Where are the Roots and Way-out ?

Big Picture: economy responses and transformations
Couple of relevant slides

Prof. Michal Mejstrik

For my students et al at the Institute of Economic Studies , Faculty of Social Sciences , Charles University

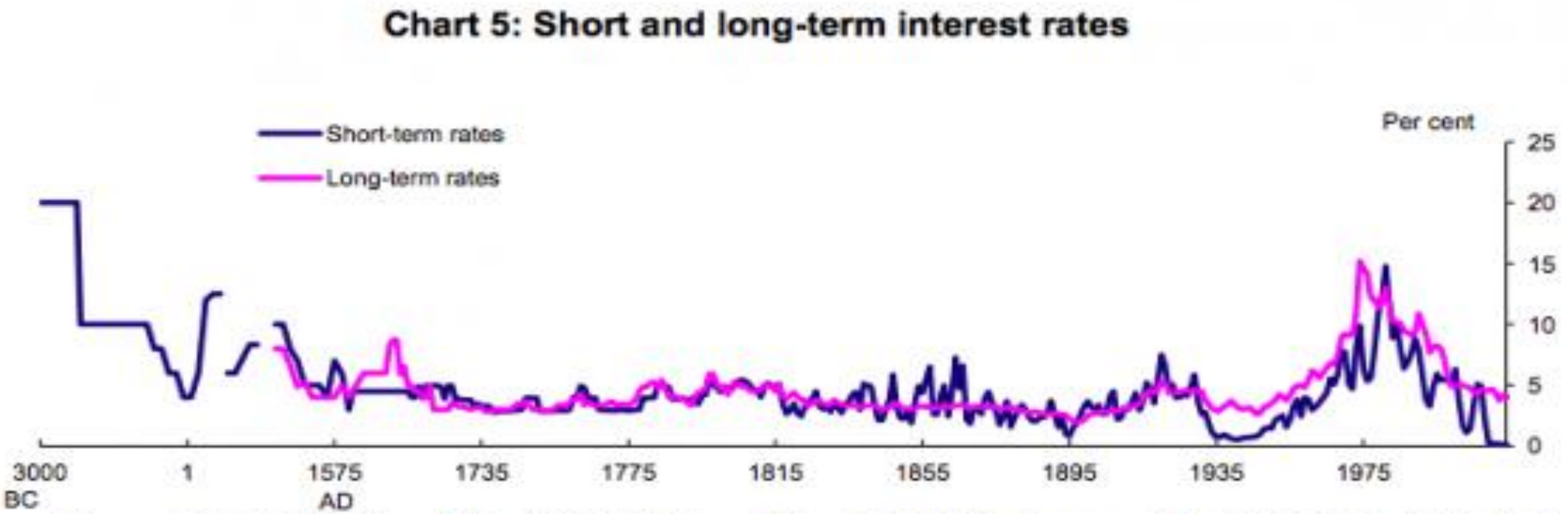
https://ies.fsv.cuni.cz/en/node/386

Michal.mejstrik@fsv.cuni.cz

Or michal.mejstrik@eeip.cz

Prague 27 March 2020

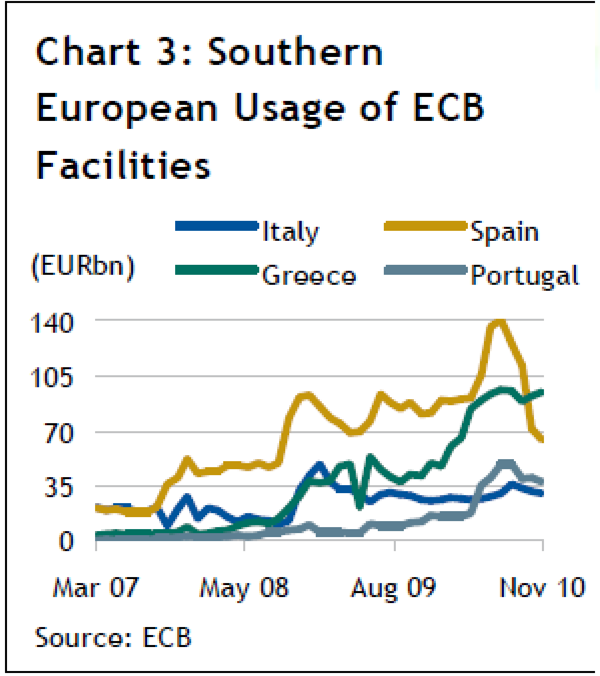
Right now we are living in the period of the lowest interest rates within 5 000 years – Conventional central bank instruments such as cutting base rate have lost much of their former power

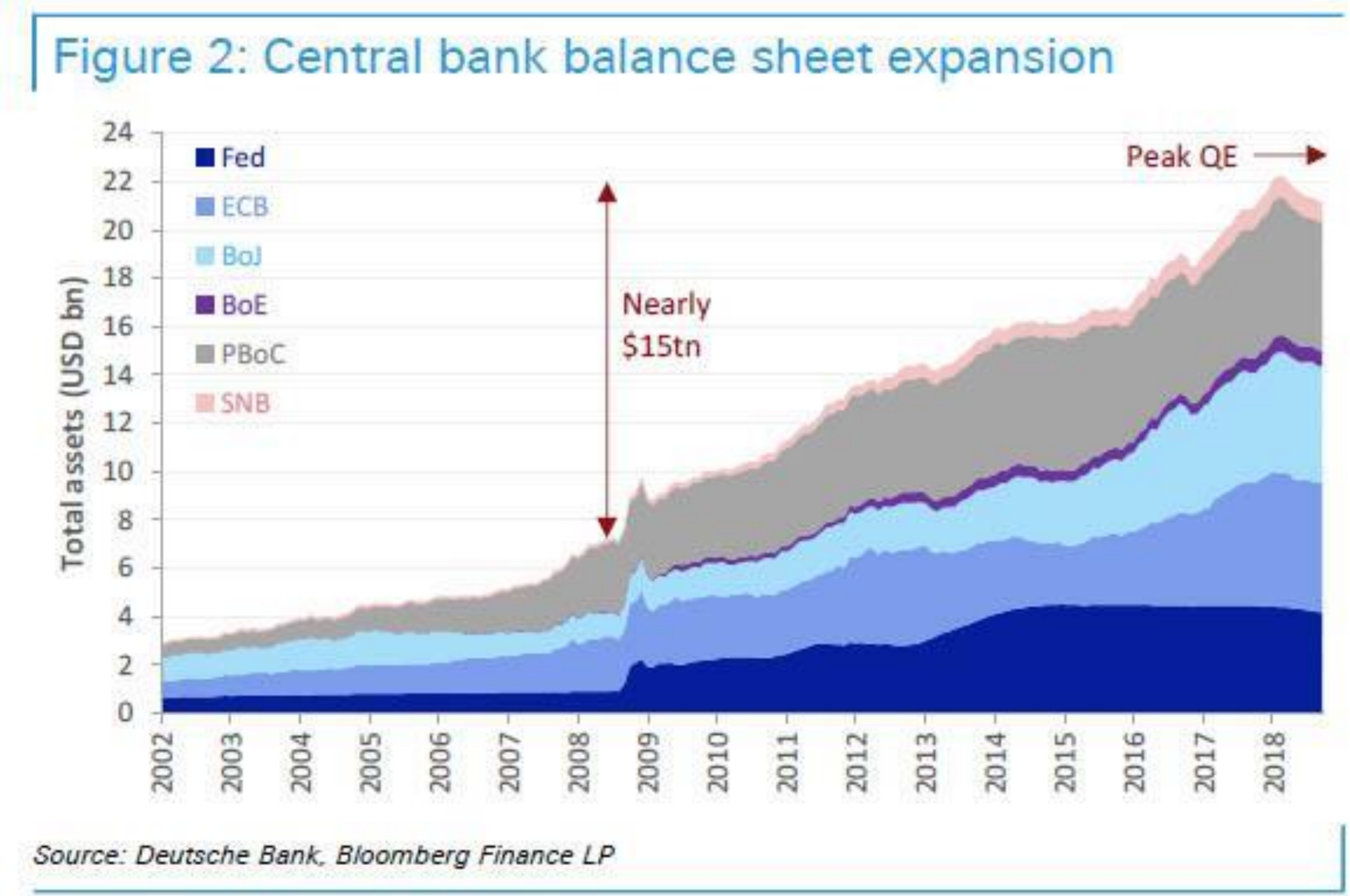


Sources: Homer and Sylla (1991); Heim and Mirowski (1987); Weiller and Mirowski (1990); Hills, Thomas and Dimsdale (2015); Bank of England; Historical Statistics of the United States Millenial Edition, Volume 3; Federal Reserve Economic Database. Notes: the intervals on the x-axis change through time up to 1715. From 1715 onwards the intervals are every twenty years. Prior to the C18th the rates reflect the country with the lowest rate reported for each type of credit: 3000BC to 6th century BC - Babylonian empire; 6th century BC to 2nd century BC - Greece; 2nd century BC to 5th century AD - Roman Empire; 6th century BC to 10th century AD - Byzantium (legal limit); 12th century AD to 13th century AD - Netherlands ;13th century AD to 16th century AD - Italian states. From the C18th the interest rates are of an annual frequency and reflect those of the most dominant money market: 1694 to 1918 this is assumed to be the UK; from 1919-2015 this is assumed to be the US. Rates used are as follows: Short rates: 1694-1717- Bank of England Discount rate;1717-1823 rate on 6 month East India bonds; 1824-1919 rate on 3 month prime or first class bills; 1919-1996 rate on 4-6 month prime US commercial paper ; 1997-2014 rate on 3month AA US commercial paper to non-financials. Long rates: 1702-1919 - rate on long-term government UK annuities and consols; 1919-1953, yield on long-term US government bond yields; 1954-2014 yield on 10 year US treasuries.

Source: Andy Haldane, BoE

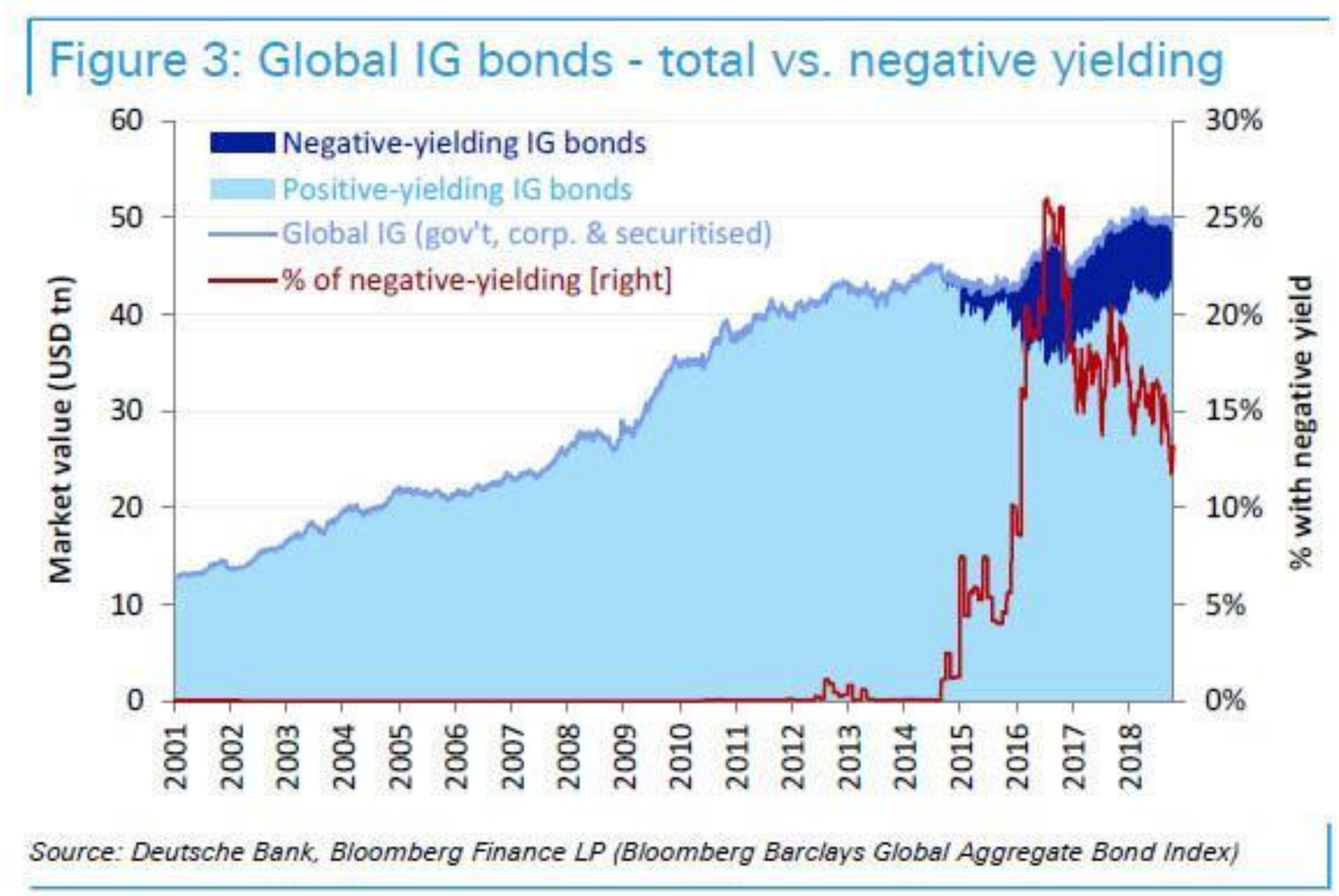
High unconventional QE engagement of key central banks during and long after the crisis tripled their central bank balance sheets between 2008 and 2019

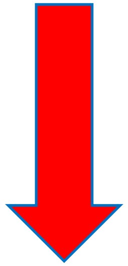




Source: The Economist (2013), FITCH (2011) **Note: Instead of standard QE, Czech central bank CNB had used exchange rate commitment to ease its monetary policy**

…because expansive monetary policies were not enough…

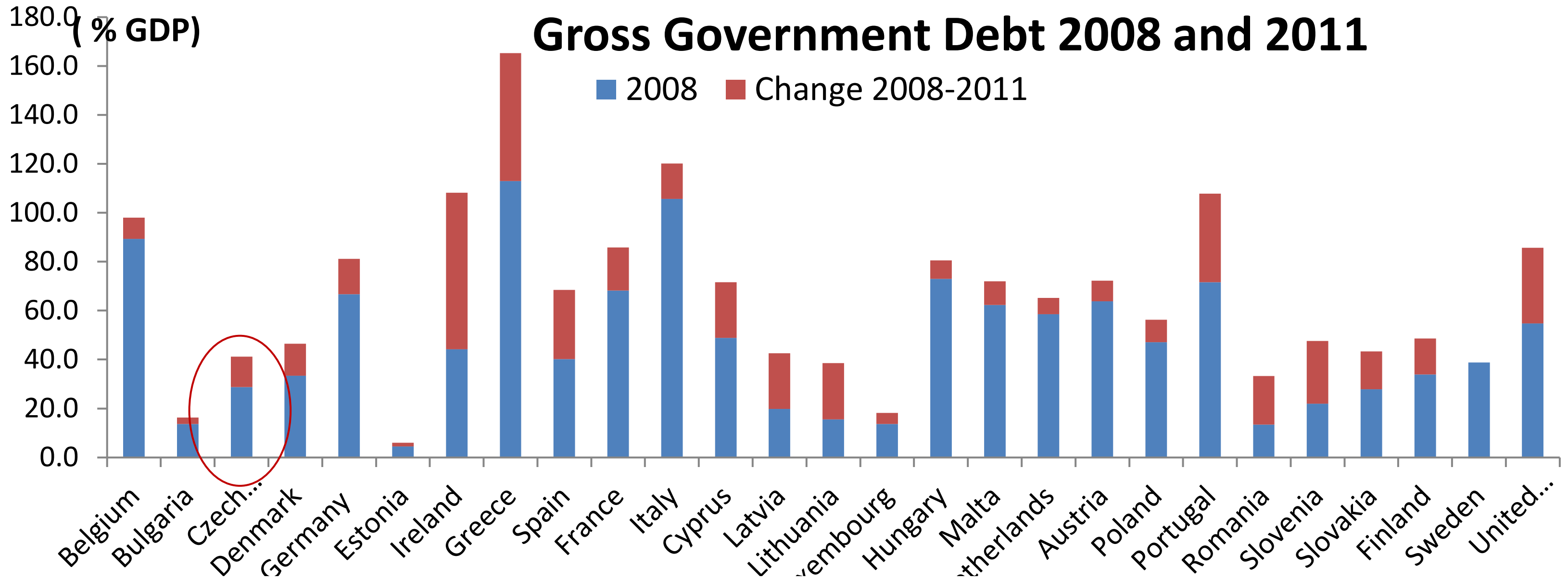


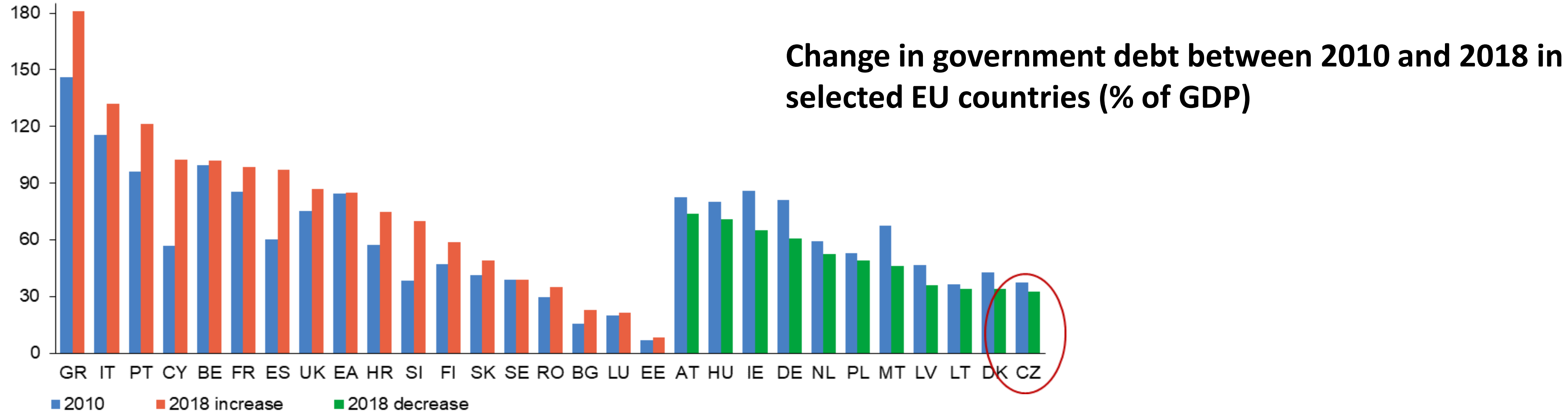


Source: https://research.db.com/Research/Article?rid=69d6a4ef-1666-4da2-ac68-496d7d7d4d66-604&kid=RP0001&documentType=R

Government fiscal measures incl. stimulus during and after the crisis left diversified indebtedness of peripheral EU member states versus CR and the rest of EU

High debt/GDP ratio of PIIGS while debt of CR relatively low





Source: Eurostat http://epp.eurostat.ec.europa.eu/portal/page/portal/government_finance_statistics/data/database

Change in debt and its components to GDP since 2007 until 2014 versus CR

High debt/GDP ratio of PIIGS while debt of CR relatively low (the 7th lowest), Germany decreased in 2015 after surplus budget

Exhibit E3

Change in debt-to-GDP ratio since 2007 by country

Ranked by real economy debt-to-GDP ratio, 2Q14[1]

Advanced economy / Developing economy — Leveraging / Deleveraging

Rank	Country	Debt-to-GDP ratio[1] %	Real economy debt change, 2007–14 Percentage points: Total	Government	Corporate	Household	Financial sector debt change
1	Japan	400	64	63	2	-1	6
2	Ireland	390	172	93	90	-11	-25
3	Singapore	382	129	22	92	15	23
4	Portugal	358	100	83	19	-2	38
5	Belgium	327	61	34	15	11	4
6	Netherlands	325	62	38	17	7	38
7	Greece	317	103	70	13	20	1
8	Spain	313	72	92	-14	-6	-2
9	Denmark	302	37	22	7	8	37
10	Sweden	290	50	1	31	18	37
11	France	280	66	38	19	10	15
12	Italy	259	55	47	3	5	14
13	United Kingdom	252	30	50	-12	-8	2
14	Norway	244	13	-16	16	13	16
15	Finland	238	62	29	17	15	24
16	United States	233	16	35	-2	-18	-24
17	South Korea	231	45	15	19	12	2
18	Hungary	225	35	15	21	-1	10
19	Austria	225	29	23	6	0	-21
20	Malaysia	222	49	17	16	16	6
21	Canada	221	39	18	6	15	-6
22	China	217	83	13	52	18	41
23	Australia	213	33	23	-1	10	-8
24	Germany	188	8	17	-2	-6	-16
25	Thailand	187	43	11	6	26	21
26	Israel	178	-22	-4	-21	3	-2
27	Slovakia	151	51	28	8	14	-5
28	Vietnam	146	13	10	-1	5	2
29	Morocco	136	20	8	7	5	3
30	Chile	136	35	6	20	9	9
31	Poland	134	36	14	9	13	9
32	South Africa	133	19	18	2	-2	-3
33	Czech Republic	128	37	19	9	9	4
34	Brazil	128	27	3	15	9	13
35	India	120	6	-5	6	-1	5
36	Philippines	116	4	-3	9	-2	-5
37	Egypt	106	-9	9	-18	0	-8
38	Turkey	104	28	-4	22	10	11
39	Romania	104	-7	26	-35	1	-4
40	Indonesia	88	17	-5	17	6	-2
41	Colombia	76	14	1	8	5	3
42	Mexico	73	30	19	10	1	-1
43	Russia	65	19	3	9	7	-4
44	Peru	62	5	-10	11	5	2
45	Saudi Arabia	59	-14	-15	2	-1	-8
46	Nigeria	46	10	7	1	2	-1
47	Argentina	33	-11	-14	1	2	-5

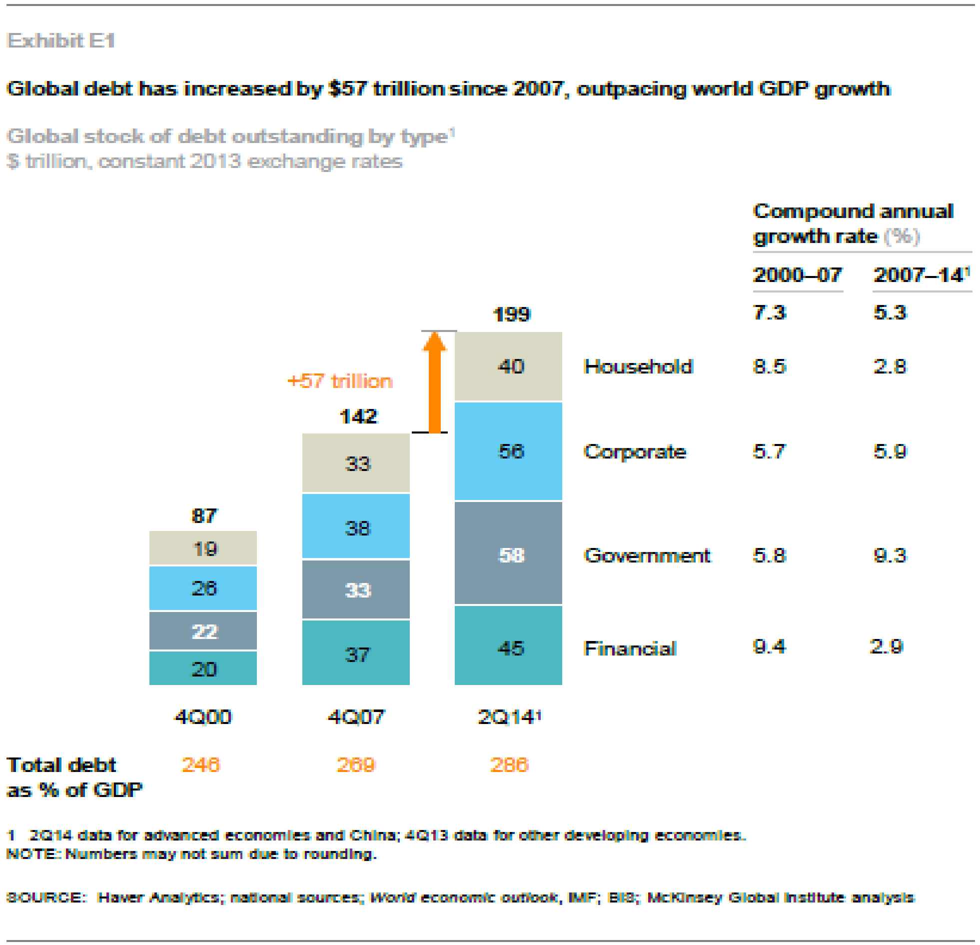
1 Includes debt of households, non-financial corporations, and government; 2Q14 data for advanced economies and China; 2013 data for other developing economies.

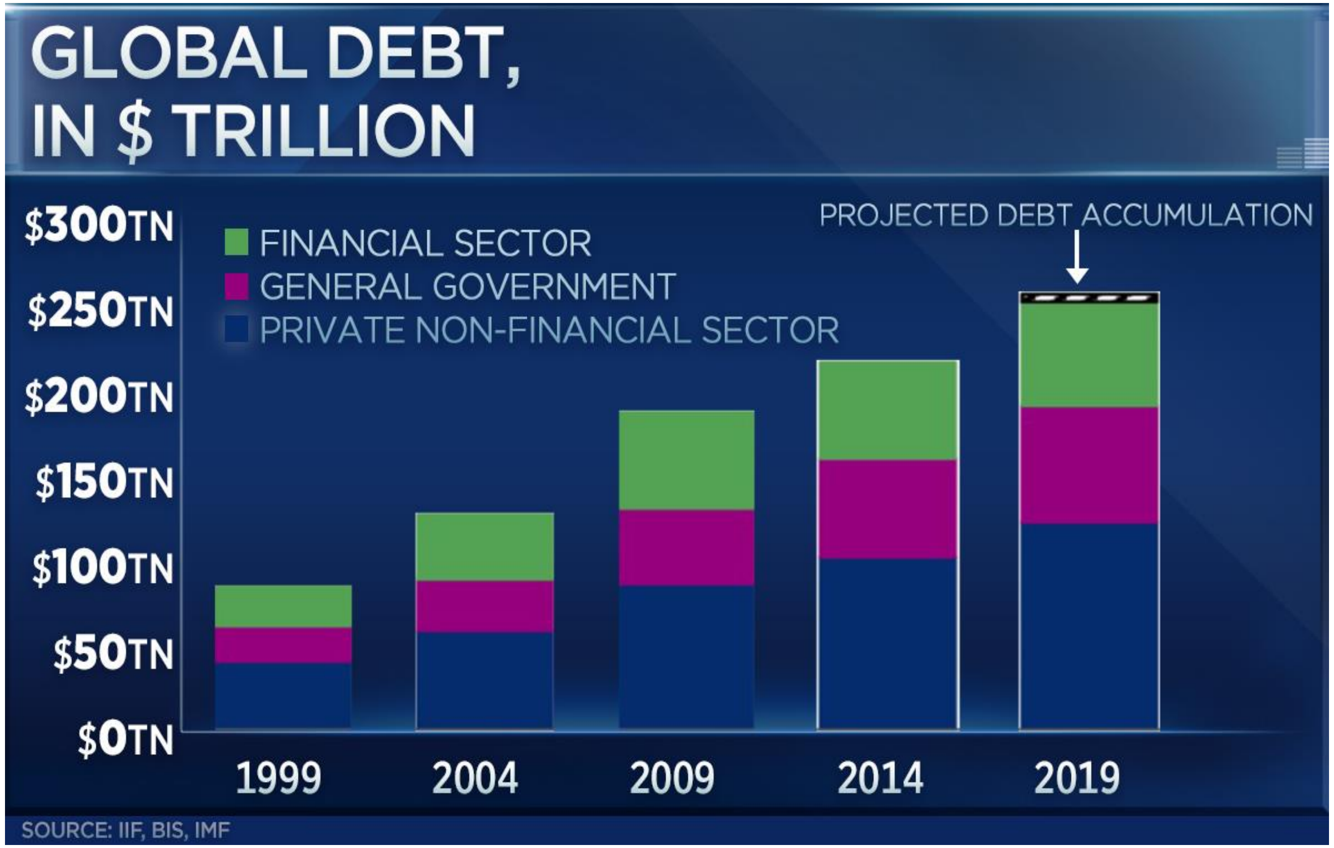
NOTE: Numbers may not sum due to rounding.

SOURCE: *World economic outlook*, IMF; BIS; Haver Analytics; national central banks; McKinsey Global Institute analysis

Source: McKinsey (2015)

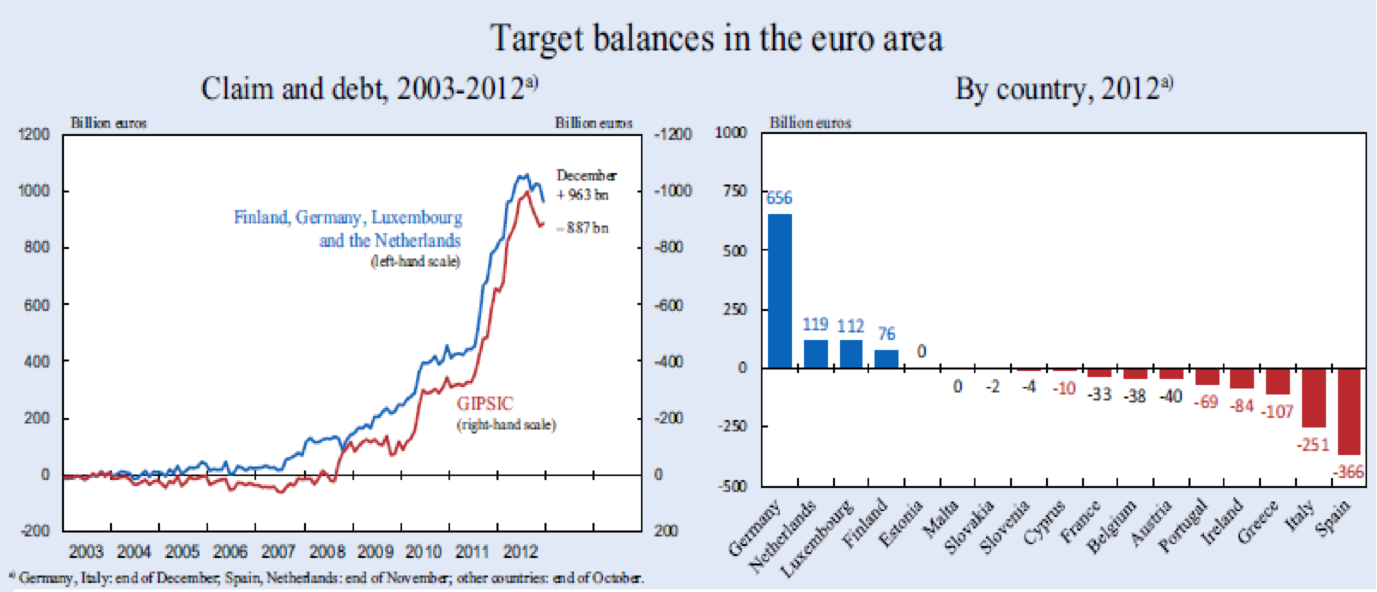
Increasing government debt in the past…and now. Space for fiscal bazooka ?





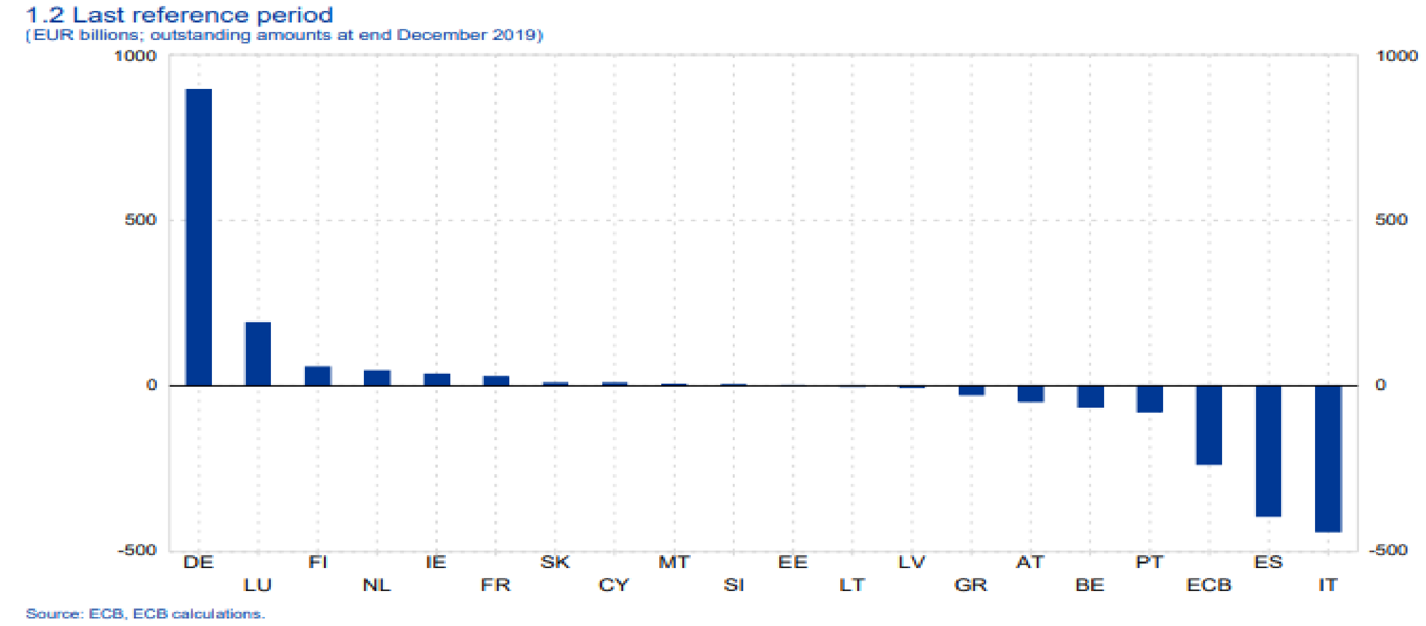
"Global debt hit a record high of over $250 trillion in the first half of this year, led by a surge in borrowings in the U.S. and China, according to IIF report. China and the U.S. accounted for over 60% of the increase. Similarly, EM debt also hit a new record of $71.4 trillion (220% of GDP). The IIF cites the deepening of global bond markets as the reason for the rise in debt levels. The global bond markets increased from $87 trillion in 2009 to over $115 trillion in mid-2019. The growth was mostly seen in the government bond market — which now make up 47% of global bond markets compared to 40% in 2009 ". https://www.cnbc.com/2019/11/15/global-debt-surged-to-a-record-250-trillion-in-the-first-half-of-2019-led-by-the-us-and-china.html

Sovereign Bonds Forgotten Consequences… Any Limit for Claims on the Eurosystem via TARGET 2 ? (2003-2019)



The ECB shifted its refinancing credit and money creation – to the tune of €900 billion – toward southern Europe and Ireland, as measured by the Eurosystem's Target balances. In doing so, however, it put itself in peril, because the only way to implement the shift was by **lowering the collateral requirements for refinancing credit. To a large extent, this collateral consisted of government bonds**.

Source: EEAG Report 2013



Source:ECB (2020)
http://sdw.ecb.europa.eu/reports.do?node=1000004859

MGI Financial Connectedness Ranking 2016E. net foreign creditors (only Lax, UK, Neth, G, SWIS, C, B, Nor,Den, besides Asian Cina, Hongkong,Sing, Jap,S.Korea,…)

MGI Financial Connectedness Ranking, 2016E (ranking by stock of foreign investment assets and liabilities)

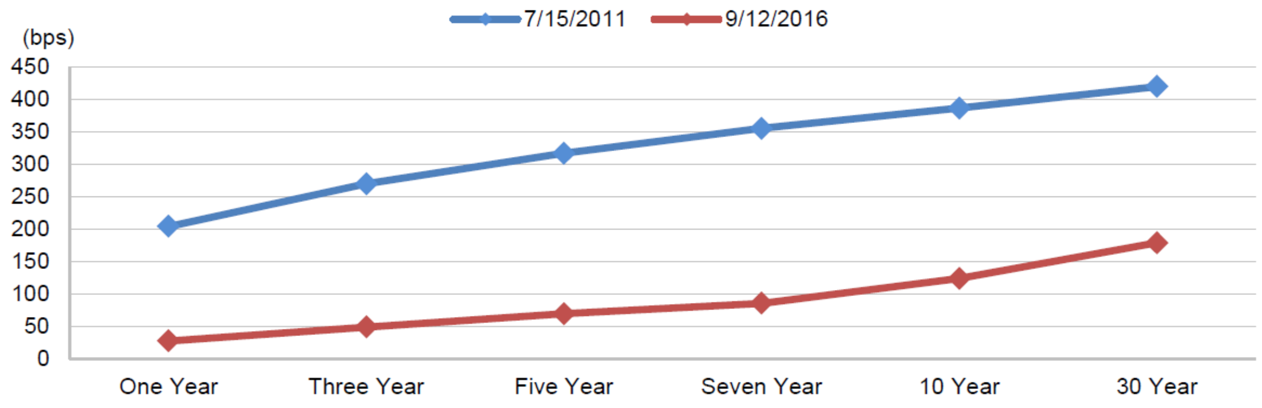
Foreign assets and liabilities as % of GDP: >500 | 100–500 | 50–100 | 10–50 | <10

Country: Net capital provider | Net capital recipient | Financial center[1]

Rank (change vs. 2005 rank)		Country	Total $ billion: Total foreign assets	Total foreign liabilities	Foreign assets % of GDP: FDI	Equity	Debt securities	Loans and other	Foreign reserve assets	Foreign liabilities % of GDP: FDI	Equity	Debt securities	Loans and other	Total foreign assets and liabilities/GDP %
1	(—)	United States	21,708	29,922	40	38	15	21	2	39	35	59	28	278
2	(+4)	Luxembourg	10,643	10,825	9,088	3,016	3,460	2,332	2	8,231	6,376	1,797	1,799	36,101
3	(-1)	United Kingdom	10,577	10,492	71	64	71	191	5	59	58	99	183	801
4	(—)	Netherlands	8,045	7,970	659	109	116	155	5	576	86	206	167	2,077
5	(-2)	Germany	8,064	6,617	57	29	57	84	5	42	20	61	68	424
6	(+1)	Japan	8,215	5,472	29	29	50	35	25	5	30	28	48	277
7	(-2)	France	6,149	6,983	66	30	72	76	6	44	35	109	96	533
8	(+8)	China	6,594	4,739	12	2	1	15	29	26	5	2	9	101
9	(-1)	Ireland	4,963	5,572	478	331	511	370	1	474	903	183	338	3,588
10	(+4)	Hong Kong, China	4,471	3,402	537	274	153	310	120	574	135	16	336	2,455
11	(-1)	Switzerland	4,290	3,537	232	93	98	125	103	192	145	16	183	1,186
12	(+1)	Canada	3,212	3,071	83	66	19	36	5	66	30	65	39	411
13	(-4)	Italy	2,713	2,878	34	43	33	28	9	26	10	66	53	302
14	(+1)	Singapore	2,976	2,350	230	174	171	344	83	359	52	13	368	1,793
15	(-4)	Spain	1,760	2,906	55	20	25	38	5	60	25	69	81	378
16	(-4)	Belgium	2,142	2,012	197	67	76	114	5	213	27	97	94	890
17	(+1)	Australia	1,471	2,277	35	32	18	27	4	51	30	69	31	298
18	(-1)	Sweden	1,414	1,448	94	81	25	65	12	81	49	95	58	560
19	(+2)	Norway	1,529	796	58	172	114	53	16	52	23	71	69	628
20	(+7)	Brazil	772	1,486	17	1	<1	4	20	43	14	13	13	126
21	(-1)	Russia	1,226	926	33	<1	5	28	29	32	11	4	25	168
22	(+1)	South Korea	1,218	928	22	13	9	17	26	13	27	13	12	152
23	(-4)	Austria	909	967	82	28	52	68	6	74	15	98	64	485
24	(-2)	Denmark	930	793	77	78	60	68	21	51	60	86	61	562

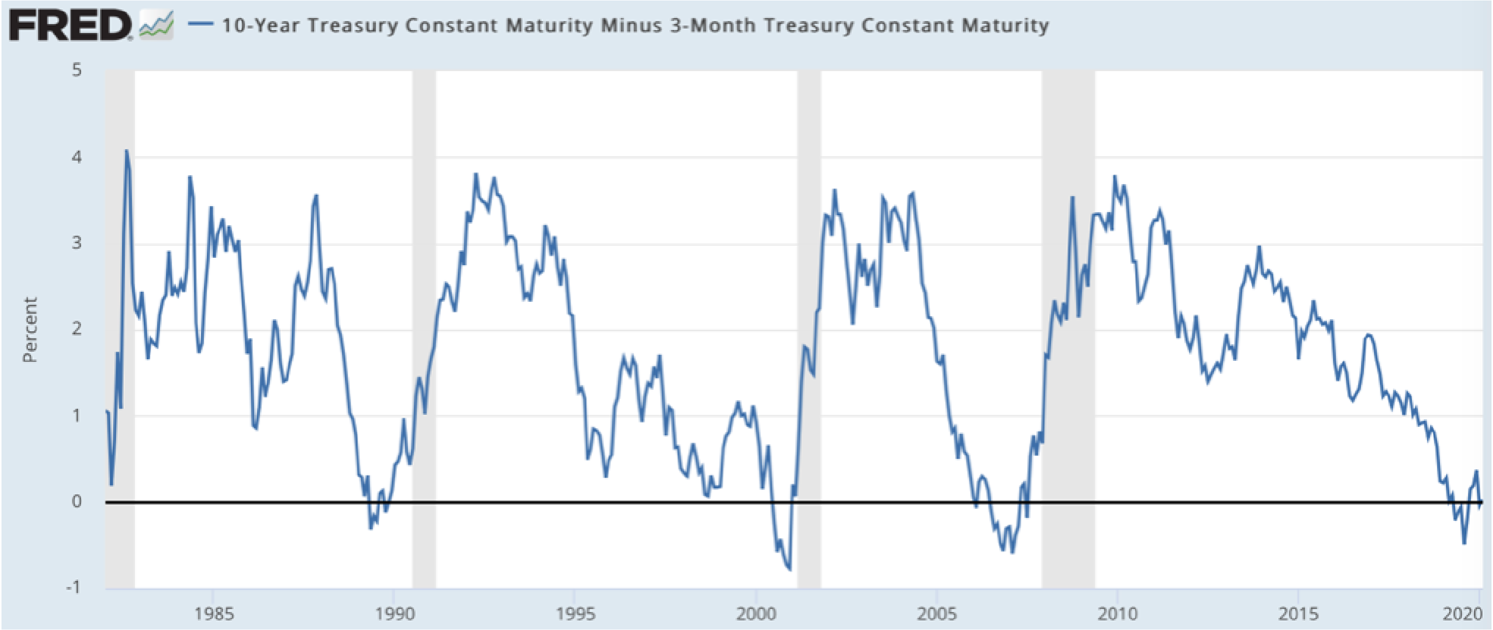
Source: McKinsey (2017). New Dynamics of Financial globalisation, August 2017

Sovereign bond yields sharply lower than 2011 as indicated by inverted yield curve
See warning signal below as we can learn from previous economic crises



Source: Fitch Ratings, Bloomberg.

Source: FITCH (2016): Negative-Yielding Sovereign Debt Note: 100 bps = 1%



Next chart Difference of 10Y T bonds minus 3M T bills
Warning Signal when negative
Previous crises indicated by vertical shading

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

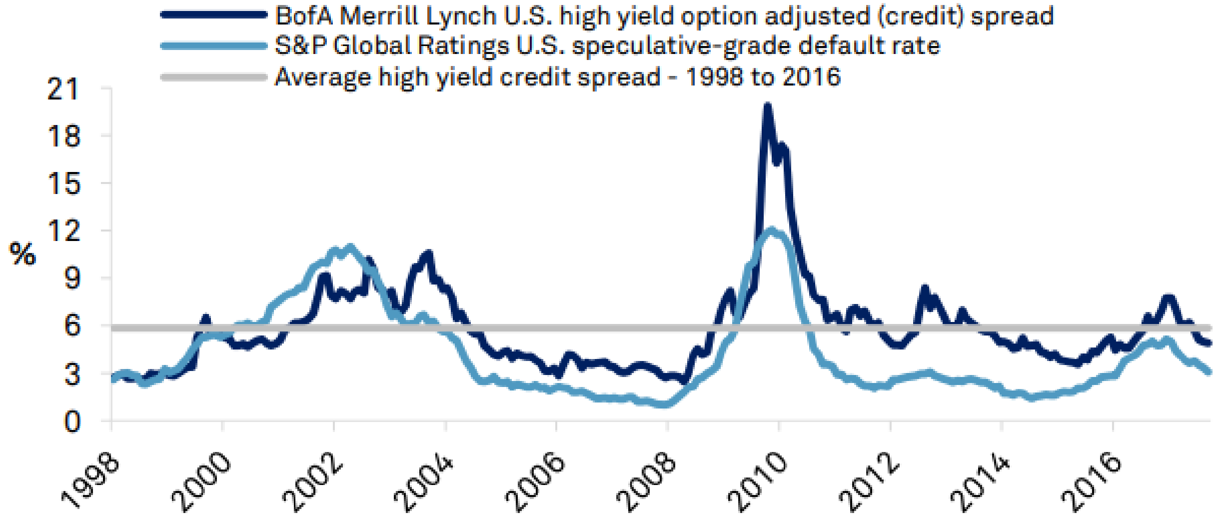
Corporate bonds - Low Default Rate in General until recently

Asset price volatility and liquidity reversal

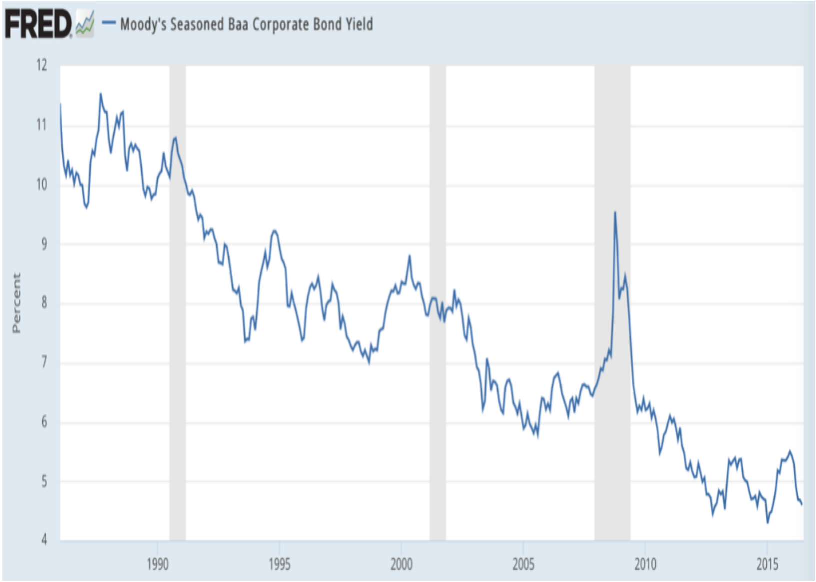
High, stable

Low inflation and the planned, gradual unwind of Fed (and other central bank) quantitative easing is supporting an orderly adjustment in global investment portfolios. High valuations for real estate and financial assets could amplify volatility if an abrupt shift in risk appetite erodes market or funding liquidity.

Low Default Rate Continues Supporting Compression In Credit Risk Premium

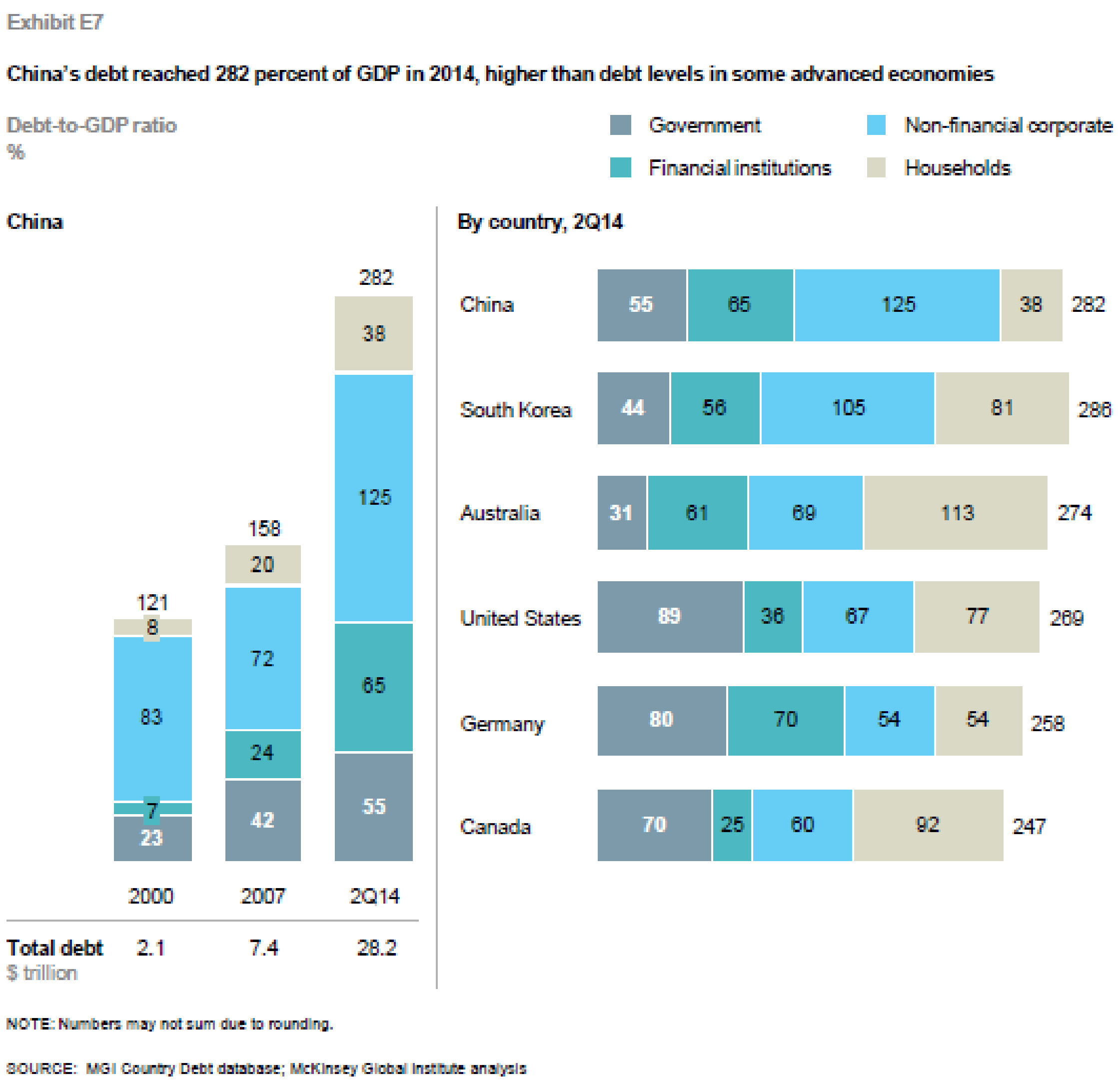


Source: BofA Merrill Lynch, Federal Reserve Bank of St. Louis, S&P Global Ratings.



Source: S&P (2017), Moody's (2019), Federal Reserve Bank of St. Louis FRED Economic Data.

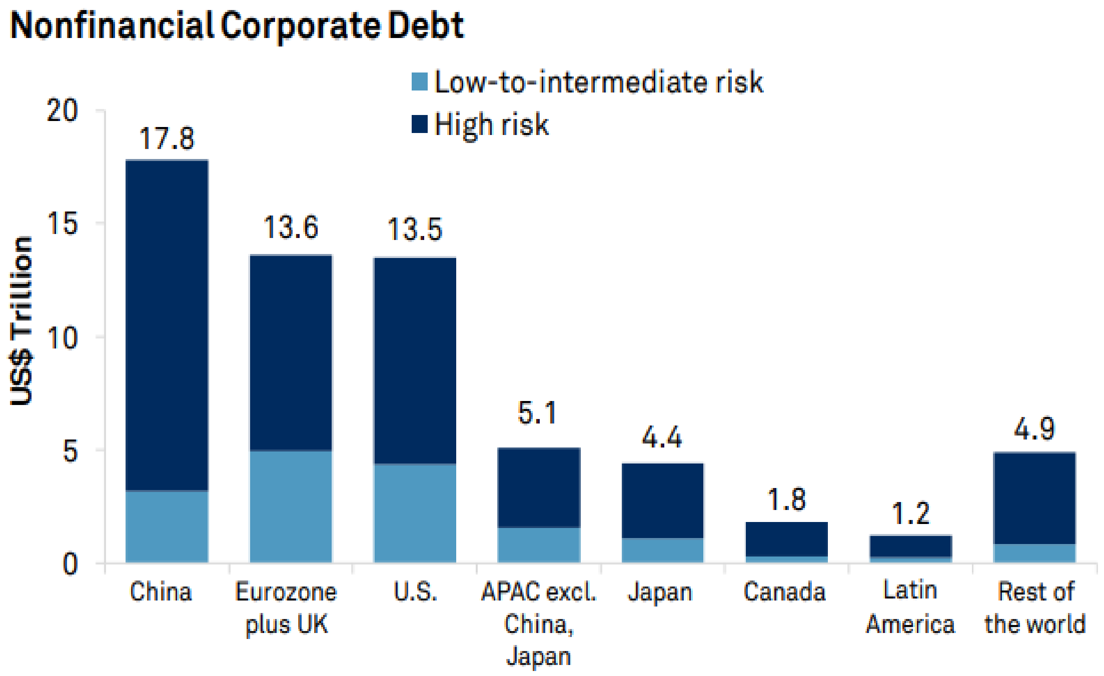
China debt higher than debt levels in some advanced countries, high-risk



China debt overhang

Elevated, stable

Credit growth appears to be slowing. Still, China's high-risk nonfinancial corporate debt now represents 30% of the world's total, exceeding Europe and America's 20% share. While China's debt is largely domestic-funded, a disorderly deleveraging could destabilize asset and commodity markets.



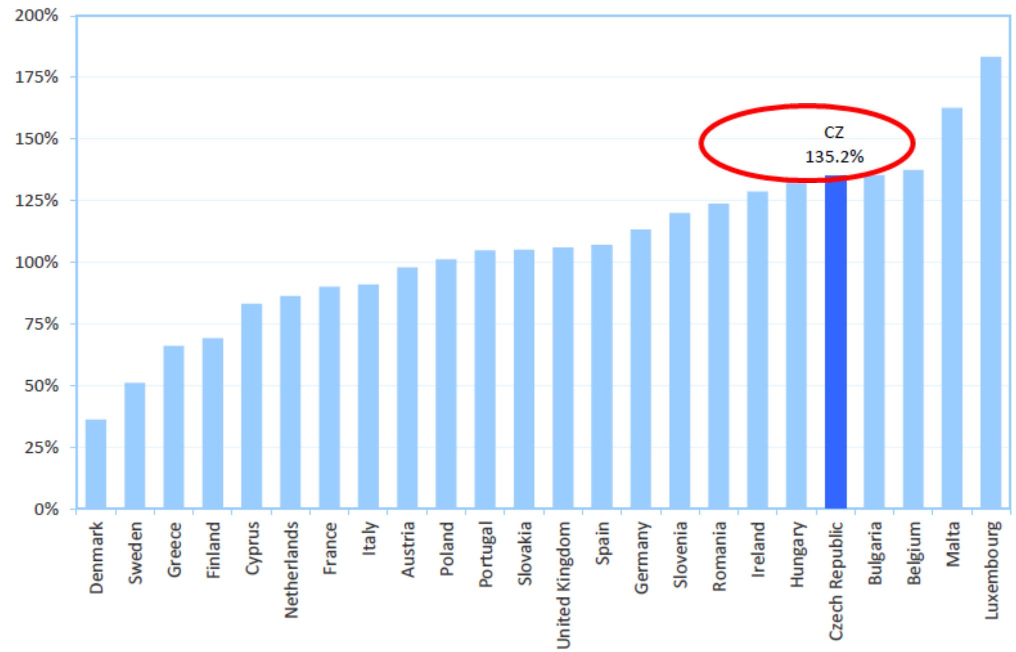
Sources: Bank for International Settlements, S&P Global Market Intelligence, S&P Global Ratings.

Source: McKinsey (2015) and S&P (2017)

The clients bank deposits to loans ratio in EU member countries: CEE vs. Eurozone

Since the end of 2009, Czech banking sector has kept the ratio of client deposits to client loans above 120%, making it one of the highest within the EU. At the end of 2019 this ratio declined a bit to 118.4 %.

Graph 5.2: Client bank deposits to loans ratio in selected EU Member States (end of 2016)



Source: ECB, MoF calculations

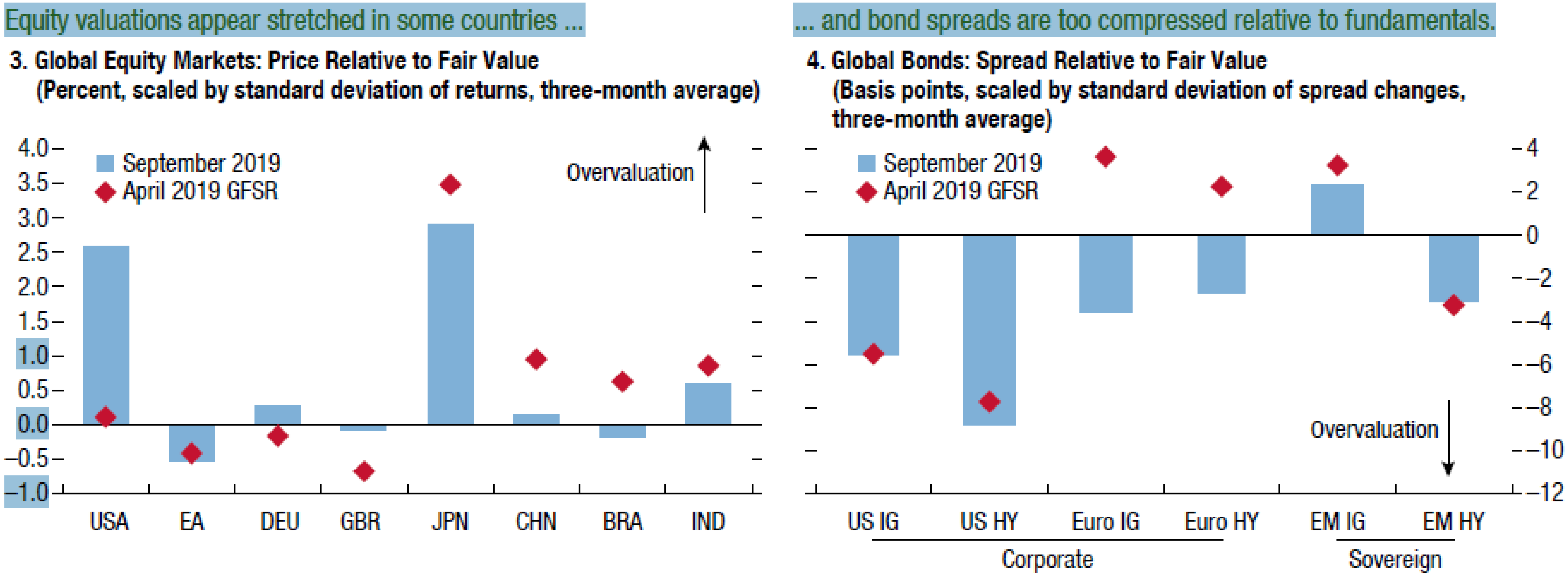
Source: MFCR (2017 and 2019). REPORT ON FINANCIAL MARKET DEVELOPMENTS IN 2016 and in 2018

- Quite different financial intermediation in Czech Republic, CEE in general and the EU…
- Clients kept deposits in banks in spite of zero nominal rate / negative real interest rate
- And somewhat conservative approach of CEE banks…left space for further lending

Czech banking sector	12/31/19	9/30/19	6/30/19	3/31/19	12/31/18	9/30/18	6/30/18	3/31/18	12/31/17	9/30/17	6/30/17	3/31/17	12/31/16
Customer deposits to total (noninterbank) loans (%)	118.4	126.7	127.3	124.7	128.22	128.6	130.61	132.02	128.3	129.35	129.61	132.36	121.88
Customer deposits in billions CZK	4481	4773	4698	4489	4556	4590	4535	4483	4263	4364	4284	4248	3874
Total gross (noninterbank) loans in billions CZK	3785	3767	3690	3601	3553	3569	3472	3396	3323	3374	3305	3209	3179

Source: CNB ARAD

Equity valuations and global Bonds often overvalued !



Sources: Bank for International Settlements; Bloomberg Finance L.P.; Consensus Economics; Federal Reserve Board; Fitch; Haver Analytics; IMF, World Economic Outlook database; Institute of International Finance; Philadelphia Federal Reserve Survey of Professional Forecasters; Standard & Poor's; S&P Capital IQ; Thomson Reuters I/B/E/S; and IMF staff calculations.

Note: Panel 1 shows 10-year government bond term premium estimates, based on the Adrian, Crump, and Moench (2013) model, relative to the value implied by fundamentals in a number of models. See Box 1.2 in Chapter 1 of the April 2018 GFSR for more information. Panel 2 shows the drivers of equity volatility taken from a model of the VIX index that uses quarterly data from 2004:Q1 to 2019:Q2. Panel 3 shows the percent deviation of equity prices relative to a fair-value model, scaled by the standard deviation of monthly price changes. Panel 4 shows global bond spreads relative to a fair value model, in basis points, scaled by the standard deviation of monthly changes in spreads over three years. Panels 3 and 4 are scaled by standard deviation to aid comparison across economies where the underlying volatility in asset prices may differ. See Section 1 of Online Annex 1.1 for details of the asset valuation models. Data labels in panels 1 and 3 use International Organization for Standardization (ISO) country codes. EA = euro area; EM = emerging market; GFSR = *Global Financial Stability Report*; HY = high-yield; IG = investment-grade; VIX = Chicago Board Options Exchange Volatility Index.

Source: https://www.imf.org/en/Publications/GFSR/Issues/2019/10/01/global-financial-stability-report-october-2019

Global Coronavirus Pandemic has been developing **Step by Step**

starting from Chinese Wuchan

Supply Shocks

– many people cannot work to minimize infection, unique Chinese GDP decline in January – February 2020, global supply chains and freight affected, …

Demand Shocks

- disappearing demand for international and domestic travel, tourism, gastronomy, sports and cultural events, supporting services. Declining consumers demand appetite except for essentials (utilities, Food stores and supplies). Declining Foreign Trade.

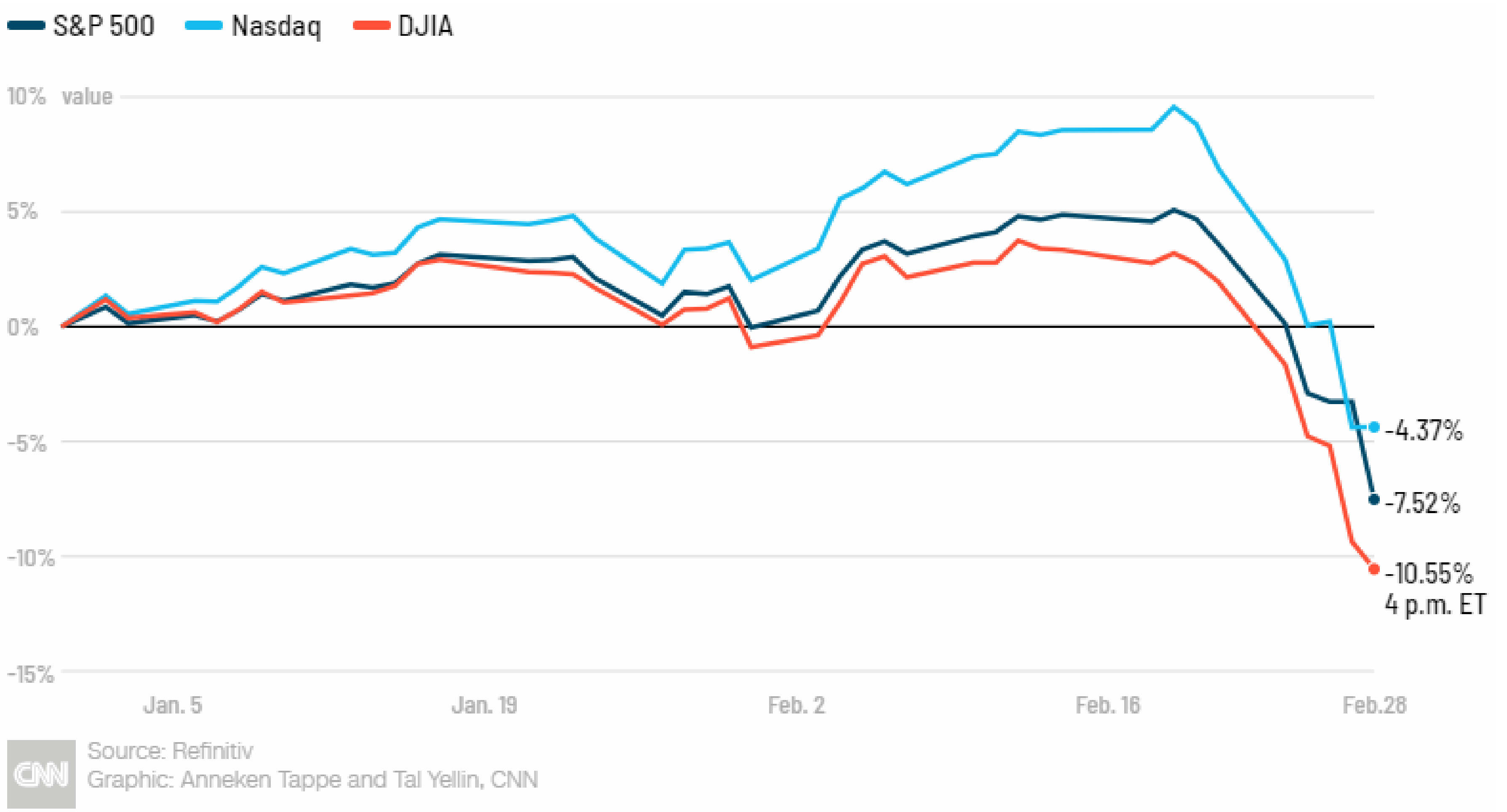
Stepwise International interactions of Demand and Supply Shocks

---

No material loss of tangible assets but Global Panics at the financial markets

Equity , Bond, FX ………corrections (of sometimes overvalued instruments) have been following since

Equity valuations correction 28 February 2019 The three major stock indexes posted their worst weekly percentage drops since the 2008 financial crisis, as coronavirus fears mount.



Source: https://edition.cnn.com/2020/02/28/investing/dow-stock-market-today/index.html

Note : What drives the "market value and market capitalization of a company" ?

- Fair market value can be described as "the cash equivalent value at which a willing and unrelated buyer would agree to buy and a willing and unrelated seller would agree to sell the company, when neither party is compelled to act, and when both parties have reasonable knowledge of the relevant available information." Absorbs publicly available forward-looking information
- – **Market value and market capitalization (…times number of shares)**: something buyers and sellers agree on during market transactions.

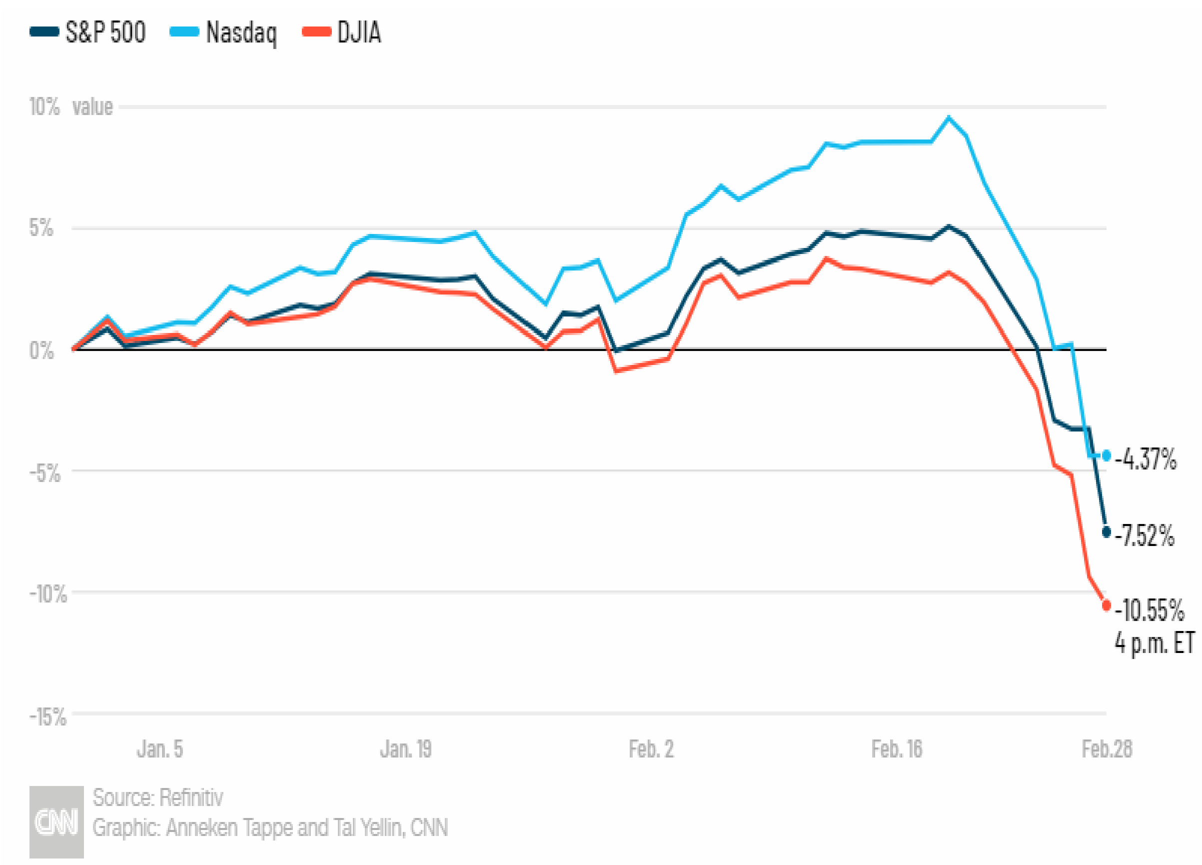
As of March 1, 2020 at 3 PM vs as of March 27, 2020 at 4 PM:

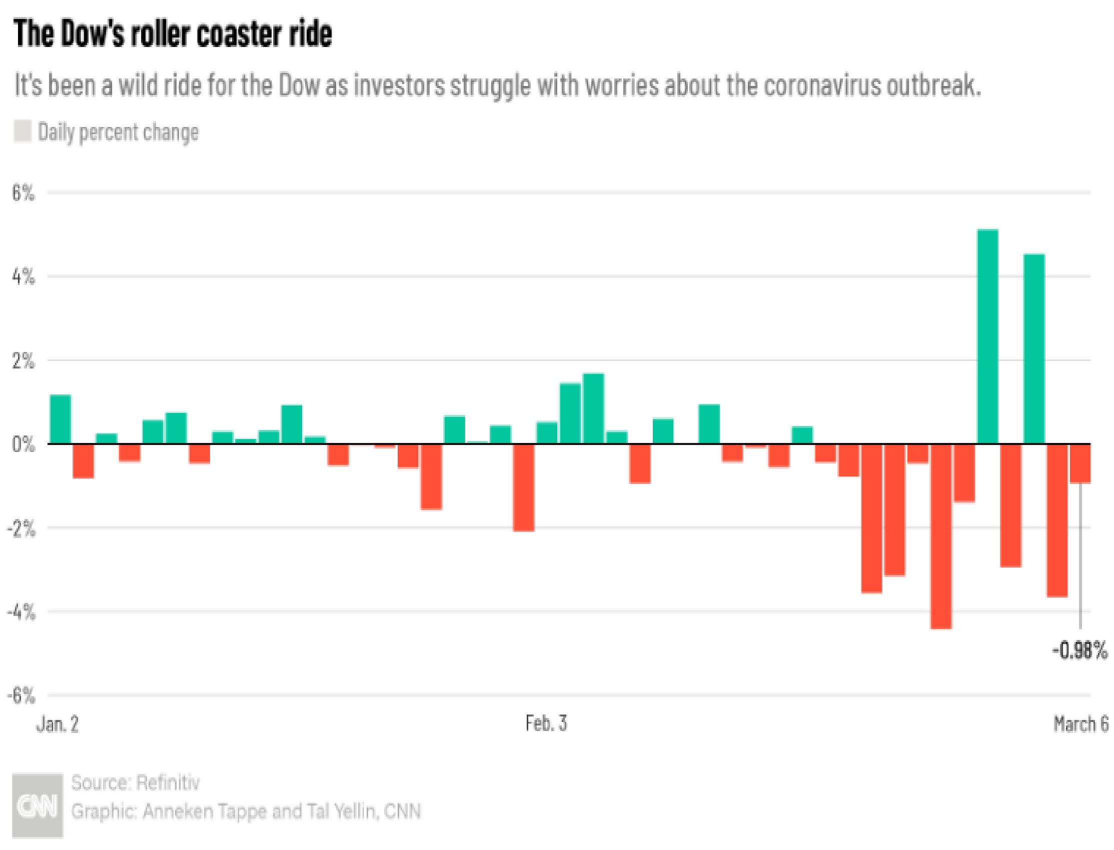
- – Market cap of Energy companies often with huge energy assets
  - Uniper with nuclear and coal power plants code UN01.F Euro 9,8 billion P/E = 8,8 Fortum 50% Euro 8,5 billion
  - RWE with nuclear and coal power plants code RWE.F Euro 18,9 billion P/E = 2,0 Euro 14,1 billion
  - CEZ with nuclear and coal power plants code CEZ.F Euro 9,2 billion P/E = 17,6 Euro 7,9 billion
  - Eon with renewables, regional grids and retail code E.ON SE Euro 25,5 billion P/E = 6,80 Euro 21,0 billion
  - Innogy (innovation energy) with renewables, regional grids and retail code IGY.DE Euro 23,9 billion P/E = - Euro 24,1 billion
- – Market cap of marketing and retail companies
  - Adidas code ADS.DE Euro 49,6 billion P/E = 26,0 Euro 41,5 billion
  - Nike code NKE Euro 139,2 billion P/E = 31,3 Euro 129,4 billion
- – market cap of tech companies
  - Facebook code FB Euro 548,6 billion P/E = 29,9 Euro 446,6 billion
  - Google code GOOG Euro 919,4 billion P/E = 27,2 Euro 772,7 billion
  - Alibaba code BABA Euro 573,5 billion P/E = 59,5 Euro 489,4 billion
  - Amazon code AMZN Euro 937,7 billion P/E = 81,9 Euro 954,0 billion

  - Microsoft code MSFT Euro 1232,0 billion P/E = 28,2 Euro 1159,0 billion
  - Apple code AAPL Euro 1196,0 billion P/E = 21,7 Euro 1098,0 billion

Equity valuations correction 7 March 2019 Update

In the last but one week the three major stock indexes posted their worst weekly percentage drops since the 2008 financial crisis, as coronavirus fears mount. The last week uptick didn't last long…

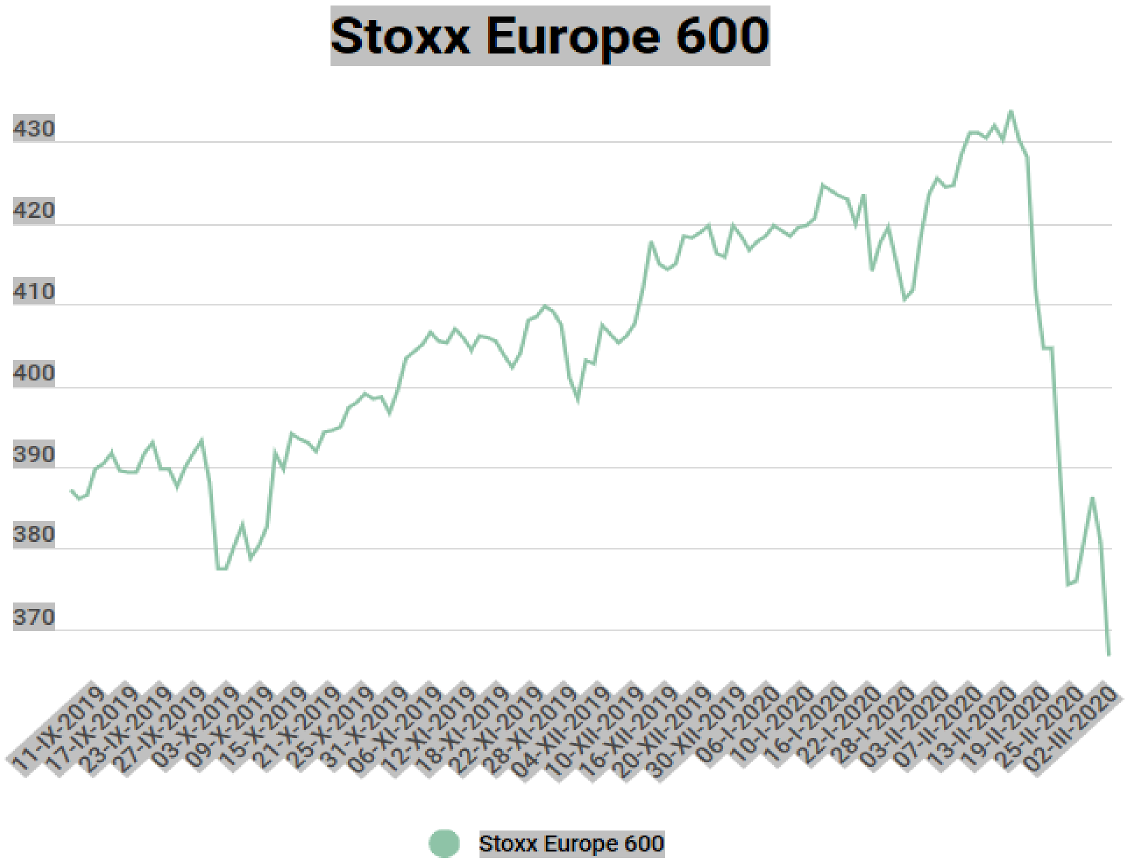


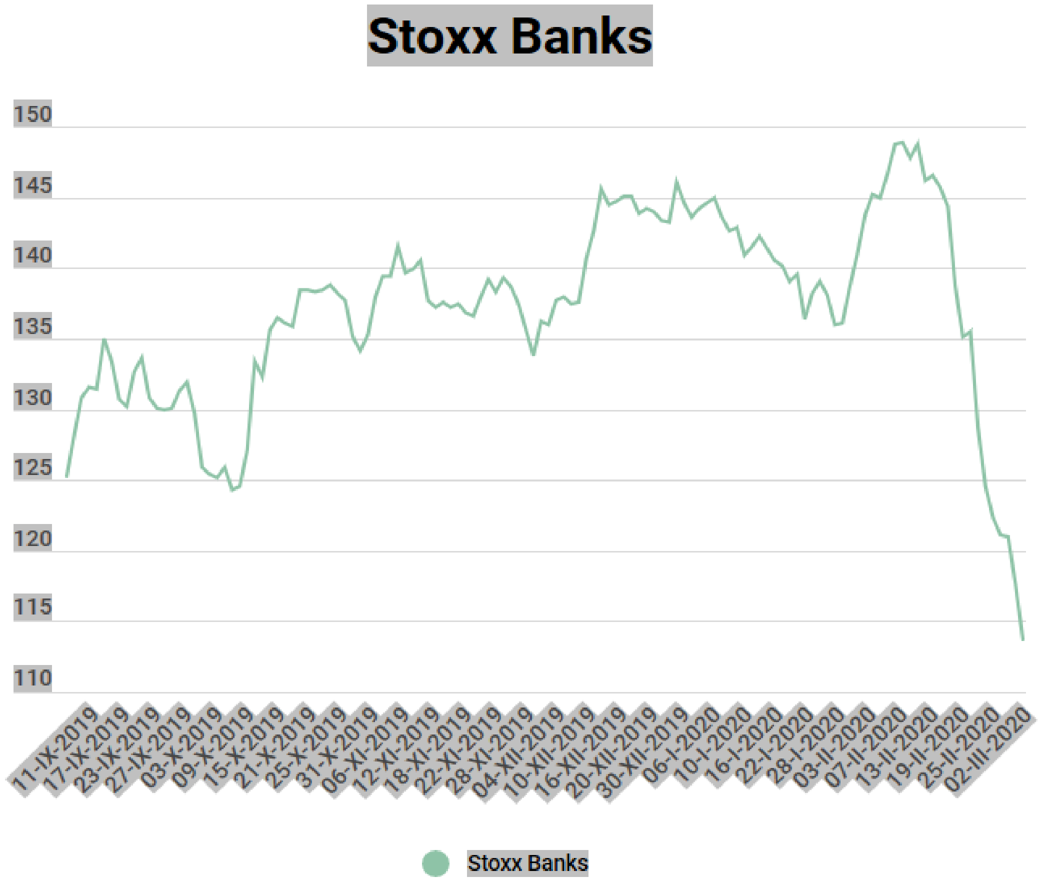


Source: https://edition.cnn.com/2020/03/07/investing/wild-week-wall-street/index.html

Equity valuations correction 7 March 2019 Update

In the last but one week also Europe major stock indexes including banking posted their worst weekly percentage drops since the 2008 financial crisis, as coronavirus fears mount.

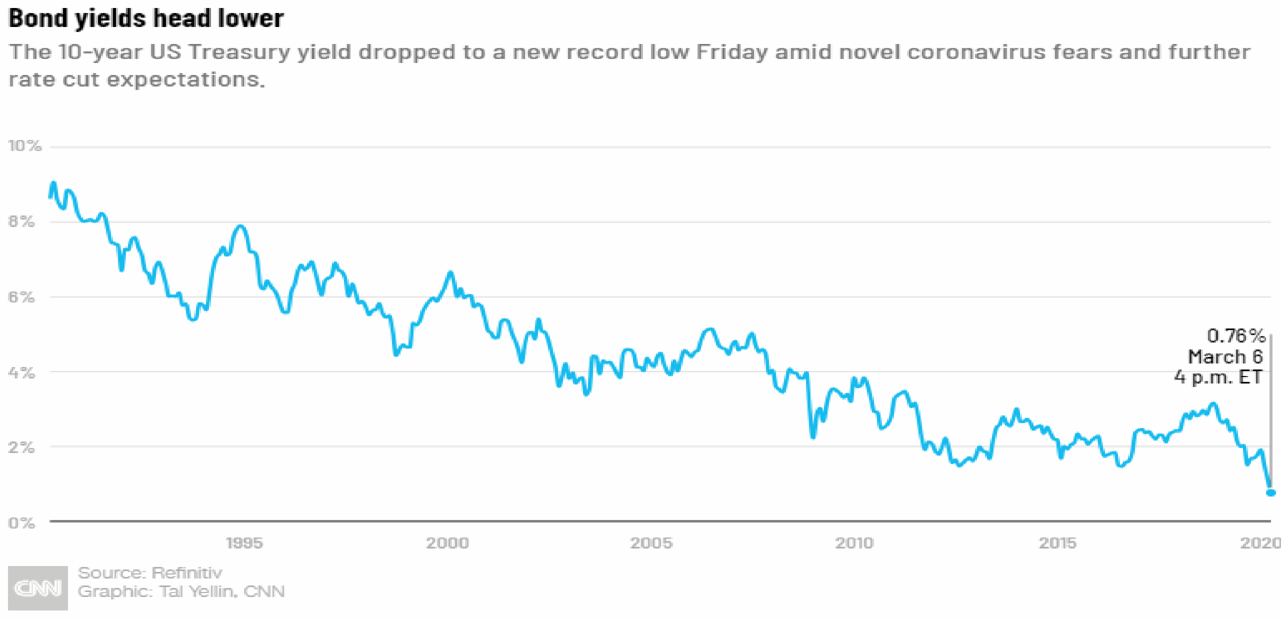




Source: https://edition.cnn.com/2020/03/07/investing/wild-week-wall-street/index.html

Bond and Oil valuations correction 7 March 2019 Update

In the last but one-week bond yields indexes posted their worst weekly percentage drops since the 2008 financial crisis, as coronavirus fears mount. Remember the inverse yield curve warning signal. **And oil follows.**

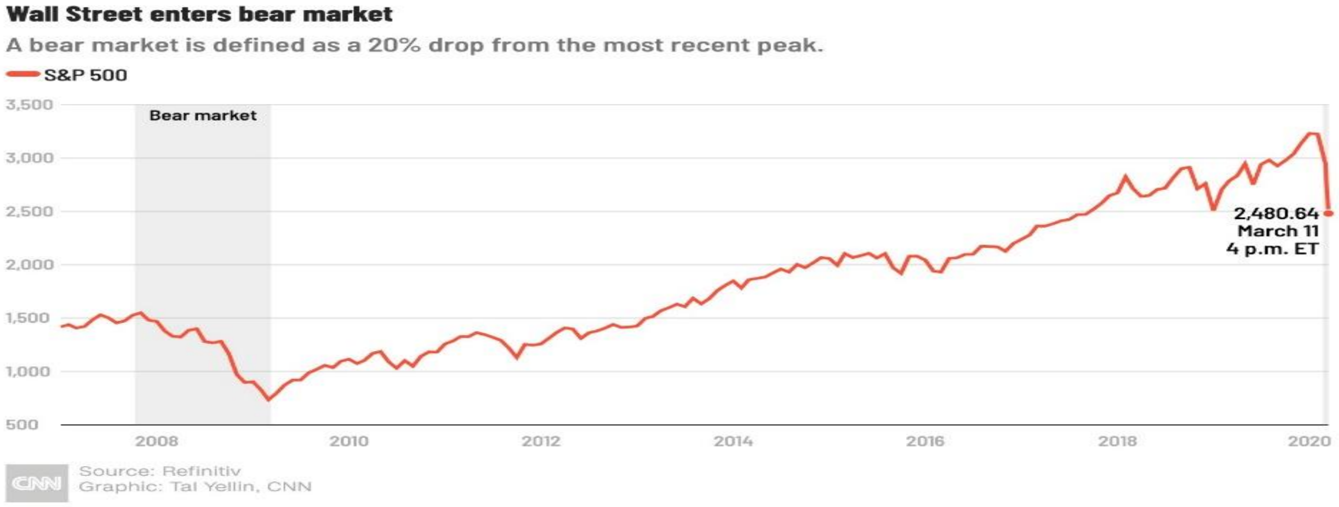


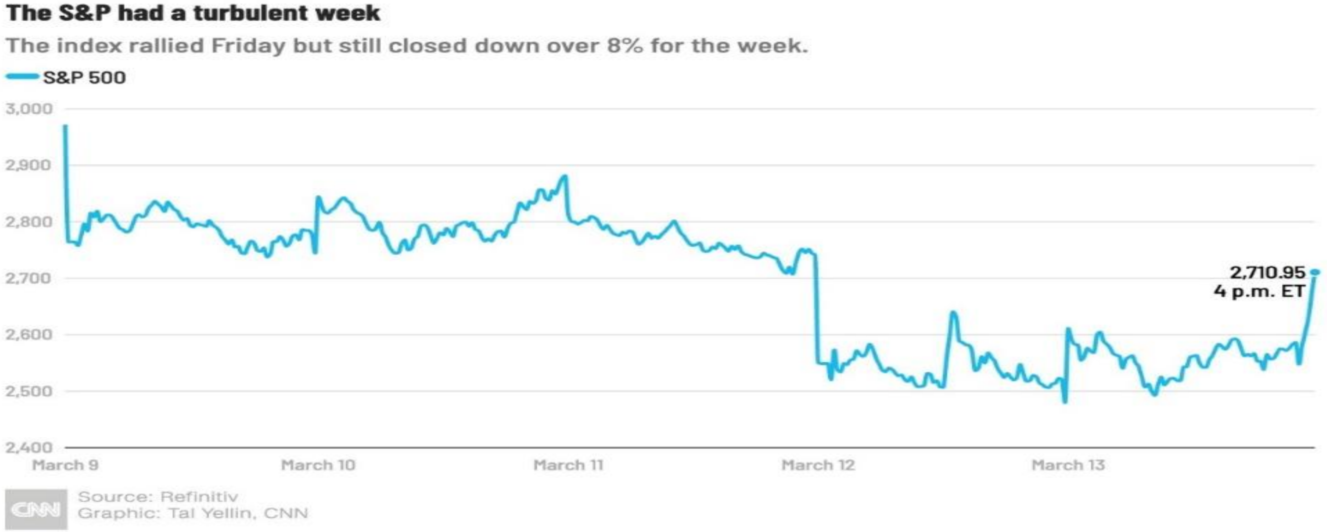
After FED interest rate cut down to 1-1.25%, investors piled into safe haven government bonds, which pushed prices up and yields lower. The [10-year US Treasury yield dropped below 1%](), and below 0.7% on Friday, for the first time ever this week. In January 2020 it was 1.8%. And German Bund yield dropped further in negative yields – they are record low, minus 0.72%.

Due to slowing growth and lower demand US **oil prices** on Friday settled 10.1% lower at $41.28, the biggest one-day percentage drop since November 2014. It was the lowest close since August 2016. Price of European oil Brent was lower by 8%, and was traded on Friday evening around $46 per barrel. It had been lowest since summer 2017. It was contributed by unsuccessful negotiation between Russia and cartel OPEC regarding lowering the limits on oil extraction.

Source: https://edition.cnn.com/2020/03/07/investing/wild-week-wall-street/index.html

Equity valuations correction Update Another Wall Street's roller coaster week : On Thursday 12 March Wall Street's 11-year bull market came to a screeching halt, **to BEAR MARKET**. Despite Friday gains loss for the week





US stocks recorded their worst day since 1987 on Thursday as worries about the coronavirus pandemic mounted. Wall Street officially fell into a bear market with the S&P 500 **dropping more than 20% from its February 19 peak**. The Dow, a smaller index than the S&P, **fell into a bear market Wednesday.** That officially ended the 11-year bull market -- the longest in history -- which started in March 2009.**On Thursday, the S&P 500 closed down 9.5%. It was its worst day since October 19, 1987, also known as "Black Monday". The index dropped 7% in the first minutes of trading, which triggered a circuit breaker** and led the New York Stocks Exchange to suspend trading for 15 minutes. The Dow was nearly 10% lower, in its biggest one-day percentage drop since "Black Monday." The index was at its lowest level since the summer of 2017.

The Nasdaq Composite closed down 9.4%. It is now also in a bear market.

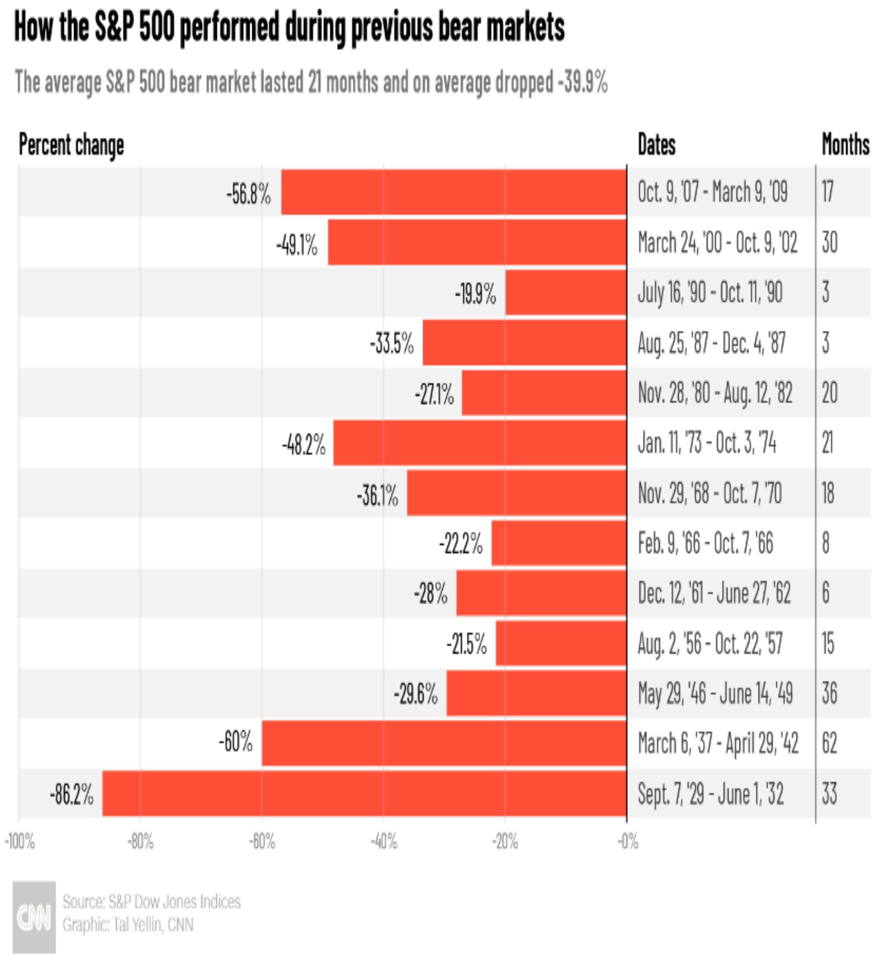
Friday 13 March was the best day for stocks since 2008, but indexes still ended the week with sharp losses. This pretty much sums up the market volatility.

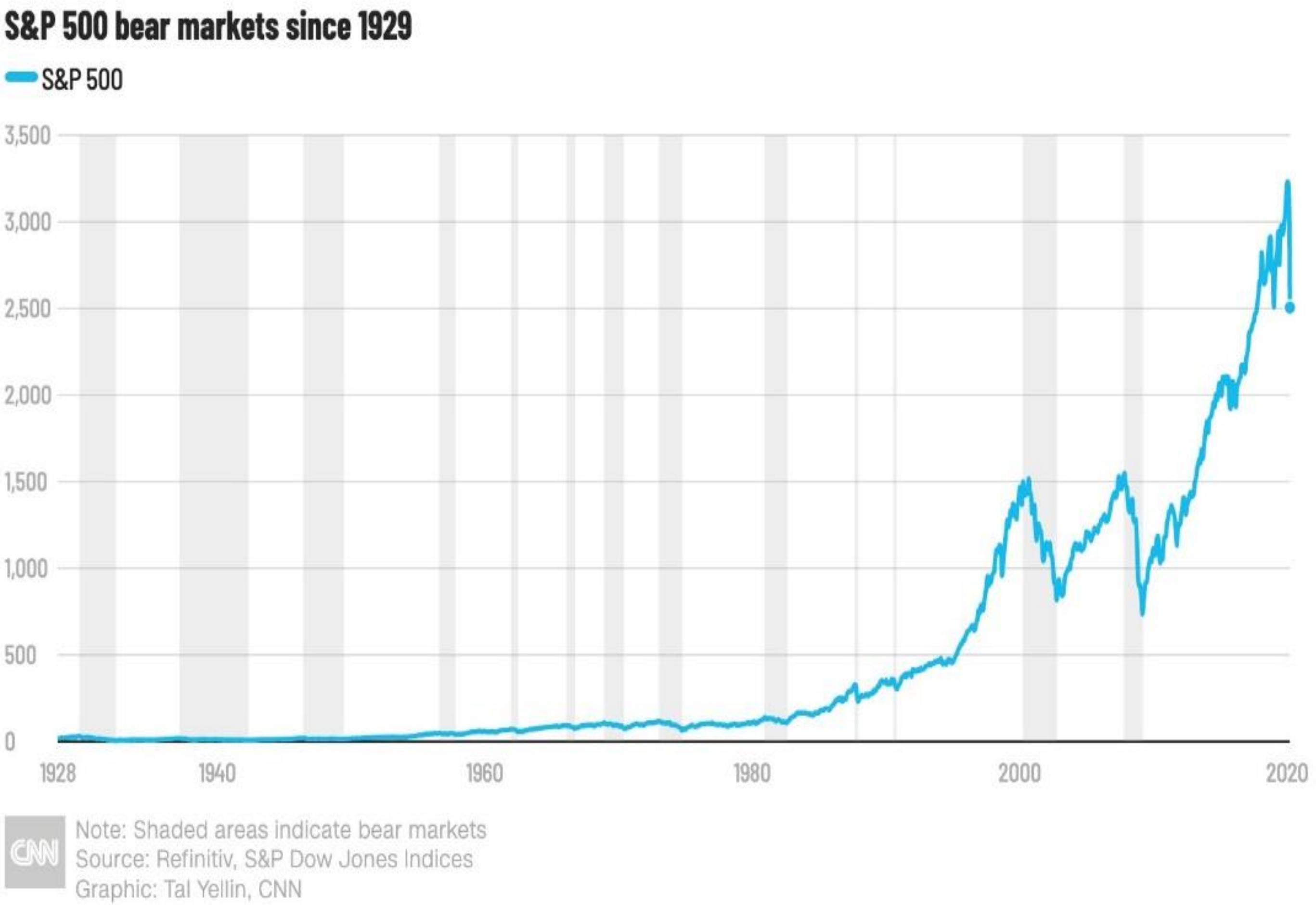
US stocks finished a turbulent week with gains on Friday, logging their best day since October 2008. Stocks rallied into the close after President Donald Trump declared a national emergency and announced measures taken together with the private sector to combat the coronavirus outbreak. But despite Friday's gains, Wall Street recorded losses this week. The S&P 500 closed up 9.3% on Friday, logging a 8.8%% loss for the week. The Dow finished 9.4%, or 1,985 points, higher. For the week, the index was down 10.4%. The Nasdaq Composite ended up 9.4%, although it dropped 8.2% for the week.

Source:https://edition.cnn.com/business/live-news/stock-market-news-today-031320/index.html

Equity valuations correction 14 March Update

How long will this bear market last? Previous crises in vertical shading





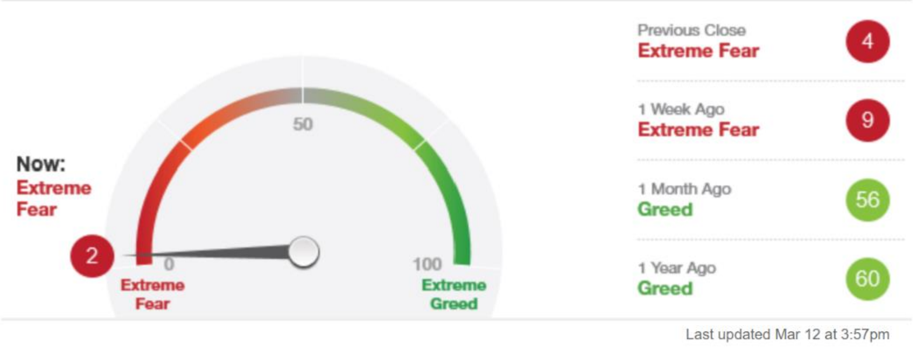
Source: https://edition.cnn.com/business/live-news/stock-market-news-today-031220/index.html

Equity valuations correction Update

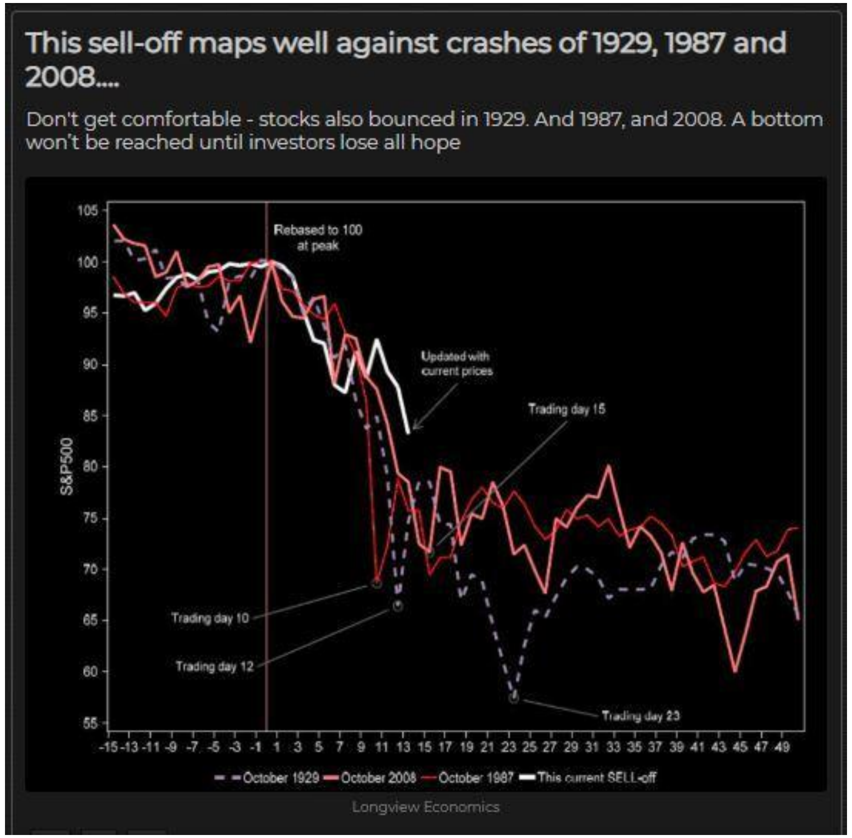
Warning signals such as the inverse yield curve materialized…Is This Time Different ?

Extreme fear has consumed the stock market

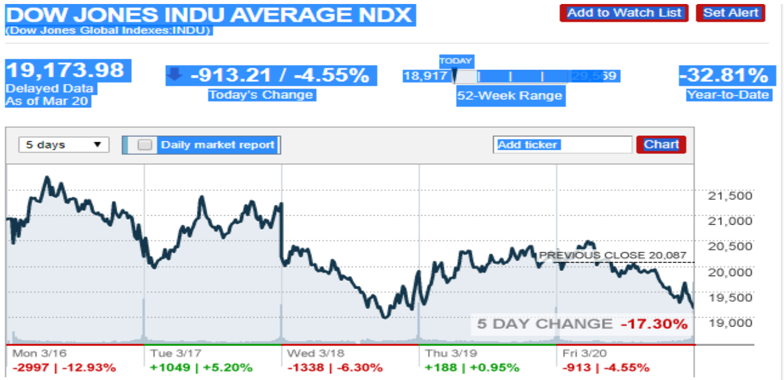
https://edition.cnn.com/business/live-news/stock-market-news-today-031220/index.html



And history from the past …is This Time Different ?



Equity valuations correction 20 March 2019 Update To BEAR MARKET **Stocks close down at least 12%, the worst week since 2008.** The Dow index has now erased all of the gains accumulated during the Trump administration.



US stocks ended Friday's session lower, although the losses were more contained than they have been in previous weeks. Even so, it was the worst weekly performance for all three major stock indexes since October 2008.

The Dow closed 913 points, or 4.6% lower, dropping 17.3%this week. The index has now erased all of the gains accumulated during the Trump administration. The **S&P 500** finished down

4.3%. It fell 15% on the week.

The **Nasdaq Composite** slipped 3.8%, for a 12.6% loss this week. The drop helped to finish the worst week on Wall Street since 2008, with all three indexes **down at least 12%.**

The falls come as authorities tighten restrictions on activity in an effort to slow the spread of the coronavirus. New York state on Friday ordered non-essential businesses to close. Illinois also made a similar move, while California earlier mandated that its residents shelter in place.

How stocks are doing in 2020

DOW-32.81%

S&P-28.66%

NASDAQ-23.33%

Source:https://edition.cnn.com/business/live-news/stock-market-news-today-032020/index.html

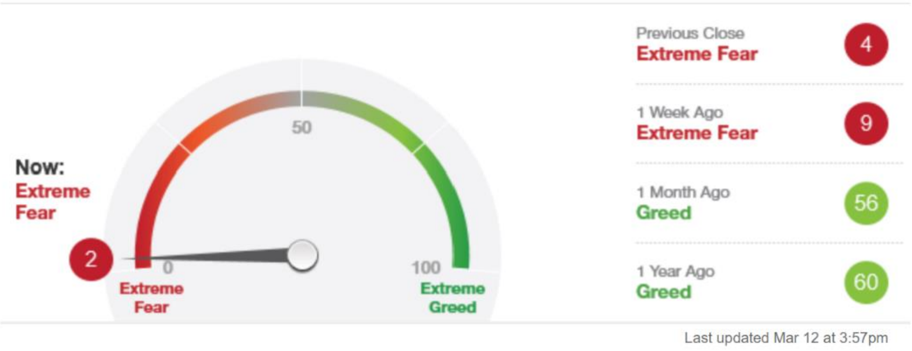
Bond valuations correction 24 March 2020 Update

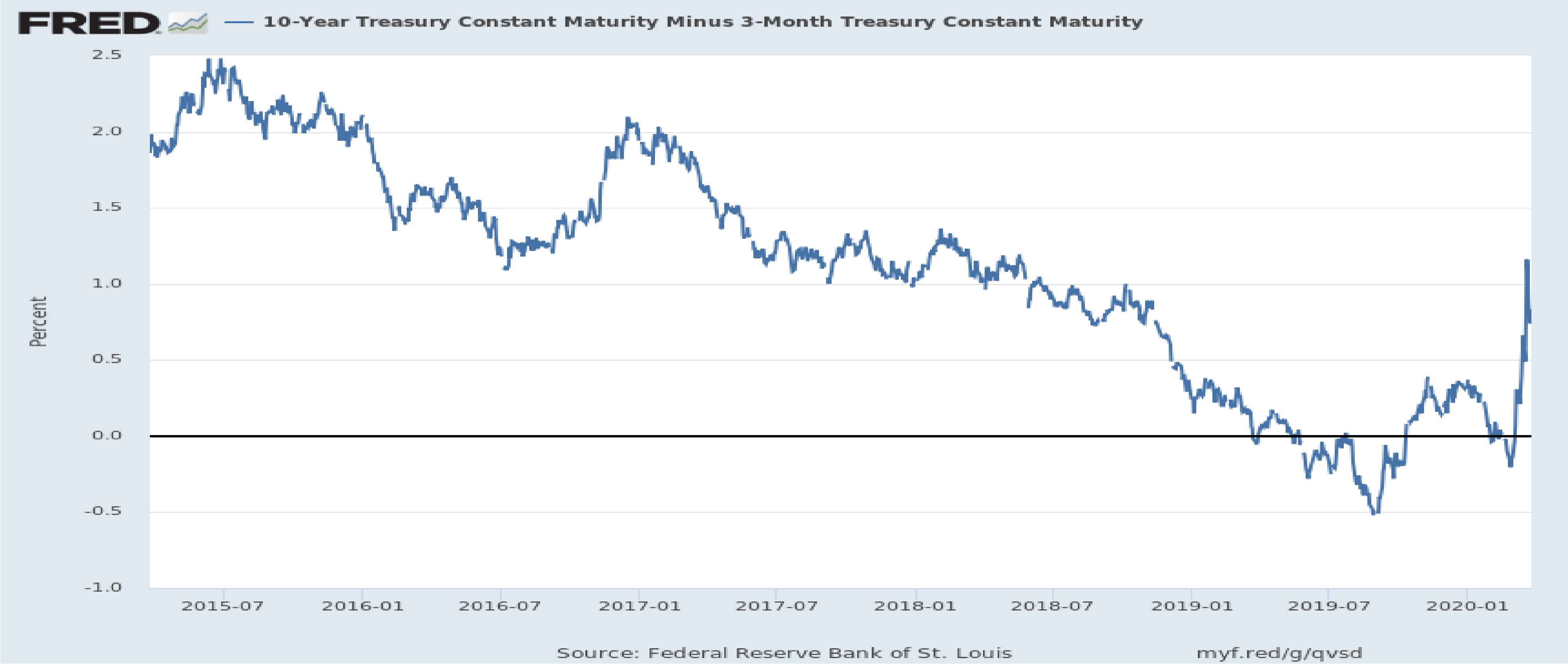
Warning signals such as the inverse yield curve materialized…Is This Time Different ?

Extreme fear has consumed the stock market

https://edition.cnn.com/business/live-news/stock-market-news-today-031220/index.html

And history from the past …is This Time Different ?





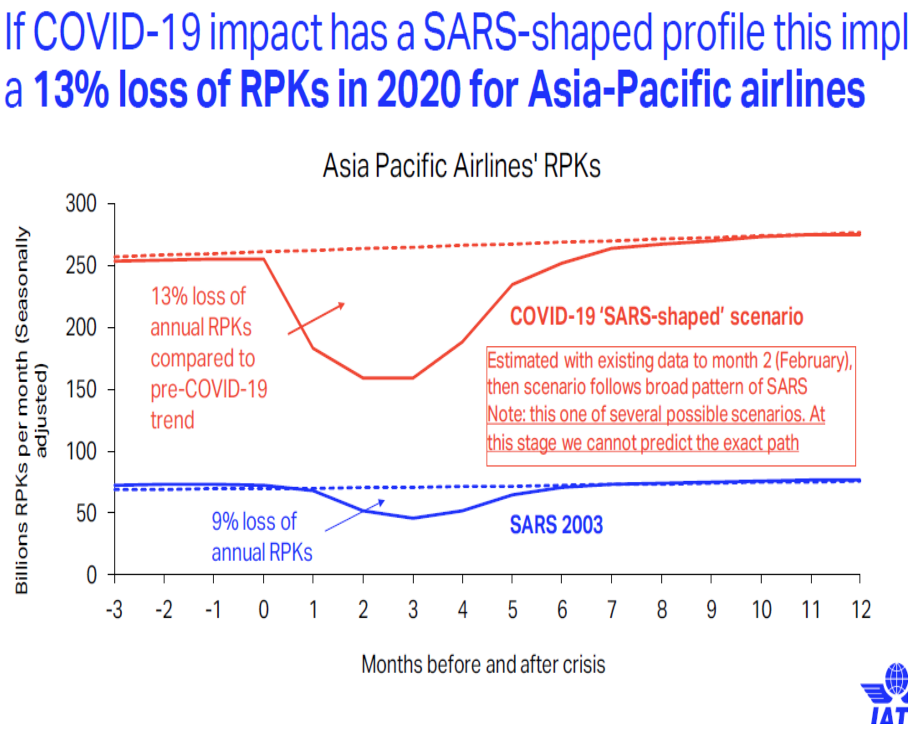
Observation:
2020-03-24: **0.83** (+ more)
Updated: Mar 24, 2020

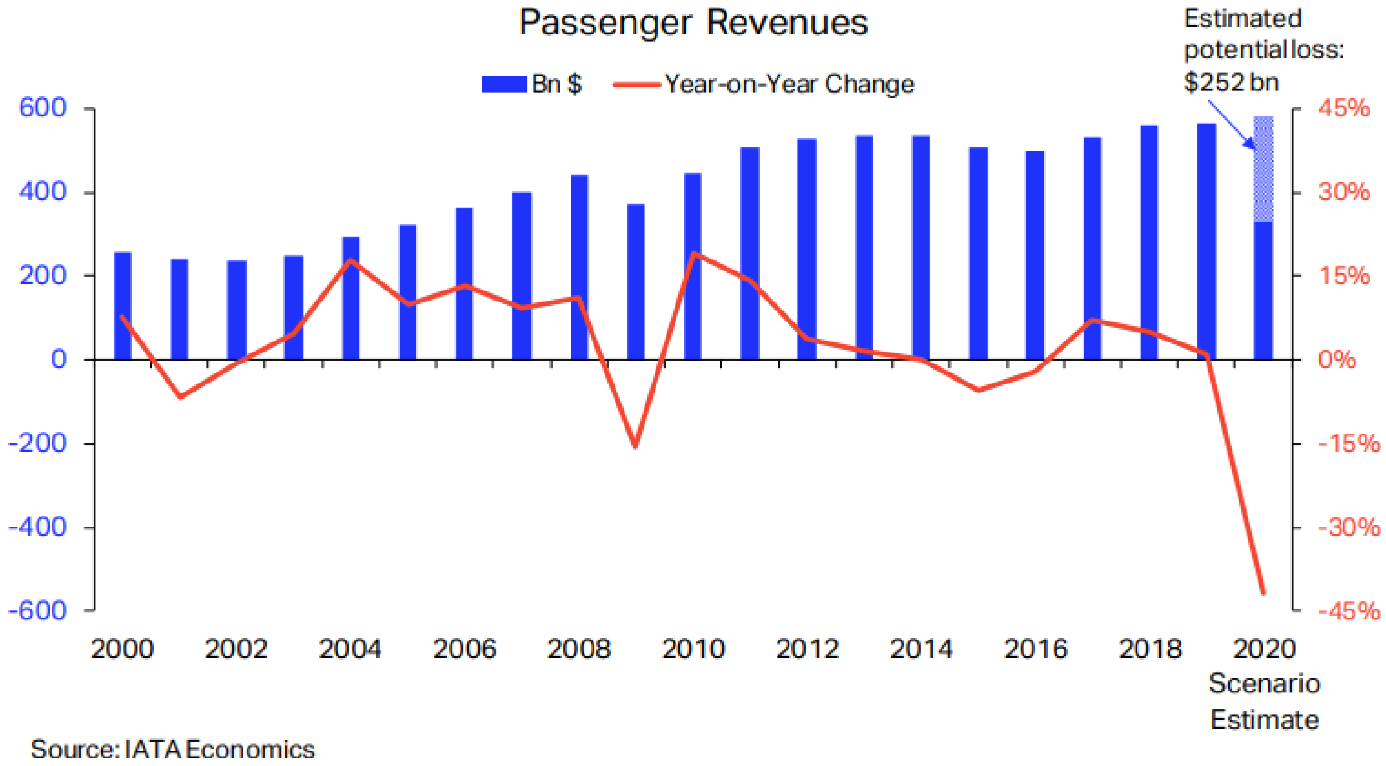
FX Foreign Exchange market correction 18 March 2020 Update

The pound has fallen to its lowest level against the dollar since 1985, as the spread of the coronavirus pandemic spooks investors.

Source: https://www.bbc.com/news/business-51921922

Airline Case study: 5., 24. and 27 March 2020 preliminary IATA COVID19 impact estimates: Passenger revenue losses estimates has rapidly escalated from $63 - $113 bn, to $252 bn in 2020 as of 27 March





All airlines tangible assets have been kept intact but Demand for passenger travel has temporarily nearly evaporated

Note: RPK (Revenue Passenger Kilometres)

Source: IATA (2020). https://www.iata.org/en/iata-repository/publications/economic-reports/covid-19-delivers-unprecedented-shock/

Airline Case study: 24 March 2020 the third IATA COVID19 impact estimate:
Passenger revenue losses to be beyond $113 bn, as of 27 March $252 bn in 2020

The impact has moved beyond our 'Extensive Spread' scenario* implying **$113 bn loss of passenger revenues (19%)** worldwide in 2020

Market	Impact on passenger numbers	Impact on passenger revenue (Billion US$)*
Australia, China, Japan, Malaysia, Singapore, South Korea, Thailand, Vietnam	-23%	**-49.7**
APAC *excluding the above*	-9%	**-7.6**
Austria, France, Italy, Germany, Netherlands, Norway, Spain, Switzerland, Sweden, the United Kingdom	-24%	**-37.3**
Europe *excluding the above*	-9%	**-6.6**
Bahrain, Iraq, Iran, Kuwait, Lebanon, the United Arab Emirates	-23%	**-4.9**
Middle East *excluding the above*	-9%	**-2.3**
Canada, United States	-10%	**-21.1**

***Note:**
Revenue numbers do not add up to the $113 bn global total because of route overlaps e.g. China and Japan include revenues on the China-Japan market. We adjust for overlaps in calculating the worldwide total. Revenues are base fare revenues for all airlines serving routes to, from and within each country

**Published on March 5*
Source: IATA Economics

IATA Economics

Source: IATA (2020) Note: RPK (Revenue Passenger Kilometres)

27 March 2020 Update

Stepwise Global Supply and Demand shocks interplay has **materialized also in business world…**

Question: is it possible to keep markets functioning and economies growing as the coronavirus looks increasingly likely to tip the world into its first recession since the financial crisis ?

The pandemic has triggered emergency economic measures both in corporate sectors and through public policies :

i) Monetary measures by central banks jointly with commercial banks and financial companies
ii) Fiscal budgetary measures of governments

Open issue: Expected costs and benefits in period of disruptive innovations and restructuring

Monetary measures 27 March 2020 Update The pandemic has triggered emergency economic measures. Stepwise Global Supply and Demand shocks interplay materialized also in business world…and central banks responded by further cutting base rates and by enormously aggressive QE quantitative easing,…

The US Federal Reserve Since it slashed its benchmark interest rate by a full percentage point to near zero. The spike in volatility and steep equity losses have in turn forced the Federal Reserve to embark on a massive, trillion-dollar easing program to help ease stressed credit markets. The central bank has purchased corporate bonds and not just U.S. Treasurys, providing unprecedented support for investment-grade corporate debt. The Fed earlier also removed limits on its asset purchases and quantitative easing measures, saying it will buy securities "in the amounts needed to support smooth market functioning" and declined to put a limit on how much it could purchase. The Fed's **balance sheet passed $5** trillion for the first time ever due to coronavirus stimulus Chairman Jerome Powell told in an interview that the central bank will "aggressively and forthrightly" continue its efforts and will not "run out of ammunition." That means the balance sheet likely will hit $7 trillion by June, or about a $2.5 trillion gain from its previous peak, according to Citigroup. **Ultimately, Wall Street forecasts are increasingly looking for a $10 trillion balance sheet that would signal a $4.5 trillion expansion, greater than the $3.7 trillion growth during and after the financial crisis.** The Fed also announced several other actions, including letting banks borrow from the discount window for as long as 90 days and reducing reserve requirement ratios to zero percent. In addition, **it united with five other central banks to ensure dollars are available around the world via swap lines.** Fed Chairman Jerome Powell said that he did not think negative rates, which have been used in Europe and Japan, would be appropriate policy in the US.

People's Bank of China The world's number-two economy offered discounts to commercial lenders' reserve ratios of a half or 1 percentage point from their original level. Joint-stock banks will get an additional reduction of 1 percentage point, and together the cuts will release 550 billion yuan ($79 billion) of liquidity. It is less aggressive, but clearly targeted, monetary easing, 73% of which targeted vulnerable small companies and private enterprises, the power houses for job creation.

European Central Bank The new Pandemic Emergency Purchase Programme (PEPP) will have an overall envelope of €750 billion. Purchases will be conducted until the end of 2020 and will include all the asset categories eligible under the existing asset purchase programme (APP). To the extent that some self-imposed limits might hamper action that the ECB is required to take in order to fulfil its mandate, the Governing Council will consider revising them to the extent necessary to make its action proportionate to the risks that EU face. But it didn't cut its deposit rate further below zero, which disappointed investors.

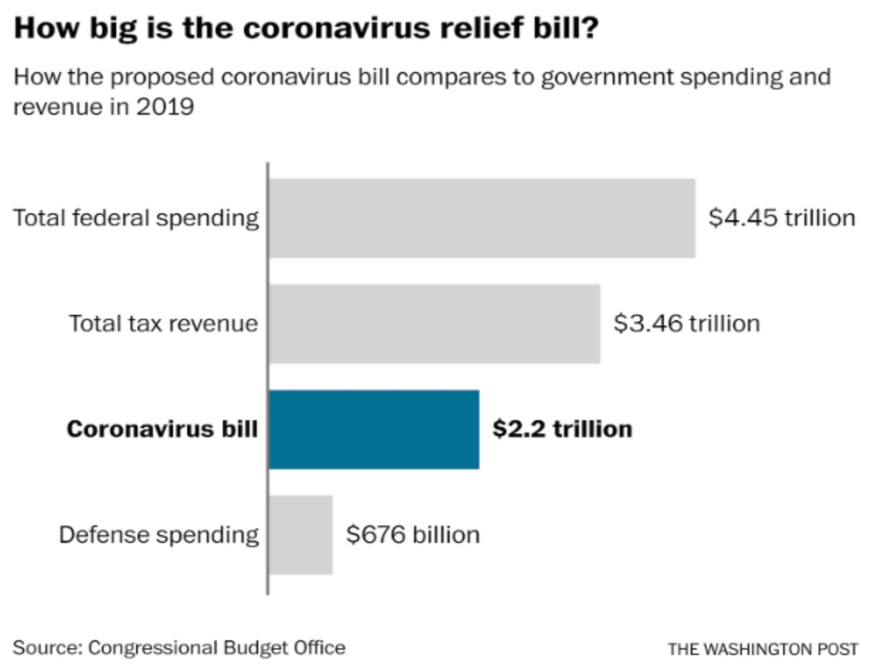
The Bank of Japan It offered the market up to 2.2 trillion yen ($20.7 billion) in cash injections in three different operations on Friday, while snapping up stock funds for the sixth time this month. It also pledged to maintain liquidity and keep markets stable this month.

Sweden's Riksbank It lent up to 500 billion kroner ($51 billion) to banks to maintain the supply of credit to companies. The measure "should be regarded as a form of insurance that enables Swedish companies –- particularly SMEs –- to feel secure that the credit supply will not fail".

The Bank of England By cutting interest rates to 0.1% (it is the lowest official interest rates have been since the Bank was founded in 1694) and announcing a fresh £200bn of money creation via its quantitative easing programme. Markets were impressed by the size of the QE announcement, which is the equivalent of about 9% of UK GDP. By comparison, the ECB's €750bn programme announced late on Wednesday night amounts to just over 7% of eurozone GDP. It is a sign of how fast things are moving that the Fed's QE expansion, which was originally 3.3% of US GDP, now looks puny.

Fiscal budgetary measures 27 March 2020 Update (selected countries)

US $2.2 trillion economic stabilization package **is the largest economic rescue package in modern American history, is hundreds of billions of dollars more than the entire US federal budget for a single year, outside of social safety net programs.**



It is intended to respond to the coronavirus pandemic and provide direct payments and jobless benefits for individuals, money for states and a huge bailout fund for businesses. The measure (The 880-page legislation) , amounts to a **government aid plan unprecedented in its sheer scope and size, touching on every facet of American life with the goal of salvaging and ultimately reviving a battered economy.**

Its cost is two thirds of total federal tax revenue, half of the federal 2019 spending, more than the entire United States federal budget for a single year, outside of social safety net programs. Administration officials said they hoped that its effect on a battered economy would be exponentially greater, as much as $4 trillion.

The legislation would send direct payments of $1,200 to millions of Americans, including those earning up to $75,000, and an additional $500 per child. It would substantially expand jobless aid, providing an additional 13 weeks and a four-month enhancement of benefits, and would extend the payments for the first time to freelancers and gig workers. The measure would also offer $377 billion in federally guaranteed loans to small businesses and establish a **$500 billion government lending program for distressed companies** reeling from the impact of the crisis, including allowing the administration the ability to take equity stakes in airlines that received aid to help compensate taxpayers. It would also send $100 billion to hospitals on the front lines of the pandemic.

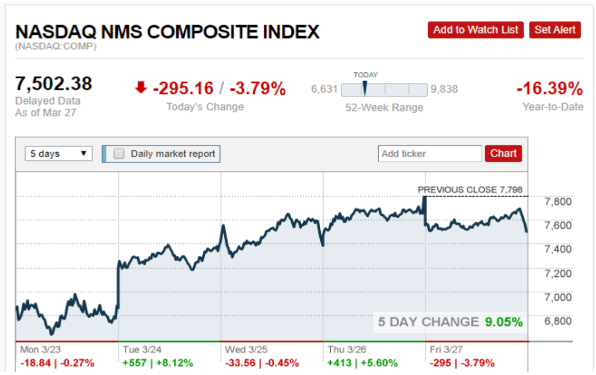
According to FITCH credit rating agency, **high fiscal deficits and debt -- which were already rising even before the onset of the huge economic shock precipitated by the coronavirus --** are starting to erode US credit strengths. The **risk of a near-term negative rating action** has **risen** given the magnitude of the shock to the economy and public finances from the coronavirus and the commensurate and necessary fiscal policy response, particularly **in the absence of a credible consolidation plan for the country's pre-existing, longer-term public finance and government debt challenges.**

The Chinese anti-virus stimulus came at the time that China's fiscal policy geared towards foster consumption. With additional stimulus, equivalent to more than Rmb3.6tn ($510bn), China expects an **increase in infrastructure investment** that can quickly **fill the gap from lower consumption.** However, some experts **question the efficiency of the fiscal boost and say it may worsen debt problems locally and nationally.**

https://www.omfif.org/2020/03/resilient-china-can-help-lead-global-recovery/?utm_source=omfifupdate

https://www.washingtonpost.com/business/2020/03/26/senate-stimulus-bill-coronavirus-2-trillion-list-what-is-in-it/

Equity valuations correction 27 March 2019 Update
Is A Bear Market really gone after enormous Policy stimulus – both monetary and fiscal



US stocks **finished the session in the red on Friday,** but that didn't keep major indexes from posting **one of their best weeks ever after a monstrous rally** between Tuesday and Thursday.
The Dow closed 915 points, or 4.1%, lower. It recorded its **best week since June 1938**, gaining 12.8%. Anyway since the beginning of year Dow Jones has lost nearly 21%.
The S&P 500 finished down 3.4%, for a weekly gain of 10.3% -- its best since March 2009. Anyway since the beginning of year S&P 500 has lost 18.6%.
The Nasdaq Composite fell 3.8%. On the week it's up 9.1%, its best performance since March 2009. Anyway since the beginning of year Nasdaq Composite has lost 13.1%.

How US stocks are doing in 2020
DOW-20.98%
S&P-18.59%
NASDAQ-13.10%
Updated: 4:23:49pm ET, https://money.cnn.com/data/markets/dow/

Global stocks lose momentum

European shares fell in early trading as enthusiasm waned over the trillions of dollars in stimulus measures announced by governments and central banks to fight economic fallout from the coronavirus pandemic. The FTSE 100 (UKX) lost 5.3% in London. Since the beginning of year The FTSE 100 has lost nearly 27%. Germany's DAX (DAX) dropped 3.7%. And since the beginning of year has lost 27.3%. France's CAC 40 (CAC40) shed 4.2%, while the Year-to-date loss was 27.2%

Most markets in Asia Pacific rose modestly. Japan's Nikkei 225 (N225) gained 3.9%, making it easily the region's best performer. China's Shanghai Composite (SHCOMP) rose 0.3%, while Hong Kong's Hang Seng (HSI) climbed 0.6% and South Korea's Kospi (KOSPI) increased 1.9%.

27 March 2020 Update – Total $7 trillion (and still rising) at Stake

The response to the coronavirus pandemic has been unprecedented in terms of speed and scale. Commitments from governments and central banks to date are close to **$7 trillion (and still rising),** according to an analysis by CNN Business. The total includes government spending, loan guarantees and tax breaks, as well as money printing by central banks to buy assets such as bonds and stock funds.

Question: is it possible to keep markets functioning and economies growing as the coronavirus looks increasingly likely to tip the world into its first recession since the financial crisis.

"While domestic debt has reached an unsustainable level, China (**supply side**) shows some early signs of a production recovery, but this will be sustained **only if external markets provide demand**. **Some global supply chains may be relocated, reflecting an emerging trend towards deglobalisation.** China needs to combine openness, domestic reform, and a better investment environment. The most difficult test concerns international co-operation. The pandemic knows no borders, yet containing the virus requires isolation. Stages of contagion vary from country to county, which makes coordinated action unlikely".

https://www.omfif.org/2020/03/resilient-china-can-help-lead-global-recovery/?utm_source=omfifupdate

Former FED chairman Ben Bernanke and current St. Louis Fed President expressed similar sentiments about the economy, as **they expect a big short-term hit but a strong rebound**. "Nothing is going to work, the Fed is not going help, fiscal **policy is not going to help if we don't get the public health right,** if we don't solve the problem of the infection, so making sure that the risk has declined sufficiently before put people back in the line of fire".

Lessons so far 27 March 2020 Update

While tangible Assets are kept intact, both Supply side and Demand Side shocks are interacting with domino effects, mitigated by interventions. The higher the people physical participation at production of goods and services/vast physical contact with clients, the bigger is the negative impact. The more complex and global supply chain, the risk control is more difficult and less predictable. Foreign trade should be win/win game.

Time to reconsider costs and benefits and look for new opportunities.

Disruptive Innovations decreasing the need of physical presence and transport - to be localized. Suddenly wider acceptance of general tendency to increase the role of well secured online world with e-commerce, video-, tele-conferences, e-learning, home office, citizens access to digitalized public services, telemedicine and utilities/facility monitoring with remote control, . Availability/access to enormous amount of information combined with big data processing methods such as artificial intelligence allows for quite new technologies such as autonomous driving, building information models (BIM) and any virtual design and its much wider testing (e.g. of new drugs), CRM, chatbots, score rating and credit granting… Number of applied technologies in robotics including 3D print of composite and metal, nanotechnologies, biotechnology...Need for process changes and retraining / education.

Opportunities to increase resilience of corporations and countries against external shocks. With respect to the current uncertain international environment, one should educate citizens and do not block the further development of domestic industries with competitive edge (artificial intelligence, nano, 3D print …?) and long-term domestic demand such as smart infrastructure, smart networks, smart cities. Subject to condition of providing reliable and secure power supply with low carbon intensity (including nuclear power plants). Both governments and companies should not limit themselves to ex post crisis management but rely also on ex ante management of risks and opportunities.
Current emergency state and operational issues should not overshadow disruptive innovations and restructuring.