Topics: The latest news; COVID impact on unfunded obligations of US states, and the Chapter 9 debate; COVID, food/energy supplies and the Electoral College

What's new (with references to where you can find the details on our virus web portal):

- **Measured on a state by state basis**, most of US GDP is now seeing declining infection rates, or rising infection rates that are the result of testing that's increasing even faster. Even so, the US has the highest infection rate per mm people in the world right now, other than Singapore. Using litmus tests for lockdown relaxation that include infections, % of positive tests, ICU beds and hospitalizations, 15% of US GDP meets our totally unofficial criteria for economic reopening. This compares to states comprising 25% of GDP that have already enacted partial reopening plans (Section 1, Section 2)
  - Note: the "reopening" of a state does not tell us enough yet about the speed or magnitude of economic revival, since definitions and personal/corporate behaviors will differ by state
- We are beginning to see **signs of life in our US tracking models**: petroleum demand, intermodal rail traffic for consumer goods, new business applications, GPS-based driving map usage, hotel occupancy rates and mortgage applications (Section 1)
- **Remdesivir** trial results were broadly positive, and may help increase hospital capacity through a modest reduction in days to recovery. But the drug has to be given on an intravenous basis rather than in outpatient settings, and has not been shown (yet) to have a beneficial impact on mortality. I don't see the results as a game-changer, but as an improvement on the margin. The J&J/Oxford vaccines and Regeneron monoclonal antibody therapy are the treatments we're watching most closely. The BCG vaccine premise does not stand up to some very basic data checking (Section 4)
- **Is US fiscal stimulus "enough"?** Hard to define exactly, but here are some metrics we have seen that put stimulus in context[1]. Overall worker incomes may only decline by 3% in 2020; the original 11% hit to incomes may be offset by 8% from government transfers. Furthermore, 65%-75% of workers laid off may be receiving more state and local unemployment benefits than lost wages (at least through the program's initial expiration date at the end of July), all of which may result in a remarkable 0.5% *increase* in personal disposable income this year vs 2019. We also show wages and expected layoffs by industry in this week's note on page 4
- **Age-based probability distributions** for COVID mortality are now clearer, and are more informative than case fatality rates or the proportional mortality data released by the states. In many countries, the probability of people under age 65 dying from COVID-19 has been measured at 2%-3% of the probability for those over 65, although in NYC that figure was 7%. Around 75% of US workers are below age 54, which is roughly where mortality risks start to rise sharply (Section 6)
- In the largest ever non-M&A bond deal in history, **Boeing** sold $22bn+ in bonds last week at 5%-6% yields with orders of $50 bn, despite a 57% YTD decline in Boeing stock, a BBB- rating and a cash burn of almost $6 bn in Q1 that left the company with $15.5bn of cash and marketable securities plus $9.6bn of undrawn revolvers

[1] "*Income Losses vs. Fiscal Stimulus: Estimating Second-Round Effects from the Virus Shock*", D. Mericle et al, GS US Economics Analyst", April 29, 2020

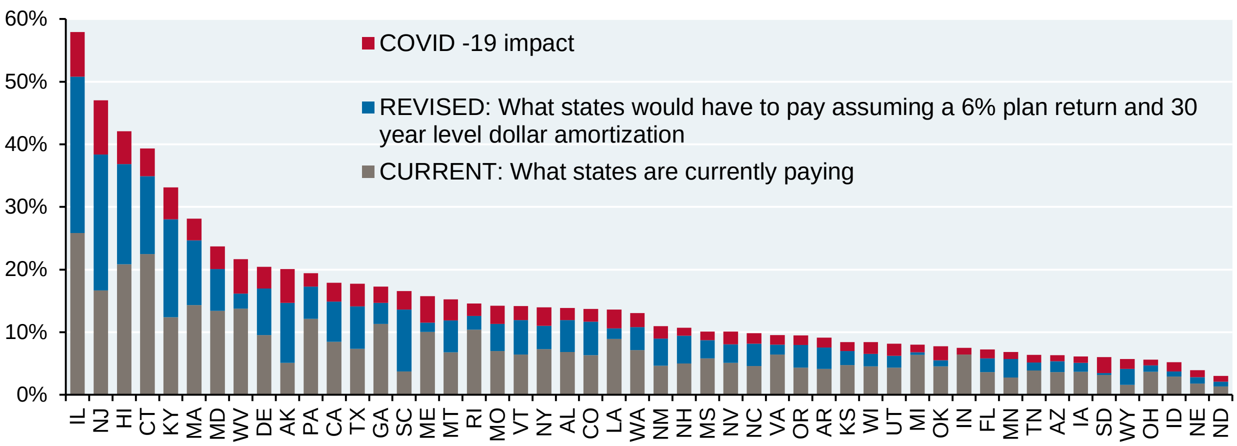
COVID impact on unfunded state pension obligations, and the Chapter 9 debate

Many clients are familiar with our "ARC & The Covenants" project, in which we measure unfunded pension and retiree healthcare obligations as a % of state revenues[2]. It will take a couple of years for COVID to fully make its way into the revenues and forward-looking assumptions in state Consolidated Annual Financial Reports, so I made a rough estimate of COVID's impact on our state "IPOD" ratios. To do this, I modeled an upfront shock to our 2018 results to reflect the instantaneous impact of COVID on state finances:

- **Revenue declines**. Moody's released base case revenues declines for fiscal year 2021[3]. They range from -13% to -15%, with a wide deviation around the mean. However, we use a normalized post-virus estimate of state revenues instead of the Moody's figures (for the same reason that we do not value US equity markets based on 2020 earnings, and use 2021 earnings instead). After triangulating GDP forecasts for the next 2-3 years, the speed with which state revenues rebounded after the recession in 2008/2009, the stimulus plans, the likelihood of more severe tax base impairment this time around, etc, I assumed that 2/3 of Moody's revenue declines are recovered by 2022
- **Portfolio declines.** Using pro-forma estimates of state defined benefit plan asset allocation, we assumed an upfront valuation shock of -10% (based on YTD changes in equity, real estate and credit markets, and their respective impact on hedge fund and private equity returns)
- **No change in investment return.** We were already using a long-term diversified portfolio return assumption of 6% compared to 7%-7.25% used by many US states. The 6% assumption also foots with JP Morgan Asset Management Long Term Capital Markets Assumptions as of April 30, 2020

Results: estimated COVID impacts were small for less indebted states, and larger for more highly indebted states, as you would expect. The first few bars on the left appear unsustainable from a long term public policy perspective, but this was the case before COVID as well. As a reminder, this analysis focuses on state resource adequacy for meeting unfunded long-term obligations, and is separate from the question of whether rainy day funds plus the Fed's new Municipal Liquidity Facility are adequate to fund 2020 state operating deficits.

The cost of unfunded pensions and retiree healthcare as a % of state revenues
% of state revenues required to pay the sum of interest on net direct debt, the state's share of unfunded pension and retiree healthcare liabilities, and defined contribution plan payments



Source: J.P. Morgan Asset Management, State Annual Financial Reports, Moody's. FY 2017. April 29, 2020.

[2] If you want to read the most recent version of the analysis, you can find it here. We define IPOD ratios as interest on general obligation debt, plus amortization of unfunded pension and retiree healthcare obligations, plus any defined contribution payments, all as a % of state revenues.

[3] "*Stress-Testing States: COVID-19*", Moody's Analytics, April 14, 2020

Since we began this project in 2014, we have argued that states should have access in emergency to Chapter 9 bankruptcy provisions, for the following reasons: fair treatment of all creditors, particularly across generations of workers; the ability to make choices regarding allocations to bondholders, retirees and discretionary spending on infrastructure/education in a way that balances the needs of all state constituents in case of dire fiscal distress; and to avoid what Federalists argue is an **unconstitutional irrevocable obligation** due by the state, whose existence is proscribed by the Federal bankruptcy code (see table, left).

The "Federalist" Argument	The "State's Rights" Argument
The Constitution authorizes Congress to pass laws related to bankruptcy, and the Congress has chosen to require equal treatment of creditors:	States can do what they want, and in many of them, state legislators don't want retiree pensions interfered with:
US Constitution: Article I, Section 8, Clause 4 "The Congress shall have Power …To establish a uniform rule of naturalization, and uniform laws on the subject of bankruptcies throughout the United States"	United States Constitution: 10th Amendment "The powers not delegated to the United States by the Constitution, nor prohibited by it to the States, are reserved to the States respectively, or to the people"
US Bankruptcy law: Chapter 9 ref. Chapter 11: "The court, on request of the proponent of the plan, shall confirm the plan notwithstanding the requirements of such paragraph if the plan does not discriminate unfairly, and is fair and equitable, with respect to each class of claims or interests that is impaired under, and has not accepted, the plan"	Michigan State Constitution: Article IX, Section 24: "The accrued financial benefits of each pension plan and retirement system of the state and its political subdivision shall be a contractual obligation thereof which shall not be diminished or impaired thereby. Financial benefits arising on account of service rendered in each fiscal year shall be funded during that year and such funding shall not be used for financing unfunded accrued liabilities"
View: The Supreme Court reversed course in the 1930's and finally ruled that laws allowing municipal bankruptcy would not violate the contracts clause or state sovereignty; the same logic can apply to laws allowing state bankruptcy	View: A Federal law allowing state bankruptcy would result in tortious interference with public sector contracts and state sovereignty

The State's Rights argument is on the right, using Michigan as an example. But I'm a Federalist on this issue, and agree with former FDIC Chairman William Isaac who said this in 2016 when discussing Illinois:

> "The city of Chicago and the state of Illinois should act now to restructure their liabilities and put the fiscal mess behind them. This can be accomplished by utilizing Chapter 9 and other tools Congress just gave Puerto Rico. The process would entail about two years of unpleasant headlines, but the city and the state will rebound far sooner and less painfully than if they stay on their current paths".

Isaac's comments were not the first on the need for Chapter 9 for states. Legal scholars at the University of Chicago began writing about it in the early 1990's, and U Penn Law Professor and bankruptcy expert David Skeel[4] has been writing about the need for Chapter 9 for states for over a decade (David is an avid *Eye on the Market* reader and helped lay out the Federalist/State's Rights arguments above).

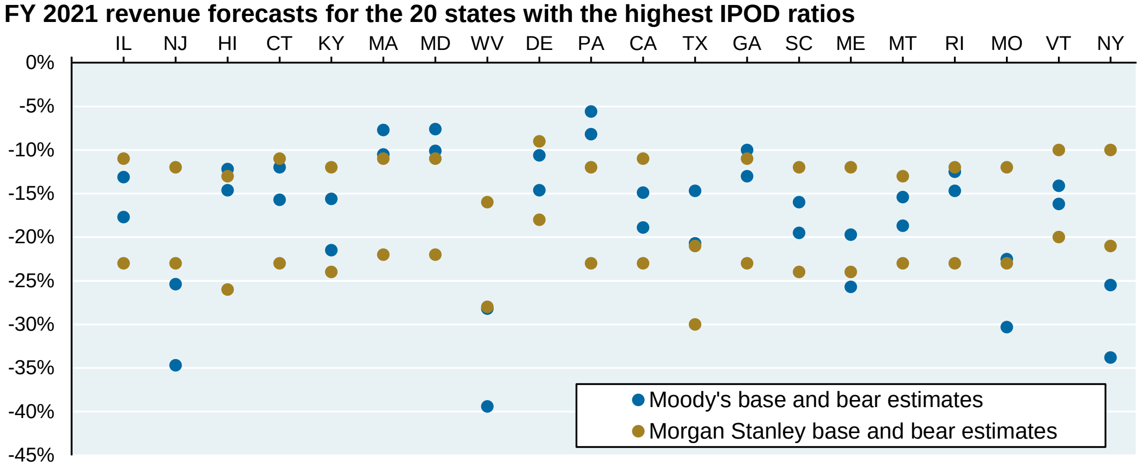
[4] David has also just published a must-read article on the need to **flatten the bankruptcy curve given the massive wave of corporate bankruptcies expected to occur**. Critical needs include allowing simultaneous prepackaged bankruptcies, government provision of DIP financing to failing firms and a lot more temporary bankruptcy judges. "*Bankruptcy and the Coronavirus*", David Skeel (U Penn), Brookings Economic Studies, April 2020.

That's why it was disappointing to see this issue framed in the press as a crude partisan divide after comments from Senator McConnell and various reactions to them. There are serious issues at stake here, both for states that might have to dedicate massive amounts of its revenues over the next 30 years to service some obligations at the expense of others, as well as for more solvent states that would have to effectively share those burdens in case of Treasury or Fed bailouts. That's a State's Rights issue too.

COVID impact on the states: notes and charts

- **State revenue shortfalls may** be substantial, $200-$250 bn in FY 2021. Estimating shortfalls is difficult given lack of precedent. The first chart shows base case/bear case revenue forecasts for 20 states with the highest IPOD ratios. There is a *lot* of variation here. Compared to 2008, natural resource extraction taxes and motor vehicle taxes are likely to fall more, but income tax payments might hold up better given stimulus described and since job losses are skewed to lower income workers (second chart)
- **Difficult choices:** After drawing on cash reserves of $75 bn, enacting $30 bn in spending freezes and relying on $50 bn in CARES Act revenue to fund new COVID-related expenditures, many states will still face **difficult choices** to balance budgets and not rely excessively on deficit spending. Cash reserves differ by state; the lowest ones (less than 3%of state expenditures) are owned by AR, IL KS, KY, NJ, PA. "**Pension holidays**" (i.e., non-payment of annual required pension contributions) have been mentioned as possible outcomes to bridge deficit gaps, which would of course worsen the IPOD ratios shown above

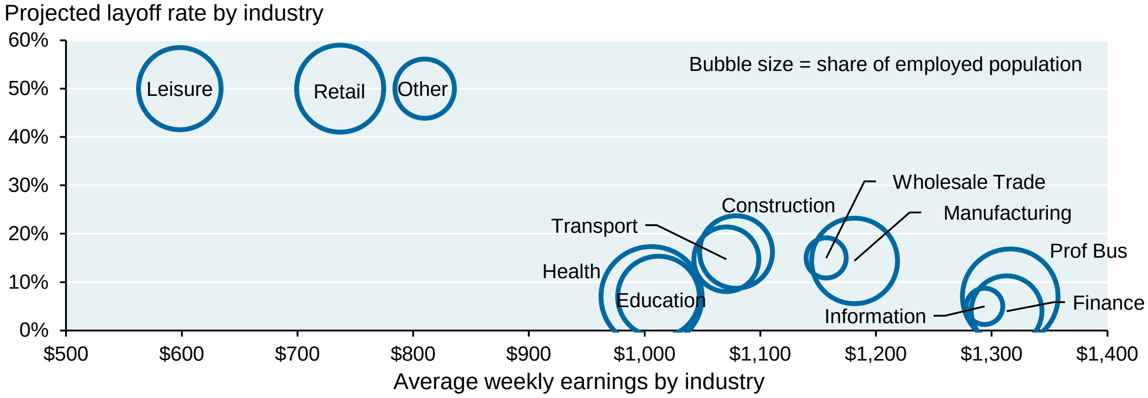
FY 2021 revenue forecasts for the 20 states with the highest IPOD ratios



Source: Moody's Analytics, Morgan Stanley. May 2020. Excludes Alaska, which is expected to suffer larger revenue shortfalls than those shown above due to declines in natural resource extraction taxes.

Projected job layoffs, wages and share of employment

Projected layoff rate by industry



Source: BEA, GS Economic Research. April 29, 2020.

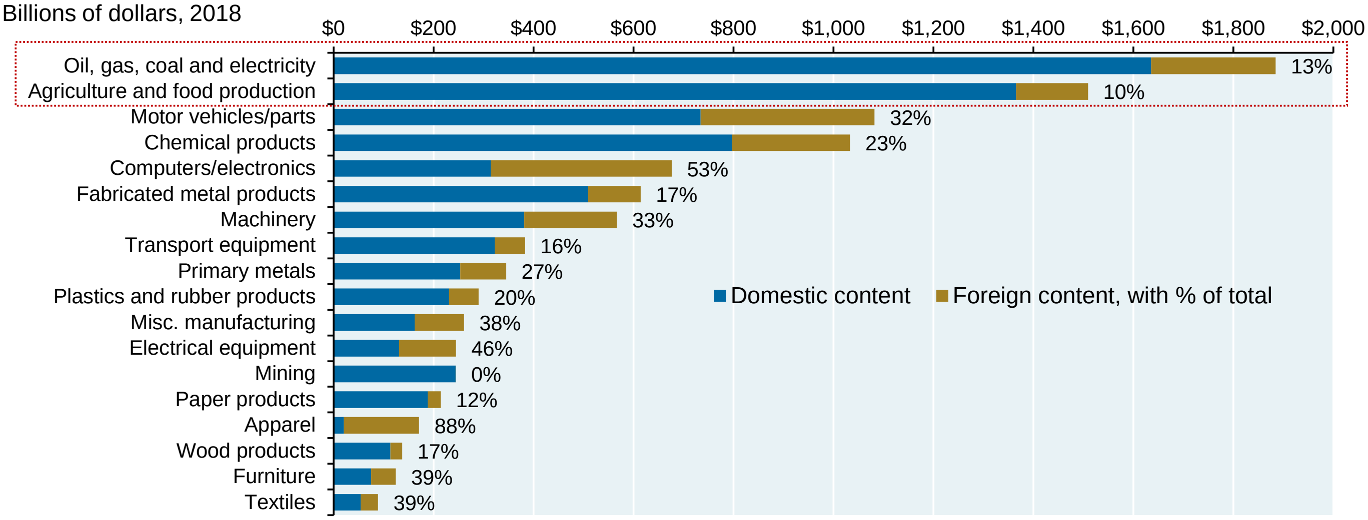
COVID, food/energy supplies and the Electoral College

As I was reading about disruptions to the US food supply, I was reminded of the following:

- The US continues to urbanize (85% of the population and rising), and its cities have among the highest food and energy consumption footprints in the world, relying very heavily on non-urban areas to survive[5]
- Food and energy production are the largest segments of the US goods sector, and also the ones most reliant on domestic production as a % of total US consumption (first chart)
- Where does all this domestically produced food and energy come from? Texas, California and a diverse group of mostly Southeastern and Midwestern states (second chart)

Food & energy: the largest goods sectors in the economy, and the ones most reliant on domestic production

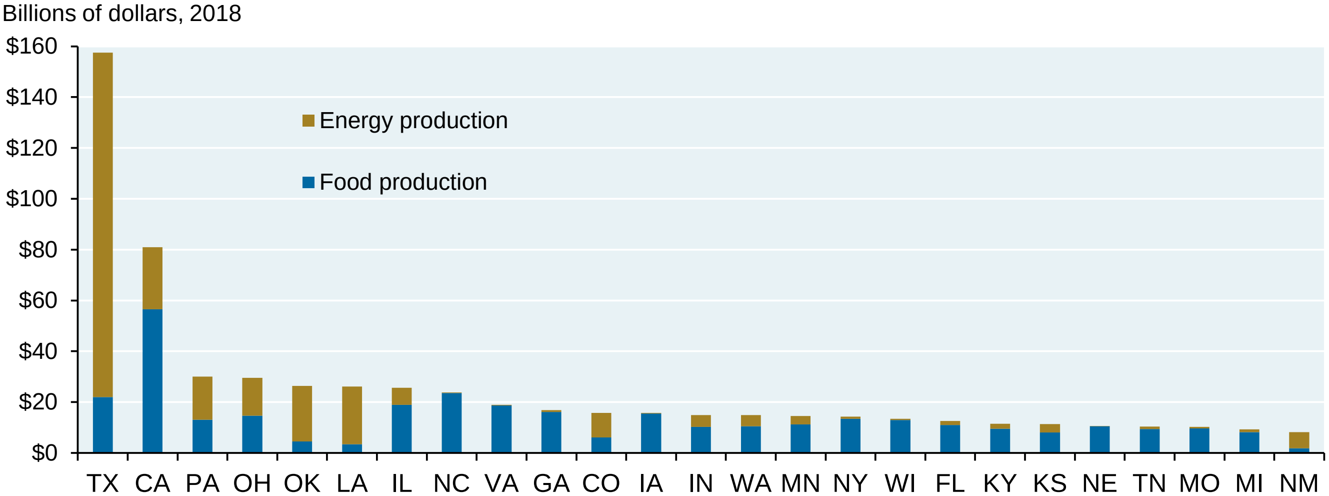
Billions of dollars, 2018



Source: BEA, JPMAM. 2020. Domestic content is derived from BEA Input-Output tables, and includes intermediate value added plus direct final

US food and energy production, top 25 states

Billions of dollars, 2018



Source: BEA, J.P. Morgan Asset Management. 2020. States shown account for 87% of total US food and energy production.

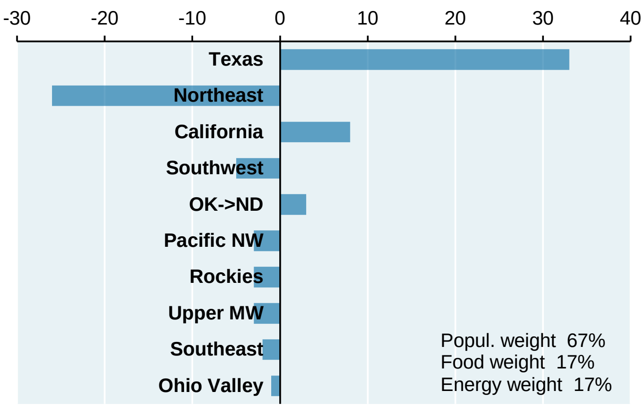
[5] "*Surveying the Environmental Footprint of Urban Food Consumption*", B. Goldstein et al, Technical University of Denmark, Journal of Industrial Ecology, 2016.

While food/energy state population densities are sometimes lower than in big cities, the cities would not be able to survive without them. Countries without domestic food and energy supplies are instead reliant on geopolitically insecure and costlier imports of food/energy, and exposed to exchange rate factors out of their control. **What does this have to do with the Electoral College?**

Some want to change the Electoral College by making it purely proportional (no automatic allocation of 2 electors per state), or simply move to a popular vote. Here's another approach that incorporates the discussion above: allocate electors to each state based mostly on its population, but also based on its share of food & energy production. I ran this two ways, the second of which reduced the relative energy weight given uncertainty regarding where US energy production goes from here. Either way, Texas and California gained electors at the expense of the Northeast, while most other electoral gains and losses were minor.

This is a purely academic exercise of course. The current Electoral College system will probably remain the same no matter what people propose, given Constitutional hurdles[6]. Even so, the results suggest that despite all its flaws, and with the exception of the Texas-Northeast divide, that the current system ends up allocating political power based on population and also based on the burden each state bears to feed and power the rest of the country in both good times and bad.

Change in electoral votes from modified approach based on population and food/energy production



Source: BEA, J.P. Morgan Asset Management. 2020.

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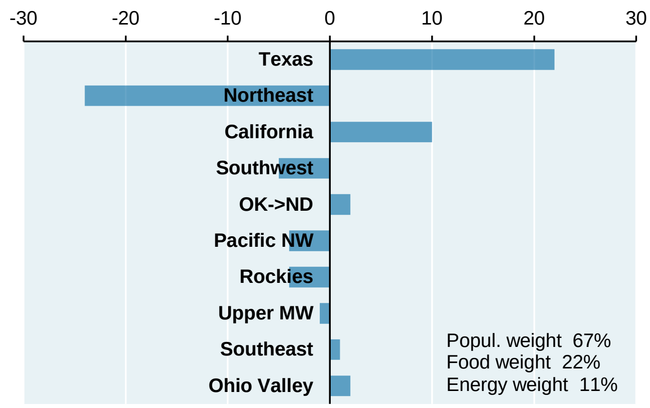

Source: BEA, J.P. Morgan Asset Management. 2020.

[6] A constitutional amendment to abolish the Electoral College would require a two thirds vote in the House and the Senate, and ratification by at least 38 state legislatures.

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