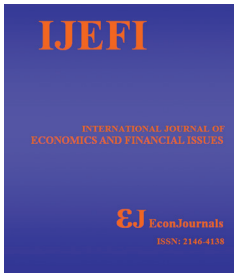

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The Impact of Oil Price Shocks on Economic Growth: The Case of Taiwan

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ABSTRACT

Most studies continue to analyze oil shocks. Earlier authors recognize that oil price volatility plays a critical role in the economy. There is accordingly evidence that oil price shocks negatively impact real gross domestic product (GDP) growth rates and cause higher inflation. However, this paper uses different perspectives to investigate whether it is beneficial to Taiwan's overall economy based on a low oil price event. This study's results reveal that an increase in the oil price leads to an increase in the consumer price index (CPI), causing higher inflation. Moreover, a long-term rise in oil prices would negatively impact the GDP growth rate. Alternatively, in the event of falling oil prices, there may not be an immediate decline in the price of goods. However, firms' reductions in the cost of goods resulted in declining CPI, due to the decreasing oil price over the past few months. Furthermore, it was observed that GDP would decrease when there is a long-term decline in the oil price. All the previously mentioned results are almost consistent with those of previous studies of high oil price events. In addition, the economy would be negatively impacted by a long-term decline in oil prices.

Keywords: Oil Price Shocks, Oil Fluctuation, Economic Activity, Impulse Response Function
JEL Classifications: F62, M21, O11, Q43

1. INTRODUCTION

According to Blanchard and Gali (2007), who examined high oil prices as the main reason for the recession, the oil price is an important source of economic fluctuation. Previous literature indicated that high oil prices would cause several phenomena: increased costs of producing goods and services could lead to lower aggregate demand (Cunado and De Gracia, 2005; Cologni and Manera, 2008) in household consumption, thereby affecting firms' production activities and earnings. In addition, oil price shocks affect corporate performance, further impacting financial markets. Hamilton (2005) found that oil price shocks lead to increased costs of production, worsening firms' earnings and market valuations. On the other hand, higher energy costs decrease household demand, reducing firms' output and further influencing the labor market (Al-Tai, 2015; Vizek et al., 2020). Furthermore, the higher energy cost reduces disposable income and increases households' precautionary savings. Thus, reduced consumption adversely affects corporate profits (Tsai, 2013).

The high oil price event would cause low investment, influenced mainly by declining corporate profits, economic instability, and inflation, leading to diminished consumer purchasing power. Moreover, some studies claimed that oil shocks negatively impact real GDP growth rates and cause increased inflation (Adebayo, 2020; Bachmeier, 2007; Cunado and De Gracia, 2005; Darby, 1982; Gershon et al., 2019; Gao et al., 2014; Lacheheb and Sirag, 2019; Hamilton, 2005; Nusair, 2016; Shaari et al., 2012; Zhao et al., 2016). Notwithstanding the above, a decline in oil prices would have positive benefits, such as increasing the GDP growth rate, corporate profits, and consumer spending. Sadorsky (1999) suggests that depressed oil prices will cause positive shocks in stock returns, interest rates, and industrial production. Furthermore, Mohaddes and Raissi (2016) found that a drop in oil

prices brought global growth to 0.4%. However, under different market conditions, the decline in oil prices affects investor sentiment, causing stock returns to fall (You et al., 2017).

A few years ago, oil prices fell by about 50% between June 2014 and February 2016. The initial gradual slide was from $110 to $25 for each barrel of Dubai crude oil (Figure 1). In considering the period for which oil prices continued to decline, next, this paper will examine whether the low oil prices may have positively impacted Taiwan's economy, such as increased household budgets and improved GDP.

The remainder of the paper is organized as follows: Section 2 describes the sample and data. Section 3 describes the methodology. Section 4 reports the analyses the results, and Section 5 concludes.

2. SAMPLE AND DATA

The data were collected mainly from Taiwan Economic Journal (TEJ), and the study period is 2006-2015. Table 1 describes the contents of each variable.

Table 1: Variable definitions for the data

Variable	Description	Unit
CPI	This is a measure that examines the weighted *average* of prices of a basket of consumer goods and services.	%
Exchange	USD/TWD	
GDP	This is the monetary value of all finished goods and services made within a country during a specific period.	%
Household	This refers to Taiwan's household expenditure.	NT$100 million
TAIEX Index	Taiwan Stock Market	
Oil price	Dubai crude oil, US$ per barrel The currency has been converted to NTD.	NTD
Wage	This refers to the total monthly salary per person in the industrial and service sectors.	NTD

3. METHODOLOGY

The study proposes a test of the null hypothesis where an observable time series is stationary around a deterministic trend (Kwiatkowski et al., 1992). In fact, most macroeconomic variables were probably nonstationary. The economic variables need to do the unit root test and co-integration test to avoid spurious regression, and it is important to examine the stability of this process. However, this testing procedure would apply the unit root of the Augmented Dickey-Fuller (ADF) test and Philips-Perron (PP) test, co-integration, the Granger causality test, and impulse response.

3.1. Augmented Dickey-Fuller (ADF) Test, There are Three Patterns

1. No intercept and time trend

$$\Delta y_t = \gamma y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_t \quad (1)$$

2. Only intercept

$$\Delta y_t = a + \gamma y_{t-1} + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_t \quad (2)$$

3. Intercept and time trend

$$\Delta y_t = a + \gamma y_{t-1} + a_1 t + \sum_{i=1}^{p} \beta_i \Delta y_{t-i} + \varepsilon_t \quad (3)$$

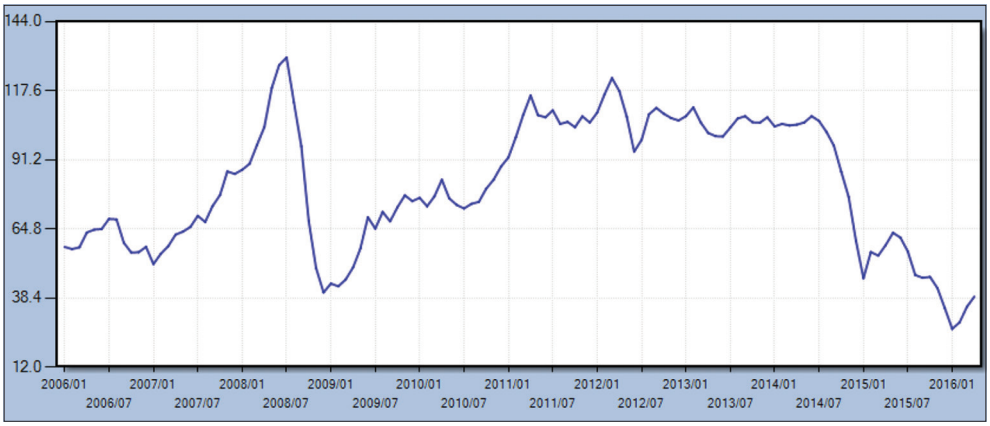
Where y_t is variable, a denotes the floating items, t is time trend and ε_t is error term and then ε_t ~iid $(0,\sigma^2)$, p is the lag length.

The null hypothesis is H_0:α_1=0, when reject the null hypothesis, it indicates that this sequence is stationary time series, also known as I (0) series. However, if the original series was unable to reject the null hypothesis, it may be used the difference to stationary of time series. After the first difference, we observed the sequence is stationary, it denotes I (1).

3.2. Co-Integration Model

Two (or more) time series with long-term trends, it means that the time series have co-integrated relationship. Model is as follows:

Figure 1: Dubai crude oil, US$ per barrel (Date: 2006/01-2015/12)



Source: Taiwan Economic Journal (TEJ)

$$Y_t = \beta_1 + \beta_2 X_{2t} + \beta_3 X_{3t} + \mu_t \quad (4)$$

The variables of Y_t, X_{2t} and X_{3t} are nonstationary, thus regression function as follows:

$$y_t = \hat{\beta}_1 + \hat{\beta}_2 X_{2t} + \hat{\beta}_3 X_{3t} + \hat{\mu}_t \quad (5)$$

3.3. Granger Causality Test

The main is that predict the relationship of variables. In order to study the causal relationship between X and Y, then consider the following regression equation:

$$X_t = \sum_{i=1}^{p} \alpha_i X_{t-1} + \sum_{j=1}^{q} \beta_j Y_{t-j} + \mu_t \quad (6)$$

$$Y_t = \sum_{k=1}^{r} \gamma_k X_{t-k} + \sum_{t=1}^{s} \delta_t Y_{t-1} + \mu_t \quad (7)$$

4. EMPIRICAL RESULTS

We used the database of TEJ and collected data from 2006 to 2015. This study applied E-views as the analysis tools. The empirical results, as follows:

4.1. Descriptive Statistics

Table 2 reports the results of descriptive statistics. In this regard, the values for the maximum oil price, CPI, GDP annual growth rate, Taiwan's household expenditure, the TAIEX index, and salary level were 3987.101, 104.43%, 13.7%, 62,1823.29, 9,711.37, and 88,285, respectively. The values for the minimum oil price, CPI, GDP annual growth rate, Taiwan's household expenditure, the TAIEX index, and salary level were 1146.398, 92.8%, −8.57%, 50,145.98, 4,247.97, and 38,189, respectively. In addition, from the perspective of standard deviation, the study found sharp fluctuations in the wage level, and fluctuations in the minimum United States Dollar (USD) exchange rate to the New Taiwan Dollar (NTD). Skewness and kurtosis coefficients are used to determine data patterns, for which the skewness for normal distribution is zero and kurtosis is three. In this regard, the study observed that the skewness coefficient is less than zero for the CPI, GDP, TAIEX index, and oil price; moreover, there is a tendency to the left side. On the other hand, there is a tendency to the right side for the exchange rate, Taiwan's household expenditure, and wage level; however, the maximum skewness coefficient is 3.02 for the wage level. The elements for which the kurtosis coefficient is less than three include the CPI, exchange rate, Taiwan's household expenditure, and the oil price.

4.2. Quantile-Quantile (QQ) Plot

Following the descriptive statistics, the study will examine the normal distribution of the variables. The QQ plot (Figure 2) was accordingly used to observe changes in the variables. Zivot and Wang (2007) examined a scatterplot of the standardized empirical quantiles of y_t against the quantiles of a standard normal random variable. In this regard, if y_t is normally distributed, the quantiles will lie on a 45-degree line. However, as depicted in Figure 2, the results of the QQ plot reveals a are non-linear 45-degree for each variable, reflecting a non-normal distribution.

4.3. Analysis the Results of Unit Root Tests

The study will examine the stability of the variables. To this end, it used the ADF and PP tests. If the P-value rejects the null hypothesis, the time series is stationary. However, for this study, it was non-stationary.

In statistics, a unit root test examines whether a time series variable is non-stationary and possesses a unit root. Based on the reported estimates, the null hypothesis was unable to be rejected for the CPI, oil price, exchange rate, household expenditure, and the TAIEX index. However, the null hypothesis of GDP and wage were rejected. The test results are shown in Table 3.

Table 4 shows that the first difference of each variable is stationary. Therefore, it is suggested that it is best described as being stationary in the first differences for each series.

4.4. Co-integration Test

Zakrajsek (2009) indicates that economic theory often suggests that economic variables should be linked by a long-run economic relationship. Thus, if two or more I (1) variables are co-integrated, they must obey an equilibrium relationship in the long run, although they may diverge substantially from that equilibrium in the short run. Therefore, this paper used the Johansen co-integration test to estimate the trace test and the max-eigenvalue test. The study will use different perspectives to investigate the different reactions of CPI and GDP to the high oil price (April 2006 to November 2011) and low oil price (November 2012 to December 2015) events.

Tables 5-8 indicate that the trace test and max-eigenvalue test of CPI and GDP during the high oil price event have a co-integration

Table 2: Descriptive statistics

	CPI	Exchange	GDP	Household	Index	Oil price	Wage
Mean	99.10505	31.17856	3.690850	55350.77	7777.659	2574.572	44592.17
Median	98.87000	30.85000	3.821481	54337.70	7884.410	2582.145	41669.00
Maximum	104.4300	34.95000	13.70481	62182.29	9711.370	3987.101	88285.00
Minimum	92.80000	28.76200	−8.572593	50145.98	4247.970	1146.398	38189.00
Std. Dev.	3.258106	1.483177	4.891815	3332.799	1126.951	646.0293	9521.431
Skewness	−0.142974	0.166328	−0.521452	0.533137	−1.049281	−0.19247	3.024349
Kurtosis	2.074480	1.819583	3.666578	2.079919	4.418137	−0.9793	11.79666
Observations	117	117	117	117	117	117	117

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Figure 2: Quantile-Quantile (QQ) plot

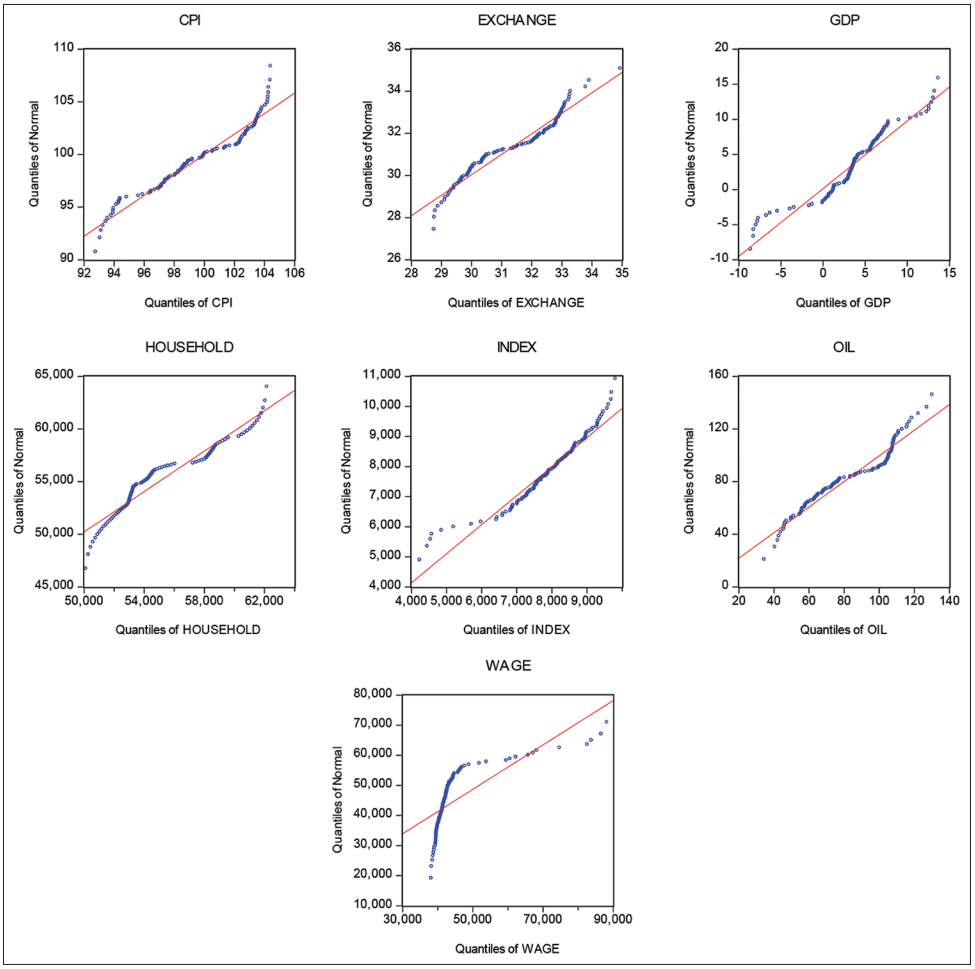


Table 3: Unit root tests

Variable name	ADF test (t-value)		PP test (t-value)	
	Include intercept	Include intercept and time trend	Include intercept	Include intercept and time trend
CPI	−1.5716 (0.4939)	−1.8749 (0.6611)	−1.5349 (0.5125)	−2.1993 (0.4851)
Price of Dubai crude oil	−2.2623 (0.1860)	−2.0601 (0.5620)	−1.8375 (0.3608)	−1.5236 (0.8160)
Exchange rate	−1.5690 (0.4952)	−1.1710 (0.9112)	−1.7487 (0.4042)	−1.4353 (0.8455)
GDP	−4.5384 (0.0003)***	−4.5368 (0.0021)***	−2.5761 (0.1009)	−2.5700 (0.2948)
Household	1.1610 (0.9978)	−0.7750 (0.9640)	0.9308 (0.9956)	−0.9761 (0.9421)
Index	−2.1694 (0.2186)	−2.2713 (0.4458)	−2.4985 (0.1185)	−2.6878 (0.2437)
wage	−0.8110 (0.8116)	−2.1076 (0.5353)	−9.7778 (0.0000)***	−11.4324 (0.0000)***

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 4: Unit root tests-first difference for each variable

Variable name	ADF test (t-value)		PP test (t-value)	
	Include intercept	Include intercept and time trend	Include intercept	Include intercept and time trend
CPI	−9.2939 (0.0000)***	−9.3691 (0.0000)***	−9.3057. (0.0000)***	−9.3804 (0.000)***
Price of Dubai crude oil	−5.9728 (0.0000)***	−6.0499 (0.0000)***	−5.7772 (0.0000)***	−5.8231 (0.0000)***
Exchange rate	−9.3751 (0.0000)***	−9.3881 (0.0000)***	−9.3794 (0.0000)***	−9.3847 (0.0000)***
GDP	−2.8404 (0.0559)*	−2.8300 (0.1898)	−4.2463 (0.0009)***	−4.2210 (0.0056)***
Household	−7.6322 (0.0000)***	−7.7982 (0.0000)***	−8.0905 (0.0000)***	−8.1038 (0.0000)***
Index	−9.8087 (0.0000)***	−9.7638 (0.0000)***	−9.8699 (0.0000)***	−9.8276 (0.0000)***
wage	−11.9904 (0.0000)***	−11.9532 (0.0000)***	−61.9236 (0.0001)***	−61.1972 (0.0001)***

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

relationship; therefore, reflecting a long-term stable equilibrium relationship. On the other hand, the results of Tables 9-12 indicate that the trace test and max-eigenvalue test of CPI and GDP during the low oil price event have a co-integration relationship; therefore, reflecting a long-term stable equilibrium relationship.

4.5. Granger Causality Test

The result from Table 13 indicates a causal relationship between the CPI, Taiwan's household expenditure, GDP, the TAIEX index, and the high oil price event. Moreover, a significant causal relationship between the exchange rate and oil prices and Taiwan's

Table 5: Trace test-during the high oil price event of CPI

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.309398	53.66302	4785613	0.0129
At most 1	0.224495	29.60054	29.79707	0.0527
At most 2	0.180824	13.07491	15.49471	0.1121
At most 3	0.001695	0.110268	3.841466	0.7398

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 6: Max-eigenvalue test- during the high oil price event of CPI

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None	0.309398	24.06249	27.58434	0.1325
At most1	0.224495	16.52563	21.13162	0.1956
At most2	0.180824	12.96464	14.26460	0.0794
At most3	0.001695	0.110268	3.841433	0.7398

Max-eigenvalue test indicates no co-integration at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 7: Trace test- during the high oil price event of GDP

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.393443	62.48083	54.07904	0.0074
At most1	0.271763	30.48366	35.19275	0.1475
At most2	0.096028	10.18740	20.26184	0.6214
At most3	0.056559	3.726177	9.164546	0.4544

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 8: Max-eigenvalue test- during the high oil price event of GDP

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.393443	31.99717	28.58808	0.0176
At most1	0.271763	20.29626	22.29962	0.0929
At most2	0.096028	6.461219	15.89210	0.7346
At most3	0.056559	3.726177	9.164546	0.4544

Max-eigenvalue test indicates no co-integration at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 9: Trace test- during the low oil price event of CPI

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.683626	62.51679	54.07904	0.0074
At most1	0.394556	24.53941	35.19275	0.4285
At most2	0.165453	7.980239	20.26184	0.8259
At most3	0.059139	2.011661	9.164546	0.7754

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

household expenditures and wages was discovered. Furthermore, Table 14 presents the Granger causality tests from the low oil price event. Based on these results, a significant causal relationship was observed between the GDP, CPI, and oil prices.

The results suggest that oil price significantly affects both GDP and CPI, and the exchange rate significantly affects the oil price.

Table 10: Max-eigenvalue test - during the low oil price event of CPI

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.683626	37.97738	28.58808	0.0024
At most1	0.394556	16.55917	22.29962	0.2604
At most2	0.165453	5.968578	15.89210	0.7915
At most3	0.059139	2.011661	9.164546	0.7754

Max-eigenvalue test indicates no co-integration at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 11: Trace test- during the low oil price event of GDP

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.491103	55.03828	54.07904	0.0409
At most1	0.314751	25.99135	35.19275	0.3424
At most2	0.146529	9.738486	20.26184	0.6655
At most3	0.065770	2.925414	9.164546	0.5947

Trace test indicates 1 co-integrating eqn(s) at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

Table 12: Max-eigenvalue test - during the low oil price event of GDP

H_0 No. of CE (S)	Eigenvalue	Trace Statistic	5% Critical Value	Prob.**
None*	0.491103	29.04693	28.58808	0.0437
At most1	0.314751	16.25286	22.29962	0.2807
At most2	0.146529	6.813072	15.89210	0.6922
At most3	0.065770	2.925414	9.164546	0.5947

Max-eigenvalue test indicates no co-integration at the 0.05 level. *denotes rejection of the hypothesis at the 0.05 level

However, during the high oil price event, the oil price shocks impact the economy, including the CPI, GDP, Taiwan's household expenditure, and the TAIEX index. On the other hand, changes in oil prices impact the CPI and GDP during the low oil price event.

4.6. Impulse Response Function

The study uses different perspectives to investigate whether high and low oil prices impact the economy differently. Therefore, this section aims to use impulse response to observe the relationship between them.

The test results from Figure 3 show the response of the high oil price event to shocks to the CPI, Taiwan's household expenditure, and wage, respectively. The first four period curves are raised, and then a flat curve occurred after the fifth period of CPI and wage. The results indicate that the high oil price event causes the cost of producing goods and services to increase, leading to higher inflation. In addition, most studies show that an increase in the oil price affects production activity and corporate earnings, thus affecting salary. However, there are different theories from the past generation. It was observed that during a high oil price event, the salary levels rose sharply. Possibly, the resulting price increase was passed on by the firm to the consumers. After the increase in corporate profits, employees earn a pay increase. Moreover, there are negative implications to households. In this regard, Hamilton

(2005) refers to oil price shocks leading to reduced household disposable income. Furthermore, the results reflected in Figure 3 reveal that a high oil price event shock the GDP, exchange rate, and TAIEX index, respectively. The first four period curves are raised, following which the curve began to decline after the fifth period of GDP. This result means that GDP growth rates are negatively impacted during the long-term rise in oil prices. In addition, high oil prices have little effect on the stock market. Generally, when the oil price rise caused the USD to fall, in other words, depreciate, this also results in an appreciation of NTD. Therefore, it was observed that when the oil price rose, there was a sharp appreciation of the NTD.

Figure 4 shows that a low oil price event caused shocks to the CPI, Taiwan's household expenditure, and wages, respectively. The first three period curves are raised, and then the curve began to decline after the fourth period of CPI. A decline in the oil price generally helps to reduce inflation, leading to reductions in the price of goods. However, based on the falling oil price event, although the price of goods did not decline immediately, when firms reduced costs, the resultant decline in CPI due to the declining oil price continued over the past few months. In addition, there are negative responses to wages and household demand.

Table 13: Granger causality test- during high oil price event

Independent variable	Dependent variable	Prob.
Oil	CPI	0.0053***
Oil	Household	0.0338**
Oil	GDP	0.0512*
Oil	Index	0.0010***
Exchange	Oil	0.0707*
Household	Wage	0.0000***

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Table 14: Granger causality test- during low oil price event

Independent variable	Dependent variable	Prob.
Oil	CPI	0.0947*
Oil	GDP	0.0279**
Wage	CPI	0.0073***
Index	GDP	0.0393**
Exchange	Oil	0.0207**

***, **, and * indicate significance at the 1%, 5%, and 10% levels.

Theoretically, the fall in oil price leads to increased firms' earnings, and their market valuation leads to wage increases. Conversely, salary levels decline. The study investigates the period of falling oil prices during which global economic growth slowed. In this regard, although corporate costs decreased, profits and wages did not increase. Surprisingly, the drop in oil prices coincided with a decline in household spending. It was observed that the slowdown in global growth resulted in limited consumer demand and increased precautionary savings — people facing uncertainty regarding future income delay consumption, lead household incomes not to rise. Moreover, Figure 4 reports the results and indicates that a low oil price event resulted in shocks to GDP, the exchange rate, and the TAIEX index, respectively. The first three period curves are raised, and the curve began to decline after the fourth period of the TAIEX index. In further investigating this possibility, it was revealed that investors who are inclined to pay more on the stock market during the period of falling oil prices engender a rise in the stock market. However, long-term falling oil prices cause investor confidence to decline, leading the stock market to fall. Theoretically, the oil price decline leads to increased GDP, but this is a short-term phenomenon because the GDP declined after the third period. Moreover, the first two period curves reflect decline, after which, after the third period of exchange, they began to rise. The estimated results suggest that enduring the long-term effects of low oil prices lead to the depreciation of the NTD.

4.7. Regression Analysis

The impact of each variable on the CPI and GDP can be understood from the regression analysis. High oil price events are significant for both CPI and GDP. On the other hand, the same results apply to low oil price events. Particularly in Equation (4.7.3), the changes in the CPI and oil prices move significantly in the same direction, which means that when oil prices fall for a sustained period, CPI also declines: a result that applies to the impulse response.

The results are analyzed as follows:

4.7.1. Regression analysis of high oil price event to CPI (Period: 2006/4-2011/11)

$$CPI=23.9833+0.0190*Oil(-1)+0.00135*Household(-1)+2.17E-06*Wage(-1) \quad (4.7.1)$$

Figure 3: Impulse response function of high oil price event

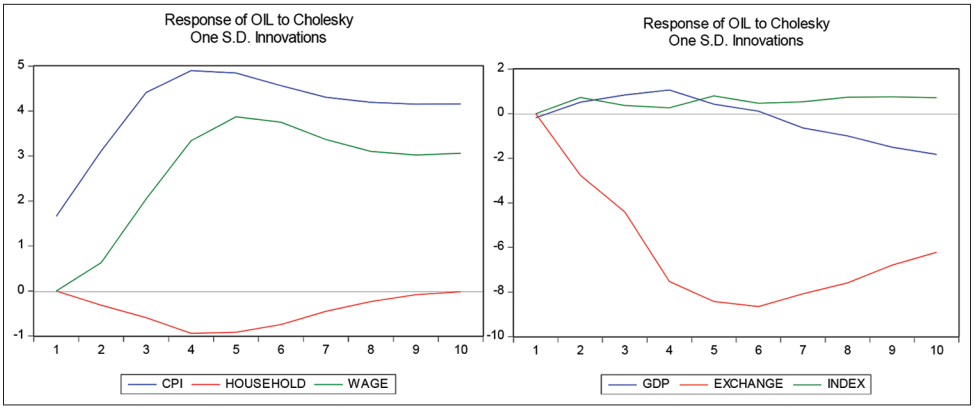
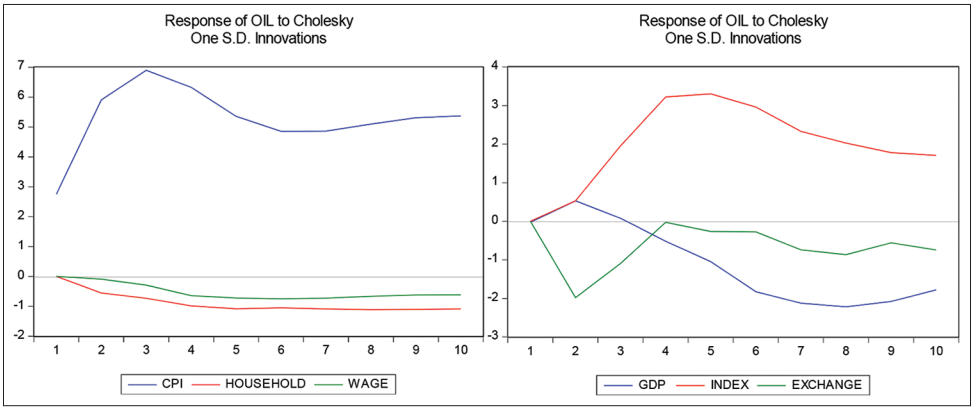


Figure 4: Impulse response function of low oil price event



(7.32)*** (4.64)*** (20.77)*** (0.26)

Adjusted R-square = 0.922227.

4.7.2. Regression analysis of high oil price event to GDP (Period: 2007/1-2011/11)

GDP=−71.4343+0.0635*Oil(−4)+0.0030*Index(−1)+1.4791*Exchange(−10) (4.7.2)

(−3.84)*** (2.48)*** (6.53)*** (2.47)***

Adjusted R-square = 0.589992.

4.7.3. Regression analysis of low oil price event to CPI (Period: 2012/11-2015/01)

CPI=62.8230+0.0378* Oil(−1)+0.0006* Household(−1)−8.04E−06*Wage(−10) (4.7.3) (19.14)*** (6.04)*** (12.83)*** (19.15)*

Adjusted R-square = 0.864168

4.7.4. Regression analysis of low oil price event to GDP (Period: 2013/02-2015/12)

GDP=-7.54918-0.0394*Oil(−13)+0.0006*Index(−1)+0.3136*Exchange(−7) (4.7.4)

(0.15) (−3.11)*** (3.52)*** (2.02)*

Adjusted R-square = 0.521366

5. CONCLUSION

Previous literature found that oil price shocks negatively impact the real GDP growth rates and inflation rates (Blanchard and Gali, 2007). However, this study mainly investigates whether low oil prices would positively affect Taiwan's economy. This paper's results revealed that a rise in the oil price leads to an increase in the CPI and caused higher inflation. Moreover, the long-term increase in oil prices negatively impacted the GDP growth rate. Theoretically, falling oil prices help reduce inflation and lower the price of goods. However, although the price of goods did not fall immediately, firms' reduction in the cost of goods resulted in declining CPI, ultimately due to the decreasing oil price over the past few months. The study also found that long-term low oil prices have caused the GDP to decline. Previous studies have been based on high oil prices as the primary research focus. However, this study's main observation is the impact of low prices on the economy, which would be negatively impacted by a long-term decline in the oil price.

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