CSU Bakersfield

Kern Economic Journal

Winner of the Award for Merit from California Association
for Local Economic Development

Featured Article:

Covid and the
Economy

Principles for Worksite
Conflict Mediation

CSUB
BPA

SCHOOL OF
BUSINESS AND PUBLIC
ADMINISTRATION

We wish to gratefully acknowledge the Journal Sponsors:

Editorial Board
Dr. Nyakundi M. Michieka, Assistant Professor of Economics, CSUB - Publisher and Managing Editor
Dr. Richard S. Gearhart, Assistant Professor of Economics, CSUB - Publisher and Managing Editor

Contact Information
Dr. Nyakundi M. Michieka, nmichieka@csub.edu, 661-654-2465
Dr. Richard S. Gearhart, rgearhart1@csub.edu, 661-654-3962

To become a sponsor, please contact the Managing Editor for sponsorship form and benefits.

Kern Economic Journal

Inside this Issue:

Economy at a Glance!

National Economy [1]

U.S. GDP decreased at an annual rate of 31.7 percent in the second quarter of 2020. In the first quarter of 2020, real GDP decreased by 5.0 percent. The decline in the second quarter GDP reflected the response to COVID-19. "Stay-at-home orders" were issued in March and April as government pandemic assistance payments were distributed to households and businesses. Economic activity was curtailed as remote work continued. The BEA reports that the full economic effects of the COVID-19 pandemic cannot be quantified since the impacts cannot be separately identified in the data.

Nonetheless, the decrease in the real GDP reflected decreases in personal consumption expenditures (decrease in service led by healthcare and decrease in goods led by clothing and footwear), exports, nonresidential fixed investment (led by transportation equipment), private inventory investment (retail led by motor vehicle dealers), residential fixed investment (decrease in new single-family housing) and state and local government spending. These movements were offset by an increase in federal government spending.

Current-dollar GDP decreased by 33.3 percent (or $2.07 trillion) in the second quarter to a level of $19.49 trillion. In the first quarter, GDP decreased by 3.4 percent or $186.3 billion.

Personal income increased by $70.5 billion (0.4 percent) in July 2020 compared to a 1.0 decrease in June. Real disposable personal income, which is adjusted for inflation and taxes, decreased by 0.1 percent in July while real PCE increased 1.6 percent.

Personal saving was $3.19 trillion in July and personal saving rate was 17.8 percent. The BEA derives the personal saving rate by calculating personal saving as a percentage of disposable personal income.

The Conference Board's Index of Leading Economic Indicators – a measure of future economic activity – increased 2.0 percent in June to 102.0 following a 3.2 percent increase in May and 6.3 percent increase in April.

The University of Michigan's Consumer Sentiment Index decreased from 89.1 in March 2020 to 78.1 in June 2020. The value for the index in the second quarter of 2019 (June) was 98.2 compared to 98.2 in (the second quarter of) 2018.

State Economy [2]

In California, the unemployment rate rose to 15.1 percent compared to 4.1 percent in June 2019. Among counties, only Lassen (4.2 percent), Modoc (9.8 percent) and Trinity (9.6 percent) counties had unemployment rates below 10 percent. Marin (10.1 percent), San Mateo (10.8 percent), Santa Cara (10.7 percent) and Yolo (10.5 percent) counties had unemployment rates less than 11 percent.

In contrast, Los Angeles (19.6 percent), Tulare (17.1 percent), Kern (17.5 percent) and San Joaquin (15.8 percent) had unemployment rates above the state average. Imperial (27 percent) and Mono (24.7 percent) recorded the highest unemployment rates.

California's labor force decreased by 710,967 in the second quarter of 2020 compared to 96,767 in 2019. During the same period, civilian employment decreased by 2.8 million, from 18.5 to 15.7 million. A total of 2.1 million people were jobless (unemployed) in the second quarter. Nonfarming and farming enterprises hired 2.3 million and 100,000 less workers, respectively. The mining and logging sector hired 467 less workers while construction and manufacturing sectors hired 82,367 and 115,467 less workers, respectively. Service sector employment dropped from 15.3 to 13.2 million between the first and second quarter of 2020. Only the finance and insurance (300) and federal government (1,633) added jobs in the second quarter.

Local Economy

The local economy saw a decrease in the labor force, from 394,500 in the first quarter of 2020 to 371,367 in the second quarter of 2020. A large part of the decrease in this quarter's estimates, appear to be driven by the county's response to the COVID-19 "Stay at home orders". Business and schools worked remotely while consumers and businesses canceled, restricted, or redirected their spending. Nonfarm employment

---

[1] U.S. economic numbers were obtained from the Bureau of Economic Analysis "U.S. Economy at a Glance". This is found at http://www.bea.gov/newsreleases/glance.htm.
The information for the Index of Leading Economic Indicators is found at https://www.conference-board.org/data/bcicountry.cfm?cid=1.
The University of Michigan Consumer Sentiment Index is found at http://www.sca.isr.umich.edu/tables.html.

[2] The California economic numbers were obtained from the Bureau of Labor Statistics "Local Area Unemployment Statistics Map". This is found at https://data.bls.gov/map/MapToolServlet?survey=la&map=county&seasonal=u.
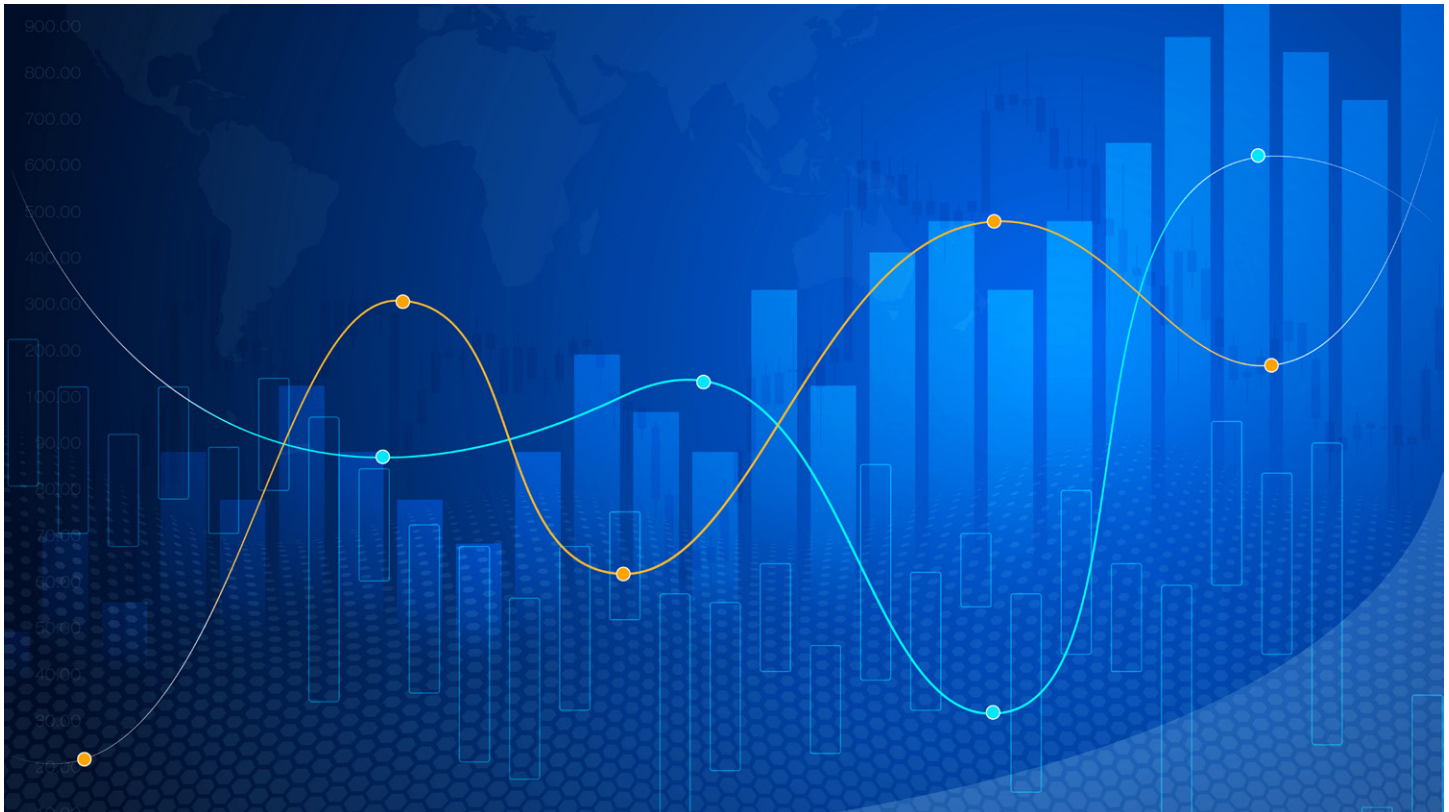
reduced by 35,100 while farm employment dropped by 9,300.

The service industry saw a quarter to quarter decline in workers of 32,900 primarily driven by losses in retail trade who hired 4,633 less workers. Professional and Business Services hired 2,976 workers while leisure and hospitality had 11,033 less employees, mostly driven by losses in workers in food services and drinking places (8,367). The only sectors adding jobs during this period included federal government excluding department of defense (adding 133 workers) and general merchandise stores (adding 100 workers).

Salaries and wages in Kern County dropped from 329,967 in the first quarter of 2020 to 285,033 (or 14 percent) in the second quarter of 2020. Compared to four quarters ago, salaries were lower by $51,867 or 15 percent.

The unemployment rate varied between 7.07 percent in Ridgecrest to 36.07 percent in Delano. All cities in Kern County showed an increase in the unemployment rate with McFarland recording the highest drop of 5.03 percent and Ridgecrest recording a modest decrease of 3.73 percent. In Bakersfield, the rate of unemployment was 17.2 percent in the first quarter of 2020 and 16.7 percent in the second quarter of 2020. Kern County's quarter-to-quarter unemployment rate doubled from 9.93 percent to 18.10 percent.

In the second quarter of 2020, the median home price in Bakersfield was 267,000 compared to 253,00 in the first quarter. Home prices are $18,167 higher than four quarters ago. Within the region, median home prices in Taft are the lowest at 156,000 compared to 332,500 in Tehachapi.

The weighted price index for the five publicly traded companies doing business in Kern County (Sierra Bancorp, Tejon Ranch Company, Chevron Corporation U.S., Granite Construction, and Wells Fargo Company) rose by 8.8 percentage points from 63.1 to 68.7. The index is 38.5 percentage points lower than what it was four quarters ago. All companies gained/lost as follows: Chevron (decreased 23.1-percent quarter-over-quarter), Tejon Ranch (increased 2.4-percent quarter-over-quarter), Granite Construction (increased 26.1-percent quarter-over-quarter), Wells Fargo (decreased 10.8-percent quarter-over-quarter) and Sierra Bancorp (increased 7.4-percent quarter-over-quarter).

The average retail price of gasoline decreased by $0.53 to $2.71. Gas prices are 30.2 percent lower than they were four quarters ago when they averaged $3.89 a gallon. The unit price of California's Class III milk dropped from the first quarter of 2020 decreasing from $16.77 to $15.42. The Index of Farm Price Parity dropped to 80 percent from 83 percent in the first quarter.

Tracking Kern's Economy[1]

DR. NYAKUNDI MICHIEKA &
DR. RICHARD S. GEARHART III

Labor Market

We adjust published data in three ways. First, we average monthly data to calculate quarterly data. Second, we recalculate quarterly data to take into account workers employed in the "informal" market (i.e., self-employed labor and those who work outside their county of residence). Finally, we adjust quarterly data for the effects of seasonal variations. In this issue, the impact of COVID-19 on Kern County's economy will be quantified.

Labor Force - The civilian labor force decreased by 23,133 members, from 394,500 in the first quarter of 2020 to 371,367 in the second quarter of 2020. The decrease in labor force is five times larger than the first to second quarter decrease of 2019. The labor force estimates are identical to those of the second quarter of 2013 (370,750). The Bureau of Labor Statistics defines the labor force participation rate as the proportion of the working-age population that is either working or actively looking for work. Recessions tend to push labor force participation down as illustrated below.


Labor Force
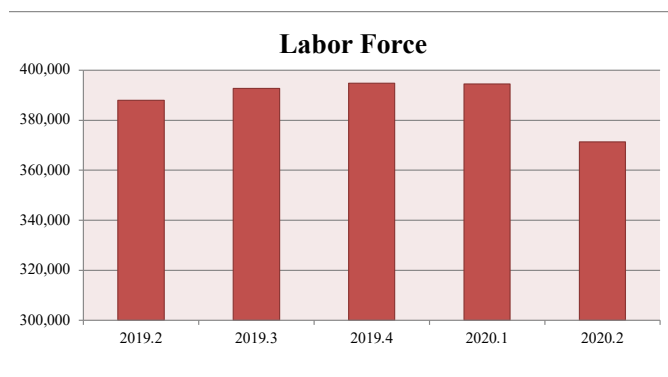
Employment – In the second quarter of 2020, Kern County hired 51,133 less workers as total employment decreased from 355,433 to 304,300. This is a 14 percent decrease in employment compared to the second quarter of 2019. Historical data indicates that in Kern County, employment grows between the first and second quarter (of each year). The last time Kern County saw Q1 to Q2 decrease in employment was in 2009, when numbers dropped by 5,000.
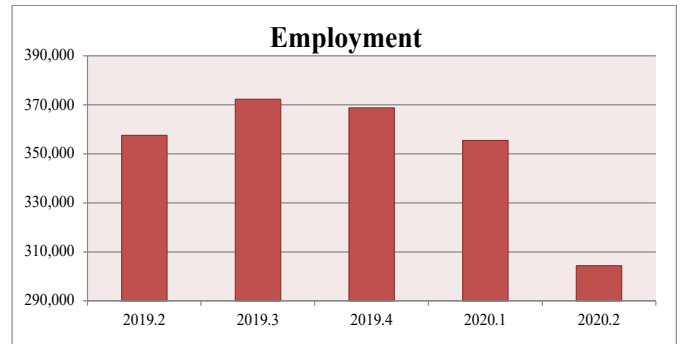
Employment

Unemployment – In the meantime, 27,967 more workers were unemployed as the number of jobless workers increased from 39,133 to 67,100. The number of unemployed workers increased by 120 percent compared to four quarters ago. In the second quarter of 2019, there were 30,500 unemployed workers compared to 67,100 today.
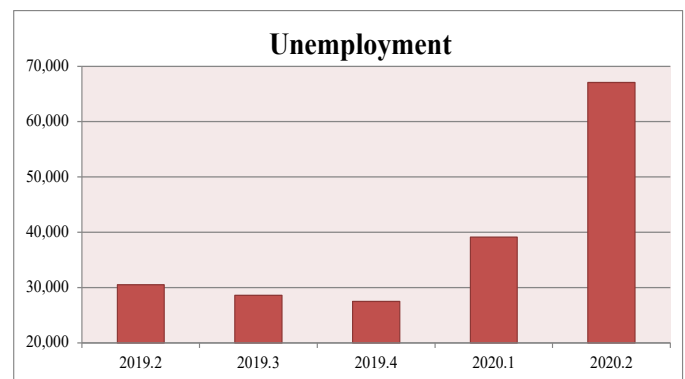
Unemployment

Unemployment Rate – Kern County's year-to-year unemployment rate rose by 132 percentage points from 7.8 percent in the second quarter of 2019 to 18.1 percent in the second quarter of 2020. The unemployment rate in the second quarter of 2020 was 82.83 percent higher than that of the first quarter of 2020. More specifically, Kern County's unemployment rate was 9.9 percent in the first quarter of 2020 and 18.1 percent in the second quarter of 2020. Kern County's unemployment rate is higher than that of California (at 13.3 percent) and the nation (8.4 percent).
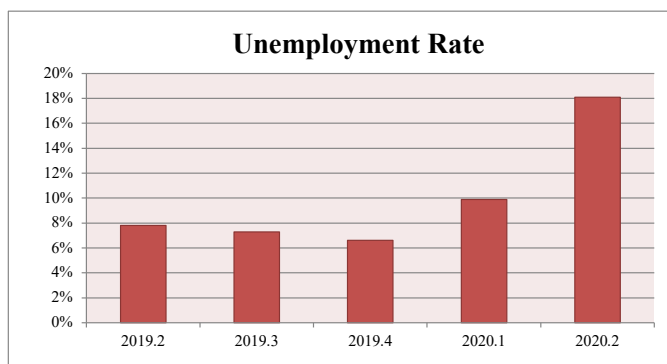
Unemployment Rate

The rate of unemployment varied considerably across cities, ranging from 7.07 percent in Ridgecrest to 36.07 percent in Mojave. All cities in Kern County showed an increase in the unemployment rate in the second quarter of 2020. The biggest increase in unemployment occurred in Mohave, increasing from 21.9 percent to 36.07 percent (first to second quarter). In Bakersfield, the unemployment rate was 16.7 percent in the second quarter of 2020 compared to 6.13 percent in the first quarter.

| Unemployment Rate of Cities			
Location	Unemployment Rate (%)	Location	Unemployment Rate (%)
KERN COUNTY	18.10%	McFarland	22.37%
Arvin	17.20%	Mojave	36.07%
Bakersfield	16.70%	Oildale	25.30%
California City	32.60%	Ridgecrest	7.07%
Delano	34.17%	Rosamond	21.20%
Edwards	20.30%	Shafter	24.33%
Frazier Park	19.33%	Taft	11.90%
Lake Isabella	24.10%	Tehachapi	12.47%
Lamont	16.67%	Wasco	21.90%
Note: City-level data are not adjusted for seasonality and "informal" market workers.			

Farm Employment – In the second quarter of 2020, Kern County hired 9,300 less farm workers. As a result, farm employment decreased from 53,033 in the first quarter of 2020 to 43,733 in the second quarter of 2020. The year-over-year number of farm workers hired decreased by 19,933 to 43,733. The last time first-to-second quarter farm employment reduced was in 2007 when numbers dropped by 1,580. Since then quarter one to quarter two farm employment has increased. Over the last five years, the first-to-second quarter

increase in the number of farm workers continues to hover around the 10,000 mark.
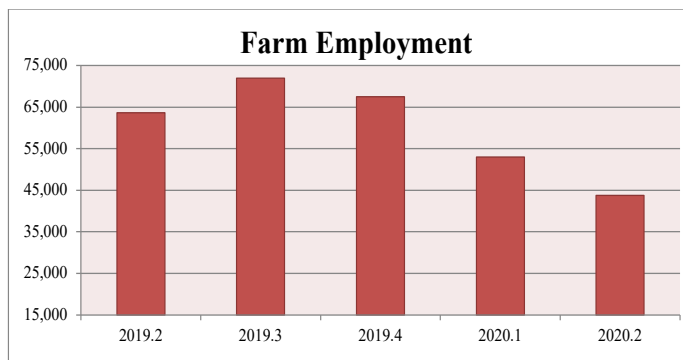
Farm Employment

Nonfarm Employment – – Local nonfarm industries employed 35,633 less workers in the second quarter of 2020 as the number decreased from 276,233 to 241,300. The industries hired 31,933 less workers compared to four quarters ago (11.69 percent decrease in workers). The total number of workers recorded in the second quarter is similar to that recorded in the first quarters of 2013 and 2008.

Nonfarm Employment
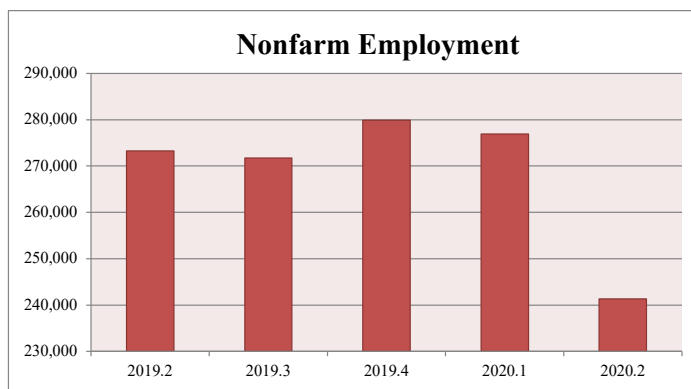
In Bakersfield, much of the decrease in nonfarm employment came from a few sectors: private service providing lost (28,533 workers), mining, logging and construction lost (1,233 workers), local government lost (4,433 workers), construction lost (500 workers), and educational and health services lost (5,333 workers). These increases were offset by increased employment in general merchandise stores (100 workers) and federal government (167 workers).

Informal Employment -Informal employment is the difference between total employment and industry

employment. It accounts for self-employed workers and workers employed outside their county of residence. In the second quarter of 2020, the number of informal workers decreased by 6,200 workers compared to the first quarter. Compared to the second quarter of 2019, there were 1,400 less informal workers. The number of residents who have sought to create their own jobs continues to slow down. There are currently 19,264 informal workers in Kern County, which is the lowest number in 10 years.

Informal Employment
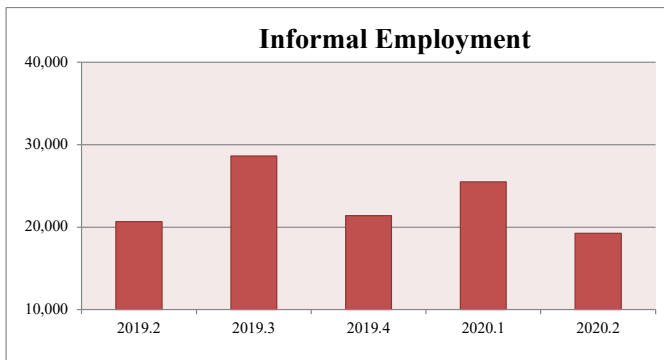
Private-Sector Employment - Nonfarm employment is comprised of private- and public-sector employment. In the first quarter of 2020, private companies hired 206,200 workers while the second quarter numbers decreased to 175,467 workers. The private sector hired 14.68 percent less workers this quarter than four quarters ago. This is the smallest number of private sector workers in the last 15 years. The last time numbers were at the 170,000 range was in 2006.

Private-Sector Employment
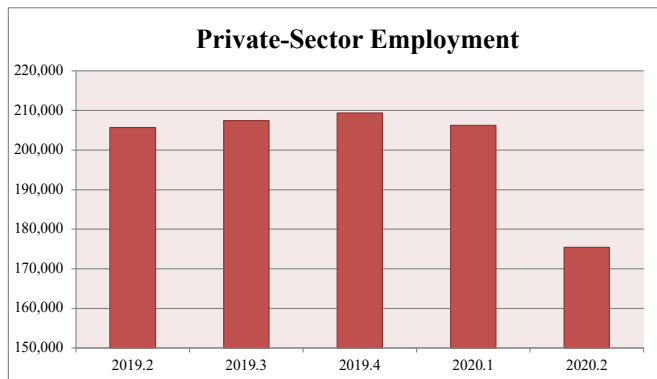
Public-Sector Employment -The public sector consists of federal, state, and local government agencies. The local government labor market includes county and city agencies and public education. In the second quarter

of 2020, government agencies hired 4,900 less workers as employment decreased from 70,733 to 65,833 – a 6.93 percent decrease. The year to year decrease in employment was 2.57 percent.

Public-Sector Employment
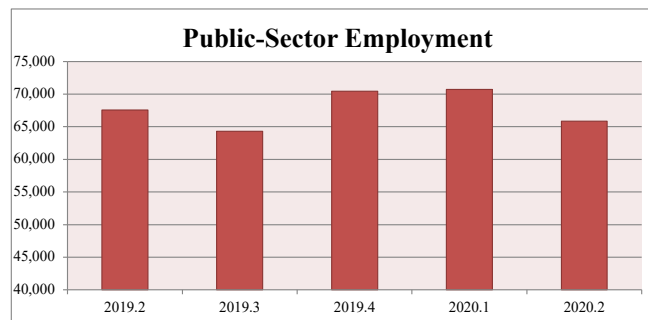
Growth in Salaries and Wages - Total Salaries and wages in Kern County decreased from $329,967 in the first quarter of 2020 to $285,033 (14 percent less) in the second quarter of 2020. Compared to four quarters ago, salaries were lower $51,867 or 15 percent.

Kern County Wages and Salaries
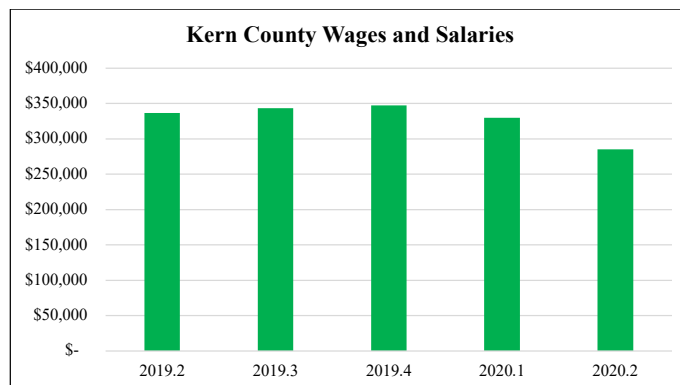
Housing Market

Housing Price - In the second quarter of 2020, Bakersfield's housing prices increased by $14,000 (5.53 percent) compared to the first quarter of 2020. The median home price averaged $267,000 in the second quarter compared to $253,000 in the first quarter. Price are $18,166 higher than they were four quarters ago. This rise in home prices has been fueled by low interest rates and increased demand.

Median Housing Price - Bakersfield
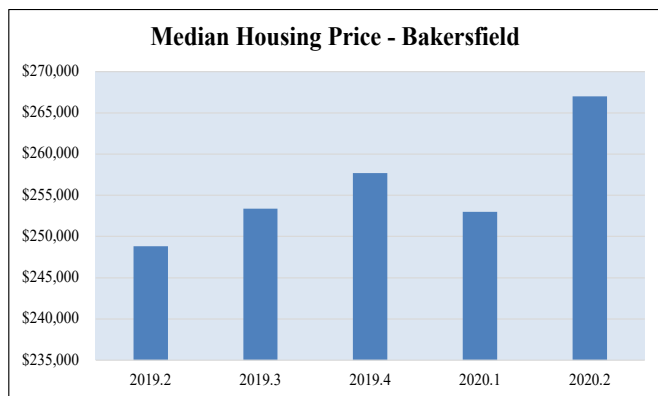
Regional Housing Prices - The changes in housing demand felt in Bakersfield are likely to spillover to the surrounding towns as individuals who are on the margin of buying or selling are likely not located in the Bakersfield MSA directly. Year-to-year home prices increased in al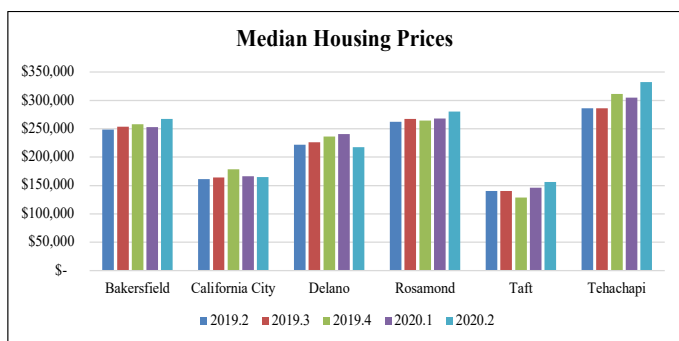l of Kern Counties' cities except Delano where prices fell by 1.95 percent. Prices increases occurred in Bakersfield (7.30 percent), California City (1.91 percent), Rosamond (7 percent), Taft (11 percent) and Tehachapi (16.19 percent).
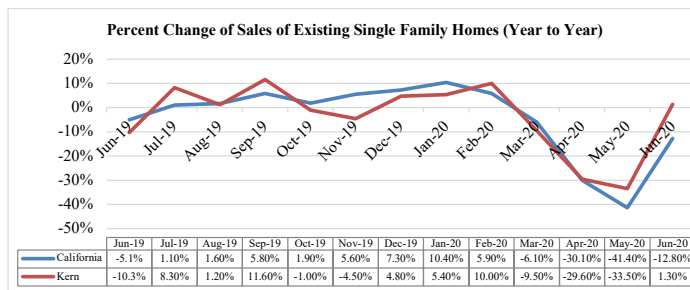
Median Housing Prices

An assessment of first to second quarter changes (2020) in median sales prices indicates that California City and Delano home prices dropped while the other regions witnessed a price increase. Tehachapi recorded a 9.14 percent increase in prices while Rosamond recorded a 4.47 percent increase. Home prices in the region increased by an average of 3 percent.

Location	Median Price 2019.2	Median Price 2020.2	Price Change ($) 2020.1 - 2020.2	% Price Change 2019.2 - 2020.2
Bakersfield	248,833	267,000	18,167	7.30%
California City	161,500	164,583	3,083	1.91%
Delano	221,667	217,333	-4,333	-1.95%
Rosamond	262,000	280,333	18,333	7.00%
Taft	140,333	156,000	15,667	11.16%
Tehachapi	286,167	332,500	46,333	16.19%

Housing Sales – In Bakersfield, quarter to quarter sales of residential units decreased by 2,253 units, from 4,683 in the second quarter of 2019 to 2,430 in the Third quarter of 2019. An average of 3,703 less homes were sold in the third quarter of 2019 compared to the third quarter of 2018. This drop in housing demand mirrors national trends. To lead to a price increase, this has to mean that there are significant shortages in the quantity supplied of houses.

Total Home Sales (Quarterly) - Bakersfield
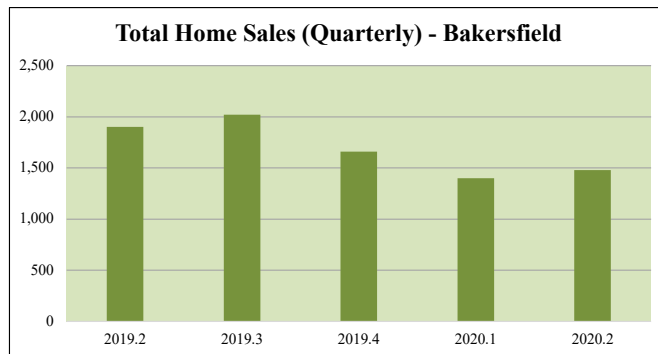
Growth in Housing Sales – We compare growth in sales of existing single-family homes in Kern County with growth of sales in California. Positive values indicate that more homes were purchased this year compared to last year. In June 2020, sales of single-family homes in Kern County were 12.8 percent less than they were in the previous year, while sales were higher in California by 1.3 percent. Average growth in home sales in California between June 2019 and June 2020 were -3.5 percent while the number was -4.3 percent in Kern County.

Percent Change of Sales of Existing Single Family Homes (Year to Year)

|	Jun-19	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20
California	-5.1%	1.10%	1.60%	5.80%	1.90%	5.60%	7.30%	10.40%	5.90%	-6.10%	-30.10%	-41.40%	-12.80%
Kern	-10.3%	8.30%	1.20%	11.60%	-1.00%	-4.50%	4.80%	5.40%	10.00%	-9.50%	-29.60%	-33.50%	1.30%

New Building Permits –In the second quarter of 2020, Kern County issued 12 more permits for construction of new privately-owned dwelling units compared to the first quarter of 2020. A total of 392 permits were issued this quarter compared to 505 in the second quarter of 2019. This increase in permitting indicates a rise in

construction plans in Kern County. The 5-year average of permits issued in the second quarter is 525.

New Building Permits

Notices of Mortgage Loan Default
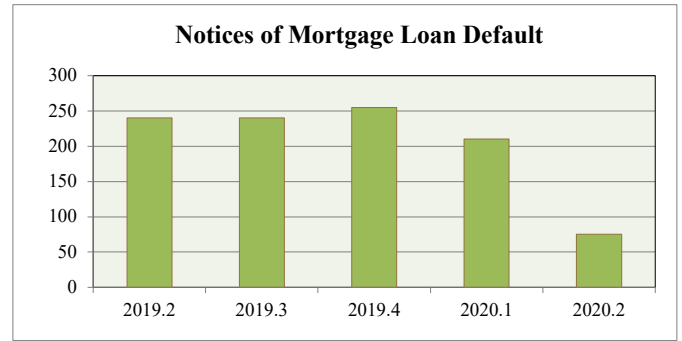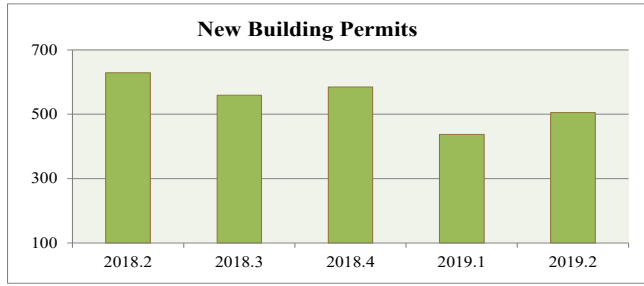
Mortgage Interest Rate – – In the second quarter of 2020, the interest rate on thirty-year conventional mortgage loans decreased to 3.23 percent from 3.51 percent in the first quarter. The mortgage interest rates are among the lowest in modern history. The last time interest rates were this low was in 2012 (fourth quarter), when they were 3.36 percent.

Mortgage Loan Interest Rate
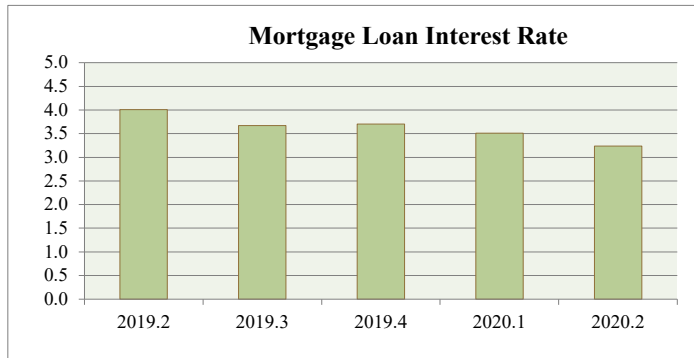
Housing Foreclosure Activity –The downtick in foreclosure activity continued as the number of new foreclosures decreased by 135 foreclosures from 210 in the first quarter of 2020 to 75 in the second quarter of 2020. This number is also 165 units lower than four quarters ago. These foreclosure estimates are the lowest witnessed in ten years.

Stock Market

In the second quarter of 2020, the composite price index (2014.1=100) of the five publicly traded companies doing business in Kern County increased by 8.8 percentage points from 63.1 to 68.7. The index is 38.5 percentage points lower than what it was four quarters ago. Average "close" prices were measured for five local market-movers: Chevron Corporation U.S., Tejon Ranch Company, Granite Construction, Wells Fargo Company, and Sierra Bancorp.

Price Index of Leading Local Stocks
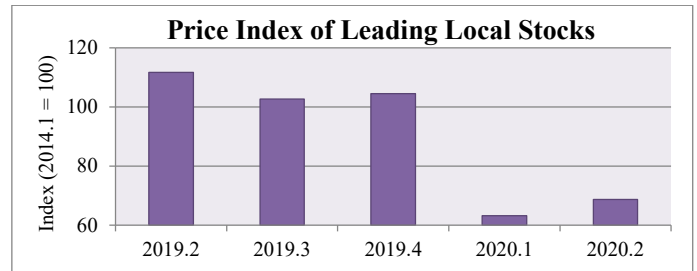
Chevron Corporation U.S.: Compared to the last quarter, CVX gained $16.77 (or 23.1 percent) per share as its price increased from $72.46 to $89.23. Relative to the second quarter of 2019, CVX was down $35.21 (or 28.3 percent).

Chevron Corporation U.S.
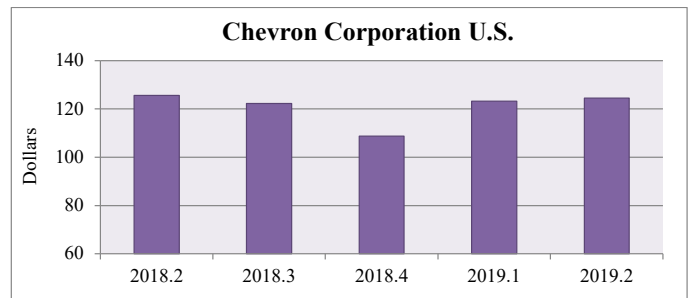
Tejon Ranch Company: TRC lost $0.34 (or 2.4 percent) per share as its stock price incerased from $14.06 to $14.40 between the first quarter and second quarter of 2020. Compared to last year, the TRC stock price is down $2.19 (or 13.2 percent).

Tejon Ranch Company
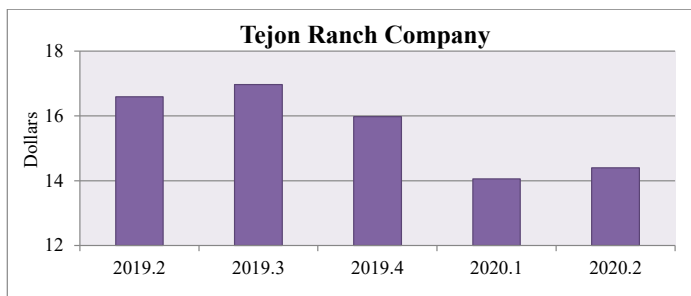
Granite Construction: GVA gained $3.96 (or 26.1 percent) per share as its stock price increased from $15.18 to $19.14 between the first and the second quarter of 2020. Conversely, GVA lost $29.04 (or 60.3 percent) over the last four quarters.
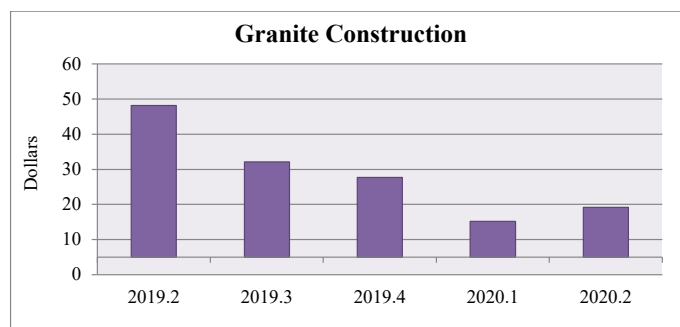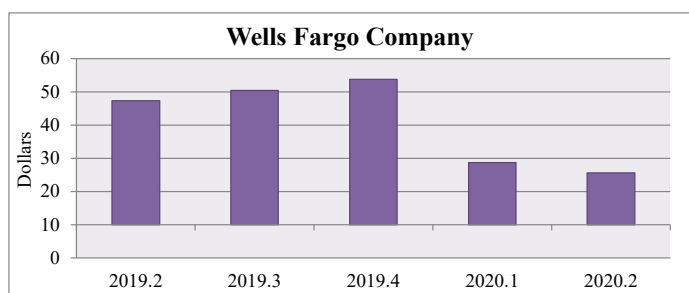
Granite Construction

Wells Fargo Company: WFC lost $3.10 (or 10.8 percent) per share as its stock price decreased from $28.70 to $25.60 between the first quarter of 2020 and the second quarter of 2020. Relative to one year ago, WFC was down $21.72 (or 45.9 percent).

Wells Fargo Company

Sierra Bancorp: BSRR gained $1.30 (or 7.4 percent)

per share as its price increased from $17.58 to $18.88. Similar to the other companies, BSRR lost $8.24 (or 30.4 percent) since the second quarter of 2019.

Sierra Bancorp
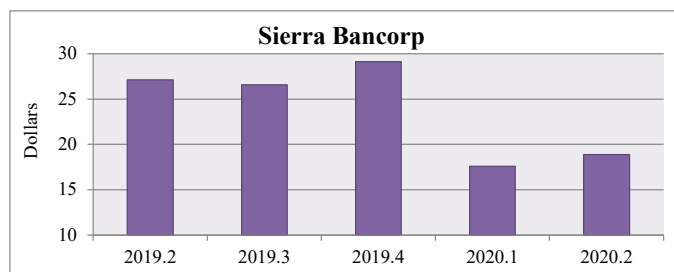
Inflation

Cost of Living – In the second quarter of 2020, the Consumer Price Index for all urban areas (1982-84 = 100) decreased from 4.79 to -2.16. The last time we witnessed a negative change in inflation was the fourth quarter of 2018 and before that, in 2015.

Cost of Living Inflation Rate
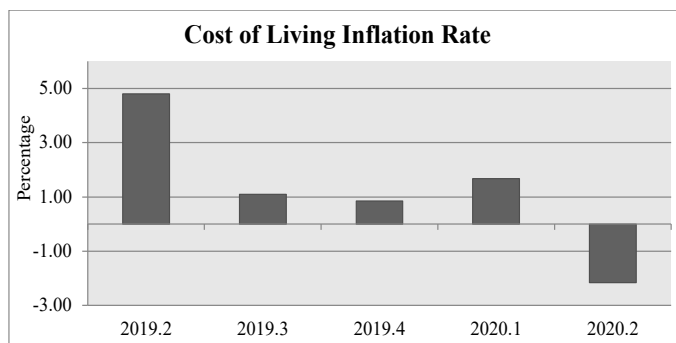
Cost of Production – The Producer Price Index for all commodities (1982 = 100) dropped between the first and second quarter of 2020. The cost of production inflation rate was -15.74 percent last quarter and +3.68 percent four quarters ago.

Cost of Producing Inflation Rate
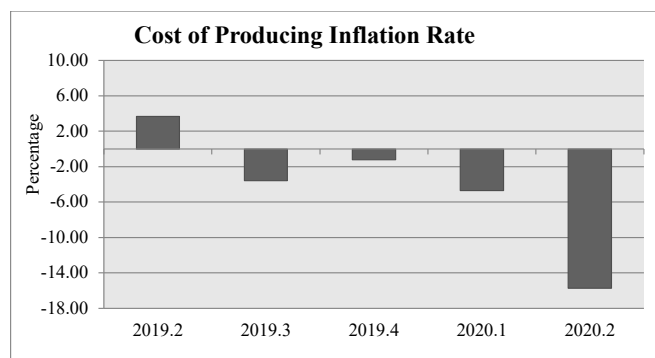
Cost of Employment - The Employment Cost Index (December 2005 = 100) for all civilian workers increased from 140 in the first quarter to 140.7 in the second quarter, growing at a rate of 2 percent. This growth is smaller than that which occurred in the first quarter of 2020 (3.17 percent) or the 2.35 percent four quarters ago.

Cost of Employment Inflation Rate

Price of Milk in California

Commodity Prices

Price of Gasoline – In the Bakersfield Metropolitan Statistical Area, the average retail price of gasoline decreased by $0.53 to $2.71 between the first and second quarter of 2020. The average prices were 30.2 percent less than they were a year ago. The last time prices were this low was in 2016.

Price of Gasoline in Bakersfield

Price of Milk – The unit price of California's Class III milk dropped in the second quarter of 2020 from $16.77 to $15.42. Noticeably, milk prices continue to hover around the 15-year average of $16. Nonetheless, prices are 4.9 percent or $0.79 lower than they were four quarters ago when they were $16.20.

Farm Prices – In the second quarter of 2020, the National Index of Prices Received by Farmers for all farm products (2011 = 100) dropped by 3.4 points to 87.47 compared to 90.83 recorded in the first quarter of 2020. This is a 5.98 point decrease from the 93.03 points recorded in the second quarter of 2019.
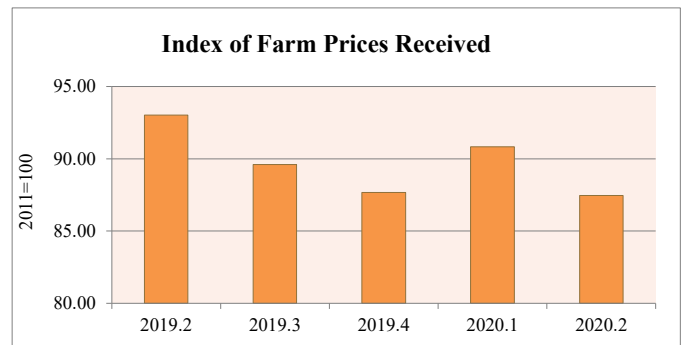
Index of Farm Prices Received

Meanwhile, the National Index of Prices Paid by farmers for commodities, services, interest, taxes, wages, and rents decreased by 1.05 percent (compared to last quarter), dropping 1.2 points to reach 108.9. This means that farmers are better off this quarter compared to last. They are also as well off today as they were in the second quarter of 2018.

Index of Farm Prices Paid

We measure the Index of Farm Price Parity as the ratio Index of Prices Received to the Index of Prices Paid. In the second quarter of 2020, the gap between prices paid and prices received decreased slightly, as the Index of Farm Price Parity dropped to 80 percent. These parity levels are similar to those witnessed in the fourth quarter of 2018. Four quarters ago, the price ratio was 84 percent.

---

[1] Source – Online databases: http://www.labormarketinfo.edd.ca.gov; www.usda.com; www.bakersfieldgasprices.com; www.bea.gov; www.car.org; www.trulia.com; www.census.gov; https://www.redfin.com; https://www.cafmmo.com; www.bls.gov

Covid and the Economy

Mark Evans Ph.D.
Economics Professor Emeritus and
Co-Director, Center for Economic Education & Research

This article provides an overview of how COVID-19 is affecting the economy. The first section summarizes epidemiology basics such as contagion and herd immunity since they are the inescapable backdrop. The second section comments on public health measures such as mask wearing and social distancing from an economic perspective. The third section addresses macroeconomics of the pandemic. The concluding section suggests an area where I believe national policy can be improved to better position the economy for the next macroeconomic crisis.

EPIDEMIOLOGY BASICS

Ro. "Ro" (r-naught), a central concept in epidemiology, represents the average number of people infected by a contagious person at the beginning of a pandemic when everyone is susceptible. Ro depends on biology of the virus and baseline social interaction.

If Ro is greater than one, the number of cases grows. For example, if Ro = 3, the first contagious person transmits the virus to three people. Each of these in turn infects three others, so 13 people are infected after two contagion periods (1 + 3 + 9). Within a few days, there will be 27 new cases with the cumulative total reaching 40 (1 + 3 + 9 + 27). Forty explodes to 121 in another few days.

Laissez Faire Herd Immunity. Over time, an increasing proportion of people encountered by a contagious person will be immune due to prior infection (assuming immunity). For example, if one-third of the population is immune (susceptible ratio = 2/3), each contagious person will on average cause two rather than three new infections.

"Herd immunity" is defined as the population fraction where new cases peak and start declining. Assuming social interaction patterns embedded in Ro persevere, herd immunity is determined by the formula "1 – 1/Ro." For example, if Ro = 2.5 (widely accepted estimate), new cases peak at 60 % of the population.

However, total cases continue to increase, although by decreasing amounts. With herd immunity at 60 %, total cases will increase until nearly 90 % is infected (30 % "overshoot").

Mortality rates are difficult to estimate with asymptomatic and pre-symptomatic cases. Many estimates cluster between 0.5 and 1.0 percent. Using the minimum of this range and a 90% infection rate, COVID-19 will cause roughly 35 million deaths worldwide, 1.5 million in the U.S. (populations of 7.8 billion and 331 million, respectively).

Rt and Adaptation. Social interaction adapts due to both government mandates and individual choices. Epidemiologists use "Rt" (effective rate of infection) to incorporate the time path of transmission (e.g., R7, R8, and R9 are the effective transmission rates in contagion periods 7, 8, and 9). When Rt falls below one (Rt < 1), the number of new cases decreases. For example, if R7 = 4/5, every five contagious people in period 7 result in four new cases in period 8.

PUBLIC HEALTH MEASURES: LOCKDOWNS, FACE MASKS, AND SOCIAL DISTANCING

Governments have responded to the virus in numerous ways. The Blavatnik School of Government tracks policies for all countries and some subnational units, including our 50 states (University of Oxford). Their composite index is disaggregated into 17 sub-indexes representing different types of policies. Also, individuals voluntarily adapt behavior to reduce risk. A few observations follow.

Lockdowns. While lockdowns have an enormous economic cost, there are at least two situations where they seem warranted. The first relates to managing hospital capacity. When hospitalizations are rapidly approaching capacity, lockdown measures have been introduced to quickly decrease Rt below one and "flatten the curve," constraining the need for hospital resources to capacity.

Second, well-timed lockdowns can eliminate overshoot
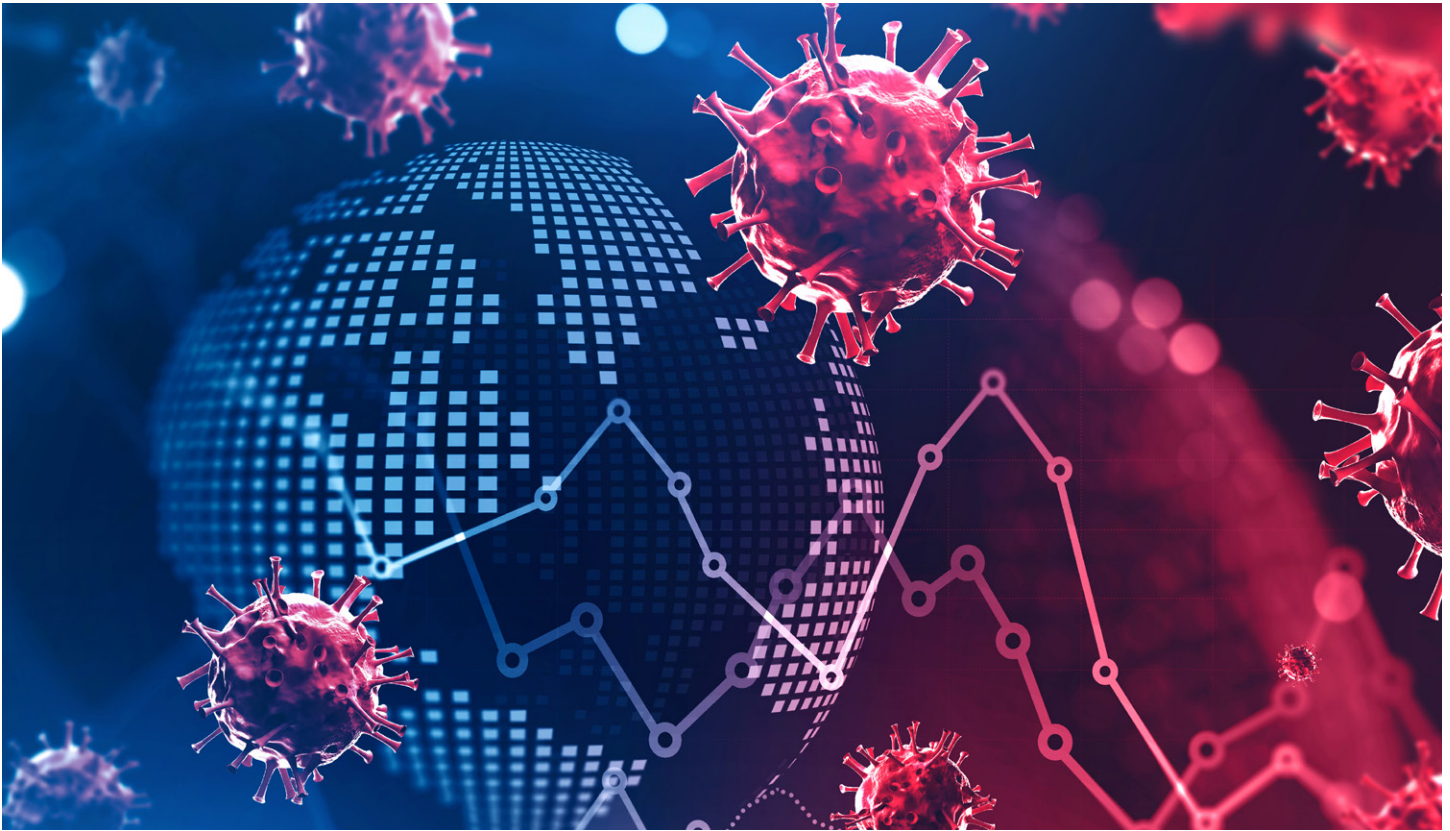
deaths. Above, we mentioned that a raging epidemic will continue beyond where herd immunity is achieved, i.e., 90 % of population will be infected with 60 % herd immunity. A temporary lockdown shortly after herd immunity is attained will spare the 30 % overshoot population from infection. Assume a contagious traveler visits a community coming out of lockdown with no active cases. The pandemic will not reignite if herd immunity has been attained. For example, if $R_o = 2.5$ and the community's immunity ratio is 0.80 (0.80 > 0.60), each infected visitor will spread the virus to an average of just 1/2 persons and new cases will flame out [2.5 x (1 - .8) = 0.5]. The net benefit of a lockdown will vary with the underlying situation.

Also, lockdowns have been applied to specific industries strongly affecting R_t, especially when new cases are growing rapidly (e.g., indoor concerts, drinking establishments).

Facemasks. Wearing facemasks is the most cost-effective way to address this contagion. One study by Goldman Sachs researchers viewed wearing facemasks and social distancing as substitute strategies for reducing infection (Hatzius et alia). They measure the potential benefit of a mask mandate as the GDP decrease that would be prevented if an equivalent reduction in infections were to instead be achieved through social distancing. They estimate the prevented cost of a mask mandate to be 5 % of GDP. Using 0.6 as the elasticity estimate, this represents 4.5 million jobs.

Social Distancing Measures. The virus will flare up again after temporary measures are relaxed and social interaction returns to baseline patterns. When behavior fluctuates such that R_t oscillates between $R_t<1$ and $R_o>1$, the number of new cases will "roller coaster" as herd immunity is approached. The relentless march of infection takes pauses, but "flattening the curve" will not reduce the number of people ultimately infected if social behavior returns to R_o.

However, flattening the curve also lengthens the curve, postponing many cases until after therapeutic and vaccine advances can come to the rescue. While we all are going to die, there is immense benefit in prolonging life. Postponing cases provides hundreds of thousands of Americans with additional quality-adjusted life years.

There are especially large benefits to social interaction innovations that sustain a lower transmission rate (i.e., a "new normal" Rt < Ro), even if the "new normal" is Rt >1. Permanently decreasing Rt below Ro enables herd immunity to be achieved sooner and reduces overshoot. The following table is my interpolation from a chart available on the Max Plank Institute of Evolutionary Biology website (Uecker, Traulsen, and Gokhale).

Sustained Rt	Herd Immunity (% of Population)	Total Cases (% of Population)
2.50 (Ro)	60 %	90 %
2.00	50 %	80 %
1.50	33 %	55 %
1.25	20 %	35 %

The Goldman Sachs study mentioned above operationalized social distancing to incorporate both government measures and voluntary individual choices. University of Chicago economists apportioned the consumer spending decline between these two causes (Goolsbee and Syverson). Using cell phone data incorporating customer visits to more than 2.25 million businesses, they found legal restrictions explained just 7 percentage points of a 60 percent decrease in consumer traffic. Voluntary changes in individual behavior dominated. This parallels what happened across Scandinavian counties where Sweden's decline in GDP was comparable to that in other Nordic countries. Consumer confidence rests on perceptions of safety. Business openings are less likely to be stimulative when they are framed in the context of mask and social distancing rebukes.

Vaccines. Safe and effective vaccines provide a less painful way of achieving herd immunity. They do not have to be 100 % effective or have 100 % participation to contribute to herd immunity. Three developments to watch as vaccines develop are: (1) the length of immunity provided by the vaccine, (2) the effect of virus mutations on vaccine effectiveness, and (3) the time frame for developing new vaccines in response to problematical mutations.

Summing up. Herd immunity, like gravity, is a fact of nature. It does not describe a policy; it drives an outcome. The outcome is not predetermined. The population fraction that ultimately will be infected, sickened, and die along the path to herd immunity, as well as the time path itself, will depend on how public health policies and voluntary choices shape the time path of future transmission, Rt.

I believe COVID-19 and its economic fallout will be with us for a while. Cumulative infections are a small fraction of what is required for herd immunity. A large block of the population conceptualizes freedom as the absence of constraints (irrespective of spillover costs to others) and views mask-wearing and social distancing as being contrary to opening the economy. Another large block conceptualizes freedom as the capacity for purposive action (which requires a safe, predictable environment) and is reducing risk by minimizing consumer activity. While a safe and effective vaccine would be a godsend, universal access will take time and safety concerns will limit participation.

MACROECONOMICS OF COVID-19

Pandemic Recession. Federal spending more than doubled in the third quarter of 2020 (April-June) relative to 2019. Despite the largest peacetime stimulus in American history, we have an unprecedented recession. A Brooking Institution paper summarizes macroeconomic fallout in the U.S. over the first six months of the pandemic (Bauer et alia). The pandemic upended the longest expansion in U.S. history (June 2009 to February 2020; 129 months). The 9.1% decrease in GDP in 2020.2 (quarterly nonannualized rate; 31.7 % annualized decrease) obliterated the previously recorded low (2.1 % quarterly nonannualized; 8.7 % annualized). Nonfarm employment fell by 20.5 million jobs in April, wiping out 113 consecutive months of employment growth. The 8.4 % August unemployment rate increases to 9.6 % when adjusted for adults who want a job but left the labor force. Home schooling and childcare are seriously disrupting labor supply. Revenue of small businesses, which employ half of private sector workers, is down 20 % since the beginning of the year. While disposable income and liquid asset aggregates are up due to unemployment insurance increases and tax rebates, many families are in dire straits. At least 20 % of households are behind in their rent in 26 states. Food insecurity in households with children has doubled since 2018.

Macroeconomics of Deficits, Debt, and Money Creation. The federal deficit, already large, began increasing dramatically in April. In the fiscal third quarter (April-July 2020), tax revenue decreased around 10 % compared to the same quarter of the previous fiscal year. As mentioned, spending doubled. The deficit for fiscal year 2020 is projected by the CBO to be $3.7 trillion (17.9 % of GDP), the largest percentage of GDP since World War II (Desilver).

The cure would have been painfully worse than the disease had the federal government opted to contain the deficit increase rather than address the Pandemic. A tax increase would have further depressed the economy. The unprecedented economic collapse would have been much worse without spending to augment household disposable income, stabilize small business cash flow and balance sheets, and reimburse state and local governments for unbudgeted public health interventions.

Many are concerned the federal debt is so large it cannot be repaid without bankrupting the country. However, only the interest must be paid; the debt is refinanced. Miniscule interest rates reduce the burden. The inflation-indexed 10-year bond rate averaged just 0.4 of 1% over the past decade. Most importantly, Treasury borrowing is

payable in U.S. dollars, a fiat currency (not redeemable for gold or other precious metals). A common denominator of international financial crises is one country having loans payable in another country's currency. For example, Greece owed Euros, which it could not create. This is not our situation. The U.S. can create fiat dollars.

Much of today's Treasury debt is held by federal trust funds (e.g., Social Security, Medicare). One arm of the government pays interest to another arm. Another sizable chunk of the debt is held by the Federal Reserve. The Fed simply returns interest payments it receives from the U.S. Treasury back to the Treasury (net of operating expenses). Public debt net of federal trust fund and central bank holdings is 67 % of GDP compared to 106 % after World War II. Also, the Fed purchases a large share of the additional Treasury bonds being issued to cover the pandemic deficits.

Another concern is inflation. Money supply and bank lending capacity increase when the Federal Reserve finances the Treasury's deficit by purchasing its securities. This can spill over into excess spending and inflation when the economy is at full employment. However, the economy is in a deep recession. Much to the consternation of whichever political party is in power, the Fed can and does keep demand-driven inflation in check by increasing interest rates as the economy approaches full employment. As my Econ 101 prof analogized, "They are like the adults chaperoning the party and taking away the spiked punchbowl just as things get interesting." Unlike in the U.S. where the Fed is independent, politicians control the central bank in countries prone to hyperinflation.

One of the more important areas of current macroeconomic research centers on the disappearance of inflation. I.e., inflation has not increased as the economy nears full employment for several decades. While unemployment in the 4.5 to 5.0 % range historically triggered inflation and central bank restraint, the U.S. unemployment rate fell to 3.5% in February with little sign of inflation. After the Great Recession, central banks established non-zero, low-inflation targets of 2 % or so to reduce the risk of deflation, which seriously deepens recessions. To date, the Fed has had difficulty achieving even this small buffer of inflation. Many view the Fed's recent policy pronouncement on inflation targeting as a feeble attempt to increase inflationary expectations in hopes upwardly revised expectations will be self-fulfilling. While supply chain disruptions caused by the pandemic will lead to price increases for individual commodities, the Fed's monetization of deficits resulting from pandemic stimuli will not result in significant generalized inflation.

A LOOK FORWARD

The timeline of publicly held debt as a percentage of GDP spikes during every crisis (Revolutionary War, Civil War, World War I, Great Depression, World War II, Great Recession of 2007-2009, Pandemic of 2020). It is not unreasonable to think of largescale federal deficits as the silver bullet that enables the U.S. to withstand economic crises threatening our way of life. This is such a crisis and additional deficit-financed stimulus packages are likely.

However, advocating that federal deficits be used aggressively during crises does not imply support of budget policies that have resulted in an upward trending debt-to-GDP ratio even during normal expansionary times. While an ever-increasing debt-to-GDP ratio will not result in government default, it will at some point cause serious resource allocation and economic security problems. As the budget share going to interest on the debt increases, fewer dollars will be available for basic research, infrastructure, national disaster mitigation and management, national defense, education, and every other activity supported through the federal budget. Transfer programs such as Social Security, Medicare, and Medicaid already face growing financial challenges due to population aging.

If interest rates return to "normal" (i.e., nonzero) levels, the interest cost of federal debt will greatly increase and intensify the squeeze on all other programs. If the real borrowing rate (nominal rate minus inflation) rises above the economy's real growth rate, there will be a sustained increase in debt as a percentage of GDP. This will necessitate

an even more drastic spending reduction in other areas to stabilize the debt-to-GDP ratio.

As the pandemic subsides and economic recovery moves the macroeconomy toward normalcy, Congress and the President should negotiate a long-term budget agreement to reduce the debt-to-GDP ratio over time. It should include legislation to eliminate the debt ceiling, which now serves as a forum for high stakes threats to default on government obligations. The budget agreement should be designed to hold the growth rate of deficits below the growth rate of nominal GDP. It will need to be honored by succeeding Presidents and Congresses to ensure we have the fiscal space needed to uncompromisingly address future crises.

Opinions expressed in this article are solely the author's.

REFERENCES

Bauer, Lauren, Kristin E. Broady et alia. "Ten Facts about COVID-19 and the U.S. Economy," Brookings Institution, September 17, 2020. Online: https://www.brookings.edu/research/ten-facts-about-covid-19-and-the-u-s-economy/

Desilver, Drew. "The U.S. Budget Deficit Is Rising Amid COVID-19, but Public Concern about It is Falling, Pew Research Center. August 13, 2020. Online: https://www.pewresearch.org/fact-tank/2020/08/13/the-u-s-budget-deficit-is-rising-amid-covid-19-but-public-concern-about-it-is-falling/#:~:text=The%20COVID%2D19%20pandemic%20has,has%20changed%20in%20recent%20years.

Goolsbee, Austan and Chad Syverson. "Fear, Lockdown, and Diversion: Comparing Drivers of Pandemic Economic Decline," Becker Friedman Institute Working Paper 2020-80. 2020. Online: https://bfi.uchicago.edu/working-paper/2020-80.

Hatzius, Jan, Dean Struyven, and Isabella Rosenberg. "Face Masks and GDP," Goldman Sachs Insights, June 29, 2020. Online: https://www.goldmansachs.com/insights/pages/face-masks-and-gdp.html.

Uecker, Hildegard, Arne Traulsen, and Chaitanya Gokhale. "Herd Immunity: Letting the Pandemic Run?" Max Plank Institute for Evolutionary Biology. 2020. Online: http://web.evolbio.mpg.de/evoltheo_corona/articles/HU_HerdImmunity/HerdImmunity.pdf.

University of Oxford, Blavatnik School of Government. "Coronavirus Government Response Tracker," September 14, 2020 update. Online: https://www.bsg.ox.ac.uk/research/research-projects/coronavirus-government-response-tracker.

Principles for Worksite Conflict Mediation

Craig W. Kelsey, PhD
Department of Public Policy and Administration
California State University – Bakersfield

Within the dynamics of the work world – with varying degrees of pressure and expectations – it seems almost inevitable that some level of worksite misunderstanding will occur. Employees, employers and the needed work assignments may clash over differing needs, goals, interests, resources and expectations. There may be mild every day levels of tension found and expected at the workplace to moments of disagreement that are more serious in nature and may even lead to significant disruption not being healthy, expected or routine. These situations might call for negotiation and resolution through a worksite conflict mediation process.

The specific source that underpins conflict at the worksite can be as varied as the people involved. However, in almost all circumstances conflict is caused by differences – differences over needs, goals, interests, norms, resources, communications, power and status, self-importance, interpretations, boundaries or wounds. Coupled with these differences of understanding are assumptions as to how each is understood. The parties involved assume that they understand others, that others understand them, that the work world is perceived in the same way by all involved, that each person places the same value on common elements and that the reactions of others will be the same as ours. The combination of differences and assumptions lead to conflict.

Our reaction may be to avoid the situation at all costs, or accept it and move on, or confront and fight the circumstance, or to search for a compromise or to bargain, or to resolve the conflict seeking long-term meaningful collaboration. Avoidance, acceptance, confrontation, and compromising are short-range efforts with low levels of sustaining success. Conflict mediation is based on collaborative and mutually respectful long-term problem solving.

The worksite conflict mediation process involves seven steps strategically flowing in the following order:

Step One: *confirm the purpose of the conflict resolution session[s]*
When those involved with the conflict first meet all parties must be introduced to and at some level accept that a disagreement exists and that the level and intensity of that difference cannot be sustained. A commitment must be made by all parties that they are willing to participate in the process and will do so with a tone of openness and respect. Even though there may be hesitation on the part of some, clear and reasonably comfortable understanding of the purpose is necessary. It is possible that the conflict mediation process stalls or ends at this point. If the process is mandatory then perhaps even though resistance exists the process can move forward. Hostility to the purpose and process of the resolution effort is a serious issue and may yield low success or abandonment of this particular style of mediation.

Step Two: *confirm the role of the session conflict mediator*
At this point, the mediator must detail their role and responsibilities to the parties involved and to the resolution process. The facilitator's role is to seek clarity and understanding as the differing parties share their expressions. The mediator will monitor the tone of the discussions and assure a minimal standard and expectation of mutual respect. Openness and safety of expression is key with the mediator making clear that they will not be taking sides during the discussions and will keep the focus on the problem and not on ancillary issues. The mediator is the guide and does control the tone, direction and quality levels of the expressions but works to be at a distance if possible. The parties understand and accept that the mediator might probe.
Step Three: confirm the rules of the mediation session
So that there is clarity and comfort at what may be a very difficult moment a few agreed upon rules must be

set to guide the conflict mediation process. If the parties involved cannot or will not agree to these basics then again, perhaps this process is not the best option. If the session is mandatory then there is a better chance at agreement. Ground rules such as the following are minimums [1] commitment to the process meaning that the parties will come to the sessions and will maintain a needed level of involvement [2] expected professional behavior meaning that at times emotions may raise but decorum, tone, word choice and appropriate tenor would be necessary [3] fairness and accuracy of communication is required [4] confidentiality of proceedings safe guarding the delicate nature of the process and those involved, and [5] an established and predetermined length of meeting time so that there is a clear start and ending process to each session.

Step Four: *confirm the issue*
This nest step is the most difficult and may require special attention. The conflict, be it a person and their behavior or a circumstance and a difference of opinion about how it should be handled, must be identified and defined. The parties should be free, supported and allowed to state the issue as seen by them. This step may be require clarification by the mediator. Each person should be free, supported and allowed to voice the level of magnitude, intensity and interest in the issue under discussion. Each person should be allowed to state what they think is the best solution to the conflict. This issue identification, clarification and solution process may be loaded with misunderstandings, miscommunications, differences of opinions, and personal bias. This is usually the most complex step in the process. Now there may be organizational policies, well-established procedures or codes of conduct that clarify the best solution.

Step Five: *confirm options and their consequences*
If the process yields a series of possible solutions [which would be one of the primary goals of these sessions] then a further analysis is needed questioning the following – which solution is [1] acceptable to all parties [2] appropriate regarding organizational policies [3] fits within the norms of the work place and [4] is ethical. In other words –

which option is the best solution? Helpful here is a consequence chart. Each possible solution is listed with needed detail. Then the consequences and required actions for each party involved are also identified. By doing such, there should be clarity and understanding of all proposed actions. Verification of the general and specific themes can be discussed using the same predetermined ground rules.

Step Six: *confirm commitment to solution*
A decision is made agreeing on the 'best' solution given all parties. By the way, the employee, the employer, the organization and its policies and other workers [customers, clients] are all part of what is meant by 'all parties'. The consequence chart is now reframed into an action plan with agreement statements. Some participants will want the solution to be verbal only while other circumstances call for a more formal written document. This process and any written documents may have legal bearing if some level of violation occurs that is significant. All parties should keep this in mind. Union representation may also be a factor.

Step Seven: *confirm follow up time line*
Lastly, a follow up session is usually scheduled far enough into the future that the actions agreed upon have time to bear results. This follow up time line should be established and agreed upon before the last session ends. When both parties know of the accountability associated with a follow up meeting it is more likely that proper attention will be a focus on the action plan. It is possible that with sincere intent the action plan will need appropriate adjustment. Evaluating the 'real' success of the best solution may require continuing study and follow up. Some parties may ignore the goals that have been set in the mediation sessions, or fail to have the capacity to achieve them. If success is not obtained then perhaps another model of resolution is needed. The issue may be one of overall work performance failure. One last point, if this process is mandatory and future employee staying is a consequence a little more power is associated with the resolution effort.

There may be some very unusual dynamics associated with worksite conflict mediation. Some parties involved may use active or passive blocking skills; bring unknown biases, or a personality structure that calls for the best of mediation skills. Conflict mediation is just one tool that may be of help in trying to resolve work place disagreements.

CSU Bakersfield

School of Business and Public Administration