FINANCIAL INTELLIGENCE *from* FHLBank Topeka

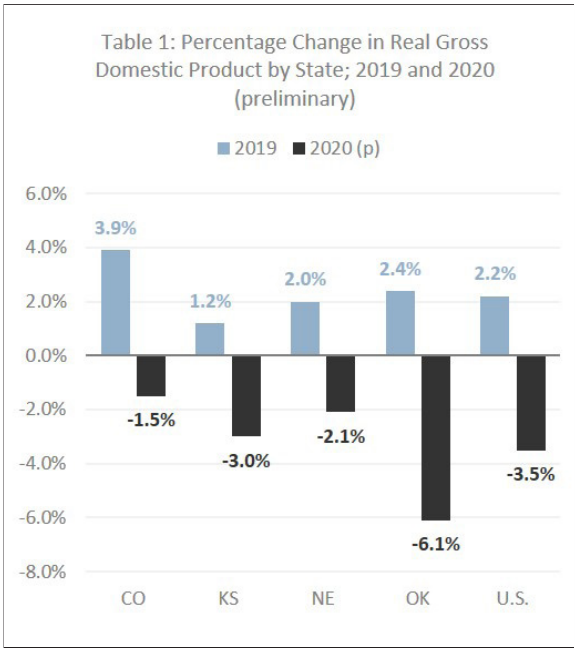
Tenth District Economic Update

Quarterly Report / Q1 2021

Prepared by: Strategic Planning and Member Solutions

Data as of Friday, April 23, 2021 — See footnotes for source and data release information

Fourth Quarter Economic Growth



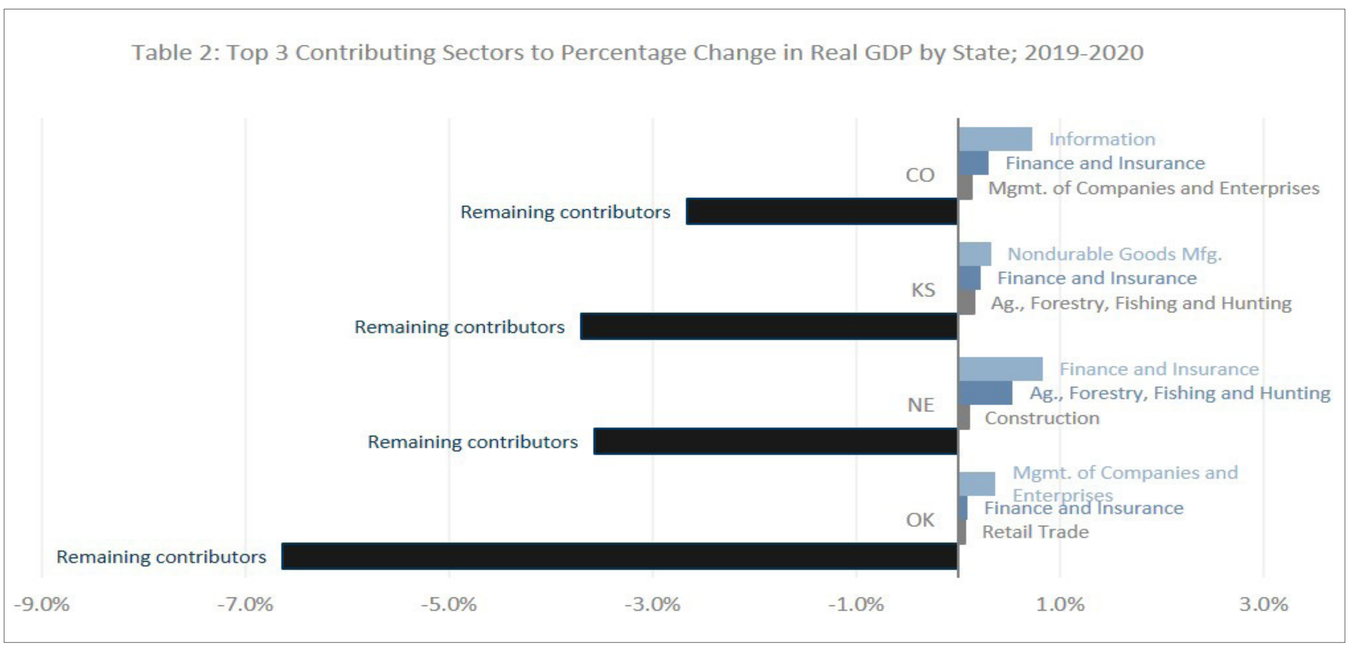
**Tenth District includes Colorado, Kansas, Nebraska and Oklahoma*

Despite strong rebounds in the third quarter of 2020 and positive growth in the fourth quarter, preliminary Real Gross Domestic Product (GDP) 2020 growth rates among Tenth District (District)* states closed the year negative.

At 3.9% GDP growth in 2019, Colorado was the fastest growing state in the District and third fastest in the U.S. Despite the drag of the COVID-19 pandemic on the travel industry, Colorado proved the most resilient. Given the major housing, construction and population growth in the state, the stage is set for Colorado to boom once economies nationwide return to full strength.

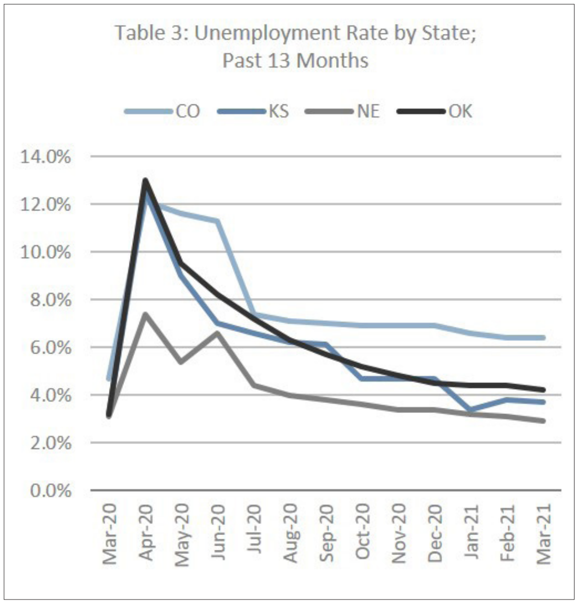
The agricultural and manufacturing-focused states of Kansas and Nebraska also fared more favorably than the rest of the country. Strength in those two areas (see Table 2) allowed Kansas and Nebraska to close out -3.0% and -2.1%, respectively, compared to -3.5% for the U.S. average.

Typically, as the oil and gas industry goes so too goes Oklahoma. With curbed demand resulting from hamstrung commercial and personal transportation, Oklahoma dropped to 48th in GDP in the most recent reading.



Source: U.S. Bureau of Economic Analysis (BEA) – Gross Domestic Product by State, Fourth Quarter 2020 and Annual 2020 (preliminary)
Next Release: June 25, 2021 – Gross Domestic Product by State (First Quarter 2021)

Fourth Quarter Employment & Labor



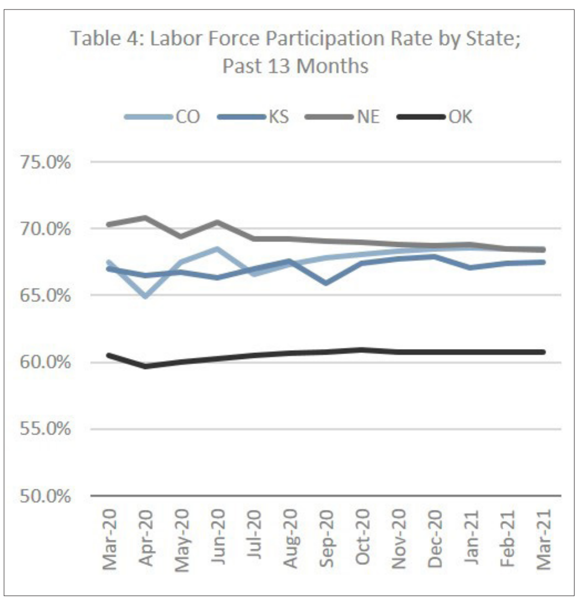
Colorado, with the lowest unemployment rate in the District throughout late 2019, finds itself at the top after the dust has settled from COVID. At 6.4%, Colorado's unemployment rate is still up 1.7% year-over-year (YoY) and down 0.2% year-to-date (YTD).

Like their economic growth figures, Kansas and Nebraska have fared better than their national peers in terms of unemployment. Kansas ranks seventh in the US at 3.7%, up 0.5% YoY and 0.3% YTD.

With 2.9% unemployment, Nebraska is down 0.2% YoY and 0.3% YTD. Nebraska is tied with three other states for the lowest unemployment rate in the US.

After peaking at 13.0% unemployment in April 2020, Oklahoma is down to 4.2% in March 2021. On a YoY basis, Oklahoma's unemployment rate is up 1.0%.

All but Colorado are below the national average of 6.0% (as of March 2021).



In terms of labor force participation rate (LFP), Colorado has seen the greatest increase in the District throughout the past year. At 68.5% in March 2021, Colorado is up 1.0% YoY but down 0.1% YTD.

Kansas has also seen improvement in LFP over the past year, up 0.5% YoY to 67.5%. Kansas currently ranks third in the District and sixth in the US.

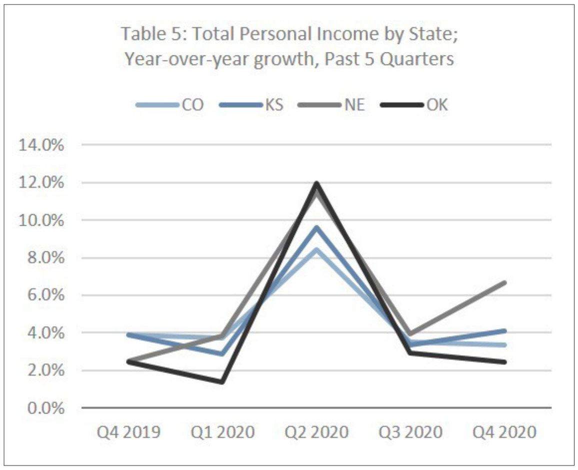
Nebraska's strength in labor conditions is also reflected by a strong participation rate. Despite being down 1.9% YoY, Nebraska is second in the District and fourth in the US at 68.4%.

Though up 0.3% YoY, Oklahoma still trails the rest of the district by a wide margin at 60.8%.

The nationwide rate in March 2021 was 61.5% (down 1.1% YoY and up 0.1% YTD).

Source: U.S. Bureau of Labor Statistics (BLS) – Civilian Noninstitutional Population and Associated Rate and Ratio Measures for Model-Based Areas, March 2021
Next Release: May 21, 2021 – State Employment and Unemployment (April 2021 data)

Fourth Quarter Wage Measure



Total personal income is defined by the U.S. Bureau Economic Analysis as the income people receive from wages, proprietors' income, dividends, interest, rents and government benefits.

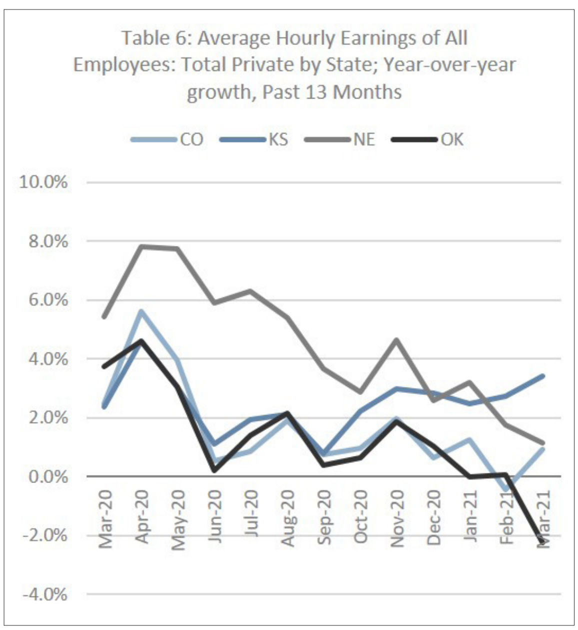
Knowing the Fed's target inflation rate is 2.0%, any personal income growth less than that level would be problematic for the workers in that state.

Fortunately for the Tenth District, all four states have continued to trend at or above that threshold over the past five quarters, save for Oklahoma in Q1 2020 (1.3%).

Colorado is the only state in the District down compared to a year ago, from 3.9% growth in Q4 2019 to 3.3% growth in Q4 2020.

Kansas and Nebraska are up 0.2% and 4.2% to 4.1% and 6.7%, respectively. Oklahoma was flat compared to one year ago at 2.4% annual personal income growth.

YoY growth for the US in 2020 was 6.1%.



Average hourly earnings (AHE), as defined by the U.S. Bureau of Labor Statistics, reflect not only changes in hourly and incentive wage rates but also such variable factors as premium pay for overtime and changes in output of workers paid on an incentive plan. They also reflect shifts in the number of employees between high-paid and low-paid work and changes in workers' earnings in individual establishments.

Earnings differ from wage rates in that earnings are the actual return to the worker for a stated period while wage rates are the amount stipulated for a given unit of work. Earnings do not measure the level of total labor costs on the part of the employer as the following are excluded: benefits, irregular bonuses, retroactive items and payroll taxes paid by employers.

Again, understanding that the Fed adjusts monetary policy based on a 2.0% interest inflation target, maintaining 2.0% growth or greater in respect to AHE is paramount for workers. Prior to COVID, all four District states were sitting above 4.5%.

In all District states but Kansas, AHE has generally trended downward for the past 13 months. Only Kansas sits above the 2.0% threshold at 3.4%, up 1.0% from one year ago. Colorado and Nebraska have fallen 1.5% and 4.3%, respectively, to 0.9% and 1.2% YoY growth. In Oklahoma, AHE growth was negative (-2.2%) in March 2021.

Sources: U.S. Bureau of Economic Analysis (Personal Income) and U.S. Bureau of Labor Statistics (Average Hourly Earnings)
Next Releases: 6/22/2021 (Personal Income); 5/12/2021 (Average Hourly Earnings)

Interest Rates and FOMC Policy

Table 7: Select Treasury Rates; Past 13 Months

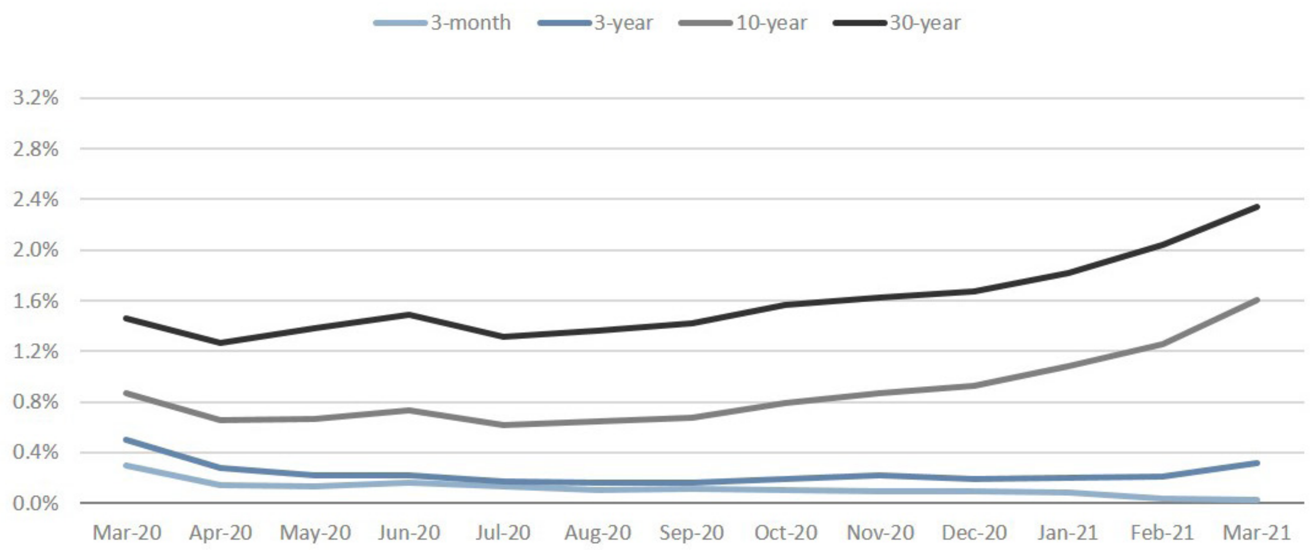


Table 8: Federal Funds Rate: Midpoint of target range or target level (Percent)-	2021	2022	2023	Longer Run
3.000				2
2.875				
2.750				1
2.625				
2.500				8
2.375				1
2.250				4
2.125				
2.000				1
1.875				
1.750				
1.625				
1.500				
1.375				
1.250				
1.125			2	
1.000				
0.875			3	
0.750				
0.625		1	1	
0.500				
0.375		3	1	
0.250				
0.125	18	14	11	
0.000				

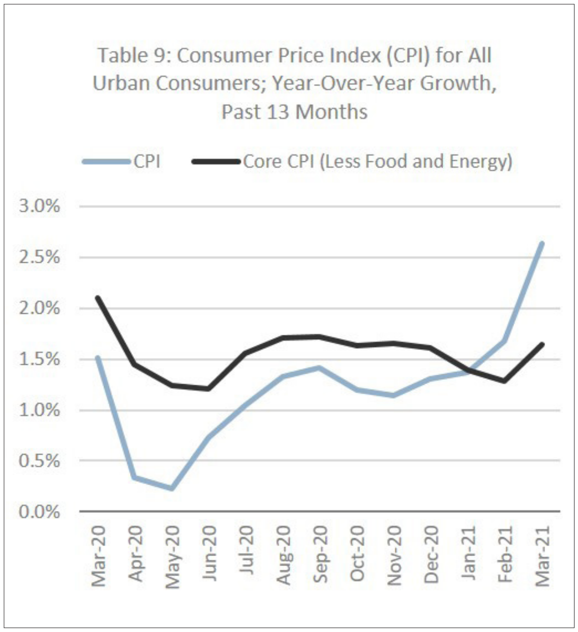
Following the longest expansion in U.S. history (10 years, eight months), the recession resulting from COVID lasted about four months, during which Treasury rates dropped by more than 100 bps across all tenors. Since bottoming out, the curve has seen very little movement on the lower end while long maturities have started to creep up in recent months.

The key spread economists follow is between the 2- and 10-year Treasuries. The relationship between these two rates speaks to the market's sentiment regarding the economy's long-term health. Once negative in August 2019 and as low as 0.12% in 2020, the spread has improved to above 1.40% in April 2021.

The FOMC does not like to trick the market, so Fed funds rate moves are typically signaled and priced in well before the announcement date. As detailed in Table 8, the majority of committee members do not expect to leave zero-bound rates until after 2023 (as of their most recent summary of economic projections provided at the March 16-17, 2021, meeting).

Source: Board of Governors of the Federal Reserve System – Interest Rates & Federal Open Market Committee (FOMC) Projections materials, March 2021
Next Summary of Economic Projections Release: June 15-16, 2021

Prices: Consumer Inflationary Measure

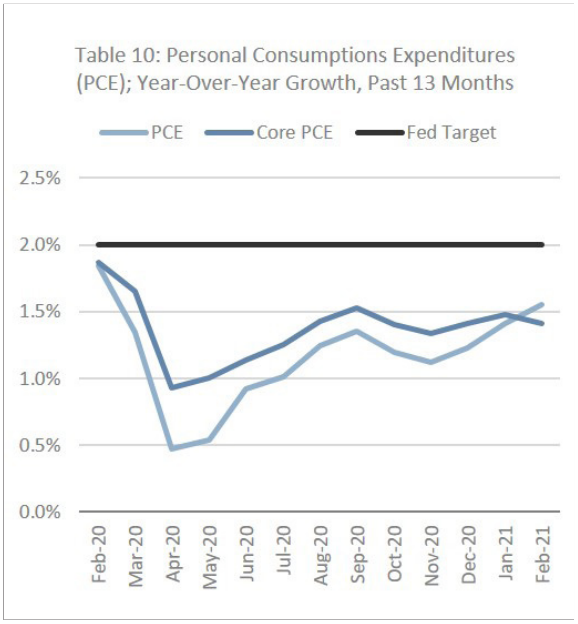


In measuring the purchasing value of the U.S. dollar, two indices rise above the rest. Both track the price level of a basket of goods but differ in a myriad of ways including the weights applied to different items in the basket, accounting for changes in the basket and simply what items are included in the basket.

Historically the higher of the two rates, the Consumer Price Index (CPI) attempts to capture the cost of what households are buying. Once the preferred measure of the FOMC, CPI is tracked by the U.S. BLS.

At the height of the pandemic, "headline" CPI had seen a sharp decline but has since skyrocketed to over 2.50%. This index differs from the "core" measure in that it includes the typically more volatile prices of food and energy.

When gauging the general direction of the economy, the core figure is more often used. However, milk and gasoline are essential purchases in every household, so it's important to monitor both versions of the index.



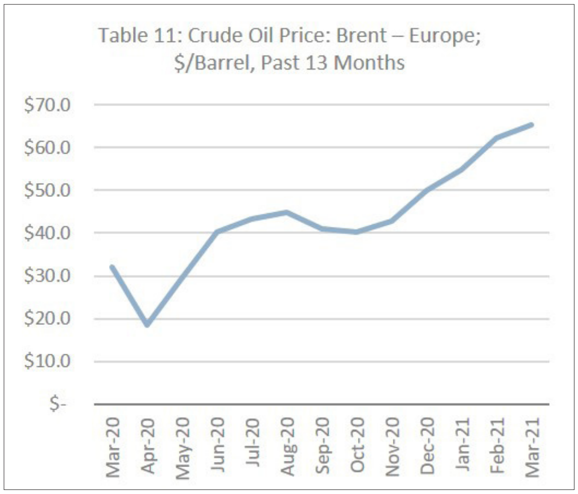
The second and more often cited inflationary measure is the Personal Consumption Expenditures index (PCE). Based on surveys of business sales, the Fed targets 2.0% for the core measure when setting monetary policy. In August 2020, an adjustment was made to how the measure will be interpreted, allowing for inflation to run higher than the standard 2.0% target before hiking interest rates. The new approach has been coined as "average inflation targeting".

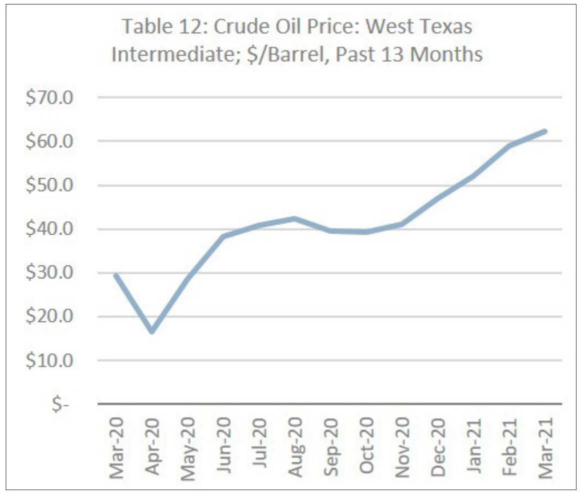
After trending up to near the 2.0% line in early 2020, core PCE dropped significantly by April 2020 to 0.9%.

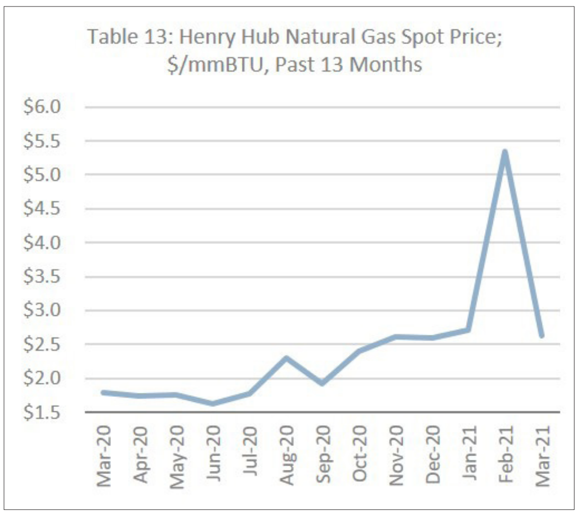
Though some of that loss was recouped, levels have remained flat for the past six months. The consistently low inflation level should be of some concern to an FOMC looking to keep interest rates near zero through 2023 and beyond.

Source: U.S. Bureau of Labor Statistics (CPI) and U.S. Bureau of Economic Analysis (PCE), March and February 2021, respectively
Next CPI Release: May 12, 2021 (April 2021 data)
Next PCE Release: April 30, 2021 (March 2021 data)

Prices: Energy







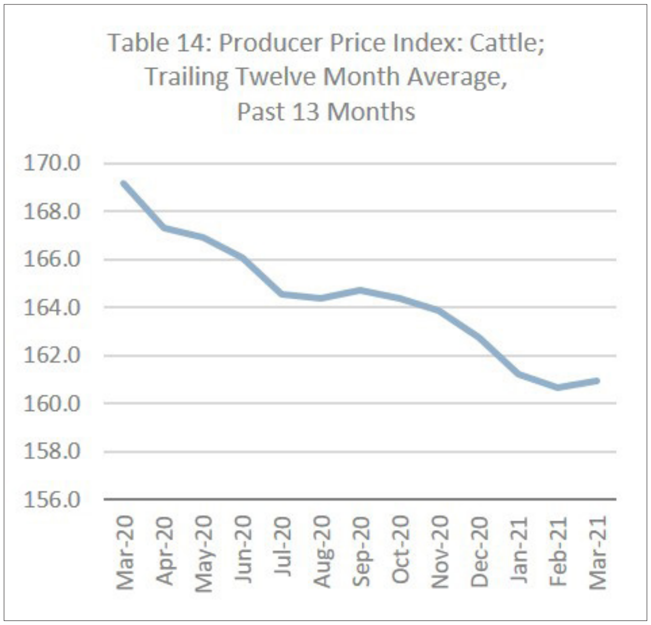
Two different prices of crude oil are generally tracked by those monitoring the energy sector: Brent (European) and West Texas Intermediate (WTI). A number of factors can contribute to differences between the prices including extraction and production, shipping and storage costs, content quality and politics such as trade tensions. Thus, it is important to look at both figures rather than the global price of oil alone to get an accurate depiction of the energy landscape.

Currently, Brent is trading at about a $3 premium to WTI. Both have followed a similar trend dropping below $20/barrel in April 2020 before rebounding during the summer and flattening the fall and winter months. Signs of improving economic conditions combined with low inventories have prices booming to open 2021, a welcome development for energy dependent economies like Oklahoma and Colorado.

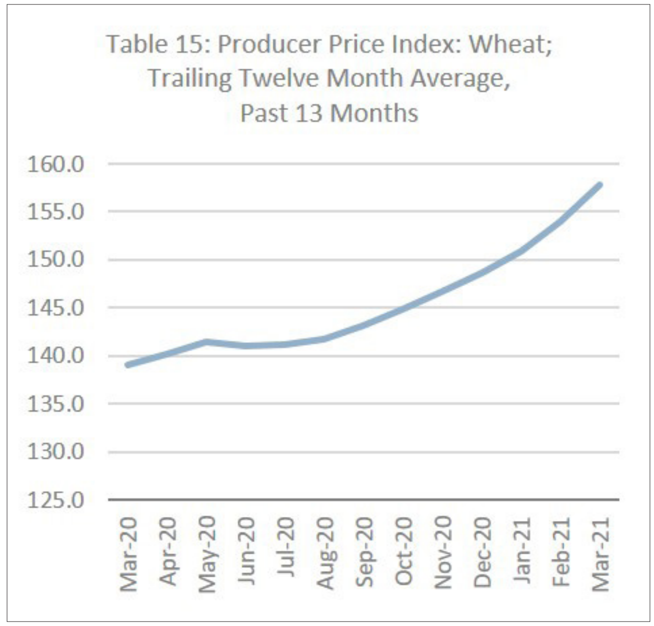
Often reflective of simple demand dynamics, the price of natural gas typically peaks in the winter months and idles in the summer. The past year has been indicative of this trend with the spot price per million BTU's dropping to below $1.70 in June 2020 before seeing a rapid increase to more than $2.50 in December 2020 and spiking to more than $5.00 in February 2021. Prices should begin to drop soon as warmer temperatures start to take hold this spring.

Source: U.S. Energy Information Administration – Spot Prices (available daily)

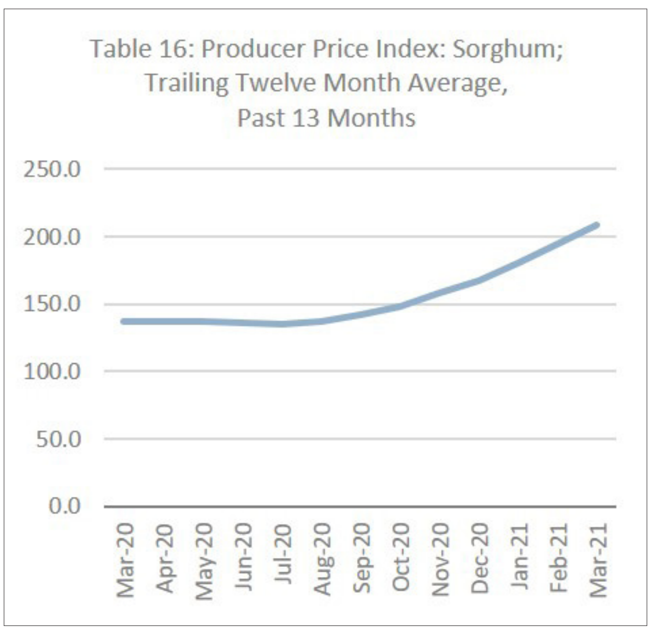
Prices: Farm & Agriculture



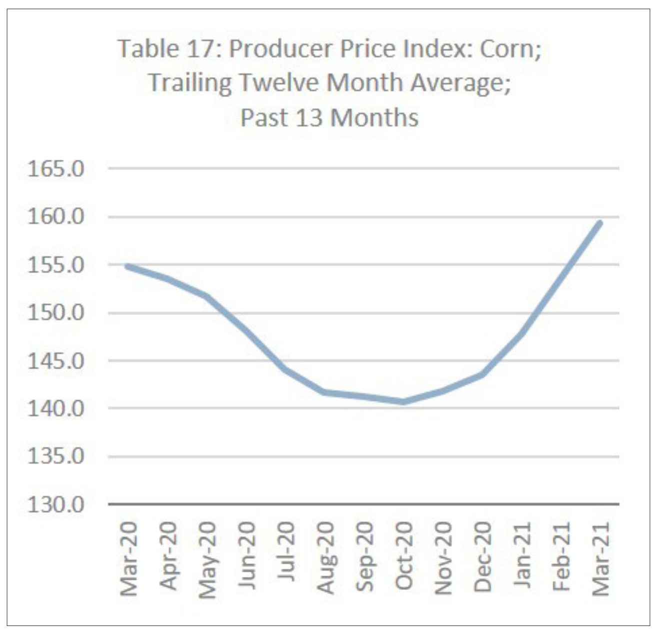
Tenth District state rankings in U.S. cattle production: 2nd Nebraska, 3rd Kansas, 5th Oklahoma, 10th Colorado



Tenth District state rankings in U.S. wheat production: 1st Kansas, 3rd Oklahoma, 4th Colorado, 8th Nebraska



Tenth District state rankings in U.S. sorghum production: 1st Kansas, 3rd Nebraska, 5th Oklahoma, 6th Colorado



Tenth District state rankings in U.S. corn production: 3rd Nebraska, 6th Kansas, 17th Colorado, 28th Oklahoma

Source: U.S. Bureau of Labor Statistics – Producer Price Indices, March 2021
Next Release: May 13, 2021 (April 2021 data)

Prices: Housing

Table 18 depicts the All-Transactions House Price Index (HPI) by state for the Tenth District. According to the U.S. Federal Housing Finance Agency, the HPI is a broad measure of the movement of single-family house prices. The HPI is a weighted, repeat-sales index meaning that it measures average price changes in repeat sales or refinancings on the same properties.

Data is obtained by reviewing repeat mortgage transactions on single-family properties whose mortgages have been purchased or securitized by Fannie Mae or Freddie Mac since 1975.

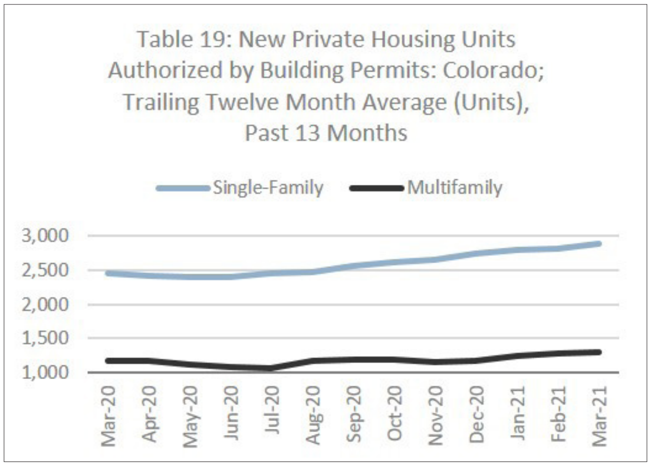
Much like the rest of the US, housing prices in Tenth District states have seen an uptick in recent quarters. High demand resulting from record-level savings rates has combined with low supply to create a very hot housing market.

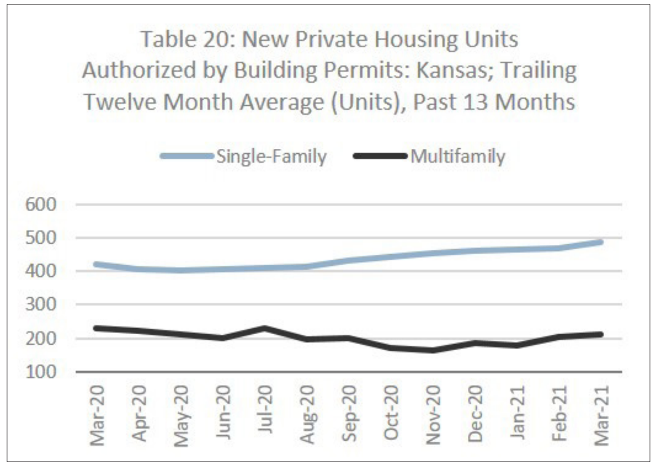
Colorado, once the hottest housing market in the Tenth District, has been surpassed by Kansas over the past year. All four District states posted YoY price growth above 5.0% in the fourth quarter of 2020.

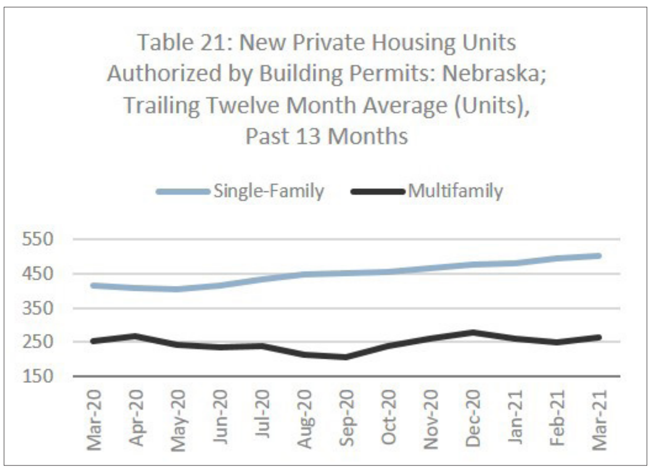
In the fourth quarter of 2020, the US on a whole saw 10.8% YoY growth, much higher than all four states in the Tenth District.

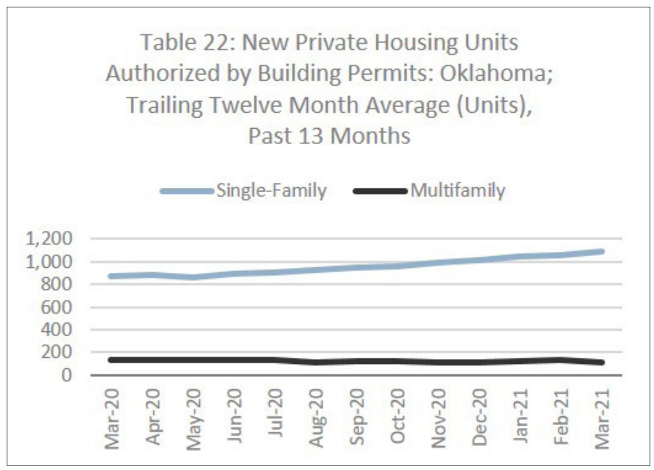
Source: U.S. Federal Housing Finance Agency – House Price Indices, Q4 2020
Next Release: May 25, 2021 (Q1 2021 data)

Fourth Quarter Housing Numbers









Tables 19-22 depict single-family and multifamily housing units authorized by building permits for each state in the Tenth District. According to the U.S. Census Bureau, these numbers provide a general indication of the amount of new housing stock that may have been added to the housing inventory. Since not all permits become actual housing starts and starts lag the permit stage of construction, these numbers do not represent total new construction but should provide a general indicator on construction activity and the local real estate market. Authorized permits can vary greatly from month to month, so a trailing 12-month average is used to provide a general trend.

Most notable among the four Tenth District states is Colorado, accounting for more than half of all building permit authorizations on both a single- and multifamily basis during the past year.

Another notable trend is the growing disparity between single-family and multifamily housing. YoY, the difference between single-family and multifamily permits has grown in all four Tenth District states. The biggest disparity in percentage of total authorized permits between single- and multifamily exists in Oklahoma where more than 90% of all permits comes from single-family authorizations.

Source: U.S. Census Bureau Building Permits Survey – March 2021
Next Release: May 25, 2021 (April 2021 data)