including premature slaughter, exponentially increasing hay costs, and exports of herds out of the state all suggest downward pressure on in-state cattle supplies. Hay, a major input cost to animal farmers, increased 60%YoY as of November 2011. The continued price increase and in-state shortage forced cattle producers, at times, to short sell their herd at a salvage rate in order to avoid paying premium for imported hay. Others resorted to decreased yields to minimize losses. The lower yields will decrease the profitability of the industry yet should not create long-term price effects. The export of existing herds, however, could weigh on long-run supplies and thus influence future cattle prices. Current statistics suggest an average response to a 10% rise in price of beef is a 7.0% reduction in the consumption of beef.

Therefore, there is not a significant risk short-run beef consumption. However, if the drought endures and cattle production suffers potential GDP could decline because of shift in producer expectations about future demand.

Outside of agriculture, losses from summer forest fires and decreased tourism revenue in surrounding lake areas was comparatively small but still significant. For example, BBVA research estimated the net cost of the 2011 forest fires were $112mn-252mn. Assuming no insurance recovery or federal assistance, timber and residential asset losses totaled 315mm. Since neither of these losses shifted industrial activities, the impact on state production was small. In addition, federal disaster declaration and private insurance should offset 2011 losses possibly boosting 2012 output. On the other hand, select tourism activities in surrounding areas experienced contraction, and it is unlikely these areas will receive compensation from state or federal government, or private insurance. Given that precipitation levels are currently worse than they were in July, timber in exceptional drought areas is either dead or dying, and the fact that current levels in major lakes is low risks will remain high 2012.

Chart 4
Agriculture & Oil &Gas Exploration Share of GDP(%)



*Choice Beef
Source Haver Analytics & BBVA Research

A mulit-year drought, on the other hand, will become increasingly impactful to state potential GDP as the burden shifts from the rural and agricultural communities to urban centers and industrial producers such as oil and gas exploration companies. Many drilling companies, however, purchase water resources close to drilling sites to allow for greater flexibility of water use. However, there is no precedent for a drought of this intensity or forecasted duration. Thus, over time, if the conditions warrant extreme rationing there could be restrictions on activities such as hydraulic fracturing. The cost of restricted exploration activities could be large given that at its peak in 2008, exploration accounted for 9.5% of GDP. In addition, there are forecasts suggesting that the hydraulic fracturing boom could create as many as 870k jobs in the United States and add $118bn to national growth by 2015. Thus, limiting exploration activities or restricting their access to water could disincentive companies to invest within Texas thus driving down potential investment and consumption in the long-run. However, if private water rights are protected, a prolonged drought would have minimal effect on hydraulic fracturing activities given that many of the hydraulic fracturing operators own sufficient private water resource and given the states pro-growth regulatory policies.

Bottom Line

The longer the duration of the current drought the more likely impacts will be skewed to urban populations and Industrial producers. However, to date, agriculture has experienced the greatest contraction, as direct and indirect estimates are $5.2bn and $3.5bn, respectively. The impact of the worst one-year drought on record is substantial, however a decade of drought, could result in extreme rationing. This scenario would likely influence exploration activities such as hydraulic fracturing and decrease the states potential GDP. In addition, latent income, price, and consumption effects could further weigh on potential GDP. However, in the short-run, the robust agriculture insurance markets and federal aid should be sufficient to offset losses and avoided severe economic contraction.