EFFECT OF LEVERAGE ON STOCK RETURNS AND SYSTEMATIC RISK: EVIDENCE FROM PAKSITANI INDUSTRIES

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Abstract. *This paper evaluates the effect of leverage on stock returns and systematic risk in the corporate sector of Pakistan. It determines the relationship between leverage and systematic risk. Data was collected from eight industries such as; Cotton, Engineering, Chemicals, Sugar and Allied, Cement, Fuel and Energy, and transport and Communications. High leverage was experienced which leaded to high level of systematic risk and volatility in the stock prices.*

Key words: Leverage, stock returns, systematic risk, stock prices, Pakistan Stock exchange (PSX).

Introduction

Risk is the adverse impact on profitability of several distinct sources of uncertainty: Risk varies in types and degree and some of factors play a vital role in shaping it such as; size, complexity in business activities and volume etc. The purpose of leverage in investment portfolios is to borrow money at lower cost than the return. Financial leverage is used to get flexible access to capital markets, buy back equity, and creating shareholder's value. Strategies varies upon nature of the company but are closely aligned to management's overall goals and objectives.

Problem Statement

The Corporate Sector of Pakistan is facing multiple issues in Return on investment specially low Stock returns because of Leverage and existence of systematic risk in following industries such as ; Cotton, engineering, chemicals, sugar and allied, cement, fuel and energy, and transport and communications.

Literature Review

Financial leverage results from the difference between the rates of returns the company earn on investment in its own asset and the rate of return the company must pay its creditors (Garrison et al., 2004).

Anas (2013) studied relationship between stock return, systematic risk and financial leverage in context of companies list on Ammon stock exchange between Jan 2000-Dec 2009 on sample of 48 companies. The results of this study showed were negative relationship between variable in case of conducting it on more developed stock market while it showed positive relationship on underdeveloped market.

Majeed (2010) studied corporate sector of Pakistan. The author on evaluated relationship between leverage and systematic risk while taking sample of 8 industries of Pakistan, they concluded positive relationship between leverage, systematic risk and stock prices.

Garrison, et al. (2004) financial leverage is a end product of difference between rate of return on investment and dividends to customers. Duffy equity capitals will sometime deliver high rate of return on equity funds. According to Jones (2003) end product/result of an investment will always be less than expected outcome and risk will be also high in this case.

Anderson (2009) risk management is a key to exploit opportunities and avoid adverse between and has positive relationship between each if financial leverage is lower. Company stability and financial leverage ratio are indirectly proportional to company profitability and vice versa.

Mcewen (2000), through an empirical research came to the conclusion that large companies takes more long term debt and risk them small companies. Khedaraloghi (2011), studied relationship between financial leverage and systematic risk on companies registered on Tehran stock exchange and found normal effect of both variables on Tehran stock exchange.

Mavia (2010), investigated relationship between financial leverage and equity return and their link with firms capital structure and found the result that determinants of firms capital structure are sensitive to firm financial leverage and equity return.

Acevdetajdamia (2007) studied effect of financial leverage at market and firm level and found result that financial leverage produce less changes in stock return volatility at market level but significant changes at firm level. They also concluded that financial level contributes more changes in stock return volatility for a small firm while it has little/low affect in case of large firms.

Jodsone, et al. (2006) worked on cross-sectional relationship between leverage and future returns in context of capital structure and market reactions. Authors concluded that there is a negative relation between leverage and future returns as expressed by investor of market.

Paymanalebari and Mohammad (2012) studied 115 companies in Tehran stock market for period of 2008-12 in which systematic risk (beta) relationship with leverages ratios was tested. The data was gathered from financial statements, committee reports and other documents. Results showed no significant relationship between these variables on the basis of regression and Pearson correlation applied to analyze the data.

Darabi, et al. (2009), evaluated relationship between operating leverage and systematic risk result showed, significant relationship between operational leverage and systematic risk but no significant relationship between operational leverage and efficiency.

Jones (2003) analyzed that actual outcome from an investment will differ from the expected outcome is called risk. Most investors are concerned that the actual outcome will be less than the expected outcome. The broader the range of possible outcomes the greater will be the risk.

Anderson (2009) studied risk management effectiveness combines both the ability to exploit opportunities and avoid adverse economic impacts, and has a significant positive relationship to performance. This effect is moderated favorably by investment in innovation and lower financial leverage. Financial distress has a series of financial events that reflect diverse phase of corporate adversity. These are decrease in cash flows from continuing operations, reduction of dividend payments loan default and technical or troubled debt restructuring (TDR), these are considered as the financial distress.

Financial structure's accounting measurements, liquidity, performance, firm specific attributes and operating risk have been shown to capture risk components that potentially impact the durability of distressed firms. Time varying stock volatility explanation is that leverage changes as the relative stocks and bonds prices changes, changes in the volatility of stock returns happened due to change in the leverage firm causes. Strongly growing corporations represent economic development. The corporate leverage have negatively relation to corporate growth, it also include the debt financing to be negatively correlated.

The GDP development Significant negative effect of economic growth depends on short term debt and total debt but it not considers the long term debt. The average rate of return on their equity funds business enterprises leverage their capitals Leverage will do this if the rate of return on the invested funds is significantly higher than the interest rate paid on the rented funds. In different situations the equity capital gives a relatively high rate of return on the equity funds.

Financial structure is optimized over time by the corporation to reflect asset type, tax rate, profitability bankruptcy and business risk. Total debt ratio is strongly affected by the tax rates even if it includes different circumstances like investor's relevant tax bracket. Superior corporations usually take on more debt. Companies with a high

proportion of net fixed assets are normally financed with more long-term debt and less short-term debt.

The marketing and research community has been measuring the wrong thing that is attitudes versus financial returns and thinking about investments in the wrong context (communication channels versus customers). Strategies and investments are not about attitude goals and communication channels, they are about meeting customer needs better while improving ROI.

Financial leverage results from the difference between the rate of return the company earn on investment in its own asset and the rate of return the company must pay its creditors. Risk management effectiveness combines both the ability to exploit opportunities and avoid adverse economic impacts, and has a significant positive relationship to performance. This effect is moderated favorably by investment in innovation and lower financial leverage.

However, the base of any business is a healthy appetite for risk, since returns higher than the risk-free interest rate can only be achieved through risk taking. This is why one of the greatest and most important challenges for corporate executives is to define the optimal risk level for their business.

A risk management system is a valuable instrument for assessing the exposure to risk that participants in the financial sector in general are subject to. Risk systems also provide a measure of the amount of capital necessary to provide a cushion against potential future losses, a vital element for both managers and regulators.

Schnabl, et al. (2013) found that very little risk is transferred because the risk was highly concentrated towards banks and that is why the stock returns of banks goes down. Merton (2013) says that a new kind of systematic risk arises when refinancing opportunities; decreasing interest rates and increasing home prices collectively create their linkage with the house owner leverage. This type of risk does not depend upon dysfunctional behavior. This risk was termed as ratchet effect.

Shibu, et al. (2014) Studying the stocks of five companies for five years (2006-2010) by using OLS regression methods said that there is strong negative relationship between the stock returns and the leverage taken but individually the relation was found not that much strong. They also showed that there is positive relationship between size and the stock returns.

Rockinger, et al. (2015) believe that a firm is considered undercapitalized by any financial institution when the whole financial system is undercapitalized, this is called systematic risk. Investigating 196 non-US European financial institutions found that the cost for some banks were too large to be controlled.

Research Methodology

Research is Quantitative in nature and data was collected for the period of 2007-15. Secondary data was gathered from annual reports of the subject eight industries, daily shares trading documents, State Bank of Pakistan site, Karachi Stock Exchange

(now PSE) site, digital library, finance search engines and sites, general Index of Share prices site, articles from Pakistan Development Review, research articles from various journals and online databases of JSTOR, Emerald, John Wiley and some of data was gathered from face to face interviews with the top management of selected industries of Pakistan.

Annual reports of selected eight corporations have been gathered from the industries and retrieved the required information. The stock prices of last eight years of selected industries have been gathered from Karachi stock exchange. The total time of data collection was almost four months including both primary and secondary data.

Review of Pakistani Industries

Cotton textile production is the most important of Pakistan's industries, accounting for about 19% of large-scale industrial employment, and 60% of total exports in 2000-01. The textile industry as a whole employs about 38% of the industrial workforce, accounts for 8.5% of GDP, 31% of total investment, and 27% of industrial value-added.

The Chemical industry is one of the most basic and important manufacturing business globally. Its total turnover approaches $1,000 billion, giving it a size comparable to that of other large international industries such as the automotive, steel, mechanical engineering and electronic industries. Pakistan's chemical industry produces a number of basic chemicals used in its other industries, including soda ash, caustic soda and sulfuric acid. Industrial output from other major industries also includes refined sugar, vegetable ghee, urea, rubber tubes, electric motors, electrical consumer products (light bulbs, air conditioners, fans refrigerators, freezers, TV sets, radios, and sewing machines), and pharmaceuticals.

It is estimated that production of engineering goods in terms of value amounted to more than Rs.200 billion, with average annual growth rate around 10 %. Total fixed assets in the engineering sector are estimated to be around Rs. 125 billion. The Eighth Five Year Plan envisaged an investment of Rs.80.43 billion in the promotion and development of engineering goods industry out of which 40 percent or Rs.32.64 billion was proposed to be absorbed in the modernization and creation of new capacity in transport equipment while 39.32 % or Rs.31.63 billion would be channelized.

Pakistan's sugar industry is passing through an unprecedented tempo of growth. As of 1991-92 there were 53 sugar mills operating in the country with a total installed TCD of about 172,200 which produced 2.33 million tons of sugar. With the advent of 1992-93 seasons so far five new sugar mills have come into operation. Pakistan at present has 53 sugar mills with a cane crushing capacity of 180,000 tons per day (including beet adjusted to cane). These are capable of producing about 1,800,000 tons of sugar in a normal crushing season of 150 days and at average recovery-

Energy is one of the world's most important resources. Over the last century, petroleum products have become the major supplier of the world's energy demand. In Pakistan petroleum products supply 42 percent of the energy needs. The industry which comprises exploration and production (upstream), refining and marketing (downstream), is the single largest contributor to the national exchequer. Demand for oil products has grown at nearly 8% per annum in Pakistan since 1948 and is expected to continue at similar levels in the years to come. This translates into the demand of oil increasing from the current 14 million tones to almost 25 million tones within 10 years. With the government's emphasis on rapid economic growth, road construction and a shift towards greater urbanization, the country's vehicle population is expected to reach 3.9 million by 1999 from the present 2.6 million. Tractors are also expected to add to the demand for diesel fuel.

Transport and Communication network is among the most important of basic infrastructures. The development of country's economy is largely dependent on its efficiency. At the time of independence, Pakistan had inherited a limited network. There was only 50,367 km of roads, 8.553 km of rail track, and seven shipping vessels having 59,414 dead-weight ton capacities, only 21,209 registered vehicles on the roads, 3,036 posts offices, and seven telegraphs offices (all located in the urban areas). There were only 12,436 telephones and 45,426 radio sets and no air transport facilities were available for common use. The network has since been vastly expanded and improved but still remains deficient in fully meeting the present requirements.

Cement Production in 1995-96 is estimated at 9.403 million tones as compared to 8.420 million tons in the preceding year. The present installed capacity of 22 cement plants (17 private & 5 public sectors) is 10.492 million tones. Total estimation of production of these plants was 8.544 million tons in 1994-95. As many as eleven new cement plants are being planned or implemented all in the private sector. The capacity of these projects is estimated at 12.988 million tones. The existing plants have also planned to expand their capacities. This worked out to 5.070 million tones. Thus the total capacity of cement projects, existing and upcoming is increasing day by day.

Production of paper and board increased from 80,920 tons in 1984 to 169,228 tons in 1990 showing more than 100 % rise in six years. In the last three years the paper industry has shown improvement. This is evident from the capacity utilization which was 63 % in 1988-89 increased to 70 % in 1990-91. At present Karachi Stock Exchange have 13 companies in the paper and board section with total paid-up capital of Rs. 743.60 million. According to Pakistan Pulp Paper & Board Makers Association, there were 23 paper units that were its members. Production of these units increased from 80,920 tons in 1984 to 169,228 tons in 1990 showing more than 100% rise in six years. The production in different categories was: writing and printing paper 33% packing and other 20% paper board and 26 chip board 21 %. In the last three years capacity utilization in the paper industry has shown improvement. This is evident from the capacity utilization which was 63 % in 1988-89 increased to 70 % in 1990-91.

Analysis and Interpretation

After data collection researchers have analyzed data by using formulas of return on equity, return on investment, CAPM formula, standard deviation, and leverage and applied all these formulas in Microsoft Excel, Beta through risk free rate, rate of return (stock & market) etc.

Research Hypothesis

A hypothesis is a statement that shows the inferred relationship among the different variables. The conjectured relationships among the variables are established on the basis of previous literature available. These relationships can be verified using certain statistical tests/techniques. These hypotheses may be substantiated or not, depending upon the results derived from statistical analysis.

The following hypotheses have been proposed in the light of literature:

H0: High leverage increases the risk.
H1: High leverage decreases the risk.
H0: High leverage increases the stock return.
H2: High leverage decreases the stock return.

Result and Findings

The researcher found high level of leverage calculated through Debt to equity which was 1.68 (2015) creating a high level of systematic risk, leading to high volatility in the stock prices of these industries traded on PSE.

Table 1 *Leverage of Eight Industries for the Period (2007-15)*

Industries	2007	2008	2009	2010	2011	2012	2013	2014
Cotton	0.3092	1.546	0.249966	1.2495	0.43464	0.240663	2.546	1.4094
Chemicals	0.0909	0.455	0.018537	0.0925	0.1154	0.01787	0.578	1.8400
Engineering	0.3963	1.982	0.325681	1.628	0.56	0.25815	2.8	2.2978
Sugar & Allied	0.3371	1.686	0.313745	1.569	0.411	0.29583	2.381	1.3192
Paper &Board	0.3864	1.932	0.294686	1.473	0.5395	0.22605	2.697	1.5165
Cement	0.4653	2.327	0.43631	2.182	0.7008	0.47649	3.503	1.8938
Fuel &Energy	0.1993	0.997	0.049779	0.249	0.2532	0.01628	1.266	0.6829
Transport & Communication	0.1161	0.581	0.351013	1.755	0.2481	0.41163	1.240	

[*]The market risk that beta was 2.178548 during the studied period of eight years.

Table 2 *Industry Leverage for Fiscal Year (2015)*

Industry	Leverage Ratio
Cotton Textiles	1.4094
Chemical	1.840
Engineering	2.297
Sugar & Allied	1.3192
Paper & Board	1.5165
Cement	1.893
Fuel & Energy	0.6829
Transport and Comm	2.1785
Average	**1.6803**

Average leverage is 1.6803. Engineering, cement, and transport and communication, indicated the value above than average leverage ratio. However, the pattern of leverage across industries does not change much over time. The extent of leverage is lower compared to previous years as determined by the other researchers. This is because of reforms introduced from 1988 onwards in corporate sector by the Government of Pakistan, primarily, through the Securities and Exchange Commission of Pakistan. The strategy of corporate financing has also been changed gradually to reduce debt to equity ratio from 80:20 and 60:40 to 50:50 over time.

The notable change is observed in Engineering, cement, and transport & communication where the leverage magnitude is higher. Other industries do have variations in their leverage magnitudes. But the pattern has been almost the same in the January 2001 to December 2010.Transport &communication; Engineering has the highest level of leverage whereas fuel and energy, sugar and allied have the lowest level of leverage.

Conclusion

The researcher found high level of leverage calculated through Debt to equity which was 1.68 (2015) creating a high level of systematic risk, leading to high volatility in the stock prices of these industries traded on PSE. The market risk that is beta was calculated to be 2.17. The strategy of corporate financing needs to be changed to reduce debt to equity ratio from 80:20 and 60:40 to 50:50 depending upon size and financial position of the industry over the time .

Despite the reforms introduced so far by the Government, corporate sector still carries a high level of leverage creating a high level of systematic risk, leading to high volatility in the stock prices of these industries traded on KSE. It is recommended that the debt equity ratio should be brought in line with international norms, i.e. 40:60.

The commercial banks can be advised by the State Bank of Pakistan to keep this ratio in view while extending fresh loans to the corporate sector. The underwriters in Pakistan significantly under-priced the new issues (IPO's) to minimize their own risks

of the new issues. This under-pricing causes direct loss to the issuing firm and their collection of funds is lower than the intrinsic value of the issued stock. It may temporarily increase the stock price of the firm but in the long run it works negatively and increases the systematic risk of the firm leading to lowest stock prices. It is, therefore, recommended that the SECP and KSE Now Pakistan Stock exchange (PSX) should ensure that underwriters price the new issues relevant to the intrinsic value of the stock. As in the U.S. and other development countries, there could be an under-pricing of up-to 10% to make the stock attractive for the investors. This research could be beneficial for Corporate Sectors specialists like: financial analyst, investors, Brokers, and PSX traders who can use this research for investment decisions in buying or selling stocks enlisted on PSX.

In future of this research can be extended to all 34 sectors listed on Pakistan Stock exchange and not only limited to these eight sectors discusses. Financial analyst and PSX traders can use this research for investment decision making in future as well.

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