

An upgrade or downgrade-

- may change market's perception of credit risk
- may lead to a change in the security's price

SECURITIZATION

Securitization refers to the process of transforming debt instrument into a security.

- Portfolio of assets "pooled" and transferred => Special Purpose Vehicle (SPV)/the issuer.
- Issuer SPV: a tax-exempt company or trust formed for funding the assets.
- The issuer SPV issues securities to buy the assets from the originator.
- Investors purchase the securities in the open market, or sometimes (less common) through a private offering.

Structured securitization-

ORIGINATOR(providers of loan) sells their loans to special purpose vehicles and the SPVs pay the banks by the funds provided by the investors. Where investors buy securities/bonds from SPVs.

- If originator(bank) goes bankrupt, the creditor (SPV) will not get the benefits of the assets.
- Performance of securities is directly linked to performance of assets
- As the loans are bought by the SPV, the originator can free their assets from the balance sheet and do more business
- SPV is bankruptcy remote i.e., it cannot be insolvent

IN THIS CASE, THE BANKS INCORPORATE A SPV WHICH BUYS THE ASSETS/LOANS FROM THE ORIGINATOR(BANKS), DIVIDE THE LOANS INTO GROUPS/TRANCHES AND THEN SELL THOSE ASSETS IN THE FORM OF BONDS TO DECREASE THE CREDIT RISK.

THE BONDS ARE BASICALLY PARTS OF ASSETS WHICH ARE SOLD TO THE INVESTORS. THE INVESTORS PAY THE PRINCIPAL OF THE DEBT AND EARN PERIODIC INTEREST ON IT. THE AMOUNT IS TO BE RETURNED BY THE SPV. THE BOND DOES NOT GIVE ANY PARTICIPATING RIGHT TO THE INVESTORS.

CREDIT STRUCTURING- Credit enhancement required for sufficient credit quality, ways to enhance-

- Internal credit enhancement.
- Subordination (overcollateralization in note form junior to more senior notes).
- Overcollateralization (assets > notes).
- Reserve fund.
- Excess spread.
- External credit enhancement.
- Letter of credit, swap

Securitization REPAYMENT Structures-

- *Static pool- No more mortgages allowed if the previous mortgage is still outstanding.*
- *Revolving pool- More mortgages/loans can be added but it must be aligned to the restrictions.*

WATERFALL-

Modern Portfolio Theory Limitations

Assumes that asset returns follow a normal distribution.

In real life asset returns may follow a leptokurtic distribution, or heavy tailed distribution.

Assumes investors:

- have homogeneous expectations and make the same choices; this applies to inputs used to develop efficient portfolios, including asset returns, variances and covariances.
- are rational and avoid risk when possible;
- are not large enough/have capacity to influence market prices; and
- investors have unlimited access to borrowing and lending money at the risk-free rate.

In real life:

- Investors may have **heterogeneous expectations**, make different choices and use different inputs to develop their portfolios.
- the market **can include irrational and risk-seeking investors**;
- **large market participants can potentially influence market prices**; and
- **investors do not have unlimited access** to borrowing and lending money at the risk-free rate.

Modern Portfolio Theory Limitations

- Measures are based on expected values, which means that they are mathematical statements about the future (the expected value of returns is explicit in the above equations, and implicit in the definitions of variance and covariance).
- **In practice**, investors use historical estimates of asset return and volatility for these values in the equations. Such expected values fail to take into account events that do not exist in historical data.
- For mean-variance optimization framework, accurate estimation of the **variance covariance matrix is critical**. Possible alternative for example may include forecasting with a Monte-Carlo simulation.
- Allowing the modelling process for empirical characteristics in stock returns such as potential auto-correlation, skewness, and kurtosis is important.
- **Not accounting for these attributes can lead to severe estimation error in the correlation and variance covariance matrix and thus to the final results!!!**

ALTERNATIVES

- Autoregressive (AR) model- There's some level of serial or auto correlation between the returns across time i.e. the return generated this year is linked to the returns generated in past.
- Monte Carlo Simulation- Assumptions are made about the mean, standard deviation and correlation which helps in creating several hypothetical outcomes. The simulated returns are sorted (highest to lowest) and organized into probability percentile ranges. The simulated returns (%) are then used to calculate wealth values (\$). Also, the necessary changes in input to evaluate precise output.

LECTURE 7

Capital Asset Pricing model-

$$\text{Return} = r_f + \beta_i (r_m - r_f)$$

β_i measures security's i contribution of total risk of a well-diversified portfolio, namely the market portfolio. It measures the non-diversifiable risk of the stock.

- Investors are compensated for holding systematic risk in the form of higher returns
- The magnitude of compensation depends on the equilibrium risk premium-- $(r_m - r_f)$