Some unpleasant valuation arithmetic for equities

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Introduction

Equity valuations have long been a source of major debate among financial market participants, and have returned to the fore recently as global equity markets continue to rise. The key question for fundamental investors is what constitutes equity fair value in the current economic environment and how deviations of equity prices from fair value impact returns. In this note, we study these important topics through the lens of Fulcrum's Macro Allocation and Risk System, MARS.

MARS is Fulcrum's fully systematic macro forecasting and portfolio construction engine.[1] It is an integral part of Fulcrum's flagship Diversified Absolute Return (DAR) Strategy (40% risk weight) and is a key building block in some of Fulcrum's external quantitative mandates. At its heart, MARS is a fundamental econometric model that estimates the linkages between the global economy, valuations and asset returns. By bringing these three blocks together in one model, MARS provides a coherent framework for studying the most important questions in macro investing from a macro-finance perspective.

In this note, we study the equity block inside MARS to unpack its views on developed market equity valuations. We exploit the tight link between valuations, future dividend growth and expected returns to assess current valuations, proxied by the price-dividend (P/D) ratio, and we discuss what current valuations might imply for future excess returns. We also discuss how MARS's forecasts of future dividend growth differ from equity analysts' expectations and what that implies for our fair value calculations.

MARS expects robust nominal dividend growth of around 10% per year over the next 5 years, driven by robust US economic activity and stable inflation. Despite the strong dividend forecasts, MARS finds the current P/D ratio sufficiently high that it attributes a substantial role to a valuation gap, implying lower future returns. Given current valuations, MARS estimates that developed market equities are 19% overvalued[2] and expects equities to return 5% per year over the long run, 50 basis points below what would be expected at fair-value prices (5.5% per year).

Methodology

We assess equity valuations by relating the P/D ratio to forecasts of future dividend growth, real risk-free rates and equity excess returns. Together, these forecasts provide a framework for assessing how much investors are paying for future dividends and what returns are consistent with that price. We present the formal equations and derivation in the appendix.

The starting point is the period return received by the equity investor – dividends plus the price in the next period, divided by the current price. Rearranging this relationship links today's P/D ratio to subsequent dividend growth, returns and valuations. Extending it over future periods gives a

[1] For a high-level introduction to MARS, see Juan Antolin-Diaz and Justin Simler (2024), "A new approach for systematic strategies."
[2] We define overvaluation as the percent change in the current price required to reach model-implied fair value, conditional on MARS forecasts.

present-value representation in which the current ratio depends on the full expected paths of dividend growth, real risk-free rates and excess returns over cash.

Within this framework, higher expected dividend growth supports a higher price–dividend ratio, while higher expected real risk-free rates imply a lower ratio, holding other expectations fixed. A higher ratio can also be consistent with investors accepting lower future excess returns. The representation sheds light on an important aspect of valuation analysis -- the P/D ratio must be viewed alongside these expectations, rather than compared with its historical average in isolation.

We use current and historical vintages of MARS forecasts to quantify these components. We define the contribution associated with expected dividend growth and real risk-free rates as the "fundamental component" and define the remaining contribution, associated with expected excess returns, as the "valuation gap". This decomposition allows us to assess how much of the ratio's deviation from its long-run mean is supported by the model's forecasts of fundamentals, and how much must be paid for by lower future excess returns.

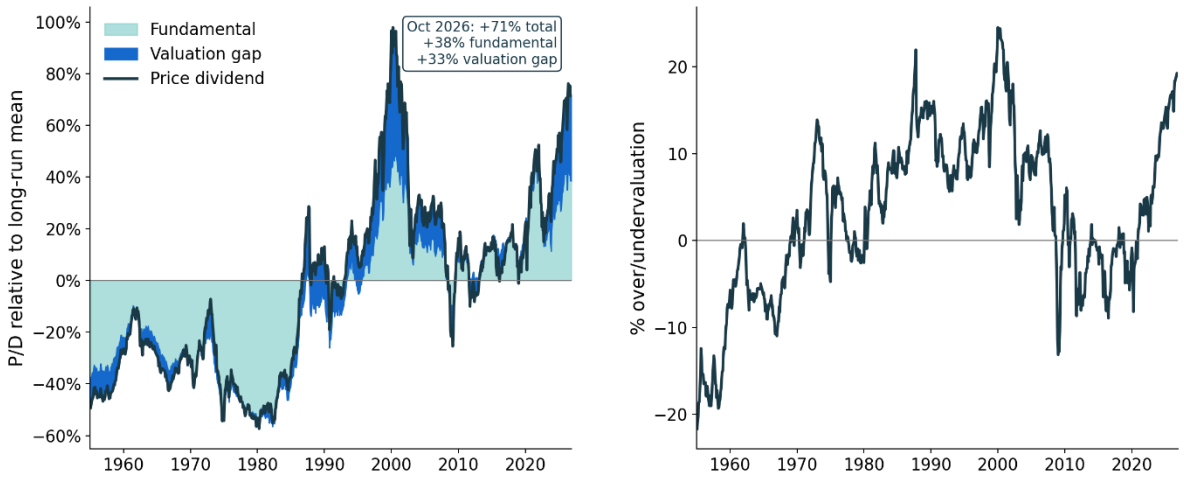
A 70-year history of equity valuations

Figure 1(a) expresses the present-value decomposition in percentage deviations of the price–dividend ratio from its long-run mean. The dark-teal line is the observed ratio relative to its mean. The pale-blue area is the part attributable to MARS forecasts of dividend growth and real risk-free rates (which we call 'Fundamental'). The dark-blue area is the part attributable to expected excess returns (which we call 'Valuation gap'). The two areas add to the percentage deviation observed by construction.

The chart shows that, up until the 1980s, the low (below average) P/D ratio was mainly driven by fundamentals (both high risk-free rates and low dividend growth). The valuation gap started opening up in the early 1990s and increased into the Dot Com bubble in the early 2000s. The increasing of the valuation gap implies a decrease in equity excess returns.

In 2020, MARS finds that the increase in the P/D ratio was primarily justified by fundamentals. The post-COVID rise in the ratio has outpaced the increase in dividend growth, leading to a re-opening of the valuation gap. Current estimates suggest that the price–dividend ratio is around 71% above its long-run mean: 38 percentage points (i.e. around half) can be attributed to the fundamental component and 33 percentage points (i.e. the other half) to the valuation gap.

Figure 1: Historical equity valuation measures



(a) Price-dividend decomposition (b) MARS over/undervaluation

Panel (a) decomposes the price–dividend ratio's percentage deviation from its long-run mean into a fundamental component and a valuation gap. Panel (b) shows the under/overvaluation metric associated with the price–dividend ratio.
Source: Fulcrum Asset Management LLP, DataStream, Bloomberg.

Figure 1(a) shows that current equity valuations are sufficiently elevated that they cannot be fully accounted for by either expected dividend growth or real rates, implying that equities are overvalued. To quantify the degree of overvaluation, we ask how much the equity price needs to fall from current levels to close the valuation gap (holding forecasts of dividend growth and real risk-free rates fixed). The computation thus gives us a conditional fair-value price for the equity market. Figure 1(b) plots the historical time series of this over/undervaluation indicator (positive values indicate overvaluation).

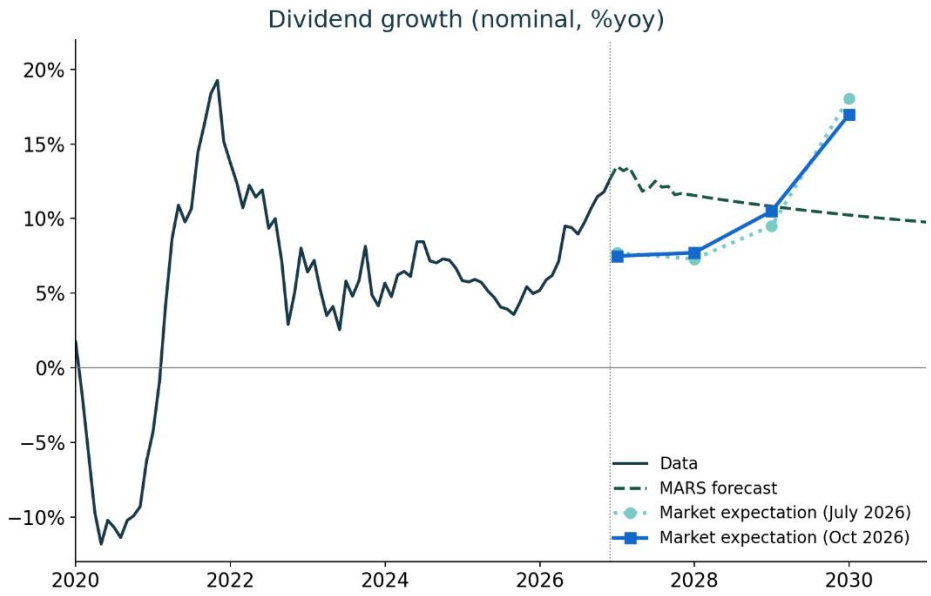
Currently, MARS estimates that equities are 19% overvalued, and this valuation has been increasing in the post-COVID period. The historical data provides useful context, showing that equities have only reached this level of overvaluation two times over the past 70 years – once very briefly in the late 1980s and again in the late 1990s.

Both panels in Figure 1 shed light on a very important aspect of valuation arithmetic. Over/under valuation cannot be determined by looking at the valuation ratio in isolation against its own history. They are determined jointly, alongside forecasts for real rates, dividend growth and excess returns. For example, P/D ratios were close to long-run averages in the late 1980s; but equities were 20% overvalued. Similarly, the price-dividend ratio was significantly below long-run averages in 1980, but they were close to fairly priced.

An important input to the valuation computation is the MARS dividend-growth forecast. Figure 2(a) compares the model's nominal year-on-year dividend growth with Bloomberg analyst estimates for MSCI World for July and October 2026. Both analyst vintages show dividend growth rising towards 2029, although the October estimates show slightly higher 2028 growth and slightly lower 2029 growth. Both analyst paths are below MARS's forecasts in 2026–2028 and above it in 2029.

Nevertheless, over the 2025–2029 period, MARS expects 11.5% dividend growth on an annualised basis, which is slightly higher than analyst estimates, at 10.6%.[3]

Figure 2 (a):



[3] The analyst workbook reports MSCI World annual dividends per share. MARS growth is compounded from its monthly nominal dividend-growth path between December 2025 and December 2029, using history through November 2026 and forecasts thereafter. Both series concern developed market equities, although annual dividend totals and December-to-December growth differ in timing.

Figure 2 (b):

Equity excess return sensitivity to dividend growth forecasts

Nominal dividend growth (%/yr)	Over / under-valuation	Implied equity excess return (%/yr)
5.75	+48%	3.87%
6.00	+43%	4.12%
6.25	+37%	4.37%
6.50	+30%	4.62%
6.75	+22%	4.87%
6.85 ◀ MARS forecast	**+19%**	**4.97%**
7.00	+14%	5.12%
7.25	+5%	5.37%
7.38 ◀ fair value	**+0%**	**5.50%**
7.50	-5%	5.62%
7.75	-16%	5.87%

Figure 2(a): nominal dividend growth for MSCI World, with analyst forecasts, July and October 2026. Figure 2 (b): conditional valuation and expected excess returns under alternative full-path nominal dividend-growth assumptions, holding MARS real-rate and inflation forecasts fixed. Positive valuation entries denote percentage falls from the observed price to conditional fair value. Sources: Bloomberg; Fulcrum Asset Management LLP.

The analyst forecasts cover only the years shown in Figure 2(a), while our present-value approach depends on the full future dividend path. Figure 2(b) therefore reports a range of conditional outcomes for alternative nominal dividend-growth assumptions, holding the real risk-free-rate and inflation paths fixed at the MARS forecasts. MARS expects nominal dividend growth to be around 6.85% per year over the long term. When compared to current P/D, this implies a 19% overvaluation and an equity excess return of 4.97% per year. For equities to be fairly valued at current prices, MARS suggests that nominal dividend growth should be 7.4% (holding fixed risk-free rate paths), which then sets the excess return to its long-run mean of 5.50% per year.

Conclusion

MARS provides a coherent framework for assessing equity valuations alongside forecasts of the economy and asset returns. The decomposition shows that the price–dividend ratio alone is insufficient to establish whether equities are expensive; its level must be assessed against the full expected paths of dividend growth and real risk-free rates. In the current estimates, roughly half of the ratio's 71% deviation above its long-run mean is attributable to fundamentals, with the remainder attributable to a valuation gap.

Despite robust near-term dividend-growth forecasts, MARS estimates that developed market equity prices would need to fall approximately 19% to reach conditional fair value. The implied equity excess return is equivalent to just under 5% per year, compared with fair value mean of 5.50%. Holding the MARS real-rate and inflation paths fixed, MARS estimates that fair value requires an annual nominal dividend growth of 7.4%. MARS currently expects 6.85%.

For asset allocation, the valuation input points to a marginally lower equity weight than a long-run strategic allocation would imply. MARS combines this input with shorter-term signals for activity, inflation, volatility, momentum and risk appetite to determine its total dynamic equity allocation.

Appendix: Valuation equations

Let P_t be the real, ex-dividend equity price and D_t the real dividend. An investor holding equity from t to $t+1$ receives the dividend D_{t+1} and the equity price P_{t+1}. The real log total return to equity over one period is given by

$$\boldsymbol{r_{t+1} = \log\left(\frac{P_{t+1} + D_{t+1}}{P_t}\right)} \qquad \boldsymbol{(1)}$$

We transform equation (1) to state the price-dividend ratio today (pd_t) in terms of dividend growth (Δd_{t+1}), next period's equity return (r_{t+1}) and the next period's price dividend ratio (pd_{t+1}).[4,5]

$$\boldsymbol{pd_t \simeq \kappa + \Delta d_{t+1} - r_{t+1} + \rho pd_{t+1}} \qquad \boldsymbol{(2)}$$

Another way to write the price dividend ratio is the present value representation.[6] This representation is especially useful as it splits up the current level of the P/D into three parts: one related to future dividend/cash flow growth, one related to the risk-free rate and one related to future excess returns to cash.[7]

$$\boldsymbol{\widetilde{pd}_t \simeq \mathbb{E}_t \sum_{j=0}^{\infty} \rho^j \widetilde{\Delta d}_{t+1+j} - \mathbb{E}_t \sum_{j=0}^{\infty} \rho^j \tilde{r}^f_{t+1+j} - \mathbb{E}_t \sum_{j=0}^{\infty} \rho^j \tilde{x}_{t+1+j}} \qquad \boldsymbol{(3)}$$

dividend growth — real risk-free rate — equity excess return

The equation shows that any change in the price-dividend ratio can be decomposed into some combination of changes in cash flows, risk-free rates and risk premia. For example, an increase in the price-dividend ratio could be fully justified by an increase in expected cash flows or a fall in risk-free rates (or both).

However, any increase in the price-dividend ratio in excess of changes in cash flows and risk-free rates must be accounted for by a decrease in future excess returns. In that sense, the equation clearly shows how valuations are associated with future expected returns. Since the equity excess return in Equation (3) is a present value, it tells us that higher valuations (in excess of those justified by cash flows and risk-free rates) reduce the cumulative sum of excess returns, but it does not tell us *which path* of returns is most likely.

We quantify the discounted sums in Equation (3) using current and historical vintages for MARS forecasts of real dividend growth, real risk-free rates and equity excess returns.

[4] Here κ and ρ are constants, and variables are expressed in the natural logarithm.
[5] John Y. Campbell and Robert J. Shiller (1988), The Dividend-Price Ratio and Expectations of Future Dividends and Discount Factors, *The Review of Financial Studies*, 1(3), 195–228.
[6] We apply Equation (2) successively, taking expectations and imposing a no-bubble condition. The no-bubble condition requires the discounted expected price–dividend ratio at an increasingly distant horizon to tend to zero. This is a long-run restriction that essentially rules out Ponzi-schemes; it does not require the observed price to equal fundamental value at every date.
[7] All the variables are written in terms of their deviations from long-run averages (denoted by tilde).

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