

Research proposal

study of the link between global commodity price shocks and financial markets

Nastaran Shahvari

shahvarinastaran@gmail.com

Introduction

volatile commodity prices have impacted the global economy. Especially due to the expansion of the global economy after the 2000s, investors are paying more and more attention to commodity prices. Policymakers and market participants have focused on the dynamics of commodity price volatility because of its impact on economic growth and financial development (Saadi Sedik, 2011). On the other hand, the main research area in finance deals with the factors that affect stock prices and the sensitivity of stock prices to these factors. As a result, understanding the behavior of stock markets has become a primary goal of investors in emerging markets (Soenen & Johnson, 2009). The interaction of commodity markets with financial markets is an important area of study. There is growing evidence that fair markets and goods are interconnected and that the correlation between goods and equity has increased since the early 2000s, Vivian (2014). Many studies have found a strong relationship between the stock market and economic growth. Because of this strong relationship, we need to take a closer look at the many factors that affect the stock market. In particular, policymakers, with the contribution of these studies, have increased their interest in commodity prices because of the impact on inflation. The importance of commodity price volatility to the global economy was highlighted by the G20 at the summit in Pittsburgh in September 2009 (Anna Creti, Mignon, 2013). Despite the enormous importance of commodity prices, only a few studies have highlighted the impact on stock prices. For this reason, in this study, using time series analysis, the relationship between and the effects of commodity prices on stock markets will be examined. The aim of this study is to investigate the effect of commodity prices on stock prices in Iran. The main idea of this study is quite simple. Rising commodity prices affect stock prices. An increase in commodity prices is often accompanied by an increase in demand due to booming economic activity. Kilian (2009). If the price of raw materials used in the production process (energy, metals, raw materials) increases due to increased costs, the profits of companies will decrease and therefore there will be less profit to distribute distribution, Lombardi (2013). That will put pressure on stock prices and stock prices may drop. This study contributes to the empirical literature on the relationship between the stock market and the commodity market. With the results of the study, we can assess the macroeconomic impact of commodity prices on the Iran economy. Significant fluctuations in commodity prices are a historical fact. Therefore, it is not surprising that many studies have investigated the impact of commodity prices on a country's macroeconomic situation. Such relationships are important for several reasons. From an economic development perspective, excessive exposure to commodities can reduce the “depth” and “width” of the domestic stock

market. From a financial perspective, the monetization of commodity markets over the last few decades had opened up new opportunities for investors to diversify their portfolios (eg Domanski & Heath, 2007; Dwyer, Gardener & Williams, 2011; Silvennoinen & Thorp, 2013; Vivian & Wohar, 2012). Commodity and equity combinations can provide better risk returns than equity-only investments, as investing in commodities can help diversify risk (see Erb. & Harvey, 2006). But at the same time, Nissanke (2012) states that volatility and commodity price volatility (with the above developments and macroeconomic implications) are due to increased market-economic interconnections. Previous research on this topic has focused primarily on petroleum and non-petroleum commodities. In addition, these studies often focus on developed countries such as the United States and EU countries rather than low- and middle-income countries. The relationship between the global commodity market and the stock market varies from country to country throughout its stage of development. In fact, many countries have significantly improved their living standards and developed their domestic stock markets over the past few decades. Therefore, time analysis is especially important. This article contributes to the literature by providing an overview of the relationship between global commodity prices and the Tehran Stock Exchange. Start with a general index of global commodity prices, look at several price indexes, and then look at separate price levels for oil (supply and demand) and non-oil (metal) prices. Kindness). Then apply the mixed frequency vector autoregressive model (MFVAR) performed by Ghysel, Hill, and Motegi (2016).

Research aims and Objectives

Overall aim:

This research seeks to investigate we provide an in-depth study of the link between global commodity price shocks and Financial markets. The aim of this study is to investigate the effect of commodity prices on stock prices in Iran. The main idea of this study is quite simple. Rising commodity prices affect stock prices. An increase in commodity prices is often accompanied by an increase in demand due to booming economic activity.

Specific aim:

- Risks related to commodity price volatility are a major thread to actors in commodity chains, particularly to smallholder farmers in low income countries.
- These results will help the decision-making process of investors.
- Furthermore, the findings of this study are important for policymakers to strengthen the stock market to promote economic growth.

Literature Review

There is an important literature on the relationship between commodity prices and many financial markets. This section presents a brief literature review of articles focusing on the dynamics between commodity prices and the stock market. Gorton and Rouwenhorst (2004) studied the interaction between stocks and commodities-related assets and analyzed commodity futures and average stock returns. They found a significant relationship between them. (Delatte & Lopez, 2013) (Gorton & Rouwenhorst, 2004). Sadorsky (1999) studied the relationship between oil prices and stock prices. Using a vector automatic regression (VAR) model, Sadorsky pointed out the importance of oil prices for industrial production

(Chan, Treepongkaruna, Brooks, & Grey, 2011) (Sadorsky, 1999). Thuraiamy and Ali Ahmed (2013) experimented in their paper on the interaction between Asian stock market volatility, crude oil futures prices and gold. They found that stock market volatility shocks are related to crude oil and gold futures markets. (Thuraiamy, Sharma and Ali Ahmed, 2013). Rossi (2012) studied the relationship between equity markets, commodities, and exchange rates in more detail and found that the value of a country's stocks is likely to be the raw material price index prediction of some raw material exporting countries (Rossi, 2012). Tang and Xiong (2010) found that investments poured into commodity markets between 2006 and 2010 led to an increase in commodity volatility by increasing their costs (Tang & Xiong, 2010). Soenen & Johnson, (2009) presents changes in commodity prices on the stock markets of South American countries (Soenen & Johnson, 2009). Kang, Hu and Chen (2013) studied the relationship between international food prices and stock prices in China. Empirical results show that the Chinese stock market interacts with many food futures contracts (Kang, Hu and Chen, 2013). Delatte & Lopez (2013), in their paper, studied the relationship between equity and commodity markets and found that the integration of some commodities with the equity index starts early 2000s (Delatte & Lopez, 2013). Chan et al. (2011) found that return on equity is affected by financial assets, commodities and real estate assets using a common Markov transformation model (Chan et al., 2011). Investigations into the relationship between commodity prices and stock returns have mainly focused on oil, using the single-frequency VAR method. UK and US and found that, with the exception of the UK, Granger oil prices boosted both activity resumption and output. Huang, Masulis, and Stoll (1996) used the VAR method and found no relationship between the daily oil futures yields and the daily returns for U.S. equities for the period from October 9, 1979 to March 16, 1990. The VAR method was also used by Sadorsky (1999), who confirmed that monthly oil prices and fluctuations in oil prices both play an important role in the economic performance of the United States. The authors find that changes in oil prices predict market inventories. Global profits and rising oil prices significantly reduce future equity returns. They also found that changes in oil prices did not predict future market returns in three of the 18 developed markets examined (Hong Kong, Japan, and Singapore), while oil prices predicted future market returns in 11 of the 30 emerging markets considered (Brazil, Finland, India, Ireland, Israel, Jordan, New Zealand, Portugal, South Korea, Taiwan, and Thailand). In addition, Cong, Wei, Jiao and Fan (2008) found no evidence of a relationship between oil prices and real equity return in China using the standard VAR framework. As mentioned in the introduction, several papers report evidence of a time-varying relationship between oil and the stock market. However, this document mainly focuses on developed economies. For example, Ciner (2001) uses a nonlinear Granger causality approach to examine the dynamic associations between future daily oil prices and the US stock market. The author uses two data samples for the periods from October 9, 1979 to March 16, 1990 (as Huang et al., 1996) and March 20, 1990 to March 2, 2000. The study showed a significant nonlinear Granger causality of the crude oil futures returns on the S&P 500 index returned in both samples. Park and Ratti (2008) use linear and nonlinear multivariable VAR specifications to estimate the impact of oil price shocks and oil price movements on real equity return for a sample of 14 Developed Nation. They find that oil price shocks have a statistically significant effect of the same time or 1 month lag on real equity returns. Apergis and Miller (2009) examine whether changes in oil prices affect stockpile returns in a sample of eight developed countries between 1981 and 2007.7 Their results show that the shocks The real shock to oil prices temporarily caused stock gains in Germany, Italy, the United Kingdom and Germany. USA. In the case of Australia, only shocks in oil supply will temporarily boost stockpile returns, while in the case of France, only shocks in global oil demand will temporarily boost returns. stock returns. For Canada and Japan, they are not causal. Yoon (2015) use a time-varying VAR

model to examine the impact of oil price shocks on US stock market returns based on monthly data for the period January 1, 2015. They find that oil price shocks contain information to predict actual return on equity, while the coefficients and nature of the shocks vary over time. Several articles have investigated the link between commodity prices and stock market returns in developing economies. (Yang, 2012) (2013) found limited evidence for the effect of monthly oil prices on stock market returns for a group of 9 oil importers and 7 oil exporters over the period. Empirical tests show that oil shocks are more likely to affect stock market returns in oil exporting countries than in oil importing countries; however, there is no significant (non-linear) causal relationship between changes in oil prices and stock market returns for most of the countries in the sample. uses daily data to look at the co-volatility between commodity prices, i.e. gold and oil, and the BRICS stock market from September 29, 1997 to March 4, 2016. Their results, based on the wavelet method, show that BRICS equity returns vary with WTI crude oil prices in the long run. Furthermore, the authors find a stronger copper movement at the beginning of the GFC. No evidence of co-movement was detected between the BRICS stock market and gold prices over time and across frequencies (horizon). The latter implies that gold can act as a hedge or a haven for BRICS economies against extreme market movements. Although the authors provide a good overview of the commodity and stock market arbitrage coefficients for the five developing economies, directional predictability has not yet been discussed and remains to be seen. an open question. We extend the above material in a number of ways. First, we look at a broader set of price indices, ranging from general commodity price indexes to commodity-specific, such as the global metal price index and individual petroleum supply and demand shocks. separate. In addition to analyzing the overall role of commodities, specific prices may be more relevant to specific countries (e.g. oil prices for oil-dependent countries) or to specific points in time. Metals are also essential inputs in many industries and are therefore essential to consuming countries (Rossen, 2015). And investigate the nature of changes over time between global commodity prices and financial markets. and time series combinations at different sampling frequencies. As a result, we use more countries.

Methodology

In order to research the connection among international commodity fees and Iran inventory market, we make the most VAR and Granger causality checks in a time-various setting. As noted above, we depend specifically at the MF-VAR method proposed with the aid of using Ghysels et al. (2016), as in brief mentioned below. 3.1 Mixed frequency VAR The MF-VAR version is an observation-pushed version that immediately pertains to the usual VAR version settings and is appropriate for Granger causality checks (Ghysels, 2016). Using the notation of Ghysels et al. (2016), we denote m to be the *ratio of sampling frequencies*, that is, the number of high-frequency periods in each low-frequency period $\tau \in \mathbb{Z}$. Thus, let $\tau \in \{1, 2, \dots, T_L\}$ be the time sequence, here at the monthly frequency. Let $CP(\tau, j)$ denote the series of commodity prices at the j th week of month τ with $j \in \{1, 2, 3, 4\}$ while $SP(\tau)$ denotes the series of stock prices at month τ .

Two defined as the ratio of the number of identified Granger causal links to the total number of possible links in each rolling window to assess the overall level of connectivity between global commodity prices and the domestic stock market. Use the global connectivity index. Build the Global Commodities Connectivity Index (GCCCI) to monitor the temporal propagation of Granger causality from commodities to the stock market.

Timetable

	2020								2021								
	Jan	Mar	Apr	Jun	Jul	Sep	Oct	Dec	Jan	Mar	Apr	Jun	Jul	Jul	Sep	Oct	Dec
Literature Review																	
Research Proposal																	
Development of tools																	
Data Collection																	
Data Analysis																	
Thesis Write-up																	
Submission of thesis																	

References

1. Adams, Z., & Glück, T. (2015). Financialization in commodity markets: A passing trend or the new normal? *Journal of Banking & Finance*, **60**, 93– 111.
2. Aghion, P., Angeletos, G. M., Banerjee, A., & Manova, K. (2010). Volatility and growth: Credit constraints and the composition of investment. *Journal of Monetary Economics*, **57**(3), 246– 265.
3. Apergis, N., & Miller, S. M. (2009). Do structural oil-market shocks affect stock prices? *Energy Economics*, **31**(4), 569– 575.
4. Arestis, P., & Demetriades, P. (1997). Financial development and economic growth: Assessing the evidence. *The Economic Journal*, **107**(442), 783– 799.
5. Arestis, P., Demetriades, P. O., & Luintel, K. B. (2001). Financial development and economic growth: The role of stock markets. *Journal of Money, Credit and Banking*, **33**(1), 16– 41.
6. Arouri, M. E. H., Lahiani, A., & Nguyen, D. K. (2015). World gold prices and stock returns in China: Insights for hedging and diversification strategies. *Economic Modelling*, **44**, 273– 282.
7. Bakshi, G., Panayotov, G., & Skoulakis, G. (2010). The Baltic dry index as a predictor of global stock returns, commodity returns, and global economic activity. *Working Paper, University of Maryland*.
8. Barsky, R. B., & Kilian, L. (2004). Oil and the macroeconomy since the 1970s. *Journal of Economic Perspectives*, **18**(4), 115– 134.
9. Basher, S. A., & Sadorsky, P. (2016). Hedging emerging market stock prices with oil, gold, VIX, and bonds: A comparison between DCC, ADCC and GO-GARCH. *Energy Economics*, **54**, 235– 247.
10. Baur, D. G., & McDermott, T. K. (2010). Is gold a safe haven? International evidence. *Journal of Banking & Finance*, **34**(8), 1886– 1898.
11. Beck, T., & Levine, R. (2004). Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance*, **28**(3), 423– 442.
12. Beckmann, J., Belke, A., & Czudaj, R. (2014). Does global liquidity drive commodity prices? *Journal of Banking & Finance*, **48**, 224– 234.

13. Byrne, J. P., Fazio, G., & Fiess, N. (2013). Primary commodity prices: Co-movements, common factors and fundamentals. *Journal of Development Economics*, **101**, 16– 26.
14. Calderón, C., & Liu, L. (2003). The direction of causality between financial development and economic growth. *Journal of Development Economics*, **72**(1), 321– 334.
15. Cashin, P., McDermott, C. J., & Scott, A. (2002). Booms and slumps in world commodity prices. *Journal of Development Economics*, **69**(1), 277– 296.
16. Chen, Y. C., Rogoff, K. S., & Rossi, B. (2010). Can exchange rates forecast commodity prices? *The Quarterly Journal of Economics*, **125**(3), 1145– 1194.
17. Chiang, I. H. E., & Hughen, W. K. (2017). Do oil futures prices predict stock returns? *Journal of Banking & Finance*, **79**, 129– 141.
18. Christoffersen, P., & Pan, X. N. (2018). Oil volatility risk and expected stock returns. *Journal of Banking & Finance*, **95**, 5– 26.
19. Ciner, C. (2001). Energy shocks and financial markets: Non-linear linkages. *Studies in Nonlinear Dynamics and Econometrics*, **5**(3), 203– 212.
20. Cong, R. G., Wei, Y. M., Jiao, J. L., & Fan, Y. (2008). Relationships between oil price shocks and stock market: An empirical analysis from China. *Energy Policy*, **36**(9), 3544– 3553.
21. Creti, A., Joëts, M., & Mignon, V. (2013). On the links between stock and commodity markets' volatility. *Energy Economics*, **37**, 16– 28.
22. Domanski, D., & Heath, A. (2007). Financial investors and commodity markets. *BIS Quarterly Review*, 53– 67.
23. Driesprong, G., Jacobsen, B., & Maat, B. (2008). Striking oil: Another puzzle? *Journal of Financial Economics*, **89**(2), 307– 327.
24. Dwyer, A., Gardner, G., & Williams, T. (2011). Global commodity markets—price volatility and financialisation. *RBA Bulletin*, 49– 57.
25. Erb, C. B., & Harvey, C. R. (2006). The strategic and tactical value of commodity futures. *Financial Analysts Journal*, **62**(2), 69– 97.
26. Ghysels, E. (2016). Macroeconomics and the reality of mixed frequency data. *Journal of Econometrics*, **193**(2), 294– 314.
27. Ghysels, E., Hill, J. B., & Motegi, K. (2016). Testing for granger causality with mixed frequency data. *Journal of Econometrics*, **192**(1), 207– 230.
28. Gonçalves, S., & Kilian, L. (2004). Bootstrapping autoregressions with conditional heteroskedasticity of unknown form. *Journal of Econometrics*, **123**(1), 89– 120.
29. Hamilton, J. D. (1983). Oil and the macroeconomy since world war II. *Journal of Political Economy*, **91**(2), 228– 248.
30. Hamilton, J. D. (1996). This is what happened to the oil price-macroeconomy relationship. *Journal of Monetary Economics*, **38**(2), 215– 220.
31. Hood, M., & Malik, F. (2013). Is gold the best hedge and a safe haven under changing stock market volatility? *Review of Financial Economics*, **22**(2), 47– 52.
32. Hooker, M. A. (1996). What happened to the oil price-macroeconomy relationship? *Journal of Monetary Economics*, **38**(2), 195– 213.
33. Huang, R. D., Masulis, R. W., & Stoll, H. R. (1996). Energy shocks and financial markets. *Journal of Futures Markets*, **16**(1), 1– 27.
34. Jones, C. M., & Kaul, G. (1996). Oil and the stock markets. *The Journal of Finance*, **51**(2), 463– 491.

35. Kang, W., de Gracia, F. P., & Ratti, R. A. (2017). Oil price shocks, policy uncertainty, and stock returns of oil and gas corporations. *Journal of International Money and Finance*, **70**, 344– 359.
36. Kang, W., & Ratti, R. A. (2013). Oil shocks, policy uncertainty and stock market return. *Journal of International Financial Markets, Institutions and Money*, **26**, 305– 318.
37. Kang, W., Ratti, R. A., & Yoon, K. H. (2015). Time-varying effect of oil market shocks on the stock market. *Journal of Banking & Finance*, **61**, S150– S163.
38. Kilian, L. (1998). Small-sample confidence intervals for impulse response functions. *Review of Economics and Statistics*, **80**(2), 218– 230.
39. Kilian, L. (2009). Not all oil price shocks are alike: Disentangling demand and supply shocks in the crude oil market. *American Economic Review*, **99**(3), 1053– 1069.
40. Kilian, L. (2019). Measuring global real economic activity: Do recent critiques hold up to scrutiny? *Economics Letters*, **178**, 106– 110.
41. Kilian, L., & Park, C. (2009). The impact of oil price shocks on the US stock market. *International Economic Review*, **50**(4), 1267– 1287.
42. King, R. G., & Levine, R. (1993). Finance and growth: Schumpeter might be right. *The Quarterly Journal of Economics*, **108**(3), 717– 737.
43. Levine, R., & Zervos, S. (1998). Stock markets, banks, and economic growth. *American Economic Review*, **88**(3), 537– 558.
44. Mensi, W., Hammoudeh, S., & Kang, S. H. (2015). Precious metals, cereal, oil and stock market linkages and portfolio risk management: Evidence from Saudi Arabia. *Economic Modelling*, **51**, 340– 358.
45. Mensi, W., Hkiri, B., Al-Yahyaee, K. H., & Kang, S. H. (2018). Analyzing time–frequency co-movements across gold and oil prices with BRICS stock markets: A VaR based on wavelet approach. *International Review of Economics & Finance*, **54**, 74– 102.
46. Narayan, P. K., & Narayan, S. (2010). Modelling the impact of oil prices on Vietnam's stock prices. *Applied Energy*, **87**(1), 356– 361.
47. Narayan, P. K., & Sharma, S. S. (2011). New evidence on oil price and firm returns. *Journal of Banking & Finance*, **35**(12), 3253– 3262.
48. Newey, W. K., & West, K. D. (1987). Hypothesis testing with efficient method of moments estimation. *International Economic Review*, **28**(3), 777– 787.
49. Newey, W. K., & West, K. D. (1994). Automatic lag selection in covariance matrix estimation. *The Review of Economic Studies*, **61**(4), 631– 653.
50. Nissanke, M. (2012). Commodity market linkages in the global financial crisis: Excess volatility and development impacts. *Journal of Development Studies*, **48**(6), 732– 750.
51. Papanoditis, E. (1996). Bootstrapping autoregressive and moving average parameter estimates of infinite order vector autoregressive processes. *Journal of Multivariate Analysis*, **57**(2), 277– 296.
52. Park, J., & Ratti, R. A. (2008). Oil price shocks and stock markets in the US and 13 European countries. *Energy Economics*, **30**(5), 2587– 2608.
53. Phan, D. H. B., Sharma, S. S., & Narayan, P. K. (2015). Oil price and stock returns of consumers and producers of crude oil. *Journal of International Financial Markets, Institutions and Money*, **34**, 245– 262.
54. Rossen, A. (2015). What are metal prices like? Co-movement, price cycles and long-run trends. *Resources Policy*, **45**, 255– 276.
55. Sadorsky, P. (1999). Oil price shocks and stock market activity. *Energy Economics*, **21**(5), 449– 469.

56. Sadorsky, P. (2014). Modeling volatility and correlations between emerging market stock prices and the prices of copper, oil and wheat. *Energy Economics*, **43**, 72– 81.
57. Silvennoinen, A., & Thorp, S. (2013). Financialisation, crisis and commodity correlation dynamics. *Journal of International Financial Markets, Institutions and Money*, **24**, 42– 65.
58. Smyth, R., & Narayan, P. K. (2018). What do we know about oil prices and stock returns? *International Review of Financial Analysis*, **57**, 148– 156.
59. Vivian, A., & Wohar, M. E. (2012). Commodity volatility breaks. *Journal of International Financial Markets, Institutions and Money*, **22**(2), 395– 422.
60. Wang, Y., Wu, C., & Yang, L. (2013). Oil price shocks and stock market activities: Evidence from oil-importing and oil-exporting countries. *Journal of Comparative Economics*, **41**(4), 1220– 1239.