Shock and volatility transmission in the oil, US and Gulf equity markets

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Abstract

This paper examines the volatility and shock transmission mechanism among US equity, global crude oil market, and equity markets of Saudi Arabia, Kuwait, and Bahrain. Our results show significant transmission among second moments. In all cases, Gulf equity markets receive volatility from the oil market but only in the case of Saudi Arabia we found a significant volatility spillover from the Saudi market to the oil market. Our results are important for building accurate asset pricing models, forecasting future equity and oil price return volatility, and will further our understanding of the interaction of the stock markets of Gulf countries vis-à-vis the US equity market and the global oil market.

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1. Introduction

The ever-increasing integration of major financial markets throughout the world has generated interest in examining whether or not conditional (or predictable) volatility is transmitted across major markets.
Much attention has been focused on modeling the equity volatility and studying the volatility transmission mechanism that exists among major international financial markets and their spillover effects on regional emerging markets such as those in the East Asia and the Pacific Rim. Notable papers that have studied the transmission of volatility across markets include those by Hamao, Masulis, and Ng (1990), King and Wadhwani (1990), Lin, Engle, and Ito (1994), Engle and Susmel (1993), and Karolyi (1995). However, no serious work has been devoted to the simultaneous volatility transmission between the US stock market, oil markets and stock markets of the major oil-exporting countries. The US consumes 25% of world oil production and the six oil-exporting countries, making up the oil-rich Gulf Cooperation Council (GCC), produce 16% of the world output and possess 47% of the world’s oil reserves. These GCC countries include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates; four of which (excluding Bahrain and Oman) are important decision makers in the Organization of Petroleum Exporting Countries (OPEC). Additionally, these countries have rapidly growing stock markets and some markets have doubled investors’ money from 2001 to 2003. Fig. 1 attests to their performance in 2002 at a time when the world’s major markets experienced precipitous fall.
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