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IMPACT OF OIL PRICE VOLATILITY ON OIL IMPORTING AND EXPORTING COUNTRIES: A CASE OF ASIAN COUNTRIES

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Abstract

The study meticulously examined oil price volatility across 16 Asian countries using a VAR model, analyzing data sourced from the World Bank spanning 1980 to 2020. Notably, the dataset exhibited non-normal distribution, showcasing varied skewness in variables and indicating stationarity in specific factors for both oil exporting and importing nations. An optimal lag of 2 was determined for both groups, affirming the existence of long-term relationships. Macroeconomic variables such as investment, Consumer Price Index (CPI), and exchange rates manifested divergent impacts on oil volatility, showcasing distinctive effects within each country. For instance, in oil exporting countries, these factors demonstrated a positive and statistically significant influence, whereas in oil importing countries, CPI and exchange rates portrayed a negative correlation. The comprehensive analysis revealed consistent patterns across the studied periods, showcasing significant and predominantly positive effects on oil volatility across various timeframes and country types. This robust finding emphasizes the substantial influence of independent macroeconomic variables on oil volatility within a 40-year period. These insights underscore the complexities and variations in the relationship between macroeconomic factors and oil price fluctuations within the Asian context.

Keywords: Oil Price Instability; Variance Decomposition; Granger Causality Test; Vector Error Correction Model; Macroeconomic variables; Impulse Response; Vector auto regression model (VAR)

Contribution/Originality

The study rigorously analyzed oil price volatility in 16 Asian countries using a VAR model with World Bank data from 1980 to 2020. It identified non-normal distribution, established optimal lag at 2, and revealed distinct impacts of macroeconomic factors on oil volatility, emphasizing their substantial influence over 40 years.

1. Introduction

1.1 Background to the Study

The retail sector in India has witnessed remarkable growth, reflecting a significant area of interest within the macroeconomic framework that analyzes national or regional economies. This examination focuses on the functioning of various market systems at a broader scale. The volatility of the oil market, a critical factor influencing international economies, has been the subject of extensive study in recent years. Baruni, Kocenda, and Vacha (2015) highlighted the period of oil market instability between 2001-2008, which had substantial repercussions on global markets, especially following the financial crisis. Contrary to expectations, spillovers in oil prices did not significantly impact general commodities during this period (Baruni, 2015).

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Further, Anand, Sunil, and Ramachandran (2016) established a direct correlation between the Asian economy and fluctuations in oil prices, especially during financial crises. Wang, Hu, and Wu's (2012) investigation into China's economy illustrated the direct influence of high oil prices on economic growth, price levels, unemployment rates, and monetary policy decisions.

Additionally, Al-Sasi, Taylan, and Demirbas (2017) explored the effects of high oil prices on Saudi Arabia's economic growth, underscoring the necessity for predictive strategies concerning oil prices and the implementation of stringent government policies. Omojolaibi and Egaikhide (2014) studied the impact of oil price volatility on African oil-exporting nations during the 2008 financial crisis, emphasizing the role of gross investment in these economies. Rentschler (2013) shed light on the economic uncertainties arising from high oil prices in both oil-exporting and oil-importing countries. Okogu's (2003) study delved into the significance of oil price collapses across various countries and sectors. Similarly, Alley (2016) emphasized the influence of oil price volatility on fiscal policies in oil-exporting nations and suggested policy consolidation to manage deficits resulting from oil price fluctuations.

The notable influence of fluctuating oil prices on macroeconomic factors significantly impacts a country's economic well-being. Understanding potential variations in these effects between oil-exporting and oil-importing nations is critical. Thus, this study aims to determine how economic growth in Asian countries, such as Pakistan, China, Iran, Iraq, Oman, Saudi Arabia, and the United Arab Emirates, responds to variations in oil prices.

This study is driven by the significant impact that oil price volatility has on the macroeconomic stability of both oil-exporting and oil-importing countries in Asia. Given the critical role that oil plays in the global economy, understanding the differential effects of oil price fluctuations on various macroeconomic indicators is essential for policymakers and economists. Specifically, the study aims to address gaps in the current literature by examining the long-term and short-term impacts of oil price volatility on GDP, CPI, investment, inflation, and the oil trade balance across 16 diverse Asian countries over 40 years from 1980 to 2020. This extensive timeframe allows for a comprehensive analysis of trends and shifts in economic variables in response to oil price changes This investigation is grounded in the following specific objectives and research questions seeking to uncover the differential impacts of oil price fluctuations on economic growth across these nations.

Objective 1: Investigate the Impact on Oil Exporting Countries

- To scrutinize the relationship between oil price volatility and macroeconomic variables (GDP, CPI, inflation, exchange rate, oil trade balance, investment, and total trade balance) in Asian oil-exporting countries.
- To discern the direction and magnitude of the influence of oil price volatility on the aforementioned macroeconomic indicators in these exporting nations.

Objective 2: Assess the Impact on Oil Importing Countries

- To analyze the correlation between oil price volatility and macroeconomic variables (GDP, CPI, inflation, exchange rate, oil trade balance, investment, and total trade balance) in Asian oil-importing countries.
- To ascertain the direction and magnitude of the effect of oil price volatility on the stated macroeconomic indicators in these importing nations.

Research Questions

1. How does oil price volatility impact the short-term and long-term trends of GDP, CPI, investment, oil trade balance, and inflation in oil-importing Asian countries?
2. What is the effect of oil price volatility on the short-term and long-term trends of GDP, CPI, investment, oil trade balance, and inflation in oil-exporting Asian countries?

These objectives and research questions seek to unravel the intricate relationship between oil price fluctuations and various key macroeconomic variables, offering insights into both importing and exporting countries in Asia.

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2. Literature Review and Development of Hypotheses

Analysts have extensively researched commodities trading, particularly focusing on the oil market. Salisu and Fasanya (2013) utilized ARCH-LM, EGARCH (1, 1), and TGARCH (1, 1) models to scrutinize the effects of oil price volatility on significant oil markets—WTI and UK Brent. Their findings emphasized more pronounced reactions to negative oil market news compared to positive news (Salisu, 2013). Yoshino and Taghizadeh (2014) assessed the influence of oil price volatility on GDP and CPI, concluding that the impact on the GDP of developing nations outweighed that of wealthier countries, especially during financial crises (Taghizadeh-Hesary, 2015). Sek, Qi, and Wonga (2015) found in their study that oil price fluctuations impacted CPI inflation, especially in economies with moderate oil dependency, affecting production costs for exporters in high oil-dependent economies (Wang, 2019).

Rafiq and Sgro (2016) studied the effects of oil prices on various economic indicators, highlighting the benefits for oil-producing nations during steady prices and advantages for oil-exporting nations during price declines (Rafiq, 2016). Subsequent studies by Pana et al., Alekhina, Diaz et al., Kang, and Ashfaq et al. echoed similar impacts on economic variables, affirming that increasing oil prices primarily enhance the oil trade balance for producing nations (Pan, 2017).

Additionally, the Energy Information Administration (EIA) reported a decline in various energy sources, leading to restrictions in public access and transit in 19 countries, impacting overall energy utilization (Roser, 2019). The lack of equipment in oil-rich nations has prompted non-OPEC countries to assist in extraction, leading to an augmented GDP (Kutlu, 2020).

H1: Oil price volatility exerts a significant impact on the macroeconomic variables of Asian countries' economies.

Numerous studies, including Yoshino and Taghizadeh's (2014) examination of GDP influences during financial crises, support the hypothesis that oil price volatility significantly affects macroeconomic variables in Asian economies. Similarly, Sek, Qi, and Wonga's (2015) findings on CPI inflation align with this hypothesis, particularly in economies with varied oil dependency (Taghizadeh-Hesary, 2015; Wang, 2019). According to statistics compiled by the Energy Information Administration (EIA) (Roser, 2019), figures 1 and 2 illustrates a discernible decline in various energy sources over the preceding year, encompassing liquid, natural gas, electricity, coal, and renewable resources. This reduction has led to the restriction of public access and transit in 19 countries, consequently curtailing the overall utilization of oil and other energy reservoirs.

Figure 1

U.S. Energy Information Administration, STEO

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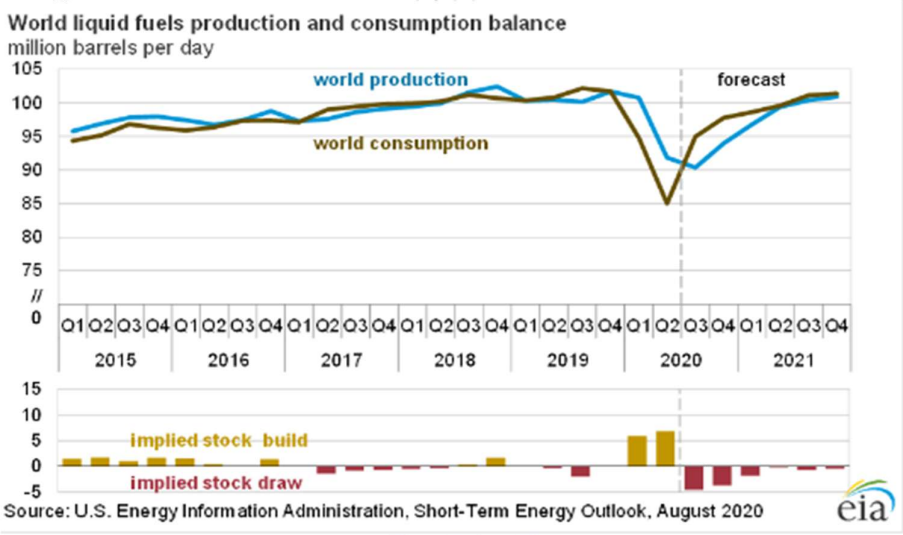
Figure 2

U.S. Short term energy outlook



H1.1: Oil price volatility significantly affects the macroeconomic variables of economies in Asian oil-exporting countries.

Rafiq and Sgro's (2016) study supporting the benefits for oil-producing nations during steady and declining oil prices confirms the significant impact of oil price volatility on macroeconomic variables in Asian oil-exporting countries (Rafiq, 2016).

H1.2: Oil price volatility significantly influences the macroeconomic variables of economies in Asian oil-importing countries.

Studies highlighting the consequences of oil price fluctuations on CPI inflation and production costs for oil-dependent economies, such as Sek, Qi, and Wonga's (2015) research, support the assertion that oil price volatility significantly impacts macroeconomic variables in Asian oil-importing countries (Wang, 2019).

3. Methodology

3.1 Variables Description

3.1.1 Oil Price Volatility Variable. Oil price volatility refers to the fluctuations in oil prices resulting from imbalances in supply and demand. These fluctuations occur due to changes in supply and demand dynamics, leading to abrupt shifts in oil prices, also known as oil price shocks. This volatility can manifest in various directions and magnitudes, representing the expected changes in prices (Guo & Kliesen, 2005).

3.1.2 Consumer Price Index (CPI). The Consumer Price Index (CPI) serves to measure the average variations in the prices of goods and services consumed by households within specific periods. It aids in calculating trends in product costs, maintaining a constant quality benchmark (Diewert, 2001).

3.1.3 Gross Domestic Product (GDP). Developed by economist Simon Smith Kuznet in 1934, Gross Domestic Product (GDP) represents the total value of final goods and services produced by a country within a specified period. It is a crucial indicator for understanding a nation's economic performance, assessed via three approaches: production, expenditure, and income (Hameed, 2012).

3.1.4 Oil Trade Balance (OTB). The Oil Trade Balance refers to the net quantity of a country's oil imports and exports, excluding financial elements, investments, or money transfers (Tiwari et al., 2014).

3.1.5 Inflation (INF). Inflation signifies the rise in prices of goods and services, either caused by demand-side or supply-side factors. Demand-driven inflation occurs when increased currency circulation leads to higher consumer spending, whereas supply-driven inflation arises from increased production costs (Castelnuovo, 2003).

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3.1.6 Exchange Rate (EXR). The Exchange Rate, also known as the external exchange rate or forex rate, reflects the value of one country's currency when converted into another's currency (Levy-yeyati et al., 2016).

3.1.7 Total Trade Balance (TTB). The Total Trade Balance represents the net value of a country's imports and exports, excluding financial elements, investments, or money transfers. A positive total trade balance indicates that a country's exports surpass its imports, signifying a surplus (Tiwari et al., 2014).

3.1.8 Investment (INV). Investment denotes assets acquired or allocated to generate wealth and preserve earnings. It aims to secure additional income or profits over a specific period (Feldman et al., 2016).

3.2 Data Collection Techniques

3.2.1 Data Collection Source. The research relied on secondary data collected from online resources such as the World Bank (https://data.worldbank.org). Unlike primary research methods involving surveys or on-site visits, the study's foundation rested on the utilization of secondary data sources (McCusker & Gunaydin, 2015).

3.2.2 Data Collection Tool. For investigating the direction and magnitude of oil price volatility concerning macroeconomic variables, a variety of online sources were employed. These included articles related to the research topic, data from the World Bank, WTI, UK Brent, and Dubai Crude data, stock exchanges, central banks of both oil-exporting and importing countries, British Petroleum's Statistical Review of World Energy for crude oil prices, and resources like Economic Survey's website. The primary source utilized for extensive data related to research variables was the World Bank data resource (https://data.worldbank.org/). Data collection primarily involved the use of ratio analysis.

3.2.3 Data Analysis Tool. Data organization was conducted utilizing MS Excel functions, aiming to categorize raw data effectively and derive relevant variables using a ratio scale. To explore the relationship and impact of independent variables on dependent variables, an unrestricted Vector Autoregression (VAR) model from the E-Views statistics software will be employed. The choice of analytical technique was contingent upon the nature of the data used to initiate the research.

3.3 VAR Model

Sim pioneered the VAR model in the 1980s, and Hamilton pioneered it in 1983. The VAR model has become the most commonly used model for determining variable causalities and interrelationships (Mirmirani & Cheng Li, 2004).

This model has been used to investigate by the following researchers:

- Actual oil prices (Kilian, 2009)
- Impact of world oil price on PRC's economy (Du et al., 2010)
- The interrelationship between oil price volatility and non-OPEC and OPEC oil production behavior (Ratti & Vespignani, 2014)

A structural VAR model is,

$BoXt = \beta + \sum$^j^ ~i=1~ $Bi\ X$t-i+ ut

4. Results and Discussions

4.1 Unit Root Test

Prior to implementing the Vector Autoregression (VAR) model, conducting unit root tests was crucial to assess variable stationarity. Stationary data is essential to avoid misleading results. Augmented Dickey-Fuller tests revealed that in oil-exporting nations, all variables displayed stationarity at both levels and first differences, except for the Consumer Price Index (CPI), which achieved stationarity solely at the first difference. Conversely, in Asian oil-importing countries, most variables demonstrated stationarity at the level, with the Investment variable achieving stationarity at the first difference. This comprehensive approach ensured the identification of any non-stationary variables within the dataset.

4.2 Vector Autoregression Model

The Vector Autoregression (VAR) model examines relationships among variables utilized in the research, such as Oil Price Volatility, CPI, GDP, Investment, Oil Trade Balance, and Exchange Rate. In the VAR model, macroeconomic variables are considered endogenous, portraying changeable movements by

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determining their relationship with other variables, while exogenous variables remain constant. EViews software was utilized to run the VAR model on datasets of oil-exporting and importing countries, setting an optimum lag to obtain VAR results.

4.3 Vector Error Correction Model

The cointegration test establishes long-term relationships, while the Vector Error Correction Model (VECM) dissects these relationships into short-term dynamics. When variables exhibit unit root stationarity and cointegration, VECM is employed to analyze dynamic short-run relationships. The coefficient of the error term in the co-integrating equation elucidates the speed of adjustment dynamics.

Table 1 delineates the direction and magnitude of various oil-exporting and importing countries in Asia. Specific variables exhibit positive or negative impacts on oil volatility, as inferred from the interpretation of VAR results. The table 1 indicators the Independent Variables (IND) as Oil Trade Balance (OTB), Investment (INV), Inflation (INF), Gross Domestic Product (GDP), Exchange Rate (EXR), Consumer Price Index (CPI), and Total Trade Balance (TTB) and Oil Price as dependent variable. The 'D' indicates the impact or direction of a particular variable, while 'M' indicates the magnitude.

Table 1

VAR Results of Importing and Exporting Countries of Asia

IND	Oil Exporting Countries of Asia		Oil Importing Countries of Asia	
	D	M	D	M
LNCPI	+	3%	+	1%
LNINF	_	8%	+	0%
LNINV	+	5%	+	1%
LNEXR	+	2%	_	0%
LNOTB	_	1%	~+~	7%
LNTTB	_	72%	+	32%
LNGDP	_	9%	+	4%

Source: Author's Calculation

4.4 Country Level VAR

Table 2 presents a concise summary analysis derived from the Vector Autoregression (VAR) model for specific oil-exporting countries in Asia. The summary showcases the magnitude and direction of variables for each country. Details regarding cointegration, lag length criterion, VAR, and Vector Error Correction Model (VECM) for individual countries are provided in the appendices. The table includes IND variables comprising Oil Trade Balance (OTB), Investment (INV), Inflation (INF), Gross Domestic Product (GDP), Exchange Rate (EXR), Consumer Price Index (CPI), and Total Trade Balance (TTB) and dependent variable Oil Price. The 'D' denotes the impact or direction of a particular variable, while 'M' signifies the magnitude.

Table 2

Country Level VAR Results of Oil Exporting Countries of Asia

Oil exporting countries of Asia												
IND	**Azerbaijan *(lag 2)***		**Iran *(lag 2)***		**Kuwait *(lag 1)***		**Kyrgyzstan *(lag 2)***		**Russia *(lag 2)***		**Saudi Arabia *(lag 2)***	
	D	**M**	**D**	**M**	**D**	**M**	**D**	**M**	**D**	**M**	**D**	**M**
OTB	+	1.24%	-	1.34%	+	1%	+	46%	+	6%	-	2.03%
INV	+	37%	+	17%	+	8%	+	15%	+	21%	+	11%
INF	-	2%	-	53%	-	2.37%	+	48%	-	7.55%	-	7.4%

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GDP	-	19%	+	1.12%	+	25%	+	4%	-	1.69%	-	87%
EXR	-	1%	+	57%	-	2%	+	6%	+	13%	-	0%
CPI	+	1%	+	10%	+	2%	-	1%	+	5%	+	10%
TTB	-	4.30%	+	2.77%	-	78%	-	3%	+	2%	+	2.65%

Source: Author's calculations

The below mentioned table is the summary analysis of VAR model of individual countries to check the magnitude and direction at specific oil importing countries of Asia.

Table 3 provides insights into the direction (D) and magnitude (M) of various economic variables in oil-importing countries of Asia, as inferred from the Vector Autoregression (VAR) model. The positive (+) and negative (-) signs denote the direction of impact, while the percentage values depict the magnitude of these effects. In China, India, Indonesia, Japan, Malaysia, and Pakistan, different economic indicators demonstrate diverse impacts. For instance, in China, variables like Oil Trade Balance (OTB) and Total Trade Balance (TTB) exhibit significant positive impacts, contributing approximately 19% and 49%, respectively, while Inflation (INF) shows a small negative impact of 4%. In contrast, Japan illustrates a varied scenario where Gross Domestic Product (GDP) and Exchange Rate (EXR) display positive impacts of approximately 18% and 2%, respectively, while Inflation (INF) and Total Trade Balance (TTB) depict substantial negative impacts of around 48% and 48%, respectively. These findings highlight the complex and distinct influences of economic variables across different oil-importing countries of Asia, signifying the necessity for tailored economic policies and strategies addressing specific national contexts.

Table 3

Country Level VAR Results of Oil Importing Countries of Asia

Oil importing countries of Asia												
IND	**China** ***(lag 2)***		**India** ***(lag 2)***		**Indonesia** ***(lag 2)***		**Japan** ***(lag 1)***		**Malaysia** ***(lag 2)***		**Pakistan** ***(lag 2)***	
	D	**M**	**D**	**M**	**D**	**M**	**D**	**M**	**D**	**M**	**D**	**M**
OTB	+	19%	+	54%	+	52%	-	47%	+	53%	-	4%
INV	-	5%	-	2%	+	3%	-	2%	+	6%	-	1%
INF	-	4%	-	37%	+	29%	-	48%	+	4.37%	-	53%
GDP	-	0%	-	11%	-	49%	+	18%	+	51%	-	37%
EXR	+	1%	-	16%	-	10%	+	2%	+	4%	-	2%
CPI	-	4%	-	6%	+	1%	-	0%	+	4%	+	4%
TTB	+	49%	-	1.07%	+	2.9%	-	48%	-	2.97%	-	24%

Source: Author's calculations

4.5 Long Run and Short Run Analysis

Table 4 presents the outcomes of long-run (LR) and short-run (SR) analyses via the Johansen cointegration test for individual oil-exporting countries, delineating the significance of variables in Vector Error Correction Models (VECM) and Vector Autoregression (VAR). Among the examined nations—Azerbaijan, Iran, Kuwait, Kyrgyzstan, Russia, and Saudi Arabia—cointegration tests indicate varied degrees of long-term relationships. While Iran, Kuwait, Russia, and Saudi Arabia exhibit cointegration based on both trace and maximum eigenvalue statistics, Azerbaijan and Kyrgyzstan display mixed results. Notably, specific variables demonstrate significance across different timeframes and countries. For instance, Iran displays long-term significance in Investment (INV) and Oil Trade Balance (OTB), while Saudi Arabia shows long-run relevance in Consumer Price Index (CPI) and Total Trade Balance (TTB). These findings underscore the

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diverse economic dynamics and variable impacts within individual oil-exporting countries, highlighting the nuanced nature of their economic relationships over time.

Table 4

Long and Short Run Analysis of Oil Exporting Countries at Individual Level

	Azerbaijan (Lag 2)		**Iran (Lag 2)**		**Kuwait (Lag 1)**		**Kyrgyzstan (Lag 2)**		**Russia (Lag 2)**		**Saudi Arabia (Lag 2)**	
Coint.	Trace Val	0.2079	Trace Val	0.0005	Trace Val	0.000	Trace Val	0.2365	Trace Val	0.0730	Trace Val	0.0000
	Max Eigen Val	0.6081	Max Eigen Val	0.0015	Max Eigen Val	0.030	Max Eigen Val	0.4370	Max Eigen Val	0.6721	Max Eigen Val	0.0000
INDV	LR (×) VECM	SR (✓) VAR	LR (✓) VECM	SR (×) VAR	LR (✓) VECM	SR (×) VAR	LR (×) VECM	SR (✓) VAR	LR (×) VECM	SR (✓) VAR	LR (✓) VECM	SR (×) VAR
OTB	1.24173**		-0.0086		0.44098		0.46367		0.06448		-0.7897	
INV	0.37877***		0.00494		-0.0123		0.15334		0.2183		0.16649**	
INF	-0.201		0.41441**		0.8415***		0.48153		-1.5563		-0.6089	
GDP	-0.1921		-0.0317		-0.6505		0.04914		-1.6953		0.9795	
EXR	-0.0152		0.02667		0.06787		0.06608		0.13349		0.00351	
CPI	0.01848		-6.16E-05		-0.0712**		-0.017		0.05142		0.07109***	
TTB	-4.3042**		-0.6354***		0.7522		-0.0355		0.02321		0.89921	

Source: Author's calculation

Table 5 presents a comprehensive overview of the long and short-run analyses conducted via the Johansen cointegration test for individual oil-importing countries, emphasizing the significance of various variables in Vector Error Correction Models (VECM) and Vector Autoregression (VAR). The cointegration test results demonstrate that China, India, Indonesia, Japan, Malaysia, Pakistan, and the Philippines exhibit varying degrees of long-term relationships in their economic variables. Specifically, China, India, Indonesia, and Japan display cointegration based on both trace and maximum eigenvalue statistics, highlighting robust long-term connections among economic factors. Notably, different variables demonstrate distinct levels of significance across countries and timeframes. For instance, China exhibits long-term relevance in Total Trade Balance (TTB) and Inflation (INF), while Japan showcases significance in Gross Domestic Product (GDP) and Exchange Rate (EXR) in the long run. These diverse findings underscore the intricate nature of economic relationships within individual oil-importing nations and the multifaceted impacts of economic variables over time.

Table 5

Oil Importing Countries Long Term and Short-Term Analysis at Individual Level

	China (lag 2)		**India (lag 2)**		**Indonesia (lag 2)**		**Japan (lag 1)**		**Malaysia (lag 2)**		**Pakistan (lag 2)**		**Philippines**	
Coint.	Trace Val	0.0000	Trace Val	0.0000	Trace Val	0.0000	Trace Val	0.0000	Trace Val	0.0000	Trace Val	0.07081	Trace Val	0.0000
	Max Eigen Val	0.0000	Max Eigen Val	0.0003	Max Eigen Val	0.0000	Max Eigen Val	0.0035	Max Eigen Val	0.0000	Max Eigen Val	0.2301	Max Eigen Val	0.0329
INDV	LR (✓)	SR (×) VAR	LR (✓)	SR (×) VAR	LR (✓)	SR (×)	LR (✓)	SR (×)	LR (✓)	SR (×)	LR (×)	SR (✓) VAR	LR (✓)	SR (×)

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	VECM	VECM	VECM	VAR	VECM	VAR	VECM	VAR	VECM	VAR
OTB	-0.1158***	0.35896**	0.00745		0.06402		0.73486***		0.30689	-0.0088
INV	-0.0053***	-0.0018	0.00086**		-0.0076***		-0.1391**		-0.0066	-0.0031***
INF	-0.0123***	-0.0842	0.00316		-0.1461		-0.6465		-0.4626	0.04747
GDP	-0.0087	-0.3175	0.00668**		-0.1622**		-0.2797		0.21077	0.02265***
EXR	-0.0097***	-0.1456**	0.00094		-0.0176***		-0.0166		0.00112	0.00019
CPI	-0.0124***	-0.0821	-0.0007**		0.00249**		-0.0384***		-0.045	-0.002**
TTB	0.27053***	-0.1799**	0.02765**		-0.4934***		-0.639**		0.14631	0.09857***

Source: Author's calculations

5. Conclusion, Limitations, Significance and Future Recommendations

This study aimed to elucidate the intricate interplay between oil pricing and the economies of Asian oil-importing and exporting countries, examining the impact of oil price volatility on crucial macroeconomic variables. Through comprehensive short and long-term analyses, the research delineated the directional impact and magnitude of oil price volatility on GDP, CPI, investment, inflation, and oil trade balance in these countries over a significant 40-year period from 1980 to 2020. By encompassing 16 diverse Asian countries with substantial oil import/export shares, the study provided a broad understanding of the effects of oil price volatility on these economies.

5.1 Limitations

Despite its comprehensive scope, the study encountered several limitations that warrant acknowledgment. The research's focus on Asian countries within a 40-year timeframe, while substantial, might restrict the generalizability of findings beyond this geographical and temporal scope. The selection of specific variables and countries might overlook potential nuances in other regions or variables, limiting a holistic understanding. The reliance on secondary data restricted the study's ability to delve into qualitative insights or collect data through primary sources like interviews or surveys, potentially missing nuanced perspectives.

5.2 Significance of the Study

This research stands out for its depth in analyzing both long and short-term effects of oil price volatility on macroeconomic variables. The outcomes could serve as a benchmark for similar studies exploring different variables or countries, contributing to a more comprehensive understanding of economic dynamics. The study's emphasis on macroeconomic variables provides a strong foundation for future research exploring microeconomic aspects, offering a roadmap for researchers seeking to uncover nuanced insights in microeconomic analyses.

5.3 Future Recommendations

Future research endeavors should aim to expand this study's breadth by including a more diverse range of Asian countries and exploring additional variables. Extending the research beyond macroeconomics to microeconomic analysis could uncover more nuanced insights into the impacts of oil price volatility. Researchers should consider employing a mixed-method approach, incorporating qualitative data collection alongside quantitative analysis, to enrich findings and provide a holistic understanding of the subject matter. Policymakers and investors can leverage the findings to formulate more informed policies and investment strategies by understanding the long and short-term impacts and magnitudes of macroeconomic variables influenced by oil volatility across various Asian countries.

Contribution of Authors

All the authors participated in the ideation, development, and final approval of the manuscript, making significant contributions to the work reported.

Conflict of Interest Statement

The authors declare no conflict of interest.

Funding Statement

This research received no external funding.

Informed Consent

Informed consent was obtained from all participants.

Data Availability

This study relies exclusively on publicly available secondary sources, including corporate disclosures, industry reports, and peer-reviewed literature, all of which are cited in the References section.

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