Testing for Linear and Nonlinear Causality between Crude Oil Price Changes and Stock Market Returns

Emmanuel Anoruo[1]

Abstract

This paper examines both the linear and nonlinear causal relationships between crude oil price changes and stock market returns for the United States. In particular, the study applied a battery of unit root tests to ascertain the time series properties of crude oil price changes and stock market returns. The linear and nonlinear causality tests were conducted through the standard VAR and the M-G frameworks, respectively. The results from both the linear and nonlinear unit root tests indicate that crude oil price changes and stock market returns are level stationary. The results from the standard VAR model provide evidence of bidirectional causality between crude oil price changes and stock market returns. The results from the M-G causality test support the finding of nonlinear bidirectional causality between crude oil price changes and stock market returns.

Keywords: Crude oil prices, nonlinear causality, stock market returns, BDS, structural breaks

JEL classifications: G10, G12, Q43

1. Introduction

An understanding of the relationship between high crude oil prices and stock markets is important to investors, financial analysts and policymakers. The conventional wisdom holds that high crude oil prices promote economic growth for oil exporting countries while on the other hand, stunts growth for oil importing countries. High oil prices decrease the amount of disposable income that consumers have available to spend on other goods and services. Furthermore, high oil prices lead to increases in the cost of production for non-oil producing firms. Increases in cost of production negatively affect the major determinants of stock market returns including corporate profits and dividends. The equity pricing model suggests that the price of equity at any given point in time is equal to the expected present value of the discounted future cash flows (Hung at al., 1996). Increases in crude oil prices are often associated with inflationary pressures. Thus, the central bank in an effort to avert

[1] School of Management Science and Economics, Coppin State University, 2500 West North Avenue Baltimore, MD 21216, USA, Email: eanoruo@coppin.edu