

The Oil Price Changes and the Consumer Confidence: Evidence from Canada

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ABSTRACT

Previous studies on macroeconomic effects of oil price changes and of oil price uncertainty have mainly focused on real economic outcomes, such as employment, consumption and aggregate output. This paper investigates the links between the oil price changes and the consumer confidence in Canada, at both the national and the regional levels, using the correlation analysis and least square econometric methods. The results of this paper suggest the oil price declines mainly affect the consumer confidence about the overall employment and about the overall buying conditions of durable goods. More specifically, the oil price declines have negative impacts on the consumer confidence about the overall employment in Canada. However, the impacts on the consumer confidence about the overall buying conditions of durable goods differ in the oil-producing regions and the oil-consuming regions. For the minority of the regions in Canada, the oil price changes affect the consumer confidence about the household financial positions.

In addition, several oil price transformations are examined in this paper. The introduction of the asymmetric oil price changes reveals that the oil price declines are more important in affecting the consumer confidence about the employment expectation than the oil price rises. Although different levels of the oil price volatility might not affect the consumer confidence, the higher is the oil price volatility, the more sensitive is the consumer confidence to the oil price changes of the same size.

Key Words: Oil Price Changes, Consumer Confidence, Oil Price Uncertainty, Canada.

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1 Introduction

The oil price is only one of the many commodity prices faced by households and firms and the dollar share of the oil consumption in the GDP is usually small. For example, in 2000 the dollar share of the oil consumed in the U.S. is only 2.2% of the nominal GDP.¹ This share is about 4.7% in Canada in 2013.² In spite of the small share, the oil price changes have been attracting “a disproportionate amount of attention in the media and from policymakers and economists” (Kilian (2008)). Lots of previous studies regarding the oil prices and the oil price uncertainty have been done to investigate possible links between the oil prices and investment, employment, consumption, asset prices and other real economic aggregates.³ However, few studies have been conducted about the oil prices and the consumer confidence. This paper investigates how the oil price changes and the price uncertainty affect the consumer confidence, using the simple correlation analysis and the least square econometric models, with the data from Canada.

This paper chooses the oil price changes and the oil price uncertainty as factors that potentially influence the consumer confidence. The oil price has the following characteristics in comparison with the prices of other commodities, as pointed in Kilian (2008). First, the oil prices often surge rapidly and then remain at high levels regardless of the prices of other commodities, affecting the households’ living costs in a remarkably different way. Second, the demand of oil, especially the demand from households, is very inelastic with respect to the oil price changes. Households depend more on oil than firms in the energy expense structure,⁴ and also it is more

¹ See Hamilton (2005), page 3.

² Calculated by the author, according to the data from the World Bank and the U.S. Energy Information Administration (EIA).

³ See Edelstein and Kilian (2009), Elder and Serletis (2009 and 2010), Kilian (2008), Hamilton (1996, 2003 and 2005), Hooker (1996), and for a complete literature survey about the links between the oil prices and the “real” economic outcomes, see Hamilton (2005).

⁴ Households are more dependent on oil while firms use more electricity. Kilian (2008) shows the energy consumption structure for the households in the U.S., with the gasoline alone accounting for 48.7 percent of the total energy expenditure in 2002, from the U.S. Bureau of Economic Analysis (BEA) data; while for the firms, according

unusual for households to reserve oil or hedge the oil costs to adapt to the oil price changes than for firms. So the oil price surges might increase the households' fuel costs (such as the commuting and heating costs) significantly. In addition, the rises of the aggregate price levels brought by the oil price increases may also affect households' other living costs.

Third, turbulences in the Mideast among other regional political factors in the world affect the oil prices and the oil supply, bringing huge exogenous uncertainty to the oil prices in an economy. With higher oil price volatility, the consumer confidence may be more sensitive to a certain size of oil price changes. Last, a recession in the oil-importing countries (for example, the U.S.) is usually preceded by an oil price surge.⁵ As we will see later in this paper, the characteristics of the oil price changes will help explain the links between the oil price changes and the consumer confidence about the financial positions, the overall short-term employment expectation and the overall buying conditions for the durable goods.

This paper focuses on the evidence for Canada and its main oil-producing regions in investigating the links between the oil price changes (or/and the oil price uncertainty) and the national/regional consumer confidence in Canada. Canada is a crude oil net producer and exporter. "Globally, Canada is the 5th largest producer of oil, according to the U.S. Department of Energy, Energy Information Administration (EIA). The Oil & Gas Journal reports Canada's proven oil reserves at 173 billion barrels... Notably, the oil sands that are located in the province of Alberta hold 167 billion barrels of these reserves."⁶ The oil production in Canada concentrates in Alberta (with 47% of the total conventional light crude oil production in Canada in 2014) and

to the data from the Bureau of Labor Statistics (BLS), the unleaded gasoline constitutes 14 percent of the total energy costs, the diesel fuel 11.4 percent and the jet fuel 9.7 percent, and actually firms spend a lot on electricity (40.3 percent) and natural gas (14.5 percent).

⁵ However this might not be necessary for the oil-exporting countries (for example, Canada), where an oil price increase may have certain industrial benefits, such as higher employment.

⁶ See CAPP (2015), page 3.

Saskatchewan (21%) in the Prairie Provinces and in Newfoundland and Labrador (23%) in the Atlantic Provinces, according to the data from the National Energy Board (NEB). Note that the NEB data also show these shares are 5% for Manitoba and 2% for British Columbia. The oil produced in the regions above is mainly used in refineries or exported. Contrarily, Ontario and Quebec primarily refine imported or domestically produced crude oil, according to the Natural Resources Canada (NRCAN).

The questions of how the oil price changes will affect the employment, the consumption and the wealth in Canada and its regions have been of even more interest recently triggered by the 2014 oil price slump. During the second half year of 2014 (from June 2014 to December 2014), the crude oil prices plunged by nearly 40% in Canada.⁷ Since the beginning of 2015, the oil price declines have ceased but the prices have remained low. Some representative points of view on the effects of this oil price slump on Canada's economy are as follows. First, after the 2014 oil price slump, "oil and commodity exporters are facing weaker growth prospects as a result of lower prices".⁸ Due to inelasticity of the domestic and foreign demand, the oil price decline may largely cut the profit margins of the Canadian oil industry. After 2014, the oil production growth in Canada will continue "but at a slower pace", and the conventional crude oil production is "more sensitive to short term fluctuations in oil prices".⁹ Slower production growth may decrease the consumer confidence about the future employment in the oil-producing regions in Canada.

Second, said by Bank of Canada governor Stephen Poloz, "the negative effects of lower oil prices hit the economy right away, and the various positives - more exports because of a stronger U.S. economy and a lower dollar, and more consumption spending as households spend less on

⁷ According to the data from Statistics Canada. *Table 330-0008 - Raw materials price index (Conventional crude oil), by North American Product Classification System (NAPCS), monthly (index, 2010=100)*, CANSIM (database).

⁸ See OECD (2015), page 1.

⁹ See CAPP (2015), page i and page 10.

fuel - will arrive only gradually, and are of uncertain size.”¹⁰ As we will see later in this paper, the fuel cost reduction resulting from the oil price decline in 2014 will affect the consumer confidence about the overall buying conditions for durable goods. In this paper, whether the oil price changes will affect the consumer confidence about the buying conditions for durable goods will be studied. The total new motor vehicle sales in Canada shift from a mild growth of 2.93 percent on a year-on-year basis in June 2014, when crude oil price was at its peak, to a rapid growth of 16.87 percent on a year-on-year basis in December 2014, when the oil prices are fairly low.¹¹ Lower oil prices are expected to lead to more willingness for consumers to buy durable goods. For example, with low oil prices, consumers do not have to wait for more fuel-efficient cars, are more willing to buy SUVs and are more likely to buy large houses that are farther away for the daily commuting. The consumer confidence about the buying conditions for durable goods is likely to be higher nationally when the oil prices fall. However, later in this paper we will see that the decline of the oil prices will not surely lead to the increase in consumer confidence about buying durables in the main oil-producing regions. As suggested by Williams (1981) with the evidence from Australia, the consumer confidence about the employment could be important in affecting consumption. It is possible for the oil-producing regions that, in an oil price decline, the consumer confidence about the buying conditions for durable goods could also fall if consumers are too pessimistic about their future employment.

Third, although oil is not a reserve of wealth by households, nor do oil-price-linked equities or funds play a role in determining household wealth, the oil price changes might still affect household financial positions, possibly in both direct and indirect ways. Directly, as mentioned above by Stephen Poloz, the oil price changes affect the households’ fuel costs (such as the

¹⁰ See Poloz (2015).

¹¹ By units, including all types of motor vehicles. Data derived from Statistics Canada *Table 079-0003 - New motor vehicle sales, Canada, provinces and territories, monthly*, CANSIM (database).

commuting costs and the heating costs) and thus the households' wealth after energy-related expenses. Indirectly, the aggregate price levels of the goods in household consumption are also affected by the oil prices. Based on the permanent income hypothesis, the household financial position expectations can be taken as the present value of the future wealth in consumers' decision-making, and thus may result in the changes in real consumption in the current period. So it is important to pay attention to the effects of the oil price changes on the consumer confidence about the financial positions but partly because the proportion of the fuel expense in the household expenditure is only around 3%-4% (Table 3), the effects of the oil price changes on the consumer confidence about the household financial positions may be weak.

The Consumer Confidence Indices used in this paper are published by the Conference Board of Canada based on the responses from a cohort of Canadian households to the following four attitudinal questions:

(Question 1) Consumer Confidence about the Household Financial Position Realization, or CCFr: Considering everything, would you say that your family is better or worse off financially than six months ago?

(Question 2) Consumer Confidence about the Household Financial Position Expectation, or CCFe: Again, considering everything, do you think that your family will be better off, the same or worse off financially six months from now?

(Question 3) Consumer Confidence about the Short-term Overall Employment Outlook, or CCE: How do you feel the job situation and overall employment will be in this community six months from now?

(Question 4) Consumer Confidence about the Overall Buying Conditions for Durable Goods, or CCB: Do you think that right now is a good or bad time for the average person to make a major outlay for items such as a home, car or other major item?

The surveys via telephonic interviews had been conducted continuously since 1982 until December 2014 (on a quarterly basis before 2002, but on a monthly basis from 2002 on). Since January 2015, the new online surveys have been adopted to replace the telephone surveys. The

households in the consumer confidence surveys are asked to give their assessments on their current and expected financial positions, their outlooks for overall short-term employment, and their judgments about whether it is a good or bad time to purchase durable goods. The Aggregate Consumer Confidence (CCA) is an integrated index containing the information from CCFr, CCFe, CCE and CCB (more detail about the consumer confidence measures will be in Section 2.1). Previous studies have shown that the consumer confidence measures are useful in predicting consumption in the economy. Shapiro and Angevine (1969) and Angevine (1974) finds that the composite index of consumer mood (derived from the Financial Post's Quarterly Survey of Consumer Buying Intentions) predicts consumer spending on durable goods, non-durable goods, semi-durable goods and services well. Rayfuse (1982) finds that the Index of Consumer Attitudes (published by the Conference Board of Canada) tends to predict consumer spending on durable goods by a quarter. Kwan and Cotsomitis (2006) also find that the Index of Consumer Attitudes can predict household spending in Canada.

Overall, the topic of this paper is about oil price changes and consumer confidence (the consumer confidence about the four survey questions as discussed above and the aggregate consumer confidence). This paper examines whether the oil price changes (and/or the oil price uncertainty) play significant roles in affecting the consumer confidence in Canada. The study in this paper will follow these steps. Section 2 discusses the data used in this research. Section 3 discusses the methodology. Section 4 conducts the correlation analysis between the oil prices and the consumer confidence. Section 5 investigates the link between the oil price changes and the consumer confidence in Canada and the results will serve as the benchmark. Section 6 studies the link on a regional basis to gain more insights. Section 7 reassesses the benchmark results in Section 5, considering the possible asymmetric effects of oil price changes. Section 8 introduces

the oil price uncertainty. Section 9 extends the benchmark results in Section 5 by considering both the oil price changes and the oil price uncertainty. Section 10 gives the conclusions of this paper.

2 Data

Four kinds of data are essential in this paper – the Consumer Confidence Indices, the crude oil price index, the gasoline price indices and the Consumer Price Index (CPI). All the other time series used in this paper are derived from the four time series above. For the overview of all time series used in this paper, please see Table 2. The analyses in this paper are carried on with the software WinRATS Version 8.00.

2.1 The Consumer Confidence Measures

As stated in Section 1 of this paper, the Consumer Confidence Indices are published by the Conference Board of Canada based on telephone surveys of a sample of Canadian households. Although a new online survey method has been adopted since January 2015, the telephone survey covers a longer time period from March 1982 to December 2014. The surveys have been conducted on a quarterly basis at first and on a monthly basis since January 2002. Given the facts above, the time series of the consumer confidence measures in this paper are constructed for the period from March 1982 to December 2014, on a quarterly basis, and are also constructed to cover the period from January 2002 to December 2014, but on a monthly basis. Both quarterly and monthly frequency are used in this paper.

The Consumer Confidence Indices are compiled from responses to the four questions that are listed in Section 1. The responses for each questions fall into four categories: “better”, “worse”, “the same”, and “not sure”. The method of compiling the Consumer Confidence Index

is computing the proportion the optimistic responses out of the sum of both the optimistic and the pessimistic responses, and then normalizing the average value of the index in 2002 to 100. Using this methodology, first, at the regional levels, by question, the regional Consumer Confidence Indices for each of the survey questions are compiled. Second, in each region, the regional Aggregate Consumer Confidence Indices are computed as the average of the four indices for the four questions. Finally, the National Consumer Confidence Indices can also be derived based on the nationwide survey responses using the same methodology.¹² This makes it possible in this paper to examine the impacts of the oil price changes on the consumer confidence in both aggregate and sub-question details, and at both the national and the regional levels.

2.2 The Crude Oil Price Measures

The crude oil price is internationally determined. Several markets exist in determining the crude oil price, including the futures market. Actually, the futures prices appear in public media the most and thus may affect consumer confidence the most. However, when conducting empirical studies, because of the unstable contangos (the premiums of futures prices over the spot price) and the unstable backwardations (the discounts of futures prices below the spot price) in futures market, futures prices may not exactly reflect the crude oil price that consumers are facing in the current period.

In order to get the continuous time series that can reflect the spot crude oil price changes, the Raw Materials Price Index - Conventional Crude Oil¹³ (the crude oil price index) published by Statistics Canada is adopted in this paper. The crude oil price index has been of great continuity since January 1981 in a monthly frequency. A little insignificant “drawback” is that this index is

¹² See Conference Board of Canada website. *Consumer Confidence*.
http://www.conferenceboard.ca/topics/economics/consumer_confidence.aspx

¹³ Statistics Canada. *Table 330-0008 - Raw materials price index, by North American Product Classification System (NAPCS), monthly (index, 2010=100)*, CANSIM (database).

scaled to 100 in the base year 2010 and thus no longer represents the level of the nominal crude oil price.¹⁴ However, considering the data quality and continuity, and finally it is the logarithmic differences of oil prices rather than the levels of oil prices that enter regression specifications, this paper will employ this crude oil price index and do not think the “drawback” is essential for the analyses. The similar situation goes with the gasoline price indices (Section 2.6), which are also scaled and are parts of the Consumer Price Index (CPI).

In this paper, the logarithmic transformation is imposed on all the price series before any further manipulations. These manipulations include constructing the large oil price changes and the net oil price shocks with non-linear transformations, splitting the positive and negative oil price changes and estimating the standard deviation using GARCH(1, 1) model. Section 2.3 and 2.4 will discuss the manipulations above.

2.3 The Large Oil Price Changes, the Net Oil Price Shocks and the Measures for Asymmetric Effects of Oil Price Changes

Goldberg (1998) and Kilian (2008) suggest that consumers and firms may be reluctant to respond to small oil price changes. So the “large” oil price changes, which exclude the logarithmic differences of crude oil prices that are between -10% and 10%, are constructed as

the large oil price changes

$$= \begin{cases} 0, & \text{if the logarithmic differences of crude oil prices are between } -10\% \text{ and } +10\%; \\ & \text{the logarithmic differences of crude oil prices, otherwise.} \end{cases}$$

One approach to constructing oil price shocks is based on non-linear oil price transformation. Hamilton (1996), Lee, Ni and Ratti (1995) and Mork (1989) suggest that the oil prices enter some economic activities in a non-linear way in response to the findings that the relations

¹⁴ As the crude oil price index is a component of the Raw Materials Price Indexes (RMPI), the scaling makes the oil price comparable to the prices of other raw materials.

between the oil prices and the real economic outcomes are weak since 1985 (Hooker (1996)). In this paper, the “net” oil price shocks constructed using non-linear transformations, capturing the net increases of the oil prices and excluding the oil price recoveries from the previous declines are considered as a potential influential factor on the consumer confidence. In this paper, the net oil price shocks are defined based on the quarterly crude oil price index as

the net oil price shocks

$$= \max\{\text{the oil price in current quarter} \\ - \max\{\text{the oil prices in the previous four quarters}\}, 0\}.$$

Alternative non-linear transformations are also feasible. Several such transformations have been suggested by Lee, Ni and Ratti (1995). However, Kilian (2008) and Hamilton (2003) have suggested that all the transformations that capture the net oil price shocks tend to produce similar results.

This paper also examines possible asymmetric effects of the upward and downward oil price changes. To capture such asymmetric effects, the oil price changes, $\Delta\text{Oil Price}$, are split into the positive oil price changes and the negative oil price changes. $\Delta\text{Oil Price}^+$ equals to the oil price changes if the changes are positive or zero otherwise, and $\Delta\text{Oil Price}^-$ equals to the oil price changes if the changes are negative or zero otherwise. (Graph 6 plots the series of the crude oil price changes.)

2.4 The Oil Price Uncertainty Measures

Oil price uncertainty might play a role in affecting consumer confidence. This section will focus on the construction and the choice of oil price uncertainty measures. To construct the monthly oil price uncertainty measures, this paper first uses GARCH(1, 1) model to estimate the

conditional standard deviation of the logarithmic differences of the monthly crude oil price index. The GARCH(1, 1) model conducted by RATS includes the logarithmic difference of the monthly crude oil price index as the dependent variable and includes a constant term as the independent variable. Then I retrieve the estimated conditional standard deviation of the monthly crude oil price changes and use it as the monthly oil price uncertainty measures. Second, the paper takes the average of the monthly oil price uncertainty measures in each quarter to get the quarterly oil price uncertainty measures. The latter will be used in this paper in order to cover a longer time horizon from 1982 to 2014 and thus to cover as many large-oil-price-uncertainty episodes in history as possible. (Graph 7 plots the logarithmic crude oil prices and the oil price uncertainty measures).

2.5 Discussions about the Nominal and the Real Oil Price Measures

Although the real prices are more meaningful in economic theories, the nominal oil prices will be used in this paper, for the following reasons. First, as suggested by Hamilton (2005), the real oil prices contain information on inflation and inflation is a very strong endogenous factor for the real economic outcomes. For the statistical exogeneity of the explanatory variables, many researchers use the nominal oil prices rather than the real oil prices. Second, Hamilton (2005) also suggests that except for the early times when the nominal oil prices were frozen at certain levels and then suddenly adjusted, there is little difference between using the real and the nominal oil prices. Recall that

$$\text{real price} = \frac{\text{nominal price}}{\text{CPI index}}$$

and thus

$$\Delta \text{real price} = \Delta \text{nominal price} - \text{CPI inflation}.$$

The CPI used in this paper is the Consumer Price Index released by Statistics Canada.¹⁵ If the CPI inflation is positive (at most times), then, in a crude oil price surge, the nominal price change will have a larger magnitude than the real price change, and in a crude oil price plunge, the nominal price change will have a smaller magnitude than the real price change. However, the quarterly and monthly inflation are both too small compared with the effective oil price changes, especially after the inflation in Canada has been well targeted and controlled at a relative low level since 1991. So even though the nominal and the real oil price changes will be different in magnitude, I do not expect significant difference in the results, as revealed later in the analysis (Section 5.3). Third, the nominal oil prices are expected to have more evident impacts on the consumer confidence than the real oil prices, because the nominal crude oil and gasoline prices are widely covered by media and receive more attentions than the “hidden” real prices. This paper will use both the nominal and the real oil prices as the explanatory variables to examine the effects of the oil price changes on the national consumer confidence to see if the results will be in consensus. As shown later in this paper, the nominal oil price changes seem to be at least as useful as the real oil price changes in affecting consumer confidence.¹⁶

2.6 The Gasoline Price Measures

The paper will examine how the internationally determined crude oil price changes enter the consumer confidence in Canada and its regions. Besides the crude oil price changes, the gasoline price changes will also be used in explaining the consumer confidence. In fact, the most direct oil prices that consumers face are the prices of the final products of the crude oil, such as the gasoline. The correlations between the crude oil price changes and the gasoline oil price changes are not as high as thought. For example, the national gasoline price changes quarterly series have

¹⁵ Statistics Canada. *Table 326-0020 - Consumer Price Index, monthly (2002=100 unless otherwise noted)*, CANSIM (database).

¹⁶ See Section 5.3, which will compare the results in Panel A of Tables 7 and 8 and the results in Table 9.

a correlation of 0.75 with the quarterly crude oil price index changes in the sample period from 1982:Q1 to 2014:Q4, and the national gasoline price changes monthly series has a correlation of only 0.58 with the monthly crude oil price index changes in the sample period from 2002:01 to 2014:12. So adopting the gasoline prices besides the crude oil prices is of interest in the analysis.

The gasoline prices are extracted from the national and regional Consumer Price Index (CPI) published by Statistics Canada.¹⁷ So the gasoline prices are both national and by province. Note that as mentioned above, the Consumer Confidence Indices are available by regions. For example, the Consumer Confidence Indices have a classification for the Prairie Provinces. However, there is no “aggregate” gasoline price index for the Prairie Provinces but only the gasoline price indices for Alberta, Saskatchewan and Manitoba, each of the Prairie Provinces. Similarly, the Consumer Confidence Indices have an aggregate index for the Atlantic Provinces but the gasoline price indices go in provincial details. This paper will examine how the provincial gasoline prices enter the regional consumer confidence for the Prairie Provinces and the Atlantic Provinces separately.

2.7 The Unit Root Tests

As a preliminary for analysis, all candidate series are tested for stationarity. The results in this paper will only be based on the stationary series. The tests used are the Augmented Dickey–Fuller test (ADF test) and the Phillips–Perron unit root test (PP test). The levels of all the prices are in logarithm in this paper. Effectively, the logarithmic difference is computed as the first difference of the price series. For the series in level, including the oil price volatility, both the ADF test and the PP test are applied, and both tests include a constant deterministic component. The series in level are thought to be stationary if they pass both the ADF test and the PP test at

¹⁷ Statistics Canada. *Table 326-0020 - Consumer Price Index, monthly (2002=100 unless otherwise noted)*, CANSIM (database).

the significance of 5%. For the series in the first difference, the ADF test with no deterministic component is applied. The series in the first differences are thought to be stationary if they pass the ADF at the significance of 5%.

Tables 4 and 5 report the test results for the quarterly series and the monthly series. The column title of each table indicates the series to be tested and the test to be applied. The first column¹⁸ and second column indicate the optimal number of lags that are selected in the related unit root tests and the test statistics. The critical values for each of the tests are listed in the last two columns. For example, for the ADF test results for the first differences of the quarterly Aggregate Consumer Confidence Index for the Prairie Provinces, in Table 4, Panel A, Row 6, Column 4, the test statistics is -9.69870. By comparing the test statistics with the critical values listed in the last two column, we can conclude the ADF test reject a unit root at the significance level of 5% since -9.69870 is smaller than -1.94. From the results, we can see that for the levels of the national Consumer Confidence Indices, at a significance level of 5%, the results of the unit root tests are mixed. That is, a number of the levels of the Consumer Confidence Indices are not stationary. However, for all of the first differences of the Consumer Confidence Indices, the ADF test rejects the unit roots. So in this paper, the first differences of the Consumer Confidence Indices will be first analyzed. Then I will use the stationary levels of the Consumer Confidence Indices for which the unit root tests were not rejected to check the robustness of the results.

As to the crude oil and gasoline price measures, for either the quarterly or the monthly series, according to the test results, the levels are not stationary¹⁹ while the first differences of the oil prices – the oil price changes are stationary. So only the oil price changes are adopted in the analysis in this paper. As to the oil price changes volatility measures that are constructed in

¹⁸ Note that the columns and rows referred in Tables 4 and 5 do not count the table titles.

¹⁹ As mentioned earlier, the series in level are thought to be stationary if they pass both the ADF test and the PP test at the significance of 5%.

Section 2.4, both the ADF test and the PP test suggest that the levels of oil price volatility are stationary.

At the end of this section, to gain the visual patterns, the crude oil price changes and the consumer confidence variations (or levels) in Canada and the Prairie Provinces are plotted in Graph 1 (or Graph 2). Next in this paper, the relations between oil price changes and the variations of consumer confidence indices are examined with the correlation analysis and the econometric methods.

3 Methodology

The research ideas and directions in this paper are largely sparked by the work of Karnizova and Khan (2014). Karnizova and Khan (2014) study the stock prices and the consumer confidence channel, using evidence from Canada. In contrast to their work, this paper focuses on oil price changes and the oil price uncertainty, rather than stock prices. The methodology adopted in this paper is the unconditional correlation and the simple least square econometric models with time series.

3.1 The Specifications

In this paper, at both the national and the regional levels, how the oil price changes and the oil price volatility affect the consumer confidence in Canada are examined with the simple least square econometric methods. The explanatory variables are the contemporary and the lagged oil price changes and the lagged first differences (or levels) of the consumer confidence measures. As mentioned previously, the oil prices often surge rapidly and maintain the high levels and thus may have different motion patterns from the consumer confidence measures, so the lags of the oil price changes could be different from those of the consumer confidence measures. The

optimal lags of the consumer confidence in the regressions are the same as those used in conducting the ADF tests for the stationarity of the consumer confidence indices, which achieve the lowest Akaike Information Criterion (AIC) value. The lags of the oil price changes are chosen such that given the optimal lags of the consumer confidence measures, the following regression equation can achieve the lowest AIC value.

$$Y_t = \alpha + \sum_{i=0}^m \beta_i \Delta \text{Oil Price}_{t-i} + \sum_{j=1}^n \theta_j Y_{t-j} + \varepsilon_t \quad (\text{Equation 1})$$

The dependent variable Y_t is the first differences or the levels of the consumer confidence measures that are stationary. $\Delta \text{Oil Price}_t$ could be the oil price changes or the transformations of the oil price changes. The values of m and n are the optimal lags for each set of the explanatory variables and α is the constant term. The ε_t is the error term and is assumed to have a zero mean. Considering the possible presence of serial correlation and heteroskedasticity, the next section conducts the diagnostic tests.

3.2 The Diagnostic Tests

In this section, whether the error term ε_t in Equation 1 presents the issues of autocorrelation or heteroskedasticity is tested using the Durbin-Watson test (DW test) and the White test. If either of the issues exists, the corrections will be put in place. The results of the DW tests are listed in Table 7, Panel A, Column 7.²⁰ The p-values of the Durbin-Watson statistics are computed by the RATS procedure - “the exact significance level for the Durbin-Watson (regexactdw.src)”. For example, the p-value of the DW test for the regression of the variations of national aggregate consumer confidence on the quarterly crude oil price changes can be found in Table 7, Panel A, Column 7, Row 1, which is 0.553. As one can see in Column 7, the results of

²⁰ Note that the columns and rows referred in Tables 7-25 do not count the table titles.

the DW tests cannot show any evidence of the existence of autocorrelation for any of the regressions in Table 7, Panel A.

Actually, compared with the issues of autocorrelation, the issues of heteroskedasticity are more common. The p-values of the White tests are reported in Table 7, Panel A, Column 8. For example, the p-value of the White test for the regression of the variations of national aggregate consumer confidence on the quarterly crude oil price changes can be found in Table 7, Panel A, Row 1, Column 8, which is 0.002, indicating the existence of heteroskedasticity, at a significance level of 5%. As one can see in Column 8, the White tests show the evidence of the existence of heteroskedasticity for some of the regressions in Table 7, Panel A. (As an example for illustration, the residuals of the OLS regressions of the national consumer confidence variations as the dependent variables on the crude oil price changes as the independent variables in Equation 1 with quarterly samples from 1982:Q1 to 2014:Q4 are plotted in Graph 5. The plot shows that, for example, for the regression on the aggregate consumer confidence, the variability of the residuals may be different in different periods.) For prudence, the DW tests and the White tests are conducted after each of the regressions in this paper. In the possible presence of the issues of autocorrelation and heteroskedasticity, the robust standard errors and the Newey-West estimators are applied to all the specifications.

In this paper, it is assumed that the oil prices are not affected by the consumer confidence contemporarily, for the following reasons. First, the oil prices, especially the crude oil prices, are largely determined on the international markets. The oil transportation in Canada is mature, stable and capable to meet the daily needs.²¹ Second, as mentioned in Section 1, consumers do

²¹ In more details, “crude oil are transported three ways: pipeline, marine transport and rail car”. “The pipeline industry has been safely transporting conventional crude for more than 60 years” and “97% of Canadian natural gas and crude oil production is transported by transmission pipelines”. “3 million barrels of crude oil are transported by transmission pipelines in Canada every day” and the daily oil consumption is 2.352 million barrels, as of 2012. From

not hold oil as the reserves and their demand for oil is very inelastic. Third, even if the consumer confidence may affect the consumers' opinions about the buying conditions for durable goods, including vehicles, the consumer confidence might only affect the demand of oil in the future rather than at the current time. For example, Kilian (2008) suggests that facing high oil prices, consumers tend to wait for more oil-efficient durable goods to become available, and the recovery of durable goods consumption is expected to be with some delays. Thus it is reasonable to assume the endogeneity is unlikely to arise and to include the contemporary oil price changes as the explanatory variables.

3.3 The Statistics of Interest in Regressions and the Significance Levels Used in this Paper

The statistics of interest in the regressions are the adjusted R^2 , the sum of the coefficients of the oil price changes variables (and/or the oil price volatility variables) and the p-values of the joint significance tests for each set of the explanatory variables in each of the regressions. Additionally, the incremental adjusted R^2 is computed based on the difference between the adjusted R^2 for the specification above (Equation 1) and the adjusted R^2 for the specification without oil price changes variables (Equation 2), to see quantitatively how much the oil price changes can explain the consumer confidence.

$$Y_t = \alpha + \sum_{j=1}^n \theta_j Y_{t-j} + \varepsilon_t \quad (\text{Equation 2})$$

Again, n is the optimal lags used in the ADF tests (and is the same as the n in Equation 1).

The regression results are reported in Tables 7-25 in the Appendix. Since the study in this paper is conducted by multiple dimensions (by quarterly and monthly frequency of the series, by

the Canadian Association of Petroleum Producers (CAPP) (<http://www.oilsandstoday.ca/topics/marketsandtransportation/Pages/default.aspx>), the Canadian Energy Pipeline Association (CEPA) and the U.S. Energy Information Administration (EIA).

different kinds of oil prices and their transformations, by the national and the regional data classification, by the first differences and the levels of consumer confidence indices, by the aggregate consumer confidence and the consumer confidence for each of the four survey questions, etc.), each of the rows in the 19 tables contain a set of the results for each of the regressions. The significance levels used in this paper are 1%, 5% and 10%, which are marked with “***”, “**” and “*” respectively in the related tables and graphs. The interpretations of regression results in this paper will mostly be based on the 1% significance level. Recall that in Section 2.7, for the unit root test results, the levels of the series are not deemed to be stationary unless they pass both the ADF tests and the PP tests at a significance level of 5%.

4 Correlation Analysis

Before presenting the regression specifications, it is interesting to investigate the cross correlations between the consumer confidence measures and the oil price changes. The correlations must be based on the stationary time series. Since some of the levels of consumer confidence measures and all the levels of oil prices are not stationary, the correlations are computed with the first differences of the consumer confidence measures and the logarithmic differences of the oil prices.

The cross correlations for the sample period from 1982:Q1 to 2014:Q4 between the Consumer Confidence Indices (including the aggregate index and the indices for each of the survey questions) and the quarterly crude oil price changes are presented in Table 6. In Panel A, Row 1, Column 4,²² the sample correlation between the contemporary oil price changes (lag = 0) and the national Consumer Confidence Index for the employment expectation is 0.18, which is significant at a significance level of 5%. From Row 2 Column 5, the sample correlation between

²² Note that the columns and rows referred in Table 6 do not count the table titles.

the oil price changes a quarter ago ($\text{lag} = 1$) and the national Consumer Confidence Index for the buying conditions of durable goods is -0.20, which is significant at the significance level of 5%. From the national results, one can see the positive correlation between the oil price changes and the consumer confidence about the short-term overall employment expectation and the negative correlation between the oil price changes and the consumer confidence to buy durable goods.

Panels B-F of Table 6 report the regional results. At a significance level of 5%, the contemporary oil price changes have a positive correlation with the aggregate consumer confidence in the Prairie Provinces (Table 6, Panel B, Row 1, Column 1). Higher oil prices are also associated with higher expectation for employment and better buying conditions for durable goods in the Prairie Provinces (Panel B, Row 1, Columns 4-5). Moreover, the contemporary oil price changes have a positive correlation with consumer confidence of financial realization in Ontario (Panel E, Row 1, Column 2). The oil price changes in the previous quarter are negatively correlated with the aggregate consumer confidence in Quebec (Panel F, Row 2, Column 5). The cross correlations between the oil price changes and the variations of the consumer confidence in Canada and the Prairie Provinces are visualized in Graph 3. The scatter plots of the oil price changes and the first differences of the consumer confidence in Canada and the Prairie Provinces are in Graph 4. As we will see later in Sections 5 and 6 in this paper, the results of the correlation analysis are surprisingly similar to the results of the econometric analysis, especially for Canada and the Prairie Provinces. The next two sections will interpret the results on the base of the econometric analysis.

5 The Oil Price Changes and the National Consumer Confidence

5.1 The “Ordinary” Oil Price Changes and the National Consumer Confidence

This part examines how the oil price changes alone affect the consumer confidence in Canada at the national level, using the methodology discussed in Section 3. From this section on, when necessary, CCA, CCFr, CCFe, CCE and CCB will be used in the texts to represent the aggregate Consumer Confidence Index and the Consumer Confidence Indices for Questions 1-4, listed in Section 1.

In this section, first, the first differences of the national consumer confidence measures are regressed on nominal quarterly and monthly national crude oil price changes. The results of the statistics of interest are reported in Tables 7 and 8, Panel A, Rows 1-5 and Rows 11-15. From Table 7, Panel A, Row 5, we can see that the quarterly crude oil price changes have a statistically significant impact on the national CCB, at a significance level of 1%, with the incremental adjusted R^2 of 3%. The sum of the coefficients of the crude oil price changes is -0.0383 and the p-value of the joint significance test statistics is 0.003, which means higher oil prices tend to negatively impact the consumer confidence to buy durable goods. The possible reason is that the higher the oil prices are, the more fuel costs the households will face. Thus the households are not willing to buy durable goods under the circumstances where the oil prices are increasing.

In Table 7, Panel A, Row 14, we can find that the monthly crude oil price changes have a significant effect on the national CCE with the sum of the oil price changes coefficients of 0.2509 and the p-value of the joint significance test statistics of 0.009. (The incremental adjusted R^2 is 4%.) This means higher oil prices may make consumers more optimistic about the overall employment in Canada. The possible reason is that, in Canada, the higher oil prices will benefit the oil industries and thus the firms are likely to employ more workers. The same results can also

be obtained by using the levels of the national Consumer Confidence Indices as the independent variables of the regressions. The results are reported in Table 8. Note only the results got from the stationary series are reliable. From Table 8, Panel A, Rows 4, 5 and 14, at a significance level of 1%, we can obtain the same results that the increases of the crude oil prices have negative impacts on consumers' confidence to buy durable goods and have positive effects on the consumers' confidence for the future employment in the economy.

Second, the national gasoline price changes are used as the explanatory variables in Equation 1 in place of the crude oil price changes. The results are reported in Tables 7 and 8, Panel A, Rows 6-10 and Rows 16-20. The results show that the monthly gasoline price changes have negative impacts on the national CCB (Table 7, Panel A, Row 20). Also, we can find that the results in this section are in consensus with the results of the national correlation analysis in Section 3 (Table 6, Panel A).

For robustness, the analysis above in this section is re-done using the real oil price changes. For the levels, I only report the results for which unit root tests indicate the absence of a unit root in the levels of the series. Table 9 shows the results. We can see the optimal numbers of lags are unchanged in all regressions, and more importantly, the statistics of interest lead to the same conclusions whether using the nominal oil price changes (Tables 7 and 8, Panel A) or the real oil price changes (Table 9). This verifies the statement in Section 2.5 that the nominal and the real oil price changes may not make significant differences in the results.

5.2 The Crude Oil Price Changes in a Certain Month of the Quarter and the National Consumer Confidence

So far we have seen that in Canada, the oil price increases positively affect the consumer confidence about the employment situation and negatively affect the consumer confidence to buy

durable goods. However, at the significance level of 1%, the results are not conclusive in examining how the oil price changes will affect the consumer confidence about the household financial positions (Tables 7 and 8, Panel A, the rows about Questions 1 and 2). With the data of the oil prices originally in a monthly frequency in the sample period from 1982:01 to 2014:12, in this section, it is possible to construct the crude oil price changes in a certain month of the quarter as the new explanatory variables in place of the quarterly oil price changes. Essentially, they are simply the “sectored” monthly oil price change series. Formally,

the oil price change in Month i in a certain quarter

= *the oil price of Month i in the quarter – the oil price in the last month ($i = 1, 2$ or 3)*

This methodology can help break the quarterly oil price changes down into oil price changes in a certain month in the quarter and reveal how the oil price changes in a certain month in a quarter affect the quarterly consumer confidence.

The results in Table 7, Panel B, Row 7 show that per percentage point increase of the crude oil price change rate in the second month in a certain quarter will affect the quarterly national CCFr changes by -0.1150, at the significance level of 1%. In Row 2 we can see that the crude oil price changes in the third month of the quarter will affect the CCFr changes with the sum of coefficients of 0.2719. This means if the crude oil price change rate continuously increases in the second and the third month in a quarter, we can predict that the CCFr changes will first decrease by 0.1150 and then increase by 0.2719, with the quarterly overall effects insignificant (because the effects of the quarterly oil price changes on the national CCFr are insignificant (Tables 7 and 8, Panel A, Row 2)).

This might reveal a mix of several considerations for consumers in judging how the oil price changes have affected their financial positions. Facing increasing oil prices, at first, consumers

may realize that they have higher fuel costs and thus lower household wealth. When the oil prices continue to rise, households can regain their confidence about the financial position possibly because they believe that the higher oil prices result in higher employment or employment incomes and thus they are better off financially. Possibly for the same reasons, when the oil prices increases, households will first be pessimistic about buying durable goods due to higher fuel costs. When the oil prices continue to rise in the third month in the quarter, they turn a little optimistic due to their higher employment income expectation, with the first differences of CCB slightly increased by 0.0920 (Table 7, Panel B, Row 5). But overall, the higher oil costs end up with the quarterly first differences of CCB decreased by 0.0383 (Table 7, Panel A, Row 5). The very similar results about CCB can also be got based on the levels of the Consumer Confidence Indices (Table 8, Panels A and B).

The methodology in this section helps to explain why the results in Section 5.1 based on the quarterly oil price changes are not significant at the significance level of 1%, for example, the results with respect to the oil price changes and the national CCFr and CCFe (Tables 7 and 8, Panel A, the rows about Questions 1 and 2). The reason might be that the different effects of the oil price changes, such as higher employment expectation but higher fuel costs brought by the oil price increases, offset each other. This finally leads to no significant effects on the quarterly consumer confidence measures.

5.3 The Large Oil Price Changes, the Net Oil Price Shocks and the National Consumer Confidence

The same specification (Equation 1) is still used in this section but the oil price changes are in different transformations. The “large” oil price changes and the “net” oil price shocks are examined in this section about their effects on the national consumer confidence.

Pinelopi Koujianou and Goldberg (1998) and Kilian (2008) suggest that consumers and firms may be reluctant to respond to small oil price changes. The “large” oil price changes are based on the quarterly crude oil price changes but omit the logarithmic differences of oil prices that are between -10% and 10%, as was explained in Section 2.3. The regression results with the modified oil price measures are listed in Tables 7 and 8, Panel C, Rows 1-5. Still, the results show that the national CCB is negatively affected by the “large” oil price changes. The sum of the coefficients is more negative than those when using the “ordinary” oil price changes. The results can be expected, since the “large” oil price changes are believed to have larger impacts on the consumer confidence than the “ordinary” oil price changes.

The “net” oil price shocks will put households and firms in a new situation where the oil prices are strictly at the highest in a certain period of time (for example, one year in this paper) and households are quite likely to react to every net oil price shock. The results based on the “net” oil price shocks to capture oil shock events are reported in Tables 7 and 8, Panel C, Rows 6-10. The results suggest that the net oil price shocks have negative impacts on the national CCFr and CCFe, the household financial positions. As mentioned earlier, Hamilton (1996), Lee, Ni and Ratti (1995) and Mork (1989) argue that oil prices enter some economic activities in a non-linear way. As we see in this section, the non-linear transformation - “net” oil price shocks can affect the impact of the oil price changes on CCFr and CCFe that the “ordinary” oil price changes cannot explain.

5.4 The Summary of the National Analysis

Using the quarterly oil price changes (with the sample period from 1982:Q1 to 2014:Q4), the monthly oil price changes (with the sample period from 2002:01 to 2014:12) and the large oil price changes, and after examining their impacts on both the first differences and the levels of

the Consumer Confidence Indices in Canada, I have found the following key results. First, nationally, the oil prices affect consumers' expectations about the overall short-term employment situation positively. The possible reason is that consumers believe that the higher oil prices will benefit the oil industry in Canada. Second, the oil prices affect consumers' confidence about the buying conditions of durable goods negatively. The possible reason is that consumers believe that the higher oil prices will cause higher fuel costs for households.

Another finding relates to the effects of the oil price changes on the consumer confidence about the household financial position realization and expectation. The "ordinary" quarterly or monthly oil price changes do not appear to have any explanatory power. However, the oil price changes in a certain month of the quarter can reveal the possible sub-effects in each month within a certain quarter. Finally, I can find that the consumer confidence about the household financial position realization and expectation is statistically significantly affected by the non-linear transformations of the oil price changes. The consumer confidence indices about these survey questions are negatively affected by the events indicated by the "net" crude oil price shocks.

6 The Oil Price Changes and the Regional Consumer Confidence

As mentioned in Section 1, the oil production in Canada concentrates in Alberta (with 47% of the total conventional light crude oil production in Canada in 2014) and Saskatchewan (21%) in the Prairie Provinces and in Newfoundland and Labrador (23%) in the Atlantic Provinces, so the consumer confidence in the oil-producing regions and the oil-consuming regions may respond to the oil price changes differently. The section employs the same methodology and specification for as in Section 5. The regional gasoline price changes are adopted besides the

international crude oil price changes. The gasoline price levels in different regions are usually different, and thus it is interesting to match the regional consumer confidence measures with the regional gasoline prices. Recall that in matching the regional data, since the gasoline price indices are classified by province while the consumer confidence indices are by region, I regress the regional consumer confidence measures in the Prairie Provinces on the gasoline price changes in each of the three Prairie Provinces respectively. The same method is applied for the Atlantic Provinces. Although the gasoline price levels in different regions are distinct, their movements are nearly synchronous and with almost the same magnitudes. For example, the gasoline price index in Alberta has a correlation of 0.93 with the national aggregate gasoline oil index.

6.1 The Prairie Provinces

With the energy sector accounting for about a quarter in the regional GDP for the sample period from 1982 to 2014,²³ the consumer confidence in the Prairie Provinces are most likely to be affected by the oil price changes. Also from the Statistics Canada data,²⁴ for most of the times the Prairie Provinces display the lowest unemployment rates in Canada. However, in December 2014, the consumer confidence about employment in the Prairie Provinces has reached its five-year lowest after the six-month oil price slump. The recent oil price decline seems to hit the consumer confidence about employment in the Prairie Provinces significantly. Using the same methodology in the previous section, the results for the Prairie Provinces are reported in Tables

²³ Statistics Canada. *Table 379-0028 - Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories, annual (percentage share)*, CANSIM (database) and *Table 384-0038 - Gross domestic product, expenditure-based, provincial and territorial, annual (dollars unless otherwise noted)*, CANSIM (database).

²⁴ Statistics Canada. *Table 282-0087 - Labour force survey estimates (LFS), by sex and age group, seasonally adjusted and unadjusted, monthly (persons unless otherwise noted)*, CANSIM (database).

10 and 11. The structures of the tables are the same with those of Tables 7 and 8, which contain the national results in Section 5.

Still at the significance level of 1%, we can see in Tables 10 and 11 Row 4 Columns 3-6, the quarterly crude oil changes influence the first differences of CCE with a summed coefficient of 0.6367 and with the incremental adjusted R^2 as high as 15%; the quarterly crude oil changes influence the levels of CCE with a summed coefficient of 1.8365 and the incremental adjusted R^2 of 8%.²⁵ We can see the oil price changes have evidently positive influences on the consumer confidence about the overall employment expectation in the Prairie Provinces. The explanatory power and the economic significance of the oil price changes on the consumer confidence about the employment expectation in the Prairie Provinces are fairly high (due to the high incremental adjusted R^2 compared with the related results).

Next I will discuss how the oil price changes affect CCB in the Prairie Provinces. In the Prairie Provinces, the conventional light crude oil production accounts for 73% of the national production in 2014, according to the data in *2014 Estimated Production of Canadian Crude Oil and Equivalent* from the National Energy Board (NEB). The oil price changes may even exert positive effects on the consumer confidence about buying durable goods in the Prairie Provinces, contrarily to the national results in Section 5. From Tables 10 and 11, Panel A, Row 5, we can find that the effects of the quarterly oil price changes on CCB in the Prairie Provinces are significantly positive, at a significance level of 1%. The oil price changes in the third month of the quarter (Tables 10 and 11, Panel B, Row 5) and the “large” oil price changes (Tables 10 and 11, Panel C, Row 5) also affect CCB positively. This means, for the Prairie Provinces, the oil

²⁵ Besides, the monthly crude oil price changes, the quarterly gasoline price changes in Saskatchewan and Manitoba, the crude oil price changes in the first and third months in the quarters, the “large” crude oil price changes all have significantly positive effects on the first differences of CCE in the Prairie Provinces with relatively high incremental adjusted R^2 (Table 10, the rows about Question 3). Using the levels of CCE as the independent variable will result similarly (Table 11).

price declines tend to hit the consumer confidence about both employment expectation and buying durable goods. The oil price declines would boom consumer confidence about buying durable goods due to the reduced fuel costs only if the negative impacts of the oil price declines on the consumers' prospects of their future employment do not overshadow the effects of fuel cost saving.

As shown in Tables 10 and 11, in the Prairie Provinces crude the oil price changes do not affect the CCA, CCFr and CCFe significantly. Only the “net” oil price shocks and the quarterly gasoline price changes in Saskatchewan affect CCFe in the Prairie Provinces negatively. Facing the potential benefits for the future employment and the possibly higher fuel expenditure in an oil price increase, consumers in the Prairie Provinces might struggle in answering the questions regarding the confidence about their financial positions (CCFr and CCFe).

6.2 The Atlantic Provinces

It shall be helpful to briefly review the economy in the Atlantic Provinces before we carry on the regressions. In the sample period, the Atlantic Provinces have the lowest shares in national GDP and for the most time, the highest unemployment rates in Canada, according to the data from Statistics Canada.²⁶ The structure of the economy in the Atlantic Provinces has been changing. In the 1990s, the traditional fishing industry began to fade out and the energy sector has been gaining importance. Now the energy sector is a supporting industry in the export-

²⁶ Statistics Canada. *Table 384-0038 - Gross domestic product, expenditure-based, provincial and territorial, annual (dollars unless otherwise noted)*, CANSIM (database) and *Table 282-0087 - Labour force survey estimates (LFS), by sex and age group, seasonally adjusted and unadjusted, monthly (persons unless otherwise noted)*, CANSIM (database).

oriented economy, according to the Atlantic Canada Opportunities Agency (ACOA)²⁷ and the data from Statistics Canada.²⁸

The econometric results obtained by applying the same methodology and specification to the related data for the Atlantic Provinces show that, under the complex economic situations in the Atlantic Provinces, the effects of the oil price changes on CCE and CCB, which are the consumer confidence indices about the overall economic conditions, are uniformly insignificant (Tables 12 and 13, the rows about “Question 3” and “Question 4”). With the unstable economic structure, the emerging oil industry and the high unemployment rate in the economy, the consumer confidence about the short-term overall employment may not lie in the oil price changes. The effects of the oil price changes on the consumer confidence about buying durable goods are not significant, either. However, with respect to the individual household financial conditions, the CCFr and CCFe are affected negatively by the oil price changes (Tables 12 and 13, all the rows about “Question 1” and “Question 2”). Besides, the CCA is negatively affected by the “large” oil price changes and the “net” oil price shocks. The results suggest that the consumers in the Atlantic Provinces may largely understand the oil price increases as negative influential factors on their past and future financial conditions. The 2014 oil price declines are possible to make the consumers optimistic about their financial positions and tend not to affect their prospects for the future employment and the buying conditions for durable goods.

6.3 British Columbia, Ontario and Quebec

In British Columbia, Ontario and Quebec, the energy sector shares in the regional GDP are 6.02%, 2.55% and 4.19% in 2014, which are much lower than those in the Prairies Provinces

²⁷ See ACOA (2012).

²⁸ Statistics Canada. *Table 282-0088 - Labour force survey estimates (LFS), employment by North American Industry Classification System (NAICS), seasonally adjusted and unadjusted, monthly (persons)*, CANSIM (database).

(about 25%) and in the Atlantic Provinces (about 12%).²⁹ The proportions of gasoline and other fuels expense in household expenditure in the three regions are just near the national average (Table 3). With the same methodology and specification, the results are reported in the same format in Tables 14-19. In the following interpretations of the results, the significance level is still 1%.

For British Columbia, the only conclusive result is that the quarterly gasoline price changes have a negative effect on CCB (Table 15, Panel A, Row 10). The results in Tables 14 and 15 show that the oil price changes do not have significant effects on the consumer confidence except that lower gasoline prices may encourage consumers in British Columbia to buy durable goods. From the results, we could expect no much negative impact on the consumer confidence in British Columbia imposed by the 2014 oil price declines.

Ontario and Quebec are the oil-consuming regions, which primarily refine imported or domestically produced crude oil, as mentioned in Section 1. For Ontario, the results show the negative effects of the quarterly gasoline price changes on CCE (Table 16, Panel A, Row 9) and the negative effects of the “net” oil price shocks on CCFr (Table 16, Panel C, Row 7). According to the results, in Ontario, the oil price declines may benefit the consumer confidence about employment and their financial positions. The possible reasons are that lower oil prices will benefit the firms and households by reducing their fuel costs and thus may improve the employment and the household financial conditions. For Quebec, the effects of the oil price changes are positive on CCE, negative on CCB and CCA; the “net” oil price shocks affect CCFr and CCFe negatively (Tables 18 and 19). The oil price decline tends to increase the consumer

²⁹ Statistics Canada. *Table 379-0028 - Gross domestic product (GDP) at basic prices, by North American Industry Classification System (NAICS), provinces and territories, annual (percentage share)*, CANSIM (database) and *Table 384-0038 - Gross domestic product, expenditure-based, provincial and territorial, annual (dollars unless otherwise noted)*, CANSIM (database).

confidence about buying durable goods but decrease the employment expectation in Quebec. The possible reason may be that in Quebec, the consumers might associate the employment in the community with the overall national employment, and thus expect less employment when they face the declining oil prices.

6.4 The Summary of the Regional Analysis

We cannot easily make a uniform summary for the regional results. However, the main focus of the regional analysis is on the Prairie Provinces, where the conventional light crude oil production accounts for 73% of the national production in 2014 (Section 6.1). The 2014 oil price decline may impact the consumer confidence in the Prairie Provinces the most. As expected, the consumer confidence about the overall employment and even the consumer confidence about the buying conditions of durable goods, are positively related to the oil prices. This is strongly implying the possibility that the effects of the oil price changes on the employment prospects in these oil-producing regions have overshadowed the effects of the fuel cost changes brought by the oil price changes in determining the consumer confidence about durable goods consumption.

The Atlantic Provinces are also oil-producing regions. However, given the changing economic structure, the emerging oil industries, and the high unemployment, consumers tend to consider the oil prices as an influencer of their fuel costs and thus their financial conditions, rather than an influencer of their employment expectation or the buying conditions for durables. The 2014 oil price decline tends to increase the consumer confidence about the financial conditions in the Atlantic Provinces.

For British Columbia, Ontario and Quebec, the 2014 oil decline is mainly beneficial for the consumer confidence. The only exception is that the oil price decline tends to decrease the consumer confidence about the overall employment in Quebec. The possible reason could be that

the consumers in Quebec associate the employment situation in the community closely with the overall national employment situation when assessing the short-term employment confidence.

7 The Asymmetric Effects of Oil Price Changes on the Consumer Confidence

Evaluating the effects of the oil price changes on the U.S. GDP growth, Hamilton (2003) has suggested there may exist asymmetric effects of the oil price increases and decreases. Similarly, it is possible that the oil price changes can have different effects on the consumer confidence. For example, the oil price changes may be associated with the households' employment expectation in Canada, as discussed previously. During the oil price declines, the negative impacts on the oil industrial profitability are imminent, and firms tend to reduce employment. During the oil price rises, the expansion of the oil industry may have some delays. Depending on the process of firms' investment decisions, the new employment will not be created immediately. To investigate the existence of possible asymmetric effects, the oil price changes in Equation 1 are split into the positive oil price changes and the negative oil price changes. This approach may have different explanatory powers on the consumer confidence. The new specification in this section is

$$Y_t = \alpha + \sum_{i=0}^m \beta_i \Delta \text{Oil Price}_{t-i}^+ + \sum_{i=0}^m \gamma_i \Delta \text{Oil Price}_{t-i}^- + \sum_{j=1}^n \theta_j Y_{t-j} + \varepsilon_t \quad (\text{Equation 3}).$$

$\Delta \text{Oil Price}^+$ equals to the oil price changes if the changes are positive or zero otherwise, and $\Delta \text{Oil Price}^-$ equals to the oil price changes if the changes are negative or zero otherwise. The lags m and n are the lags that are used in Equation 1. Equation 3 is a less restrictive version of Equation 1, without the restrictions that $\beta_i = \gamma_i$ ($i = 0, \dots, m$).

The results are reported in Tables 20 and 21. Panels A-F are for Canada and its five regions respectively. In each panel, Columns 3 and 4 show the adjusted R^2 and the incremental adjusted R^2 based on this model (Equation 3) and the model without the oil price changes (Equation 2). We can see that the incremental adjusted R^2 of the regression of the variations of the consumer confidence about the employment expectation in the Prairie Provinces on the quarterly crude oil price changes has increased to 19% (Table 20, Panel B, Row 4). Actually, 99 out of the total 120 regressions in Tables 20 and 21 have larger adjusted R^2 and incremental adjusted R^2 than those regressions with the symmetric oil price changes.

Columns 5 and 6 show the sum of the coefficients and the p-values of the joint significance test statistics for the positive oil price changes. Columns 7 and 8 are for the negative oil price changes. Compared with the results of the symmetric crude oil price changes (the “ordinary” quarterly and monthly oil price changes and the “large” oil price changes) in Section 5.1 and Section 6 (Tables 7-8 and 10-19), the results with the asymmetric crude oil price changes (Tables 20 and 21) falls into three cases. First, they are in consensus with the results obtained from the symmetric crude oil price changes in Section 5.1 and Section 6 (CCE and CCB in Canada; CCE and CCB in the Prairie Provinces; CCA, CCFr in the Atlantic Provinces; CCFr, CCE and CCB in Quebec). Second, they indicate new significant results that the symmetric crude oil price changes fail to reveal (CCFr in Canada; CCA and CCFe in the Prairie Provinces; CCB in British Columbia; CCFr and CCB in Ontario; CCA in Quebec). Third, for only few of the significant results that are revealed by the symmetric oil price changes, the asymmetric oil price changes fail to find (CCFe in in the Atlantic Provinces; CCFe in Quebec).

Besides the higher overall explanatory power, the most important characteristic of the asymmetric model is that it allows us to examine the positive and the negative oil price changes

separately. The findings from the results in Tables 20 and 21 are that CCA, CCFr, CCE and CCB tend to be effected only by the negative oil price changes and that CCFe tends to be affected only by the positive oil price changes. That is, the consumer confidence about the financial position realization, the employment and the conditions to buy durable goods may be sensitive only to the oil price declines but not to the oil price rises (or recoveries). For example, from Table 21, Panel A, Row 4, we can find that the national consumer confidence about the overall employment is only affected by the negative oil price changes with a summed coefficient of 1.0073. From Tables 20, Panel B, Row 5, we can find that the consumer confidence in the Prairie Provinces about the conditions to buy durable goods is only affected by the negative oil price changes with a summed coefficient of 0.3336. Other (similar) results can also be found in Tables 20 and 21. If this is true, we must look for the other effective solutions for the possible negative impacts of the 2014 oil price declines on the consumer confidence about the employment across Canada and the durable goods consumption in the oil-producing regions, in instead of counting too much on the oil price recoveries, in order to prevent the consumption shrinkage led by the decreased consumer confidence in the economy.

8 The Oil Price Volatility and the Consumer Confidence

Previous studies by Elder and Serletis (2009 and 2010) have suggested that the high uncertainty of the oil prices will defer industrial investments. We may also expect that this delay might affect the industrial employment. If the auto firms announce delays in the investments in developing the fuel-efficient vehicles, the consumers might postpone their purchasing decisions. So very indirectly, the oil price volatility could influence the consumer confidence about the employment expectation and durable goods consumption, if the consumers know the firms' investment decisions well.

I construct the following specification to see whether the oil price volatility alone (without the oil price changes as explanatory variables) can explain the consumer confidence.

$$Y_t = \alpha + \sum_{i=0}^k \delta_i \text{Volatility}_{t-i} + \sum_{j=1}^n \theta_j Y_{t-j} + \varepsilon_t \quad (\text{Equation 4})$$

Volatility_t is the quarterly average of the monthly GARCH(1, 1) estimated standard deviations. As before, Y_t measures the consumer confidence (in the first differences or the levels). The optimal lag n is the same as the optimal lags used in Sections 2.7, 5, 6 and 7. The optimal lag k is selected so that Equation 4 achieves the lowest AIC. Quarterly series with a longer time horizon (from 1982:Q2 to 2014:Q4) are used in order to include as many high-oil-price-uncertainty episodes in history as possible (Graph 7). As we can see in Graph 7, the quarterly volatility measures have multiple peaks while the monthly volatility measures capture few high-oil-price-volatility episodes.

The results are listed in Tables 22 and 23. The tables are in similar format with those in Sections 5 and 6. We can find the p-values of the joint significance test statistics for the oil price uncertainty measures from Tables 22 and 23, Column 6. Still at the same significance level of 1% as in Sections 5 and 6, we can see the results are rarely significant for any consumer confidence measures in Canada or in its regions (58 out of 60 regressions get no significant results, except for CCE in the Atlantic Provinces and CCFr in British Columbia).

The assumptions that the consumer confidence will be affected by the oil price volatility through consumers' knowledge about the firms' investment decision seem too strong. The results above show little evidence that the oil price uncertainty will determine the consumer confidence.

9 The Effects of the Oil Price Changes on the Consumer Confidence at Different Oil Price Volatility Levels

The oil price volatility alone may not explain the consumer confidence well, but at different volatility levels, the symmetric oil price changes may affect the consumer confidence with different magnitudes. For example, consumers will think a certain size of oil price change more effective when the oil price is more volatile. So a model identifying the symmetric oil price changes at different levels of oil price uncertainty might have higher explanatory power on the consumer confidence measures. To evaluate the hypothesis, I estimate the following specification.

$$Y_t = \alpha + \sum_{i=0}^r \beta_i \Delta \text{Oil Price}_{t-i} + \sum_{i=0}^r \delta_i \text{Volatility}_{t-i} + \sum_{i=0}^r \varphi_i \Delta \text{Oil Price}_{t-i} * \text{Volatility}_{t-i} + \sum_{j=1}^n \theta_j Y_{t-j} + \varepsilon_t \quad (\text{Equation 5}).$$

All the variables are as defined in the previous sections. The optimal lag n is the same as the optimal lags used in Sections 2.7, 5, 6, 7 and 8. Since this specification integrates both the oil price changes and the oil price volatility, for fitness, the optimal lag r is re-selected so that Equation 5 achieves the lowest AIC. The results are listed in Tables 24 and 25. In Table 24, Panel B, Row 4 we see, in explaining the variations of quarterly CCE in the Prairie Provinces, the incremental adjusted R^2 increases to 19%. Actually, 112 out of the total 140 regressions in Tables 24 and 25 have larger adjusted R^2 and incremental adjusted R^2 than those regressions with only the oil price changes.

The “marginal effect” of the oil price changes can be expressed as

$$\beta_i + \varphi_i * \text{Volatility}_{t-i}.$$

By assuming that the volatility remain at the same (or similar) level in the r lagged periods as in the current period,³⁰ and the oil price changes are the identical in the lagged periods as in the current period, the effect of a percentage point change in the oil prices at a certain level of oil price volatility can be viewed as

$$\sum_{i=0}^r \beta_i + \sum_{i=0}^r \varphi_i * \text{Volatility}.$$

As we can find in Tables 24 and 25, Column 10, all the significantly non-zero term “ $\sum_{i=0}^n \varphi_i$ ” (the sum of the coefficients for the interacted terms) are positive, which means the effects of a certain size of the oil price changes are strictly increasing with respect to the oil price volatility. Specifically, using the results in Table 24, Panel B, Row 4, the effect of one percentage point change of the quarterly crude oil prices on the first differences of CCE in the Prairie Provinces is $0.0061 + 4.809 * \text{Volatility}$, which is always positive and increasing in the levels of volatility. This suggests that for the Prairie Provinces, at any levels of oil price volatility, the oil price declines always tend to decrease the consumer confidence about the employment prospects. Under the high-oil-price-uncertainty circumstances, the effects shall be severer. As we can see in Graphs 1 and 2, Panel B4, and Graph 7, Panel A, in light of the increasing oil price volatility in the second half 2014, the oil price declines have been associated with severe declines of the CCE in the Prairie Provinces.

In Section 7, we have seen that different levels of the oil price volatility might not affect the consumer confidence. However, in this section, the results imply that, the higher is the oil price volatility, the more sensitive is the consumer confidence to the oil price changes of the same size.

³⁰ This imaginary situation happens when $r = 0$ and makes sense when r is small. Actually, the maximum of r is set to be 4 in this paper.

10 Conclusions

Previous studies on macroeconomic effects of oil price changes and of oil price uncertainty have mainly focused on real economic outcomes, such as employment, consumption and aggregate output. This paper investigates the links between the oil price changes and the consumer confidence in Canada, at both the national and the regional levels, using the correlation analysis and least square econometric methods. The findings are that the oil price changes tend to affect the consumer confidence about the overall employment positively across Canada (except in Ontario). Higher oil prices mean higher fuel costs for the households. However, the impacts on the consumer confidence about the overall buying conditions of durable goods differ in the oil-producing regions and the oil-consuming regions. As to the consumer confidence about the household financial position realization and expectation, the “net” oil price shocks identifying the oil price shock events have negative impacts on them nationally and regionally.

The introduction of the asymmetric oil price changes reveals that the oil price declines are more important in affecting the consumer confidence about the employment expectation and the durable goods consumption. Although different levels of the oil price volatility might not affect the consumer confidence, the higher is the oil price volatility, the more sensitive is the consumer confidence to the oil price changes of the same size, with the effects of the oil price changes increasing with the oil price volatility.

Applying the conclusions above, the historical oil price decline mainly tends to negatively impact the consumer confidence about the employment across Canada and the durable goods consumption in the main oil-producing regions, especially when associated with the high volatility of the oil prices. However, the oil-consuming regions tend to benefit from the oil price decline with higher consumer confidence about the buying conditions for durable goods.

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APPENDIX

Table 1 The Monthly National and Regional Unemployment Rates Canada from June 2013 to May 2015 (Seasonal Adjusted) and the Year-over-year Percentage Points Changes

Geographies	Canada %	Alberta %	Saskatchewan %	Manitoba %	Nova Scotia %	New Brunswick %	Newfoundland and Labrador %	Prince Edward Island %	British Columbia %	Ontario %	Quebec %
2013 June	7.1 -0.1	4.9 0.4	4.1 -0.7	5.5 0.2	8.8 -0.5	11.2 1.6	11.4 -1.2	11.3 -0.6	6.5 -0.3	7.6 -0.2	7.7 0.4
2013 July	7.1 -0.2	4.6 0.1	4.3 -0.5	5.7 0.0	8.8 -0.7	9.8 -0.7	11.9 -0.5	12.1 1.7	6.6 -0.3	7.6 -0.3	7.8 0.4
2013 August	7.1 -0.1	4.8 0.5	4.1 -0.3	5.4 -0.1	9.0 -0.7	10.2 -0.6	10.9 -1.7	11.1 -0.9	6.6 0.0	7.5 -0.3	7.8 0.3
2013 September	7.0 -0.3	4.3 -0.2	4.5 -0.1	5.5 0.3	8.8 -0.4	10.3 -0.7	10.3 -2.3	11.6 0.5	6.5 -0.3	7.4 -0.5	7.8 0.3
2013 October	7.0 -0.4	4.5 0.0	3.8 -0.9	5.5 -0.2	9.1 -0.4	9.7 -1.9	11.1 -1.2	11.7 0.3	6.5 -0.2	7.5 -0.9	7.7 0.3
2013 November	7.0 -0.2	4.8 0.5	4.1 -0.5	5.9 0.6	8.6 -0.7	9.7 -1.7	12.3 0.2	11.9 0.9	6.6 -0.4	7.4 -0.5	7.3 -0.1
2013 December	7.2 0.0	4.7 0.2	4.0 -0.7	5.7 0.6	9.3 -0.3	10.0 -0.5	11.6 0.2	11.2 0.9	6.9 0.1	7.7 -0.2	7.7 0.3
2014 January	7.0 0.0	4.6 0.1	4.3 0.4	5.6 1.0	8.9 -0.7	10.1 -1.2	12.3 1.1	10.9 -0.6	6.4 -0.2	7.4 -0.3	7.5 0.3
2014 February	7.1 0.0	4.4 -0.3	4.1 0.3	5.3 0.4	8.9 -0.4	9.7 -0.6	11.8 0.0	11.0 -0.2	6.5 0.1	7.5 -0.3	8.0 0.7
2014 March	7.0 -0.3	5.1 0.3	4.6 0.7	5.4 0.5	9.0 -0.3	9.7 -1.0	11.6 -0.7	11.2 -0.6	6.0 -1.1	7.3 -0.5	7.7 0.0
2014 April	7.0 -0.1	5.0 0.6	3.5 -0.6	5.8 0.2	9.0 0.0	10.6 0.4	11.9 -0.2	11.2 0.3	6.1 -0.5	7.3 -0.4	7.7 0.0
2014 May	7.0 0.0	4.7 0.2	4.0 -0.5	5.5 0.0	9.1 0.3	10.3 0.1	12.6 0.8	12.2 0.3	6.2 -0.3	7.2 -0.2	7.9 0.4
2014 June	7.0 -0.1	4.8 -0.1	3.8 -0.3	5.1 -0.4	9.0 0.2	9.4 -1.8	11.9 0.5	9.9 -1.4	6.1 -0.4	7.3 -0.3	8.1 0.4
2014 July	7.0 -0.1	4.5 -0.1	3.3 -1.0	5.2 -0.5	9.5 0.7	10.0 0.2	11.9 0.0	9.3 -2.8	6.1 -0.5	7.5 -0.1	8.1 0.3
2014 August	7.0 -0.1	5.2 0.4	4.1 0.0	5.5 0.1	8.6 -0.4	9.3 -0.9	12.6 1.7	9.4 -1.7	6.2 -0.4	7.3 -0.2	7.7 -0.1
2014 September	6.9 -0.1	4.6 0.3	3.5 -1.0	5.5 0.0	8.5 -0.3	10.1 -0.2	12.4 2.1	9.6 -2.0	6.3 -0.2	7.3 -0.1	7.8 0.0
2014 October	6.6 -0.4	4.4 -0.1	3.6 -0.2	5.0 -0.5	8.7 -0.4	9.9 0.2	12.0 0.9	9.3 -2.4	6.1 -0.4	6.7 -0.8	7.7 0.0
2014 November	6.7 -0.3	4.4 -0.4	3.4 -0.7	5.1 -0.8	8.9 0.3	10.0 0.3	11.0 -1.3	10.4 -1.5	5.7 -0.9	7.0 -0.4	7.6 0.3
2014 December	6.7 -0.5	4.7 0.0	3.7 -0.3	5.4 -0.3	8.4 -0.9	10.0 0.0	11.8 0.2	11.1 -0.1	5.5 -1.4	7.0 -0.7	7.5 -0.2
2015 January	6.6 -0.4	4.5 -0.1	4.5 0.2	6.0 0.4	8.4 -0.5	10.0 -0.1	11.4 -0.9	10.2 -0.7	5.6 -0.8	6.9 -0.5	7.4 -0.1
2015 February	6.8 -0.3	5.3 0.9	5.0 0.9	5.6 0.3	9.1 0.2	10.4 0.7	12.6 0.8	10.1 -0.9	6.0 -0.5	6.9 -0.6	7.4 -0.6
2015 March	6.8 -0.2	5.5 0.4	4.4 -0.2	5.4 0.0	9.3 0.3	10.1 0.4	13.3 1.7	11.0 -0.2	5.8 -0.2	6.9 -0.4	7.5 -0.2
2015 April	6.8 -0.2	5.5 0.5	4.3 0.8	5.5 -0.3	9.2 0.2	9.9 -0.7	12.6 0.7	10.5 -0.7	6.3 0.2	6.8 -0.5	7.4 -0.3
2015 May	6.8 -0.2	5.8 1.1	4.9 0.9	5.7 0.2	8.8 -0.3	9.6 -0.7	13.8 1.2	11.0 -1.2	6.1 -0.1	6.5 -0.7	7.6 -0.3

Data Source:

Statistics Canada. Table 282-0087 - Labour force survey estimates (LFS), by sex and age group, seasonally adjusted and unadjusted, monthly (persons unless otherwise noted), CANSIM (database).

Table 2 The Variable List and Description

A. The National and Regional Consumer Confidence Measures		
Variable Name		Description
Quarterly Series	Monthly Series	
R1CCQ0Q	R1CCQ0	The Aggregate Consumer Confidence Index in Canada
R1CCQ1Q	R1CCQ1	The Consumer Confidence Index for Question 1 in Canada
R1CCQ2Q	R1CCQ2	The Consumer Confidence Index for Question 2 in Canada
R1CCQ3Q	R1CCQ3	The Consumer Confidence Index for Question 3 in Canada
R1CCQ4Q	R1CCQ4	The Consumer Confidence Index for Question 4 in Canada
R2CCQ0Q	R2CCQ0	The Aggregate Consumer Confidence Index in the Prairie provinces
R2CCQ1Q	R2CCQ1	The Consumer Confidence Index for Question 1 in the Prairie provinces
R2CCQ2Q	R2CCQ2	The Consumer Confidence Index for Question 2 in the Prairie provinces
R2CCQ3Q	R2CCQ3	The Consumer Confidence Index for Question 3 in the Prairie provinces
R2CCQ4Q	R2CCQ4	The Consumer Confidence Index for Question 4 in the Prairie provinces
R3CCQ0Q	R3CCQ0	The Aggregate Consumer Confidence Index in the Atlantic Provinces
R3CCQ1Q	R3CCQ1	The Consumer Confidence Index for Question 1 in the Atlantic Provinces
R3CCQ2Q	R3CCQ2	The Consumer Confidence Index for Question 2 in the Atlantic Provinces
R3CCQ3Q	R3CCQ3	The Consumer Confidence Index for Question 3 in the Atlantic Provinces
R3CCQ4Q	R3CCQ4	The Consumer Confidence Index for Question 4 in the Atlantic Provinces
R4CCQ0Q	R4CCQ0	The Aggregate Consumer Confidence Index in British Columbia
R4CCQ1Q	R4CCQ1	The Consumer Confidence Index for Question 1 in British Columbia
R4CCQ2Q	R4CCQ2	The Consumer Confidence Index for Question 2 in British Columbia
R4CCQ3Q	R4CCQ3	The Consumer Confidence Index for Question 3 in British Columbia
R4CCQ4Q	R4CCQ4	The Consumer Confidence Index for Question 4 in British Columbia
R5CCQ0Q	R5CCQ0	The Aggregate Consumer Confidence Index in Ontario
R5CCQ1Q	R5CCQ1	The Consumer Confidence Index for Question 1 in Ontario
R5CCQ2Q	R5CCQ2	The Consumer Confidence Index for Question 2 in Ontario
R5CCQ3Q	R5CCQ3	The Consumer Confidence Index for Question 3 in Ontario
R5CCQ4Q	R5CCQ4	The Consumer Confidence Index for Question 4 in Ontario
R6CCQ0Q	R6CCQ0	The Aggregate Consumer Confidence Index in Quebec
R6CCQ1Q	R6CCQ1	The Consumer Confidence Index for Question 1 in Quebec
R6CCQ2Q	R6CCQ2	The Consumer Confidence Index for Question 2 in Quebec
R6CCQ3Q	R6CCQ3	The Consumer Confidence Index for Question 3 in Quebec
R6CCQ4Q	R6CCQ4	The Consumer Confidence Index for Question 4 in Quebec
DRiCCQjQ	DRiCCQj	The first differences of national and regional consumer confidence measures (i = 1, 2, ..., 6; j = 0, 1, ..., 4)

Table 2 The Variable List and Description (Continued)**B. The Oil Price Changes and Volatility Measures**

Variable Name		Description
Quarterly Series	Monthly Series	
CRUDEQ	CRUDE	The Conventional Crude Oil Price Index
LCRUDEQ	LCRUDE	The logarithm of Conventional Crude Oil Price Index
DLCRUDEQ	DLCRUDE	The logarithmic differences of Conventional Crude Oil Price Index
DLCRUDEQM32	-	The logarithmic differences of Conventional Crude Oil Price Index in the third month of each of the quarters.
DLCRUDEQM21	-	The logarithmic differences of Conventional Crude Oil Price Index in the second month of each of the quarters.
DLCRUDEQM10	-	The logarithmic differences of Conventional Crude Oil Price Index in the first month of each of the quarters.
LARGECRUDE	-	The “large” crude oil price changes defined as DLCRUDEQ if DLCRUDEQ is larger than 10 or smaller than -10 and zero otherwise.
NETCRUDE	-	The “net” crude oil price changes defined as the logarithmic crude oil price increases from the maximum of LCRUDEQ in the past four quarters.
R1GQ	R1G	The National Gasoline Price Index
R2GQ	R2G	The Gasoline Price Index in Alberta
R3GQ	R3G	The Gasoline Price Index in Saskatchewan
R4GQ	R4G	The Gasoline Price Index in Manitoba
R5GQ	R5G	The Gasoline Price Index in Nova Scotia
R6GQ	R6G	The Gasoline Price Index in New Brunswick
R7GQ	R7G	The Gasoline Price Index in Newfoundland and Labrador
R8GQ	R8G	The Gasoline Price Index in Prince Edward Island
R9GQ	R9G	The Gasoline Price Index in British Columbia
R10GQ	R10G	The Gasoline Price Index in Ontario
R11GQ	R11G	The Gasoline Price Index in Quebec
DLRiGQ	DLRiG	The logarithmic differences of Gasoline Price Index ($i = 1, 2, \dots, 11$)
CPIQ	CPI	The national Consumer Price Index (CPI) published by Statistics Canada. This is for the computation of the real oil price changes.
REALCRUDEQ	REALCRUDE	The CPI-adjusted Conventional Crude Oil Price Index
LREALCRUDEQ	LREALCRUDE	The logarithm of CPI-adjusted Conventional Crude Oil Price Index
DLREALCRUDEQ	DLREALCRUDE	The logarithmic differences of CPI-adjusted Conventional Crude Oil Price Index
REALR1GQ	REALR1G	The CPI-adjusted national Gasoline Price Index
LREALR1GQ	LREALR1G	The logarithm of CPI-adjusted national Gasoline Price Index
DLREALR1GQ	DLREALR1G	The logarithmic differences of CPI-adjusted national Gasoline Price Index
-	SM	The monthly GARCH(1, 1) estimated standard deviations based on DLCRUDE, used as the measures of volatility of monthly crude oil price changes
S	-	The quarterly average of the monthly GARCH(1, 1) estimated standard deviations, used as the measures of volatility of quarterly crude oil price changes

Table 2 The Variable List and Description (Continued)**C. The Variables in Specifications**

Variable Name	Description
$\Delta OIL\ PRICE$	DLCRUDEQ, DLRiGQ, DLCRUDEQM32, DLCRUDEQM21, DLCRUDEQM10, LARGECRUDE, NETCRUDE, DLCRUDE or DLRiG ($i = 1, 2, \dots, 11$)
$\Delta OIL\ PRICE^+$	$\Delta OIL\ PRICE$ if positive or zero otherwise
$\Delta OIL\ PRICE^-$	$\Delta OIL\ PRICE$ if negative or zero otherwise
VOLATILITY	S
Y	DRiCCQjQ, DRiCCQj, RiCCQjQ or RiCCQj ($i = 1, 2, \dots, 6; j = 0, 1, \dots, 4$)

D. The Matching Relations between the Regional Classifications of Consumer Confidence Measures and the Regional Classifications of Gasoline Price Indices

Consumer Confidence Survey Geographies	Consumer Confidence Measures	Gasoline Price Index Geographies	Gasoline Price Index Series
Canada	R1CCQiQ, R1CCQi ($i = 0, 1, \dots, 4$)	Canada	R1GQ, R1G
		Alberta	R2GQ, R2G
The Prairie Provinces	R2CCQiQ, R2CCQi ($i = 0, 1, \dots, 4$)	Saskatchewan	R3GQ, R3G
		Manitoba	R4GQ, R4G
		Nova Scotia	R5GQ, R5G
The Atlantic Provinces	R3CCQiQ, R3CCQi ($i = 0, 1, \dots, 4$)	New Brunswick	R6GQ, R6G
		Newfoundland and Labrador	R7GQ, R7G
		Prince Edward Island	R8GQ, R8G
British Columbia	R4CCQiQ, R4CCQi ($i = 0, 1, \dots, 4$)	British Columbia	R9GQ, R9G
Ontario	R5CCQiQ, R5CCQi ($i = 0, 1, \dots, 4$)	Ontario	R10GQ, R10G
Quebec	R6CCQiQ, R6CCQi ($i = 0, 1, \dots, 4$)	Quebec	R11GQ, R11G

Note:

1. The sample periods are from 1982:Q1 to 2014:Q4 for quarterly series and from 2002:01 to 2014:12 for monthly series.
2. In Panel D, The order of consumer confidence survey geographies is basically in accordance with the order of the oil production in each of the geographies.
3. For more details about data, please see Section 2.

Table 3 The Proportions of Gasoline and Other Fuels Expense in Household Expenditure

Average expenditure per household	Canada			The Prairie Provinces			The Atlantic Provinces		
	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion
2010	71282	2106	2.95%	78611	2334	2.97%	61341	2458	4.01%
2011	73457	2606	3.55%	80147	2732	3.41%	64611	2803	4.34%
2012	75443	2394	3.17%	87649	2526	2.88%	67231	2734	4.07%
2013	79012	2581	3.27%	91664	2715	2.96%	68748	2862	4.16%
(Continued)									
Average expenditure per household	British Columbia			Ontario			Quebec		
	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion	Total expenditure	Gas and other fuels (all vehicles and tools)	Proportion
2010	73456	2089	2.84%	75163	2088	2.78%	62169	1883	3.03%
2011	74448	2233	3.00%	77554	2759	3.56%	64716	2435	3.76%
2012	74837	2139	2.86%	78495	2492	3.17%	65126	2196	3.37%
2013	78414	2064	2.63%	82267	2749	3.34%	68684	2436	3.55%

Data Source:

Statistics Canada. *Table 203-0021 - Survey of household spending (SHS), household spending, Canada, regions and provinces, annual (dollars)*, CANSIM (database).

Table 4 The Unit Root Test Results for Quarterly Series (Quarterly Samples from 1982:Q1 to 2014:Q4)

A. Consumer Confidence Measures

Quarterly series	Canada		The Prairie Provinces		The Atlantic Provinces		British Columbia		Ontario		Quebec		Significance levels	Critical values
	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics		
The ADF test statistics for the levels of Consumer Confidence Indices for														
Aggregate	6	-2.45662	0	-3.76256***	4	-2.22321	1	-3.68677***	5	-2.25832	6	-2.42388	1%(***)	-3.48
Question 1	1	-2.21275	1	-2.70790*	2	-2.52301	3	-2.23674	1	-2.51938	4	-2.44077	5%(**)	-2.88
Question 2	1	-3.11908**	7	-2.04077	3	-2.71246*	6	-2.42932	1	-3.08720**	1	-2.93387**	10%(*)	-2.58
Question 3	0	-4.61042***	0	-3.54585***	8	-2.39324	2	-3.35395**	0	-4.63387***	0	-5.10219***		
Question 4	1	-4.34123***	2	-3.86755***	2	-4.31330***	1	-4.36633***	1	-3.83011***	1	-3.88424***		
The ADF test statistics for the first differences of Consumer Confidence Indices for														
Aggregate	4	-7.33111***	1	-9.69870***	3	-8.14261***	0	-15.5615***	4	-7.55264***	4	-7.04329***	1%(***)	-2.58
Question 1	0	-16.1516***	3	-7.67873***	3	-7.97812***	2	-10.0231***	0	-16.3222***	2	-9.02429***	5%(**)	-1.94
Question 2	2	-8.49587***	6	-6.66719***	3	-8.56525***	5	-5.38983***	2	-8.58148***	0	-18.0752***	10%(*)	-1.62
Question 3	4	-6.82380***	1	-9.56780***	7	-5.08325***	1	-12.0497***	8	-6.09685***	1	-10.6178***		
Question 4	2	-7.63600***	1	-11.8221***	1	-11.7422***	4	-7.69500***	4	-7.61726***	2	-8.75684***		
The PP test statistics for the levels of Consumer Confidence Indices for														
Aggregate	4	-3.74070***	4	-3.65456***	4	-4.54929***	4	-4.34394***	4	-3.78742***	4	-3.75885***	1%(***)	-3.48
Question 1	4	-2.83747*	4	-3.73521***	4	-5.18484***	4	-4.27012***	4	-3.26380**	4	-3.57037***	5%(**)	-2.88
Question 2	4	-4.13996***	4	-6.11531***	4	-5.89107***	4	-6.00933***	4	-4.15207***	4	-4.12108***	10%(*)	-2.58
Question 3	4	-4.68828***	4	-3.42175**	4	-6.39682***	4	-4.57789***	4	-4.79558***	4	-5.12247***		
Question 4	4	-4.53420***	4	-5.34502***	4	-5.43337***	4	-5.40205***	4	-4.27460***	4	-4.45681***		

Table 4 The Unit Root Test Results for Quarterly Series (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. Crude Oil Price Indices and Crude Oil Price Volatility Measures

The ADF tests for the levels of Crude Oil Price Indices				The ADF tests Crude Oil Price Volatility Measures				Significance levels	Critical values
Lag	5	T-statistics	-0.60533	Lag	1	T-statistics	-5.49530***	1% (***)	-3.48
								5% (**)	-2.88
								10% (*)	-2.58
The ADF tests for the First Logarithmic Differences of Crude Oil Price Indices								Significance levels	Critical values
Lag	4	T-statistics	-6.83351***					1% (***)	-2.58
								5% (**)	-1.94
								10% (*)	-1.62
The PP tests for the levels of Crude Oil Price Indices				The PP tests Crude Oil Price Volatility Measures				Significance levels	Critical values
Lag	4	T-statistics	-1.42006	Lag	4	T-statistics	-5.08593***	1% (***)	-3.48
								5% (**)	-2.88
								10% (*)	-2.58

Table 4 The Unit Root Test Results for Quarterly Series (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

C. Gasoline Price Indices

Quarterly Series	Canada		The Prairies Provinces		The Atlantic Provinces		British Columbia		Ontario		Quebec		Significance Level	Critical Value
	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics		
The ADF test statistics for the levels of Gasoline Price Indices													1%(***)	-3.48
	7	-0.03327	3	-0.77509	2	-0.97707	8	-0.18885	2	-0.73336	3	-0.44757	5%(**)	-2.88
													10%(*)	-2.58
The ADF test statistics for the first logarithmic differences of Gasoline Price Indices													1%(***)	-2.58
	1	-11.3380***	1	-10.6784***	1	-10.7378***	7	-4.11304***	1	-11.1078***	2	-8.81088***	5%(**)	-1.94
													10%(*)	-1.62
The PP test statistics for the levels of Gasoline Price Indices													1%(***)	-3.48
	4	-1.24759	4	-1.34401	4	-1.36169	4	-1.17966	4	-1.22489	4	-1.26835	5%(**)	-2.88
													10%(*)	-2.58

D. Real Oil Price Measures in Canada

The ADF tests for the levels real crude oil prices					The ADF tests for the levels of real gasoline prices					Significance levels	Critical values
Lag	0	T-statistics		-2.18280	Lag	2	T-statistics		-1.58160	1%(***)	-3.48
										5%(**)	-2.88
										10%(*)	-2.58
The ADF tests for the first logarithmic differences of real crude oil prices					The ADF tests for the first logarithmic differences of real gasoline prices					Significance levels	Critical values
Lag	4	T-statistics		-6.83784***	Lag	2	T-statistics		-8.93551***	1%(***)	-2.58
										5%(**)	-1.94
										10%(*)	-1.62
The PP tests for the levels real crude oil prices					The PP tests for the levels of real gasoline prices					Significance levels	Critical values
Lag	4	T-statistics		-2.07450	Lag	4	T-statistics		-2.35370	1%(***)	-3.48
										5%(**)	-2.88
										10%(*)	-2.58

Table 5 The Unit Root Test Results for Monthly Series (Monthly Samples from 2002:01 to 2014:12)

A. Consumer Confidence Measures

Monthly series	Canada		The Prairie Provinces		The Atlantic Provinces		British Columbia		Ontario		Quebec		Significance levels	Critical values
	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics		
The ADF test statistics for the levels of Consumer Confidence Indices for														
Aggregate	1	-2.28074	1	-2.76254*	2	-2.81632*	2	-1.75768	1	-2.33037	7	-2.17981	1%(***)	-3.47
Question 1	1	-1.98682	2	-1.9931	2	-3.34505**	2	-1.93933	2	-1.97704	3	-2.17637	5%(**)	-2.88
Question 2	1	-3.40960**	1	-5.23575***	1	-4.50901***	6	-1.73499	1	-3.41768**	2	-3.08128**	10%(*)	-2.58
Question 3	5	-2.75065*	1	-2.43052	1	-3.89669***	2	-2.37401	1	-2.67302*	1	-3.31994**		
Question 4	0	-2.27569	1	-2.34372	3	-2.03799	2	-1.90291	1	-2.03916	1	-2.76629*		
The ADF test statistics for the first differences of Consumer Confidence Indices for														
Aggregate	0	-14.4856***	0	-17.1922***	1	-12.7037***	1	-11.5434***	2	-9.39677***	6	-5.35195***	1%(***)	-2.58
Question 1	1	-10.9826***	1	-14.4682***	1	-15.4621***	1	-14.1018***	1	-13.1460***	2	-10.2959***	5%(**)	-1.94
Question 2	3	-8.41616***	4	-7.70539***	2	-10.0365***	6	-7.75495***	2	-9.88470***	3	-8.74850***	10%(*)	-1.62
Question 3	4	-6.30648***	0	-15.5624***	6	-7.27339***	0	-17.3986***	0	-16.4436***	1	-10.7756***		
Question 4	0	-14.0259***	0	-16.5097***	2	-9.88939***	1	-12.3945***	7	-5.24904***	6	-6.34003***		
The PP test statistics for the levels of Consumer Confidence Indices for														
Aggregate	4	-2.44326	4	-3.56766***	4	-4.32823***	4	-2.35485	4	-2.71580*	4	-2.92285**	1%(***)	-3.47
Question 1	4	-2.23311	4	-4.40991***	4	-7.09970***	4	-3.72321***	4	-3.26975**	4	-4.12500***	5%(**)	-2.88
Question 2	4	-3.85064***	4	-7.14436***	4	-6.62726***	4	-5.66488***	4	-4.45218***	4	-4.65408***	10%(*)	-2.58
Question 3	4	-3.35259**	4	-3.22858**	4	-5.11746***	4	-2.82685*	4	-3.63413***	4	-4.00511***		
Question 4	4	-2.16991	4	-2.50427	4	-3.26811**	4	-2.83828*	4	-2.29873	4	-3.17177**		

Table 5 The Unit Root Test Results for Monthly Series (Monthly Samples from 2002:01 to 2014:12) (Continued)

B. Crude Oil Price Indices and Crude Oil Price Volatility Measures

The ADF tests for the levels of Crude Oil Price Indices				The ADF tests Crude Oil Price Volatility Measures				Significance levels	Critical values
Lag	6	T-statistics	-2.28632	Lag	1	T-statistics	-3.44759**	1%(***)	-3.47
								5%(**)	-2.88
								10%(*)	-2.58
The ADF tests for the First Logarithmic Differences of Crude Oil Price Indices								Significance levels	Critical values
Lag	5	T-statistics	-5.81811***					1%(***)	-2.58
								5%(**)	-1.94
								10%(*)	-1.62
The PP tests for the levels of Crude Oil Price Indices				The PP tests Crude Oil Price Volatility Measures				Significance levels	Critical values
Lag	4	T-statistics	-2.85373	Lag	4	T-statistics	-3.49239***	1%(***)	-3.47
								5%(**)	-2.88
								10%(*)	-2.58

Table 5 The Unit Root Test Results for Monthly Series (Monthly Samples from 2002:01 to 2014:12) (Continued)

C. Gasoline Price Indices

Monthly Series	Canada		The Prairies Provinces		The Atlantic Provinces		British Columbia		Ontario		Quebec		Significance Level	Critical Value
	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics	Lag	T-statistics		
The ADF test statistics for the levels of Gasoline Price Indices													1%(***)	-3.47
	8	-1.81619	8	-1.95701	8	-2.03454	8	-2.06422	2	-2.20216	8	-1.77369	5%(**)	-2.88
													10%(*)	-2.58
The ADF test statistics for the first logarithmic differences of Gasoline Price Indices													1%(***)	-2.58
	7	-6.68818***	7	-6.48015***	7	-6.28710***	7	-7.02863***	7	-6.26974***	7	-6.48931***	5%(**)	-1.94
													10%(*)	-1.62
The PP test statistics for the levels of Gasoline Price Indices													1%(***)	-3.47
	4	-2.62193*	4	-2.79029*	4	-2.66069*	4	-2.86717*	4	-2.44300	4	-2.52973	5%(**)	-2.88
													10%(*)	-2.58

D. Real Oil Price Measures in Canada

The ADF tests for the levels real crude oil prices				The ADF tests for the levels of real gasoline prices				Significance levels	Critical values
Lag	6	T-statistics	-2.49590	Lag	8	T-statistics	-1.99436	1%(***)	-3.47
								5%(**)	-2.88
								10%(*)	-2.58
The ADF tests for the first logarithmic differences of real crude oil prices				The ADF tests for the first logarithmic differences of real gasoline prices				Significance levels	Critical values
Lag	5	T-statistics	-5.78295***	Lag	7	T-statistics	-6.74328***	1%(***)	-2.58
								5%(**)	-1.94
								10%(*)	-1.62
The PP tests for the levels real crude oil prices				The PP tests for the levels of real gasoline prices				Significance levels	Critical values
Lag	4	T-statistics	-3.04069**	Lag	4	T-statistics	-3.02129**	1%(***)	-3.47
								5%(**)	-2.88
								10%(*)	-2.58

Table 6 The Cross Correlations between the First Differences of the Consumer Confidence Indices and the Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4)

A. Canada

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4
lag=0	0.13 (0.122)	0.15* (0.081)	-0.05 (0.595)	0.18** (0.043)	0.10 (0.235)
lag=1	-0.11 (0.215)	-0.06 (0.528)	-0.02 (0.833)	-0.06 (0.523)	-0.20** (0.022)
lag=2	-0.07 (0.415)	-0.17* (0.052)	-0.10 (0.253)	0.01 (0.868)	0.01 (0.896)
lag=3	-0.06 (0.509)	0.03 (0.742)	0.02 (0.805)	-0.15* (0.088)	-0.04 (0.645)
lag=4	-0.05 (0.540)	-0.01 (0.903)	-0.02 (0.835)	-0.10 (0.283)	-0.03 (0.773)

B. The Prairie Provinces

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4
lag=0	0.22*** (0.010)	0.01 (0.870)	-0.05 (0.600)	0.37*** (0.000)	0.17** (0.046)
lag=1	-0.06 (0.521)	0.04 (0.659)	-0.11 (0.219)	0.07 (0.423)	-0.15* (0.084)
lag=2	-0.05 (0.611)	-0.09 (0.323)	0.00 (0.961)	-0.06 (0.509)	0.03 (0.762)
lag=3	0.00 (0.975)	0.04 (0.657)	0.07 (0.435)	-0.11 (0.219)	0.02 (0.847)
lag=4	-0.01 (0.951)	-0.02 (0.842)	0.01 (0.934)	0.07 (0.423)	-0.09 (0.320)

C. The Atlantic Provinces

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4
lag=0	-0.06 (0.501)	-0.10 (0.261)	-0.09 (0.293)	0.03 (0.768)	0.00 (0.964)
lag=1	-0.17* (0.058)	-0.08 (0.348)	-0.17* (0.051)	-0.09 (0.305)	-0.12 (0.179)
lag=2	-0.01 (0.948)	-0.10 (0.275)	-0.01 (0.929)	0.10 (0.266)	-0.03 (0.766)
lag=3	0.06 (0.505)	0.11 (0.203)	0.17* (0.051)	-0.12 (0.177)	0.00 (0.966)
lag=4	-0.15* (0.080)	-0.09 (0.316)	-0.14 (0.121)	-0.12 (0.186)	-0.08 (0.360)

Table 6 The Cross Correlations between the First Differences of the Consumer Confidence Indices and the Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

Pane D British Columbia

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4	
Crude oil price changes with	lag=0	0.09 (0.279)	0.15* (0.093)	-0.05 (0.541)	0.12 (0.173)	0.05 (0.587)
	lag=1	-0.05 (0.584)	-0.03 (0.703)	0.08 (0.389)	-0.05 (0.589)	-0.14 (0.112)
	lag=2	-0.07 (0.422)	-0.13 (0.154)	-0.05 (0.537)	-0.01 (0.866)	-0.01 (0.912)
	lag=3	0.02 (0.821)	0.12 (0.157)	0.00 (0.975)	-0.09 (0.328)	0.05 (0.589)
	lag=4	0.03 (0.704)	0.05 (0.573)	0.07 (0.441)	-0.02 (0.846)	0.00 (0.994)

Panel E Ontario

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4	
Crude oil price changes with	lag=0	0.12 (0.171)	0.17** (0.050)	0.02 (0.781)	0.08 (0.333)	0.07 (0.413)
	lag=1	-0.08 (0.358)	0.01 (0.937)	-0.01 (0.948)	-0.08 (0.350)	-0.15* (0.083)
	lag=2	-0.06 (0.493)	-0.14 (0.108)	-0.10 (0.271)	0.01 (0.948)	0.04 (0.654)
	lag=3	-0.09 (0.309)	-0.05 (0.555)	0.00 (0.957)	-0.11 (0.207)	-0.10 (0.275)
	lag=4	-0.06 (0.490)	-0.01 (0.919)	-0.02 (0.862)	-0.12 (0.189)	-0.03 (0.754)

Panel F Quebec

Consumer Confidence Indices for	Aggregate	Question 1	Question 2	Question 3	Question 4	
Crude oil price changes with	lag=0	0.10 (0.234)	0.15* (0.078)	-0.06 (0.498)	0.09 (0.295)	0.11 (0.216)
	lag=1	-0.11 (0.198)	-0.16* (0.059)	0.03 (0.705)	-0.03 (0.749)	-0.20** (0.023)
	lag=2	-0.08 (0.356)	-0.12 (0.175)	-0.16* (0.063)	0.04 (0.622)	-0.03 (0.771)
	lag=3	-0.09 (0.287)	0.00 (0.971)	-0.05 (0.586)	-0.15 (0.089)*	-0.05 (0.567)
	lag=4	-0.06 (0.528)	0.01 (0.929)	-0.04 (0.693)	-0.14 (0.117)	0.04 (0.628)

Notes:

1. In the parentheses, the p-values for the correlations are given. The significance levels are 1% (***), 5% (**), and 10% (*).
2. The correlations are computed based on the first differences of the Consumer Confidence Indices and the logarithmic differences of the Crude Oil Price Index.
3. The lags are of the crude oil price changes.

Table 7 The Results of the Regressions of the Variations of National Consumer Confidence Indices on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	4	0	0.04	0.00	0.0561	0.420	0.553	0.002***
		Question 1	0	0	0.02	0.02	0.1040	0.089*	1.000	0.035**
		Question 2	2	0	0.13	0.01	-0.0698	0.302	0.472	0.007***
		Question 3	4	0	0.05	0.03	0.2110	0.103	0.514	0.231
		Question 4	2	1	0.05	0.03	-0.0383	0.003***	0.469	0.532
	Gasoline	Aggregate	4	2	0.06	0.02	-0.3131	0.031**	0.652	0.001***
		Question 1	0	0	0.00	0.00	0.1250	0.444	1.000	0.000***
		Question 2	2	2	0.14	0.02	-0.4564	0.097*	0.520	0.157
		Question 3	4	0	0.05	0.03	0.3822	0.086*	0.486	0.023**
		Question 4	2	3	0.04	0.02	-0.6477	0.019**	0.555	0.113
Monthly	Crude Oil	Aggregate	0	0	0.00	0.00	0.0293	0.653	0.973	0.468
		Question 1	1	0	0.06	-0.01	0.0244	0.812	0.638	0.536
		Question 2	3	0	0.08	0.01	-0.1033	0.190	0.572	0.071*
		Question 3	4	0	0.04	0.04	0.2509	0.009***	0.401	0.192
		Question 4	0	1	0.00	0.00	-0.0044	0.155	0.941	0.739
	Gasoline	Aggregate	0	2	0.02	0.02	0.0419	0.093*	0.961	0.000***
		Question 1	1	2	0.08	0.02	0.0611	0.150	0.594	0.067*
		Question 2	3	1	0.13	0.06	-0.3767	0.180	0.511	0.002***
		Question 3	4	0	0.02	0.02	0.3102	0.141	0.406	0.386
		Question 4	0	3	0.05	0.05	-0.1178	0.003***	0.914	0.000***

Table 7 The Results of the Regressions of the Variations of National Consumer Confidence Indices on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson test statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	4	0	0.07	0.03	0.1966	0.048**	0.546	0.292
		Question 1	0	0	0.04	0.04	0.2719	0.004***	1.000	0.055*
		Question 2	2	0	0.12	-0.01	-0.0161	0.885	0.485	0.172
		Question 3	4	0	0.05	0.03	0.3724	0.086*	0.559	0.177
		Question 4	2	1	0.10	0.08	0.0920	0.000***	0.444	0.418
	The second month of the quarter	Aggregate	4	0	0.03	-0.01	0.0401	0.833	0.578	0.033**
		Question 1	0	2	0.02	0.02	-0.1150	0.007***	1.000	0.048**
		Question 2	2	0	0.15	0.02	-0.2516	0.132	0.445	0.094*
		Question 3	4	4	0.08	0.05	-0.6556	0.015**	0.682	0.087*
		Question 4	2	1	0.03	0.01	-0.1357	0.190	0.500	0.616
	The first month of the quarter	Aggregate	4	0	0.03	-0.01	-0.0528	0.632	0.586	0.019**
		Question 1	0	0	-0.01	-0.01	-0.0338	0.824	1.000	0.023**
		Question 2	2	0	0.13	0.00	-0.1313	0.133	0.462	0.646
		Question 3	4	0	0.02	0.00	0.2148	0.350	0.511	0.006***
		Question 4	2	0	0.03	0.00	-0.1668	0.186	0.504	0.338

Table 7 The Results of the Regressions of the Variations of National Consumer Confidence Indices on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	4	0	0.04	0.00	0.0537	0.450	0.567	0.001***
		Question 1	0	0	0.02	0.02	0.1081	0.083*	1.000	0.035**
		Question 2	2	0	0.14	0.01	-0.0803	0.256	0.468	0.003***
		Question 3	4	0	0.05	0.03	0.2021	0.135	0.548	0.197
		Question 4	2	1	0.05	0.03	-0.0384	0.003***	0.495	0.342
	Net oil price shocks	Aggregate	4	0	0.08	0.04	-0.3389	0.029**	0.554	0.021**
		Question 1	0	2	0.04	0.04	-0.6490	0.003***	1.000	0.705
		Question 2	2	0	0.21	0.08	-0.4896	0.002***	0.401	0.195
		Question 3	4	0	0.02	0.00	-0.1961	0.454	0.512	0.151
		Question 4	2	0	0.03	0.01	-0.2245	0.163	0.523	0.324

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 8 The Results of the Regressions of the Levels of National Consumer Confidence Indices on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Non-stationary	6	0	0.69	0.00	0.0506	0.437	0.349	0.007***
		Question 1	Non-stationary	1	0	0.74	0.00	0.0973	0.093*	0.996	0.068*
		Question 2	Stationary	1	0	0.57	0.00	-0.0256	0.664	0.995	0.003***
		Question 3	Stationary	0	2	0.05	0.05	0.7536	0.008***	0.000***	0.014**
		Question 4	Stationary	1	1	0.63	-0.02	-0.0366	0.009***	0.818	0.180
	Gasoline	Aggregate	Non-stationary	6	2	0.70	0.01	-0.2653	0.040**	0.437	0.002***
		Question 1	Non-stationary	1	0	0.73	0.00	0.1226	0.427	0.998	0.000***
		Question 2	Stationary	1	0	0.57	0.00	-0.0836	0.514	0.995	0.000***
		Question 3	Stationary	0	2	0.06	0.06	1.6104	0.012**	0.000***	0.975
		Question 4	Stationary	1	0	0.64	0.00	0.0414	0.742	0.853	0.005***
Monthly	Crude Oil	Aggregate	Non-stationary	1	0	0.84	0.00	0.0528	0.451	0.903	0.071*
		Question 1	Non-stationary	1	0	0.83	0.00	0.0212	0.828	0.992	0.207
		Question 2	Stationary	1	0	0.65	0.00	-0.0683	0.397	0.938	0.010**
		Question 3	Non-stationary	5	0	0.81	0.01	0.2883	0.008***	0.371	0.331
		Question 4	Non-stationary	0	4	0.11	0.11	1.1406	0.060*	0.000***	0.197
	Gasoline	Aggregate	Non-stationary	1	2	0.84	0.00	0.1108	0.076*	0.868	0.000***
		Question 1	Non-stationary	1	2	0.83	0.00	0.1049	0.158	0.989	0.130
		Question 2	Stationary	1	0	0.66	0.01	-0.2084	0.152	0.976	0.005***
		Question 3	Non-stationary	5	0	0.80	0.01	0.3583	0.111	0.355	0.243
		Question 4	Non-stationary	0	3	0.06	0.06	1.3412	0.235	0.000***	0.094*

Table 8 The Results of the Regressions of the Levels of National Consumer Confidence Indices on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Non-stationary	6	0	0.70	0.01	0.1704	0.070*	0.353	0.416
		Question 1	Non-stationary	1	0	0.74	0.01	0.2532	0.005***	0.995	0.067*
		Question 2	Stationary	1	0	0.57	0.00	0.0587	0.542	0.989	0.068*
		Question 3	Stationary	0	2	0.01	0.01	1.0781	0.212	0.000***	0.006***
		Question 4	Stationary	1	1	0.68	0.03	0.0803	0.000***	0.715	0.856
	The second month of the quarter	Aggregate	Non-stationary	6	0	0.69	0.00	0.0373	0.836	0.372	0.059*
		Question 1	Non-stationary	1	2	0.74	0.01	-0.0855	0.021**	0.997	0.161
		Question 2	Stationary	1	0	0.58	0.00	-0.1502	0.310	0.996	0.002***
		Question 3	Stationary	0	0	0.01	0.01	0.4706	0.219	0.000***	0.003***
		Question 4	Stationary	1	1	0.65	0.00	-0.0925	0.285	0.859	0.037**
	The first month of the quarter	Aggregate	Non-stationary	6	3	0.70	0.00	-0.5046	0.281	0.380	0.025**
		Question 1	Non-stationary	1	0	0.73	0.00	-0.0260	0.866	0.997	0.024**
		Question 2	Stationary	1	2	0.57	0.00	-0.3030	0.195	0.995	0.744
		Question 3	Stationary	0	0	0.02	0.02	0.5924	0.069*	0.000***	0.070*
		Question 4	Stationary	1	0	0.65	0.00	-0.1813	0.196	0.811	0.004***

Table 8 The Results of the Regressions of the Levels of National Consumer Confidence Indices on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Non-stationary	6	0	0.69	0.00	0.0440	0.512	0.358	0.006***
		Question 1	Non-stationary	1	0	0.74	0.00	0.0965	0.104	0.996	0.063*
		Question 2	Stationary	1	0	0.57	0.00	-0.0361	0.569	0.995	0.001***
		Question 3	Stationary	0	2	0.03	0.03	0.6838	0.026**	0.000***	0.011**
		Question 4	Stationary	1	1	0.63	-0.02	-0.0439	0.012**	0.829	0.110
	Net oil price shocks	Aggregate	Non-stationary	6	0	0.71	0.01	-0.3334	0.024**	0.336	0.116
		Question 1	Non-stationary	1	2	0.74	0.01	-0.6163	0.001***	0.999	0.472
		Question 2	Stationary	1	0	0.60	0.02	-0.3749	0.007***	0.998	0.198
		Question 3	Stationary	0	0	-0.01	-0.01	0.2183	0.647	0.000***	0.484
		Question 4	Stationary	1	0	0.64	0.00	-0.1571	0.307	0.885	0.458

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%***).
3. The oil prices are originally in nominal terms.

Table 9 The Results of the Regressions of the Variations and the Levels of National Consumer Confidence Indices on the Real Oil Price Changes

A. Independent Variables: the Variations of National Consumer Confidence Indices

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	4	0	0.04	0.00	0.0564	0.425	0.554	0.003***
		Question 1	0	0	0.02	0.02	0.1070	0.081 *	1.000	0.046**
		Question 2	2	0	0.13	0.01	-0.0719	0.300	0.472	0.009***
		Question 3	4	0	0.05	0.03	0.2093	0.120	0.524	0.190
		Question 4	2	1	0.06	0.03	-0.0431	0.002 ***	0.466	0.557
	Gasoline	Aggregate	4	2	0.05	0.02	-0.3073	0.044 **	0.634	0.001***
		Question 1	0	0	0.00	0.00	0.1378	0.422	1.000	0.000***
		Question 2	2	2	0.15	0.02	-0.5027	0.060 *	0.519	0.144
		Question 3	4	0	0.05	0.03	0.3911	0.111	0.501	0.016**
		Question 4	2	3	0.05	0.02	-0.6877	0.013 **	0.557	0.143
Monthly	Crude Oil	Aggregate	0	0	0.00	0.00	0.0372	0.564	0.905	0.655
		Question 1	1	0	0.06	0.00	0.0299	0.771	0.639	0.576
		Question 2	3	0	0.08	0.01	-0.1006	0.200	0.566	0.099*
		Question 3	4	0	0.04	0.04	0.2585	0.007 ***	0.408	0.189
		Question 4	0	0	0.00	0.00	0.0437	0.340	0.938	0.352
	Gasoline	Aggregate	0	2	0.02	0.02	0.0568	0.113	0.961	0.002***
		Question 1	1	2	0.08	0.02	0.0864	0.160	0.587	0.092*
		Question 2	3	1	0.12	0.06	-0.3855	0.196	0.520	0.004***
		Question 3	4	0	0.02	0.02	0.3359	0.125	0.411	0.399
		Question 4	0	3	0.04	0.04	-0.1017	0.005 ***	0.912	0.000***

Table 9 The Results of the Regressions of the Variations and the Levels of National Consumer Confidence Indices on the Real Oil Price Changes (Continued)

B. Independent Variables: the Levels of National Consumer Confidence Indices

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Non-stationary	6	0	0.69	0.00	0.0505	0.444	0.350	0.011**
		Question 1	Non-stationary	1	0	0.74	0.00	0.0985	0.090*	0.997	0.077*
		Question 2	Stationary	1	0	0.57	0.00	-0.0278	0.644	0.995	0.003***
		Question 3	Stationary	0	2	0.05	0.05	0.7649	0.006***	0.000***	0.013**
		Question 4	Stationary	1	1	0.63	-0.02	-0.0407	0.008***	0.817	0.200
	Gasoline	Aggregate	Non-stationary	6	2	0.70	0.00	-0.2669	0.050*	0.424	0.002***
		Question 1	Non-stationary	1	0	0.73	0.00	0.1288	0.430	0.998	0.000***
		Question 2	Stationary	1	0	0.57	0.00	-0.0978	0.475	0.995	0.000***
		Question 3	Stationary	0	3	0.07	0.07	2.4389	0.018**	0.000***	0.938
		Question 4	Stationary	1	0	0.64	0.00	0.0423	0.750	0.853	0.007***
Monthly	Crude Oil	Aggregate	Non-stationary	1	0	0.84	0.00	0.0562	0.421	0.905	0.100*
		Question 1	Non-stationary	1	0	0.83	0.00	0.0260	0.790	0.992	0.232
		Question 2	Stationary	1	0	0.65	0.00	-0.0664	0.410	0.936	0.014**
		Question 3	Non-stationary	5	0	0.81	0.01	0.2949	0.008***	0.379	0.332
		Question 4	Non-stationary	0	4	0.11	0.11	1.2049	0.056*	0.000***	0.167
	Gasoline	Aggregate	Non-stationary	1	2	0.84	0.01	0.1297	0.090*	0.869	0.000***
		Question 1	Non-stationary	1	2	0.83	0.00	0.1308	0.167	0.988	0.189
		Question 2	Stationary	1	0	0.66	0.01	-0.2185	0.156	0.974	0.008***
		Question 3	Non-stationary	5	0	0.81	0.01	0.3827	0.102	0.360	0.275
		Question 4	Non-stationary	0	3	0.06	0.06	1.4995	0.289	0.000***	0.182

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.

2. The significance levels are 10%(*), 5%(**) and 1%(***).

3. The oil prices are originally in nominal terms.

Table 10 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	1	0	0.07	0.04	0.1248	0.030 **	0.591	0.024 **
		Question 1	3	0	0.11	-0.01	0.0226	0.698	0.640	0.046 **
		Question 2	6	2	0.28	0.02	-0.2710	0.049 **	0.496	0.272
		Question 3	1	1	0.17	0.15	0.6367	0.000 ***	0.599	0.329
		Question 4	1	0	0.12	0.03	0.1545	0.000 ***	0.755	0.761
	Alberta Gasoline	Aggregate	1	0	0.03	0.00	0.0859	0.348	0.574	0.030 **
		Question 1	3	0	0.11	-0.01	-0.0127	0.891	0.632	0.063 *
		Question 2	6	2	0.31	0.04	-0.6699	0.050 *	0.564	0.881
		Question 3	1	0	0.06	0.04	0.3909	0.052 *	0.594	0.268
		Question 4	1	0	0.10	0.02	0.1754	0.018 **	0.814	0.825
	Saskatchewan Gasoline	Aggregate	1	0	0.02	0.00	0.0449	0.653	0.569	0.022 **
		Question 1	3	0	0.12	0.00	-0.0997	0.322	0.613	0.026 **
		Question 2	6	2	0.36	0.09	-0.9045	0.008 ***	0.594	0.711
		Question 3	1	0	0.08	0.06	0.4883	0.005 ***	0.549	0.635
		Question 4	1	0	0.08	0.00	0.0832	0.378	0.803	0.814
	Manitoba Gasoline	Aggregate	1	0	0.03	0.00	0.0942	0.339	0.575	0.203
		Question 1	3	0	0.11	-0.01	-0.0012	0.990	0.635	0.080 *
		Question 2	6	2	0.32	0.05	-0.7393	0.015 **	0.520	0.771
		Question 3	1	0	0.08	0.06	0.4864	0.008 ***	0.625	0.512
		Question 4	1	0	0.11	0.02	0.2082	0.013 **	0.811	0.703

Table 10 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes (Continued)

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Monthly	Crude Oil	Aggregate	0	2	0.01	0.01	0.1549	0.128	1.000	0.792
		Question 1	1	2	0.28	0.02	0.0955	0.012 **	0.957	0.732
		Question 2	4	0	0.15	0.00	-0.0868	0.315	0.524	0.184
		Question 3	0	2	0.05	0.05	0.5545	0.000 ***	1.000	0.983
		Question 4	0	4	0.04	0.04	-0.0285	0.050 **	1.000	0.423
	Alberta Gasoline	Aggregate	0	2	0.02	0.02	0.1238	0.101	1.000	0.128
		Question 1	1	2	0.30	0.04	0.0484	0.023 **	0.958	0.004 ***
		Question 2	4	1	0.19	0.04	-0.4069	0.092 *	0.440	0.058 *
		Question 3	0	0	0.02	0.02	0.3051	0.125	0.999	0.159
		Question 4	0	0	0.00	0.00	0.0451	0.617	1.000	0.970
	Saskatchewan Gasoline	Aggregate	0	2	0.03	0.03	0.1271	0.066 *	1.000	0.030 **
		Question 1	1	2	0.30	0.04	0.0784	0.012 **	0.967	0.006 ***
		Question 2	4	1	0.19	0.05	-0.4242	0.062 *	0.460	0.032 **
		Question 3	0	0	0.01	0.01	0.3161	0.122	0.999	0.086 *
		Question 4	0	0	-0.01	-0.01	0.0158	0.876	0.999	0.959
	Manitoba Gasoline	Aggregate	0	2	0.01	0.01	0.1282	0.074 *	1.000	0.027 **
		Question 1	1	0	0.26	0.00	-0.0842	0.644	0.967	0.028 **
		Question 2	4	1	0.19	0.04	-0.4069	0.107	0.479	0.040 **
		Question 3	0	0	0.02	0.02	0.3641	0.072 *	0.999	0.165
		Question 4	0	0	-0.01	-0.01	0.0149	0.880	0.999	0.882

Table 10 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	1	0	0.10	0.07	0.2892	0.004 ***	0.557	0.006 ***
		Question 1	3	0	0.12	0.00	0.1141	0.338	0.639	0.007 ***
		Question 2	6	1	0.29	0.02	-0.2778	0.047 **	0.575	0.099 *
		Question 3	1	1	0.13	0.11	1.1691	0.006 ***	0.520	0.091 *
		Question 4	1	0	0.16	0.07	0.3964	0.000 ***	0.760	0.891
	The second month of the quarter	Aggregate	1	0	0.04	0.01	0.1801	0.315	0.613	0.001 ***
		Question 1	3	1	0.13	0.01	0.2851	0.149	0.580	0.230
		Question 2	6	0	0.28	0.01	-0.2331	0.240	0.540	0.468
		Question 3	1	3	0.11	0.09	0.4192	0.019 **	0.572	0.472
		Question 4	1	0	0.10	0.01	0.2806	0.042 **	0.794	0.612
	The first month of the quarter	Aggregate	1	0	0.02	0.00	0.0776	0.433	0.555	0.317
		Question 1	3	0	0.11	-0.01	-0.0384	0.737	0.624	0.065 *
		Question 2	6	0	0.27	0.01	-0.2015	0.021 **	0.492	0.450
		Question 3	1	0	0.10	0.08	0.8549	0.000 ***	0.495	0.668
		Question 4	1	1	0.09	0.00	-0.2486	0.194	0.738	0.657

Table 10 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	1	0	0.06	0.04	0.1190	0.043 **	0.600	0.021 **
		Question 1	3	0	0.11	-0.01	0.0132	0.835	0.636	0.033 **
		Question 2	6	2	0.29	0.02	-0.2965	0.057 *	0.494	0.137
		Question 3	1	1	0.15	0.13	0.6470	0.001 ***	0.578	0.233
		Question 4	1	0	0.12	0.04	0.1619	0.000 ***	0.762	0.896
	Net oil price shocks	Aggregate	1	0	0.03	0.00	-0.1426	0.233	0.531	0.926
		Question 1	3	0	0.12	-0.01	-0.0930	0.570	0.621	0.098 *
		Question 2	6	0	0.33	0.06	-0.5698	0.001 ***	0.469	0.785
		Question 3	1	0	0.02	0.00	0.2237	0.268	0.458	0.893
		Question 4	1	0	0.08	0.00	-0.1202	0.298	0.789	0.699

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***)
3. The oil prices are originally in nominal terms.

Table 11 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Stationary	0	0	0.00	0.00	0.0759	0.234	0.000***	0.190
		Question 1	Non-stationary	1	0	0.58	0.00	0.0058	0.915	0.980	0.212
		Question 2	Non-stationary	7	2	0.40	0.01	-0.2597	0.015**	0.407	0.277
		Question 3	Stationary	0	4	0.08	0.08	1.8365	0.005***	0.000***	0.077*
		Question 4	Stationary	2	0	0.51	0.02	0.1363	0.001***	0.563	0.461
	Alberta Gasoline	Aggregate	Stationary	0	0	0.00	0.00	0.1149	0.148	0.000***	0.735
		Question 1	Non-stationary	1	0	0.58	0.00	-0.0192	0.852	0.980	0.147
		Question 2	Non-stationary	7	2	0.41	0.03	-0.6233	0.048**	0.476	0.855
		Question 3	Stationary	0	4	0.06	0.06	3.6477	0.174	0.000***	0.830
		Question 4	Stationary	2	0	0.50	0.01	0.1605	0.033**	0.649	0.646
	Saskatchewan Gasoline	Aggregate	Stationary	0	0	0.00	0.00	0.0805	0.376	0.000***	0.911
		Question 1	Non-stationary	1	0	0.59	0.00	-0.1057	0.318	0.978	0.097*
		Question 2	Non-stationary	7	2	0.46	0.07	-0.8740	0.005***	0.522	0.697
		Question 3	Stationary	0	0	0.01	0.01	0.4633	0.012**	0.000***	0.675
		Question 4	Stationary	2	0	0.49	0.00	0.0755	0.407	0.621	0.312
	Manitoba Gasoline	Aggregate	Stationary	0	0	0.00	0.00	0.0956	0.299	0.000***	0.978
		Question 1	Non-stationary	1	0	0.58	0.00	-0.0053	0.959	0.980	0.204
		Question 2	Non-stationary	7	2	0.43	0.04	-0.6944	0.012**	0.434	0.890
		Question 3	Stationary	0	3	0.05	0.05	3.0500	0.029**	0.000***	0.711
		Question 4	Stationary	2	0	0.50	0.01	0.1887	0.015**	0.638	0.511

Table 11 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes (Continued)

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Monthly	Crude Oil	Aggregate	Non-stationary	1	2	0.70	0.01	0.2159	0.064*	0.997	0.510
		Question 1	Non-stationary	2	2	0.64	0.01	0.0954	0.010**	0.888	0.038**
		Question 2	Stationary	1	0	0.26	0.00	-0.0225	0.767	0.788	0.638
		Question 3	Non-stationary	1	3	0.78	0.03	0.7474	0.002***	0.989	0.074*
		Question 4	Non-stationary	1	2	0.81	0.01	0.1974	0.030**	0.993	0.892
	Alberta Gasoline	Aggregate	Non-stationary	1	2	0.70	0.01	0.2043	0.114	0.991	0.001***
		Question 1	Non-stationary	2	2	0.65	0.02	0.0602	0.022**	0.889	0.001***
		Question 2	Stationary	1	2	0.28	0.01	-0.0937	0.102	0.813	0.047**
		Question 3	Non-stationary	1	0	0.76	0.01	0.3269	0.130	0.985	0.005***
		Question 4	Non-stationary	1	0	0.81	0.00	0.0847	0.405	0.995	0.466
	Saskatchewan Gasoline	Aggregate	Non-stationary	1	2	0.70	0.01	0.2024	0.061*	0.993	0.000***
		Question 1	Non-stationary	2	2	0.65	0.02	0.0871	0.011**	0.910	0.000***
		Question 2	Stationary	1	1	0.27	0.00	-0.2406	0.309	0.800	0.006***
		Question 3	Non-stationary	1	0	0.76	0.01	0.3444	0.119	0.984	0.002***
		Question 4	Non-stationary	1	0	0.81	0.00	0.0535	0.631	0.993	0.407
	Manitoba Gasoline	Aggregate	Non-stationary	1	2	0.69	0.01	0.2050	0.088*	0.993	0.001***
		Question 1	Non-stationary	2	0	0.63	0.00	-0.0803	0.663	0.888	0.015**
		Question 2	Stationary	1	0	0.27	0.01	-0.1654	0.221	0.867	0.047**
		Question 3	Non-stationary	1	2	0.77	0.02	0.7820	0.118	0.955	0.001***
		Question 4	Non-stationary	1	0	0.81	0.00	0.0561	0.610	0.994	0.379

Table 11 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Stationary	0	0	0.00	0.00	0.1347	0.280	0.000***	0.300
		Question 1	Non-stationary	1	0	0.59	0.00	0.1129	0.264	0.981	0.269
		Question 2	Non-stationary	7	1	0.40	0.02	-0.2411	0.048**	0.478	0.131
		Question 3	Stationary	0	4	0.04	0.04	3.0196	0.036**	0.000***	0.586
		Question 4	Stationary	2	0	0.52	0.03	0.3482	0.000***	0.581	0.525
	The second month of the quarter	Aggregate	Stationary	0	0	-0.01	-0.01	0.0245	0.887	0.000***	0.249
		Question 1	Non-stationary	1	0	0.58	0.00	-0.0326	0.837	0.978	0.268
		Question 2	Non-stationary	7	2	0.41	0.02	-0.6675	0.091*	0.369	0.310
		Question 3	Stationary	0	0	0.00	0.00	0.3430	0.335	0.000***	0.373
		Question 4	Stationary	2	0	0.50	0.01	0.2515	0.064*	0.610	0.346
	The first month of the quarter	Aggregate	Stationary	0	0	0.00	0.00	0.2000	0.245	0.000***	0.401
		Question 1	Non-stationary	1	0	0.59	0.00	-0.1345	0.304	0.975	0.235
		Question 2	Non-stationary	7	0	0.39	0.00	-0.1738	0.033**	0.399	0.528
		Question 3	Stationary	0	4	0.09	0.09	4.2066	0.009***	0.000***	0.166
		Question 4	Stationary	2	0	0.49	0.00	-0.0321	0.815	0.608	0.229

Table 11 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Prairie Provinces on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Stationary	0	0	0.00	0.00	0.0743	0.213	0.000***	0.165
		Question 1	Non-stationary	1	0	0.58	0.00	-0.0017	0.976	0.979	0.216
		Question 2	Non-stationary	7	2	0.40	0.02	-0.2904	0.019**	0.405	0.164
		Question 3	Stationary	0	4	0.07	0.07	1.8983	0.004***	0.000***	0.301
		Question 4	Stationary	2	0	0.51	0.02	0.1440	0.000***	0.574	0.595
	Net oil price shocks	Aggregate	Stationary	0	0	-0.01	-0.01	0.0770	0.785	0.000***	0.854
		Question 1	Non-stationary	1	0	0.59	0.00	-0.0850	0.513	0.978	0.102
		Question 2	Non-stationary	7	0	0.43	0.05	-0.5284	0.002***	0.376	0.629
		Question 3	Stationary	0	0	0.00	0.00	0.6550	0.307	0.000***	0.677
		Question 4	Stationary	2	0	0.49	0.00	-0.1148	0.334	0.608	0.577

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 12 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	3	1	0.15	0.01	-0.1340	0.064*	0.693	0.792
		Question 1	3	2	0.29	0.02	-0.4461	0.017**	0.400	0.460
		Question 2	3	2	0.23	0.02	-0.4058	0.013**	0.578	0.568
		Question 3	7	0	0.31	0.00	0.1528	0.283	0.316	0.181
		Question 4	1	1	0.09	0.00	-0.0910	0.402	0.831	0.107
	Nova Scotia Gasoline	Aggregate	3	0	0.16	0.02	-0.2693	0.234	0.709	0.016**
		Question 1	3	0	0.29	0.02	-0.3935	0.096*	0.509	0.363
		Question 2	3	2	0.25	0.04	-0.9622	0.006***	0.648	0.835
		Question 3	7	0	0.30	0.00	0.1253	0.664	0.338	0.159
		Question 4	1	0	0.10	0.01	-0.2272	0.325	0.788	0.000***
	New Brunswick Gasoline	Aggregate	3	0	0.16	0.02	-0.2669	0.281	0.712	0.013**
		Question 1	3	1	0.30	0.03	-0.7322	0.006***	0.462	0.349
		Question 2	3	2	0.23	0.03	-0.8817	0.033**	0.629	0.950
		Question 3	7	0	0.30	-0.01	0.0940	0.756	0.331	0.292
		Question 4	1	0	0.10	0.01	-0.2437	0.333	0.798	0.000***
	Newfoundland and Labrador Gasoline	Aggregate	3	2	0.18	0.05	-0.8870	0.034**	0.692	0.014**
		Question 1	3	2	0.32	0.05	-1.4037	0.013**	0.470	0.268
		Question 2	3	2	0.26	0.06	-1.2704	0.001***	0.634	0.917
		Question 3	7	0	0.30	-0.01	-0.0205	0.959	0.326	0.068*
		Question 4	1	0	0.10	0.01	-0.2596	0.373	0.797	0.000***
	Prince Edward Island Gasoline	Aggregate	3	2	0.17	0.04	-0.7877	0.038**	0.683	0.033**
		Question 1	3	2	0.31	0.04	-1.2247	0.015**	0.464	0.344
		Question 2	3	2	0.26	0.06	-1.1596	0.001***	0.634	0.755
		Question 3	7	0	0.30	-0.01	0.0718	0.825	0.328	0.166
		Question 4	1	0	0.09	0.00	-0.1815	0.456	0.798	0.000***

Table 12 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes (Continued)

Monthly	Crude Oil	Aggregate	1	0	0.10	0.00	-0.0454	0.708	0.828	0.026**
		Question 1	1	0	0.14	0.00	-0.0776	0.634	0.966	0.742
		Question 2	2	1	0.24	0.04	-0.3703	0.008***	0.573	0.010***
		Question 3	6	0	0.16	0.01	0.2296	0.228	0.700	0.299
		Question 4	2	0	0.16	0.00	0.0382	0.711	0.601	0.815
	Nova Scotia Gasoline	Aggregate	1	0	0.17	0.06	-0.4323	0.021**	0.867	0.089*
		Question 1	1	0	0.18	0.04	-0.6023	0.005***	0.978	0.965
		Question 2	2	1	0.31	0.11	-0.9149	0.004***	0.511	0.005***
		Question 3	6	0	0.15	-0.01	-0.0440	0.884	0.635	0.030**
		Question 4	2	1	0.18	0.01	-0.2571	0.188	0.500	0.064*
	New Brunswick Gasoline	Aggregate	1	0	0.21	0.10	-0.5329	0.014**	0.774	0.011**
		Question 1	1	0	0.21	0.07	-0.7699	0.003***	0.957	0.874
		Question 2	2	0	0.32	0.13	-0.7687	0.000***	0.622	0.013**
		Question 3	6	0	0.15	-0.01	-0.0559	0.843	0.632	0.041**
		Question 4	2	4	0.21	0.05	-0.2822	0.001***	0.576	0.000***
	Newfoundland and Labrador Gasoline	Aggregate	1	0	0.21	0.10	-0.6502	0.012**	0.767	0.007***
		Question 1	1	0	0.21	0.07	-0.9040	0.003***	0.962	0.763
		Question 2	2	0	0.34	0.15	-0.9947	0.000***	0.632	0.046**
		Question 3	6	1	0.16	0.01	0.2640	0.216	0.604	0.246
		Question 4	2	0	0.17	0.01	-0.2224	0.469	0.643	0.000***
	Prince Edward Island Gasoline	Aggregate	1	0	0.18	0.07	-0.4783	0.025**	0.837	0.016**
		Question 1	1	0	0.18	0.04	-0.6604	0.007***	0.973	0.884
		Question 2	2	0	0.31	0.12	-0.7722	0.001***	0.644	0.008***
		Question 3	6	0	0.15	-0.01	-0.0368	0.911	0.636	0.025**
		Question 4	2	4	0.19	0.03	-0.1746	0.010**	0.601	0.132

Table 12 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	3	1	0.17	0.03	-0.2242	0.001***	0.616	0.892
		Question 1	3	1	0.27	0.01	-0.2429	0.042**	0.471	0.480
		Question 2	3	1	0.24	0.03	-0.4706	0.011**	0.735	0.224
		Question 3	7	2	0.32	0.02	0.6335	0.018**	0.290	0.402
		Question 4	1	1	0.11	0.02	-0.0496	0.077*	0.816	0.006***
	The second month of the quarter	Aggregate	3	0	0.13	0.00	-0.1332	0.587	0.655	0.722
		Question 1	3	0	0.28	0.01	-0.4341	0.141	0.402	0.315
		Question 2	3	0	0.22	0.01	-0.3445	0.212	0.678	0.690
		Question 3	7	0	0.30	0.00	0.3258	0.384	0.334	0.546
		Question 4	1	0	0.08	-0.01	0.0552	0.774	0.810	0.893
	The first month of the quarter	Aggregate	3	3	0.16	0.02	-0.8354	0.072*	0.664	0.902
		Question 1	3	2	0.30	0.03	-0.8756	0.001***	0.464	0.496
		Question 2	3	0	0.20	-0.01	-0.0368	0.847	0.634	0.871
		Question 3	7	0	0.30	0.00	0.2407	0.435	0.342	0.139
		Question 4	1	0	0.10	0.01	-0.3293	0.155	0.785	0.323

Table 12 The Results of the Regressions of the Variations of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	3	4	0.19	0.06	-0.5000	0.004***	0.529	0.342
		Question 1	3	2	0.30	0.04	-0.5239	0.009***	0.389	0.237
		Question 2	3	2	0.24	0.03	-0.4877	0.004***	0.554	0.408
		Question 3	7	0	0.30	0.00	0.1389	0.360	0.320	0.188
		Question 4	1	1	0.09	0.00	-0.1086	0.481	0.838	0.119
	Net oil price shocks	Aggregate	3	0	0.19	0.05	-0.5744	0.001***	0.710	0.801
		Question 1	3	2	0.33	0.07	-1.3907	0.000***	0.296	0.384
		Question 2	3	0	0.27	0.06	-0.8280	0.000***	0.649	0.900
		Question 3	7	0	0.30	-0.01	-0.0825	0.775	0.316	0.748
		Question 4	1	1	0.12	0.03	-0.6919	0.019**	0.856	0.588

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.

2. The significance levels are 10%(*), 5%(**) and 1%(***).

3. The oil prices are originally in nominal terms.

Table 13 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Non-stationary	4	1	0.53	0.01	-0.1213	0.067*	0.598	0.720
		Question 1	Non-stationary	2	2	0.48	0.01	-0.4278	0.011**	0.769	0.601
		Question 2	Non-stationary	3	2	0.38	0.03	-0.4249	0.000***	0.454	0.555
		Question 3	Non-stationary	8	0	0.42	0.00	0.1617	0.206	0.285	0.187
		Question 4	Stationary	2	0	0.44	0.00	0.0415	0.473	0.635	0.960
	Nova Scotia Gasoline	Aggregate	Non-stationary	4	0	0.53	0.01	-0.2484	0.253	0.612	0.054*
		Question 1	Non-stationary	2	0	0.48	0.02	-0.3931	0.069*	0.782	0.269
		Question 2	Non-stationary	3	2	0.39	0.04	-1.0328	0.001***	0.487	0.745
		Question 3	Non-stationary	8	0	0.41	0.00	0.1464	0.582	0.308	0.213
		Question 4	Stationary	2	0	0.45	0.00	-0.1847	0.387	0.621	0.000***
	New Brunswick Gasoline	Aggregate	Non-stationary	4	0	0.53	0.01	-0.2420	0.306	0.615	0.062*
		Question 1	Non-stationary	2	0	0.49	0.02	-0.4452	0.066*	0.792	0.241
		Question 2	Non-stationary	3	2	0.37	0.02	-0.9015	0.010**	0.496	0.797
		Question 3	Non-stationary	8	0	0.41	0.00	0.1255	0.653	0.302	0.238
		Question 4	Stationary	2	0	0.45	0.00	-0.1843	0.419	0.637	0.004***
	Newfoundland and Labrador Gasoline	Aggregate	Non-stationary	4	0	0.54	0.02	-0.3689	0.204	0.660	0.001***
		Question 1	Non-stationary	2	0	0.49	0.02	-0.5427	0.046**	0.781	0.085*
		Question 2	Non-stationary	3	2	0.40	0.05	-1.3207	0.000***	0.476	0.673
		Question 3	Non-stationary	8	0	0.41	-0.01	0.0128	0.973	0.293	0.142
		Question 4	Stationary	2	0	0.45	0.00	-0.2068	0.441	0.634	0.000***
	Prince Edward Island Gasoline	Aggregate	Non-stationary	4	2	0.54	0.02	-0.7220	0.068*	0.593	0.136
		Question 1	Non-stationary	2	0	0.49	0.02	-0.4388	0.072*	0.782	0.138
		Question 2	Non-stationary	3	2	0.40	0.05	-1.1905	0.000***	0.480	0.844
		Question 3	Non-stationary	8	0	0.41	0.00	0.1012	0.735	0.297	0.181
		Question 4	Stationary	2	0	0.44	0.00	-0.1401	0.532	0.634	0.002***

Table 13 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes (Continued)

Monthly	Crude Oil	Aggregate	Non-stationary	2	0	0.61	0.00	0.0145	0.893	0.645	0.008***
		Question 1	Stationary	2	0	0.27	0.00	0.0078	0.956	0.669	0.598
		Question 2	Stationary	1	0	0.32	0.00	-0.0102	0.935	0.966	0.398
		Question 3	Stationary	1	0	0.51	0.00	0.2306	0.108	0.949	0.140
		Question 4	Non-stationary	3	2	0.74	0.00	0.1134	0.079*	0.553	0.982
	Nova Scotia Gasoline	Aggregate	Non-stationary	2	0	0.63	0.02	-0.3534	0.050**	0.720	0.022**
		Question 1	Stationary	2	0	0.30	0.02	-0.4524	0.032**	0.767	0.890
		Question 2	Stationary	1	0	0.35	0.03	-0.4625	0.011**	0.992	0.576
		Question 3	Stationary	1	0	0.50	0.00	-0.0126	0.960	0.936	0.616
		Question 4	Non-stationary	3	3	0.75	0.01	0.1393	0.017**	0.467	0.221
	New Brunswick Gasoline	Aggregate	Non-stationary	2	0	0.64	0.03	-0.4633	0.028**	0.615	0.004***
		Question 1	Stationary	2	0	0.32	0.04	-0.6422	0.010**	0.704	0.673
		Question 2	Stationary	1	0	0.36	0.04	-0.5081	0.010***	0.988	0.631
		Question 3	Stationary	1	0	0.50	0.00	-0.0222	0.922	0.936	0.804
		Question 4	Non-stationary	3	4	0.75	0.01	-0.1582	0.001***	0.499	0.000***
	Newfoundland and Labrador Gasoline	Aggregate	Non-stationary	2	0	0.64	0.03	-0.5628	0.027**	0.609	0.003***
		Question 1	Stationary	2	0	0.32	0.04	-0.7240	0.015**	0.723	0.575
		Question 2	Stationary	1	1	0.37	0.05	-0.4992	0.000***	0.992	0.318
		Question 3	Stationary	1	1	0.51	0.00	0.3392	0.138	0.903	0.908
		Question 4	Non-stationary	3	0	0.74	0.00	-0.1768	0.558	0.587	0.000***
	Prince Edward Island Gasoline	Aggregate	Non-stationary	2	0	0.63	0.02	-0.3944	0.055*	0.687	0.005***
		Question 1	Stationary	2	0	0.30	0.02	-0.5110	0.030**	0.750	0.740
		Question 2	Stationary	1	0	0.36	0.04	-0.5413	0.010**	0.989	0.437
		Question 3	Stationary	1	0	0.50	0.00	0.0181	0.948	0.935	0.728
		Question 4	Non-stationary	3	3	0.75	0.00	0.1316	0.029**	0.435	0.076*

Table 13 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Non-stationary	4	1	0.54	0.02	-0.1814	0.001***	0.505	0.877
		Question 1	Non-stationary	2	1	0.47	0.00	-0.1754	0.023***	0.756	0.254
		Question 2	Non-stationary	3	1	0.38	0.03	-0.4401	0.002***	0.579	0.248
		Question 3	Non-stationary	8	2	0.44	0.02	0.7352	0.010**	0.272	0.540
		Question 4	Stationary	2	0	0.45	0.01	0.2496	0.007***	0.572	0.948
	The second month of the quarter	Aggregate	Non-stationary	4	0	0.52	0.00	-0.1251	0.587	0.560	0.686
		Question 1	Non-stationary	2	0	0.47	0.01	-0.4111	0.094*	0.719	0.587
		Question 2	Non-stationary	3	1	0.36	0.01	-0.6322	0.097*	0.532	0.656
		Question 3	Non-stationary	8	0	0.42	0.00	0.3247	0.336	0.301	0.314
		Question 4	Stationary	2	0	0.44	0.00	0.0863	0.619	0.644	0.947
	The first month of the quarter	Aggregate	Non-stationary	4	3	0.53	0.01	-0.8164	0.038**	0.593	0.902
		Question 1	Non-stationary	2	2	0.49	0.02	-1.0273	0.002***	0.811	0.337
		Question 2	Non-stationary	3	4	0.39	0.03	-1.3270	0.003***	0.497	0.841
		Question 3	Non-stationary	8	0	0.42	0.00	0.2600	0.382	0.310	0.134
		Question 4	Stationary	2	0	0.45	0.01	-0.2771	0.224	0.625	0.058*

Table 13 The Results of the Regressions of the Levels of Consumer Confidence Indices in the Atlantic Provinces on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Non-stationary	4	4	0.55	0.03	-0.5149	0.003***	0.472	0.310
		Question 1	Non-stationary	2	2	0.49	0.02	-0.5245	0.002***	0.779	0.539
		Question 2	Non-stationary	3	2	0.40	0.04	-0.5417	0.000***	0.444	0.361
		Question 3	Non-stationary	8	0	0.42	0.00	0.1370	0.320	0.285	0.166
		Question 4	Stationary	2	0	0.44	0.00	0.0302	0.629	0.639	0.962
	Net oil price shocks	Aggregate	Non-stationary	4	0	0.54	0.02	-0.5141	0.001***	0.619	0.722
		Question 1	Non-stationary	2	0	0.49	0.02	-0.6484	0.005***	0.771	0.102
		Question 2	Non-stationary	3	0	0.39	0.04	-0.7543	0.000***	0.569	0.767
		Question 3	Non-stationary	8	0	0.41	-0.01	-0.0029	0.992	0.279	0.283
		Question 4	Stationary	2	1	0.45	0.01	-0.4587	0.202	0.712	0.389

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 14 The Results of the Regressions of the Variations of Consumer Confidence Indices in British Columbia on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	0	0	0.00	0.00	0.0884	0.307	0.999	0.500
		Question 1	2	0	0.16	0.01	0.1683	0.080*	0.693	0.642
		Question 2	5	0	0.36	0.00	-0.0929	0.198	0.412	0.397
		Question 3	1	0	0.02	0.01	0.3144	0.235	0.704	0.786
		Question 4	4	0	0.14	0.00	0.0731	0.388	0.480	0.774
	Gasoline	Aggregate	0	0	0.00	0.00	0.1508	0.363	1.000	0.057*
		Question 1	2	0	0.16	0.01	0.3170	0.080*	0.739	0.766
		Question 2	5	0	0.36	0.00	-0.1332	0.226	0.406	0.172
		Question 3	1	1	0.04	0.03	-0.4002	0.035**	0.743	0.437
		Question 4	4	4	0.17	0.03	-0.3905	0.012**	0.441	0.664
Monthly	Crude Oil	Aggregate	1	0	0.11	-0.01	0.0241	0.827	0.663	0.708
		Question 1	1	0	0.15	-0.01	0.0021	0.989	0.924	0.913
		Question 2	6	1	0.29	0.00	-0.1991	0.323	0.566	0.104
		Question 3	0	0	0.00	0.00	0.2635	0.255	1.000	0.691
		Question 4	1	2	0.11	0.02	-0.0768	0.016**	0.737	0.739
	Gasoline	Aggregate	1	1	0.13	0.01	-0.3179	0.161	0.615	0.062*
		Question 1	1	0	0.15	-0.01	0.0271	0.934	0.923	0.469
		Question 2	6	1	0.32	0.04	-0.6729	0.027**	0.543	0.044**
		Question 3	0	1	0.02	0.02	-0.3757	0.042**	1.000	0.728
		Question 4	1	3	0.14	0.05	-0.4352	0.021**	0.776	0.310

Table 14 The Results of the Regressions of the Variations of Consumer Confidence Indices in British Columbia on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter (Continued)

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	0	0	0.02	0.02	0.2620	0.026**	0.999	0.616
		Question 1	2	0	0.15	0.00	0.1471	0.359	0.693	0.690
		Question 2	5	0	0.35	-0.01	-0.0313	0.787	0.424	0.522
		Question 3	1	0	0.03	0.01	0.6407	0.113	0.707	0.954
		Question 4	4	0	0.17	0.03	0.3429	0.004***	0.449	0.503
	The second month of the quarter	Aggregate	0	0	-0.01	-0.01	0.0520	0.825	1.000	0.167
		Question 1	2	0	0.15	0.00	0.2599	0.354	0.709	0.571
		Question 2	5	0	0.36	0.00	-0.2180	0.226	0.377	0.351
		Question 3	1	0	0.01	0.00	0.4328	0.570	0.715	0.284
		Question 4	4	0	0.13	-0.01	0.0279	0.899	0.518	0.747
	The first month of the quarter	Aggregate	0	0	-0.01	-0.01	0.0232	0.900	1.000	0.822
		Question 1	2	0	0.17	0.02	0.5052	0.012**	0.668	0.711
		Question 2	5	0	0.36	0.01	-0.2883	0.066*	0.369	0.577
		Question 3	1	0	0.01	0.00	0.3701	0.468	0.706	0.569
		Question 4	4	0	0.14	0.00	-0.1766	0.308	0.555	0.279

Table 14 The Results of the Regressions of the Variations of Consumer Confidence Indices in British Columbia on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	0	0	0.00	0.00	0.0743	0.405	0.999	0.430
		Question 1	2	0	0.16	0.01	0.1737	0.063*	0.691	0.641
		Question 2	5	0	0.36	0.01	-0.1118	0.111	0.422	0.349
		Question 3	1	0	0.02	0.00	0.2641	0.347	0.712	0.583
		Question 4	4	0	0.14	0.00	0.0860	0.305	0.480	0.764
	Net oil price shocks	Aggregate	0	0	0.00	0.00	-0.2312	0.279	1.000	0.893
		Question 1	2	2	0.16	0.01	-0.8356	0.048**	0.722	0.820
		Question 2	5	0	0.37	0.01	-0.3880	0.075*	0.468	0.252
		Question 3	1	0	0.02	0.00	-0.6490	0.295	0.733	0.860
		Question 4	4	0	0.13	-0.01	-0.1000	0.616	0.517	0.681

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 15 The Results of the Regressions of the Levels of Consumer Confidence Indices in British Columbia on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Stationary	1	0	0.53	0.00	0.0764	0.347	0.916	0.139
		Question 1	Non-stationary	3	0	0.56	0.00	0.1396	0.155	0.569	0.609
		Question 2	Non-stationary	6	0	0.44	0.00	-0.0999	0.160	0.403	0.069*
		Question 3	Stationary	2	0	0.50	0.01	0.3539	0.126	0.476	0.729
		Question 4	Stationary	1	1	0.41	-0.01	-0.0808	0.065*	0.913	0.837
	Gasoline	Aggregate	Stationary	1	0	0.53	0.00	0.1557	0.298	0.924	0.037**
		Question 1	Non-stationary	3	0	0.56	0.01	0.2915	0.098*	0.621	0.863
		Question 2	Non-stationary	6	0	0.44	0.00	-0.1335	0.214	0.391	0.032**
		Question 3	Stationary	2	0	0.50	0.01	0.6249	0.115	0.417	0.431
		Question 4	Stationary	1	4	0.43	0.01	-0.3416	0.001***	0.932	0.472
Monthly	Crude Oil	Aggregate	Non-stationary	2	0	0.82	0.00	0.0461	0.689	0.581	0.709
		Question 1	Non-stationary	2	0	0.66	0.00	0.0034	0.983	0.834	0.884
		Question 2	Non-stationary	6	0	0.47	0.00	-0.1309	0.155	0.480	0.147
		Question 3	Non-stationary	2	0	0.83	0.00	0.4939	0.071*	0.350	0.355
		Question 4	Non-stationary	2	1	0.78	0.00	0.0633	0.070*	0.726	0.433
	Gasoline	Aggregate	Non-stationary	2	1	0.82	0.00	-0.2751	0.244	0.532	0.041**
		Question 1	Non-stationary	2	0	0.66	0.00	0.0346	0.915	0.832	0.545
		Question 2	Non-stationary	6	1	0.50	0.03	-0.7344	0.007***	0.414	0.135
		Question 3	Non-stationary	2	1	0.83	0.01	0.0600	0.018**	0.247	0.153
		Question 4	Non-stationary	2	3	0.78	0.01	-0.3221	0.057*	0.686	0.310

Table 15 The Results of the Regressions of the Levels of Consumer Confidence Indices in British Columbia on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Stationary	1	0	0.54	0.00	0.2134	0.055*	0.896	0.360
		Question 1	Non-stationary	3	0	0.55	0.00	0.1143	0.474	0.570	0.641
		Question 2	Non-stationary	6	0	0.43	0.00	-0.0370	0.749	0.410	0.116
		Question 3	Stationary	2	0	0.50	0.00	0.5896	0.096*	0.472	0.780
		Question 4	Stationary	1	1	0.44	0.02	-0.0120	0.002***	0.939	0.989
	The second month of the quarter	Aggregate	Stationary	1	0	0.53	0.00	0.0603	0.792	0.928	0.042**
		Question 1	Non-stationary	3	0	0.55	0.00	0.2163	0.444	0.586	0.481
		Question 2	Non-stationary	6	0	0.44	0.00	-0.2393	0.187	0.362	0.082*
		Question 3	Stationary	2	0	0.49	0.00	0.5518	0.421	0.487	0.315
		Question 4	Stationary	1	0	0.42	0.00	0.0189	0.935	0.935	0.747
	The first month of the quarter	Aggregate	Stationary	1	0	0.53	0.00	0.0301	0.869	0.927	0.264
		Question 1	Non-stationary	3	0	0.56	0.01	0.4301	0.039**	0.544	0.853
		Question 2	Non-stationary	6	0	0.45	0.01	-0.3004	0.057*	0.359	0.098*
		Question 3	Stationary	2	0	0.49	0.00	0.5914	0.249	0.480	0.276
		Question 4	Stationary	1	0	0.42	0.00	-0.2290	0.226	0.937	0.420

Table 15 The Results of the Regressions of the Levels of Consumer Confidence Indices in British Columbia on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Stationary	1	0	0.53	0.00	0.0581	0.495	0.921	0.070*
		Question 1	Non-stationary	3	0	0.55	0.00	0.1399	0.148	0.566	0.594
		Question 2	Non-stationary	6	0	0.45	0.01	-0.1219	0.080*	0.418	0.048**
		Question 3	Stationary	2	0	0.49	0.00	0.2949	0.234	0.486	0.499
		Question 4	Stationary	1	1	0.41	-0.01	-0.0961	0.067*	0.919	0.652
	Net oil price shocks	Aggregate	Stationary	1	0	0.53	0.00	-0.2101	0.234	0.948	0.443
		Question 1	Non-stationary	3	2	0.56	0.01	-0.8645	0.024**	0.615	0.895
		Question 2	Non-stationary	6	0	0.45	0.01	-0.3987	0.043**	0.464	0.143
		Question 3	Stationary	2	0	0.49	0.00	-0.2472	0.637	0.483	0.716
		Question 4	Stationary	1	0	0.42	0.00	-0.0860	0.663	0.940	0.865

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 16 The Results of the Regressions of the Variations of Consumer Confidence Indices in Ontario on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	4	0	0.06	0.00	0.0405	0.551	0.517	0.024**
		Question 1	0	0	0.02	0.02	0.1426	0.042**	1.000	0.001***
		Question 2	2	0	0.11	-0.01	-0.0158	0.803	0.526	0.057*
		Question 3	8	0	0.09	0.00	0.1052	0.411	0.554	0.462
		Question 4	4	1	0.05	0.00	-0.0520	0.237	0.603	0.471
	Gasoline	Aggregate	4	2	0.07	0.01	-0.2525	0.046**	0.584	0.062*
		Question 1	0	0	0.00	0.00	0.1497	0.409	1.000	0.000***
		Question 2	2	0	0.11	0.00	-0.0711	0.570	0.534	0.002***
		Question 3	8	4	0.13	0.04	-1.3022	0.003***	0.676	0.801
		Question 4	4	0	0.04	-0.01	0.0194	0.846	0.599	0.328
Monthly	Crude Oil	Aggregate	2	0	0.08	0.00	0.0361	0.668	0.559	0.002***
		Question 1	1	0	0.13	-0.01	-0.0067	0.962	0.865	0.101
		Question 2	2	0	0.14	0.00	-0.0340	0.727	0.553	0.149
		Question 3	0	0	0.02	0.02	0.2177	0.025**	0.999	0.675
		Question 4	7	0	0.13	0.00	0.0429	0.515	0.622	0.467
	Gasoline	Aggregate	2	1	0.09	0.00	-0.0811	0.364	0.529	0.011**
		Question 1	1	0	0.13	0.00	-0.0812	0.714	0.867	0.138
		Question 2	2	1	0.16	0.01	-0.2313	0.423	0.554	0.029**
		Question 3	0	0	0.01	0.01	0.3120	0.120	0.999	0.600
		Question 4	7	1	0.14	0.00	-0.0922	0.108	0.578	0.440

Table 16 The Results of the Regressions of the Variations of Consumer Confidence Indices in Ontario on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	4	0	0.07	0.01	0.1331	0.247	0.540	0.167
		Question 1	0	0	0.03	0.03	0.2939	0.020**	1.000	0.001***
		Question 2	2	0	0.11	-0.01	0.0121	0.910	0.534	0.242
		Question 3	8	0	0.09	0.00	0.1985	0.354	0.581	0.545
		Question 4	4	0	0.06	0.02	0.1945	0.025**	0.532	0.811
	The second month of the quarter	Aggregate	4	0	0.06	-0.01	0.0401	0.814	0.531	0.110
		Question 1	0	2	0.04	0.04	0.0114	0.004***	1.000	0.012**
		Question 2	2	0	0.11	0.00	-0.0789	0.612	0.535	0.198
		Question 3	8	4	0.12	0.03	-1.2096	0.015**	0.693	0.355
		Question 4	4	1	0.05	0.00	-0.1931	0.377	0.641	0.855
	The first month of the quarter	Aggregate	4	0	0.06	-0.01	-0.0271	0.805	0.539	0.027**
		Question 1	0	0	-0.01	-0.01	0.0496	0.795	1.000	0.007***
		Question 2	2	0	0.11	-0.01	-0.0359	0.726	0.528	0.109
		Question 3	8	0	0.08	-0.01	0.0781	0.701	0.565	0.389
		Question 4	4	0	0.05	0.00	-0.1478	0.234	0.618	0.390

Table 16 The Results of the Regressions of the Variations of Consumer Confidence Indices in Ontario on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	4	0	0.06	0.00	0.0397	0.578	0.529	0.011**
		Question 1	0	0	0.02	0.02	0.1528	0.031**	1.000	0.002***
		Question 2	2	0	0.11	-0.01	-0.0207	0.761	0.524	0.027**
		Question 3	8	0	0.09	0.00	0.0923	0.498	0.574	0.448
		Question 4	4	0	0.04	0.00	0.0450	0.376	0.568	0.385
	Net oil price shocks	Aggregate	4	0	0.10	0.03	-0.3512	0.049**	0.530	0.003***
		Question 1	0	2	0.03	0.03	-0.6549	0.008***	1.000	0.172
		Question 2	2	0	0.15	0.04	-0.3804	0.021**	0.509	0.029**
		Question 3	8	0	0.09	0.00	-0.3636	0.208	0.570	0.419
		Question 4	4	0	0.06	0.01	-0.2592	0.229	0.638	0.095*

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.

2. The significance levels are 10%(*), 5%(**) and 1%(***).

3. The oil prices are originally in nominal terms.

Table 17 The Results of the Regressions of the Levels of Consumer Confidence Indices in Ontario on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Non-stationary	5	0	0.68	0.00	0.0423	0.509	0.409	0.063*
		Question 1	Non-stationary	1	0	0.68	0.01	0.1264	0.053*	0.994	0.003***
		Question 2	Stationary	1	0	0.56	0.00	0.0082	0.894	0.986	0.005***
		Question 3	Stationary	0	0	0.01	0.01	0.1958	0.190	0.000***	0.005***
		Question 4	Stationary	1	1	0.64	-0.02	-0.0334	0.119	0.827	0.574
	Gasoline	Aggregate	Non-stationary	5	0	0.68	0.00	0.0688	0.581	0.428	0.007***
		Question 1	Non-stationary	1	0	0.67	0.00	0.1338	0.428	0.996	0.000***
		Question 2	Stationary	1	0	0.56	0.00	-0.0230	0.870	0.988	0.001***
		Question 3	Stationary	0	0	0.01	0.01	0.4189	0.059*	0.000***	0.343
		Question 4	Stationary	1	0	0.66	0.00	0.0390	0.709	0.874	0.114
Monthly	Crude Oil	Aggregate	Non-stationary	1	0	0.78	0.00	0.0520	0.536	0.997	0.060*
		Question 1	Non-stationary	2	0	0.71	0.00	-0.0069	0.962	0.767	0.080*
		Question 2	Stationary	1	0	0.56	0.00	0.0009	0.993	0.996	0.015**
		Question 3	Non-stationary	1	0	0.72	0.01	0.2761	0.018**	0.972	0.380
		Question 4	Non-stationary	1	0	0.84	0.00	0.0146	0.806	1.000	0.701
	Gasoline	Aggregate	Non-stationary	1	0	0.78	0.00	0.0550	0.704	0.995	0.018**
		Question 1	Non-stationary	2	0	0.71	0.00	-0.0677	0.754	0.772	0.164
		Question 2	Stationary	1	1	0.56	0.00	-0.1440	0.517	0.996	0.024**
		Question 3	Non-stationary	1	0	0.72	0.01	0.3808	0.082*	0.955	0.285
		Question 4	Non-stationary	1	2	0.84	0.00	0.0667	0.073*	0.999	0.053*

Table 17 The Results of the Regressions of the Levels of Consumer Confidence Indices in Ontario on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Non-stationary	5	0	0.68	0.00	0.1367	0.206	0.439	0.301
		Question 1	Non-stationary	1	0	0.68	0.01	0.2559	0.034**	0.993	0.001***
		Question 2	Stationary	1	0	0.57	0.00	0.0723	0.457	0.984	0.094*
		Question 3	Stationary	0	0	0.00	0.00	0.2091	0.439	0.000***	0.000***
		Question 4	Stationary	1	0	0.67	0.01	0.2292	0.006***	0.769	0.422
	The second month of the quarter	Aggregate	Non-stationary	5	0	0.68	0.00	0.0452	0.780	0.422	0.313
		Question 1	Non-stationary	1	2	0.68	0.01	0.0645	0.014**	0.996	0.023***
		Question 2	Stationary	1	0	0.56	0.00	-0.0320	0.828	0.989	0.013**
		Question 3	Stationary	0	0	0.00	0.00	0.4452	0.320	0.000***	0.007***
		Question 4	Stationary	1	1	0.66	0.00	-0.1224	0.258	0.874	0.663
	The first month of the quarter	Aggregate	Non-stationary	5	0	0.68	0.00	-0.0280	0.800	0.430	0.128
		Question 1	Non-stationary	1	0	0.67	0.00	0.0520	0.784	0.995	0.020**
		Question 2	Stationary	1	0	0.56	0.00	-0.0472	0.674	0.988	0.682
		Question 3	Stationary	0	0	0.00	0.00	0.3928	0.292	0.000***	0.052*
		Question 4	Stationary	1	0	0.66	0.00	-0.1555	0.247	0.849	0.121

Table 17 The Results of the Regressions of the Levels of Consumer Confidence Indices in Ontario on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Non-stationary	5	0	0.68	0.00	0.0340	0.617	0.419	0.031**
		Question 1	Non-stationary	1	0	0.68	0.01	0.1283	0.055*	0.993	0.003***
		Question 2	Stationary	1	0	0.56	0.00	0.0032	0.962	0.987	0.003***
		Question 3	Stationary	0	0	0.00	0.00	0.1384	0.387	0.000***	0.001***
		Question 4	Stationary	1	1	0.64	-0.02	-0.0406	0.145	0.834	0.508
	Net oil price shocks	Aggregate	Non-stationary	5	0	0.69	0.01	-0.3081	0.071*	0.414	0.022**
		Question 1	Non-stationary	1	2	0.68	0.01	-0.6029	0.010***	0.998	0.066*
		Question 2	Stationary	1	0	0.58	0.01	-0.3258	0.021**	0.992	0.833
		Question 3	Stationary	0	0	-0.01	-0.01	-0.0091	0.987	0.000***	0.631
		Question 4	Stationary	1	0	0.66	0.00	-0.1452	0.504	0.906	0.063*

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 18 The Results of the Regressions of the Variations of Consumer Confidence Indices in Quebec on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	4	4	0.09	0.03	-0.2958	0.178	0.513	0.671
		Question 1	2	0	0.18	0.04	0.1895	0.000***	0.511	0.922
		Question 2	0	2	0.01	0.01	-0.1709	0.070*	1.000	0.184
		Question 3	1	0	0.02	0.00	0.1246	0.371	0.645	0.404
		Question 4	2	1	0.10	0.03	-0.0210	0.001***	0.562	0.788
	Gasoline	Aggregate	4	3	0.11	0.06	-0.6189	0.000***	0.563	0.092*
		Question 1	2	3	0.19	0.04	-0.7292	0.000***	0.605	0.116
		Question 2	0	2	0.01	0.01	-0.4060	0.126	1.000	0.359
		Question 3	1	0	0.04	0.03	0.4456	0.016**	0.648	0.510
		Question 4	2	3	0.11	0.05	-0.6614	0.015**	0.583	0.331
Monthly	Crude Oil	Aggregate	6	0	0.10	0.02	0.1337	0.051*	0.432	0.470
		Question 1	2	1	0.26	0.02	0.0547	0.047**	0.568	1.000
		Question 2	3	0	0.17	0.00	-0.0729	0.386	0.570	0.997
		Question 3	1	0	0.07	0.04	0.3519	0.001***	0.658	0.291
		Question 4	6	0	0.11	0.03	0.1687	0.023**	0.486	0.303
	Gasoline	Aggregate	6	0	0.07	0.00	0.0680	0.638	0.462	0.016**
		Question 1	2	0	0.23	0.00	0.0204	0.922	0.558	0.405
		Question 2	3	0	0.18	0.01	-0.1920	0.202	0.619	0.979
		Question 3	1	0	0.05	0.02	0.4248	0.016**	0.682	0.343
		Question 4	6	0	0.07	0.00	0.0880	0.602	0.554	0.019**

Table 18 The Results of the Regressions of the Variations of Consumer Confidence Indices in Quebec on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	4	0	0.09	0.04	0.2409	0.019**	0.493	0.399
		Question 1	2	0	0.20	0.05	0.4130	0.000***	0.531	0.915
		Question 2	0	0	-0.01	-0.01	0.0530	0.692	1.000	0.226
		Question 3	1	0	0.02	0.01	0.3079	0.192	0.669	0.372
		Question 4	2	1	0.15	0.08	0.1368	0.000***	0.537	0.852
	The second month of the quarter	Aggregate	4	0	0.05	-0.01	0.0719	0.712	0.481	0.644
		Question 1	2	0	0.17	0.03	0.4344	0.008***	0.497	0.781
		Question 2	0	0	0.00	0.00	-0.1899	0.261	1.000	0.002***
		Question 3	1	4	0.05	0.04	-0.7342	0.000***	0.767	0.839
		Question 4	2	1	0.08	0.01	-0.1627	0.158	0.576	0.665
	The first month of the quarter	Aggregate	4	3	0.09	0.03	-0.6944	0.037**	0.492	0.327
		Question 1	2	0	0.14	-0.01	0.0017	0.993	0.593	0.217
		Question 2	0	2	0.01	0.01	-0.3155	0.204	1.000	0.499
		Question 3	1	0	0.01	-0.01	-0.0478	0.869	0.634	0.352
		Question 4	2	0	0.07	0.00	-0.1323	0.295	0.542	0.595

Table 18 The Results of the Regressions of the Variations of Consumer Confidence Indices in Quebec on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Crude oil price changes in form of	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	4	0	0.06	0.00	0.0699	0.319	0.482	0.168
		Question 1	2	2	0.20	0.05	-0.0832	0.000***	0.628	0.537
		Question 2	0	2	0.02	0.02	-0.1910	0.038**	1.000	0.099*
		Question 3	1	0	0.02	0.00	0.1329	0.348	0.655	0.404
		Question 4	2	1	0.10	0.03	-0.0252	0.000***	0.580	0.745
	Net oil price shocks	Aggregate	4	0	0.09	0.03	-0.3555	0.014**	0.456	0.832
		Question 1	2	2	0.23	0.09	-1.0072	0.004***	0.600	0.789
		Question 2	0	0	0.03	0.03	-0.3561	0.064*	1.000	0.055*
		Question 3	1	0	0.01	0.00	-0.3239	0.221	0.596	0.995
		Question 4	2	0	0.09	0.02	-0.2971	0.038**	0.557	0.604

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.

2. The significance levels are 10%(*), 5%(**) and 1%(***).

3. The oil prices are originally in nominal terms.

Table 19 The Results of the Regressions of the Levels of Consumer Confidence Indices in Quebec on the Oil Price Changes

A. Oil Price Changes Explanatory Variables: the Quarterly and Monthly Crude Oil Price Changes and Gasoline Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Crude Oil	Aggregate	Non-stationary	6	4	0.68	0.01	-0.2709	0.159	0.372	0.465
		Question 1	Non-stationary	4	0	0.68	0.01	0.1793	0.001***	0.352	0.757
		Question 2	Stationary	1	2	0.57	-0.01	-0.1437	0.072*	1.000	0.120
		Question 3	Stationary	0	0	0.01	0.01	0.1792	0.179	0.000***	0.000***
		Question 4	Stationary	1	1	0.54	0.00	-0.0217	0.004***	0.934	0.119
	Gasoline	Aggregate	Non-stationary	6	3	0.69	0.02	-0.5222	0.000***	0.407	0.144
		Question 1	Non-stationary	4	3	0.68	0.02	-0.5571	0.000***	0.425	0.192
		Question 2	Stationary	1	2	0.57	-0.01	-0.3093	0.172	0.999	0.489
		Question 3	Stationary	0	1	0.02	0.02	0.8649	0.028**	0.000***	0.116
		Question 4	Stationary	1	2	0.52	-0.02	-0.3073	0.035**	0.952	0.015**
Monthly	Crude Oil	Aggregate	Non-stationary	7	0	0.74	0.01	0.1581	0.022**	0.341	0.483
		Question 1	Non-stationary	3	3	0.68	0.01	0.2442	0.064*	0.614	0.865
		Question 2	Stationary	2	0	0.54	0.00	-0.0444	0.584	0.656	0.666
		Question 3	Stationary	1	3	0.66	0.03	0.8000	0.000***	0.918	0.711
		Question 4	Non-stationary	1	0	0.75	0.01	0.1744	0.014**	0.988	0.809
	Gasoline	Aggregate	Non-stationary	7	0	0.73	0.00	0.0957	0.494	0.369	0.083*
		Question 1	Non-stationary	3	0	0.66	0.00	0.0152	0.942	0.582	0.252
		Question 2	Stationary	2	0	0.55	0.00	-0.1683	0.258	0.686	0.483
		Question 3	Stationary	1	2	0.65	0.02	0.9917	0.006***	0.961	0.972
		Question 4	Non-stationary	1	2	0.73	0.00	0.3131	0.179	0.988	0.000***

Table 19 The Results of the Regressions of the Levels of Consumer Confidence Indices in Quebec on the Oil Price Changes (Continued)

B. Oil Price Changes Explanatory Variables: the Crude Oil Price Changes in a Certain Month of the Quarter

Frequency of series	Crude oil price changes in	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	The third month of the quarter	Aggregate	Non-stationary	6	0	0.68	0.01	0.2194	0.025**	0.361	0.767
		Question 1	Non-stationary	4	0	0.69	0.02	0.4014	0.000***	0.376	0.795
		Question 2	Stationary	1	0	0.58	0.00	0.0673	0.587	0.999	0.093*
		Question 3	Stationary	0	0	0.00	0.00	0.2250	0.373	0.000***	0.000***
		Question 4	Stationary	1	1	0.59	0.05	0.1105	0.000***	0.853	0.329
	The second month of the quarter	Aggregate	Non-stationary	6	0	0.66	0.00	0.0753	0.676	0.348	0.906
		Question 1	Non-stationary	4	0	0.68	0.01	0.4060	0.014**	0.343	0.762
		Question 2	Stationary	1	0	0.58	0.00	-0.1516	0.359	0.999	0.002***
		Question 3	Stationary	0	0	0.00	0.00	0.3766	0.364	0.000***	0.002***
		Question 4	Stationary	1	0	0.54	0.00	0.0858	0.597	0.913	0.068*
	The first month of the quarter	Aggregate	Non-stationary	6	3	0.68	0.01	-0.6742	0.057*	0.408	0.126
		Question 1	Non-stationary	4	0	0.66	0.00	-0.0138	0.943	0.388	0.093*
		Question 2	Stationary	1	3	0.57	-0.01	-0.5456	0.083*	0.999	0.585
		Question 3	Stationary	0	0	0.00	0.00	0.3293	0.346	0.000***	0.493
		Question 4	Stationary	1	0	0.54	0.00	-0.1664	0.244	0.893	0.003***

Table 19 The Results of the Regressions of the Levels of Consumer Confidence Indices in Quebec on the Oil Price Changes (Continued)

C. Oil Price Changes Explanatory Variables: the Non-linearly Transformed Quarterly Crude Oil Price Changes

Frequency of series	Oil price changes for	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Large oil price changes	Aggregate	Non-stationary	6	4	0.68	0.01	-0.2896	0.125	0.390	0.457
		Question 1	Non-stationary	4	2	0.68	0.02	-0.0806	0.000***	0.496	0.294
		Question 2	Stationary	1	4	0.59	0.01	-0.4165	0.001***	1.000	0.089*
		Question 3	Stationary	0	0	0.00	0.00	0.1443	0.283	0.000***	0.001***
		Question 4	Stationary	1	1	0.55	0.01	-0.0361	0.001***	0.936	0.111
	Net oil price shocks	Aggregate	Non-stationary	6	2	0.68	0.02	-0.5100	0.017**	0.298	0.971
		Question 1	Non-stationary	4	2	0.70	0.03	-0.9447	0.001***	0.337	0.622
		Question 2	Stationary	1	2	0.59	0.01	-0.4633	0.010***	1.000	0.221
		Question 3	Stationary	0	0	-0.01	-0.01	0.0830	0.867	0.000***	0.426
		Question 4	Stationary	1	0	0.54	0.00	-0.2143	0.093*	0.945	0.134

Note:

1. The quarterly series are from 1982:Q1 to 2014:Q4; the monthly series are from 2002:01 to 2014:12.
2. The significance levels are 10%(*), 5%(**) and 1%(***).
3. The oil prices are originally in nominal terms.

Table 20 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on the Asymmetric Crude Oil Price Changes

A. Canada

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	4	0	0.06	0.02	-0.0920	0.506	0.1488	0.132	0.468	0.006***
	Question 1	0	0	0.04	0.04	-0.1031	0.445	0.2337	0.003***	1.000	0.958
	Question 2	2	0	0.13	0.01	-0.1603	0.216	-0.0138	0.858	0.438	0.000***
	Question 3	4	0	0.05	0.03	0.0737	0.753	0.2973	0.171	0.477	0.132
	Question 4	2	1	0.08	0.06	-0.1297	0.375	-0.0604	0.000***	0.448	0.675
Monthly	Aggregate	0	0	-0.01	-0.01	-0.0349	0.681	0.0709	0.485	0.906	0.493
	Question 1	1	0	0.06	0.00	-0.1275	0.268	0.1263	0.448	0.699	0.954
	Question 2	3	0	0.09	0.02	-0.2439	0.034**	-0.0138	0.892	0.535	0.196
	Question 3	4	0	0.03	0.03	0.2135	0.180	0.2750	0.040**	0.393	0.364
	Question 4	0	1	0.00	0.00	0.1006	0.407	-0.0593	0.092*	0.939	0.269

B. The Prairie Provinces

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	1	0	0.15	0.13	-0.1652	0.059*	0.3070	0.000***	0.454	0.410
	Question 1	3	0	0.15	0.03	-0.2576	0.083*	0.2010	0.013**	0.688	0.217
	Question 2	6	2	0.31	0.05	-0.4679	0.006***	-0.1781	0.033**	0.458	0.629
	Question 3	1	1	0.21	0.19	0.0734	0.568	0.8797	0.000***	0.700	0.489
	Question 4	1	0	0.16	0.07	-0.1259	0.198	0.3336	0.000***	0.721	0.804
Monthly	Aggregate	0	2	0.00	0.00	0.1507	0.245	0.1279	0.644	1.000	0.864
	Question 1	1	2	0.29	0.03	-0.5445	0.039**	0.3875	0.102	0.980	0.311
	Question 2	4	0	0.15	0.00	-0.0972	0.634	-0.0803	0.398	0.521	0.291
	Question 3	0	2	0.03	0.03	0.6644	0.295	0.4593	0.019**	1.000	0.000 ***
	Question 4	0	4	0.02	0.02	-0.0144	0.222	-0.0522	0.134	1.000	0.178

Table 20 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on the Asymmetric Oil Price Changes (Continued)

C. The Atlantic Provinces

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	3	1	0.14	0.00	-0.2054	0.540	-0.1311	0.010***	0.671	0.904
	Question 1	3	2	0.28	0.01	-0.5222	0.199	-0.3759	0.004***	0.388	0.737
	Question 2	3	2	0.21	0.01	-0.3472	0.702	-0.4638	0.084*	0.562	0.181
	Question 3	7	0	0.31	0.00	-0.0341	0.882	0.2716	0.285	0.317	0.243
	Question 4	1	1	0.10	0.01	-0.3019	0.208	-0.0361	0.065*	0.836	0.100
Monthly	Aggregate	1	0	0.10	-0.01	-0.0724	0.708	-0.0276	0.877	0.828	0.012**
	Question 1	1	0	0.13	-0.01	-0.1008	0.745	-0.0621	0.794	0.965	0.362
	Question 2	2	1	0.23	0.03	-0.5258	0.117	-0.2832	0.372	0.585	0.003***
	Question 3	6	0	0.16	0.01	-0.2198	0.478	0.5196	0.025**	0.688	0.300
	Question 4	2	0	0.16	-0.01	0.0983	0.541	-0.0031	0.986	0.575	0.874

D. British Columbia

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	0	0	0.00	0.00	-0.0109	0.940	0.1506	0.231	1.000	0.880
	Question 1	2	0	0.18	0.03	-0.1990	0.336	0.3913	0.018**	0.771	0.641
	Question 2	5	0	0.36	0.01	-0.2610	0.122	0.0103	0.907	0.436	0.672
	Question 3	1	0	0.02	0.01	-0.0521	0.898	0.5446	0.161	0.714	0.857
	Question 4	4	0	0.13	-0.01	-0.0033	0.983	0.1225	0.151	0.443	0.873
Monthly	Aggregate	1	0	0.11	-0.01	-0.0616	0.672	0.0825	0.627	0.658	0.801
	Question 1	1	0	0.15	0.00	-0.3306	0.133	0.2258	0.297	0.942	0.979
	Question 2	6	1	0.28	0.00	-0.3826	0.455	-0.1019	0.811	0.574	0.074*
	Question 3	0	0	-0.01	-0.01	0.2316	0.640	0.2849	0.413	1.000	0.824
	Question 4	1	2	0.11	0.02	0.1983	0.459	-0.1954	0.003***	0.797	0.621

Table 20 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on the Asymmetric Oil Price Changes (Continued)

E. Ontario

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	4	0	0.06	0.00	-0.0579	0.716	0.1017	0.384	0.468	0.012**
	Question 1	0	0	0.06	0.06	-0.1791	0.254	0.3442	0.000***	1.000	0.951
	Question 2	2	0	0.11	0.00	-0.1177	0.350	0.0482	0.637	0.502	0.069*
	Question 3	8	0	0.09	-0.01	0.2284	0.395	0.0279	0.909	0.564	0.314
	Question 4	4	1	0.06	0.01	-0.0631	0.706	-0.1072	0.003***	0.585	0.609
Monthly	Aggregate	2	0	0.08	-0.01	-0.0375	0.750	0.0857	0.516	0.545	0.005***
	Question 1	1	0	0.13	-0.01	-0.1462	0.416	0.0860	0.720	0.885	0.471
	Question 2	2	0	0.16	0.01	-0.2715	0.067*	0.1222	0.313	0.471	0.530
	Question 3	0	0	0.01	0.01	0.2689	0.182	0.1833	0.134	1.000	0.248
	Question 4	7	0	0.13	-0.01	0.1023	0.416	0.0010	0.992	0.633	0.433

F. Quebec

Frequency of series	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	4	4	0.08	0.03	-0.2804	0.662	-0.3513	0.000***	0.533	0.279
	Question 1	2	0	0.18	0.04	0.0447	0.765	0.2822	0.000***	0.547	0.922
	Question 2	0	2	-0.01	-0.01	-0.1584	0.692	-0.1872	0.132	1.000	0.139
	Question 3	1	0	0.02	0.00	-0.0652	0.793	0.2446	0.216	0.605	0.982
	Question 4	2	1	0.14	0.07	-0.0719	0.333	-0.0784	0.000***	0.552	0.823
Monthly	Aggregate	6	0	0.10	0.02	0.0642	0.554	0.1808	0.068*	0.421	0.385
	Question 1	2	1	0.27	0.03	-0.1325	0.890	0.1362	0.004***	0.508	0.899
	Question 2	3	0	0.17	0.00	-0.2508	0.054*	0.0434	0.658	0.524	0.997
	Question 3	1	0	0.07	0.04	0.4718	0.066*	0.2721	0.090*	0.642	0.142
	Question 4	6	0	0.10	0.03	0.2234	0.127	0.1305	0.239	0.479	0.440

Table 21 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on the Asymmetric Crude Oil Price Changes

A. Canada

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Non-stationary	6	0	0.70	0.01	-0.1260	0.355	0.1585	0.091*	0.241	0.099*
	Question 1	Non-stationary	1	0	0.74	0.01	-0.1109	0.408	0.2276	0.006***	0.998	0.942
	Question 2	Stationary	1	0	0.57	0.00	-0.1179	0.341	0.0322	0.695	0.994	0.189
	Question 3	Stationary	0	2	0.06	0.06	0.1284	0.419	1.0073	0.000***	0.000***	0.031**
	Question 4	Stationary	1	1	0.66	0.02	-0.1232	0.564	-0.0535	0.000***	0.885	0.481
Monthly	Aggregate	Non-stationary	1	0	0.84	0.00	-0.0235	0.787	0.1055	0.370	0.905	0.047**
	Question 1	Non-stationary	1	0	0.83	0.00	-0.1064	0.357	0.1064	0.522	0.996	0.539
	Question 2	Stationary	1	0	0.65	0.00	-0.1944	0.069*	0.0151	0.900	0.929	0.035**
	Question 3	Non-stationary	5	0	0.81	0.01	0.0738	0.628	0.4318	0.003***	0.375	0.296
	Question 4	Non-stationary	0	4	0.08	0.08	0.8962	0.961	1.2546	0.112	0.000***	0.001***

B. The Prairie Provinces

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Stationary	0	0	0.01	0.01	-0.1380	0.503	0.2108	0.032**	0.000***	0.210
	Question 1	Non-stationary	1	0	0.59	0.01	-0.2102	0.082*	0.1414	0.051*	0.982	0.290
	Question 2	Non-stationary	7	2	0.42	0.03	-0.4131	0.010**	-0.1887	0.019**	0.367	0.320
	Question 3	Stationary	0	4	0.07	0.07	1.1781	0.361	2.0728	0.001***	0.000***	0.152
	Question 4	Stationary	2	0	0.53	0.04	-0.1464	0.130	0.3168	0.000***	0.535	0.873
Monthly	Aggregate	Non-stationary	1	2	0.70	0.02	-0.2151	0.211	0.4318	0.017**	0.996	0.558
	Question 1	Non-stationary	2	2	0.65	0.02	-0.7468	0.002***	0.4955	0.028**	0.948	0.158
	Question 2	Stationary	1	0	0.26	-0.01	-0.1260	0.328	0.0493	0.639	0.823	0.827
	Question 3	Non-stationary	1	3	0.78	0.03	0.0784	0.338	1.2927	0.000***	0.991	0.007***
	Question 4	Non-stationary	1	2	0.82	0.01	0.1656	0.136	0.1940	0.087*	0.997	0.321

Table 21 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on the Asymmetric Crude Oil Price Changes (Continued)

C. The Atlantic Provinces

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Non-stationary	4	1	0.52	0.00	-0.1947	0.577	-0.1109	0.026**	0.574	0.906
	Question 1	Non-stationary	2	2	0.47	0.01	-0.4894	0.151	-0.3449	0.001***	0.728	0.292
	Question 2	Non-stationary	3	2	0.36	0.01	-0.4434	0.249	-0.4223	0.069*	0.442	0.231
	Question 3	Non-stationary	8	0	0.42	0.00	0.0245	0.911	0.2484	0.272	0.281	0.119
	Question 4	Stationary	2	0	0.44	0.00	-0.0865	0.510	0.1224	0.221	0.623	0.901
Monthly	Aggregate	Non-stationary	2	0	0.61	-0.01	-0.0131	0.930	0.0329	0.857	0.643	0.019**
	Question 1	Stationary	2	0	0.27	-0.01	0.0028	0.989	0.0112	0.964	0.664	0.341
	Question 2	Stationary	1	0	0.31	-0.01	0.0277	0.892	-0.0342	0.857	0.965	0.361
	Question 3	Stationary	1	0	0.51	0.00	-0.0589	0.839	0.4224	0.045**	0.937	0.296
	Question 4	Non-stationary	3	2	0.74	0.00	-0.0490	0.235	0.1874	0.268	0.538	0.997

D. British Columbia

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Stationary	1	0	0.53	0.00	-0.1030	0.462	0.1880	0.151	0.939	0.502
	Question 1	Non-stationary	3	0	0.57	0.01	-0.2404	0.195	0.3693	0.027**	0.670	0.541
	Question 2	Non-stationary	6	0	0.45	0.01	-0.2818	0.086*	0.0112	0.897	0.437	0.272
	Question 3	Stationary	2	0	0.50	0.01	-0.0531	0.884	0.6098	0.088*	0.487	0.836
	Question 4	Stationary	1	1	0.42	0.00	-0.1755	0.657	-0.0792	0.006***	0.952	0.994
Monthly	Aggregate	Non-stationary	2	0	0.82	0.00	-0.0641	0.672	0.1220	0.516	0.571	0.608
	Question 1	Non-stationary	2	0	0.66	0.00	-0.3409	0.087*	0.2349	0.334	0.870	0.625
	Question 2	Non-stationary	6	0	0.47	0.00	-0.0938	0.681	-0.1546	0.334	0.467	0.300
	Question 3	Non-stationary	2	0	0.83	0.00	0.1173	0.806	0.7538	0.078*	0.302	0.528
	Question 4	Non-stationary	2	1	0.78	0.01	0.3535	0.296	-0.1073	0.033**	0.695	0.661

Table 21 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on the Asymmetric Crude Oil Price Changes (Continued)

E. Ontario

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Non-stationary	5	0	0.68	0.00	-0.0552	0.734	0.1028	0.373	0.357	0.030**
	Question 1	Non-stationary	1	0	0.69	0.02	-0.1915	0.249	0.3257	0.001***	0.995	0.959
	Question 2	Stationary	1	0	0.57	0.00	-0.1103	0.367	0.0821	0.460	0.984	0.428
	Question 3	Stationary	0	0	0.02	0.02	-0.2381	0.605	0.4684	0.077*	0.000***	0.228
	Question 4	Stationary	1	1	0.66	0.00	-0.0891	0.852	-0.0476	0.012**	0.861	0.846
Monthly	Aggregate	Non-stationary	1	0	0.78	0.00	-0.0611	0.630	0.1286	0.325	0.995	0.093*
	Question 1	Non-stationary	2	0	0.71	0.00	-0.1623	0.393	0.0965	0.704	0.801	0.476
	Question 2	Stationary	1	0	0.57	0.00	-0.2367	0.171	0.1565	0.173	0.989	0.166
	Question 3	Non-stationary	1	0	0.72	0.01	0.1514	0.435	0.3626	0.024**	0.968	0.181
	Question 4	Non-stationary	1	0	0.84	0.00	0.0934	0.435	-0.0394	0.709	1.000	0.845

F. Quebec

Frequency of series	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price changes	Adj-R2	Incremental adj-R2 based on the models without the oil price changes	Sum of the coefficients for the positive oil price changes	P-values of the joint significance test statistics for the positive oil price changes	Sum of the coefficients for the negative oil price changes	P-values of the joint significance test statistics for the negative oil price changes	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly	Aggregate	Non-stationary	6	4	0.67	0.01	-0.3252	0.418	-0.2604	0.002***	0.375	0.532
	Question 1	Non-stationary	4	0	0.68	0.01	0.0232	0.874	0.2775	0.002***	0.367	0.805
	Question 2	Stationary	1	2	0.57	-0.01	-0.1797	0.669	-0.1398	0.206	1.000	0.076*
	Question 3	Stationary	0	0	0.02	0.02	-0.1796	0.667	0.4051	0.023**	0.000***	0.004***
	Question 4	Stationary	1	1	0.57	0.03	-0.0888	0.585	-0.0567	0.001***	0.957	0.077*
Monthly	Aggregate	Non-stationary	7	0	0.74	0.01	0.0690	0.522	0.2191	0.040**	0.326	0.341
	Question 1	Non-stationary	3	3	0.68	0.02	-0.1472	0.345	0.4228	0.001***	0.613	0.637
	Question 2	Stationary	2	0	0.54	0.00	-0.1663	0.175	0.0376	0.753	0.623	0.865
	Question 3	Stationary	1	3	0.68	0.05	0.5234	0.011**	1.0759	0.000***	0.874	0.817
	Question 4	Non-stationary	1	0	0.75	0.01	0.2151	0.083*	0.1454	0.174	0.989	0.791

Table 22 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on the Oil Price Changes Volatility Measures

A. Canada

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	4	1	0.07	0.03	40.00	0.070*	0.526	0.545
	Question 1	0	0	0.00	0.00	-24.15	0.428	1.000	0.870
	Question 2	2	1	0.14	0.02	39.48	0.161	0.394	0.960
	Question 3	4	1	0.07	0.05	81.32	0.073*	0.638	0.418
	Question 4	2	0	0.02	0.00	23.09	0.372	0.470	0.079*

B. The Prairie Provinces

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	1	1	0.05	0.02	13.71	0.133	0.624	0.237
	Question 1	3	0	0.13	0.01	-60.20	0.236	0.645	0.047**
	Question 2	6	0	0.26	0.00	23.02	0.340	0.475	0.527
	Question 3	1	1	0.10	0.08	16.61	0.012**	0.642	0.324
	Question 4	1	1	0.09	0.00	21.66	0.186	0.811	0.298

C. The Atlantic Provinces

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	3	1	0.14	0.00	36.35	0.281	0.613	0.971
	Question 1	3	0	0.27	0.00	36.12	0.389	0.386	0.349
	Question 2	3	1	0.22	0.01	65.94	0.212	0.586	0.973
	Question 3	7	4	0.35	0.04	6.81	0.000***	0.266	0.269
	Question 4	1	1	0.09	0.00	20.15	0.464	0.782	0.153

Table 22 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on the Oil Price Changes Volatility Measures (Continued)

D. British Columbia

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R2	Incremental adj-R2 based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	0	1	0.01	0.01	30.77	0.105	1.000	0.147
	Question 1	2	0	0.19	0.04	-155.08	0.000***	0.650	0.706
	Question 2	5	1	0.37	0.01	3.17	0.170	0.374	0.714
	Question 3	1	1	0.05	0.03	105.07	0.047**	0.748	0.265
	Question 4	4	0	0.15	0.01	61.73	0.050*	0.519	0.414

E. Ontario

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R2	Incremental adj-R2 based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	4	1	0.08	0.02	41.25	0.133	0.441	0.521
	Question 1	0	0	0.00	0.00	-30.67	0.443	1.000	0.576
	Question 2	2	1	0.13	0.01	37.22	0.210	0.445	0.812
	Question 3	8	1	0.11	0.02	96.43	0.069*	0.519	0.801
	Question 4	4	0	0.04	0.00	28.13	0.205	0.591	0.603

F. Quebec

Uncertainty measures of crude oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the oil price uncertainty measures	Adj-R2	Incremental adj-R2 based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	4	1	0.08	0.02	39.88	0.180	0.509	0.985
	Question 1	2	0	0.15	0.00	-44.65	0.266	0.596	0.906
	Question 2	0	1	0.01	0.01	44.38	0.040**	1.000	0.878
	Question 3	1	2	0.03	0.02	74.40	0.173	0.636	0.917
	Question 4	2	1	0.08	0.01	45.24	0.304	0.476	0.952

Table 23 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on the Oil Price Changes Volatility Measures

A. Canada

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Non-stationary	6	1	0.70	0.01	27.41	0.075*	0.345	0.251
	Question 1	Non-stationary	1	0	0.73	0.00	-39.81	0.282	0.998	0.062*
	Question 2	Stationary	1	1	0.57	0.00	19.07	0.350	0.993	0.554
	Question 3	Stationary	0	0	0.02	0.02	-139.77	0.175	0.000***	0.642
	Question 4	Stationary	1	0	0.64	0.00	19.67	0.508	0.827	0.205

B. The Prairie Provinces

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Stationary	0	0	0.01	0.01	-68.33	0.217	0.000***	0.610
	Question 1	Non-stationary	1	0	0.59	0.00	-39.29	0.365	0.982	0.049**
	Question 2	Non-stationary	7	0	0.38	0.00	26.93	0.231	0.388	0.545
	Question 3	Stationary	0	0	0.01	0.01	-157.41	0.136	0.000***	0.751
	Question 4	Stationary	2	1	0.49	0.00	6.22	0.228	0.641	0.034**

C. The Atlantic Provinces

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Non-stationary	4	0	0.52	0.00	11.59	0.709	0.523	0.949
	Question 1	Non-stationary	2	0	0.46	0.00	33.63	0.385	0.701	0.293
	Question 2	Non-stationary	3	0	0.35	0.00	15.14	0.712	0.483	0.661
	Question 3	Non-stationary	8	4	0.46	0.04	25.80	0.001***	0.247	0.233
	Question 4	Stationary	2	1	0.44	0.00	26.44	0.095*	0.612	0.002***

Table 23 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on the Oil Price Changes Volatility Measures (Continued)

D. British Columbia

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Stationary	1	1	0.54	0.00	-27.62	0.150	0.943	0.063*
	Question 1	Non-stationary	3	0	0.58	0.03	-177.54	0.000***	0.531	0.824
	Question 2	Non-stationary	6	1	0.45	0.01	-12.33	0.192	0.340	0.370
	Question 3	Stationary	2	1	0.50	0.01	10.54	0.073*	0.520	0.210
	Question 4	Stationary	1	0	0.42	0.00	15.13	0.653	0.932	0.908

E. Ontario

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Non-stationary	5	1	0.68	0.00	32.90	0.111	0.344	0.584
	Question 1	Non-stationary	1	0	0.67	0.00	-52.31	0.296	0.996	0.063*
	Question 2	Stationary	1	1	0.56	0.00	15.91	0.474	0.983	0.877
	Question 3	Stationary	0	0	0.01	0.01	-125.79	0.320	0.000***	0.414
	Question 4	Stationary	1	0	0.66	0.00	16.44	0.603	0.857	0.407

F. Quebec

Uncertainty measures of crude oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the oil price uncertainty measures	Adj-R ²	Incremental adj-R ² based on the models without the oil price uncertainty measures	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly uncertainty measures (the quarterly average of the monthly GARCH(1, 1) estimated standard deviations)	Aggregate	Non-stationary	6	1	0.67	0.00	23.77	0.219	0.372	0.931
	Question 1	Non-stationary	4	0	0.67	0.00	-51.86	0.247	0.376	0.574
	Question 2	Stationary	1	1	0.58	0.00	31.58	0.044**	0.999	0.617
	Question 3	Stationary	0	0	0.01	0.01	-110.78	0.308	0.000***	0.563
	Question 4	Stationary	1	0	0.54	0.00	15.96	0.548	0.919	0.063*

Table 24 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures

A. Canada

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	4	1	0.14	0.10	-0.5363	0.000***	16.97	0.201	4.844	0.000***	0.704	0.030**
	Question 1	0	0	0.01	0.01	-0.0234	0.885	-29.71	0.406	1.141	0.351	1.000	0.676
	Question 2	2	1	0.19	0.06	-0.5225	0.002***	29.43	0.184	3.622	0.002***	0.398	0.059*
	Question 3	4	2	0.16	0.13	-1.0897	0.000***	66.20	0.125	13.300	0.000***	0.650	0.255
	Question 4	2	1	0.06	0.04	-0.3800	0.002***	11.75	0.759	2.991	0.005***	0.413	0.873
Monthly crude oil price changes	Aggregate	0	0	0.00	0.00	-0.1092	0.236	5.17	0.481	1.166	0.005***	0.979	0.179
	Question 1	1	0	0.09	0.02	-0.2044	0.063*	-25.41	0.000***	1.829	0.001***	0.694	0.953
	Question 2	3	0	0.10	0.03	-0.3009	0.009***	9.39	0.365	1.671	0.013**	0.588	0.259
	Question 3	4	0	0.04	0.04	0.0691	0.680	11.22	0.579	1.556	0.112	0.402	0.025**
	Question 4	0	0	0.01	0.01	0.0132	0.892	18.12	0.010***	0.284	0.564	0.967	0.076*
Large crude oil price changes	Aggregate	4	1	0.14	0.10	-0.5948	0.000***	16.33	0.245	5.303	0.000***	0.708	0.014**
	Question 1	0	0	0.01	0.01	-0.0203	0.906	-29.46	0.416	1.121	0.381	1.000	0.614
	Question 2	2	1	0.21	0.08	-0.6571	0.002***	25.79	0.229	4.588	0.002***	0.441	0.044**
	Question 3	4	2	0.14	0.12	-1.0791	0.000***	70.78	0.175	13.316	0.000***	0.638	0.449
	Question 4	2	1	0.06	0.04	-0.4445	0.002***	10.76	0.802	3.482	0.004***	0.472	0.848
Net crude oil price shocks	Aggregate	4	1	0.12	0.08	-0.3277	0.252	49.21	0.048**	-0.276	0.118	0.492	0.273
	Question 1	0	3	0.07	0.07	-1.3721	0.037**	-11.27	0.911	9.583	0.019**	1.000	0.988
	Question 2	2	1	0.26	0.14	-1.0672	0.001***	39.31	0.172	6.562	0.006***	0.324	0.401
	Question 3	4	1	0.06	0.04	-0.2836	0.268	80.39	0.171	1.254	0.207	0.632	0.540
	Question 4	2	0	0.04	0.02	0.5843	0.310	49.40	0.037**	-9.819	0.109	0.457	0.196

Table 24 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

B. The Prairie Provinces

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	1	1	0.08	0.05	-0.1222	0.074*	0.25	0.286	1.844	0.078*	0.692	0.016**
	Question 1	3	0	0.12	0.00	0.0709	0.628	-59.90	0.250	-0.365	0.754	0.668	0.120
	Question 2	6	0	0.26	-0.01	-0.0942	0.603	22.94	0.389	0.255	0.830	0.545	0.307
	Question 3	1	1	0.22	0.19	0.0061	0.018**	-11.37	0.003***	4.809	0.001***	0.655	0.917
	Question 4	1	0	0.11	0.02	0.1692	0.201	-2.62	0.924	-0.129	0.882	0.741	0.299
Monthly crude oil price changes	Aggregate	0	0	-0.01	-0.01	-0.0812	0.495	-0.92	0.936	1.059	0.132	1.000	0.308
	Question 1	1	0	0.27	0.01	-0.0604	0.693	-37.47	0.003***	0.914	0.403	0.981	0.378
	Question 2	4	0	0.15	0.01	-0.3135	0.035**	-0.26	0.985	1.869	0.039**	0.554	0.269
	Question 3	0	0	0.02	0.02	0.1215	0.628	-0.65	0.982	1.363	0.407	1.000	0.026**
	Question 4	0	0	0.00	0.00	-0.0015	0.991	16.69	0.061*	0.598	0.360	1.000	0.217

C. The Atlantic Provinces

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	3	1	0.17	0.03	-0.6483	0.013**	11.92	0.481	4.394	0.066*	0.759	0.992
	Question 1	3	0	0.27	0.00	-0.3374	0.093*	24.15	0.620	2.611	0.053*	0.425	0.104
	Question 2	3	1	0.24	0.03	-0.6621	0.084*	43.84	0.192	3.391	0.401	0.727	0.925
	Question 3	7	4	0.37	0.07	-2.2016	0.000***	-42.15	0.000***	22.526	0.000***	0.218	0.709
	Question 4	1	1	0.11	0.02	-0.6314	0.011**	-7.50	0.506	4.453	0.002***	0.857	0.262
Monthly crude oil price changes	Aggregate	1	0	0.13	0.03	-0.4661	0.007***	-3.35	0.710	3.478	0.000***	0.876	0.007***
	Question 1	1	0	0.14	0.00	-0.4932	0.094*	-19.92	0.290	3.388	0.035**	0.972	0.369
	Question 2	2	1	0.26	0.06	-1.1069	0.001***	1.26	0.995	5.930	0.001***	0.591	0.238
	Question 3	6	0	0.17	0.02	-0.3825	0.214	-39.45	0.132	4.907	0.002***	0.700	0.457
	Question 4	2	1	0.18	0.01	-0.4631	0.136	8.04	0.501	3.240	0.026**	0.656	0.992

Table 24 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

D. British Columbia

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	0	1	0.02	0.02	-0.5859	0.003***	1.28	0.124	5.210	0.003***	1.000	0.894
	Question 1	2	0	0.20	0.05	0.0010	0.996	-162.24	0.000***	1.513	0.221	0.677	0.813
	Question 2	5	1	0.37	0.01	-0.2031	0.548	7.48	0.080*	0.305	0.266	0.417	0.578
	Question 3	1	1	0.08	0.06	-1.8612	0.003***	14.06	0.074*	17.617	0.002***	0.783	0.753
	Question 4	4	0	0.15	0.01	-0.1824	0.255	50.56	0.069*	2.257	0.034**	0.563	0.813
Monthly crude oil price changes	Aggregate	1	0	0.11	-0.01	-0.1377	0.383	8.63	0.560	1.377	0.067*	0.693	0.305
	Question 1	1	0	0.15	0.00	-0.2575	0.225	-41.41	0.016**	2.039	0.079*	0.938	0.815
	Question 2	6	0	0.27	-0.01	-0.1326	0.470	-0.06	0.997	0.356	0.743	0.588	0.023**
	Question 3	0	0	-0.01	-0.01	0.0817	0.871	34.77	0.349	1.620	0.542	1.000	0.901
	Question 4	1	1	0.14	0.05	-0.4476	0.039**	37.68	0.001***	4.797	0.002***	0.771	0.260

E. Ontario

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	4	1	0.17	0.10	-0.6984	0.000***	13.72	0.550	6.557	0.000***	0.614	0.022**
	Question 1	0	0	0.02	0.02	-0.0353	0.858	-38.42	0.409	1.592	0.298	1.000	0.763
	Question 2	2	1	0.18	0.07	-0.6612	0.001***	18.53	0.625	5.684	0.000***	0.471	0.213
	Question 3	8	1	0.14	0.05	-0.9766	0.003***	50.72	0.501	8.950	0.000***	0.662	0.635
	Question 4	4	1	0.07	0.03	-0.5151	0.001***	11.29	0.885	4.241	0.000***	0.600	0.886
Monthly crude oil price changes	Aggregate	2	0	0.08	0.00	-0.1266	0.263	8.19	0.427	1.403	0.039**	0.571	0.001***
	Question 1	1	0	0.15	0.02	-0.3256	0.064*	-35.59	0.003***	2.537	0.006***	0.888	0.143
	Question 2	2	0	0.15	0.01	-0.2759	0.055*	12.82	0.304	2.061	0.054*	0.566	0.167
	Question 3	0	0	0.01	0.01	0.1380	0.506	18.54	0.214	0.721	0.503	0.999	0.818
	Question 4	7	0	0.14	0.00	-0.0124	0.907	24.76	0.013**	0.550	0.301	0.590	0.375

Table 24 The Results of the Regressions of the Variations of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

F. Quebec

Oil price changes	Variations of the consumer confidence for	Lags of the variations of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	4	1	0.12	0.07	-0.4981	0.001***	17.64	0.294	4.425	0.001***	0.702	0.114
	Question 1	2	1	0.20	0.06	-0.3451	0.007***	-75.14	0.043**	4.097	0.012**	0.676	0.670
	Question 2	0	0	0.00	0.00	-0.1840	0.196	19.00	0.455	1.279	0.156	1.000	0.073*
	Question 3	1	2	0.06	0.05	-1.2897	0.004***	30.84	0.182	14.041	0.001***	0.661	0.096*
	Question 4	2	1	0.12	0.05	-0.4089	0.007***	19.97	0.539	3.369	0.025**	0.530	0.975
Monthly crude oil price changes	Aggregate	6	0	0.10	0.02	-0.0199	0.864	6.36	0.663	1.293	0.028**	0.413	0.435
	Question 1	2	1	0.27	0.03	0.0045	0.992	-24.43	0.082*	0.732	0.039**	0.518	0.441
	Question 2	3	0	0.18	0.01	-0.2662	0.047**	18.93	0.214	1.658	0.016**	0.563	0.999
	Question 3	1	0	0.06	0.03	0.3563	0.101	-18.41	0.394	-0.092	0.935	0.607	0.154
	Question 4	6	2	0.16	0.09	-0.2467	0.042**	28.99	0.003***	2.427	0.446	0.616	0.535

Table 25 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures

A. Canada

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Non-stationary	6	1	0.72	0.03	-0.4613	0.000***	10.08	0.256	4.202	0.000***	0.531	0.124
	Question 1	Non-stationary	1	0	0.74	0.00	0.0067	0.963	-43.28	0.301	0.812	0.481	0.998	0.373
	Question 2	Stationary	1	1	0.58	0.00	-0.4360	0.003***	6.40	0.450	3.418	0.005***	0.997	0.258
	Question 3	Stationary	0	0	0.04	0.04	0.4002	0.128	-134.93	0.177	-1.404	0.436	0.000***	0.363
Monthly crude oil price changes	Question 4	Stationary	1	1	0.63	-0.02	-0.3728	0.009***	2.86	0.846	2.977	0.009***	0.834	0.840
	Aggregate	Non-stationary	1	0	0.84	0.00	-0.0692	0.453	-6.83	0.372	1.002	0.026**	0.905	0.007***
	Question 1	Non-stationary	1	0	0.83	0.01	-0.1532	0.167	-34.57	0.000***	1.357	0.020**	0.996	0.767
	Question 2	Stationary	1	0	0.65	0.00	-0.2328	0.035**	4.66	0.642	1.358	0.055*	0.953	0.013**
Large crude oil price changes	Question 3	Non-stationary	5	0	0.81	0.01	0.1549	0.332	-43.08	0.025**	1.073	0.274	0.313	0.018**
	Question 4	Non-stationary	0	0	0.09	0.09	0.3823	0.133	-79.29	0.164	0.005	0.998	0.000***	0.028**
	Aggregate	Non-stationary	6	1	0.72	0.02	-0.5190	0.001***	9.38	0.290	4.620	0.000***	0.543	0.105
	Question 1	Non-stationary	1	0	0.74	0.00	-0.0026	0.986	-43.17	0.307	0.862	0.469	0.998	0.385
Net crude oil price shocks	Question 2	Stationary	1	1	0.58	0.01	-0.5616	0.000***	2.72	0.483	4.296	0.001***	0.999	0.297
	Question 3	Stationary	0	0	0.03	0.03	0.3025	0.243	-136.37	0.181	-0.893	0.615	0.000***	0.402
	Question 4	Stationary	1	1	0.63	-0.02	-0.4375	0.006***	2.06	0.873	3.392	0.008***	0.862	0.725
	Aggregate	Non-stationary	6	1	0.71	0.02	-0.2901	0.292	37.06	0.040**	-0.590	0.181	0.311	0.267
	Question 1	Non-stationary	1	0	0.73	0.00	0.2042	0.707	-24.76	0.576	-4.879	0.443	0.998	0.381
	Question 2	Stationary	1	1	0.61	0.04	-0.6263	0.004***	21.91	0.557	3.295	0.003***	0.996	0.965
	Question 3	Stationary	0	0	0.02	0.02	1.6077	0.258	-115.79	0.292	-15.611	0.399	0.000***	0.385
	Question 4	Stationary	1	0	0.65	0.00	0.6293	0.320	43.15	0.184	-9.604	0.179	0.765	0.181

Table 25 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

B. The Prairie Provinces

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Stationary	0	0	0.00	0.00	0.1394	0.372	-66.33	0.235	-0.554	0.581	0.000***	0.611
	Question 1	Non-stationary	1	0	0.58	-0.01	0.0335	0.816	-38.32	0.401	-0.242	0.838	0.984	0.091*
	Question 2	Non-stationary	7	0	0.38	-0.01	-0.0879	0.615	26.79	0.272	0.239	0.832	0.453	0.364
	Question 3	Stationary	0	0	0.02	0.02	0.4051	0.229	-153.61	0.137	-1.201	0.583	0.000***	0.866
	Question 4	Stationary	2	0	0.50	0.01	0.1348	0.271	-14.81	0.649	0.019	0.983	0.544	0.183
Monthly crude oil price changes	Aggregate	Non-stationary	1	0	0.70	0.02	-0.0288	0.781	-51.77	0.000***	0.762	0.200	0.984	0.060*
	Question 1	Non-stationary	2	1	0.66	0.03	-0.3345	0.120	-84.45	0.000***	2.204	0.200	0.924	0.013**
	Question 2	Stationary	1	0	0.28	0.01	-0.1340	0.312	-35.19	0.001***	0.872	0.238	0.705	0.770
	Question 3	Non-stationary	1	0	0.77	0.02	0.1228	0.612	-82.45	0.007***	1.105	0.471	0.989	0.064*
	Question 4	Non-stationary	1	0	0.81	0.00	0.0166	0.899	1.13	0.913	0.624	0.340	0.995	0.054*

C. The Atlantic Provinces

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Non-stationary	4	1	0.53	0.01	-0.5617	0.014**	6.84	0.510	3.714	0.078*	0.663	0.976
	Question 1	Non-stationary	2	0	0.46	-0.01	-0.2561	0.177	26.52	0.554	1.786	0.198	0.728	0.455
	Question 2	Non-stationary	3	1	0.37	0.02	-0.5602	0.093*	14.45	0.262	2.214	0.626	0.594	0.950
	Question 3	Non-stationary	8	4	0.47	0.06	-1.9611	0.000***	-20.01	0.001***	20.446	0.000***	0.196	0.500
	Question 4	Stationary	2	1	0.45	0.01	-0.4455	0.067*	4.83	0.296	3.235	0.013**	0.709	0.046**
Monthly crude oil price changes	Aggregate	Non-stationary	2	0	0.62	0.01	-0.3349	0.030**	-13.79	0.246	2.816	0.000***	0.685	0.006***
	Question 1	Stationary	2	0	0.28	0.00	-0.2860	0.240	-44.18	0.064*	2.316	0.070*	0.671	0.290
	Question 2	Stationary	1	0	0.33	0.01	-0.4403	0.020**	10.45	0.504	3.489	0.000***	0.969	0.421
	Question 3	Stationary	1	0	0.51	0.00	-0.1016	0.734	-40.72	0.182	2.635	0.110	0.939	0.459
	Question 4	Non-stationary	3	1	0.74	0.00	-0.3970	0.220	0.09	0.503	2.905	0.051*	0.595	0.993

Table 25 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

D. British Columbia

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Stationary	1	0	0.53	0.00	-0.0493	0.775	-52.75	0.168	1.123	0.418	0.914	0.403
	Question 1	Non-stationary	3	0	0.59	0.03	-0.0006	0.998	-182.19	0.000***	1.237	0.308	0.550	0.663
	Question 2	Non-stationary	6	0	0.44	0.00	-0.0001	1.000	-36.77	0.345	-0.882	0.534	0.312	0.142
	Question 3	Stationary	2	1	0.51	0.02	-1.1843	0.034**	-51.19	0.102	12.791	0.037**	0.539	0.435
	Question 4	Stationary	1	0	0.42	0.00	-0.1932	0.255	5.48	0.888	2.131	0.097*	0.946	0.947
Monthly crude oil price changes	Aggregate	Non-stationary	2	0	0.82	0.00	-0.1007	0.516	-2.82	0.844	1.213	0.119	0.602	0.418
	Question 1	Non-stationary	2	0	0.67	0.00	-0.2109	0.304	-70.17	0.000***	1.587	0.163	0.854	0.893
	Question 2	Non-stationary	6	0	0.47	-0.01	-0.0806	0.656	-5.02	0.745	-0.429	0.723	0.437	0.080*
	Question 3	Non-stationary	2	0	0.83	0.00	0.1833	0.698	-7.60	0.870	2.574	0.340	0.341	0.361
	Question 4	Non-stationary	2	1	0.78	0.01	-0.3890	0.057*	31.30	0.002***	4.700	0.002***	0.661	0.076*

E. Ontario

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Non-stationary	5	1	0.71	0.03	-0.6331	0.000***	8.86	0.619	5.988	0.000***	0.514	0.050**
	Question 1	Non-stationary	1	0	0.68	0.01	-0.0025	0.989	-56.90	0.303	1.153	0.418	0.995	0.446
	Question 2	Stationary	1	1	0.59	0.02	-0.6232	0.000***	-5.39	0.738	5.621	0.000***	0.988	0.721
	Question 3	Stationary	0	0	0.01	0.01	0.2177	0.511	-126.11	0.326	-0.172	0.942	0.000***	0.061*
	Question 4	Stationary	1	1	0.65	-0.01	-0.4400	0.006***	-4.92	0.977	3.769	0.002***	0.822	0.800
Monthly crude oil price changes	Aggregate	Non-stationary	1	0	0.78	0.00	-0.0415	0.732	-4.61	0.663	0.766	0.278	0.996	0.011**
	Question 1	Non-stationary	2	0	0.72	0.01	-0.2818	0.108	-54.17	0.000***	2.121	0.036**	0.791	0.470
	Question 2	Stationary	1	0	0.56	0.00	-0.1245	0.414	11.32	0.490	1.069	0.403	0.996	0.006***
	Question 3	Non-stationary	1	0	0.72	0.01	0.2089	0.308	-33.75	0.106	0.526	0.630	0.942	0.438
	Question 4	Non-stationary	1	0	0.84	0.00	0.0815	0.505	13.92	0.066*	-0.531	0.352	1.000	0.166

Table 25 The Results of the Regressions of the Levels of National and Regional Consumer Confidence Indices on both the Oil Price Changes and the Volatility Measures (Continued)

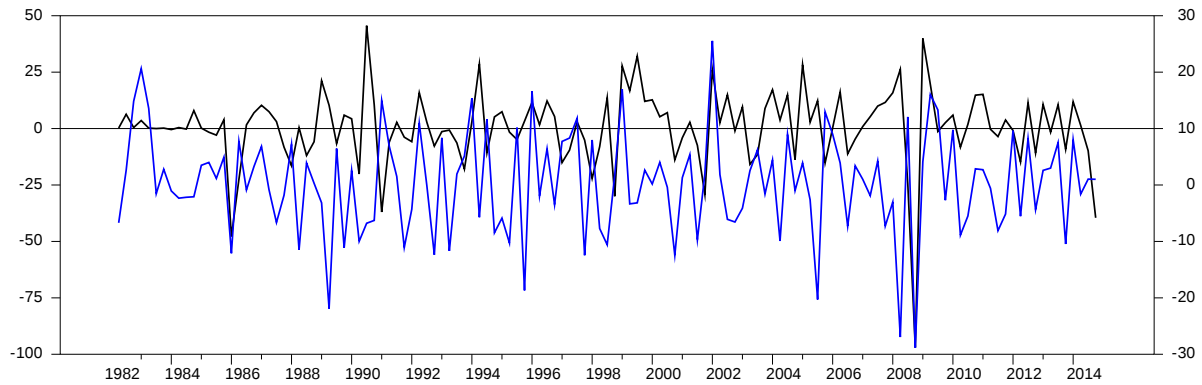
F. Quebec

Oil price changes	Levels of the consumer confidence for	Stationarity of the levels of consumer confidence indices	Lags of the levels of consumer confidence	Lags of the other explanatory variables	Adj-R2	Incremental adj-R2 based on the models without the other explanatory variables	Sum of the coefficients for the oil price changes	P-values of the joint significance test statistics for the oil price changes	Sum of the coefficients for the oil price uncertainty measures	P-values of the joint significance test statistics for the oil price uncertainty measures	Sum of the coefficients for the interacted terms	P-values of the joint significance test statistics for the interacted terms	P-values of the Durbin-Watson statistics	P-values of the White test statistics
Quarterly crude oil price changes	Aggregate	Non-stationary	6	1	0.68	0.01	-0.3996	0.006***	7.16	0.369	3.701	0.003***	0.537	0.304
	Question 1	Non-stationary	4	0	0.68	0.01	0.2312	0.076*	-52.82	0.269	-0.436	0.683	0.321	0.051*
	Question 2	Stationary	1	0	0.57	-0.01	-0.1116	0.416	8.90	0.730	0.747	0.409	0.999	0.026**
	Question 3	Stationary	0	0	0.02	0.02	0.4676	0.115	-100.58	0.331	-2.553	0.201	0.000***	0.136
	Question 4	Stationary	1	1	0.55	0.01	-0.3680	0.018**	1.45	0.703	2.975	0.041**	0.950	0.804
Monthly crude oil price changes	Aggregate	Non-stationary	7	0	0.74	0.01	0.0382	0.736	-7.16	0.557	0.989	0.100*	0.303	0.578
	Question 1	Non-stationary	3	1	0.68	0.02	0.0379	0.989	-42.03	0.001***	0.689	0.015**	0.559	0.740
	Question 2	Stationary	2	0	0.54	0.00	-0.1534	0.256	12.00	0.422	0.915	0.238	0.655	0.813
	Question 3	Stationary	1	0	0.66	0.03	0.5160	0.026**	-72.71	0.000***	-1.287	0.343	0.756	0.357
	Question 4	Non-stationary	1	2	0.74	0.01	-0.0620	0.241	7.46	0.578	1.569	0.399	0.990	0.260

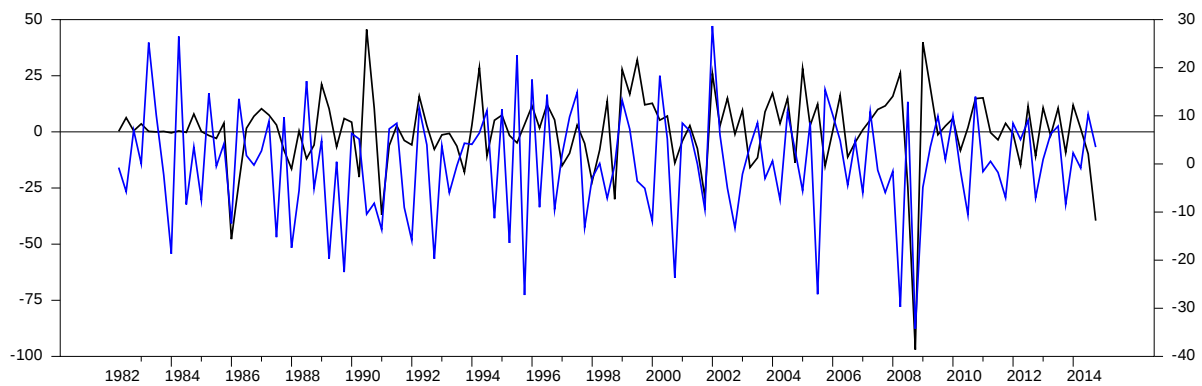
Graph 1 The Plots of the Crude Oil Price Changes and the Consumer Confidence Variations (Quarterly Samples from 1982:Q1 to 2014:Q4)

A. Canada

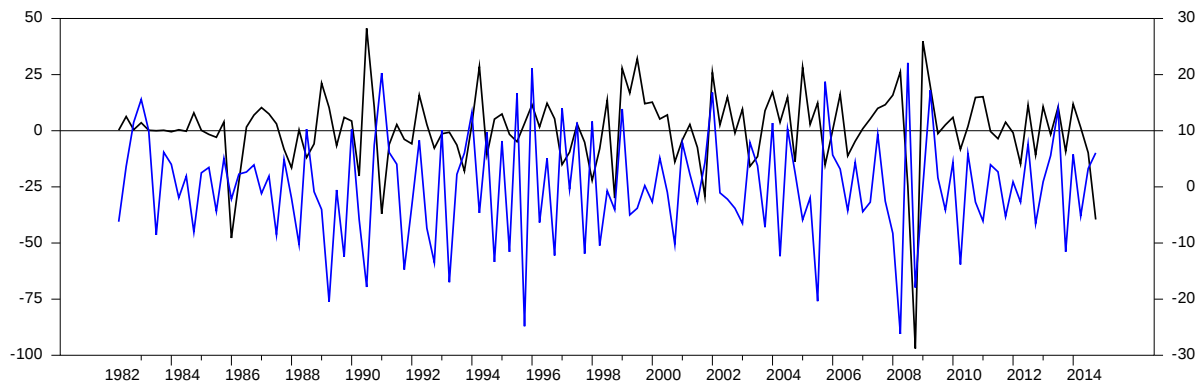
The Crude Oil Price Changes and the Variations of Aggregate Consumer Confidence



The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Realization (Question 1)



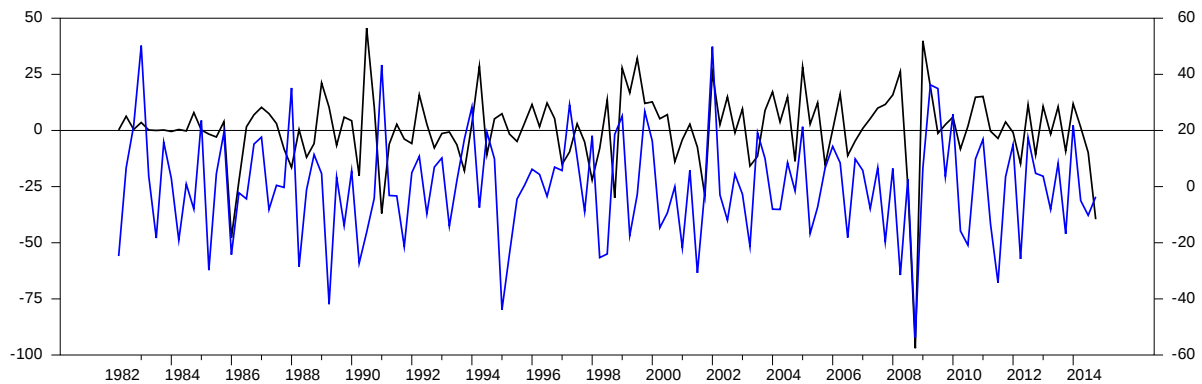
The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Expectation (Question 2)



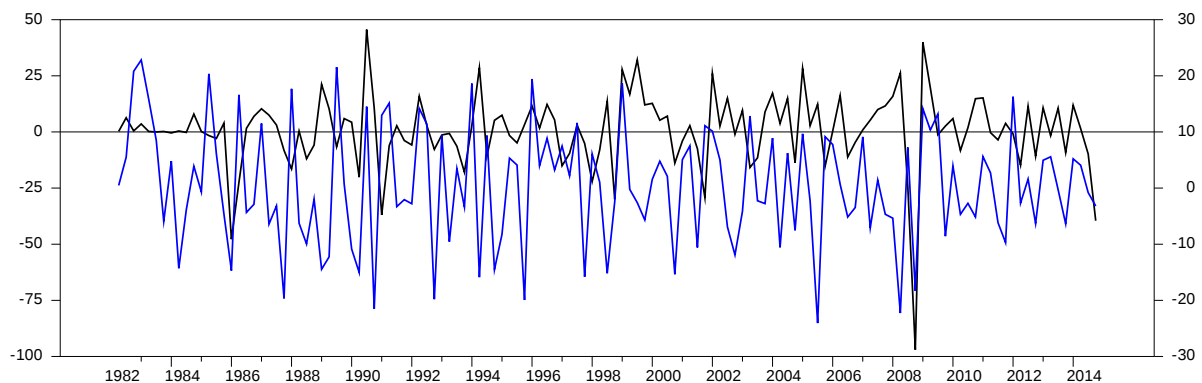
Graph 1 The Plots of the Crude Oil Price Changes and the Consumer Confidence Variations (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

A. Canada (Continued)

The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)



The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



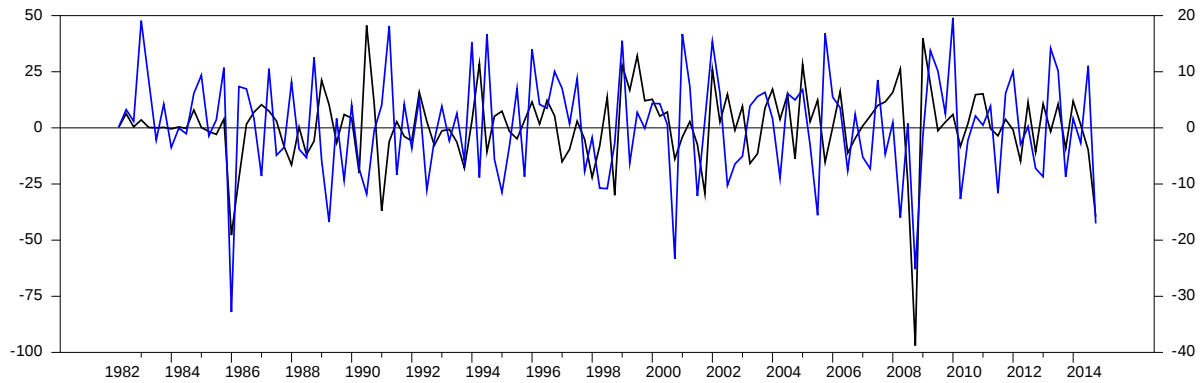
Notes:

1. Black are quarterly crude oil price changes in first order logarithmic differences, with the Y-axes on the left.
2. Blue are the first differences of quarterly Consumer Confidence Indices in Canada, with the Y-axes on the right.

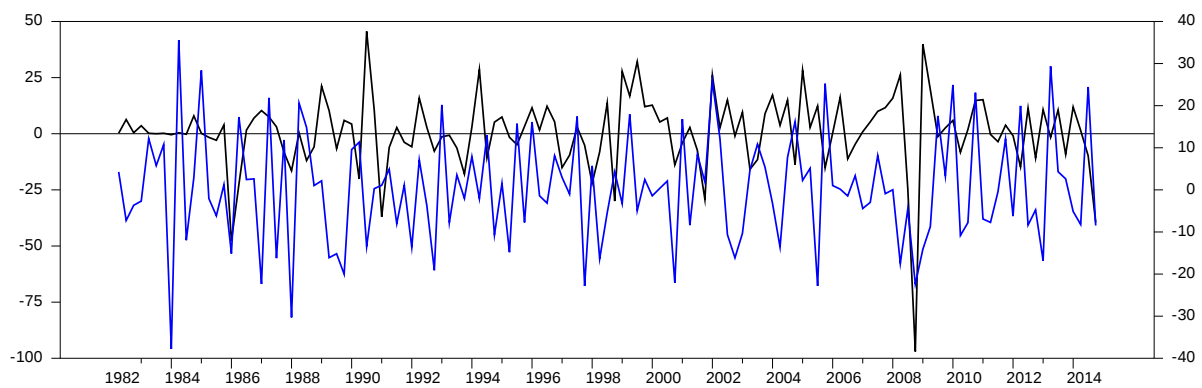
Graph 1 The Plots of the Crude Oil Price Changes and the Consumer Confidence Variations (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces

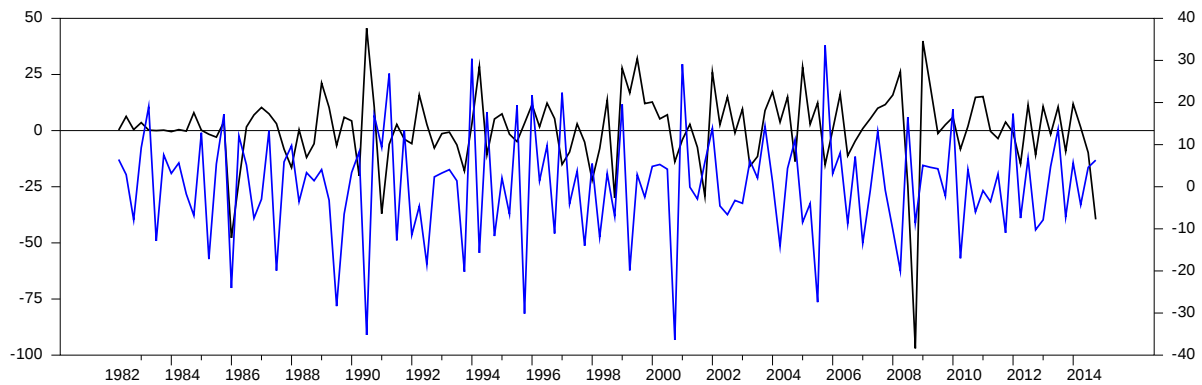
B1. The Crude Oil Price Changes and the Variations of Aggregate Consumer Confidence



B2. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Realization (Question 1)



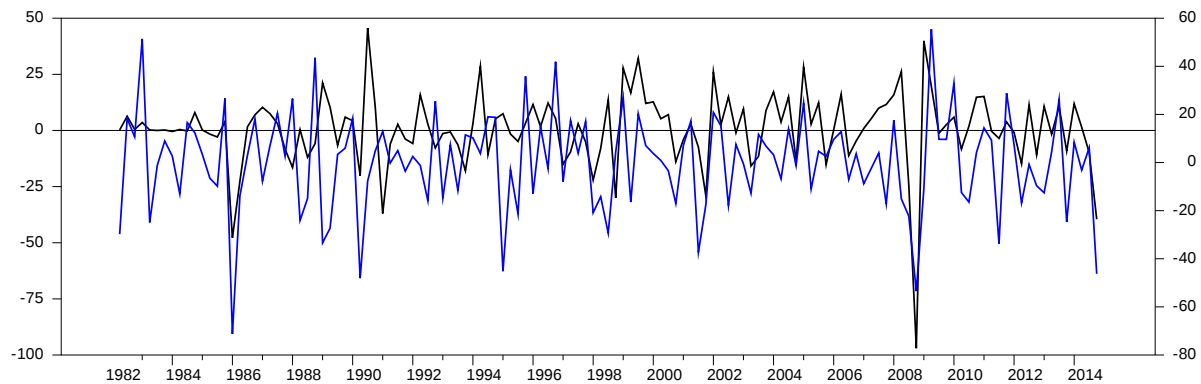
B3. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Expectation (Question 2)



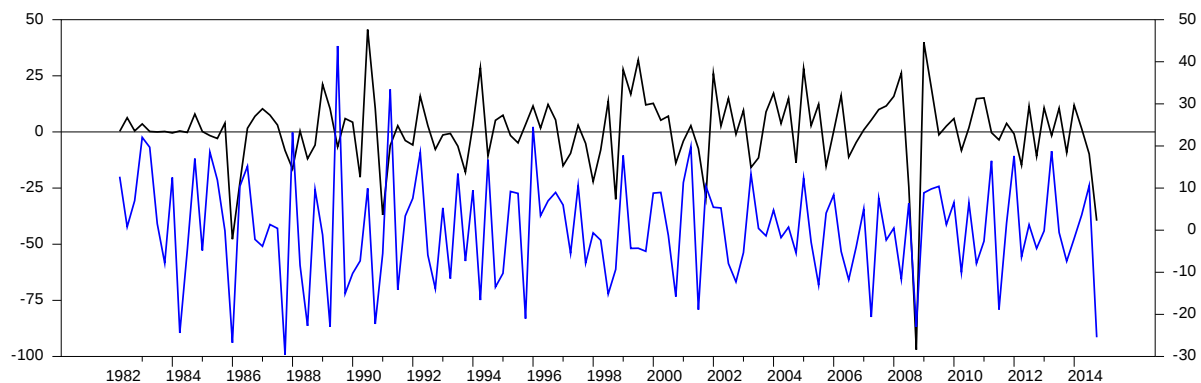
Graph 1 The Plots of the Crude Oil Price Changes and the Consumer Confidence Variations (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces (Continued)

B4. The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)



B5. The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



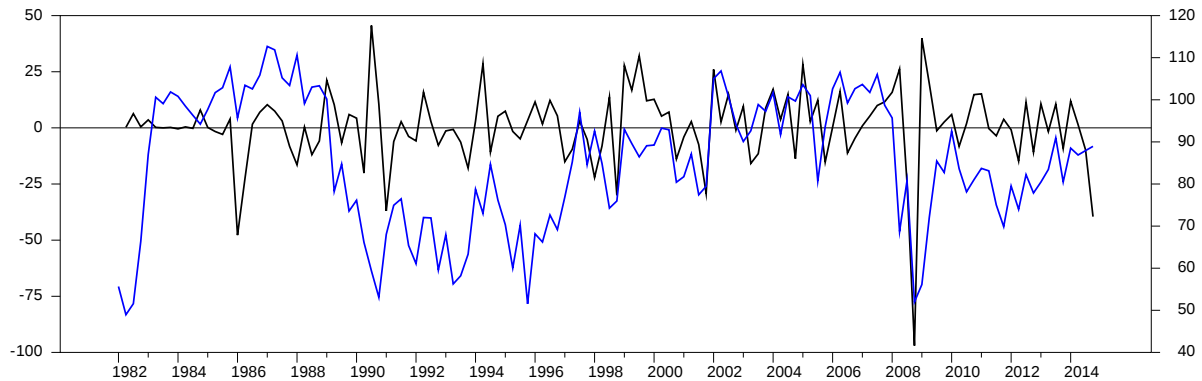
Notes:

1. Black are quarterly crude oil price changes in first order logarithmic differences, with the Y-axes on the left.
2. Blue are the first differences of quarterly Consumer Confidence Indices in The Prairie Provinces, with the Y-axes on the right.

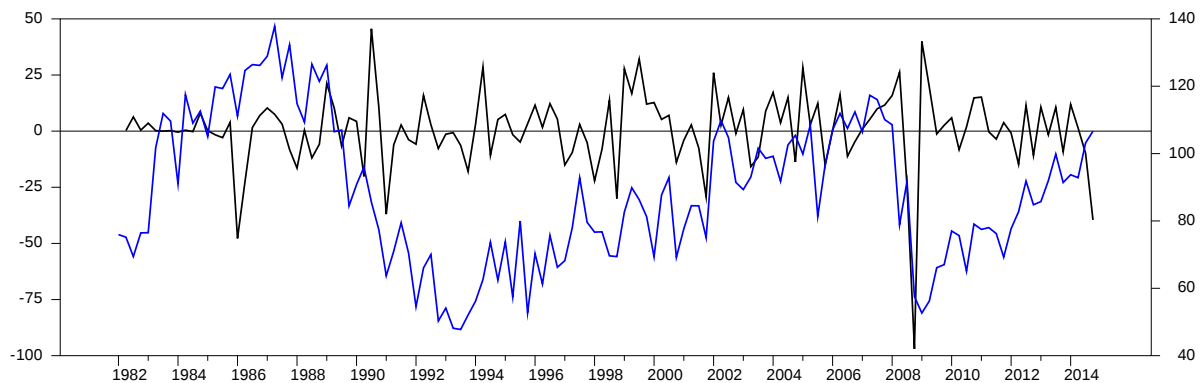
Graph 2 The Plots of the Crude Oil Price Changes and the Consumer Confidence Indices (Quarterly Samples from 1982:Q1 to 2014:Q4)

A. Canada

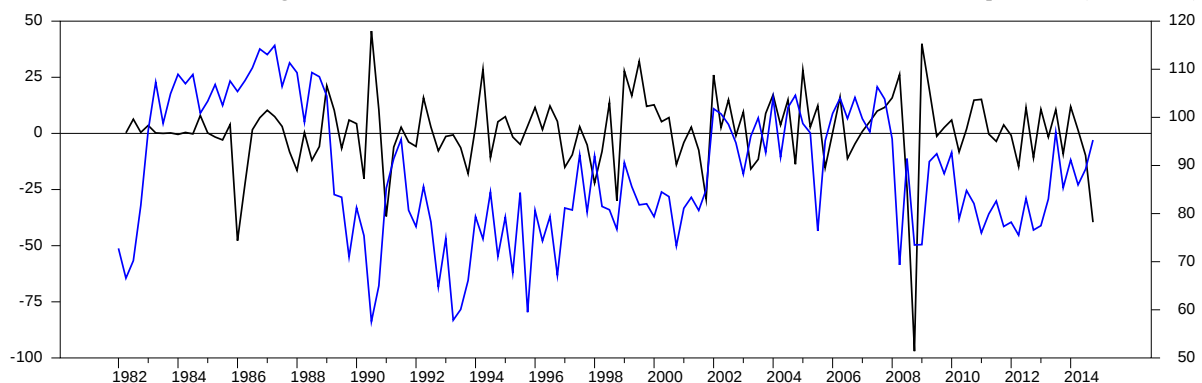
1. The Crude Oil Price Changes and the Variations of Aggregate Consumer Confidence



2. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Realization (Question 1)



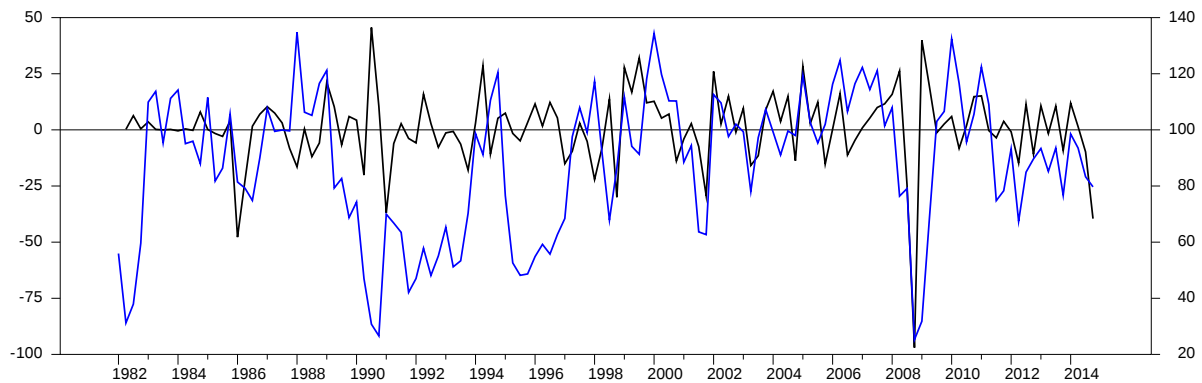
3. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Expectation (Question 2)



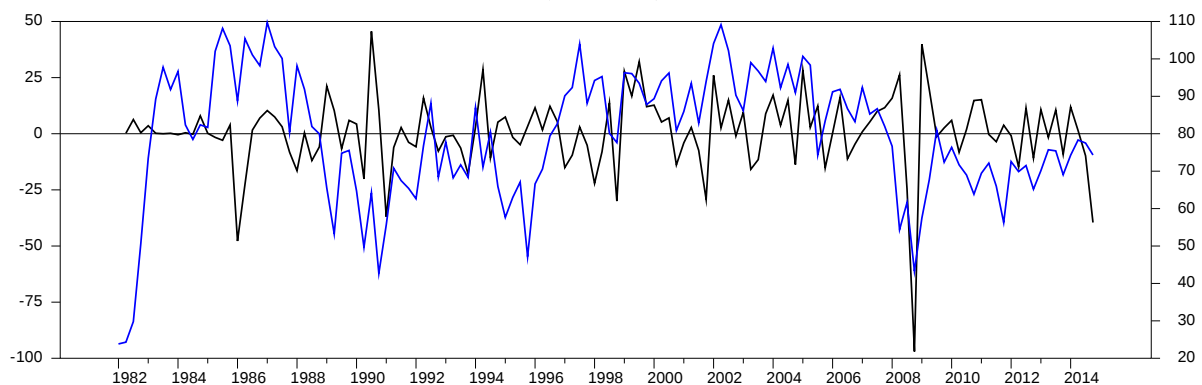
Graph 2 The Plots of the Crude Oil Price Changes and the Consumer Confidence Indices (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

A. Canada (Continued)

4. The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)



5. The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



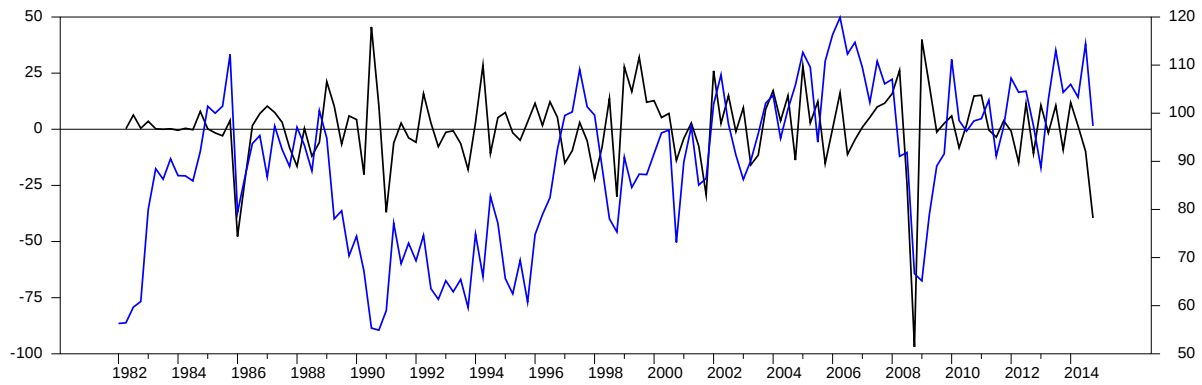
Notes:

1. Black are quarterly crude oil price changes in first order logarithmic differences, with the Y-axes on the left.
2. Blue are the levels of quarterly Consumer Confidence Indices in Canada, with the Y-axes on the right.

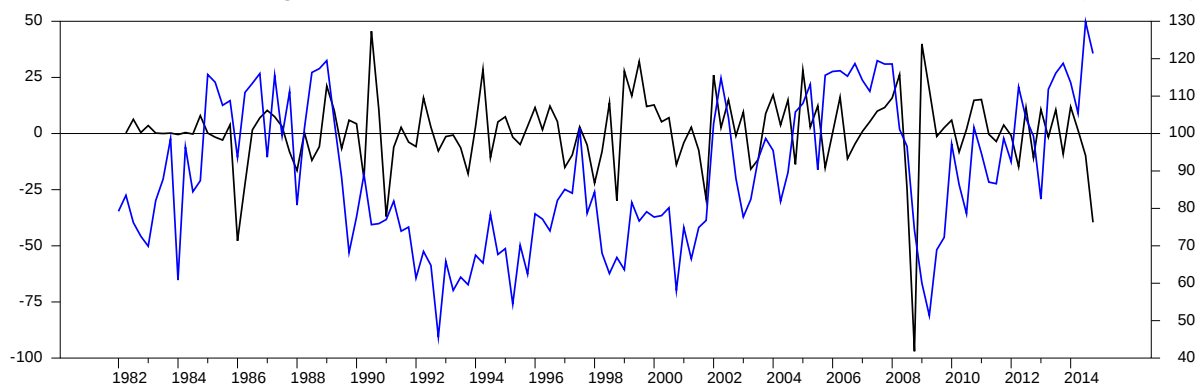
Graph 2 The Plots of the Crude Oil Price Changes and the Consumer Confidence Indices (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces

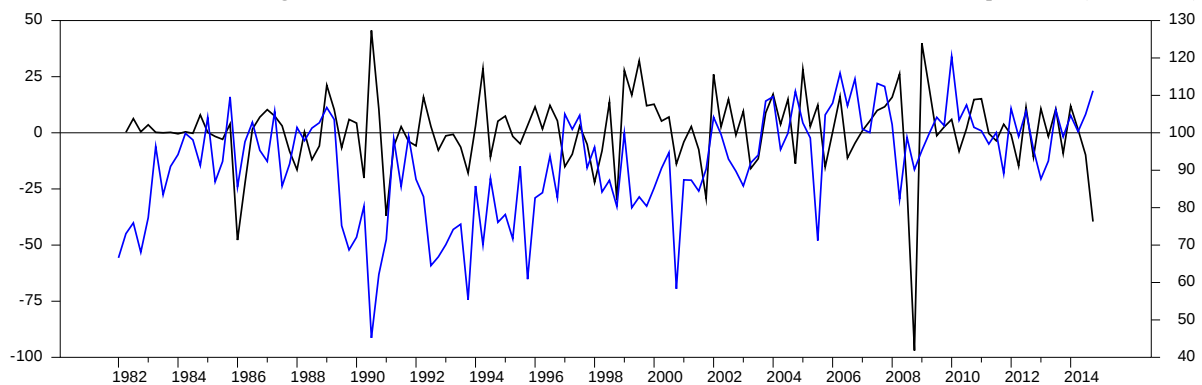
1. The Crude Oil Price Changes and the Variations of Aggregate Consumer Confidence



2. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Realization (Question 1)



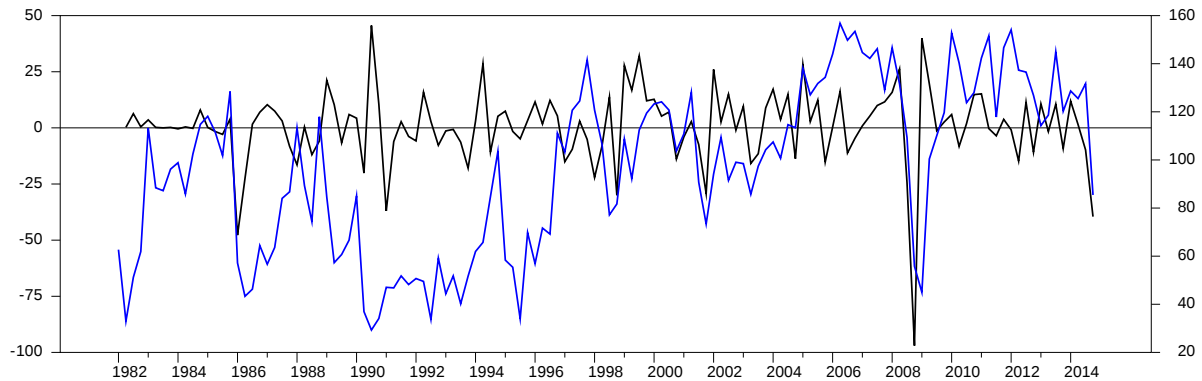
3. The Crude Oil Price Changes and the Variations of Consumer Confidence for Financial Position Expectation (Question 2)



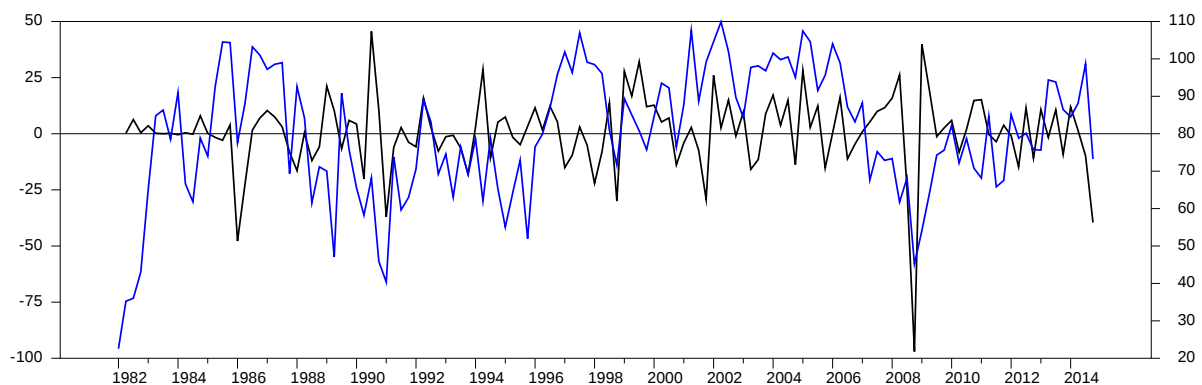
Graph 2 The Plots of the Crude Oil Price Changes and the Consumer Confidence Indices (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces (Continued)

4. The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)



5. The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



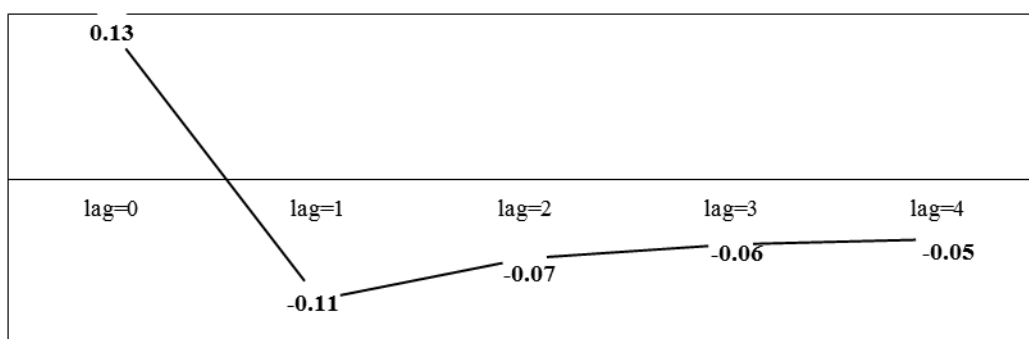
Notes:

1. Black are quarterly crude oil price changes in first order logarithmic differences, with the Y-axes on the left.
2. Blue are the levels of quarterly Consumer Confidence Indices in The Prairie Provinces, with the Y-axes on the right.

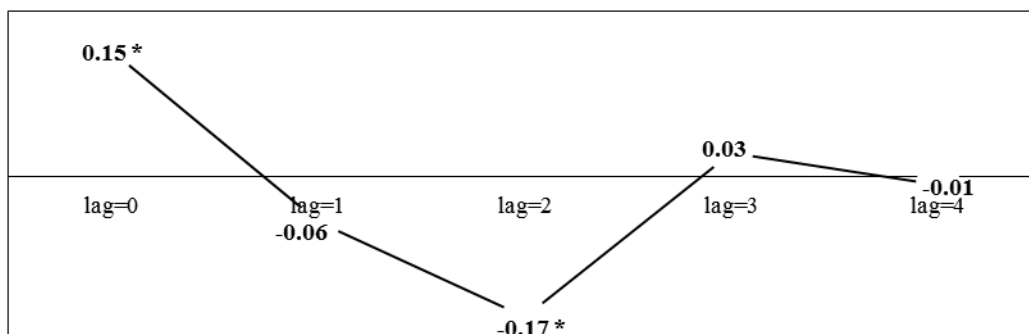
Graph 3 The Plots of the Cross Correlations between the Consumer Confidence Variations (in Canada and in the Prairie Provinces) and the Contemporary and Lagged Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4)

A. Canada

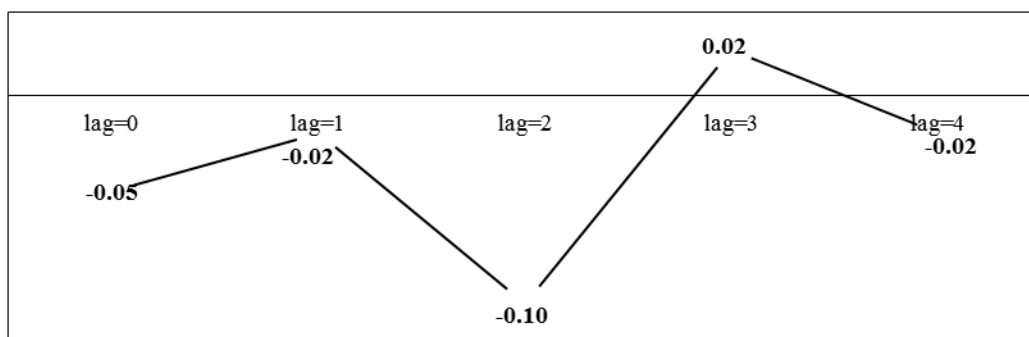
A1. The Cross Correlations between the National Aggregate Consumer Confidence Variations and the Contemporary and Lagged Crude Oil Price Changes



A2. The Cross Correlations between the National Consumer Confidence (for Question 1) Variations and the Contemporary and Lagged Crude Oil Price Changes



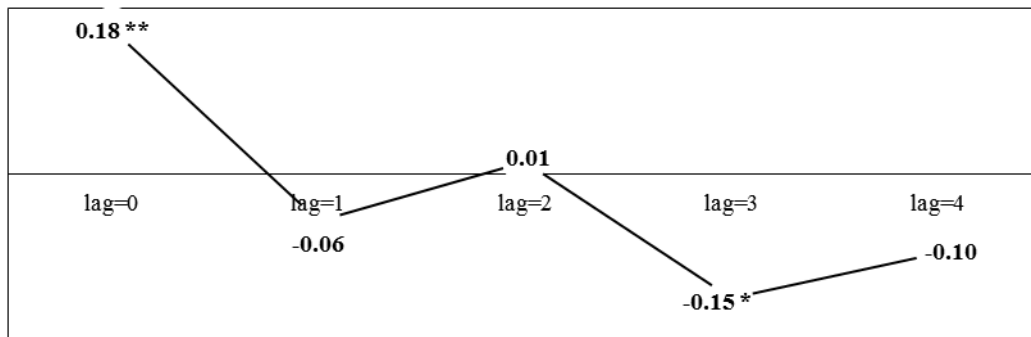
A3. The Cross Correlations between the National Consumer Confidence (for Question 2) Variations and the Contemporary and Lagged Crude Oil Price Changes



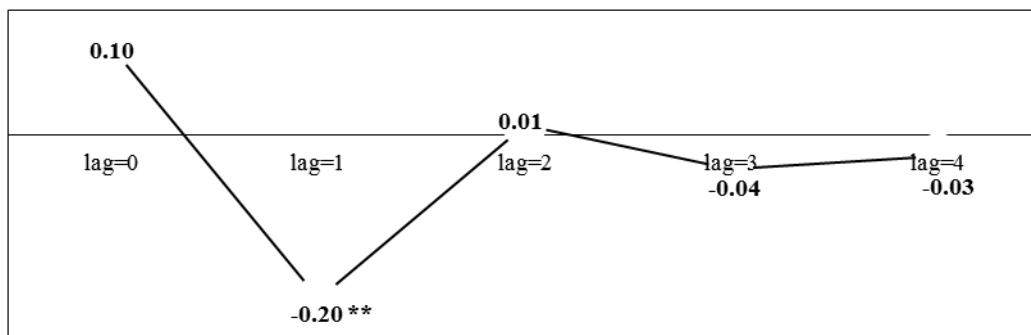
Graph 3 The Plots of the Cross Correlations between the Consumer Confidence Variations (in Canada and in the Prairie Provinces) and the Contemporary and Lagged Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

A. Canada (Continued)

A4. The Cross Correlations between the National Consumer Confidence (for Question 3) Variations and the Contemporary and Lagged Crude Oil Price Changes



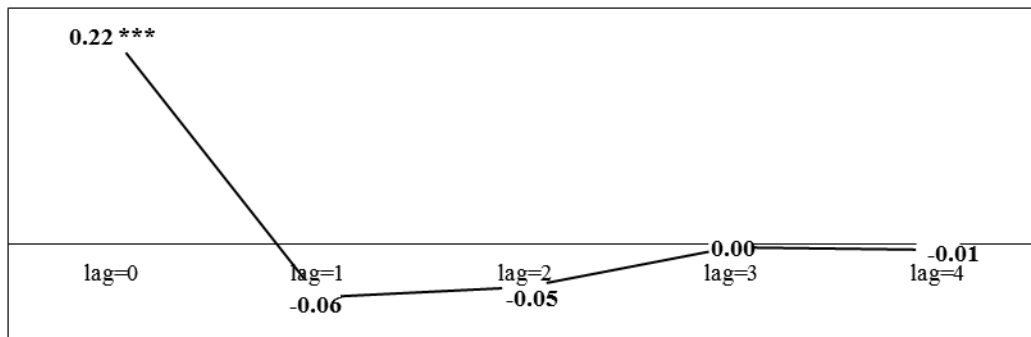
A5. The Cross Correlations between the National Consumer Confidence (for Question 4) Variations and the Contemporary and Lagged Crude Oil Price Changes



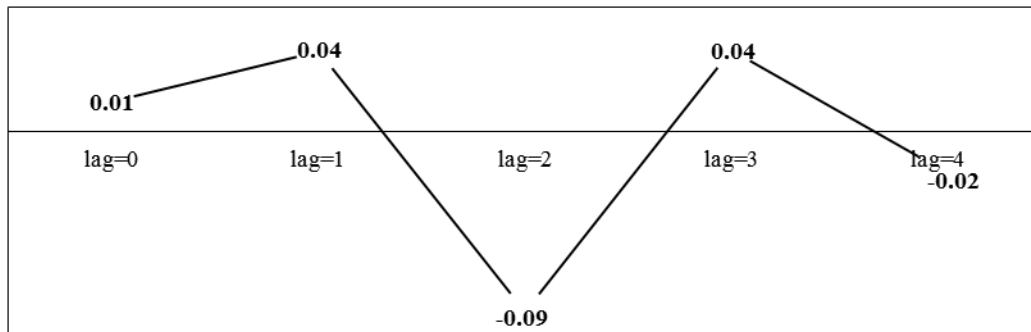
Graph 3 The Plots of the Cross Correlations between the Consumer Confidence Variations (in Canada and in the Prairie Provinces) and the Contemporary and Lagged Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces

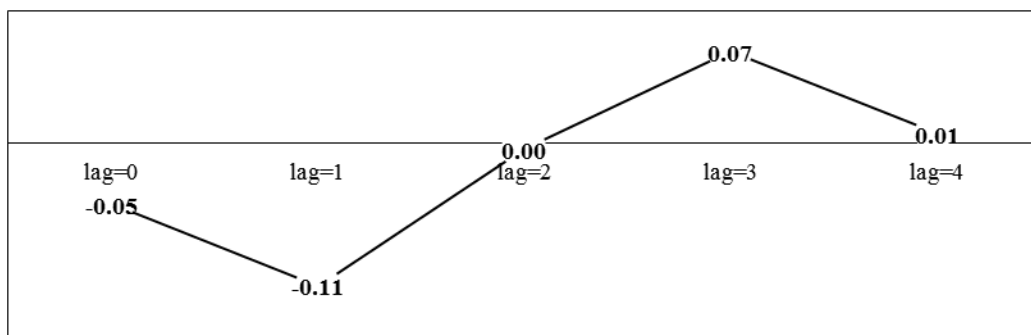
B1. The Cross Correlations between the National Aggregate Consumer Confidence Variations and the Contemporary and Lagged Crude Oil Price Changes



B2. The Cross Correlations between the National Consumer Confidence (for Question 1) Variations and the Contemporary and Lagged Crude Oil Price Changes



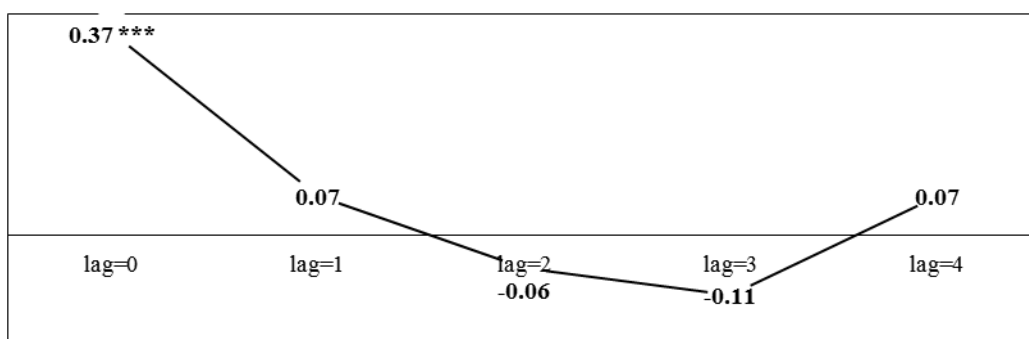
B3. The Cross Correlations between the National Consumer Confidence (for Question 2) Variations and the Contemporary and Lagged Crude Oil Price Changes



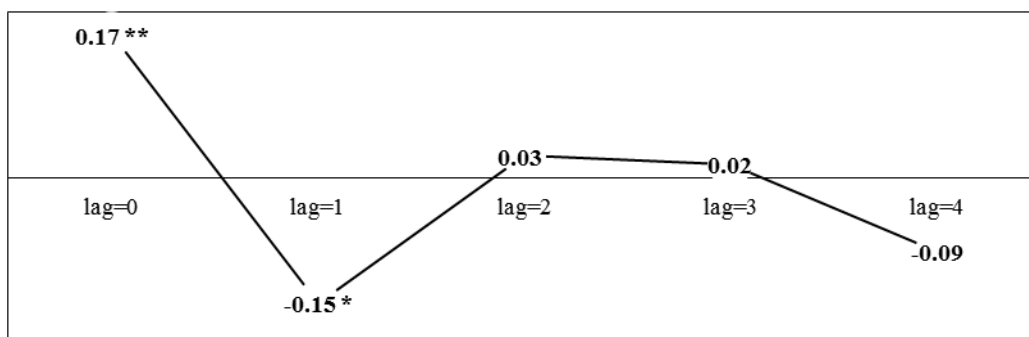
Graph 3 The Plots of the Cross Correlations between the Consumer Confidence Variations (in Canada and in the Prairie Provinces) and the Contemporary and Lagged Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces (Continued)

B4. The Cross Correlations between the National Consumer Confidence (for Question 3) Variations and the Contemporary and Lagged Crude Oil Price Changes

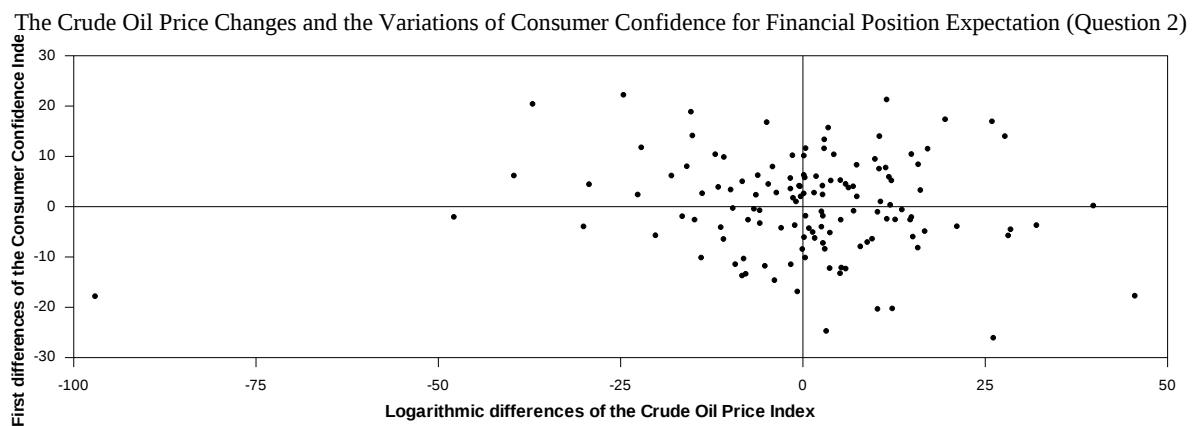
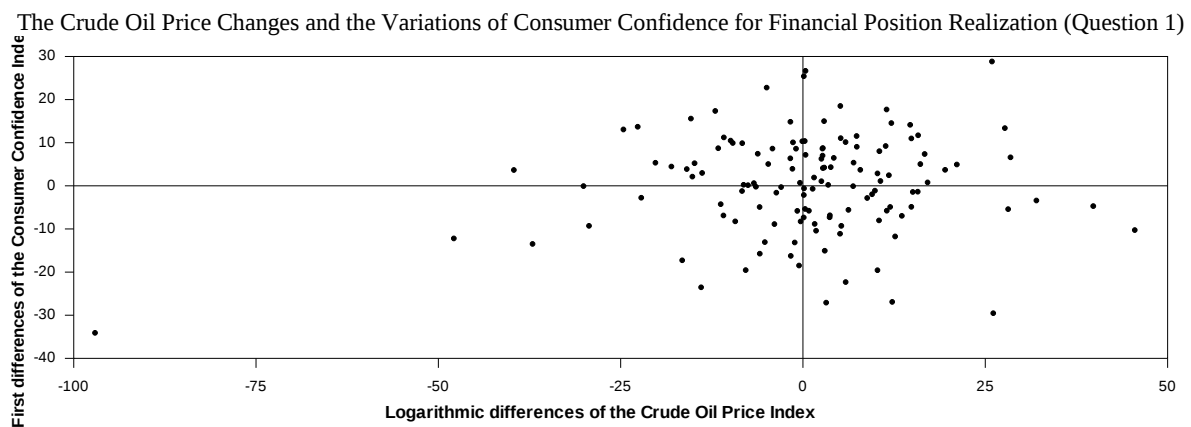
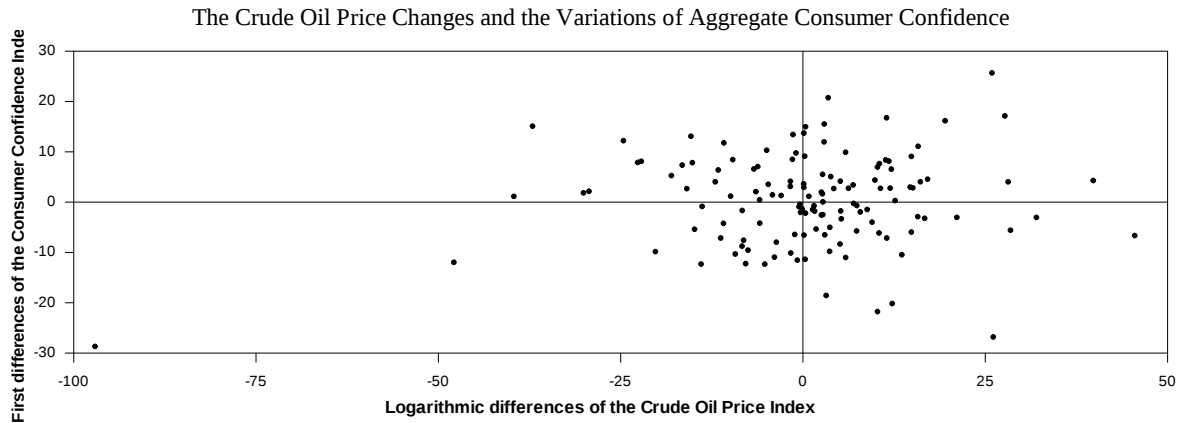


B5. The Cross Correlations between the National Consumer Confidence (for Question 4) Variations and the Contemporary and Lagged Crude Oil Price Changes



Graph 4 The Scatter Plots of the Crude Oil Price Changes and the Consumer Confidence Variations in Canada and in the Prairie Provinces (Quarterly Samples from 1982:Q1 to 2014:Q4)

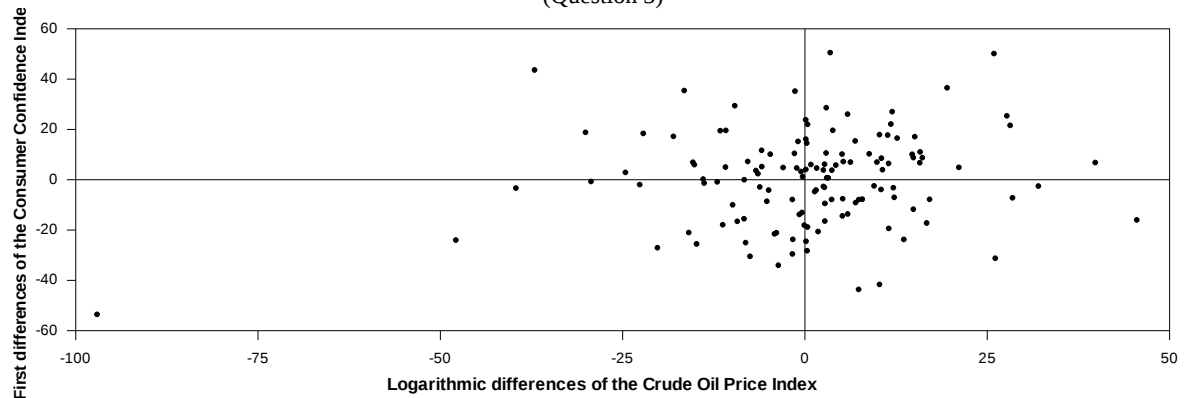
A. Canada



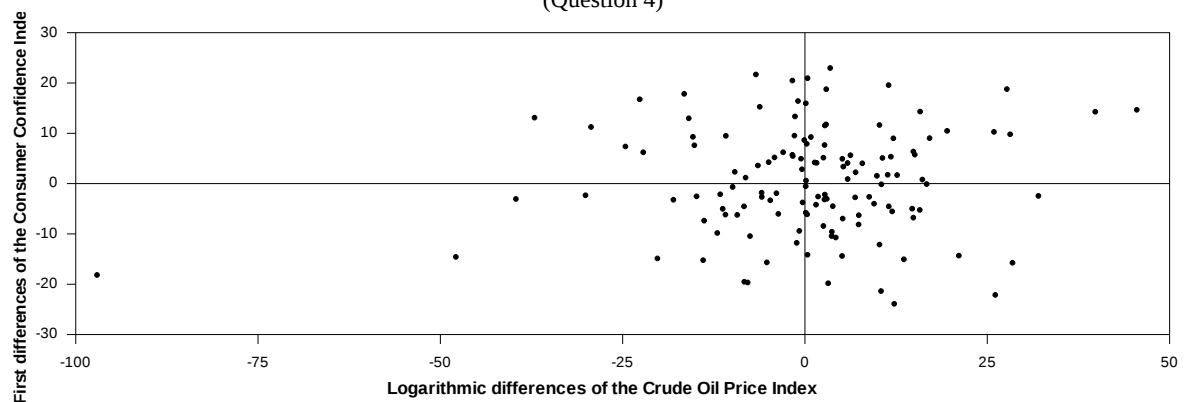
Graph 4 The Scatter Plots of the Crude Oil Price Changes and the Consumer Confidence Variations in Canada and in the Prairie Provinces (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

A. Canada (Continued)

The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)

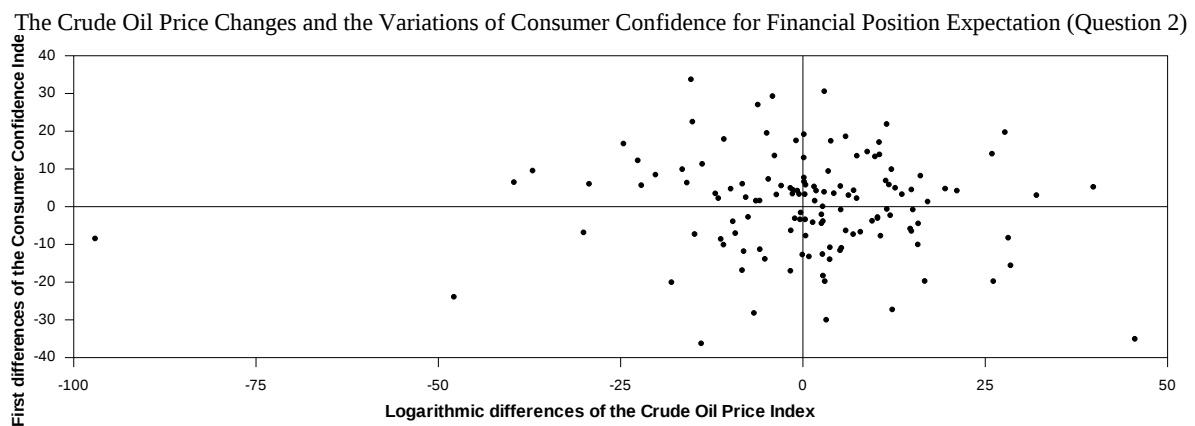
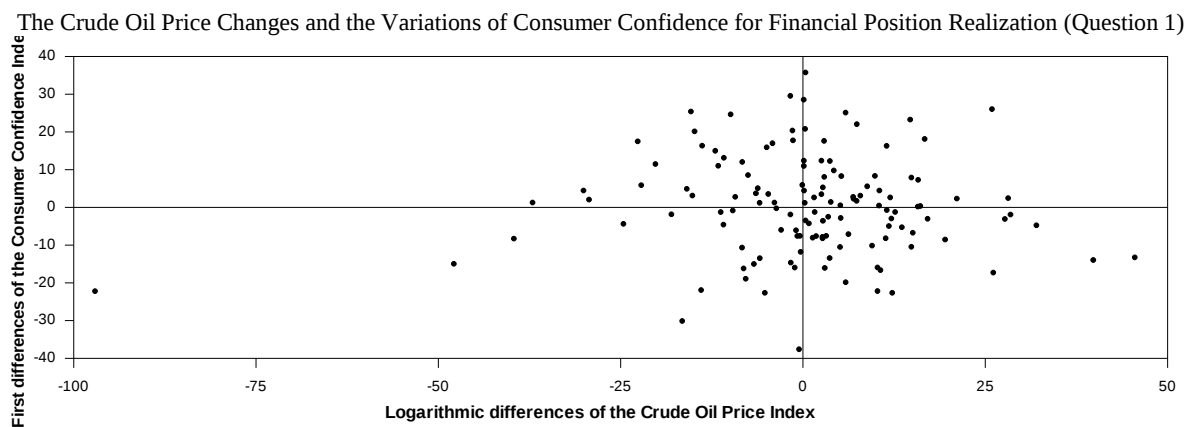
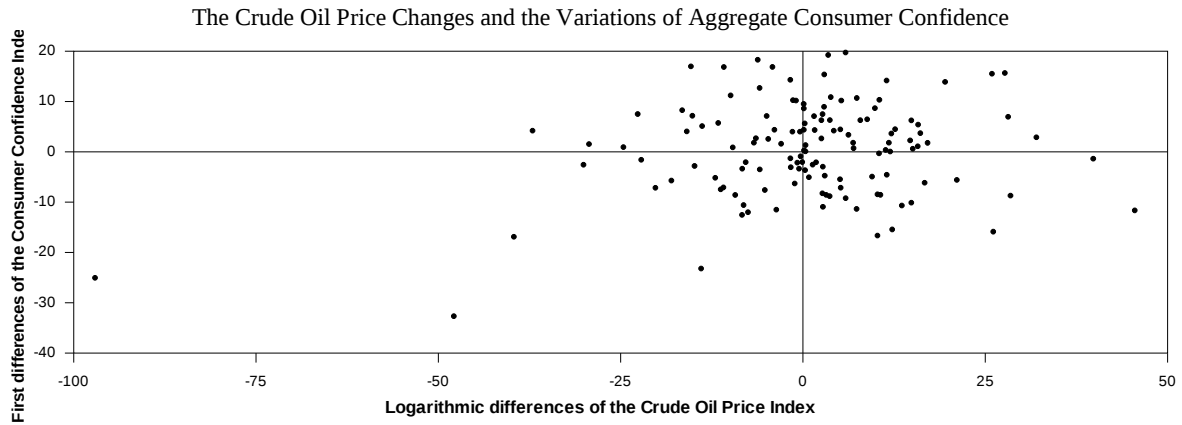


The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



Graph 4 The Scatter Plots of the Crude Oil Price Changes and the Consumer Confidence Variations in Canada and in the Prairie Provinces (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

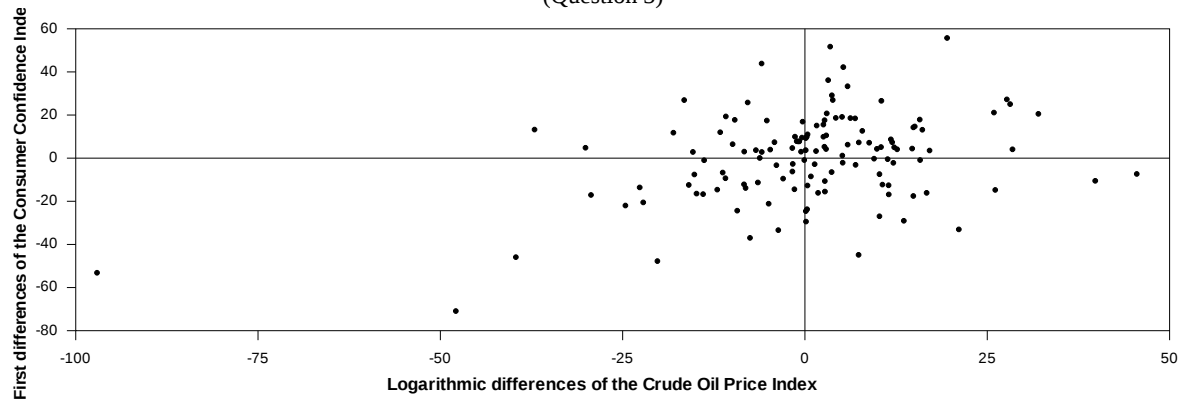
B. The Prairie Provinces



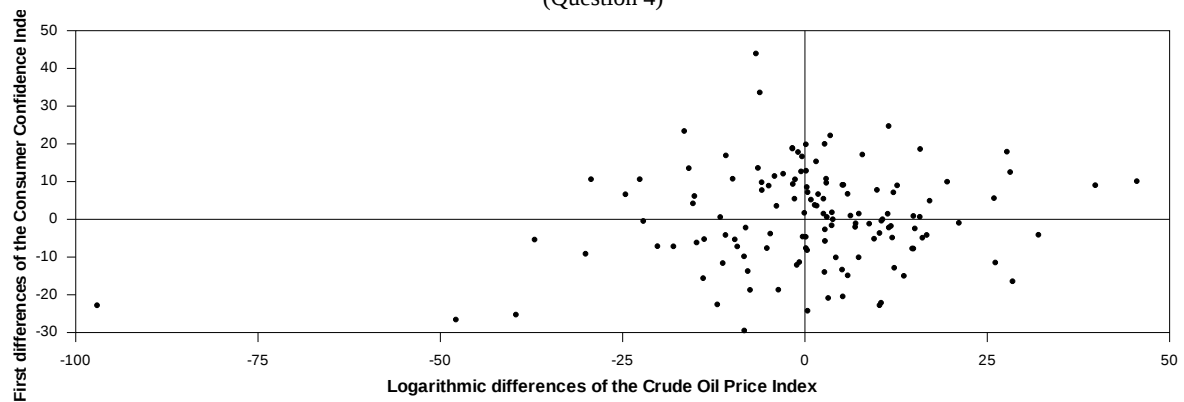
Graph 4 The Scatter Plots of the Crude Oil Price Changes and the Consumer Confidence Variations in Canada and in the Prairie Provinces (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

B. The Prairie Provinces

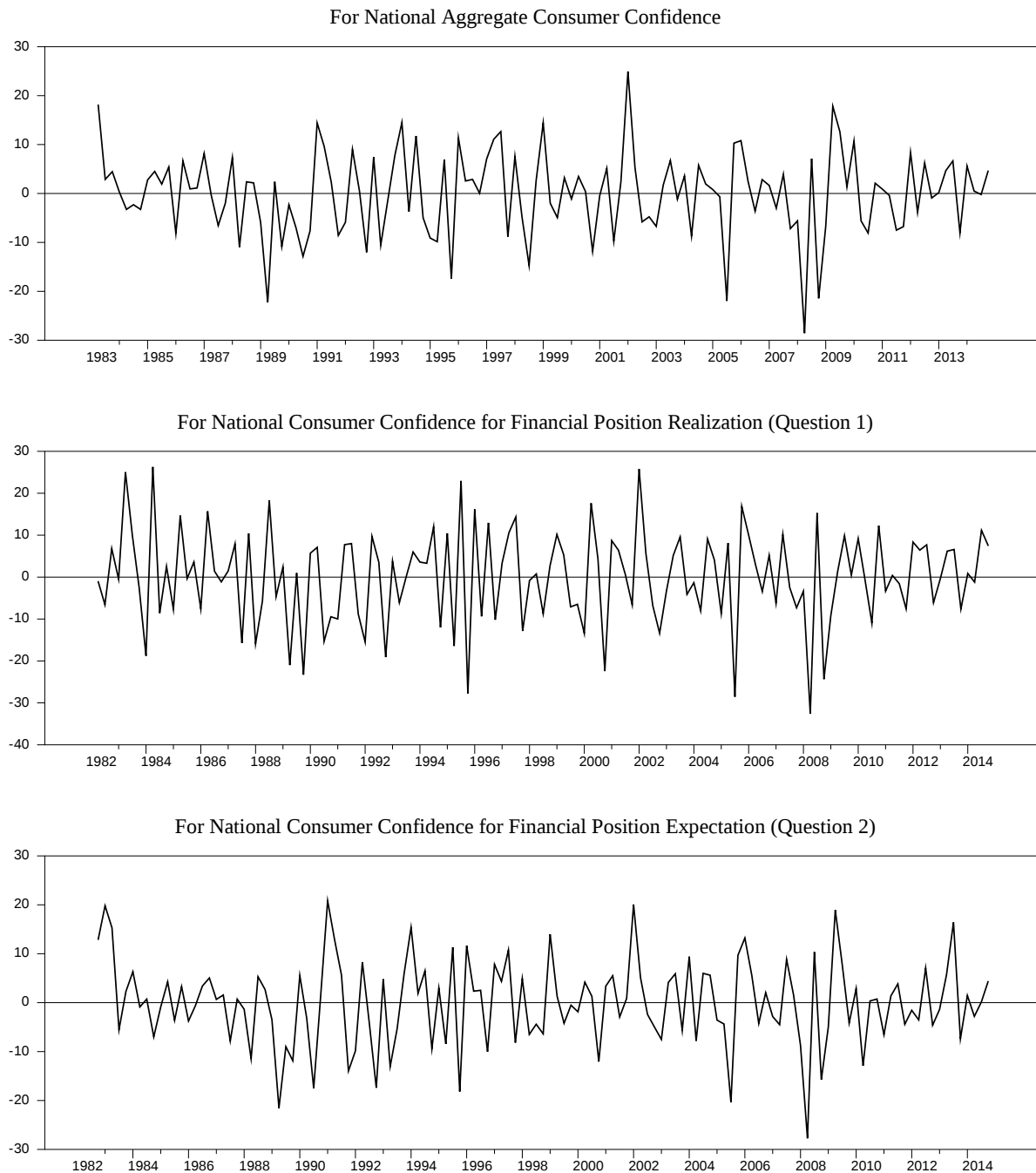
The Crude Oil Price Changes and the Variations of Consumer Confidence for Short-term Overall Employment Outlook (Question 3)



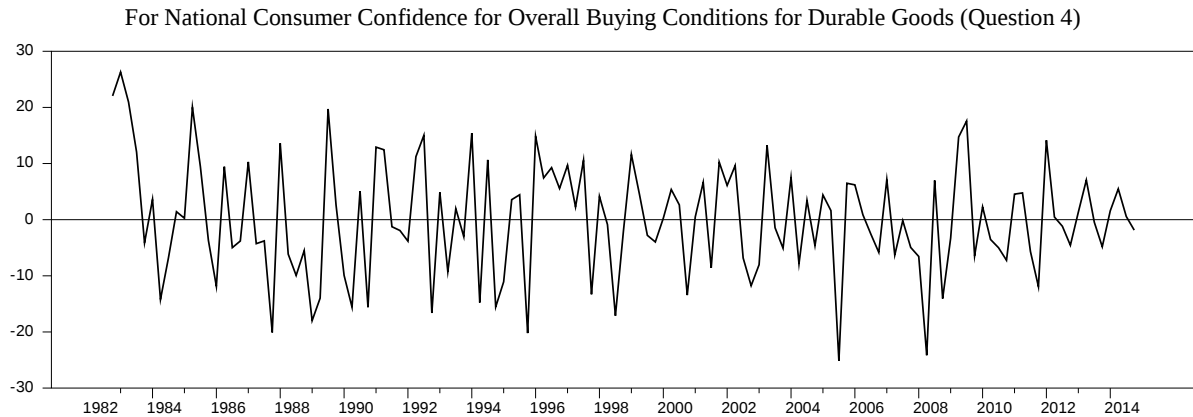
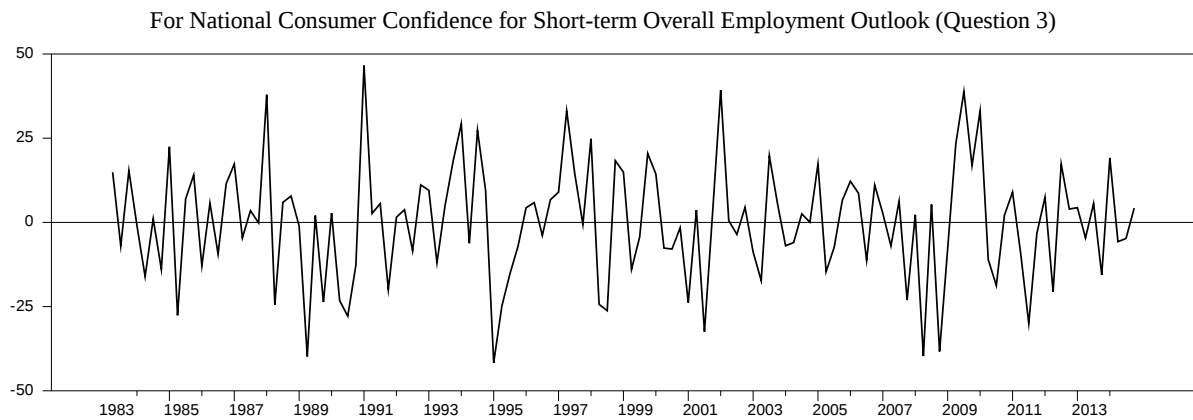
The Crude Oil Price Changes and the Variations of Consumer Confidence for Overall Buying Conditions for Durable Goods (Question 4)



Graph 5 The Residuals of the OLS Regressions of the National Consumer Confidence Variations as the Dependent Variables on the Crude Oil Price Changes as the Independent Variables in Equation 1 (Quarterly Samples from 1982:Q1 to 2014:Q4)



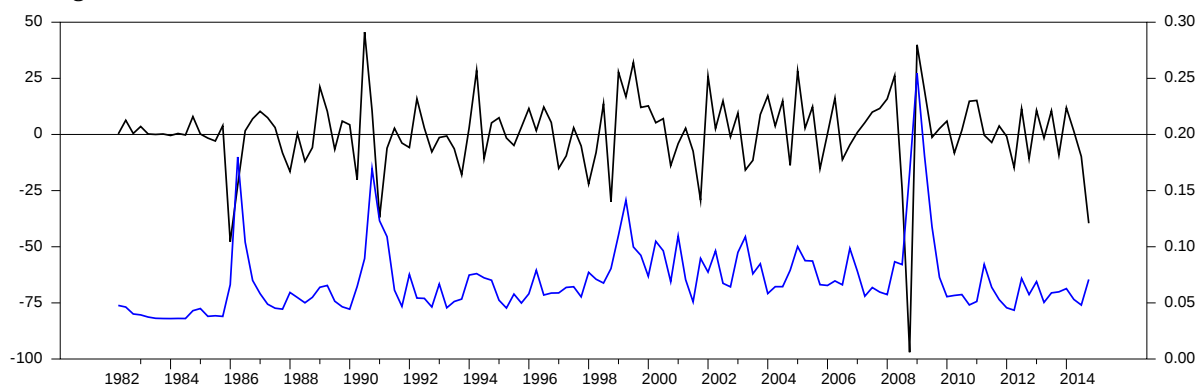
Graph 5 The Residuals of the OLS Regressions of the National Consumer Confidence Variations as the Dependent Variables on the Crude Oil Price Changes as the Independent Variables in Equation 1 (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)



Graph 6 The Plots of the Transformations of Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4)

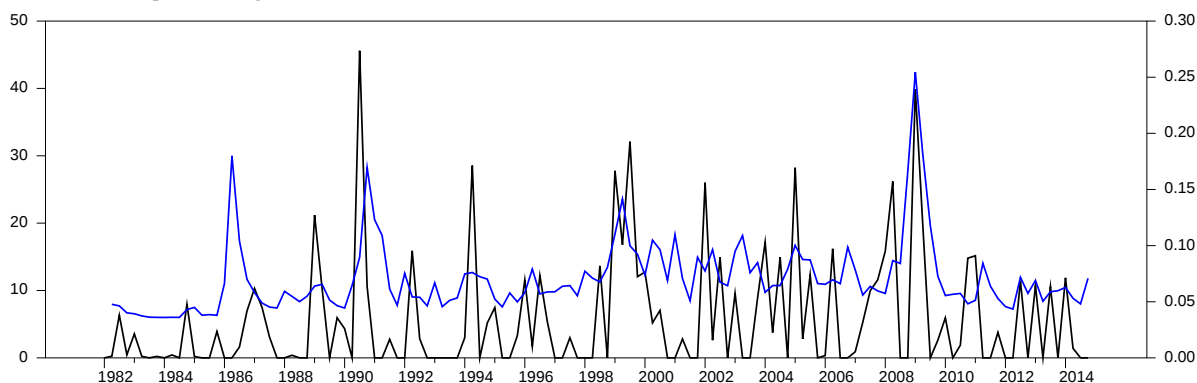
In each of the following graphs, the quarterly average of the monthly GARCH(1, 1) estimated standard deviations, used as the measures of volatility of quarterly crude oil price changes are also given (in blue and with Y-axes on the right).

A. The logarithmic differences of the Crude Price Index

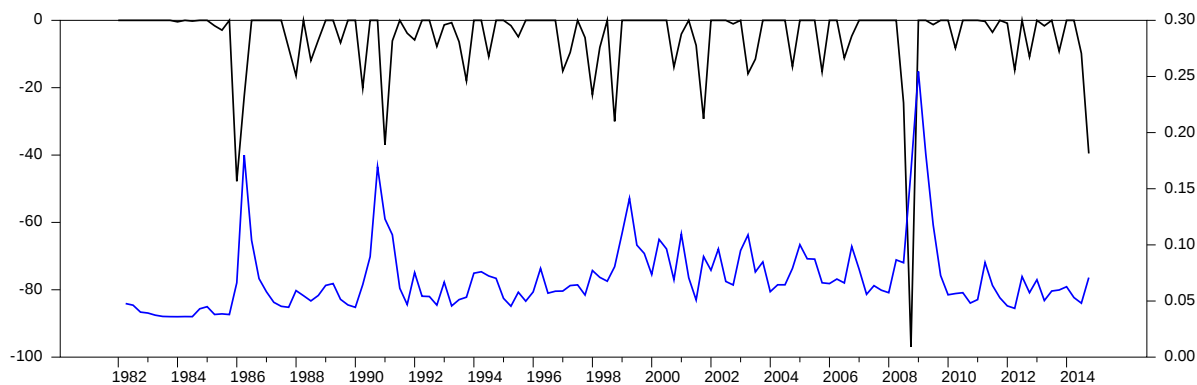


B. The Asymmetric Crude Oil Price Changes

Positive crude oil price changes

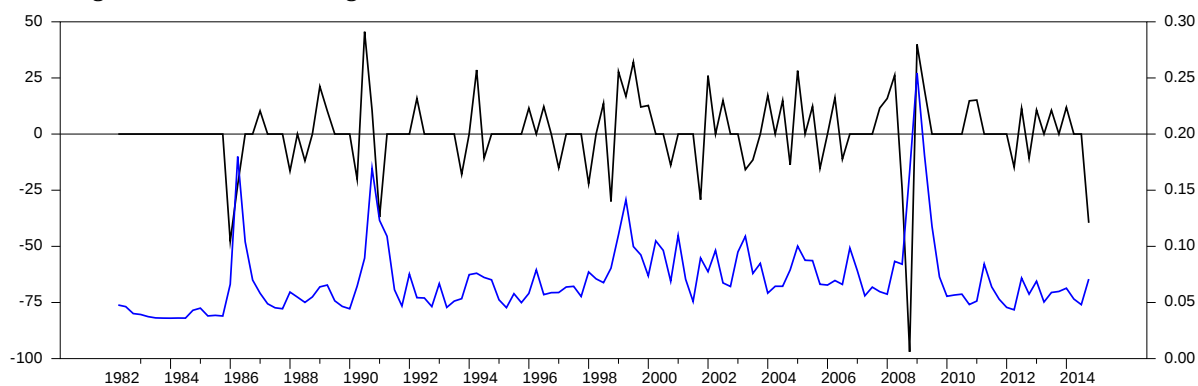


Negative crude oil price changes

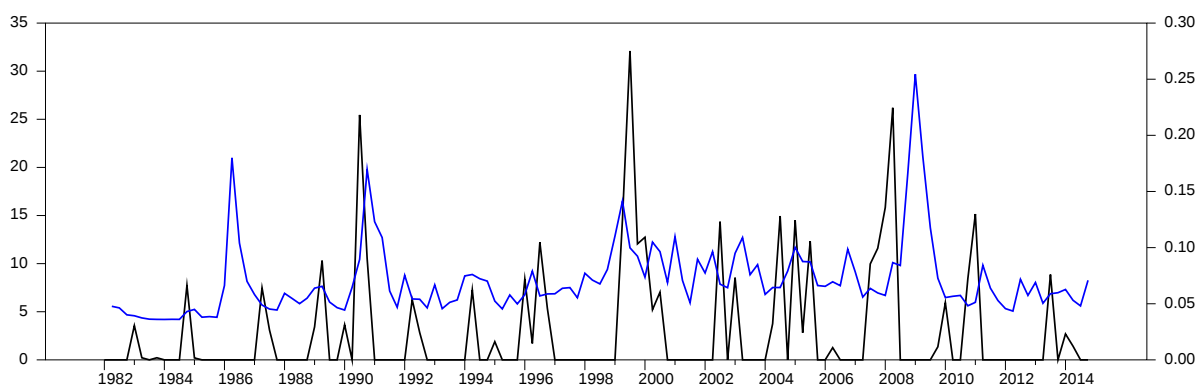


Graph 6 The Plots of the Transformations of Crude Oil Price Changes (Quarterly Samples from 1982:Q1 to 2014:Q4) (Continued)

C. The Large Crude Oil Price Changes

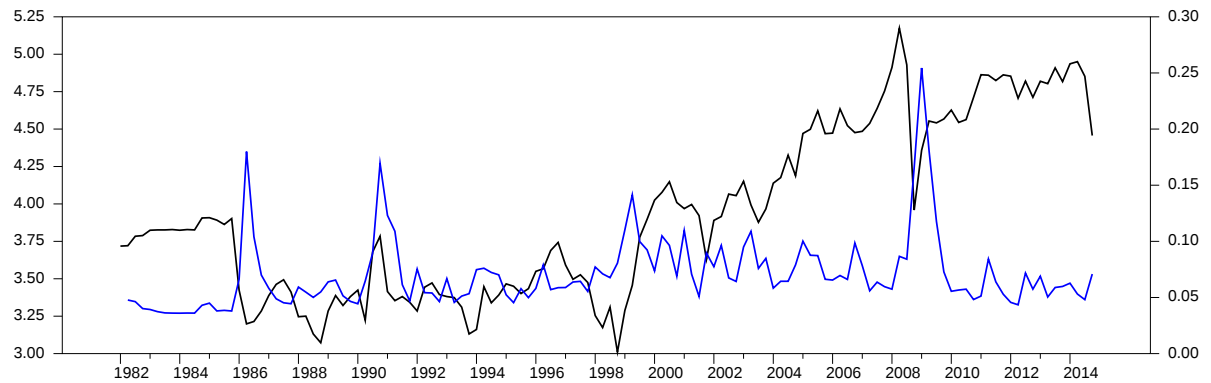


D. The Net Crude Oil Price Shocks



Graph 7 The Plots of the Logarithmic Levels of the Crude Oil Prices and the Oil Price Volatility Measures

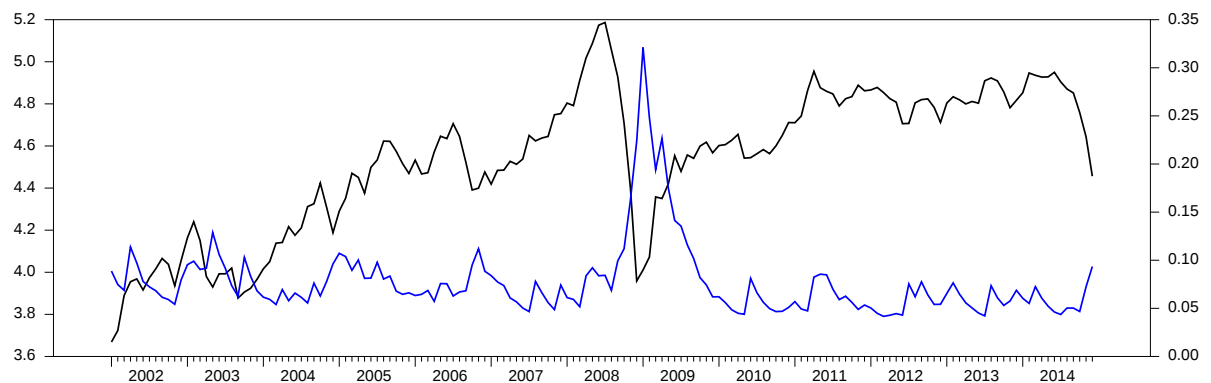
A. Quarterly Samples from 1982:Q1 to 2014:Q4



Notes:

1. Black are the logarithmic quarterly Crude Oil Price Index, with the Y-axis on the left.
2. Blue are the quarterly average of the monthly GARCH(1, 1) estimated standard deviations, with the Y-axis on the right.

B. Monthly Samples from 2002:01 to 2014:12



Notes:

1. Black are the logarithmic quarterly Crude Oil Price Index, with the Y-axis on the left.
2. Blue are the monthly GARCH(1, 1) estimated standard deviations, with the Y-axis on the right.