CAPM pre and post demonetization: case study of few Indian securities

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Abstract :
Many of the fund managers, stock brokers, individual, mutual funds and various other professional stock markets information users had been continuously trying to yield better results than earlier or beat the market by generating more returns than the market return. At this juncture the question of utmost importance is whether this reliance on the previous performances of stocks and portfolios is a result of better investments and trades or just a matter of chance. Human nature to believe on the individual's skills sets for the successful returns and fate or chance for the failure is an old phenomenon. As a mode of reliance on model is concerned the debate starts with Capital Asset Pricing Model (CAPM) and its existence. Traditionally the CAPM beta had been a mark of systematic risk, i.e non-diversifiable risk of a portfolio return due to exposure to the market. In other words beta is the correlation between the assets excess return over the return of market portfolio. This paper tries to understand the current stature of CAPM in Indian stock market with few real companies data taken from NSE.

IndexTerms **– CAPM, Efficient Market Hypothesis, Jensen Alpha, CAPM Beta, NSE India.**

I. INTRODUCTION

Many of the fund managers, stock brokers, individual, mutual funds and various other professional stock markets information users had been continuously trying to yield better results than earlier or beat the market by generating more returns than the market return. At this juncture the question of utmost importance is whether this reliance on the previous performances of stocks and portfolios is a result of better investments and trades or just a matter of chance. Human nature to believe on the individual's skills sets for the successful returns and fate or chance for the failure is an old phenomenon. As a mode of reliance on model is concerned the debate starts with Capital Asset Pricing Model (CAPM) and its existence. Traditionally the CAPM beta had been a mark of systematic risk, i.e non-diversifiable risk of a portfolio return due to exposure to the market. In other words beta is the correlation between the assets excess return over the return of market portfolio. This paper tries to understand the current stature of CAPM in Indian stock market with few real companies data taken from NSE (companies had been intentionally masked to make a fair decision without taking into consideration the biases associated with the biases associated)
This paper is organized into four sections:

1. Introduction
2. CAPM: Support and critique
3. Empirical Results
4. Conclusion

"The most common cause of low prices is pessimism - sometimes pervasive, sometimes specific to a company or industry. We want to do business in such an environment, not because we like pessimism but because we like the prices it produces. It's optimism that is the enemy of the rational buyer." Buffett (1990)

The Capital Asset Pricing Model (CAPM) is one of the security valuation model that had been in existence for long, even with critics and various support studies. It is said to be disapprove in the same manner its being approved by the scholars and practioners. Still CAPM is considered as a mode of calculation of equity betas and alphas before making investment decisions. Debates are still on with the issues related to the death and live of this model. This paper is an empirical examination of the existence of the CAPM Model with the optimal portfolio with short selling i.e, the weights are allowed to have the negative values. For this the monthly data of four securities i.e, A, B, C and D (randomly selected from NSE India, companies had been intentionally masked to make a fair decision without taking into consideration the biases associated with the biases associated) were taken for a total period of three years i.e, January 1, 2016 to 31 December, 2018. For the risk free rate of return the 10-Year G-Sec Par Yield (FBIL) is taken.

Capital markets had been the place where the ownership of the economy's capital takes place between the players. At this place the investors get in return an assurance that the ownership will yield results in their favor in future for which they had paid the right price. The right price is judged based on the assumption that the securities prices reflect all the information concerning the present and future of the company to which the security belongs to. Prices of securities get affected by the behavioral aspect of individuals. Being pessimist is reflective through the security prices are the words of one of the most prominent investor Warren E. Buffett, Chairman and CEO of Berkshire Hathaway. He is admired for being a role model and follower of the classic value based investing. He is an

admirer and practioner of Graham and Dodd (1934) value investing, they had warned the investors for staying away from excess leverage, illiquidity and other market risk in their book Security Analysis.
In his 2019 Berkshire Hathaway Annual Meeting, he made these observations "The decision to buy Amazon's stock was just as much based on value investing principles as a decision to buy a statistically cheap stock. Value investing is about estimating and valuing future cash flows, not about how low a Price to Book or a Price to Earnings ratio is for a stock."

II CAPM: SUPPORT AND CRITIQUE

Abundantly used model available with the investors to evaluate their portfolio is considerable the Capital Asset Pricing Model (CAPM) of William Sharp, John Lintner and Fisher Black, effectively known as Sharpe-Lintner-Black model. CAPM is considered as a model which doesn't reveal truth but helps in a construct that needs to be empirically tested and proven. This model was build on the model of portfolio choice of Markowitz (1959), this model is also known as mean variance model. Later this model was enriched by Sharpe (1964), Lintner (1965) and Black (1972) with new alterations to the assumptions. They had concluded that the assets which are uncorrelated with the markets have the expected return as a combination of risk free rate of return. Also it had a beta premium equaling to the difference between the expected market return and the risk free rate of return. It is considerably a theoretical representation of behavioral aspect of financial markets under certain stated conditions, it an analytical tool for the financial managers. It's a combination of risky securities for the construction of a portfolio for risk reduction through diversification. This diversification is
Initially this model got acceptance from academia and industry both; later data during 1930s to 1960s was used by academicians to prove that there is positive relation between the beta of the portfolio and the average rerun that an investor s had got on creation of portfolio of stocks. Eugene F. Fama and James MacBeth, (1973) had tested that rejection of the hypothesis is not there for the average return on NYSE common stocks reflecting the attempts of risk averse investor to hold efficient portfolio. Even they had shown that there is an existence of tradeoff between return and risk, while risk being measured on the portfolio viewpoint. These views were taken positively by academicians and practioners. Kothari, Shanken and Sloan (1995) had shown that cross section of expected return had shown compensation ranging from 6% to 9% for beta risk while working with regression analysis of annual portfolio returns on the annual return on the equal weighted market index. The B/M equity and returns relations were found to be weaker than that of the Fama and French (1992) model. Jagannathan and McGrattan (1995) in their paper studied the Black (1972) model and concluded that the data used is consistent with the Black CAPM and beta calculated is the only unknown with a possibility to be calculated and a non-zero intercept. The proxies used for their paper was NYSE for market portfolio and 30 days T-bill rate as the risk free rate.

Even in 1970s, the work of Black (1972) was challenged with more emphasis on the non related market beta and the variations in expected returns. Later academia had seen the development on empirical analysis when in starting of 90's had shown evidences of inconsistency with the CAPM Eugene F. Fama and French Kenneth R. (1992). They had considered the data set during 1941 to 1990 where they concluded that the relationship between the beta and the average rate of return is weak and specifically for the period 1963 onwards its virtually nonexistent. They also emphasized on the negative relation between the firm's price to earnings ratio (P/E Ratio) and Market to Book (M/B Ratio). It was contradictory to the CAPM which had shown the relation of expected return on the security to the beta only, while ignoring any relationship with the P/E Ratio and M/B Ratio.

III Empirical Results:

The period considered for this empirical research was taken from the NSE India Website for the four companies (they have been masked by putting the different names of the companies i.e. A, B, C and D for respective companies).
The period considered for this study is January 1, 2016 to 31 December, 2018. Within this period the Indian economy had seen the demonetization and other policy decision of the government.
To hold CAPM true, it should have Jensen's alpha equals to zero and the coefficient of beta should be able in explaining the excess of market return in case of existence of Capital Asset Pricing Model.
Return without short selling yielded better security wise returns (Table 1) in comparison to the returns with the option of short selling of shares (Table 2). For all the securities the Jensen alpha had been negative or equal to zero hence all the returns are explainable with the presence of positive beta(s) in both the cases with the absence and presence of short selling in the securities.
Period wise data is shown for the convenience of readers to understand the position of securities during the three different year's i.e, P1=2016, P2=2017 and P3=2018.
In the case of without short selling its visible that in the P3 there are two securities B and C who had shown negative betas for the period, it might be the case of corrections in prices of securities or due to impact of government policies. It's a point of concern and need attention of researchers for further studies.

Table 1 Without Short Selling

	A	B	C	D
Mean	0.005070584	0.004830881	-0.004782813	0.002417187
SD	0.022942403	0.015065104	0.025497138	0.01707333
Min	0.022942403	-0.026803812	-0.018527176	-0.025368316
Max	0.022942403	0.053176017	0.084271923	0.04129097
Return (W/o Short Selling)	-0.334665979	-0.087054023	0.04576	-0.045836811
CAPM ALPHA	-0.002417487	0.002049888	-0.004100278	-0.00108247
CAPM BETA	1.645474494	0.796351905	1.060972709	0.924149722
CAPM ALPHA P 1	0.000447931	-0.000233377	-0.008799947	0.005189476
CAPM BETA P 1	1.721039958	0.738357718	1.296506048	1.018074574
CAPM ALPHA P 2	0.000525895	-0.002964501	-0.008104809	0.000517208
CAPM BETA P 2	1.878648226	1.141210729	1.052526033	0.794056156
CAPM ALPHA P 3	0.003086295	0.01079223	-0.005912114	-0.003923686
CAPM BETA P 3	2.63899789	-0.165627762	-0.652487711	1.797366575

In case of securities with the option of short selling (Table 2) the securities were able to correct their returns and yielded positive betas for the period P1, P2 and P3. It's an example of markets showing the efficiencies in the stock market and the securities. Here the securities are reflecting the polices of government on the prices of the securities, hence on the return on securities. As a security return proxy the short selling is a better risk-return and hedging instruments in the Indian stock markets.

Table 2 With Short Selling

	A	B	C	D
Mean	-0.001137513	-0.001670161	-0.001804609	-0.001461803
SD	0.021686148	0.014104044	0.019339713	0.023206864
Min	-0.117585225	-0.090284888	-0.06812067	-0.493239763
Max	0.093172413	0.051302045	0.102882935	0.090877189
Return (WTH Short Selling)	-0.001137513	-0.001670161	-0.001804609	-0.001461803
CAPM ALPHA	0.001128365	-0.000336001	-0.00049501	-0.000334607
CAPM BETA	1.513493362	0.891152045	0.874746371	0.752910141
CAPM ALPHA P 1	0.001349549	-0.000122715	-0.000903494	-0.000294762
CAPM BETA P 1	1.564051268	0.856887067	0.669026112	0.88298108
CAPM ALPHA P 2	0.000897923	-0.000282013	0.001026671	0.000660326
CAPM BETA P 2	1.580963366	0.83943273	0.869247137	0.675079677
CAPM ALPHA P 3	0.001075962	-0.000559899	-0.001486112	-0.001515355
CAPM BETA P 3	1.41494379	0.96162774	1.125296732	0.599555751

IV Conclusion

Indian stock markets are showing forms of efficiencies and securities are reflecting the impact of government policies and prices are adjusting themselves accordingly. With a Jensen alpha equaling to zero or negative and a relevant beta, shows that the Capital Asset Pricing Model is being of utmost importance for the Indian securities market and it is not dead.

For future studies the event studies like demonetization should be studies further in length with the other policy decisions to see the changes it had on the securities market and the returns associated with them.

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