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The Macroeconomic Policy Response to the Pandemic: The What, the How, and the What Next?

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Covid-19

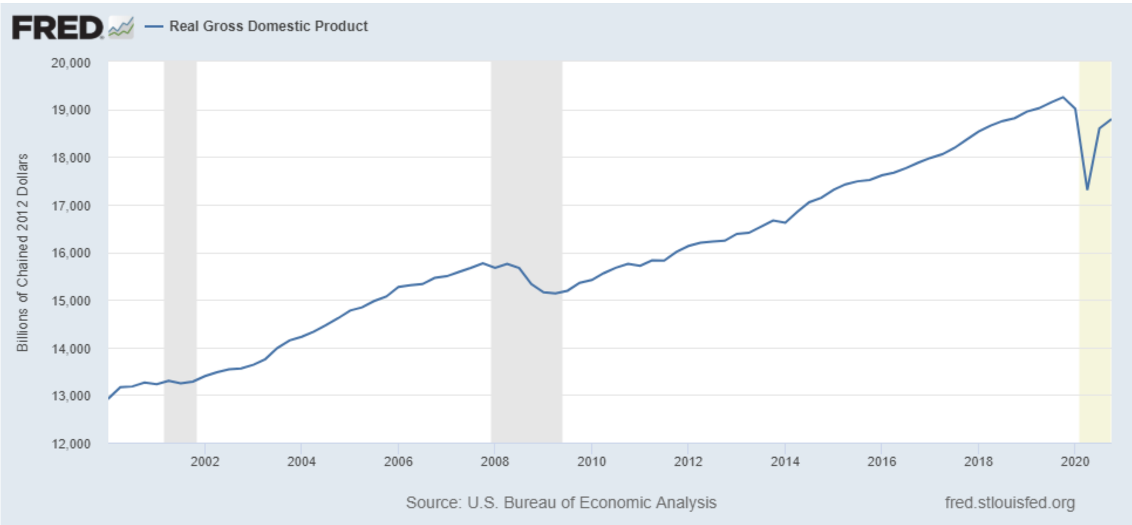
- A classic negative "exogenous shock"
- Both a demand and a supply shock
- Unique aspect is that governments suppressed economic activity
- Changed efficacy/role of macroeconomic (monetary and fiscal) policy
- Exposed fragilities in the global economy
- Triggered structural changes, amplifying several pre-existing trends

Table 1: IMF global growth forecasts, latest vs pre-Covid

Forecast date	2020	2021	2022
Jan 2020	3.3	3.4	
Apr 2021	-3.3	6.0	4.4

Source: IMF World Economic Outlook.

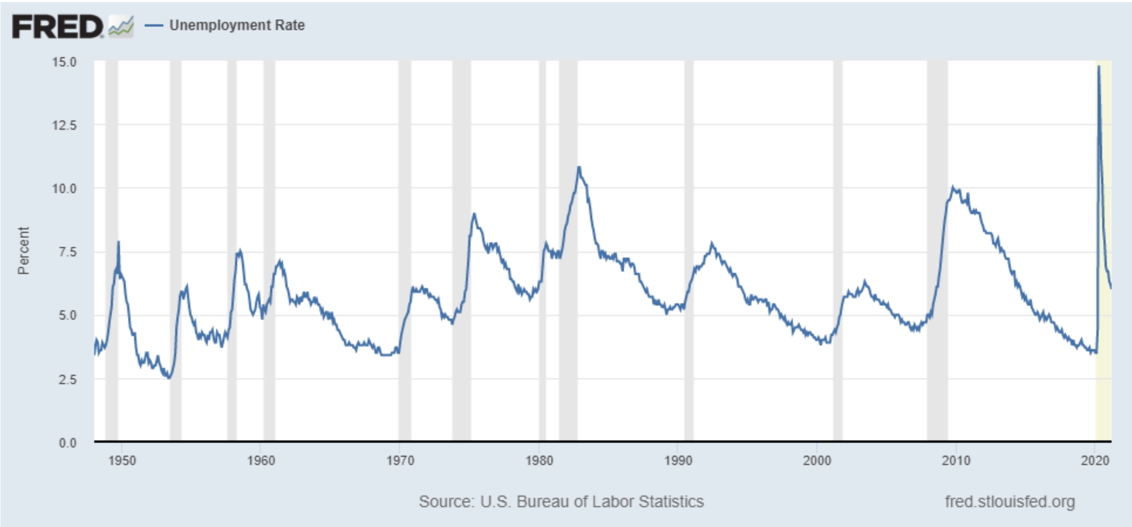
Figure 1: US real GDP, 2000 to Q4 2020



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- Covid-19 has been biggest negative shock to demand in living memory
- Real GDP fell by 10.1% in two quarters; in the Great Recession by 3.3%

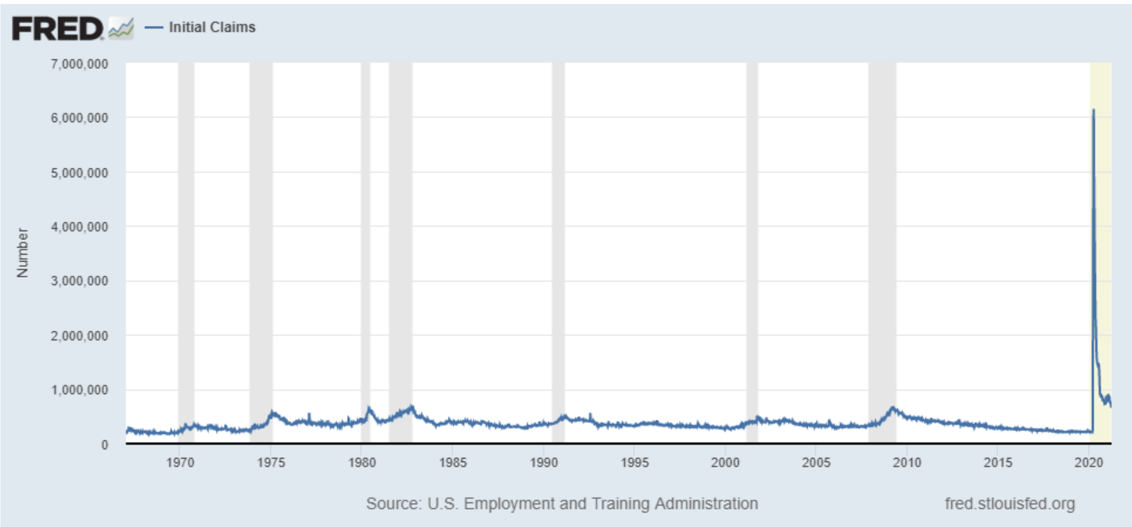
Figure 2: US unemployment rate, post-WWII period



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- Unemployment rate up from 3.5% to 14.8% in two months (latest: 6.0%; BLS estimates could be 0.4pp more due to Covid-related reporting error)
- The un-/under-employment rate up from 7.0% to 22.9% (latest: 10.7%)
- Labor force participation rate fell from 63.3% to 60.2% (latest: 61.5%)

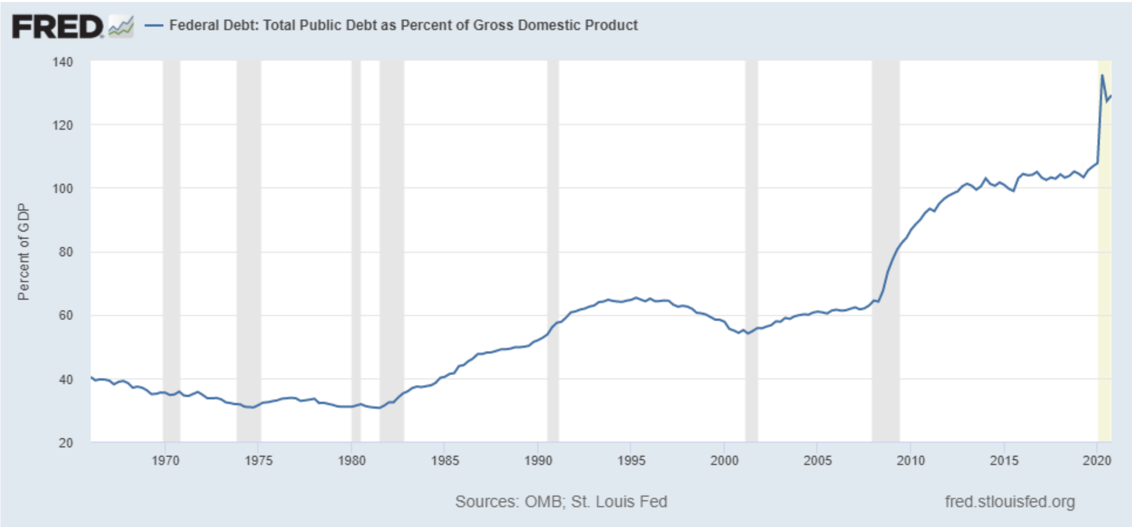
Figure 3: US weekly initial unemployment claims, 1967 to present



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions

- Cumulative claims since Covid equivalent to 48% of Feb 2020 workforce
- In the prior equivalent period this ratio was just 7.2%

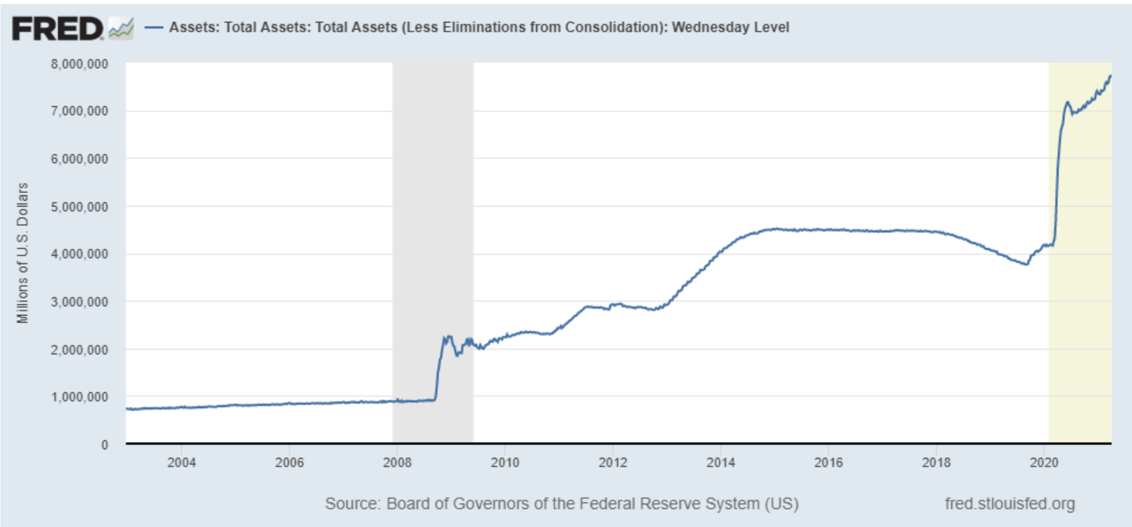
Figure 4: US federal debt relative to size of the economy, 2000 to Q4 2020



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- The debt-to-GDP ratio rose by 28 percentage points from Q1 to Q2 2020, partly because the economy shrunk but mainly because the budget deficit blew out, as government spending rose and tax revenue fell

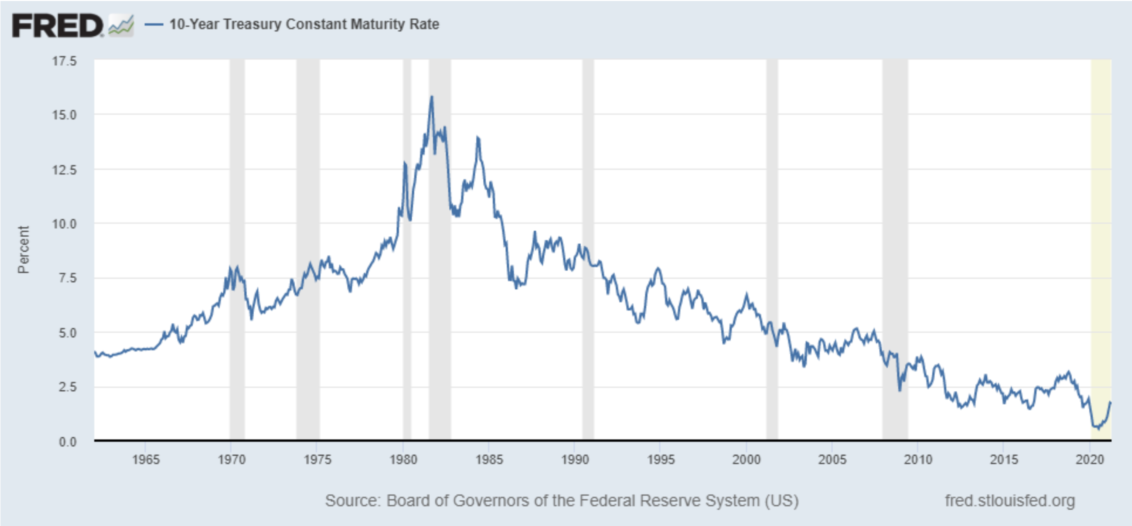
Figure 5: Federal Reserve balance sheet, 2002 to present



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- The Fed cut its target federal funds rate from 1.25-1.5% to 0-0.25% range and launched aggressive credit and quantitative easing (QE)
- Simplified central bank balance sheet: Government Bonds + Loans = Reserves (bank deposits) + Banknotes + Government Deposits + Capital

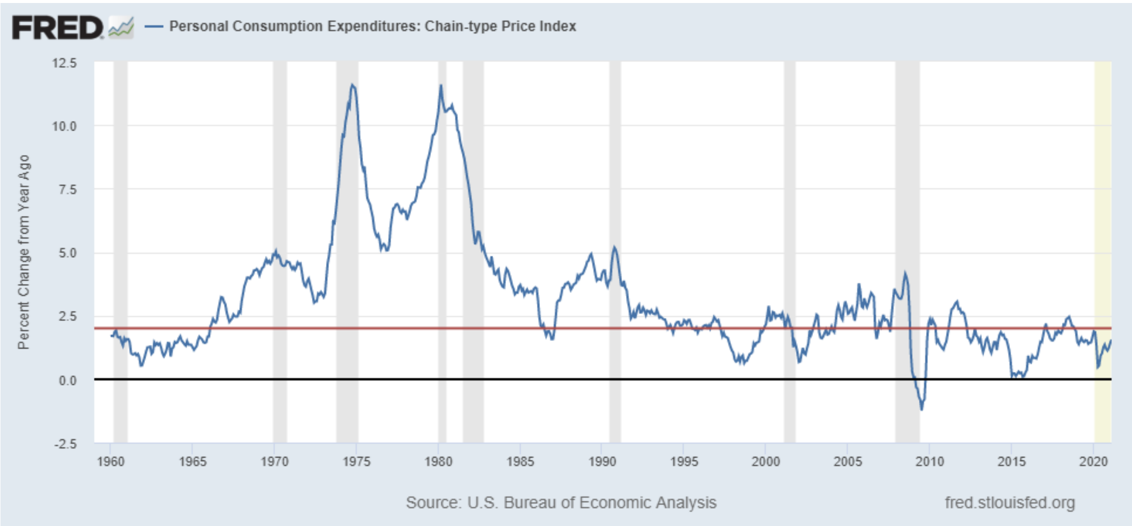
Figure 6: Ten-year treasury yield, 1962 to present



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- Since early 1980s treasury yields have been on a declining trend
- Since Aug 2019, allowing for the Fed's 2% inflation target, real (inflation-adjusted) yields have been trading in negative territory

Figure 7: PCE inflation, 1960 to present (% year-on-year)



Red line indicates Fed's 2% inflation target; PCE – personal consumption expenditures.

Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

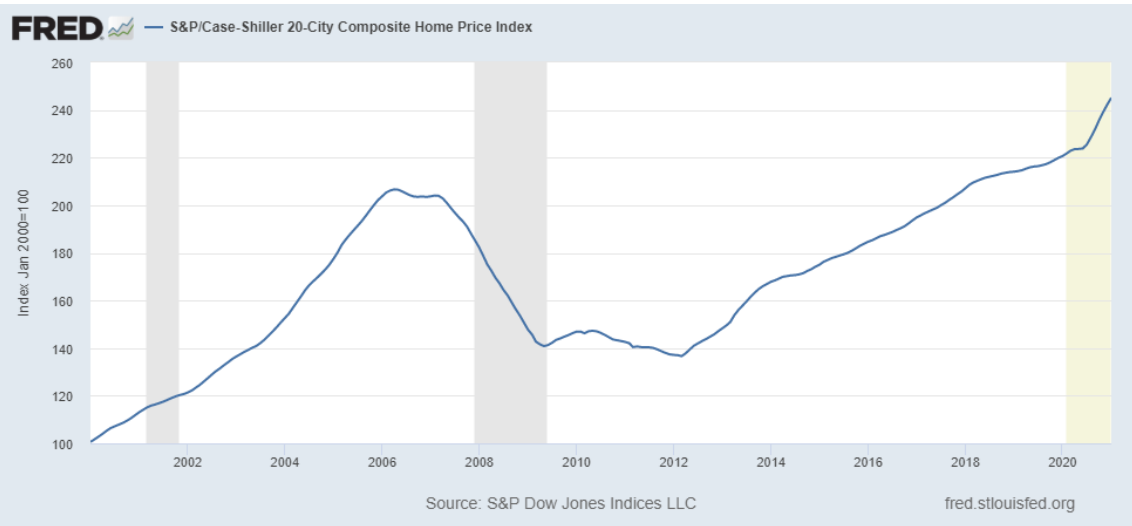
- PCE inflation in past 10 years has averaged 1.5% (latest: 1.7%)
- Core PCE inflation (excluding food and energy) has averaged 1.7% (latest: 1.6%)

Figure 8: S&P500 index, 2011 to present

Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded area indicates recession.

- S&P500 fell 34% when Covid hit; it is now 20% above its pre-Covid peak
- S&P500 Price-to-Earnings Ratio (trailing 12-months reported earnings) has increased from 25x pre-Covid (Jan 1, 2020) to 41x
- Top five stocks in index, percent above pre-Covid peak: Apple 55%; Microsoft 33%; Amazon 49%; Alphabet (Google) 46%; Facebook 38%

Figure 9: US home prices (index level)



S&P/Case-Shiller 20-City Composite Home Price Index.

Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- the index is up 11% year-on-year

Table 2: Economic impact of Global Financial Crisis vs Covid-19

	Peak-to-trough fall in real GDP (%) (number of quarters)		Pre-shock*-to-peak rise in unemployment rate (pp) (number of months)	
	Global Financial Crisis	Covid-19	Global Financial Crisis	Covid-19
US	4.0 (6)	10.1 (2)	3.9 (14)	11.3 (2)
Euro area	5.7 (5)	14.9 (2)	2.7 (21)	1.4 (6)
UK	5.8 (5)	21.8 (2)	2.1 (18)	1.1 (9)
Japan	8.9 (6)	10.5 (3)	1.4 (11)	0.7 (7)
South Korea	3.2 (2)	4.4 (2)	1.4 (17)	2.0 (11)
Australia	0.4 (1)	7.3 (2)	1.9 (10)	2.4 (5)

* August 2008 and February 2020, respectively; pp - percentage points.

Source: Federal Reserve Bank of St. Louis FRED Economic Data.

- The GDP fall this time was bigger and quicker than in the GFC
- The rise in the unemployment rate in the US was particularly dramatic: unlike similar schemes in other countries, Paycheck Protection Program recipients were counted as unemployed

Table 3: Change in real GDP by country, two halves of 2020 (%)

	H1 2020	H2 2020	Q4 2020 level: percent change from Q4 2019
United States	-10.1	8.6	-2.4
China	0.7	5.9	6.5
Japan	-8.8	8.2	-1.3
Euro Area	-14.9	11.7	-4.9
United Kingdom	-21.8	18.4	-7.3
India	-25.1	33.6	0.1

na - non-annualized rate.

Source: Federal Reserve Bank of St. Louis FRED Economic Data.

- GDP rebounded strongly in the second half, but beware levels and growth rate: a variable that falls 50%, then rises by 100% is back where it started

Table 4: US real GDP: change in components and contributions to growth

	H1 2020 (% hoh, na)	H2 2020 (% hoh, na)	Q4 2020 level: percent change from Q4 2019	Contribution to 2020 growth (pp)
Personal consumption	-11.2	9.6	-2.7	-2.6
Residential investment	-6.4	22.2	14.3	0.2
Business fixed investment	-9.2	8.6	-1.4	-0.5
Government consumption/investment	0.9	-1.4	-0.5	0.2
Exports	-24.6	18.2	-10.9	-1.5
Imports	-21.0	25.8	-0.6	1.3
Inventory investment				-0.6
Real GDP growth	-10.1	8.6	-2.4	-3.5

na - non-annualized rate; hoh - half-on-half; pp - percentage points.

Source: Federal Reserve Bank of St. Louis FRED Economic Data.

- Household consumption was the main driver of the recession and recovery
- Residential investment was a “beneficiary” of the pandemic
- Government spending on GDP played surprisingly little role

Table 5: Major central banks' balance sheet expansion, post-Covid

	Pre-Covid	Latest	Percent increase	Increase as percent of Q4 2019 nominal GDP (pp)	Reference: 2015-2019 average growth rate (% y-o-y)	Reference: balance sheet as percent of Q4 2020 nominal GDP
Federal Reserve	4202	7689	83	16	-2	36
ECB	4671	7505	61	24	18	66
Bank of Japan	578	719	24	25	17	130

Note: billion USD, billion euro, trillion yen, respectively; pp - percentage points.

Source: Federal Reserve Bank of St. Louis FRED Economic Data.

- Among the major central banks, the Fed increased the size of its balance sheet the most in percent terms but the least as a percent of nominal GDP
- The Fed now holds 18% of treasuries outstanding, the BOJ 51% of JGBs

Table 6: Tools the Fed lists as using to implement monetary policy

- Open Market Operations
- Discount Window and Discount Rate
- Reserve Requirements
- Interest on Required Reserve Balances and Excess Balances
- Overnight Reverse Repurchase Agreement Facility
- Term Deposit Facility
- Commercial Paper Funding Facility
- Primary Dealer Credit Facility
- Money Market Mutual Fund Liquidity Facility
- Primary Market Corporate Credit Facility
- Secondary Market Corporate Credit Facility
- Term Asset-Backed Securities Loan Facility
- Paycheck Protection Program Liquidity Facility
- Municipal Liquidity Facility
- Main Street Lending Program
- Central Bank Liquidity Swaps
- Temporary Foreign and International Monetary Authorities (FIMA) Repo Facility
- Money Market Investor Funding Facility (expired)
- ABCP MMMF Liquidity Facility (expired)
- Term Securities Lending Facility (expired)
- Term Auction Facility (expired)
- Maturity Extension Program and Reinvestment Policy (expired)

Source: Federal Reserve website.

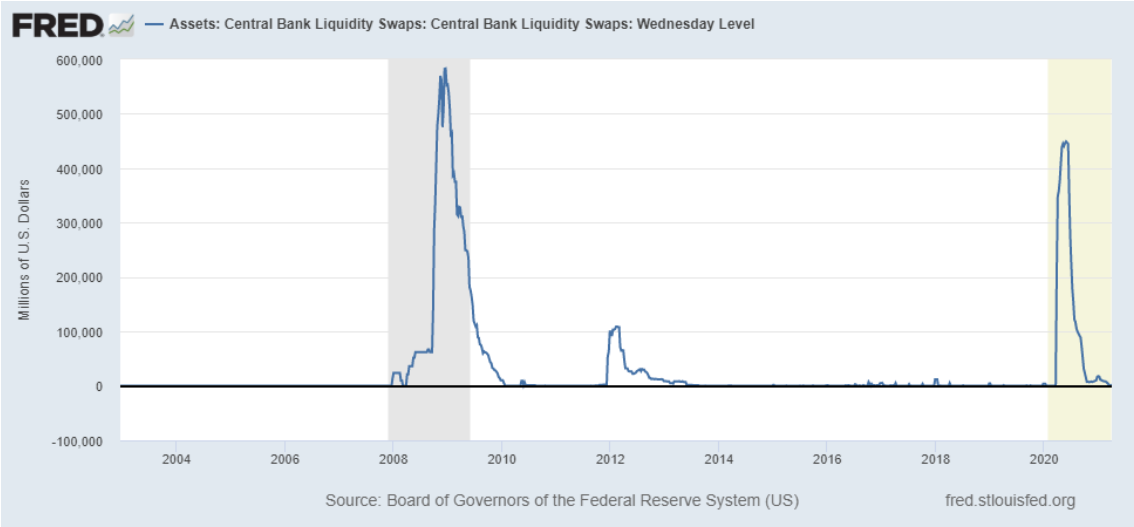
Table 7: Federal Reserve balance sheet components, latest vs pre-Covid

Balance sheet item		Latest ($bn)	Pre-Covid ($bn)	Change ($bn)	Share of total increase (%)
Total assets		7689	4242	3447	100.0
	Treasuries	4942	2503	2440	70.8
	MBS/Agency debt	2187	1374	813	23.6
	Loans	61	0	61	1.8
	CP Funding Facility	9	0	9	0.2
	Corporate Credit Facilities	26	0	26	0.8
	Main Street Lending Program	31	0	31	0.9
	Municipal Liquidity Facility	12	0	12	0.3
	TALF II	5	0	5	0.2
	Central bank liquidity swaps	3	0	2	0.1
Total liabilities/capital		7689	4242	3447	100.0
	Federal Reserve notes (Banknotes)	2095	1762	333	9.7
	Bank deposits	3673	1735	1938	56.2
	Treasury deposits	1122	381	741	21.5
	Treasury contributions to credit facilities	52	0	52	1.5
	Reverse repurchase agreements	352	237	115	3.3

MBS: mortgage-backed securities; CP: commercial paper; TALF: term asset-backed securities loan facility.
Source: Federal Reserve.

- Most (94%) of the Fed's balance sheet expansion has come from purchases of treasuries and (government-guaranteed) MBS/agency debt
- The "alphabet soup" of Fed credit and liquidity programs, while likely having significant "announcement" or confidence-engendering effects, in aggregate have been small in scale
- A significant part of the increase in the Fed's balance sheet on the liabilities side is due to increased Treasury deposits. This is tantamount to the Treasury "pre-funding" its budget deficit

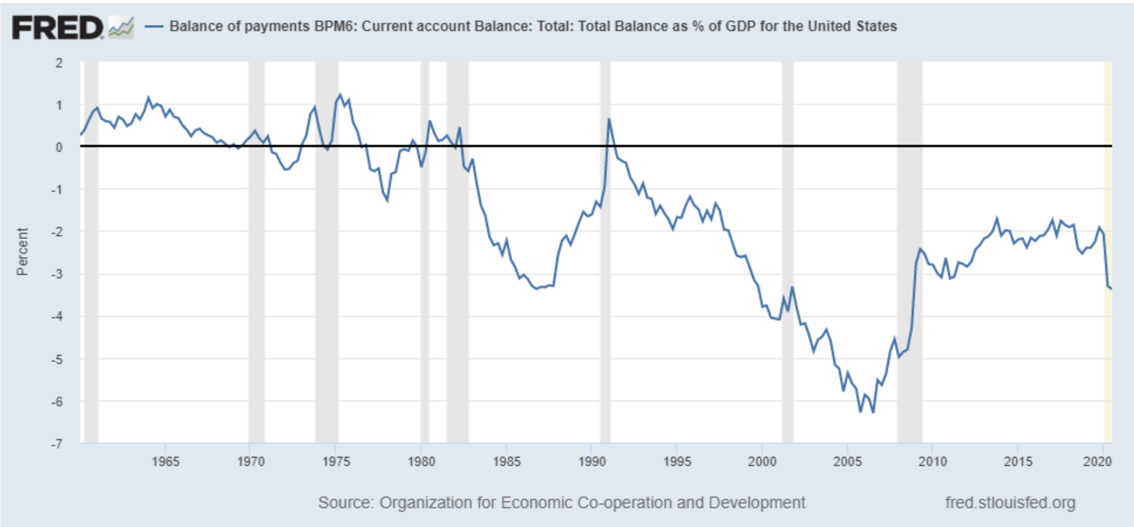
Figure 10: Fed dollar loans to foreign central banks, 2000 to present



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- In times of severe dollar funding "stress," the Fed provides dollars to foreign central banks, which lend them to banks in their own jurisdiction
- In the Covid recession, the amount outstanding peaked at $449 billion
- In the Global Financial Crisis, the total outstanding reached $583 billion

Figure 11: US current account balance as percent of GDP, 1960 to Q3 2020



Source: Federal Reserve Bank of St. Louis FRED Economic Data. Shaded areas indicate recessions.

- US current account deficit rose from 2.1% of GDP in Q1 '20 to 3.4% in Q3
- China's current account surplus went from -0.5% to 2.3% in same period

Table 8: Major US legislation related to Covid-19 economic relief

- Coronavirus Preparedness and Response Supplemental Appropriations Act, 2020 - March 2020
- Families First Coronavirus Response Act - March 2020
- Coronavirus Aid, Relief, and Economic Security Act (CARES Act) - March 2020
- Paycheck Protection Program and Health Care Enhancement Act - April 2020
- Paycheck Protection Program Flexibility Act of 2020 - June 2020
- A bill to extend the authority for commitments for the paycheck protection program - July 2020
- Consolidated Appropriations Act, 2021 - December 2020
- American Rescue Plan Act of 2021 - March 2021

Source: Wikipedia.

Table 9: Key funding provisions in the CARES Act ($bn)

Business-related	
Loans and guarantees for large businesses and governments	510
Small business loans and grants	377
Business tax breaks	280
Support to transportation and transit providers	72
Household and other provisions	
Directs payments to households	290
Unemployment benefit boost and extension	260
Hospital, Medicare, and other health-related funding	180
Aid to state and local governments	150
FEMA disaster assistance funds	45
Increased food stamp, nutrition, and housing funds	42
Education Stabilization Fund and related programs	32
Other spending	25
Individual tax breaks	20
Total	2283

Source: J.P. Morgan Research, "A Breakdown of the CARES Act," April 2020.

- Most fiscal measures involve transfers not direct government spending

Appendix 1: Covid-19 US cases and deaths by age group

Age group	Cases	Cumulative cases	Deaths	Cumulative deaths
0-4	2.0	2	0.0	0
5-17	9.7	12	0.1	0
18-29	22.4	34	0.5	1
30-39	16.3	50	1.1	2
40-49	14.9	65	2.8	4
50-65	20.5	86	14.6	19
65-74	7.7	93	21.3	40
75-84	4.0	97	27.7	68
85-	2.4	100	31.8	100

Source: CDC Data Tracker.

Appendix 2: Covid-19 death rate: US vs selected countries

	Cumulative deaths per 100,000	US death rate compared to this country (multiple)	Reference: population (millions)	Reference: per capital income (INT$) (PPP basis)
US	164.0		331	63051
UK	186.4	1	67	44288
Italy	178.0	1	59	40066
Brazil	144.5	1	213	14563
Sweden	132.7	1	10	52497
Iran	74.2	2	84	11963
India	11.7	14	1375	6284
Japan	7.1	23	125	41637
South Korea	3.4	48	52	44292
China	0.3	547	1407	17206
Thailand	0.1	1640	67	18073

INT$ - International dollar (Geary-Khamis dollar); PPP - purchasing power parity.

Source: World Health Organization COVID-19 Weekly Epidemiological Update, 28 March 2021; Wikipedia.