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April 19, 2021

The Market is Not Overvalued - Based On Free Cash Flow Valuation

Executive Summary

- A coordinated policy intervention together with the COVID 19 vaccination roll-out and expectations of the re-opening of the economy have all helped the S&P 500 to advance 90% since the March 2020 bottom amid a global pandemic defying many pessimistic views.

- As the market reaches new highs, some investors have become alarmed pointing to several valuation metrics which indicate the market may be significantly overvalued.

- Alpha Quant Models (AQM) analyzes the trend of the drivers of earnings and market valuation. AQM focuses on free cash flow (FCF) based valuation as it is more comprehensive measure of profitability and market fundamentals.

- While corporate earnings have maintained a cyclical pattern over the last thirty years moving in tandem with the business cycle through expansion and contraction phases, FCF displays a more steady, linear trend particularly over the last few years.

- Strikingly, during the COVID 19-induced recession FCF has continued to grow even as earnings were falling sharply. This resiliency in companies' FCF may be supportive in making the 2020 bear market the shortest one in history.

- An alternative view of the market valuation based on FCF multiples indicates that the market may not be overvalued as many investors fear.

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Corporate Earnings Outlook

The speed of the earnings recovery from the pandemic-induced bottom of Q3 2020 with EPS of $123 rebounding quickly to $156 by Q2 2021 has been quite remarkable. As of this writing, consensus 2022 EPS estimates for the S&P 500 companies in aggregate is $200. This represents a projected growth rate of 16% over the 2021 EPS of $172. The rebound and the anticipation of future strong growth have been accompanied by a parallel move in the S&P 500 Index which has leapt 90% from the March 2020 bottom.

Figure 1 reminds us that over the long-term the equity market moves in relation to the underlying companies' earnings. Specifically, since 1988 the correlation between operating quarterly EPS and the S&P 500 Index has been on average 0.9 (90% of the time EPS and the Index moved in the same direction). The graph also shows that the market seems to have already factored in the future projected earnings growth.

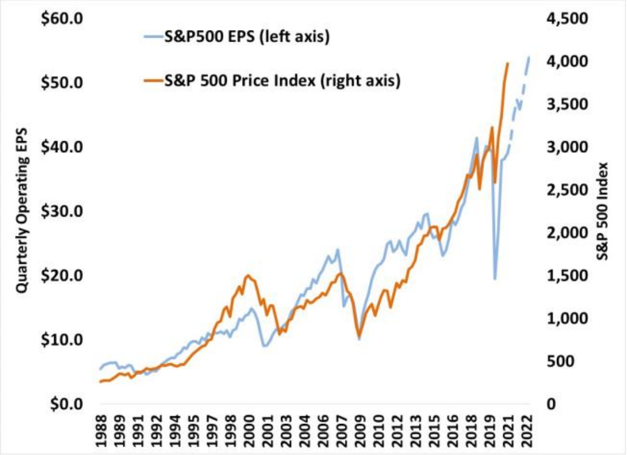
This relentless market advance based on optimistic growth estimates has prompted some investors to call this market a speculative one.

Evidence throughout the past several business cycles shows that analysts tend to be too optimistic in their earnings estimates during earnings expansions, but too conservative while exiting an earnings downdraft, as they anchor their expectations to the most recent trends.

This phenomenon may be at play even more now with such a massive coordinated monetary and fiscal intervention by the FED and the government fueling above-trend economic and corporate earnings growth.

Indeed, the ISM Manufacturing Index has reached a record reading of 61.4 signaling strong growth ahead. Figure 2 displays the ISM Index together with the one-year ahead earnings revision diffusion index. We note that over the 1988-2021 period, the average correlation of year-over-year change between the ISM and operating EPS has been a significant 0.6.

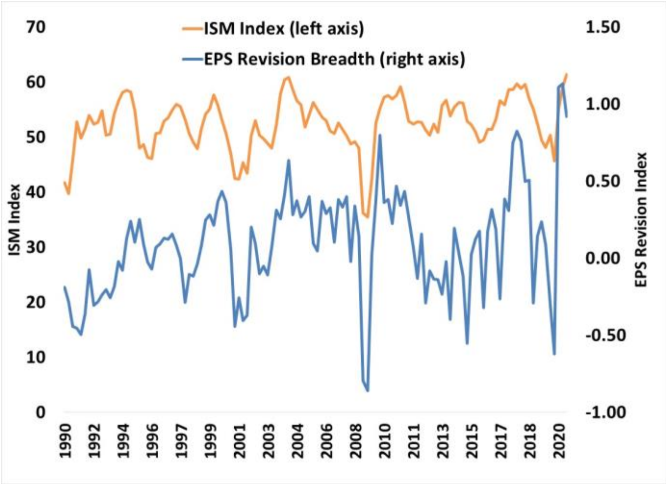
Figure 1. S&P 500 Quarterly Operating EPS



Source: S&P/Dow Jones, as of 04/15/2021, dotted line represent 2021 and 2022 consensus estimates

The graph shows that the recent upward jump in earnings revisions appears proportional to the advance of the ISM.

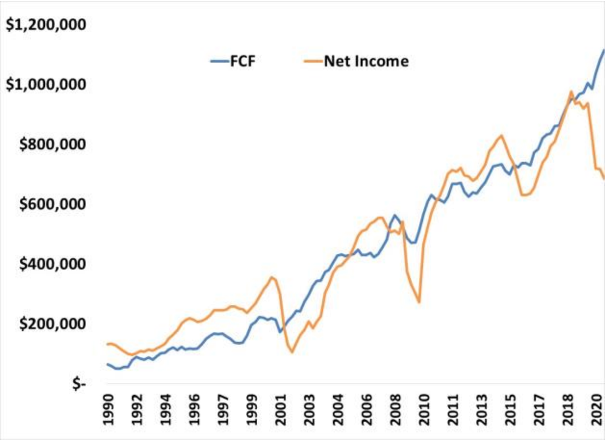
Figure 2. ISM Index and EPS Revisions



Source: FactSet, as of 03/31/2021

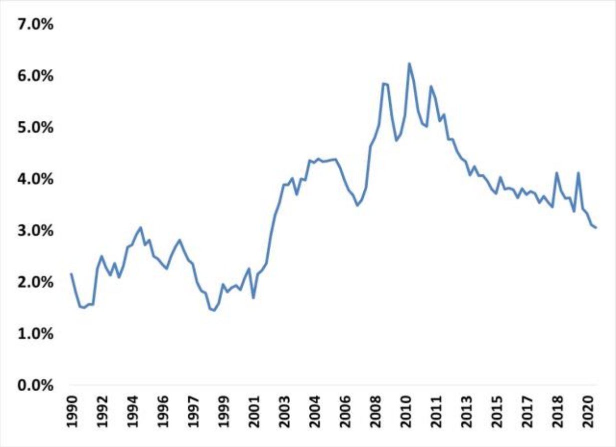
Given the positive momentum of the economic rebound and analysts' tendency to under-react and anchor during the recovery phase of the earnings cycle, it is not unrealistic to believe that investors may still be under-estimating the true earning power of the S&P 500 companies. Therefore, the strong market performance may be correctly anticipating future earnings above current expectations.

Figure 3. S&P 500 Free Cash Flow and Net Income ($mm)



Source: FactSet, as of 03/31/2021, S&P500 ex-Fin

Figure 4. S&P 500 Free Cash Flow-to-Enterprise Value



Source: FactSet, as of 03/31/2021, S&P500 ex-Fin

Earnings per share (EPS) is broadly referenced in evaluating both companies and the overall market. This is because EPS is relatively easy to understand, there is a long history available, and wall street analysts produce continuous EPS estimates that reflect the companies' outlook.

An alternative approach to evaluate companies' profitability is to focus on free cash flow (FCF). FCF is a more comprehensive measure of profitability as it excludes non-cash charges and includes both changes in working capital and capital expenditure. At the company level, in security analysis, a high level of FCF relative to net income is typically considered a measure of higher quality. Alpha Quant Models research has found that companies with strong FCF tend to generate future earnings above current expectations. In addition, companies with strong FCF have more financial flexibility, can deploy FCF towards dividends and buybacks or to pay down debt or make strategic acquisitions. Figure 3 displays the aggregate dollar value of net income and FCF for the S&P 500 companies over the last 30 years. There is a positive correlation between the two, however FCF tends to be less cyclical and more stable over time. What is very noticeable in this graph is that in the more recent years FCF has become more linear and has accelerated quite significantly. Strikingly, during the COVID 19-induced recession FCF has continued to grow even as earnings were falling sharply. We believe this resiliency in companies' FCF helped to make the 2020 bear market the shortest one in history.

On a FCF-basis the market does not appear overly expensive. Figure 4 depicts the FCF yield for the S&P 500 ex-financials over the last 30 years. The average FCF yield over this period is 3.5% (or equivalently, the average EV/FCF multiple is 29x), in line with the current value.

In Figure 5 we apply that average EV/FCF multiple of 29x to the projected aggregate FCF value of $1.43 trillion to obtain the projected enterprise value (EV) from which we subtract total debt and add cash to finally obtain the "fair market value of equity" of the S&P 500. As of April 15, 2021, the fair market value was about 15% above the current market value of the S&P 500 ex financials.

Figure 5. Summary Valuation

Current Market Value (4/15/2021)	$	32,615,453
Cash	$	2,105,224
Total Debt	$	6,174,218
Enterprise Value	$	36,684,447
1990-2020 Average EV/FCF		29x
FCF 12M trailing	$	1,066,228
2022 FCF consensus estimate	$	1,431,021
Projected Enterprise Value	$	41,499,609
"Fair Market Value"	$	37,430,615
Projected Return		**14.76%**

Source: Alpha Quant Models, FactSet

In the appendix we develop a formal discounted cash flow model for the S&P 500 based on projected unlevered free cash flows. This more complex methodology yields similar results to the above simple multiple approach.

APPENDIX: Discounted Cash Flow Valuation

Below is a valuation model for the S&P 500 based on projected unlevered free cash flows. The S&P 500 aggregate free cash flow (FCF) is calculated by rolling up analysts' consensus FCF 2021 and 2022 projections of the individual companies, as reported in FactSet. A 5% growth rate of FCF between 2022-2025 is applied annually. A discount rate of 7.65% is used to calculate the present value of projected FCF. Based on this model, the market does not appear overvalued. A sensitivity table displays the impact to intrinsic value in relation to varied discount and FCF growth rates.

ASSUMPTIONS

PERPETUAL GROWTH RATE	4%
EV/FCF MULTIPLE	29.0
Forecast Horizon	5 years
2021 Consensus FCF	$ 1,213,028
2022 Consensus FCF	$ 1,431,021
FCF growth 2022-2025	5.0%
Discount Rate	7.65%

ESTIMATED EQUITY VALUE (in Million of $)

PERPETUITY APPROACH	**$ 34,488,895**
MULTIPLE APPROACH	**$ 35,069,689**
AVERAGE ESTIMATED VALUE	**$ 34,779,292**
S&P 500 Current Value	**$ 32,615,453**
Potential UP/Downside	**6.6%**

		2020A	2021	2022	2023	2024	2025
UNLEVERED FREE CASH FLOWS		$ 1,066,228	$ 1,213,028	$ 1,431,021	$ 1,502,572	$ 1,577,701	$ 1,656,586
DISCOUNT RATE (r)	ERP=5.5%; 20Yr Treasury= 2.15%		7.65%	7.65%	7.65%	7.65%	7.65%
PV of UFCFs			$ 1,147,784	$ 1,234,861	$ 1,204,462	$ 1,174,812	$ 1,145,892

Stage 1: SUM OF PRESENT VALUES	**$ 5,907,812**

TERMINAL VALUE | Growth in Perpetuity Approach

PERPETUAL GROWTH RATE		4%
FCF x (1 + g) IN:	2025P	$ 1,722,849
TERMINAL VALUE IN:	2025P	$ 47,201,346
Stage 2: PV of TV		**$ 32,650,077**

ENTERPRISE VALUE (Stage 1 + 2)	**$ 38,557,889**

TERMINAL VALUE | EV/FCF Multiple Approach

EV/FCF multiple		29.0x
TERMINAL VALUE IN:	2025P	$ 48,040,985
Stage 2: PV of TV		**$ 33,230,872**

ENTERPRISE VALUE (Stage 1 + 2)	**$ 39,138,683**

NET DEBT

Total Debt	$ 6,174,218
Cash	$ 2,105,224
NET DEBT	**$ 4,068,994**

SENSITIVITY OF INTRINSIC VALUE TO FCF GROWTH AND DISCOUNT RATE

		Growth rate of FCF between 2023-2025					
		3.0%	4.0%	5.0%	6.0%	7.0%	8.0%
Discount Rate	6.5%	**29%**	**33%**	**37%**	**41%**	**45%**	**49%**
	7.0%	**14%**	**18%**	**21%**	**25%**	**28%**	**32%**
	7.5%	**3%**	**6%**	**10%**	**13%**	**16%**	**19%**
	8.0%	**-5%**	**-2%**	**1%**	**3%**	**6%**	**10%**
	8.5%	**-12%**	**-9%**	**-7%**	**-4%**	**-1%**	**2%**
	9.0%	**-18%**	**-15%**	**-13%**	**-10%**	**-8%**	**-5%**

Model Inputs Description and Source

- All data sourced from FactSet, unless otherwise noted.
- FCF 2021 and 2022 consensus estimates: obtained from FactSet by summing individual companies estimates for S&P 500 Ex-Financials
- Free Cash Flow (FCF) : Aggregate value of FCF for S&P 500 Ex-Financials constituents
- EV (Enterprise Value): Aggregate value of Total Market Cap + Total Debt – Cash for S&P 500 Ex-Financials constituents
- Perpetual Growth Rate: Historical FCF growth rate of 6% (FactSet) reduced to 4% for conservative input
- Discount Rate: Equity Risk Premium = 5.5%. Sourced from Duff and Phelps recommended US equity risk premium
- Discount Rate: 20 Year Treasury Yield: Sourced from www.treasury.gov

Source: Alpha Quant Models, FactSet, Duff & Phelps, U.S. Treasury. As of 4/15/2021.

Massimo Santicchia is a Co-Founder and Managing Member of Alpha Quant Models LLC. Massimo has over 20 years of investment experience including: CIO at Alpha Quant Advisors, CIO at Cypress Trust Company, and VP of Investment Strategy at S&P Investment Advisory Services LLC. His expertise encompasses fundamental, quantitative analysis, portfolio management and investment strategy development.

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