GARCH Risk Assessment of Inflation and Industrial Production Factors on Pakistan Stocks

Shehla Akhtar, Department of Management Science, National University of Modern Languages, Pakistan

Benish Javed, Department of Management Science, National University of Modern Languages, Pakistan

ABSTRACT

The purpose of the study was to measure the risk the return relationship of inflation and industrial production as macroeconomic variables against stock returns. The study extends the literature by using the GARCH model instead of the traditional Arbitrage Pricing Theory or the Capital Asset Pricing Model. The sample consisted of 50 companies listed on the Karachi Stock Exchange (KSE) in Pakistan. The data collection encompassed the period from July 1998 to December 2008. The macro economic indicators were inflation rate and growth rate of industrial production. The techniques included regression and first order Augmented Dick Fuller test (since it was a time series). The authors found a significant relationship between the macro economic indicators of inflation and industrial production against the sampled KSE returns. The sensitivity coefficients of industrial production and inflation were negative which indicated real sector risk and inflation unfavorably impacted the sampled KSE returns.

Keywords: APT, CAPM, GARCH, Industrial Production, Inflation, Macroeconomic Variables, Risk, Stock Return

1. INTRODUCTION

Arbitrage Pricing Theory (APT) and Capital Asset Pricing model (CAPM) are widely used to evaluate the performance the stock returns. The investors and regulators require risk assessment and management models in the unstable for minimizing risks. For hedging of risks associated with their open positions in the market, the investors need risk management models. While by introducing the optimal margin and risk control systems, the market regulators must ensure the financial integrity of the stock markets and clearing houses (Ali et al., 2010).

The economic factors are risks that investor face and want compensation in the form of risk returns so far, extensive literature has explained the trading volume to contain risk.
returns influencing stock market movement across stocks and market index. The existing literature has identified several economic risk factors identified as monetary policy, stock market performance, and inflation and supply shocks on real GDP (Hussein & Chen, 2004).

The multifactor CAPM is known for estimating the theoretical possibility requiring variables or risk factors against the variation in market portfolio. It explains the reasons for higher returns than others while confronting the arbitrage process, since Merton (1973, 1980) and Ross (1976).

Multi-factor model (Ross, 1976) consists of macroeconomic factors of inflation and industrial production for investigating the risk. These stock forces react shareholder’s behavior in such a manner which are not completely wrapped by (CAPM) Capital Asset Pricing model.

To implement the risk management effectively, affect of macro-economic variables on stock returns for the investors needs to be estimated in order to avoid risk that helps in minimizing financial market risk. Stock exchange performance has a vital role in global economics and financial markets, because of the impact on corporate finance and economic activity. Ibrahim (1999) examined that macroeconomic variables have reasonable influence on stock prices by way of their impact on expected future cash flows. Chakravarty (2005) examined that stock market returns are extremely sensitive to basic macroeconomic variables.

Adjasi and Biekpe (2006) refer that stock markets assist firms to make capital rapidly, as they provide an ease to trade securities. Stock exchange trading, thus, plays a significant role in investigating the impact of macroeconomic activities. The Literature contains provides evidences of the stock prices movements. Dynamic effects of macroeconomic variables on stock returns are focus of study for economists, academicians, financial investors and policy makers. Mehr (2005) found that the influence of public policies on economic growth can be checked by the raise in stock exchange return.

2. PROBLEM STATEMENT

To illustrate the influence of macroeconomic risk factors of inflation and industrial production over firms listed at Karachi Stock Market of Pakistan.

3. RESEARCH QUESTIONS

The research questions addresses by the research are as follows:

a. To observe the association among inflation, industrial production and performance of stock returns;

b. To illustrate the risk return relationship between inflation rate and the industrial productivity and term structure;

c. To estimate the inflation and industrial productivity as macro economic risk factors against stock return by employing GARCH (1,1) model to determine the volatility.

4. RESEARCH OBJECTIVES

Following are the research objectives:

a. To determine a multifactor model by using inflation and industrial production as macro-economic risk factors;

b. To examine the risk return relationship among inflation rate, and industrial productivity;

c. To study GARCH (1,1) model followed by Varma (2008) with extension of Bollerslev (1986) for the time series data.

5. STUDY PLAN

This study consists of various sections. This part of the study is followed by significance and rationale of the study. The second section is comprised of literature review while next part
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