# Moodys’ Model

: Published Credit Rating of Company ,

: Credit Score Transform Table



: Moodys Credit Score (Unknown)

: Moodys Credit Score Adjustment(Unknown)

Then,

Score of Factor j of Company , where



Each factor has sub factor(s).

* Scale

are Transform Table where



* Competitive Landscape

This score is calculated by unknown procedure.

They says, “*This factor includes* ***an assessment of the defensibility of a company’s business position that incorporates items*** *such as pricing pressure, product substitution, and other barriers to entry like patents, product differentiation, investment requirements, customer relationships, or channels to market*.” and “*Another consideration that informs our measurement of competitive landscape is o****ur estimate of the market share ranking for the company’s core market or the majority of its segments using public data from company financial statements, market research reports, issuer presentations and/or Moody’s internal research****. An issuer is ranked highest if it is a clear dominant market leader in its core business.*”

This is so called fundamental research. In this process they use both quantitative and qualitative factors.



* Operating Performance Stability

*“Operating margin stability is measured on a rolling twelve-month basis over the past five years and is measured as the average of five years’ operating margins divided by the standard error of the data points.”*

*“Free cash flow margin is measured as free cash flow divided by revenue. Free cash flow margin stability is measured on a rolling twelve-month basis over the past five years and is measured as the average of five years’ free cash flow margins divided by the standard error of the data points.”*

Transform Table are



* Financial Strength

Transform Tables are



Then,

where

# Our Model

Unknown part of Moodys’ model (**bold**):

where

If we omit unknown part, the model reduced to

We assume we and Moody’s use same information (e.g. We use same Free Cash Flow, EBITDA …). If this assumption is violated, we cannot handle it.

Let we assume we can get and , then we define error as

Then we determine which predictors explain unknown part **.**

* How to calculate error b/w our estimate and moodys’?

We can observe , but we cannot observe and . This means that we cannot compare and .

<Method 1> Take median of the score

If we observe and get , we regard (Median of the table) and calculate error as .

<Method 2> Comparison b/w rating

If we observe and , compare them directly.

…

## Indentify (Replicate) unkown part



* Possible explanation
  + Adjustment in Same direction
    - Sector Outlook

If the future of Technology/Hardware industry is hopeless, they may do negative adjustment to most companies.

* + - Specialization/Diversification of business

Some companies are specialized in producing some specific product(s) (Hard disk, Memory, and so on). If that products becomes worthless, their business will also be worthless.

* + - Macroeconomic Situation

If US economy is in depression, they may do negative adjustment to most companies.

* + Individual Factor
    - If there is important information everyone cannot see from financial statement, they include that information by adjustment.

Remember that they says,

“*This factor includes* ***an assessment of the defensibility of a company’s business position that incorporates items*** *such as* ***pricing pressure****,* ***product substitution****, and* ***other barriers to entry like patents****,* ***product differentiation****,* ***investment requirements****,* ***customer relationships****, or c****hannels to market***.”

and

“*Another consideration that informs our measurement of competitive landscape is our estimate of* ***the market share ranking for the company’s core market or the majority of its segments using public data from company financial statements, market research reports, issuer presentations and/or Moody’s internal research****. An issuer is ranked highest if it is a clear dominant market leader in its core business.*”

If we can get that information, we can construct a model which explains the information has.

* Example: Predictor of Market share

Let : Sales amount (USD) of company i. Then,

* Estimation of (Statistical Part)

Let

Then we identify the function and select *Z*.