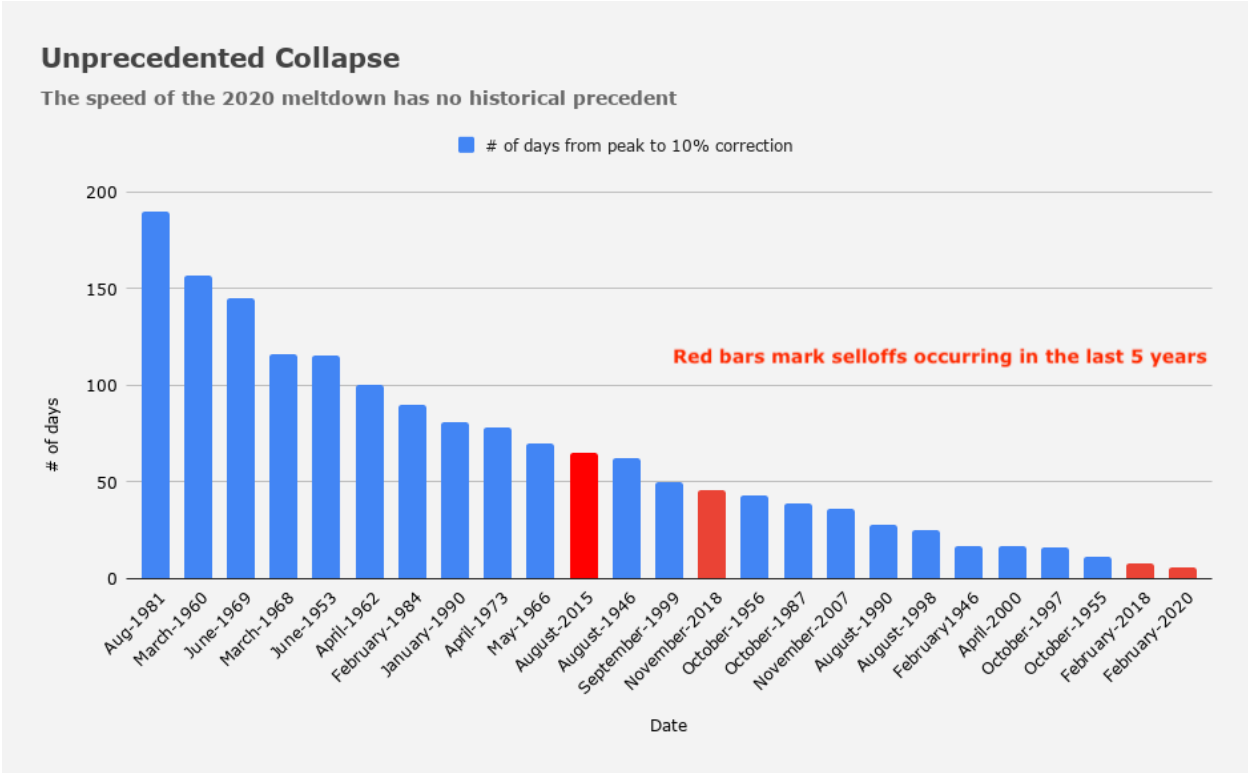


What just happened?

Some volatilities were squeezed last week.

In case you were hiding in your cave, the financial markets had a little meltdown last week. The major indices lost more than 10%, in a few days. That's a pretty fast "correction". Actually, it's probably the fastest ever:



We all know the official reasons: corona virus, contagion, pandemic, significant slowdown of the economy. Since nobody can really put a number on how much the impact will be, the markets probably priced also the risk of uncertainty, and priced equities a chunk lower (and bonds even higher).

This being said, not all investors were taken by surprise. World-famous investors like Jamie Dimon, Leon Cooperman or Paul Tudor have issued warnings. They were pointing the fingers towards the democratic boogey(wo)men of Bernie Sanders and Elizabeth Warren as the likely causes of such a retracement.

But there is an investor, who took a decisive step. Last week, he has been ripping the benefits of his decision, while the volatility traders of Wall Street have been reeling it: in November last year, Ray Dalio of Bridgewater invested \$1.5 billion (with a b) in S&P 500 short-dated puts. You will find several articles reporting this humongous trade (Wall Street Journal, MarketWatch). He used 1% of his \$150 bn AUM, and tapped Goldman and Morgan Stanley for supposedly the March 2650 puts. At an indicative price of \$15, that would be 1,000,000 lots. That's a lot of lots.

Several consequences follow this:

- 1 Bridgewater is not a volatility trader. They are not re-selling the puts or somehow their vega/gamma. As a result, Goldman and Morgan Stanley became massively short that strike against a trader who was not directional in volatility and not delta hedging in any form.
- 2 No bank can carry that kind of position, so there is little doubt that Goldman and Morgan Stanley aggressively bought back that risk in the market through either (other) listed options, structured products or variance/volatility swaps. In other words, they have dissipated the risk into the street, which was now massively short those options, with increased risk of volatility (short option traders buy when the market goes up and sell when the market goes down)
- 3 When the market tanked on the corona virus news, institutional investors looked for protection. Those tiny puts were now 10% lower than the market with 15% delta - the proper insurance for catastrophic risk. They started bidding them up.
- 4 When the street is short an asset and the price of this asset rises, the street does what it always does. It squeezes. Market-makers covered their shorts, pain-ly aware of their mark-to-market. They paid pretty much whatever offer was available. In implied volatility terms, these puts gaped up from ~40% vol to ~60%... pretty much on the open of Friday 2/28 (which also happened to be a month-end). They stayed at that volatility level most of the day.

Volatilities subsided at the end of the day (ahead of the week-end), but the damage was done. Here are the vol changes in vol points from 2/27 to 2/28:

March 2650 Puts

Vol Move	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%	105%	110%	115%	120%	125%	130%	135%	140%	145%	150%
15 d	-11.37	-9.36	-5.74	-4.01	-1.96	0.74	3.67	5.78	6.84	6.54	4.99	2.99	3.23	3.55	3.08	2.31	2.03	1.06	-0.29	-1.47	-2.60
30 d	-8.97	-6.06	-3.07	-2.39	0.22	3.14	4.72	5.35	5.58	4.85	3.77	2.02	1.80	2.88	1.82	1.57	1.13	-1.77	-2.84	-3.48	-3.48
60 d	-6.49	-4.70	-2.66	-0.47	1.86	3.04	3.48	3.46	3.41	2.71	1.87	1.02	0.36	1.14	1.61	1.58	1.27	1.28	1.72	1.72	1.72
90 d	-2.47	-1.61	-0.47	1.02	2.23	2.95	2.87	2.79	2.45	1.81	1.41	0.73	0.05	0.27	1.11	1.12	1.28	0.79	0.73	0.95	0.21
120 d	-0.43	0.06	0.76	1.44	2.03	2.46	2.30	2.01	1.69	1.33	0.93	0.43	-0.20	-0.26	0.41	1.03	1.11	0.94	1.09	1.16	1.18
150 d	-3.11	-3.52	-2.04	-2.36	-2.10	1.69	-1.65	-1.05	1.49	-2.53	-2.09	-1.34	-2.24	-1.89	-1.48	-1.05	-0.56	-1.16	-1.72	-2.46	-2.78
180 d	0.18	0.36	0.91	1.34	1.64	1.77	1.76	1.52	1.13	0.89	0.68	0.41	0.18	-0.18	-0.12	0.31	0.30	0.13	0.46	0.61	0.71
210 d	0.92	0.39	0.94	1.26	1.43	1.44	1.48	1.23	1.02	0.85	0.73	0.44	0.15	-0.22	-0.37	0.32	1.17	1.68	2.76	3.12	3.15
240 d	0.35	0.50	0.89	1.16	1.24	1.23	1.16	1.08	0.94	0.82	0.65	0.41	0.10	-0.13	-0.01	0.47	1.05	1.69	2.29	2.81	2.91
270 d	0.34	0.49	0.82	1.01	1.08	1.06	1.01	0.95	0.83	0.71	0.47	0.30	0.08	-0.11	-0.22	0.27	0.61	1.33	1.91	2.28	2.45
300 d	0.28	0.62	0.88	0.89	0.96	0.94	0.86	0.82	0.70	0.60	0.46	0.35	0.09	-0.29	-0.30	0.10	0.79	1.64	1.81	1.50	1.55
330 d	0.04	0.35	0.61	0.76	0.84	0.82	0.76	0.69	0.64	0.58	0.35	0.27	0.09	-0.04	-0.16	-0.22	0.85	1.74	2.26	2.91	2.00
360 d	0.26	0.35	0.47	0.62	0.68	0.68	0.63	0.59	0.53	0.45	0.30	0.22	0.09	-0.06	-0.20	-0.30	0.41	1.28	1.92	2.61	2.51
540 d	-0.09	0.10	0.04	0.33	0.35	0.25	0.19	0.19	0.03	-0.01	-0.11	-0.13	-0.13	-0.12	-0.16	-0.18	-0.13	0.04	0.70	1.37	2.15
720 d	-0.22	-0.10	0.04	0.09	0.14	0.02	-0.03	0.02	-0.22	-0.20	-0.21	-0.18	-0.18	-0.17	-0.20	-0.24	-0.27	-0.23	-0.19	0.01	0.36

Adjusted by the local stdev of the volatilities (aka, expressing the vol changes in units of 'typical changes in vol'):

Vol Move Std	50%	55%	60%	65%	70%	75%	80%	85%	90%	95%	100%	105%	110%	115%	120%	125%	130%	135%	140%	145%	150%
d	-1.06	-1.41	-1.40	-1.04	-0.50	0.20	1.10	1.90	2.29	2.00	1.36	1.49	2.98	3.24	1.24	0.56	0.37	0.17	-0.04	-0.21	-0.35
d	-1.43	-1.48	-1.02	-0.85	0.09	1.35	2.13	2.43	2.36	1.80	1.27	1.09	1.86	4.16	1.37	0.68	0.34	-0.45	-0.67	-0.77	-0.75
d	-2.52	-2.06	-1.36	-0.27	1.15	1.94	2.19	2.01	1.75	1.24	0.81	0.60	0.40	1.58	1.77	1.03	0.57	0.48	0.59	0.58	0.58
d	-1.30	-1.00	-0.33	0.78	1.80	2.43	2.22	1.91	1.47	0.98	0.73	0.46	0.06	0.40	1.86	1.67	0.74	0.52	0.39	0.47	0.10
d	-0.30	0.05	0.65	1.30	1.92	2.28	1.92	1.47	1.11	0.81	0.54	0.29	-0.21	-0.38	0.61	1.31	1.08	0.66	0.60	0.57	0.55
d	-2.74	-3.26	-1.95	-2.37	-2.14	1.61	-1.40	-0.80	1.03	-1.65	-1.34	-0.95	-2.37	-2.75	-2.07	-1.35	-0.62	-0.99	-1.19	-1.50	-1.66
d	0.20	0.39	1.02	1.53	1.79	1.74	1.52	1.19	0.82	0.61	0.47	0.30	0.19	-0.27	-0.18	0.41	0.34	0.12	0.34	0.40	0.45
d	1.13	0.48	1.20	1.57	1.62	1.44	1.31	1.00	0.77	0.62	0.53	0.35	0.16	-0.33	-0.58	0.45	1.55	1.89	2.54	2.41	2.21
d	0.46	0.66	1.23	1.52	1.43	1.25	1.06	0.91	0.75	0.63	0.49	0.33	0.10	-0.20	-0.02	0.67	1.31	1.74	1.90	2.04	1.99
d	0.43	0.65	1.16	1.32	1.26	1.10	0.95	0.83	0.68	0.56	0.37	0.25	0.08	-0.17	-0.38	0.41	0.77	1.35	1.56	1.63	1.67
d	0.38	0.89	1.33	1.22	1.16	1.02	0.85	0.75	0.61	0.51	0.38	0.31	0.09	-0.43	-0.53	0.17	1.13	1.96	1.80	1.30	1.31
d	0.06	0.56	0.97	1.08	1.05	0.92	0.78	0.67	0.59	0.51	0.30	0.25	0.09	-0.06	-0.29	-0.38	1.28	2.25	2.68	2.99	1.95
d	0.26	0.45	0.72	0.89	0.86	0.77	0.66	0.58	0.50	0.41	0.28	0.21	0.09	-0.09	-0.36	-0.54	0.67	1.83	2.62	3.30	2.99
d	-0.16	0.17	0.06	0.47	0.46	0.32	0.23	0.22	0.04	-0.02	-0.12	-0.15	-0.17	-0.18	-0.28	-0.38	-0.28	0.10	1.49	2.78	4.04
d	-0.37	-0.16	0.06	0.14	0.20	0.03	-0.05	0.02	-0.31	-0.28	-0.30	-0.27	-0.28	-0.29	-0.37	-0.49	-0.62	-0.55	-0.47	0.02	0.82

You clearly see the valley of option buyers. The street bought everything it could at that strike and around that strike/maturity to cover their short. Never mind if the skew became 'almost flat' below and incredibly steep above.

What will happen now? Dalio assured the market that he was not bear, but just hedging his position. This means he still needs those puts. When he bought them, they were worth ~\$15 each. On Friday, those same puts were worth \$55. If he wanted to unwind them, Friday would have been a great time. He didn't. So what will Dalio do? It's likely that he will keep them.

So what will happen to the market?

- At 60% vol, these options price ~4% of daily move until maturity. That's unlikely to realize. They are overpriced, and will surely drip a fortune in gamma/theta. Most likely, the market will reprice them lower, but slowly (market-makers just bought them through their noses).
- If Dalio comes on the offer though, the repricing would probably be very quick.
- The skew will normalize, on that maturity and in this portion of the surface, so you can expect a steepening of the lower skew, and a flattening of the below-the-money skew.
- Once again, how quickly skew will converge to more normal levels will depend on flows. If Dalio was to show up, the repricing would be fast. This being said, he is not the only active player in that area of the market: vol-of-vol traders and VIX traders need to deal in tiny puts. There are large such players around.



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Gontran de Quillacq, consultant / expert witness

Gontran de Quillacq has over 20 years of experience in portfolio management, derivatives trading, proprietary trading, structured products and investment research. He has worked with top-tier banks and hedge funds in both London and New York.

Background Experience - After his European and US education, Mr. de Quillacq traded derivatives for two decades, from vanillas to exotics, both proprietary and client-facing, at top-tier banks in the square mile and on Wall Street. As a portfolio manager, he researched and managed investment strategies, delivered both in hedge fund and in structured note formats. He initiated the distribution of investment strategies through derivatives, an activity now called 'portable alpha' and 'smart beta'. For the following five years, Mr. de Quillacq ran due diligence on investment strategies and selected senior investment personnel for some of the world's most famous and most demanding hedge funds and asset managers. In 2017, he co-founded a quantitative activity deploying the latest machine learning techniques in global long/short equities. Mr. de Quillacq is a quantitative researcher and portfolio manager for an asset management firm deploying volatility trading strategies.

Litigation Support - Mr. de Quillacq's own investment experience and his cross-sectional review of other professionals give him unique experience on what can be done, what should be done, what should not be done, and the grey areas in-between. During a personal case, his legal team was so impressed by his wide and thorough knowledge in finance, his capacity to explain complicated ideas in simple terms, and his strong performance on the stand, that they strongly recommended he expand into litigation support services. Mr. de Quillacq is now a FINRA/NFA arbitrator, a member of the **Securities Expert Roundtable** and an IMS Elite Expert. He has consulting affiliations with **Barrington Financial Consulting Group, Ankura, The Bates Group, Moskalev consulting and SEDA Experts.**

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