Our Theme is

“Prediction on the direction of Credit Ratings”

1. Background

Credit Rating:

A credit rating is **an evaluation of the credit worthiness of a debtor**, especially a business (company) or a government, but not individual consumers. **The evaluation is made by a credit rating agency** of the debtor's ability to pay back the debt and the likelihood of default. (Wikipedia)

The changes of credit rating are important for the investors who invest their asset on the financial products which have credit risk, such as credit bond, credit derivatives, and so on.

Once the changes of credit rating announced, the price (value) of the product changes. If the credit rating goes up, the value also goes up and vice versa. In other words, it is too late to make an action after the announcement of the changes of credit rating.

In this sense, it is important to predict the changes of credit ratings. For example, if we know that there is a risk that the credit rating of a company goes down, we can sell the corporate bond of that company before its price going down.

1. Objective/Data source

Our objective is to predict the changes of credit ratings in future.

* Y: Stable or going up(0)/ going down (1)

For instance, if the a company is ranked ‘A’ at time t,

A→A, AA, AAA at time t+1: 0

A→BBB, BB, B, C, D at time t+1: 1

To predict Y, we use the data of the companies as X that is available when we make a prediction. In our study, we set our prediction period as 1Q or 1 Year.

The following items are the potential X

* Return on Asset (ROA)
* Free cash flow
* Company’s size
* Debt
* EBITDA (Earnings before Interest, Taxes, Depreciation and Amortization
* …

Since we predict the direction of the credit ratings, X(t) – X(t-1) or (X(t)-X(t-1))/X(t) would be better than X(t) to make prediction.

<Data Source>

These data are available on Bloomberg.

<Potential model limitation>

Since Credit Rating Companies use not only quantitative data but also qualitative data, our model cannot capture all rating action of them. In addition, the information comes from financial statement are available only quarterly. Therefore, our model clearly fails to capture the changes of credit rating do to radical changes of credit worthiness (scandal, lawsuit, disaster and so on).

Therefore, our model should be used as a ‘signal’. It means that it is dangerous to make a decision by this model only.

1. Methodology

Since our explained variable is binary (Stable or going up/ going down), the following methods that are used in classification would be considered.

* LDA
* Logistic Regression
* SVM
* Decision Tree
* …

1. Results

Not available now

1. Conclusion

Not available now