

REVISITING THE ARBITRAGE PRICING THEORY (APT) IN THE NIGERIAN STOCK MARKET: A STRUCTURAL VAR APPROACH

Ndubuisi Jamani¹ and Kennedy Prince Modugu²

The focus of this study is to assess the APT in the Nigerian environment using Structural VAR approach. The nature of this study necessitates the use of a time-series research design and an extensive reliance on secondary data. The data which include selected macroeconomic variables were sourced from the Central Bank of Nigeria (CBN) statistical bulletins, for the period 1980-2012. The method of data analysis utilized in the study involves several econometric applications often used in most contemporary economic time-series studies. First, the unit root test is applied to examine the stationarity condition of the variables in a time-series analysis. Next, we conducted the VAR estimation, while the impulse response and variance decomposition followed. The results obtained in the empirical analysis suggest certain policy direction issues. First, Money supply and interest rate shocks are not unstable in their effects on stock prices and hence cannot cause destabilisation in the stock market. Second, the all share price index does not also react immediately to government expenditure shocks. Finally, money supply and interest rates shocks tend to have a stronger effect on stock prices than government expenditure shocks.

Key words: Arbitrage Pricing Theory, Macroeconomic Variables, SVAR and Nigerian Stock Market

INTRODUCTION

An important subject in capital market-based research has been the behaviour of stock returns especially the forces that influence the stock returns. Stock returns and indeed asset prices in general are commonly believed to respond to information about economic fundamentals. There are reasons to suspect that individual stock prices are influenced by a wide variety of unanticipated events and that some events have a more pervasive effect on asset prices than do others. (Chen et al., 1986). Thus there has been some level of curiosity about what could explain considerably the pattern of stock market returns.

¹ Department of Economics & Statistics, University of Benin, Benin City, Edo State, Nigeria

² Department of Accounting, University of Benin, Benin City, Edo State, Nigeria

Retrospectively, the one-factor capital asset pricing models (CAPM) is seen in certain quarters as the dominant asset pricing model. However, the single factor assumption of the CAPM is often cited to be its underlying weakness. The Arbitrage pricing theory (APT) model as formulated by Ross (1976) rests on the assumption that stock price is influenced by limited and non-correlated common factors and by a specific factor totally independent of the other factors. According to Morel (2001), by using the arbitrage reasoning, it can be shown that the risk associated with holding a particular security comes from two sources. The first source of risk is the macroeconomic factors that affect all securities. The whole asset market is influenced by these factors and cannot be diversified away. The second source of risk is the idiosyncratic element. This element is unique to each security and according to the APT, in a broadly diversified portfolio, it can be diversified away. The APT comes from an entirely different set of assumptions as it is not primarily concerned about the efficiency of portfolios. Instead, it starts by establishing a line of causality between each equity's return and the prevailing and pervasive macroeconomic influences as well as partly on random disturbances. Azeez and Yonezawa (2003) are of the opinion that the primary advantages of using macroeconomic factors is that firstly, the factors and their APT prices in principle can be given economic interpretations, and secondly rather than only using asset-prices to explain asset-prices, observed macroeconomic factors introduce additional information, linking asset-price behaviour to macroeconomic events. However, the research findings with regards to the suitability of the APT in explaining stock returns have indicated conflicting results across countries.

Specifically, developing economies have not provided adequate research findings. Furthermore there are also divergences with regards to which of the macroeconomic variables exert significant influence on stock returns (Humpe and Macmillan 2007; Nishat and Shaheen 2004; Maghayereh 2002; Al-Sharkas 2004). Thus this study addresses the need and thus fills the void of empirical evidence on the suitability of the APT in developing economies. There are several reasons why the Nigerian stock market is a good ground to examine the impact of the APT. Firstly, the Nigerian stock market provide a great possibility to test existing asset pricing models and pricing anomalies in special conditions of evolving markets. Second, in the light of evolving synergies between equity markets due to enhanced capital movements, it is interesting to test the extent macroeconomic fundamentals can be used as a basis for portfolio investments in the market. A related question in this respect is whether investors in this market react to news or unexpected changes in macro-economic conditions. The study adopts the

Structural VAR approach as it has been credited as the best way to discover what dynamic relations exist between multivariate series (Dungey & Pagan, 2008). The study hypothesizes that the APT macro-economic variables exerts considerable influence on stock price returns in the Nigerian Capital market.

LITERATURE REVIEW

Javed and Akhtar (2012) investigated the risk-return relationship between money supply, interest rate and term structure with stock returns of fifty (50) firms listed on the Karachi Stock Exchange in Pakistan for the period July, 1998 to December, 2008. The study which employed the Generalized autoregressive conditional Heteroscedasticity (GARCH) model demonstrates, among others, that money supply positively affects stock returns. The findings also show that the sensitivity co-efficient of term structure of interest rate is negative implying that term structure adversely affects stock returns.

Dewan (2012) in his study of econometric analysis in Bangladesh, investigated the effect of monetary policy variables on its stock market using monthly data from January 2006 to July 2012. The variables used in the study are DSE index, money supply, repo rate, inflation rate, 3 month treasury bill using econometric analysis such as co-integration, error correction model and the granger causality. He found that, money supply, inflation and treasury bill rate have a positive impact while repo rate has a negative impact on the market index.

Ardagna (2009) reports that adjustments based on expenditure reduction are related with increases in stock market prices. Darrat (1990) in his examination of the effect of fiscal policies on shares in Canada concludes that budget deficits determine share returns but did not ascertain whether it is positive, negative or ambiguous.

The empirical findings from literature have not led to any consensus as to what factors adequate impact on stock price movements. In addition, comparisons on the dynamics of macroeconomic influences in order to draw inferences on the relative adequacy of the APT variables appear insufficient.

METHODOLOGY

The nature of this study necessitates the use of a time-series research design and an extensive reliance on secondary data. The data which include selected macroeconomic

