US Rates

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Year 2020 Strategy Update – Our models calculus suggest risk of a deep economic hit over the months of March through early-July 2020 that likely may linger through October 2020 – inclusive of risk of a nasty negative feedback-loop (from the world's economy over the summer months). We outline our models forecast of "USA initial conditions" in early March, just as the economy began to rollover into recession (according to our models). The U.S. economy likely may shed 1.532 million private sector jobs over March-June 2020 – the fastest pace of job cuts at the start of any recession since 1946.

23 March 2020

OVERVIEW

Conservatively speaking, according to our models "initial pass" at the data, the U.S. economy likely may shed 1.532 million private-sector jobs over the time-period from mid-March through mid-June 2020 (in an initial jolt to the U.S. economy).

It is not difficult to conceptualize an even deeper "hit" to private sector employment over those months – and we will continue to run scenarios through our models that capture anecdotal information on company closures and business idling and shutters (and update our forecasts accordingly).

The Federal Government's Decennial Census program likely may add a total transitory gain of +412,000 workers over the months of March through early-June – which would conceal much of the deeper risks to employment.

*** Nonetheless, even our initial pass estimate would suggest that ***the current year's economic recession likely has commenced at the steepest pace (of private-sector job loss) of any economic recession dating back to the year 1945***.

The magnitude of such an "initial jolt" to the economy might linger over the summer months – even should fiscal and monetary stimuli promote a more optimistic sentiment for some risk-takers.

A more troubling concern is a risk that, by mid-May, metro-New York City may surpass the city of Wuhan's stated number of COVID-19 cases (and near Wuhan's death tally) – a shock to consumers' and businesses' confidence (and a negative feedback loop into employment growth over the 3rd Quarter). Such a risk likely has not been captured in the Year 2020 estimates (currently) formulated by most official and private economists.

Bottom Line: Again, we caution our clients over risk of complacency in the near-term. The seduction of the promises of monetary and fiscal stimulus, alongside the improving spring and summer season weather patterns - and American's natural youthful tendencies to move forward (and to not look back) and to trust in technology's ability to cure all ills – is a heady elixir to jump optimistically forward (into risk or otherwise).

We simply note three risks of caution over the near-term and we mention (once again) our intermediate-term recession risk scenario:

(a) the initial jolt to the U.S. recession likely is quite sizeable,

(b) COVID-19's impact on metro-NYC, and the nation, might exceed (and linger longer) the expectations of most market participants,

(c) there may be a substantial negative feedback loop from the world's economy to the United States economy over the 2nd Half of 2020, and

(d) a structural inflection point in baby boomer retirement demographics beginning in late-2021 and running (forcefully) strong in each and every year of the following nine-consecutive years – Year 2022 through Year 2030.

POWELL'S THIRTY-CANNON GUN RESPONSE TO COVID-19

As we argued a few weeks ago, Chair Powell's arsenal is far more formidable than comprehension. Chair Powell has delivered a remarkable pace of non-conventional stimulus over the last three weeks – and there likely remain far more official monetary actions over the coming year(s).

As we Previewed in a series of Notes over the last eight-weeks, in "Emergency Situations," such as these, the FOMC should act forcefully, and continue to act forcefully, in the coming weeks, months and quarters ahead.

Against that backdrop of forceful Federal Reserve accommodative actions, we took profits over the last 14-trading sessions in ALL of our models core investment stance(s), including in:

1. ***A strategic investment stance*** ***of an outright long stance in the EDZ2 and EDZ3 contracts*** (initiated on January 28th).
2. **A tactical investment stance** **of an outright long of the EDU1 contract** (initiated on February 24th).
3. **A tactical investment stance** **of an outright long of the FFK0 contract** (initiated on February 28th).
4. **A tactical investment stance** **of an outright long of the FFV0 contract** (initiated on March 03rd).

All of these investments had appreciated sharply in value and had nearly fully captured the magnitude of monetary policy easings that we had initially anticipated, namely:

- the risk that the FOMC would restore ZIRP (the zero interest rate

lower bound),
- the risk that the FOMC would embark upon a new round(s) of Quantitative Easing and
- the risk of the introduction of other non-conventional programs.

INITIAL CONDITIONS OUR MODELS SPIED FOR THE U.S.A.

According to patterns our models spied for the U.S. economy over the last three months, the 1st Quarter's initial conditions as COVID-19's community spread emerged in early March included several likely vulnerabilities – see our point forecasts in Table 3:

- another poor result for total business inventory stockpiling – that may deteriorate further over the second quarter;
- lackluster consumer spending patterns upon big ticket items and services – save for spending on non-durable goods' "essential" items (e.g., household food and sanitizing products hoarding);
- a disappointing pattern of consumer spending upon "services;"
- weak business spending upon fixed capital equipment;
- weak business spending upon structures;
- a relatively sluggish growth rate for business spending upon software and R&D;
- West Coast port traffic data on container imports were as weak as our models had anticipated for the months of January-February and likely March;
- while the "weather-sensitive" sectors of the economy were quite resilient (in nonfarm payrolls-employment and otherwise) over the benign months of January and February into early-March. Over the final week of March, weather patterns have resumed far more normal patterns.
  In sum, January-February's positive weather effects simply "pulled forward" in time the pick-up in hiring and activity over the early-to-mid-spring season (of mid-March through early-May).

All was not doom and gloom in the U.S. economy in the 1st Quarter, as:

- total Government spending grew forcefully (upon construction and otherwise);
- residential investment spending had one of its strongest quarterly gains of the 10-year cycle;
- the U.S. net foreign trade gap (deficit) likely narrowed significantly over the 1st quarter; and, again,
- favorable weather patterns in January and February bolstered household incomes and spending.
  But, there likely should be a sizeable "weather pay-back" in the March, April and May nonfarm payroll reports – due to the pulling forward in time into January and February months of hiring that typically takes place in the spring-time of the year.

Currently, we are running several scenarios through our aggregate demand, production and employment models – given the initial conditions for the economy outlined above.

We will be updating our GDP growth forecast over the coming weeks to reflect the risks (to the downside and upside) our models identify.

****** The current estimates – Table 3 - are quite "preliminary" and are not even "complete"- by our standards of forecasting***!!!

OUR MODELS PRELIMINARY NONFARM PAYROLL FORECASTS

We have endeavored to deliver a risk-based nonfarm payroll forecasts for the months of March, April, May and June – as even a preliminary forecast may prove useful to our clients.

Again, these employment forecasts are highly preliminary (even should they prove highly accurate) – as our models real-time data inputs will not be available for many weeks and months.

**** We note that our models forecasts for the ISM Manufacturing and Non-Manufacturing surveys mirror our employment models forecasts*.

Notwithstanding such limitations, here are our models forecasts:

Private-Sector Total Nonfarm Payrolls:

- March month: -132.2K mom,
- April month: -812.2K mom,
- May month: -431.2K mom,
- June month: -156.3K mom.

(Ex-Census Workers) Total Government Nonfarm Payrolls:

- March month: -18.0K mom,
- April month: -71.0K mom,
- May month: -59.0K mom,
- June month: -24.0K mom.

Decennial Census Workers Nonfarm Payrolls:

- March month: +36.0K mom,
- April month: +57.0K mom,
- May month: +319.0K mom,
- June month: -187.0K mom.

"Overall" Total Nonfarm Payrolls (the sum of the three components):

- March month: -114.2K mom,
- April month: -826.2K mom,
- May month: -171.2K mom,
- June month: -367.3K mom.

BASE CASE EXPECTATIONS

- **Next Fed move**: FOMC restored ZIRP (as we predicted), of a policy rate of 0.00% to 0.25% for the balance of the year 2020 – with the effective federal funds target rate trading near nine or ten basis points.

  ***** Our models highlight risk that the policy interest rate remains at ZIRP**

over all of the years 2020 and 2021 – and likely even longer.

Our economic models highlight "recession risk" for America over the year 2020 and of a weakened growth rate for America over the years 2021-2022-2023.

Importantly, our models highlight risk of a "Double-Dip" economic recession beginning in the year 2022 (following Year 2020's recession).

Our models highlight risk of significantly weaker economic growth in overseas economies (especially Europe) over the entirety of the years 2020 and 2021 (and into the years 2022 and 2023).

As we had been expecting for Chair Powell in the year 2020, the Committee likely may ultimately deliver upon an easing cycle of risk-management emergency/insurance policy interest rate cuts – to support financial conditions, confidence and economic activity (*as health officials wrestle with community spread of COVID-19*) – see Tables 1 and 2.

- **Terminal rate view:** For a decade now, our models have forecast a relatively "low" neutral-terminal federal funds target rate of near 1.50%. Such a forecast of the "terminal rate" remains significantly lower than the FOMC's baseline projection of near 2.50% to 3.00%.

  We note that, over the previous eight-years, the Committee steadily has marked lower their projection for the terminal rate from 4.25% towards 2.50%, but the Committee has not embraced our forecast for a neutral rate of just 1.50%.

  ***** We expect the FOMC to lower its SEP Projection for the terminal rate to just 2.00% over the course of the year 2020.**

  The basis for our models forecast of a "low" terminal interest rate includes many factors: our discoveries over deep structural challenges to U.S. labor markets (also, in numerous labor markets abroad) and of persistent uncertainty in the political landscape of America to address such challenges (uncertainty that typically dampens the pace of business investment, business formation and of labor productivity growth) and of quiescent inflation at home and disinflation-deflation risk abroad (where structural issues in the labor force prevail in most developed economies).

  <u>According to our models forecasts, the Committee over-shot the 'neutral policy rate' during its interest rate policy tightening cycle over the years 2017-2018. Due to such an "over-shoot" risk, we anticipated reductions in the policy interest rate over the year 2019 into the year 2020.</u>

  <u>COVID-19 community and global spread simply reinforced the trend to lower interest rates – as the spread pulled forward into the year 2020 the recession risk our models had spied for the years 2021 and 2022.</u>

- **Curve shape comment*:*** Our models continue to glean risk ***over the emergence of a "U-shaped" economic slowdown and recession in the USA*** over the years 2020-2021-2022-2023.

  Given our chief intermediate-term risk concern, our models continue to forecast a series of non-conventional measures by the FOMC over the near- and intermediate-term horizons – see our Tables 1 & 2 – alongside a stepwise series of substantial, stimulative fiscal policy responses – which may balloon the Federal Debt-to-GDP ratio towards 112% by 2024 (if not sooner). .

  Should our risk-based interest rate scenario prove accurate, then the 2s-10s and 2s-30s yield curve likely may steepen over the intermediate-term – see Forecast Table 2.

<u>Please note</u>: Over all of-2019 into 2020, the FOMC's SEP "dots charts" predicted a further STRENGTHENING of the U.S. economy over the years 2021 and 2022 and of the possibility of another TWO-to-THREE twenty-five bps short-end

interest rate HIKES over those years – **potential outcomes that were/are the exact opposite of our models economic and interest rate forecasts**.

*** *The FOMC needs to DRASTICALLY reconsider and revise its near- and intermediate-term SEP projections for the U.S. (and world) economy*!

KEY RISK FACTORS TO OUR VIEW IN THE MONTHS AHEAD

- **A U-Shaped recession risk for America and the World's economy in the years 2020-2021**. Risk over the USA and worldwide "community spread" of COVID-19 over the spring-summer 2020. Risk of potentially deeper impediments to the world's economic supply chain**.**
- Risk of a re-emergence and deepening of "community spread" of COVID-19 (in the absence of the emergence of a vaccination for the COVID-19 virus) over the (normal flu season's) time period from October 2020 through March 2021 – that may prompt the FOMC to maintain the range of the federal funds target rate near ZIRP, 0.00% to 0.25%, through most of the year 2021.
- Risk of weak economic growth over the years 2020-2021 (and of further disinflation pressures) in Europe and in Asia (e.g., China, Japan, South Korea, Singapore, Hong Kong, elsewhere) – that depletes growth more broadly through emerging economies.
- Risk of a deepening of strains in the markets for risky assets over 2020-2021 (on balance).
- Risk of a continuation of financial markets illiquidity – across a range of securities – as traders work from home and Dodd-Frank regulations limit financial intermediation.
- Risk of average monthly growth in total nonfarm payrolls of -66.2K per month in the year 2020 and of just +101.34K per month over the year 2021.
- A "TARP-like" bailout program: Adverse risk to commercial aircraft industry run-rates and deliveries over nearly all of the year 2020, into the First Half of 2021 alongside a dramatic pull-back in the run-rates of the airlines/transportation industries.
- Political risks abound over foreign trade negotiations, of Brexit (trade negotiations), of geopolitical matters, of the outcome(s) of America's November 2020 National Elections, of FAA rulings, etc.
- As we have argued upon numerous occasions, there remain strong global influences upon the U.S. Treasury (and swaps) yield curve! Global financial conditions and flows need to be monitored closely over the near- and intermediate-terms, including actions of foreign central bankers. The 'levels' of overseas interest rates need to be monitored closely, as well.

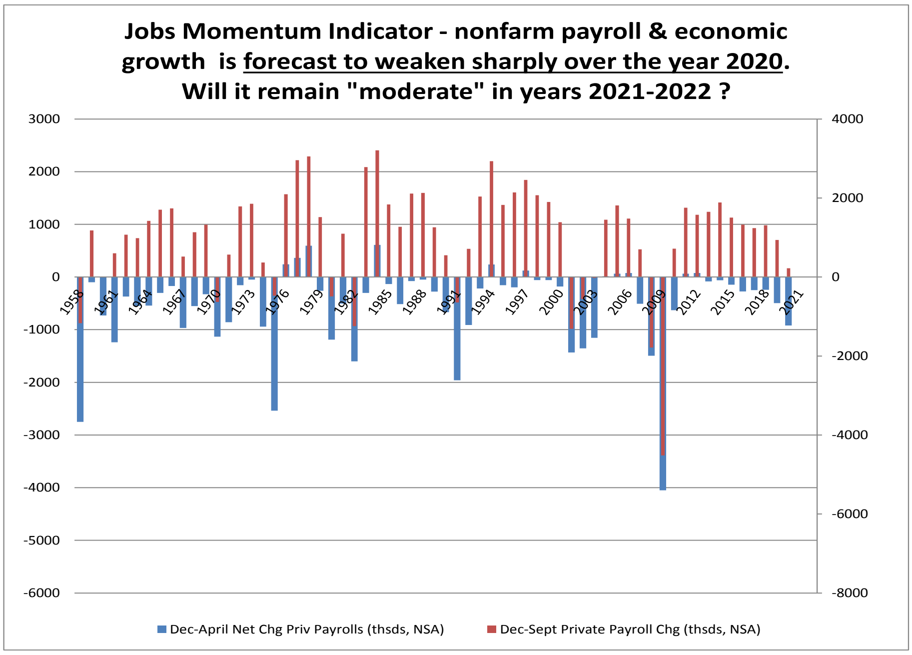
CONCLUSIONS

Our base case forecasts are preliminry, but there remain risks of:

- ***Continued deceleration in real GDP growth and employment growth over the year 2020, alongside continued uncertainty in employment prospects and in growth over the years 2021, 2022 and 2023;***
- ***Quiescent inflation over the next three-to-four years –*** Table 3;
- ***Risk of the persistence of ZIRP over the years 2020 and 2021 (and longer)*** – Table 2***.***

Good Luck to All in 2020 and beyond !

CHART 1: YEARS 2020-2021-2022-2023 ENTER A "DOUBLE-DIP" RECESSION?



Source: ISM Survey, Bloomberg LP, MUFG Securities

TABLE 1: OUR MODELS FORECASTS POINT TO RISK OF FURTHER FOMC INTEREST RATE CUTS OVER 2020-2023

FOMC Meeting Date	March 12, 2020 Our Models' Probability of a 25 bps Rate Change (to the target range)	October 17, 2019 Forward Markets' Price of a 25 bps Rate Change (FFZ, approximate)
Mar. 17-18, 2020	-401.10%	-64.10%
Apr. 28-29, 2020	-404.10%	-72.20%
Jun. 09-10, 2020	-407.20%	-90.40%
Jul. 28-29, 2020	-411.80%	-98.20%
Sep. 15-16, 2020	-414.40%	-111.40%
Nov. 04-05, 2020	-416.50%	-122.30%
Dec. 15-16, 2020	-418.30%	-138.40%
Jan. 26-27, 2021*	-419.70%	-143.50%
Mar. 16-17, 2021*	-420.90%	
Apr. 27-28, 2021*	-417.60%	
June 15-16, 2021*	-410.10%	
July 27-28, 2021*	-403.40%	
Sep. 14-15, 2021*	-399.80%	
Oct. 26-27, 2021*	-397.50%	
Dec. 14-15, 2021*	-395.30%	
Jan. 25-26, 2022*	-399.60%	
Mar. 15-16, 2022*	-401.70%	
Apr. 26-27, 2022*	-403.40%	
Jun. 14-15, 2022*	-404.10%	
Jul. 26-27, 2022*	-404.20%	

*Sources: Federal Reserve, Bloomberg LP, MUFG Securities forecasts & calculations, 03/12/2020. * = Projected Dates*

*Source: Bloomberg LP, Federal Reserve, MUFG Securities (12 March 2020). * = Projected Dates*

TABLE 2: OUR INTERMEDIATE-TERM FORECAST HIGHLIGHTS RISK OF LOWER YIELDS & STEEPER YIELD CURVE

Quarter-End	USA Federal Funds Rate Target Range	USA 1-Year Treasury Yield	USA 2-Year Treasury Yield	USA 3-Year Treasury Yield	USA 5-Year Treasury Yield	USA 10-Year Treasury Yield	USA 30-Year Treasury Yield
Current	1.00% - 1.25%	0.17%	0.38%	0.41%	0.46%	0.51%	0.88%
1Q-2020	0.00% - 0.25%	0.13%	0.32%	0.35%	0.39%	0.45%	0.83%
2Q-2020	0.00% - 0.25%	0.10%	0.19%	0.22%	0.26%	0.36%	0.77%
3Q-2020	0.00% - 0.25%	0.11%	0.18%	0.21%	0.25%	0.43%	0.83%
4Q-2020	0.00% - 0.25%	0.12%	0.16%	0.20%	0.24%	0.51%	0.89%
1Q-2021	0.00% - 0.25%	0.13%	0.15%	0.19%	0.24%	0.48%	0.87%
2Q-2021	0.00% - 0.25%	0.13%	0.13%	0.18%	0.23%	0.46%	0.85%
3Q-2021	0.00% - 0.25%	0.13%	0.13%	0.19%	0.25%	0.44%	0.83%
4Q-2021	0.00% - 0.25%	0.14%	0.15%	0.22%	0.29%	0.45%	0.84%
1Q-2022	0.00% - 0.25%	0.14%	0.15%	0.24%	0.31%	0.51%	0.89%
2Q-2022	0.00% - 0.25%	0.13%	0.14%	0.25%	0.33%	0.58%	0.96%
3Q-2022	0.00% - 0.25%	0.12%	0.15%	0.27%	0.36%	0.66%	1.03%
4Q-2022	0.00% - 0.25%	0.13%	0.17%	0.31%	0.42%	0.76%	1.13%
1Q-2023	0.00% - 0.25%	0.18%	0.21%	0.37%	0.49%	0.87%	1.25%
2Q-2023	0.00% - 0.25%	0.25%	0.28%	0.43%	0.56%	0.98%	1.38%
3Q-2023	0.00% - 0.25%	0.32%	0.36%	0.52%	0.66%	1.11%	1.51%
4Q-2023	0.00% - 0.25%	0.41%	0.45%	0.62%	0.77%	1.24%	1.64%
1Q-2024	0.25% - 0.50%	0.47%	0.53%	0.71%	0.87%	1.36%	1.77%
2Q-2024	0.25% - 0.50%	0.54%	0.61%	0.81%	0.98%	1.41%	1.83%
3Q-2024	0.25% - 0.50%	0.63%	0.72%	0.92%	1.10%	1.44%	1.87%
4Q-2024	0.25% - 0.50%	0.72%	0.82%	1.01%	1.22%	1.49%	1.93%

*Bloomberg LP, Federal Reserve, *MUFG MUSA (John Herrmann) Forecast for quarter-end yields, 03/12/2020*

Source: Bloomberg LP, Federal Reserve, MUFG Securities (12 March 2020)

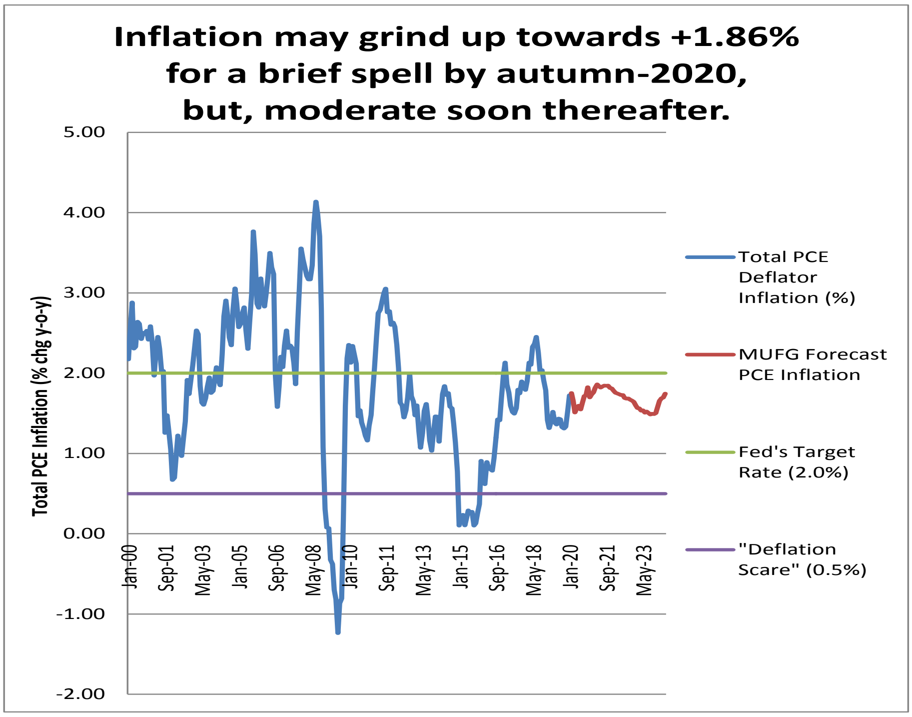
TABLE 3: DOWNSIDE RISKS TO ECONOMIC GROWTH OVER YEARS 2020, 2021, 2022 AND 2023?

Preliminary	2016 (A)	2017 (A)	2018 (A)	2019 (A)	2020 (F)	2021 (F)	2022 (F)	2023 (F)	2019 1Q (A)	2019 2Q (A)	2019 3Q (A)	2019 4Q (A)	2020 1Q (F)	2020 2Q (F)	2020 3Q (F)	2020 4Q (F)
Aggregate Output	Growth (% avg. ann.)								Growth (% q/q SAAR)				Growth (% q/q SAAR)			
Real GDP (%)	1.64	2.37	2.93	2.332	0.898	0.719	1.036	0.92	3.10	2.01	2.10	2.096	1.593	-1.924	-0.198	0.760
Consumer Spending (%)	2.74	2.61	3.00	2.590	0.76	0.94	1.38	1.09	1.14	4.55	3.15	1.73	0.78	-2.240	-0.47	0.98
Business Fixed Investment (%)	0.71	4.36	6.36	2.08	-1.33	0.34	0.78	0.42	4.43	-1.02	-2.27	-2.34	-0.18	-2.31	-0.73	0.38
Residential Investment (%)	6.46	3.50	-1.47	-1.53	5.05	0.44	0.24	-0.18	-1.08	-2.94	4.64	6.13	13.54	1.02	-0.98	0.54
Government Spending - Clinton (%)	1.81	0.70	0.25	0.16	-0.11	0.28	0.27	0.03	-0.33	0.22	0.34	-0.14	-0.29	0.11	0.23	-0.21
Government Spending "Sunset" - Trump (%)	1.81	0.70	1.71	2.01	0.21	-0.56	-0.10	-0.26	2.90	4.81	1.33	1.34	0.87	1.02	0.81	0.71
Government Spending "Non-Sunset" - Trump (%)	1.81	0.70	1.71	2.34	1.91	0.81	0.54	0.66	2.90	4.81	1.69	2.62	1.74	1.53	1.22	0.98
Net Exports ($ blns, chained '09)	-783.7	-849.75	-920.03	-953.60	-877.63	-922.65	-942.40	-940.4	-944.00	-980.70	-990.10	-899.60	-858.30	-871.70	-884.20	-896.30
Inventory Change ($ blns, chained '09)	23.00	31.65	48.18	66.95	6.45	25.15	20.80	13.28	116.00	69.40	69.40	13.00	-13.00	-2.30	16.90	24.20
Real Final Sales to Priv Domestic Purchasers (%)	2.55	2.92	3.37	2.35	0.57	0.83	1.24	0.94	1.60	3.33	2.29	1.20	1.09	-2.11	-0.53	0.87
	Growth (% 4Q/4Q)								Growth (% year-over-year chg, SAAR)				Growth (% year-over-year chg, SAAR)			
MUFG Forecast GDP Growth (%)	2.03	2.800	2.516	2.326	0.158	1.147	1.020	0.725	2.65	2.28	2.07	2.326	1.95	1.03	0.47	0.158
Median FOMC SEP Projection GDP Growth (%)	2.40	2.10	2.50	2.20	2.00	1.80	1.90									
	Potential															
MUFG Forecast "Potential" GDP Growth (%)	1.65	1.65	1.65	1.55	1.55	1.50	1.50	1.50								
Median FOMC SEP Proj. "Potential" (%)	2.00	1.80	1.80	1.90	1.90	1.90	1.90									
Labor Market	Year-End (%)								2019 Quarter-End (%)				2020 Quarter-End (%)			
U3 Unemployment Rate (%)	4.70	4.0912	3.86	3.535	3.911	4.11	4.340	4.527	3.81	3.67	3.52	3.54	3.48	3.88	3.97	3.91
Labor Force Participation Rate (%)	62.7	62.7	63.1	63.2	63.1	62.9	62.6	62.5	63.0	62.9	63.2	63.2	63.3	63.2	63.2	63.1
Average Monthly Nonfarm Payroll (thsds)	195.47	175.77	192.8	174.69	-88.7	101.34	97.47	63.21	174.0	152.0	193.0	184.0	193.0	111.0	129.0	154.0
Average Hourly Earnings (%, yoy chg, All Employees)	2.652	2.74	3.341	3.02	2.86	2.77	2.61	2.52	3.24	3.18	3.00	3.02	3.08	2.98	2.89	2.91
Median FOMC SEP Projection of U3 Rate (%)	4.70	4.30	4.10	3.50	3.60	3.80	3.70									
MUFG Forecast NAIRU of U3 Rate (%)	4.40	4.15	4.00	3.90	3.80	3.80	3.80	3.80								
Median FOMC SEP Proj. of NAIRU U3 Rate (%)	4.80	4.70	4.60	4.40	4.40	4.40										
Inflation (% chg)	Inflation (% avg. ann.)								2019 Inflation (% y-o-y)				2020 Inflation (% y-o-y)			
Total PCE Deflator	1.014	1.766	2.090	1.414	1.808	1.778	1.668	1.496								
Core PCE Deflator	1.591	1.626	1.950	1.612	1.686	1.656	1.523	1.517								
	Inflation (% yoy, year end)															
MUFG Forecast PCE Inflation (%)	1.691	1.854	1.784	1.613	1.828	1.722	1.594	1.479	1.403	1.360	1.326	1.613	1.819	1.758	1.877	1.843
Median FOMC SEP Projection PCE Inflation (%)	1.50	1.60	2.10	2.00	2.10	2.10	2.00									
MUFG Forecast Core PCE Inflation (%)	1.795	1.691	1.971	1.584	1.667	1.626	1.498	1.545	1.481	1.611	1.658	1.584	1.760	1.663	1.684	1.716
Median FOMC SEP Proj. Core PCE Inflation (%)	1.70	1.50	2.00	2.10	2.10	2.10										
	Year-End (%, effective fed funds target rate)															
MUFG Forecast Federal Funds Target Rate (%)	0.875	1.375	2.400	1.625	0.125	0.125	0.125	0.125								
Median FOMC SEP Proj. Fed. Funds Target (%)	1.375	1.375	2.125	2.875	1.625	1.875	2.125									
Median FOMC SEP Proj. Fed. Funds "Neutral" (%)	3.50	3.00	2.80	2.80	2.50	2.50	2.50									

(A) = Actual BEA, Census, Commerce, DoL, BLS, Federal Reserve; (F) = MUFG Securities; U3 = quarter-end or year-end. MUFG Securities Forecasts Mar. 22, 2020

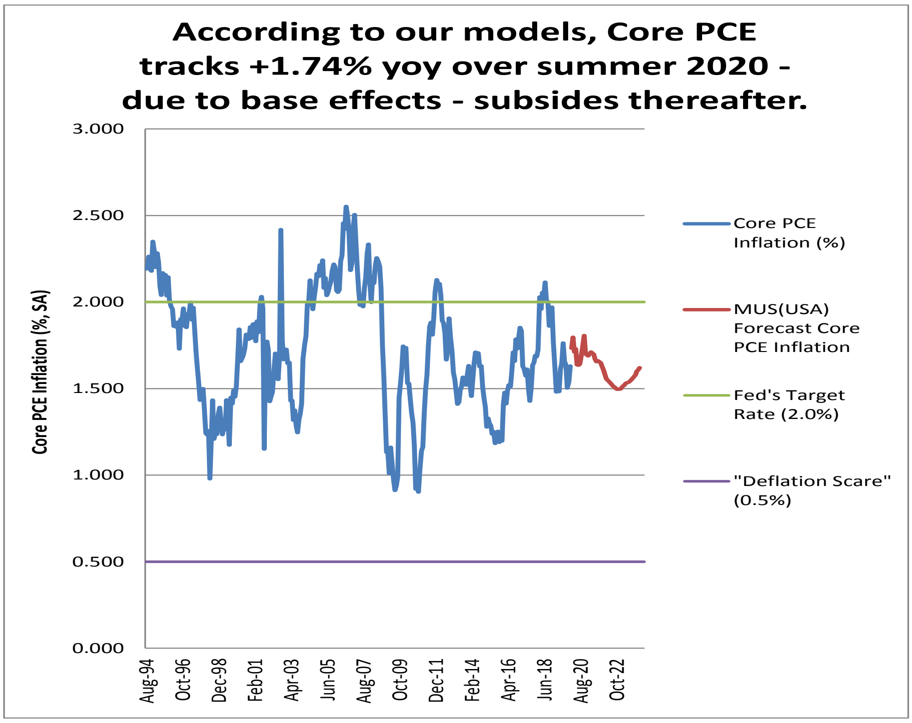
Source: BEA, Census, Commerce Dept., DoL, BLS, Federal Reserve, MUFG Securities Forecasts, Mar. 22, 2020

CHART 2: OUR FORECAST OF FOUR YEARS OF MODERATE INFLATION



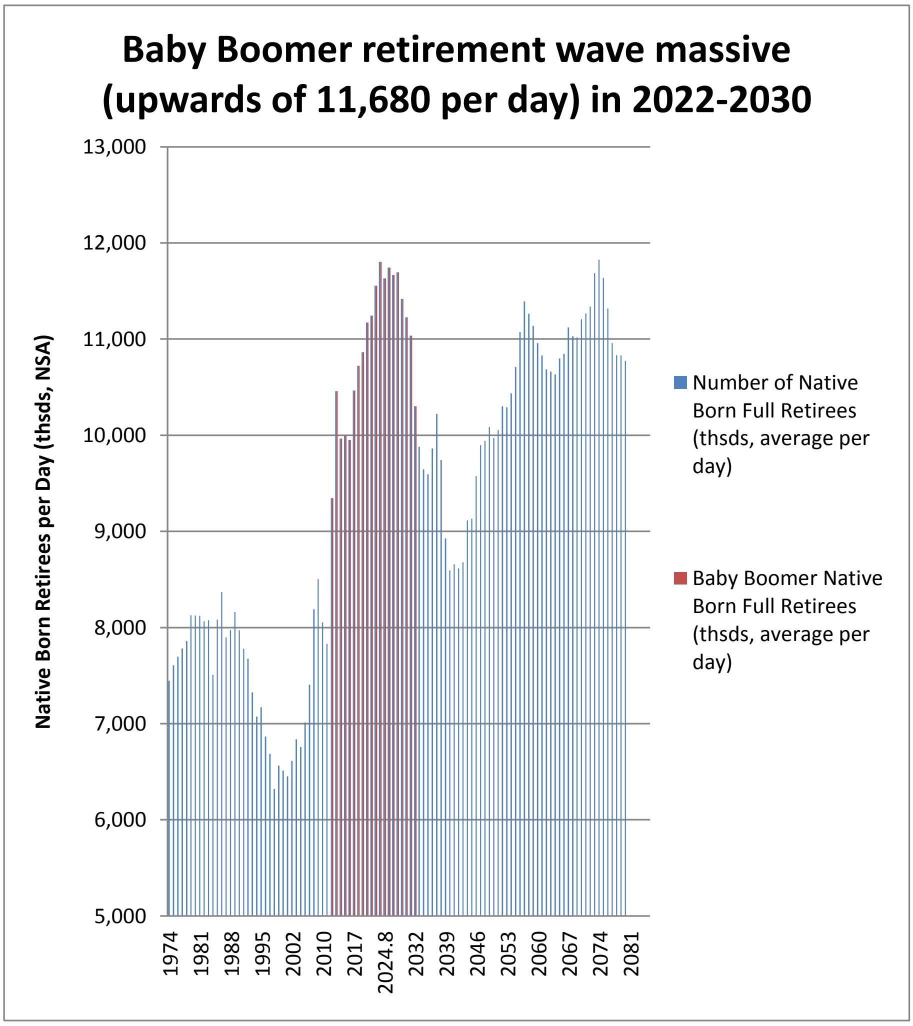
Source: BLS, BEA, Federal reserve, Bloomberg LP, MUFG Securities

CHART 3: OUR FORECAST FOR MODERATE CORE INFLATION, AS WELL



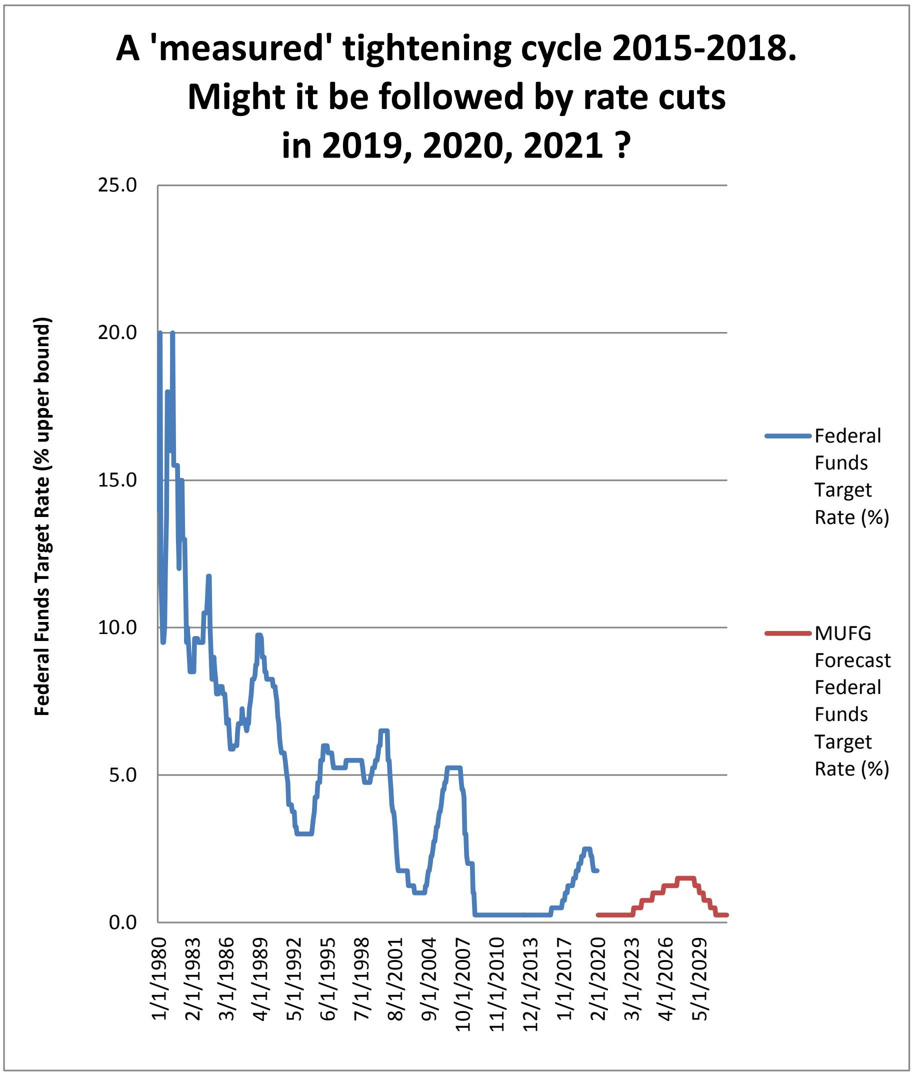
Source: BLS, BEA, Federal reserve, Bloomberg LP, MUFG Securities

CHART 4: MASSIVE AGING OF AMERICA OVER 2022 THROUGH 2030



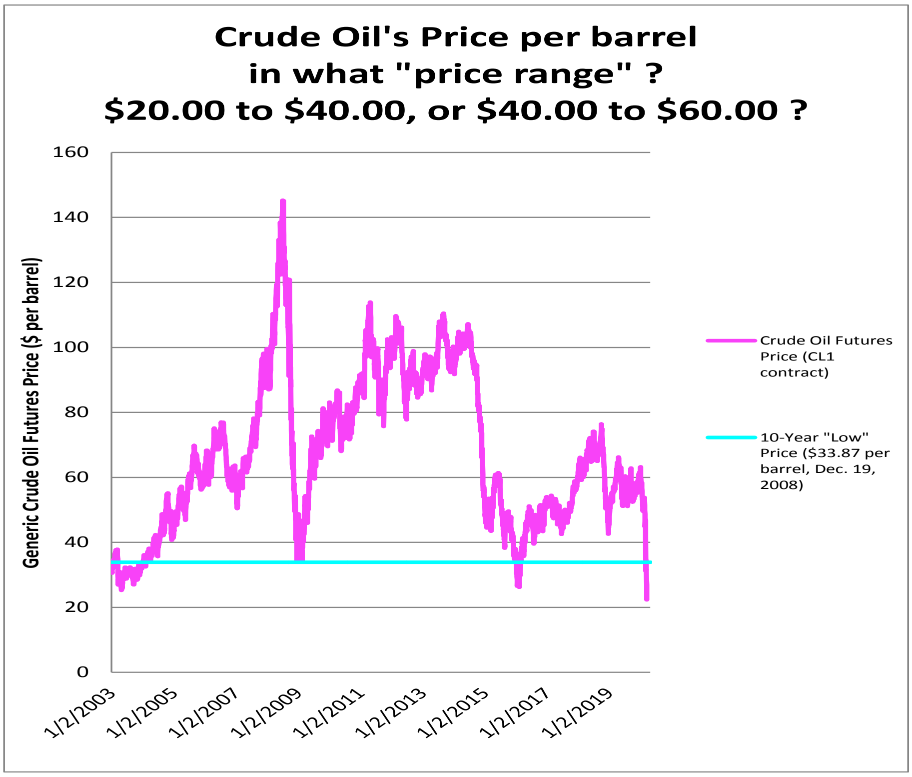
Source: CDC, Census, BLS, MUFG Securities

CHART 5: OUR MODELS FORECAST ZIRP FOR YEARS 2020, 2021 AND 2022



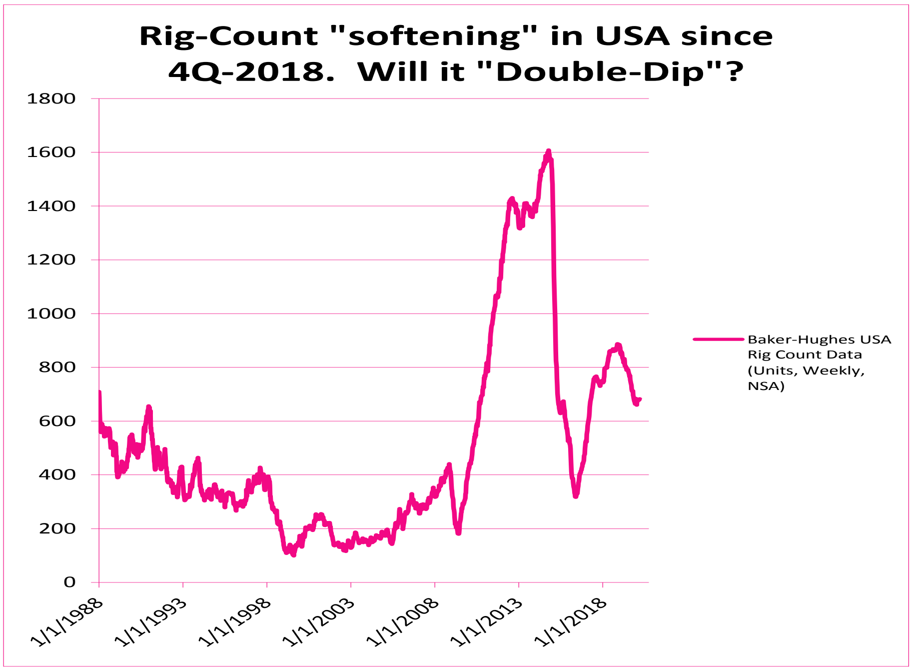
Source: Federal Reserve, Bloomberg LP, MUFG Securities

CHART 1: CRUDE OIL'S PRICE DECLINE MAY TRIGGER MINING JOB LOSS



Source: Bloomberg LP, MUFG Securities

CHART 2: WILL RIG COUNT PLUNGE, AGAIN ? ELIMINATING JOBS ?



Source: Baker Hughes, Bloomberg LP, MUFG Securities

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