



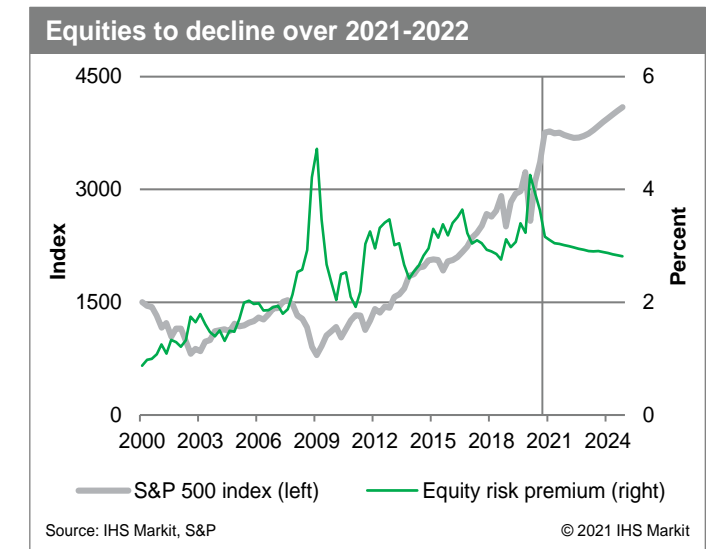
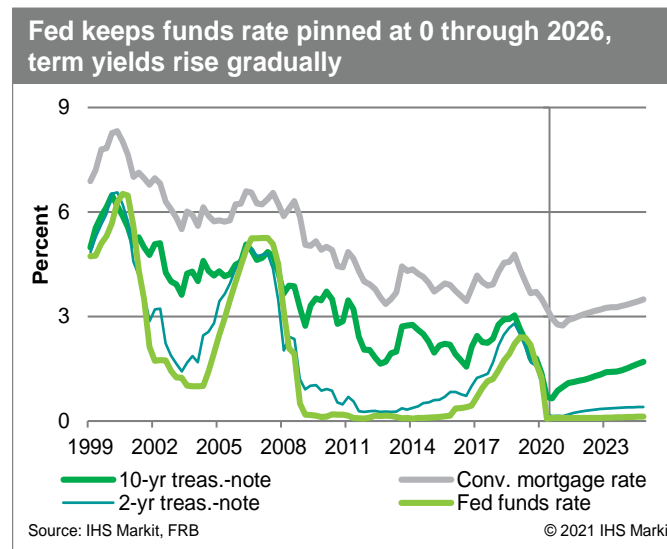
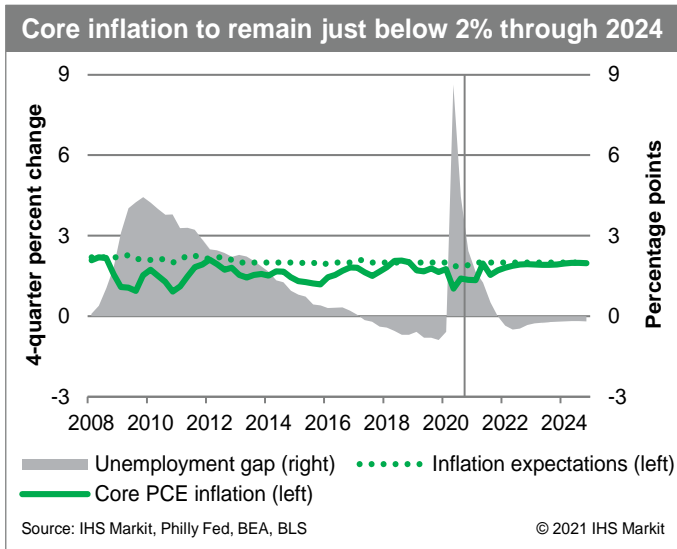
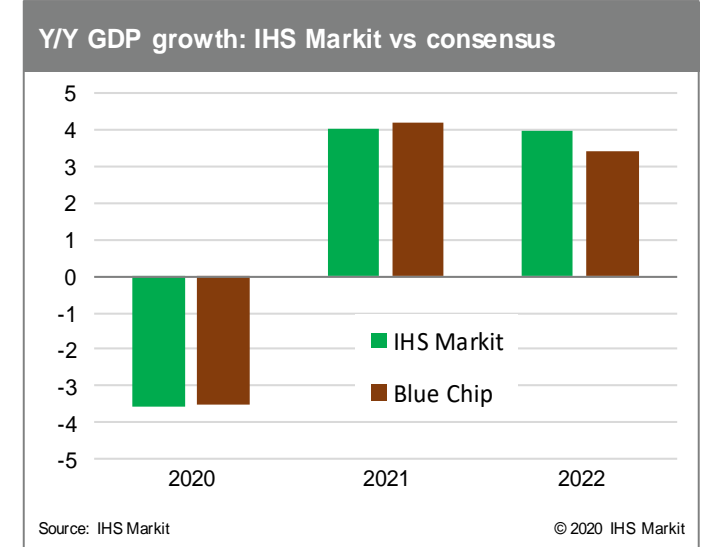
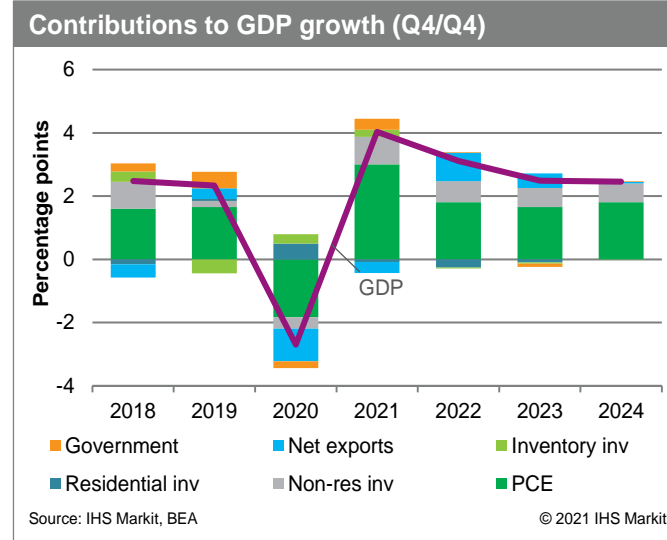
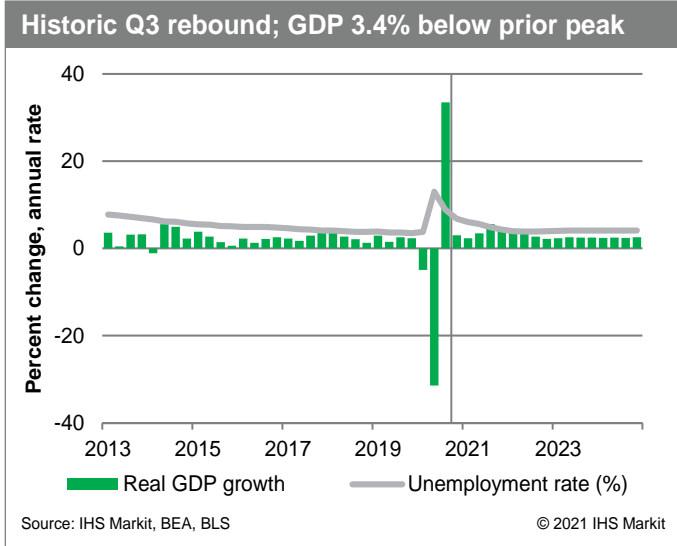
The US Economic Outlook

Michigan Consensus Revenue Estimating Conference

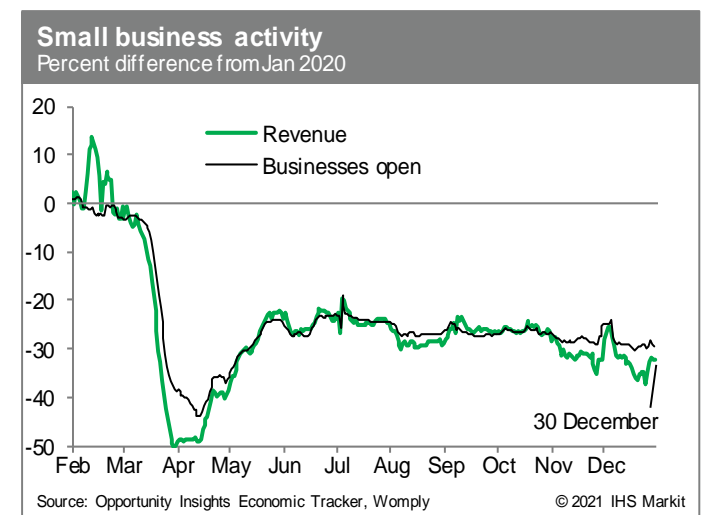
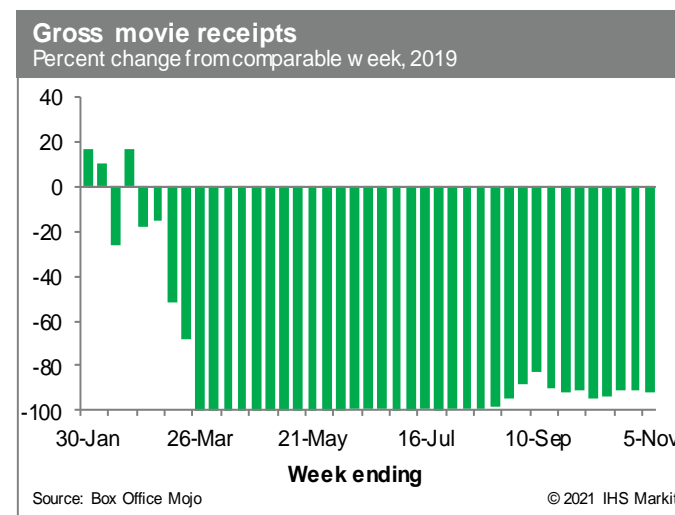
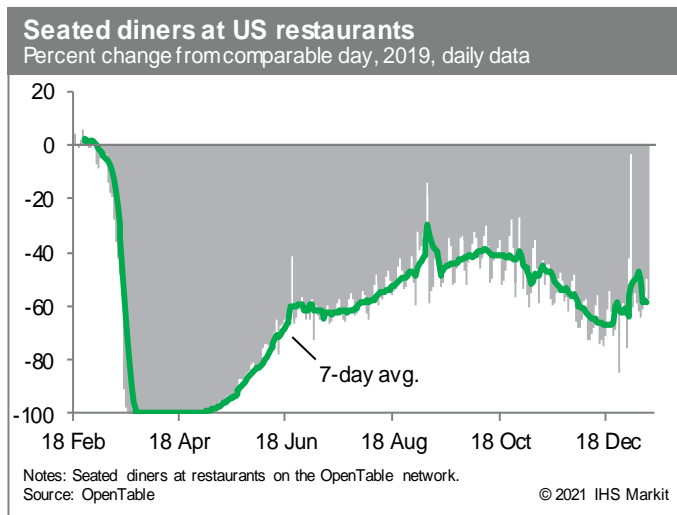
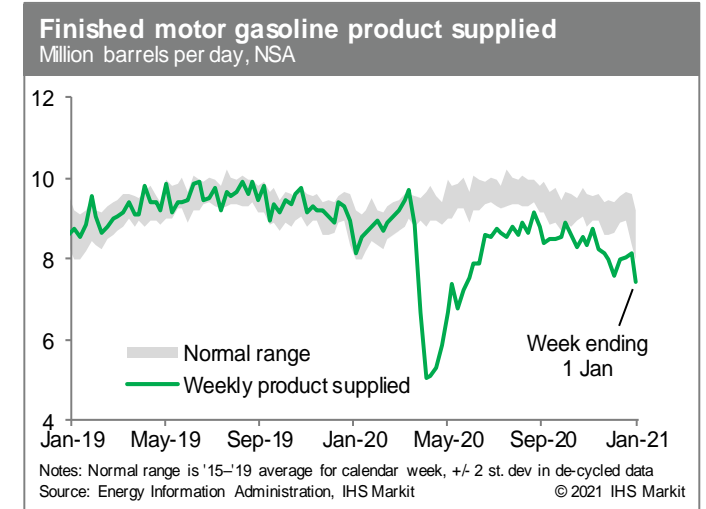
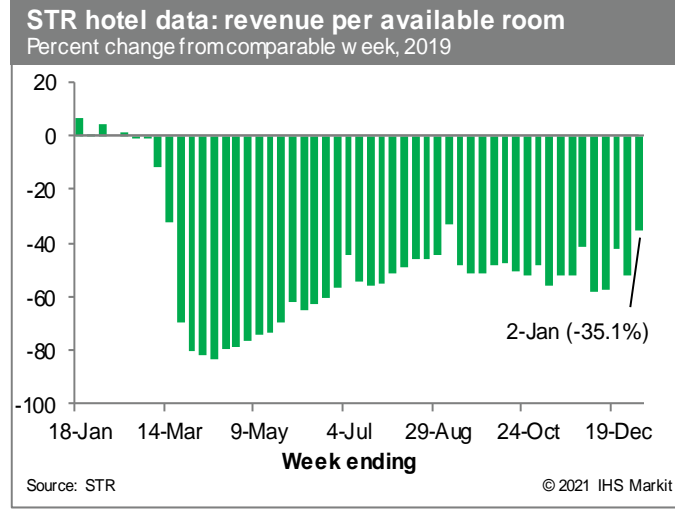
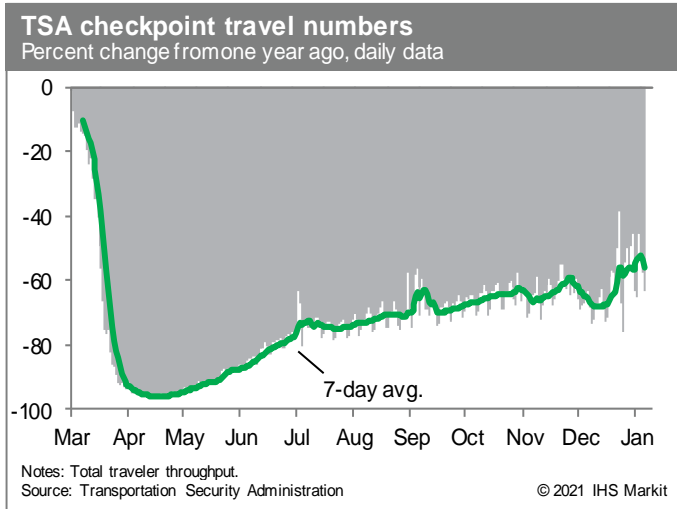
15 January 2021

Joel Prakken, Chief US Economist

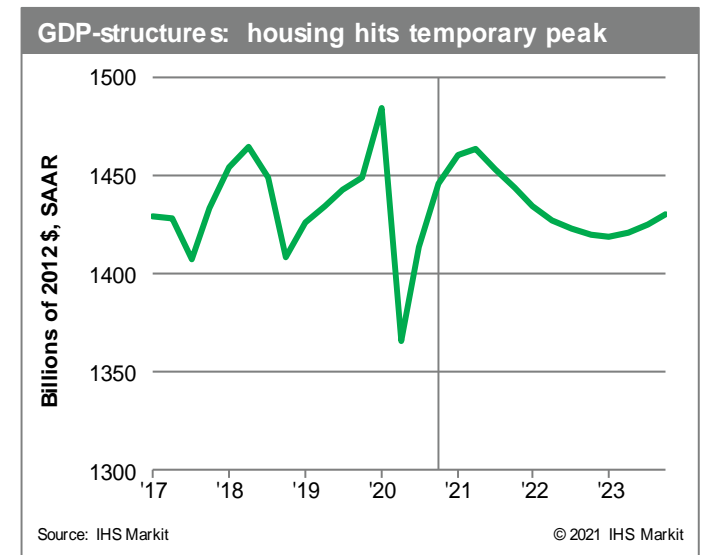
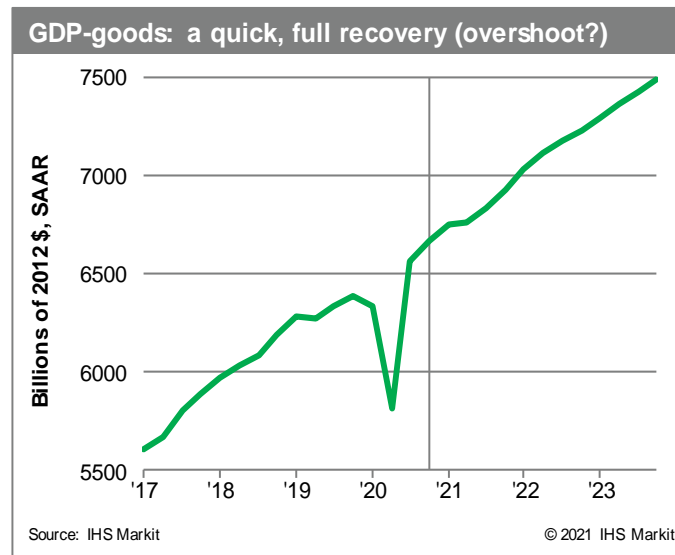
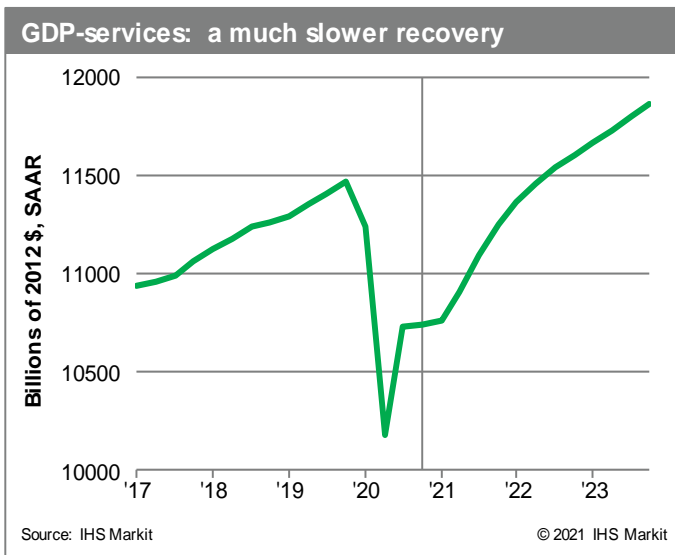
Forecast at a glance



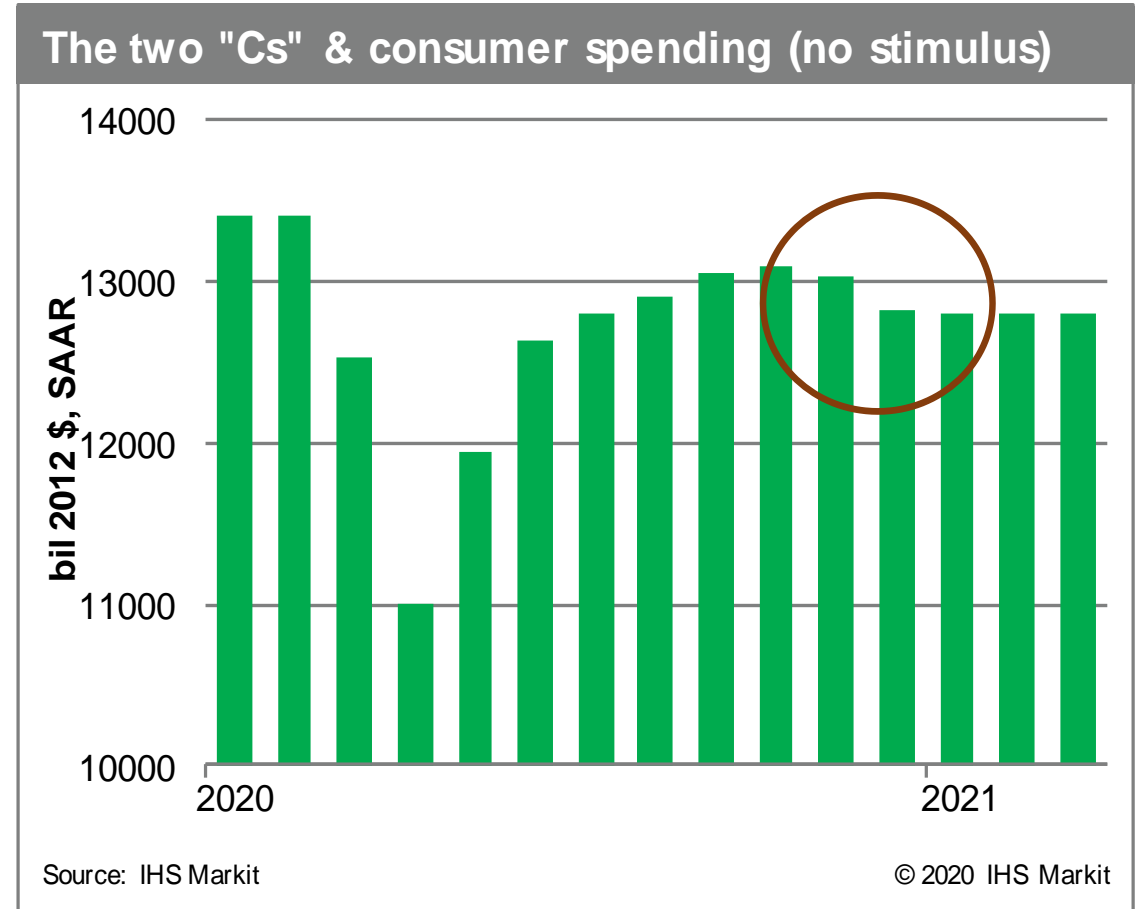
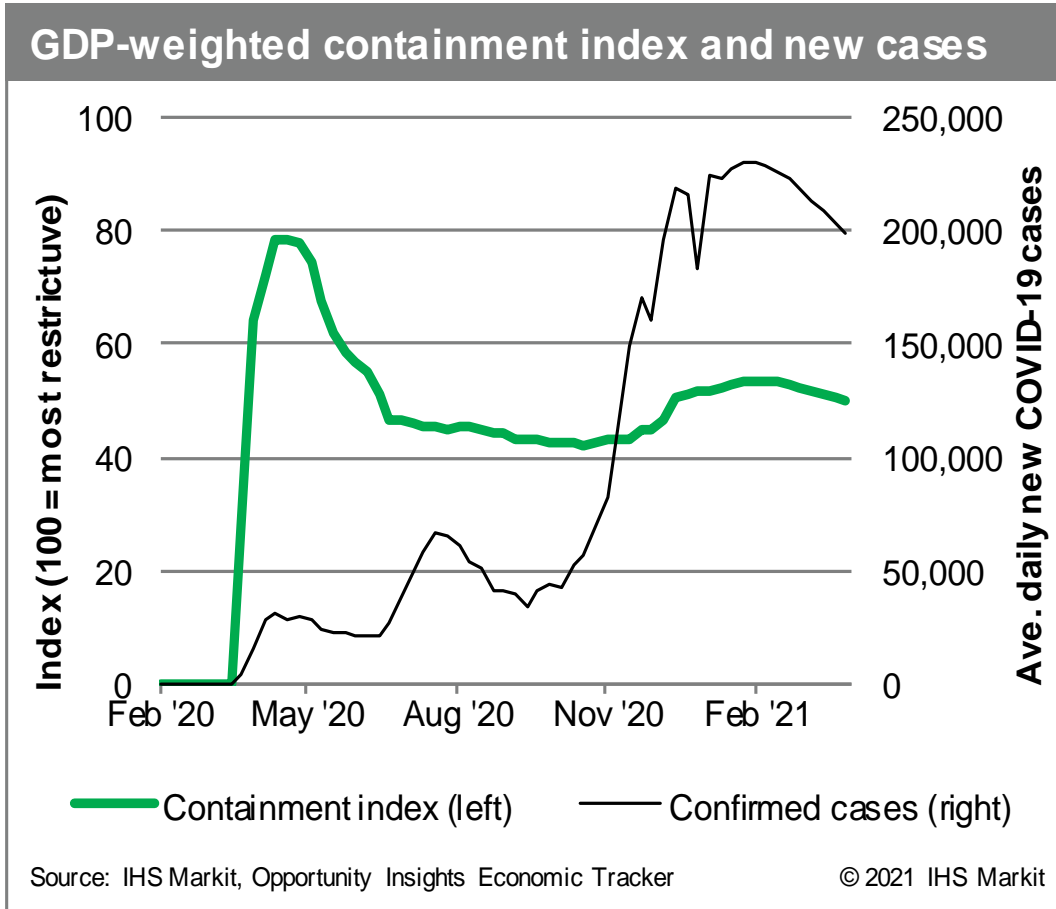
Social distancing still clobbering some parts of the service economy...



...but other sectors have fared much better.



The two "Cs": - cases & containment influence near-term pattern of spending

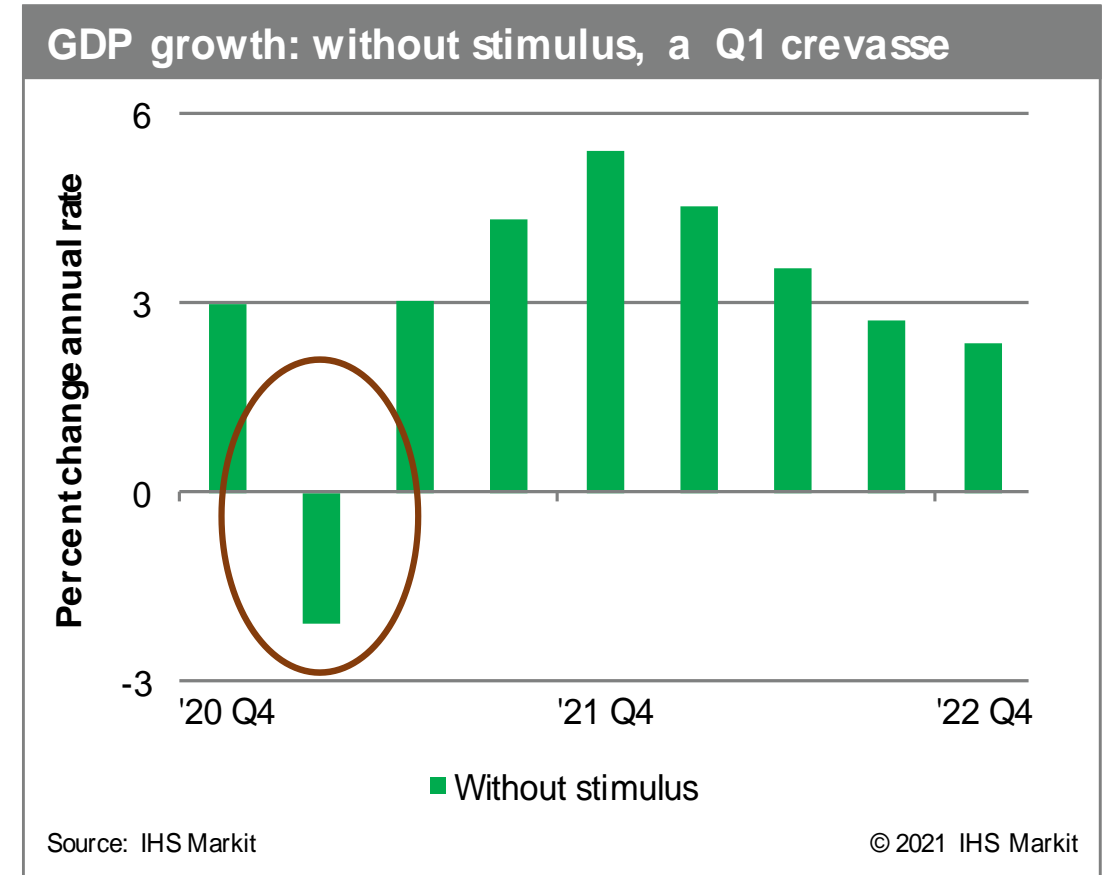


Key points from the latest briefing by our Life Sciences Team (LST)

- *We expect that by mid-2021 enough people will have been vaccinated to have had a significant impact on mortality and hospitalization rates. We already expect an impact on mortality in the Spring (although US will be somewhat later than Europe because of higher levels of risk population beyond the elderly).*
- *The disease will not be gone, and significant portions of the population will not be vaccinated, but the disease will be well controlled and not require lockdowns/social distancing/NPIs.*
- *This will also coincide with the significant seasonality that we've seen – i.e., infection rates will have naturally declined as well.*
- *There will almost certainly still be some leftover behavioral changes (i.e., some people might still wear masks or socially distance etc.) but this would be voluntary/individual choices.*
- *Some countries around the world with much later access to vaccines will only have had a very limited impact on the disease at that stage, which means that air travel will still suffer.*

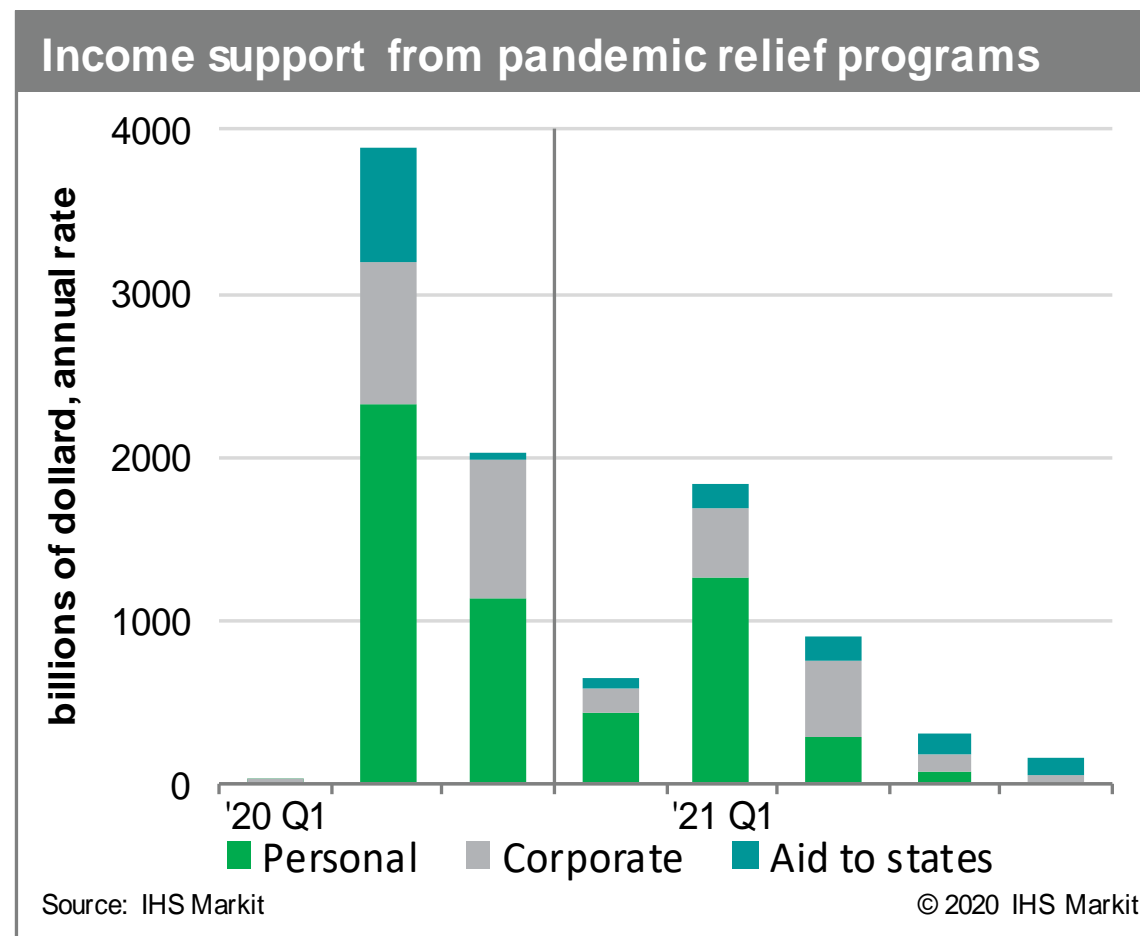
Building the forecast in layers; first, without stimulus...

- Based on our assumptions about cases, containment, and their impact on spending, we expected that, without stimulus, GDP would have contracted at a 2% annualized rate in Q1
- Based on our LST’s assumptions regarding the inoculation campaign, we anticipated GDP growth in the second half to rise above “trend” as behavior begins normalizing and with the release of some pent-up demand
- An underlying narrative of a weak(er) first half followed by a strong(er) second half
- Fiscal stimulus: how high, long a bridge?

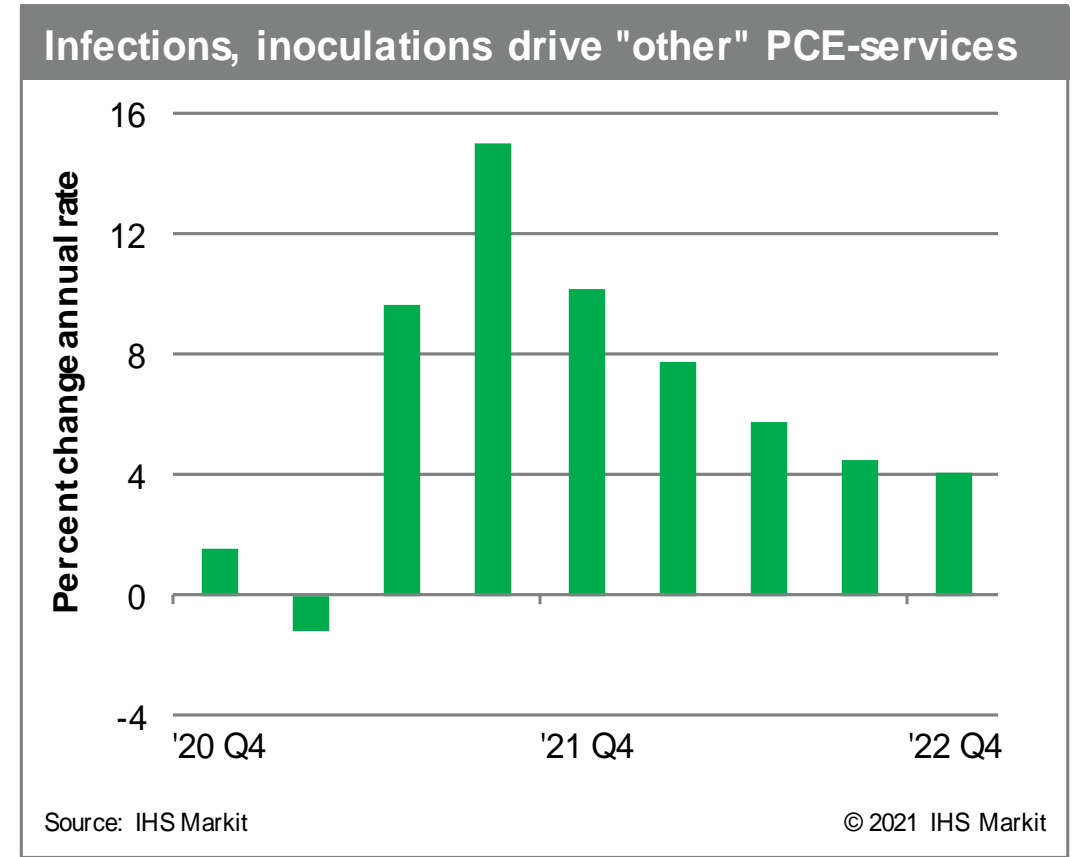
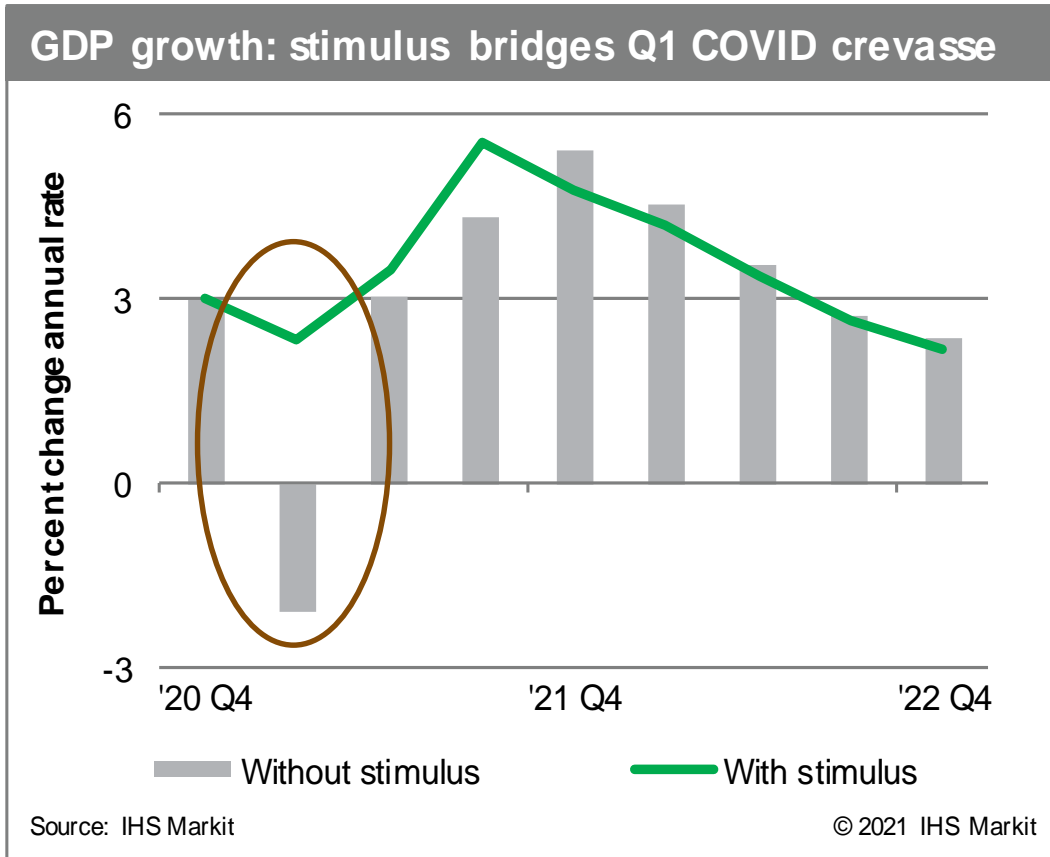


Coronavirus Relief & Recovery Supplemental Appropriations (CRRSA) Act

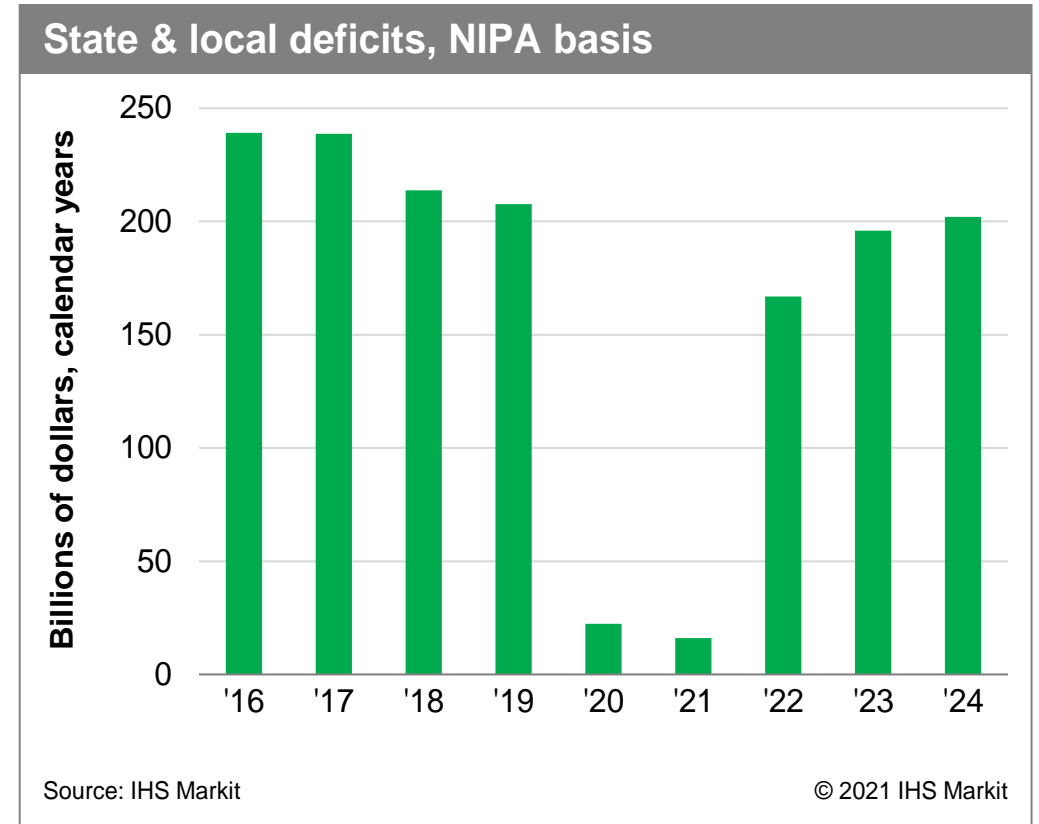
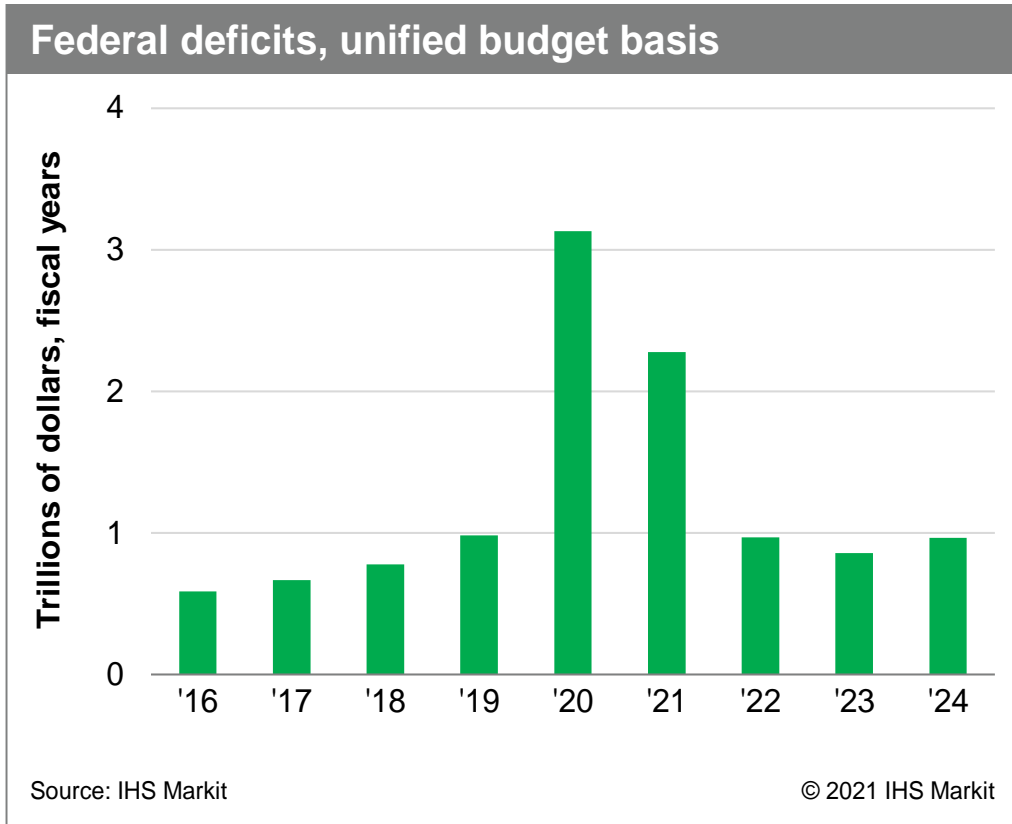
CRRSA Act (billions)	BIL \$
Consumption expenditures	20
Government social benefits	319
<i>Of which:</i>	
Economic impact payments	166
Expansion of unemployment programs	120
Other social benefits	33
Grants-in-aid to state & local governments	126
Subsidies	365
<i>Of which:</i>	
PPP loans to businesses	222
Corporate businesses	139
Farm proprietors	2
Nonfarm proprietors	81
Other subsidies	143
Tax cuts	5
TOTAL	836



Building the forecast in layers; then include stimulus...



Federal deficit: temporary balloon; S&L deficits: better than feared



Biden tax proposals

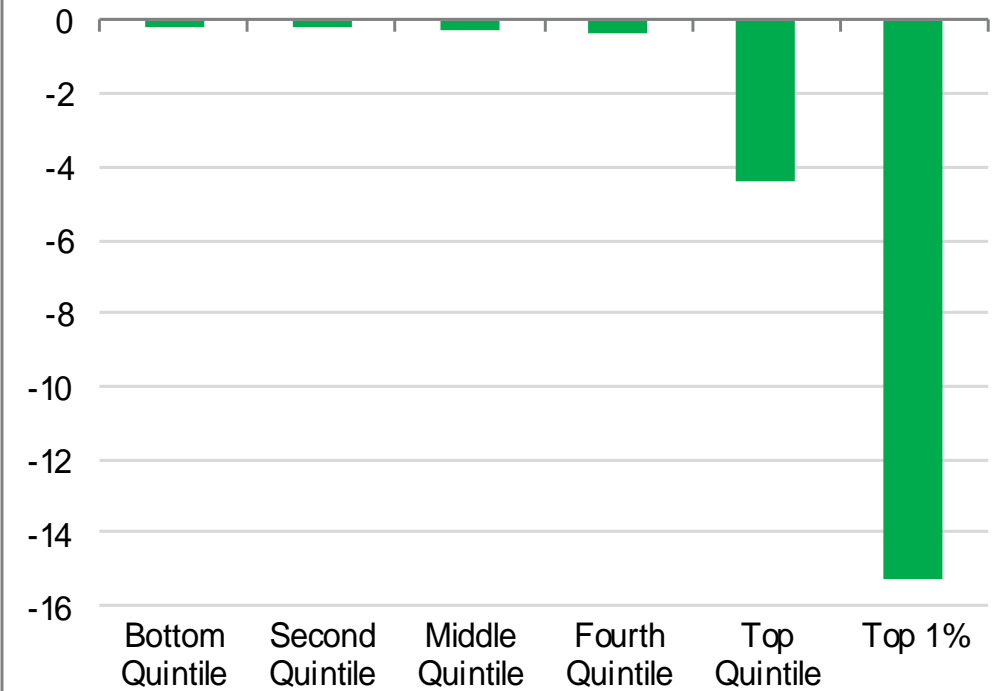
Biden tax proposals: 10-yr / \$3.5 trillion

Billions of dollars, fiscal years 2021-30

Provision	Amount
Raise corporate tax rate to 28%	\$1,248
Increase Social Security earnings cap	\$901
Gains taxed as ordinary income for incomes > \$1 mil; no step-up in basis	\$428
Cap itemized deductions (28% limit, Pease limitation)	\$327
Double (to 21%) minimum tax on foreign subsidiaries	\$311
15% minimum tax on book income with foreign tax credit	\$218
Phase out small business income deduction > \$400,000	\$209
Restore top individual rate to 39.6%	\$137
Financial risk fee on large banks	\$100
All other	\$38
Increase child and dependent care tax credits	\$100
First-time homebuyers & renters' tax credits	\$300
Total	\$3,517

Source: IHS Markit, CRFB

Biden tax proposal: change in after-tax income (%)



Source: IHS Markit

© 2020 IHS Markit

Biden spending proposals

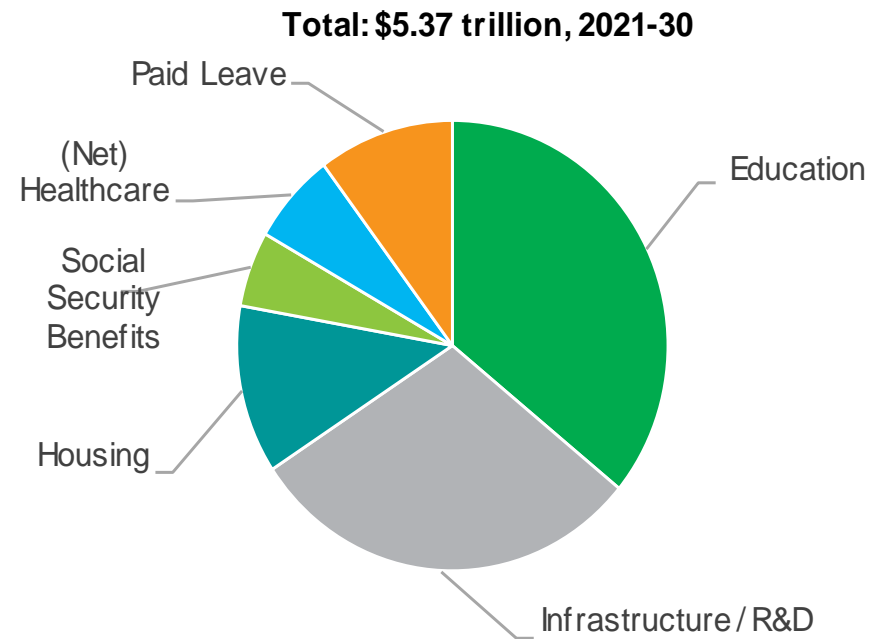
Biden spending proposals: 10-yr / \$5.4 trillion

Billions of dollars, fiscal years 2021-30

Category	Amount
Education	\$1,930
Infrastrucutre and R&D	\$1,601
Housing	\$650
Social Security benefits	\$291
Net healthcare	\$352
Prescription Drugs	\$1,253
Other new spending	\$1,605
Paid leave	\$547
Total	\$5,370

Source: IHS Markit, PWBM

Biden spending proposals



Source: IHS Markit, BEA

© 2020 IHS Markit

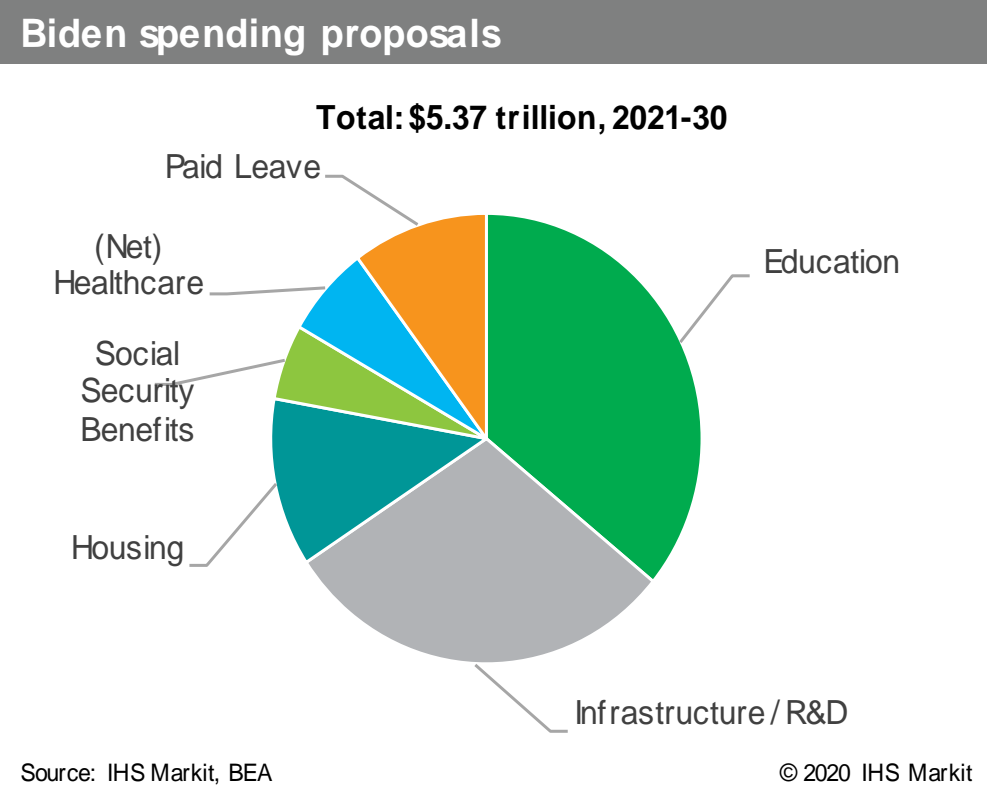
Re-thinking population projections

Biden spending proposals: 10-yr / \$5.4 trillion

Billions of dollars, fiscal years 2021-30

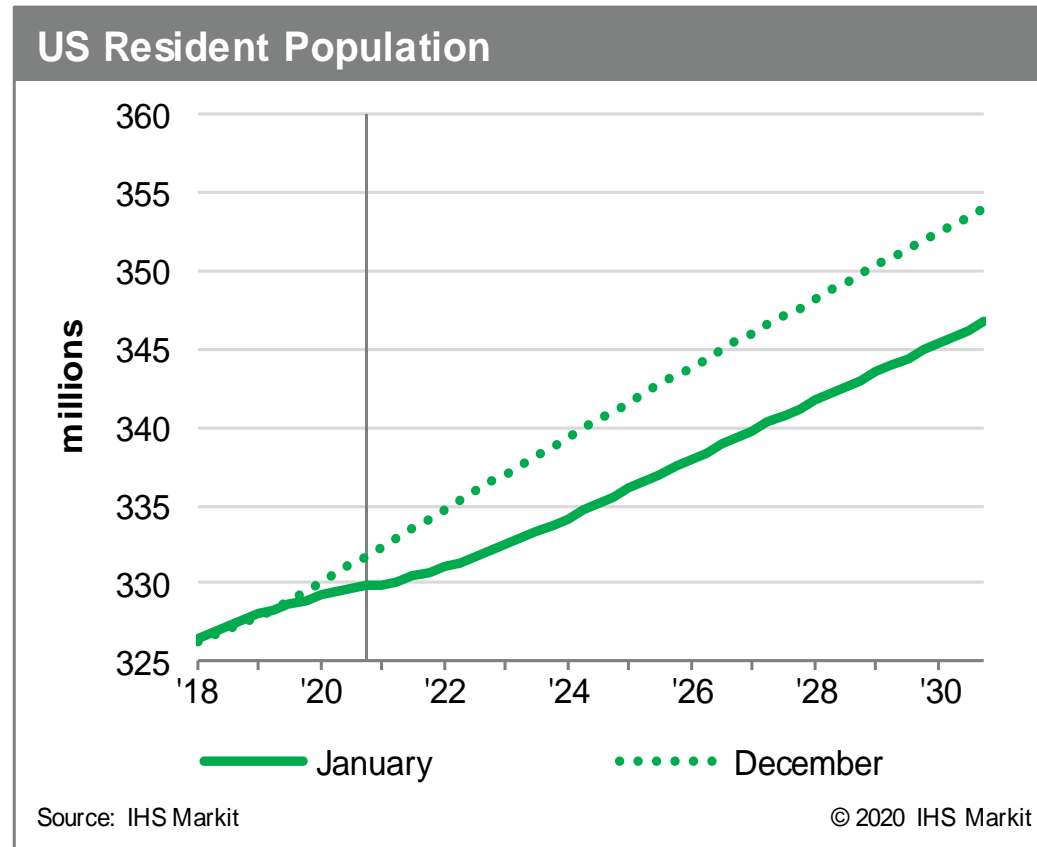
Category	Amount
Education	\$1,930
Infrastructure and R&D	\$1,601
Housing	\$650
Social Security benefits	\$291
Net healthcare	\$352
Prescription Drugs	\$1,253
Other new spending	\$1,605
Paid leave	\$547
Total	\$5,370

Source: IHS Markit, PWBM



Rethinking population projections

- Census 2017 projections have been way high
 - > There have been more deaths (pre-COVID)
 - > Fewer births
 - > And fewer immigrants
- In addition, COVID
 - > Has caused an increase in deaths
 - > Likely will cause a cyclical decline in births
 - > Is another headwind for immigrations
- We've adopted our own assumption that result in about a 2% smaller population by 2030



IHS Markit US Base Forecast (4 Jan '20): 2020:Q4 - 2030:Q4
Major Economic Indicators

														Q4/Q4 % change or annual avg.										
	2020.1	2020.2	2020.3	2020.4	2021.1	2021.2	2021.3	2021.4	2022.1	2022.2	2022.3	2022.4	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Key Indicators of Real Activity																								
Real gross domestic product*	-5.0	-31.4	33.4	3.0	2.4	3.5	5.5	4.8	4.2	3.4	2.7	2.2	2.3	-2.7	4.0	3.1	2.5	2.5	2.5	2.3	2.3	2.4	2.3	2.2
Contributions to growth:																								
Final sales	-3.5	-27.7	27.7	1.7	1.6	3.8	5.7	4.1	3.7	3.5	2.9	2.4	2.8	-3.0	3.8	3.1	2.5	2.5	2.5	2.4	2.3	2.4	2.3	2.2
To domestic purchasers	-4.6	-27.1	31.8	2.9	2.5	4.3	5.8	4.1	3.0	2.4	1.9	1.6	2.5	-1.9	4.2	2.2	2.0	2.4	2.6	2.5	2.6	2.7	2.7	2.6
Net exp. of goods & services	1.1	-0.6	-4.2	-1.1	-0.8	-0.5	-0.1	0.1	0.8	1.0	1.0	0.8	0.3	-1.1	-0.4	0.9	0.5	0.0	-0.1	-0.1	-0.3	-0.4	-0.4	-0.4
Change in private inventories	-1.4	-3.7	5.8	1.3	0.7	-0.3	-0.2	0.6	0.5	-0.1	-0.2	-0.2	-0.5	0.3	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Major components of real GDP:																								
Personal consumption expend.*	-6.9	-33.2	41.0	2.0	0.1	5.2	7.7	4.9	3.7	2.8	2.1	2.1	2.5	-2.7	4.4	2.7	2.4	2.7	2.9	3.0	3.0	3.2	3.1	3.0
Nonres. fixed investment*	-6.7	-27.2	22.9	7.5	10.9	3.1	6.1	6.4	6.0	5.2	4.5	3.9	1.4	-2.7	6.6	4.9	4.4	4.3	4.2	3.7	3.3	3.3	3.2	3.0
Residential investment*	19.0	-35.6	63.0	30.5	5.4	0.4	-6.6	-6.1	-6.6	-6.5	-5.2	-5.0	1.6	13.0	-1.8	-5.8	-2.3	0.0	0.1	-2.5	-0.2	0.6	0.8	0.4
Change in private inventories**	-68.8	-244.0	-3.2	54.3	87.9	74.0	66.2	94.5	115.5	110.5	99.1	88.9	41.3	-65.4	80.7	103.5	80.6	78.5	80.3	79.2	77.6	79.1	82.0	81.3
Exports of goods & services*	-9.5	-64.4	59.6	18.4	14.4	8.3	9.7	11.3	10.4	9.0	7.7	6.8	0.4	-11.7	10.9	8.5	5.7	4.7	3.9	3.2	2.7	2.4	2.4	2.5
Imports of goods & services*	-15.0	-54.1	93.1	23.0	17.0	10.0	7.5	7.5	2.4	-0.3	-1.0	-0.2	-1.9	-1.9	10.4	0.2	1.3	3.6	4.0	3.5	4.3	4.7	5.0	4.7
Gov't consump. & gross invest.*	1.3	2.5	-4.8	-3.7	4.0	2.5	0.7	0.9	-0.3	0.7	0.5	-0.5	3.0	-1.2	2.0	0.1	-0.6	0.2	0.4	0.3	0.5	0.6	0.4	0.6
Pvt. housing starts (thous. units)	1484	1079	1432	1538	1575	1520	1463	1412	1361	1313	1276	1245	1295	1383	1493	1298	1202	1175	1196	1181	1158	1162	1174	1176
Light vehicle sales (mil. units)	15.0	11.3	15.3	15.9	15.7	16.0	16.0	16.1	16.1	16.1	16.1	16.1	17.0	14.4	15.9	16.1	16.1	16.2	16.3	16.4	16.3	16.2	16.2	16.1
Industrial production, total*	-6.8	-42.6	42.5	6.1	6.2	2.3	2.8	3.1	4.1	3.6	2.6	2.0	-0.7	-5.2	3.6	3.1	2.6	2.3	2.3	1.8	1.6	1.6	1.6	1.6
Industrial production, mfg*	-5.5	-46.5	56.3	8.7	5.8	1.3	2.1	2.7	3.5	2.8	2.2	1.6	-1.2	-3.7	3.0	2.5	2.3	2.3	2.3	1.8	1.8	1.8	1.7	1.7
Capacity utilization (mfg, %)	73.9	63.2	70.8	72.3	73.4	73.5	73.6	73.8	74.1	74.3	74.4	74.4	75.6	70.1	73.6	74.3	74.6	74.9	75.3	75.3	75.2	75.0	74.9	74.8
Nonfarm payroll employ. (mil.)	151.9	133.7	140.8	142.6	143.9	145.5	147.6	149.2	150.5	151.3	151.8	152.0	150.9	142.3	146.5	151.4	152.5	153.5	154.4	155.1	155.9	156.8	157.9	158.9
Private nonfarm hours*	-6.1	-42.9	37.1	8.0	3.6	4.9	7.0	4.9	3.7	2.1	1.0	0.2	0.8	-5.6	5.1	1.7	0.6	0.6	0.6	0.5	0.6	0.7	0.7	0.6
Civilian unemployment rate (%)	3.8	13.0	8.8	6.8	6.0	5.6	4.9	4.3	4.0	3.8	3.9	4.0	3.7	8.1	5.2	3.9	4.1	4.1	4.1	4.1	4.2	4.2	4.2	4.1
Prices, Productivity, & Costs																								
GDP chain-type price index*	1.4	-1.8	3.5	2.1	1.2	1.6	1.8	1.8	1.9	1.9	1.9	2.0	1.6	1.3	1.6	1.9	2.1	2.1	2.1	2.1	2.2	2.2	2.2	2.2
CPI, all items (all urban)*	1.2	-3.5	5.2	2.2	1.8	1.7	2.9	2.7	2.7	2.2	2.1	2.1	2.0	1.2	2.3	2.3	2.1	2.2	2.2	2.3	2.3	2.2	2.2	2.2
CPI excl food & energy (all urb)*	2.0	-1.6	4.4	1.9	2.1	1.9	2.0	2.1	2.2	2.2	2.1	2.2	2.3	1.7	2.0	2.2	2.2	2.2	2.2	2.2	2.2	2.3	2.3	2.3
PCE price index*	1.3	-1.6	3.7	1.3	1.4	1.6	2.1	2.1	2.2	2.0	1.9	1.9	1.5	1.1	1.8	2.0	1.9	2.0	1.9	2.0	2.0	2.0	2.0	2.1
PCE price excl food & energy*	1.6	-0.8	3.4	1.2	1.6	1.7	1.7	1.9	2.0	2.0	1.9	1.9	1.6	1.4	1.7	1.9	1.9	2.0	1.9	1.9	2.0	2.0	2.1	2.1
PPI (finished goods)*	-3.4	-11.4	6.9	4.8	3.2	2.0	3.5	3.3	2.8	2.3	2.1	2.1	0.9	-1.0	3.0	2.3	1.9	1.9	2.0	2.1	2.1	2.0	1.9	2.0
Compensation per hour*	9.2	24.3	-2.3	1.4	3.3	0.4	0.4	0.8	1.5	1.7	1.9	2.4	3.3	7.7	1.2	1.9	3.5	3.9	4.0	4.0	4.1	4.1	4.1	4.1
Output per hour*	-0.3	10.6	5.1	-3.9	-1.2	-1.2	-0.5	0.6	1.2	1.8	2.1	2.3	1.9	2.7	-0.6	1.8	2.4	2.4	2.3	2.3	2.2	2.0	2.0	2.0
Unit labor cost*	9.6	12.3	-7.0	5.5	4.6	1.6	0.9	0.3	0.3	-0.1	-0.1	0.1	1.4	4.8	1.8	0.0	1.1	1.5	1.6	1.7	1.9	2.0	2.0	2.0
CoreLogic house price index***	1.2	1.5	2.3	3.2	1.7	1.0	0.7	0.7	0.7	0.7	0.7	0.7	3.8	8.4	4.2	3.0	3.0	2.9	2.8	2.8	2.8	2.8	2.9	2.9
Price of WTI crude oil (\$/barrel)	45.76	27.81	40.89	42.51	43.35	42.23	46.85	49.67	51.28	51.93	52.69	53.47	56.98	39.24	45.53	52.34	54.24	56.02	59.25	64.15	69.28	73.24	76.00	78.09
Price of Brent crude oil (\$/barrel)	50.42	29.38	42.97	44.32	46.00	45.00	49.67	52.67	54.50	55.17	56.00	56.83	64.34	41.78	48.33	55.63	57.51	59.38	62.65	67.65	73.00	77.10	79.96	82.20
Selected Financial Variables																								
Federal funds rate	1.26	0.06	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	0.09	2.16	0.38	0.09	0.09	0.10	0.12	0.13	0.14	0.39	0.78	1.28	1.78
Yield on 10-Yr Treasury Notes (%)	1.38	0.69	0.65	0.87	0.98	1.09	1.12	1.16	1.19	1.24	1.29	1.34	2.14	0.89	1.09	1.26	1.42	1.61	1.87	2.12	2.36	2.59	2.79	2.92
Baa corporate bond yield	4.07	3.93	3.40	3.37	3.45	3.42	3.43	3.50	3.57	3.69	3.76	3.85	4.53	3.69	3.45	3.72	3.92	4.11	4.32	4.53	4.72	4.86	4.98	5.07
Broad trade-weighted US\$	131.0	135.9	130.9	127.1	124.5	122.7	121.3	120.0	118.6	117.7	117.2	117.0	128.7	131.2	122.1	117.6	117.0	117.6	118.7	120.2	122.1	123.8	125.2	126.1
S&P 500 stock price index***	-20.0	20.0	8.5	11.7	0.5	-0.8	0.3	-0.8	-0.6	-0.4	0.1	0.6	28.9	16.3	-0.8	-0.3	5.0	5.0	4.3	1.9	1.7	1.9	2.6	3.4
Incomes & Related Measures																								
Corporate profits w/ IVA & CCAdj*	-39.9	-35.2	163.1	-45.8	25.8	9.4	-39.0	-4.4	12.5	10.7	9.3	7.7	1.3	-13.7	-5.4	10.0	6.8	5.7	5.6	5.2	5.0	5.0	4.8	4.8
Real disposable personal income*	2.6	48.6	-16.3	-9.7	23.5	-17.3	-2.3	-0.8	2.5	1.9	1.8	1.6	1.6	3.6	-0.3	2.0	2.7	2.7	2.7	2.6	2.7	2.8	2.7	2.6
Personal saving rate (%)	9.6	26.0	16.0	13.4	17.7	12.5	10.4	9.2	8.9	8.7	8.7	8.6	7.6	16.2	12.5	8.7	8.7	8.8	8.8	8.5	8.3	8.0	7.6	7.3
Fed. surplus (unified, FY, bil. \$)	-1547.4	-8003.4	-1550.5	-2260.2	-3804.1	-1400.5	-1649.5	-1351.9	-1595.7	-56.3	-866.6	-1127.0	-984.4	-3131.9	-2278.6	-967.6	-858.9	-966.1	-977.8	-1001.7	-1044.7	-1112.4	-1186.4	-1279.8

* Percent change at annual rate

** Billions of chained (2009) dollars

*** Quarterly percent change not annualized