Expected Stock Market Returns from 2020

Where will S&P 500 end up in year 2030?

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The stock market has been trading at much higher price earnings (PE) levels for the last 25 years as compared to the full 149 years for which we have data. This has led to concerns that markets might be overvalued.

A vast volume of outstanding research is published by Philosophical Economics that dwelled into many of these issues in depth. Much of this research is in the 2013 to 2015 period and is a must read for anyone interested in overall market valuation. I wanted to summarize the main ideas and update the data to year end 2019. The calculations and estimates are my own.

Using S&P 500 as a proxy for the overall market, its price can be expressed as:

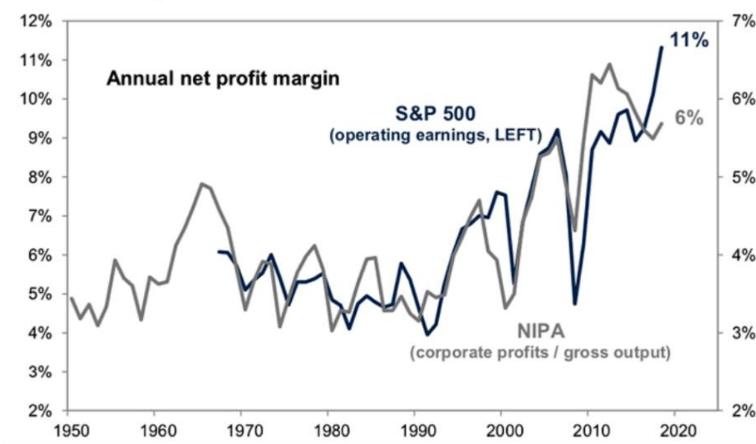
S&P 500 Price = Revenue X Profit Margin X Price Earnings Ratio

Many investors base the argument on the market being expensive on two factors

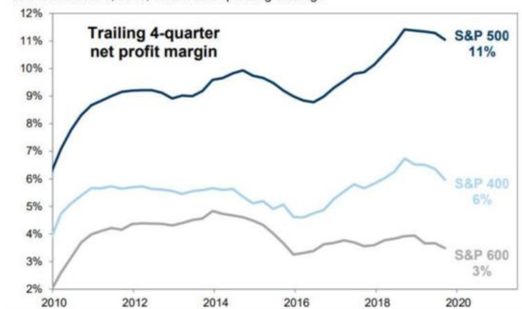
1. Profit margins are at historical highs compared to any time in the past
2. Price earnings ratio are also at very high levels compared to past

Profit Margins

Profit margins have increased considerably over the last 25 years and have remained persistently high. After both the 2001-2002 and 2008-2009 recessions, profit margins quickly reverted back to the new higher levels.

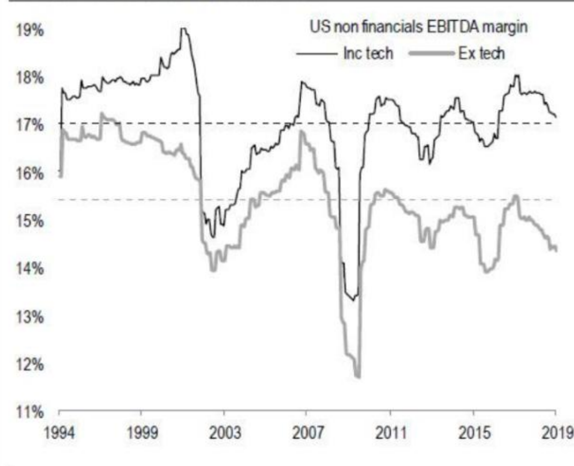


The profit margin expansion is concentrated in the larger capitalization companies.



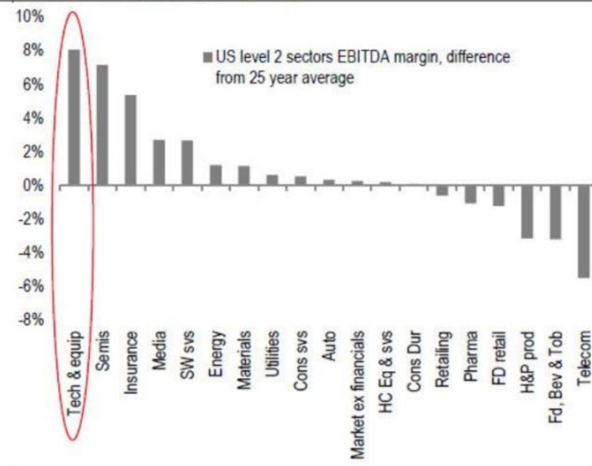
Profit margins are also concentrated in the Technology and Financial sector. Many of the largest companies are technology or financials with large operating margins. Excluding these companies margins are closer to historical norms. Expecting margins to return to historical levels implies that one is expecting margins of companies such as Apple, Microsoft, Google, Facebook, Visa, MasterCard, etc to fall dramatically.

Figure 16: Excluding tech and financials, EBITDA margins are below their historical norm



Source: Refinitiv, Credit Suisse research

Figure 17: The tech sector has accounted for most of the EBITDA margin improvement

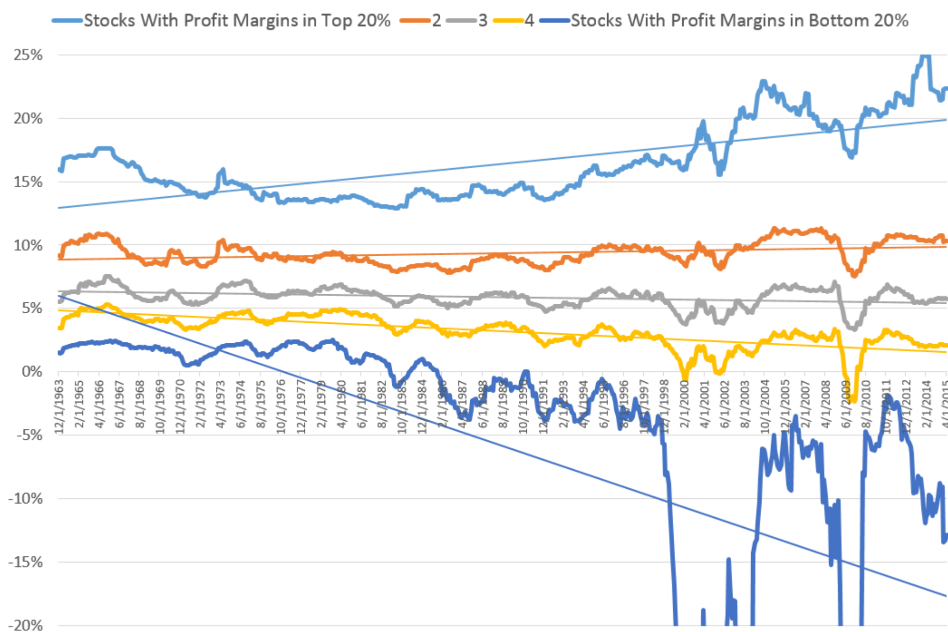


Source: Refinitiv, Credit Suisse research

Source: https://www.zerohedge.com/markets/are-profit-margins-really-plunging-goldman-responds-zero-hedge

Another way to look at the profit margin distribution in the stock market is provided by the picture below in The Rich Are Getting Richer. It shows how only a small portion of the companies are increasing their profit margins, whiles 80% of the companies have stagnant or declining margins.

Aggregate Profit Margin by Profit Margin Quintile



Profit margins are high but that is a reflection more of the changing composition of industries that make up the US economy. It is not broad based but concentrated in a set of companies with competitive advantages. It is very

likely that margins are going to remain high and even a further increase in margins, though hard to imagine remains a possibility.

Tax cuts have also contributed to an increase in net-margins and that portion of the increase is likely to revert in case taxes increase in the future.

Price Earnings Ratio

Price earnings ratio is simply a reflection of overall investors enthusiasm for owning stocks. There are limits to how high or low the PE can be for the overall stock market. But within these limits – a lower limit of 5 and upper limit of 30, it is difficult to say what should be the right PE level.

One way to think about the PE ratio is as a measure of expected returns. A high PE ratio simply implies lower expected returns in the future. A high PE ratio would be justified if current investors are satisfied with lower expected returns than those of the past.

Imagine yourself in year 1900 or 1920 or 1940 or even 1960. Investors in these periods faced three problems that the current investors do not have.

1. First, during most of those times there is only limited data and limited knowledge in the society to support to the notion that stocks provide attractive real returns compared to bonds and cash. Investors, during those time periods, did not know stocks would provide 6.5% real return. Being on the gold standard most of this period, they did not have much experience with sustained inflation, did not realize that inflation would prove to be so detrimental to bonds. There is barely perceptible growth in real earnings per share for most of the first 7 decades and stock market mostly fluctuated between a range and thus had no reason to believe that stocks would keep going up. The one time some of this is not true is in the 1920's which increased PE ratios but the unfortunate events that led to the Great Depression, again led the public to doubt stocks as a good long term investment.

2. Second, it is very expensive for an individual investor to buy a diversified set of stocks during this period. The transaction costs and research costs needed to put a diversified portfolio would have taken up at least 2% annually from the returns. Investing in unit trusts required paying 6-8% initial load along with more than 1% annual expenses. Either of these would have resulted in a minimum drag of 1.5% annual returns and more likely the drag is closer to 2%.

3. Third, building a diversified portfolio is more difficult for the common investor. So investors end up owning fewer stocks that exposes them to individual stock risk (unsystematic risk). It leads to stocks being priced lower to compensate for this risk.

Thus investors at that time are not aware that stocks produce 6.5% annual real returns, cannot easily buy a diversified index fund and forced to take higher risk in fewer individual stocks and need to incur annual expenses of 2%. These investors thus needed stocks to provide a real-returns of 6.5% which translated into realized returns of 4.5% real or thereabouts.

Now, investors had it pounded into their heads that stocks are the best form of investment for the long term and can easily buy a globally diversified portfolio of stocks with as little as $25 with virtually zero costs. After everyone has realized the secret of stocks outperforming over the long run, has seen the data, and has an easy way to invest, would stocks still be priced the same as before?

In addition to all the advantages current set of investors have over investors in past periods, many other factors have changed in the last few decades.

- The concept of retirement is a recent phenomenon. Most people worked until they are on the death bed. It started in the mid 1930s and only gained steam from the 1950s. Now, the asset management business that help individuals save for retirement is a huge industry with several trillions of dollars under management. This massive pool of capital is invested with a generally accepted approach that divides the assets into stocks and bonds. Every month, a huge pool of capital is invested automatically into stocks and bonds. This creates an automatic increase in "demand" for stocks that used to be much less in the past.

- Most of the stock market history, except for the last three decades, stock buybacks are not a major phenomenon. Especially the first several decades, dividends used to be primary return from stocks. The last three decades has seen a steady decline in the number of shares outstanding. This created a steady decrease in "supply" of stocks available for investment.

- Interest rates have been in a steady decline. Thus cash and bonds are going to provide much lower returns in the future. Nominal cash returns of 0%-1% and bond returns of 2%-3% seem to be more likely. In such a scenario with negative real returns for cash and close to zero real returns for bonds, stocks would be attractive even if they provide 4% real returns.

Another way to take into account all the above issues is to view valuation changes from aggregate investor allocation to equities. If you look at how all the investors in aggregate are invested into stocks, bonds and cash and see how they are changing the allocation, it provides clues to likely returns. In this framework, if the aggregate investor maintains a constant allocation to stocks, the supply of stocks must grow proportionately with the supply of cash and bonds. The supply of stocks can be through either an increase in new shares or increases in stock prices. We know the corporate sector is reducing the number of shares through buybacks. So unless investors in aggregate want to have lower percentages of their portfolios in stocks, stock prices would keep increasing until the allocation preferences are reached.

Taking all the factors into account, it seems very likely that stocks would be priced much higher in the future than in the past. At a minimum they would be priced to return what investors would have actually realized in the past after all the costs. That would be about 4.5% real return. More likely, stocks would be priced to provide slightly lower returns than this.

The really big thing to keep a watch on is interest rates. If low rates persist there is no reason to expect stock market PE ratios to fall.

Expected Returns

Expectations on future stock and bond market returns have been primarily based on historical returns.

Table 1: Geometric Average Historical Annual Returns

	S&P 500	3-month T.Bill	US T. Bond	Baa Corporate Bond
1928-2019	9.71%	3.35%	4.88%	6.96%
1970-2019	10.51%	4.58%	6.99%	9.18%
2010-2019	13.44%	0.51%	4.13%	7.06%

Table 2: Historical S&P 500 Fundamental Data

Year	Reported Earnings	Dividends	Operating Earnings	5 Year Average	Payout	RE/OE	Sales per share	Book Value	Net Margin	ROE	Avg of Qtr Close	PE (Reported)
1990	21.3	12.1	22.65		57%	94%					334	15.7
1991	16.0	12.2	19.3		76%	83%					388	24.3
1992	19.1	12.4	20.87	21.8	65%	91%					416	21.8
1993	21.9	12.6	26.9		57%	81%					457	20.9
1994	30.6	13.2	31.75		43%	96%					453	14.8
1995	34.0	13.8	37.7		41%	90%					561	16.5
1996	38.7	14.9	40.6		38%	95%					686	17.7
1997	39.7	15.5	44.0	39.7	39%	90%					890	22.4
1998	37.7	16.2	44.3		43%	85%					1120	29.7
1999	48.2	16.7	51.7		35%	93%		$291		16.6%	1353	28.1
2000	50.0	16.3	56.1		33%	89%	$745	$326	6.7%	15.3%	1427	28.5
2001	24.7	15.7	38.9		64%	64%	$737	$338	3.4%	7.3%	1143	46.3
2002	27.6	16.1	46.0	41.9	58%	60%	$674	$322	4.1%	8.6%	958	34.7
2003	48.7	17.4	54.7		36%	89%	$711	$367	6.9%	13.3%	983	20.2
2004	58.6	19.4	67.7		33%	87%	$788	$415	7.4%	14.1%	1148	19.6
2005	69.8	22.2	76.5		32%	91%	$874	$453	8.0%	15.4%	1212	17.4
2006	81.5	24.9	87.7		31%	93%	$952	$504	8.6%	16.2%	1330	16.3
2007	66.2	27.7	82.5	56.7	42%	80%	$1,025	$529	6.5%	12.5%	1480	22.4
2008	14.9	28.4	49.5		191%	30%	$1,042	$451	1.4%	3.3%	1168	78.5
2009	51.0	22.4	56.9		44%	90%	$908	$514	5.6%	9.9%	972	19.1
2010	77.4	22.7	83.8		29%	92%	$962	$579	8.0%	13.4%	1150	14.9
2011	87.0	26.4	96.4		30%	90%	$1,053	$613	8.3%	14.2%	1259	14.5
2012	86.5	31.3	96.8	90.7	36%	89%	$1,092	$667	7.9%	13.0%	1409	16.3
2013	100.2	35.0	107.3		35%	93%	$1,117	$716	9.0%	14.0%	1676	16.7
2014	102.3	39.4	113.0		39%	91%	$1,163	$727	8.8%	14.1%	1966	19.2
2015	86.5	43.4	100.5		50%	86%	$1,127	$740	7.7%	11.7%	2024	23.4
2016	94.6	45.7	106.3		48%	89%	$1,150	$769	8.2%	12.3%	2141	22.6
2017	109.9	48.9	124.5	112.6	45%	88%	$1,231	$827	8.9%	13.3%	2495	22.7
2018	132.4	53.8	151.6		41%	87%	$1,343	$852	9.9%	15.5%	2695	20.4
2019	139.5	58.2	157.1		42%	89%	$1,415	$914	9.9%	15.3%	2996	21.5

Rather than look at historical returns and assume that returns going forward would be similar to past, we can use financial theory to estimate returns. The fundamental drivers of stock returns are

1. Growth in Earnings Per Share
    a. Growth in Revenues (GDP growth + Inflation)
    b. Profit Margin changes (Changes in economy, industries, regulations & taxes)
    c. Change in Share Count (Dilution and Share Buybacks)
2. Dividends Paid
3. Change in PE multiple

The main uncertainty among the above fundamental drivers are changes in profit margins and PE multiples. The main disagreement between bulls and bears boils down to their assumptions about these two drivers.

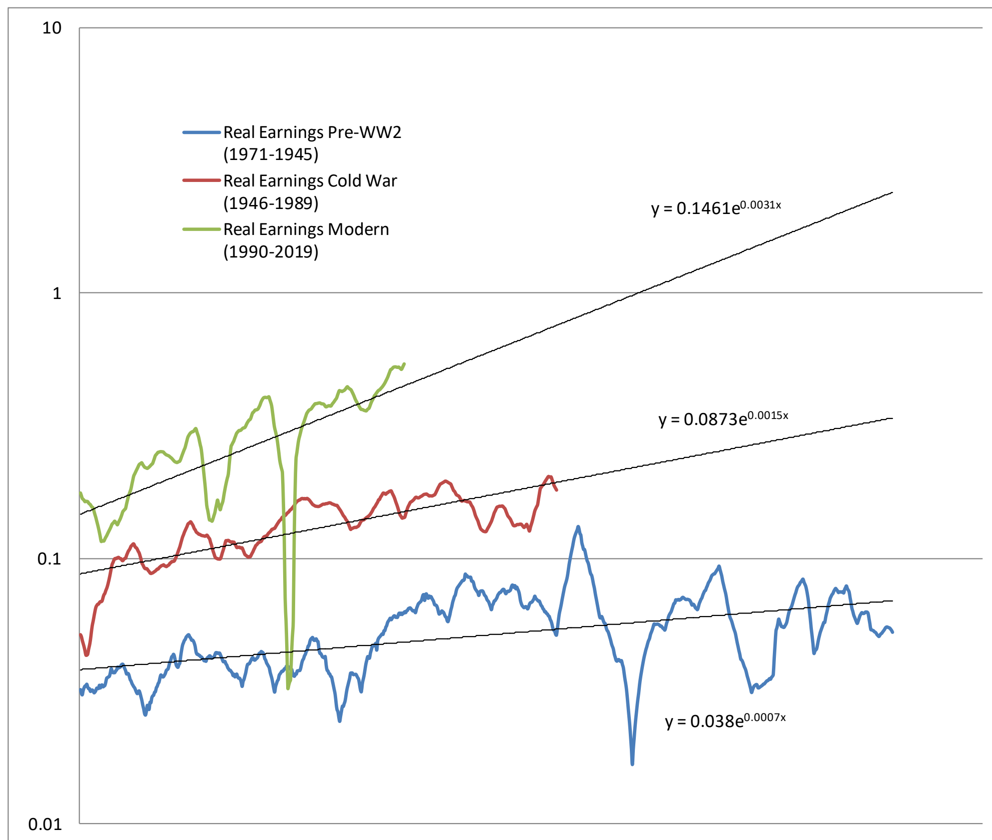
Historical Returns

Looking at the overall growth in earnings per share the last 149 years, there are three distinct periods with vastly different growth rates. The table below shows the growth rates over these periods. Figure 1 below shows the trend growth rate of real earnings for the different periods plotted on the same graph.

Table 3: Real Earnings Growth Rate during Three Separate Time Periods

Period	Real Earnings Growth Rate Trend
1871- 1945	0.8%
1946 - 1989	1.8%
1990 - 2019	3.7%

Figure 1: Real Earnings Growth during Three Separate Time Periods



The period from 1871 to 1945, only had modest growth in real earnings. Stock returns are primarily through the dividends they paid out. Paying out about 70% of earnings on average over this period. Earnings growth doubled over the next period from 1946 to 1989 as payout reduced to 50% and doubled again from 1990 to 2019 as payout was further reduced to about 40%.

Three factors contributed to the increase in earnings growth in the last period.

1. This period saw the emergence of stock buybacks as a major component of capital allocation. This merely shifted the return to investors from dividends to stock price appreciation.

2. Profit margin expansion from the mid 1990s 6-7% range to 9-10% range at the present time.

3. Tax cuts driven increase in 2018 and 2019.

Analyzing these factors we can adjust the trend earnings growth to remove those that are unlikely to persist in the future. Buybacks are here to stay and unlikely to change. Profit margins are also unlikely to change much or fall

very modestly. The increase in earnings that came from profit margin expansion need to be backed out at a minimum. Using a crude estimate of 2% profit margin expansion over a 25 year period (from 6.5% to 8.5%), it reduces the annual earnings growth rate by 1.1%. Tax rates contributed to about 0.5% rate (increasing profits by 15% averaged over 25 years).

Thus we have two factors that contributed to about 1.6% growth in EPS that would be unlikely to contribute in future.

We need to make one final adjustment to the 3.7% annual real EPS growth from 1990-2019. This trend growth is severely impacted by the steep write-downs driven by accounting issues in 2008. By removing this distortion, trend growth increases to 4.1%. Inflation averaged 2% over this period, thus nominal earnings increased 6.1%.

After all these adjustments, we have real EPS growth of 2.5%. This is the rate that would have been achieved over the last 29 year period, if there are no changes in profit margins or taxes. It would be a good starting point on which to base market expectations and as a cross check on fundamentally driven estimates.

Conservative 20 Year Returns Using Fundamental Estimates

The table below shows the estimates for the various stock market drivers going forward.

Table 4: Estimates of Financial Drivers of Expected Returns

Financial Driver	Estimate	Rationale
GDP	1.5%	Growth in revenues is closely tied to GDP growth (both in USA and World). GDP has grown by about 4% between 1930 to 1959, 3.5% between 1960 to 1999 and 2.1% from 2000 to 2019. Slightly lower going forward.
Profit Margins	9%	Profit margins have reached 10% in 2018 and 2019. Assuming a modest pullback.
Share Count	1%	Assuming a 30% payout. At a 4.5% earnings yield, this translates to 1.35% but likely thee would be some leakage from expensive acquisitions, repurchases when times are good and PE's are high, executive compensation, etc.
Dividends	2%	Assuming a 45% payout.
PE Multiple	22	A PE of 22 on trend earnings for the year would be more appropriate. Not the PE ratios of 14 to 16 that prevailed in the past. This represents an earnings yield of 4.5%. S&P 500 has averaged a ROE of 13%. To grow nominal earnings by 3.5%, it means companies would need to retain about 25% of earnings. The remaining 75% can be paid out as 2% in dividends and 1.5% in buybacks.

Real earnings growth rate under these assumptions would be 2.5% and assuming an inflation of 2%, nominal growth in earnings would be 4.5%. Adding in a dividend yield of 2%, long term returns would be about 6.5% when purchased on trend.

Table 5: Trend Earnings

Year	Reported Earnings	Operating Earnings	Trend Earnings	Trend Earnings/ Reported Earnings	Trend Earnings/ Operating Earnings
1990	21.3	22.65	26.5	124%	117%
1991	16.0	19.3	27.9	175%	145%
1992	19.1	20.87	29.5	154%	141%
1993	21.9	26.9	31.1	142%	116%
1994	30.6	31.75	32.8	107%	103%
1995	34.0	37.7	34.6	102%	92%
1996	38.7	40.6	36.5	94%	90%
1997	39.7	44.0	38.5	97%	87%
1998	37.7	44.3	40.6	108%	92%
1999	48.2	51.7	42.8	89%	83%
2000	50.0	56.1	45.2	90%	81%
2001	24.7	38.9	47.7	193%	123%
2002	27.6	46.0	50.3	182%	109%
2003	48.7	54.7	53.1	109%	97%
2004	58.6	67.7	56.0	96%	83%
2005	69.8	76.5	59.1	85%	77%
2006	81.5	87.7	62.3	76%	71%
2007	66.2	82.5	65.7	99%	80%
2008	14.9	49.5	69.4	466%	140%
2009	51.0	56.9	73.2	144%	129%
2010	77.4	83.8	77.2	100%	92%
2011	87.0	96.4	81.4	94%	84%
2012	86.5	96.8	85.9	99%	89%
2013	100.2	107.3	90.7	90%	84%
2014	102.3	113.0	95.6	93%	85%
2015	86.5	100.5	100.9	117%	100%
2016	94.6	106.3	106.5	113%	100%
2017	109.9	124.5	112.3	102%	90%
2018	132.4	151.6	118.5	89%	78%
2019	139.5	157.1	125.0	90%	80%

Trend earnings for 2019 are about $125 per share (consistent with assumptions of 9% margins on sales of $1415). The tax cuts effective from 2018 produced a jump in earnings and the trend rate incorporates this effect. Without tax cuts, trend earnings would have been $115 in 2019. Going forward assumption is that the current corporate tax rate of 21% holds in the long term. Any increase would need an adjustment.

Table 6: Long term Growth Assumptions

Trend Earnings in 2019	$125
GDP Growth Rate	1.50%
Share Buybacks	1.00%
Inflation Rate	2.00%
PE	22
Historical Growth Rate	2.50%
Earnings Growth Rate	4.50%

Table 7: Projected S&P 500 earnings and index levels

COVID Impact	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Trend Earnings	$100	$120	$135	$141	$147	$154	$161	$168	$176	$184	$192	$201	$210	$219	$229	$239	$250	$261	$273	$285	$298
S&P 500 Value	2695	2830	2970	3104	3243	3389	3542	3701	3868	4042	4224	4414	4612	4820	5037	5263	5500	5748	6006	6277	6559

I have manually adjusted the earnings for years 2020 to 2022 to take into account COVID impact. These are just guesses assuming that GDP would take until 2022 to recover back to 2019 levels. S&P 500 value for 2020 and 2021 were adjusted to provide 7% returns working backwards from 2022 as that would be year where earnings would be on trend.

Table 8: Projected S&P 500 earnings and index levels if there is there is no COVID impact

Ignore COVID Impact	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Trend Earnings	$131	$137	$143	$149	$156	$163	$170	$178	$186	$194	$203	$212	$222	$231	$242	$253	$264	$276	$288	$301	$315
S&P 500 Value	2874	3003	3138	3279	3427	3581	3742	3911	4087	4271	4463	4664	4874	5093	5322	5562	5812	6073	6347	6632	6931

The estimates are based on trend earnings and over an entire business cycle should match the reported earnings over the same period. Reported earnings tend to be about 88% of the operating earnings on average.

Table 8 shows what the earnings for S&P 500 would have been if COVID had not occurred. This shows how the value of the market has been reduced by the virus by about 5%.

The return expectations over the next 5, 10 and 20 years when S&P 500 is bought at various prices in the base case.

Table 9: Return on S&P 500 when bought at various levels in 2020

Return Estimates	5 Year	10 Year	20 year
2000	13.9%	10.6%	8.9%
2500	8.5%	7.6%	7.1%
3000	4.4%	5.4%	5.9%

Optimistic 20 Year Returns Using Fundamental Estimates

It is possible that the estimates above might be pessimistic and as software and Internet becomes increasingly major component of the economy, there might be more companies with moats that allow them to earn higher margins, require lower capital expenditures and also lead to faster economic growth.

In such a scenario, earnings could keep growing at about 5.5% nominal rate as they have in the past three decades and lead to much higher stock market returns.

Table 10: Long term growth assumptions

Trend Earnings in 2019	$125
GDP Growth Rate	2.00%
Share Buybacks	1.50%
Inflation Rate	2.00%
PE	22
Historical Growth Rate	2.50%
Earnings Growth Rate	5.50%

Table 11: Projected S&P 500 earnings and index levels

COVID Impact	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Trend Earnings	$100	$120	$135	$142	$150	**$159**	$167	$176	$186	$196	**$207**	$219	$231	$243	$257	$271	$286	$301	$318	$335	**$354**
S&P 500 Value	2695	2830	2970	3133	3306	**3487**	3679	3882	4095	4320	**4558**	4809	5073	5352	5647	5957	6285	6630	6995	7380	**7786**

Table 12: Return on S&P 500 when bought at various levels in 2020

Return Estimates	5 Year	10 Year	20 year
2000	14.6%	11.4%	9.8%
2500	9.1%	8.4%	8.0%
3000	5.0%	6.2%	6.8%

Risks to the Estimates

With S&P 500 between 2500 to 3000, it can be expected to generate 6% to 8% returns over the long term (20 years). **The main risk to the return estimates is the level of interest rates. They are based on the assumption that long term rates (10 year Treasuries) would be in the 2% to 3% range.**

- If instead, long term rates average below 1% for over this period, then 6-8% stock market returns look very high – an equity risk premium of 5% to 7%, and stock market would be worth significantly more in this case. This could add a further 1-2% in annual returns over the next 20 years.
- If long term rates are in the 4-5% range, returns are going to look pretty ugly.

Conclusion

The baseline expectation is for S&P 500 to end up between 4200 to 4600 in year 2030 and between 6600 to 7800 in year 2040.

Predicting stock market levels is a mugs game. The future, would turn out differently from the estimates made above. Nevertheless, we need some estimates to set reasonable expectations for our portfolios. By making explicit the assumptions we make and putting numbers to the fundamental economic drivers, as changes occur we can update the forecast to incorporate new data.

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