

Muzinich M2 Score methodology

Fundamental DNA. Systematically Scaled.

M2 combines advanced data science with deep fundamental expertise, delivering a scalable and differentiated signal for DM equity markets.

1. Introduction

The Muzinich M2 Score is a proprietary equity scoring framework designed to rank companies based on a combination of fundamental strength, valuation, financial structure and market behaviour.

The score reflects Muzinich's long-standing expertise in fundamental credit analysis, combined with systematic data-driven techniques, and is intended to provide a consistent and scalable assessment of company quality and relative value across developed equity markets.

2. Investment Universe

The M2 Score is applied to the following universe:

- **Benchmark:** MSCI World
- **Coverage:** Large Cap and Mid Cap equities
- **Minimum Market Capitalization:** USD 10 billion

The universe is reviewed periodically to ensure consistency with the reference benchmark.

3. Definition of the M2 Score

The M2 Score is defined as a scalar value assigned to each company in the universe.

The score is designed to:

- rank companies cross-sectionally
- provide an estimate of the likelihood that a company's economic value exceeds its market capitalization

Formally:

The M2 Score can be interpreted as a measure of relative attractiveness, where higher values indicate a higher estimated probability that economic value exceeds market capitalization.

4. Model Architecture

The M2 Score is derived from a multi-model framework combining three primary components:

4.1 Fundamental Model, (*Neural Network mainly based on Fundamental Analysis, ANN_{FA}*)

Captures company-level fundamental characteristics, including:

- profitability metrics
- leverage and capital structure
- coverage ratios
- earnings quality indicators

4.2 Technical Model, (*Neural Network mainly based on Technical Analysis, ANN_{TA}*)

Captures market behaviour and trading dynamics, including:

- price momentum
- volatility measures
- trading patterns and liquidity signals

4.3 Fair Value & Risk Model, (*Neural Network mainly based on Muzinich Risk and Fair Value Metrics, ANN_{FVR}*)

Captures valuation and downside risk characteristics, including:

- valuation ratios
- credit-derived metrics
- measures of financial resilience and downside protection

Each component is implemented using non-linear machine learning models, primarily based on Artificial Neural Networks (ANNs), trained on historical datasets.

5. Score Construction

Let:

$i \in U$ index companies in the investment universe

$X_i \in \mathbb{R}^d$ denote the vector of observable features for company i

$X_i = (X_i^F, X_i^T, X_i^R)$, where:

- X_i^F : fundamental variables
- X_i^T : technical/market variables
- X_i^R : risk and valuation variables

Let V_i^* denote the (unobserved) economic value of company i , and M_i its market capitalization, the objective of M2 framework is to estimate:

$$P(V_i^* > M_i \mid X_i)$$

meaning the estimated probability that economic value exceeds market capitalization.

The intermediate signals are combined via a non-linear aggregation function:

$$S_i = g(ANN_{FA}(X_i^F), ANN_{TA}(X_i^T), ANN_{FVR}(X_i^R))$$

The final M2 score is obtained through a monotonic transformation:

$$M2_i = \sigma(S_i)$$

where:

- $\sigma(\cdot)$ is a sigmoid-like function ensuring:

$$M2_i \in (0,1)$$

Thus:

$$M2_i \approx P(V_i^* > M_i \mid X_i)$$

6. Inputs and Data Sources

6.1 Input Categories

The model incorporates multiple categories of input data, including:

- **Fundamental data:** financial statements, profitability, leverage and cash flow metrics
- **Market data:** prices, returns, volatility and trading activity

- **Risk and valuation data:** credit-based indicators and valuation measures

6.2 Data Sources

Data is sourced from:

- publicly available market and financial datasets
- proprietary datasets derived from Muzinich's investment platform

7. Model Training and Calibration

The underlying models are trained on historical datasets covering multiple market cycles.

Training incorporates:

- structured financial data
- time-series market data

Model calibration is performed periodically to maintain stability and robustness.

Detailed aspects of model architecture, feature engineering and training processes are proprietary.

8. Handling of Special Cases

8.1 New Entrants

Companies are included in the scoring universe once sufficient data history is available.

8.2 Missing Data

Missing data is addressed through:

- data imputation techniques
- model-level robustness mechanisms

8.3 Outliers

Outliers are managed through:

- normalization procedures
- model constraints designed to limit undue influence

9. Output and Ranking

The M2 framework produces:

- a **score** for each company
- a **cross-sectional ranking** of the universe

The ranking is used to identify companies with relatively higher expected economic value compared to market capitalization.

10. Update Frequency

The M2 Score is updated on a **quarterly basis**, typically following corporate earnings reporting periods.

It is available at Quarter End + 2months + 5 business days.

Important information

This document is provided for informational purposes only. It does not constitute investment, legal, tax or accounting advice, nor a recommendation, offer or solicitation to buy or sell any security or financial instrument, or to adopt any investment strategy. It does not constitute an offer of investment management or advisory services in any jurisdiction in which such an offer would be unlawful.

The M2 Score is a quantitative output produced by a systematic model. A high score does not constitute a recommendation to purchase, and a low score does not constitute a recommendation to sell or avoid, any security. Scores are one input among several within Muzinich's broader investment process and are not determinative of any investment decision. Inclusion of a company in the scoring universe does not imply that Muzinich holds, has held, or intends to hold, any position in that company.

The M2 Score is not a credit rating and is not intended to be, and must not be used as, a measure of creditworthiness, credit quality or likelihood of default.

The M2 Score is derived from quantitative models that rely on assumptions, historical data and simplified representations of complex market dynamics. Models may contain errors in specification, implementation, data handling or calibration, and may perform differently — or fail — in market conditions not represented in the data on which they were trained. No representation is made that the models will achieve their stated objectives or that the relationships identified in historical data will persist.

No representation or warranty is made as to the accuracy, completeness or predictive value of the M2 Score. Investing involves risk, including possible loss of principal. Nothing in this document should be relied upon as a promise or representation as to future results.

The M2 framework employs artificial neural networks and other non-linear machine learning techniques. Such models identify statistical associations in historical data rather than causal relationships, and their internal logic is not fully interpretable or explainable in conventional terms. They are subject to risks including, without limitation: overfitting to historical data; degradation of predictive power as market regimes change ("model drift"); sensitivity to input data quality; and instability of outputs following recalibration. Model outputs are statistical estimates, not statements of fact or forecasts of any specific outcome.

References in this document to the "probability" that a company's economic value exceeds its market capitalisation describe a model-implied construct derived from historical relationships. Economic value is not directly observable and cannot be verified ex post. The M2 Score should therefore be understood as a relative, cross-sectional ranking measure rather than an objectively measurable or statistically validated probability. Scores are comparable across companies within the universe at a given point in time; they are not intended to be interpreted on an absolute basis or compared across time periods without reference to the prevailing calibration.

The M2 Score is produced by systematic processes subject to human oversight, review and governance by Muzinich's investment and risk functions. Model outputs are not executed automatically and do not replace fundamental judgement. Muzinich retains discretion to override, disregard or suspend use of model outputs.

The methodology described herein represents the framework as at the date of this document. Muzinich may modify, recalibrate, suspend or discontinue the M2 Score, its inputs, its universe or its construction methodology at any time and without notice. Changes may result in materially different scores for the same company. Historical scores may be

restated following recalibration.

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The M2 Score is updated quarterly and is published at quarter end plus two months and five business days. Accordingly, the score reflects information as at the relevant reference date and may not reflect subsequent corporate events, market developments or changes in company circumstances. Scores should be read as at their stated reference date only.

The scoring universe is limited to large- and mid-capitalisation constituents of developed markets with a minimum market capitalisation of USD 10 billion. Scores are not comparable to, and no inference should be drawn regarding, companies outside this universe. Changes to the reference benchmark's composition may affect the universe and the resulting cross-sectional rankings.