

Beta – Investment Safety Indicator

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How should investors gauge risk when they purchase or sell stocks? As we know, the concept of risk is extremely hard to pinpoint and subsequently factor into stock analysis and valuation. Is there any rating – some sort of letter, number or phrase that can make the job simple for investors?

Beta is one of the popular indicators used for risk management. Stock markets analysts frequently use this statistical measure to sense the risk associated with any particular stock of listed companies. In corporate finance, Beta (β) implies financial elasticity and can be referred to as a measure of volatility or systematic risk of a particular stock in comparison to the capital market as a whole.

Correlations are even evident between stocks within the same industry, as was regularly demonstrated in various major historical stock market movements including the latest crash of 2008. This correlated risk, measured by Beta, creates almost all of the risk in a diversified portfolio. On an individual asset level, measuring Beta can also give hints of liquidity in the marketplace.

Beta coefficient is a key parameter in the Capital Asset Pricing Model (CAPM). It measures the part of the asset's statistical variance that cannot be alleviated by the diversification provided by the portfolio of many risky assets, because it is correlated with the return of the other assets in the portfolio. Beta can be calculated for individual companies using regression analysis against a stock market index.

The formula for the Beta of an asset within a portfolio:

$$\beta_a = \frac{\text{Cov}(r_a, r_m)}{\text{Var}(r_m)}$$

r_a = Rate of Return of Asset
 r_m = Rate of Return of the market portfolio
 Cov(r_a, r_m) = Covariance between Rates of Return

By definition, the market itself has an underlying Beta of 1, and individual stocks are ranked according to how much they deviate from the macro market. BSE Sensex is usually used as a proxy for the market as a whole while calculating Beta for any listed companies in India. A stock that swings more than the market over time has a Beta whose [absolute value](#) is above 1. If a stock moves less than the market, its Beta will naturally be less than 1. A positive Beta means that the asset generally follows the market. A negative Beta shows that the asset inversely follows the market; the asset

generally decreases in value if the market goes up and vice versa. An asset with 0 Beta means it is totally independent and its price is not at all correlated with the market.

Example: Impact of Capital Market movement on assorted stocks with differential Beta:

Stock Market Movement	Beta	Movement in Stock	Impact on Stock
+ 5% (UP)	- 2	DOWN	- 10%
+ 5% (UP)	+ 1	UP	+ 5%
+ 5% (UP)	+ 2	UP	+ 10%
+ 5% (UP)	0	No Change	0
- 5% (DOWN)	- 2	UP	+ 10%
- 5% (DOWN)	+ 1	DOWN	- 5%
- 5% (DOWN)	+ 2	DOWN	- 10%

More specifically, a stock that has a Beta of 2 follows the market in an overall decline or growth, but does so by a factor of 2; meaning when the market has an overall decline of 5% a stock with a Beta of 2 will fall 10%. Beta can also be negative, meaning the stock moves in the opposite direction of the market: a stock with a Beta of -2 would decline 10% when the market goes up 5% and conversely would climb 10% if the market fell by 5%.

Beta has no upper or lower bound, and Beta value of 3 or 4 can be possible with highly volatile stocks. Higher-Beta stocks mean greater volatility and are hence, considered to be riskier, but in turn have a potential for higher returns. On the other hand, low-Beta stocks carry less risk but also offer lower returns. Beta can also be zero. Some zero-Beta assets are risk-free, such as cash and government bonds. However, **simply because a Beta is zero does NOT mean that it is risk free.** A Beta can be zero simply because the correlation between that item and the market is zero. An example would be betting on horse racing / lottery. The correlation with the market is zero, but it is certainly not a risk free endeavor.

One needs to appreciate that historical price movements may not always help to predict the future. Beta is like a rear view mirror which can hardly reflect what lies ahead. It is advisable for investors to make the distinction between short term risk – where price volatility and Beta are useful and long term risk – where fundamentals and overall risk factors need to be looked into. High Beta may mean very high risk followed by price volatility in the nearby future, but there could be hidden long term opportunities as well.

“Safety is the most productive business”