Midas V1 Factor Model

$$V_0 = V_{t-1} \cdot (1 + F_{\text{macro}} + F_{\text{fundamental}} + F_{\text{noise}})$$

Formula adjusted because price changes proportionally to the stock's price instead of incrementally.

$\mathbf{F_{macro}}$

$$F_{\text{macro}} = w_Y Y(t) + w_{\text{GDP}} \text{GDP}(t) + w_L L(t) + w_U U(t) + w_O O(t) + w_{CCI} \text{CCI}(t) + w_{FB} \text{FB}(t) + w_{\text{IPI}} \text{IPI}(t) \cdot$$

- **Y(t): Yield curve (reflects market expectations)**

$$Y(t) = \frac{\text{10-year Treasury yield} - \text{1-year yield}}{\sigma_Y}$$

  where σ_Y is the standard deviation of yield spread.

- **GDP(t): GDP growth**

$$\text{GDP}(t) = \frac{\text{GDP}_t - \text{GDP}_{t-1}}{\text{GDP}_{t-1}}$$

  Source: OECD

- **L(t): Inflation measured by CPI**

$$L(t) = \frac{\text{CPI}_t - \text{CPI}_{t-1}}{\text{CPI}_{t-1}}$$

  Source: Bureau of Labor

- **U(t): Unemployment (indicates market conditions)**

$$U(t) = \frac{U(t) - MU}{\sigma_U}$$

  Source: BLS

- **O(t): Oil prices (lower is better)**

$$O(t) = \frac{\text{OPE}_t - \text{OPE}_{t-1}}{\text{OPE}_{t-1}}$$

  Source: EIA, Yahoo Finance API

- **CCI(t): Consumer sentiment (University of Michigan)**

$$\text{CCI}(t) = \frac{\text{CCI}_t - \text{CCI}_{t-1}}{\text{CCI}_{t-1}}$$

Source: University of Michigan Consumer Sentiment Index

- **FB(t): Fed's balance sheet (monetary stimulus indicator)**

$$\text{FB}(t) = \frac{\text{Assets}_t - \text{Assets}_{t-1}}{\text{Assets}_{t-1}}$$

Source: FRED

- **IPI(t): Industrial output**

$$\text{IPI}(t) = \frac{\text{IPI}(t) - \text{IPI}(t - 12)}{\text{IPI}(t - 12)}$$

Source: FRED

- **HS(t): Housing starts (new home construction)**

$$\text{HS}(t) = \frac{\text{Starts}_t - \text{Starts}_{t-1}}{\text{Starts}_{t-1}}$$

Source: Census Bureau or FRED

- **FX(t): Exchange rates (currency strength)**

$$\text{FX}(t) = \frac{\text{DXY}_t - \text{DXY}_{t-1}}{\text{DXY}_{t-1}}$$

Source: DXY Index, FRED

- **VIX(t): Volatility (market risk)**

$$\text{VIX}(t) = \frac{\text{VIX}_t - \text{VIX}_{t-1}}{\text{VIX}_{t-1}}$$

Source: Yahoo Finance