

Oil price risk and emerging stock markets

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Abstract

The purpose of this paper is to contribute to the literature on stock markets and energy prices by studying the impact of oil price changes on a large set of emerging stock market returns. The approach taken in this paper uses an international multi-factor model that allows for both unconditional and conditional risk factors to investigate the relationship between oil price risk and emerging stock market returns. This paper, thus, represents one of the first comprehensive studies of the impact of oil price risk on emerging stock markets. In general we find strong evidence that oil price risk impacts stock price returns in emerging markets. Results for other risk factors like market risk, total risk, skewness, and kurtosis are also presented. These results are useful for individual and institutional investors, managers and policy makers. © 2006 Elsevier Inc. All rights reserved.

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1. Introduction

Oil is the lifeblood of modern economies. As countries urbanize and modernize their demand for oil increases significantly. Future oil demand is difficult to predict but is generally highly correlated with the growth in industrial production. Consequently, countries experiencing rapid economic growth are the ones most likely to dramatically increase their demand for oil. In particular, countries like China and India are experiencing rapid growth in Gross Domestic Product (GDP). Between 1991 and 2001 China's average annual growth rate in real GDP was 9.8% while India's average annual growth rate in real GDP was 5.4% (*The Economist*, 2004). In the future, emerging economies in general, and China and India in particular, are expected to

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consume an increasing share of the world's oil. Energy, financial markets and the economy are all explicitly linked together on a country's path of economic growth.

Table 1 shows data on how oil consumption has changed over the ten year period 1994–2004 for the major regions of the world as well as selected countries. The Asia Pacific region experienced the greatest increase in oil consumption (37.2%) while Europe and Eurasia experienced the smallest increase (1.3%). China's oil consumption increased by 112.5% while India's oil consumption increased by 80.9%. By comparison, oil consumption in the United States increased by 15.8% while Japan's oil consumption fell by 8.0% (partially in response to increased energy efficiency and alternative energy sources). The data in Table 1 shows that oil consumption is increasing most rapidly in the developing countries of the world.

Increases in oil demand without offsetting increases in supply lead to higher oil prices. Higher oil prices act like an inflation tax on consumers and producers by 1) reducing the amount of disposable income consumers have left to spend on other goods and services and 2) raising the costs of non-oil producing companies and, in the absence of fully passing these costs on to consumers, reducing profits and dividends which are key drivers of stock prices. In addition to global demand and supply conditions, oil prices also respond to geopolitics, institutional arrangements (OPEC), and the dynamics of the futures market (Sadorsky, 2004). Unanticipated changes in any of these four factors can create volatility, and hence risk, in oil futures prices. Oil price volatility increases risk and uncertainty which negatively impacts stock prices and reduces wealth and investment.

The relationship between oil price changes and stock prices can be explained using an equity pricing model. In an equity pricing model, the price of equity at any point in time is equal to the expected present value of discounted future cash flows (Huang, Masulis, & Stoll, 1996). Oil, along with capital, labour and materials represent important components into the production of most goods and services and changes in the prices of these inputs affects cash flows. Rising oil

Table 1
Oil consumption (thousands of barrels per day)

Region	Consumption in 2004	1994–2004 % change
North America	24,619	16.0
South and Central America	4739	19.2
Europe and Eurasia	20,017	1.3
Middle East	5289	30.8
Africa	2647	24.3
Asia Pacific	23,446	37.2
World	80,757	18.4
Selected countries		
Brazil	1830	29.0
China	6684	112.5
India	2555	80.9
Indonesia	1150	48.6
Japan	5288	–8.0
Malaysia	504	35.5
Pakistan	296	1.9
Russia	2574	–21.2
Thailand	909	47.4
United States	20,517	15.8

Source: BP Statistical Review of World Energy, June 2005 (www.BP.com).

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