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## The Stock Market and the Consumer Confidence Channel in Canada \*

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## ***Abstract***

When stock prices rise, so does aggregate consumer spending. A traditional explanation for this phenomenon is based on wealth effects. However, movements of the stock market may affect consumer spending indirectly, by influencing consumer confidence. A bullish stock market may make consumers feel more optimistic about the future of the aggregate economy, and hence increase their spending. This paper investigates the existence of the consumer confidence channel of asset price transmission in Canada. The analysis is based on the indices of consumer confidence from the Conference Board of Canada and the Toronto Stock Exchange index. The results are supportive of the consumer confidence channel at the national level. There is also evidence of asymmetric effects of stock price changes on confidence changes: declines of the stock index have larger and statistically more significant effects relative to its increases.

**Key words:** *Stock market, Consumer confidence, Wealth, Asymmetry.*

**JEL Classification:** E21, E44.

## ***Résumé***

Lorsque les cours des actions s'élèvent, les dépenses de consommation globale s'accroissent. Une explication traditionnelle de ce phénomène se base sur l'effet de richesse. Cependant, les mouvements de la bourse peuvent aussi affecter les dépenses de consommation indirectement, en influençant les attitudes des consommateurs. Un marché boursier en hausse peut entraîner les consommateurs à se sentir plus optimistes envers l'avenir de l'économie et par conséquent à augmenter leurs dépenses. Cette étude examine l'existence d'un canal de transmission des cours des actions sur la consommation par le biais des attitudes des consommateurs. Notre analyse est basée sur les indices des attitudes des consommateurs du Conference Board du Canada et sur l'indice des actions de la Bourse de Toronto. Les résultats confirment le canal des attitudes des consommateurs au niveau national. De plus, les variations des cours des actions ont des effets asymétriques sur les changements des attitudes des consommateurs : les baisses de l'indice boursier ont un effet plus important qui est aussi statistiquement plus significatif que l'effet des augmentations.

**Mots clés:** *marché boursier, attitudes des consommateurs, richesse financière, asymétrie.*

**Classification JEL:** E21, E44.

# 1. Introduction

In the aftermath of the financial crisis of 2008, a better understanding of relations between financial markets and the real side of the economy has come to the forefront of both policy making and academic research. This paper focuses on the links between the stock market and aggregate consumption behaviour. Conventionally, the stock market affects consumption spending directly through the wealth channel. When stock prices rise, the value of financial wealth increases, thereby increasing the lifetime resources of consumers, and hence consumption. However, movements of the stock market may affect consumer spending indirectly, by influencing consumer confidence. The objective of the paper is to explore the existence of this indirect confidence channel of changes in stock prices.

The confidence channel is based on the idea that stock market prices are a readily available leading indicator of economic activity. A bullish stock market may make consumers feel better about the future of the economy and hence to increase their spending. A genuine confidence channel is distinct from the wealth effect of stock prices on consumer confidence. Higher stock prices can certainly boost consumer optimism through higher wealth. However, it is consumers' beliefs about forthcoming good times for the economy in general, not their beliefs about their greater financial wealth, that are critical for the confidence channel. If an independent confidence channel exists, then changes in stock prices may influence attitudes and spending decisions of not only stockholders, but also households who do not own stock.

The confidence channel of stock price was proposed by [Romer \(1990\)](#) in her study on the onset Great Depression. She argued that the stock market crash in October 1929 led to an increase in uncertainty about future income, and thus was critical in explaining U.S. consumer spending between 1929 and 1932. More recent empirical work for the U.S. and Europe provides evidence in favour of a confidence channel that is distinct from the conventional wealth channel. [Otoo \(1999\)](#) and [Jansen and Nahuis \(2003\)](#) find a causal relation from changes in stock prices to changes in consumer sentiment. [Carroll et al. \(1994\)](#), [Bram and Ludvigson \(1998\)](#) and [Jansen and Nahuis \(2004\)](#) show that changes in consumer sentiment improve forecasts of consumption growth. The contribution of this paper is to

examine the confidence channel of stock price changes in Canada.

Previous research for Canada supports the second part of the confidence channel, according to which consumer confidence affects consumption. [Kwan and Cotsomitis \(2006\)](#) find that consumer confidence is a reliable predictor of household spending. [Côté and Johnson \(1998\)](#) show that measures of consumer confidence matter in consumption equations. In contrast with the previous work, this paper focuses on the first part of the confidence channel that examines the relationship between stock prices and consumer confidence.

We document a positive contemporaneous correlation between changes in stock prices and changes in the aggregate index of consumer confidence at the national and regional levels. To interpret these correlations, we conduct a number of Granger causality tests, similar to the work of [Jansen and Nahuis \(2003\)](#) for Europe. To assess the importance of the wealth effects and consumer confidence channel, we disaggregate the confidence index into its subquestions.

Our results are supportive of the consumer confidence channel at the national level. We find that changes in stock prices have a significant impact on the expectations of future employment conditions. However, these changes are less useful in predicting expectations about the personal financial position. Turning to the regional analysis, the evidence from Quebec, Ontario, and the Prairies is consistent with the aggregate evidence. For the Atlantic provinces and British Columbia the results are somewhat mixed.

We investigate two hypotheses regarding asymmetric effects of changes of stock prices on changes in consumer confidence. First, we assess whether negative changes in the stock market make agents relatively more pessimistic than positive changes make them optimistic. Second, we evaluate whether larger negative changes have a larger effect on confidence changes relative to smaller changes. We find support for the first but not the second hypothesis. Moreover, such asymmetries manifest via both the wealth and the consumer confidence channels.

The rest of the paper is organized as follows. Section 2 describes the data. Section 3 explains the empirical methodology and reports the empirical results regarding the nature of the relationship between stock prices and consumer confidence. Section 4 concludes.

## 2. Data

Measures of consumer confidence for Canada are published by the Conference Board of Canada. These measures are based on the survey of Canadian households. For quarterly data, the survey is conducted in the first two weeks of the third month of each quarter. The data is typically released one week after the survey is completed.

The overall index of consumer confidence (CI) combines responses to questions about current and expected personal financial position, employment prospects and current buying conditions. The responses to the four individual questions are converted into indices and aggregated into the overall index. The indices of consumer confidence are available at the national level as well as for five Canadian regions: the Atlantic Provinces, Quebec, Ontario, the Prairies and the British Columbia. Our data sample runs from 1961:Q1 to 2008:Q2. The Appendix provides more details about the data.

Two questions from the consumer confidence survey are particularly relevant for evaluating the nature of the relationship between the stock prices and consumer attitudes. These questions are listed as number two and three in the survey. In the rest of the paper, the responses to these two questions, aggregated into the indices following the methodology of the Conference Board of Canada, are referred to as the Q2-index and the Q3-index. The questions are as follows:

Q2: *Again, considering everything, do you think that your family will be better off, the same or worse off financially six months from now?*

Q3: *How do you feel the job situation and overall employment will be in this community six months from now?*

Question Q2 asks to assess the future personal financial position. The responses to this question can provide an insight on the strength of the wealth effect of stock prices on confidence. Question Q3 asks about general employment prospects. If an independent confidence channel exists, the responses to this question should be influenced by changes in the stock prices. Thus, the Q2 and Q3 indices are used in this paper to judge the importance of the wealth and confidence channels of the stock price changes on consumer confidence.

The Standard&Poor's/Toronto stock exchange composite (TSX) index is the primary indicator for Canadian equity markets. The monthly series for the TSX index is from the CANSIM database of Statistics Canada (table 176-0047, label V122620). These monthly series are converted into quarterly by using the values in the last month of each quarter, consistent with the timing of the Conference Board's Survey. This approach eliminates a possibility of spurious correlation and causality.

### **3. Econometric results**

#### **3.1 Diagnostic tests**

Tables 1 and 2 report the results of integration and cointegration tests. Based on the unit root test of Dickey and Fuller, the null hypothesis of a unit root in the levels of the three measures of consumer confidence at the national level and in the TSX index cannot be rejected.<sup>1</sup> The Johansen's trace and eigenvalues statistics indicate the absence of cointegration. Based on the test results, we focus on the relation between the changes (the first differences) in the stock prices and the changes in the measures of consumer confidences.

The overall index of consumer confidence and the Q2 and Q3 indices for the national level are plotted on Figure 1. Table 3 reports the correlation coefficients between changes in the overall index and the indices Q2 and Q3 at the national level. Both the Figure and the Table indicate an independent variation in the responses to the individual questions of the consumer confidence survey. In addition, Table 4 reports correlation coefficients between the aggregate indices of consumer confidence for Canada and its regions.

#### **3.2 Correlation analysis**

The contemporaneous correlation between changes in the stock prices and in consumer confidence is reported in columns 2 and 3 of Table 5. With one exception, the correlation coefficients are positive. In all the cases, the relation between the expectations of employment prospects (Q3-index) and stock prices is stronger than between the responses about

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<sup>1</sup>The results for regional indices of consumer confidence are available upon request.

future personal financial position (Q2-index) and stock prices.

Although small, the correlation statistics are in the range of the statistics reported by [Jansen and Nahuis \(2003\)](#) for Europe. The correlation coefficients are statistically significant at the 5% level for Canada and Ontario, at the 10% level for Quebec, and at the 15% for the Prairies and the British Columbia.<sup>2</sup> In all cases, the hypothesis of no contemporaneous correlation between the stock prices and the expectations of future personal finances (Q2-index) cannot be rejected.

### 3.3 Granger causality tests

To explore the nature of the relation between the stock prices and consumer confidence indices, we conducted Granger causality tests, based on the following specification:

$$\Delta CC_t = \alpha_c + \sum_{i=1}^L \beta_c(i) \Delta CC_{t-i} + \sum_{i=1}^L \gamma_c(i) \Delta TSX_{t-i} + u_{c,t}, \quad (1)$$

$$\Delta TSX_t = \alpha_{tsx} + \sum_{i=1}^L \gamma_{tsx}(i) \Delta CC_{t-i} + \sum_{i=1}^L \beta_{tsx}(i) \Delta TSX_{t-i} + u_{tsx,t}. \quad (2)$$

The variable  $CC$  denotes a measure of consumer confidence (either the overall index CI or one of the indices Q2 or Q3) at the national or regional levels. The value of  $L$  corresponds to the maximum lag and  $u_t$  is a error term, assumed to be normally distributed with mean zero.

A variable  $X$  is said to Granger cause  $Y$  if and only if lagged values of  $X$  have marginal predictive content in a forecasting equation for  $Y$ . Given the specification (1) and (2), changes in stock prices Granger-cause changes in consumer confidence if the past changes in stock prices improve the forecasts of consumer confidence based on the past values of consumer confidence alone. Similarly, changes in consumer confidence Granger-cause changes in stock prices if they contain more information than is contained in the past values of the stock prices alone. The null hypothesis of no-Granger causality corresponds to a joint test that all coefficients  $\gamma_c(i)$  and  $\gamma_{tsx}(i)$  in (1) and (2) are equal to zero.

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<sup>2</sup>The  $t$ -statistic associated with the null of zero correlation is  $t=r\sqrt{\frac{N-2}{1-r^2}}$  where  $r$  is the correlation coefficient. The  $p$ -value is obtained as  $p\text{-value}=2*(1-N(|t|))$ , where  $N(\cdot)$  is the cumulative density of a standard normal distribution.

Table 5 reports the results of Granger causality tests. In the Table, ‘Optimal lag’ denotes the value of  $L$  in the system (1)-(2) for a given measure of consumer confidence. This value is determined by the Akaike information criterion. The direct Granger causality from the stock prices to consumer confidence corresponds to the column ‘ $\Delta\text{TSX} \rightarrow \Delta\text{CC}$ ’, while the reversed Granger causality from the index of consumer confidence to stock prices corresponds to the column ‘ $\Delta\text{CC} \rightarrow \Delta\text{TSX}$ ’. The null hypothesis of no-Granger causality can be rejected at the marginal significance level given by the  $p$ -value of the test statistics.

### 3.3.1 National data

The test results for the Canadian aggregate index of consumer confidence point to a bi-directional Granger causality. Changes in stock prices are useful in forecasting consumer confidence. At the same time, measures of consumer confidence help to forecast future stock price changes. The reversed causality may be attributed to the publication effects. The consumer confidence survey is conducted in the first half of the last month of each quarter, and the confidence indices are published in the second half of that month. However, the TSX series are the averages of the values of the index over a month.

The direct causality can reflect both the wealth and the confidence channels of stock prices. Ideally, we would have liked to know how beliefs of non-stockholders are affected by stock prices changes relative to beliefs of stockholders. Unfortunately, this approach is not feasible with the available confidence indices. Nevertheless, the analysis of individual questions from the consumer confidence survey allows us to shed some light on the relevance of the wealth and confidence channels.

The data supports a one-way direct Granger causality from the stock prices to consumer confidence for both Q2 and Q3 indices. That is, stock prices are useful for forecasting the responses about employment prospects as well as perceptions of future personal finances. However, expectations of employment prospects are much stronger affected by the changes in the stock prices than expectations of future personal position. These results imply that stock prices affect consumer attitudes not only through the conventional wealth channel, but also through an independent confidence channel. These conclusions are similar to those

made by [Otoo \(1999\)](#) for the U.S. and [Jansen and Nahuis \(2003\)](#) for Europe.

### 3.3.2 Regional data

The results of Granger causality for the overall index of consumer confidence for Quebec, Ontario and the Prairies are similar to the results for Canada. However, there is less significance for Quebec. The overall index for BC is Granger caused by stock price changes.

The causality from changes in the stock prices to perceptions of personal finances can be rejected for all specifications that use optimal lags. However, there is some sensitivity in Granger causality tests to the number of lags for the expected future financial position. In addition to the results based on the optimal lags, [Table 5](#) also reports the  $p$ -values of the tests that correspond to lag one. This lag is the optimal lag for the Q2-index for Canada. The lag and the corresponding  $p$ -values are given in brackets. Based on one lag specification, the direct causality for the Q2-index cannot be rejected at the 5% level for Ontario, and at the 10% levels for the Atlantic provinces and Quebec.

Changes in the stock prices are helpful in forecasting expectations about employment prospects in the local community for consumers in Quebec, Ontario and the Prairies. The lack of the direct causality for the Atlantic provinces and the British Columbia may be linked to the structures of labour markets in these regions. Both regions have many seasonal jobs. Thus, employment situation in this area may be unrelated to the performance of the TSX index.

## 3.4 Asymmetric effects

Previous research has shown that changes in the stock market wealth affect consumption asymmetrically in the U.S. ([Apergis and Miller \(2006\)](#)). That is, agents' changes in consumption respond more strongly to negative stock market changes than to positive changes of the same magnitude. It is, however, unclear whether such changes manifest themselves via the asymmetries embedded in the wealth channel or in the confidence channel, or both. For example, if many agents in the economy are credit constrained then a negative change in the stock market may have a larger adverse effect on agents' wealth and hence on consumption,

relative to a positive change. On the other hand, a negative change in the stock market may make agents more pessimistic about future prospects relative to optimism generated by a positive change of the same magnitude. Thus, in principle, asymmetries can arise under both channels.

We consider two different specifications to evaluate the presence of asymmetric effects. The first specification is

$$\Delta CC_t = \sum_{i=1}^k \alpha_{1i} \Delta CC_{t-i} + \sum_{i=1}^k \alpha_{2i} \Delta TSX_{t-i} + \gamma^+ D^+ + \gamma^- D^- + \epsilon_t, \quad (3)$$

where  $CC$  denotes one of the measures of consumer confidence as before,  $k$  is the number of lags, and  $\epsilon_t$  is a mean-zero normally distributed error term. The coefficients  $\alpha_{1,i}$  and  $\alpha_{2,i}$  are associated with the lagged changes in the confidence index and the TSX, respectively.  $D^+$  is a dummy variable that takes on a value one if the change in the TSX is positive in period  $t$ , and zero otherwise. Similarly,  $D^-$  is a dummy variable that takes on a value one if the change in TSX is negative in period  $t$ , and zero otherwise. The coefficients  $\gamma^+$  and  $\gamma^-$  are associated with the two dummy variables, respectively. Under specification (3), any presence of asymmetric effects will be captured in the intercept, implying shifts in consumer confidence changes, depending on the direction (positive or negative) of stock market changes.

Table 6 presents the results for the six lags specification, which provided the best fit with the data based on the  $\bar{R}^2$ .<sup>3</sup> For the national consumer confidence index, both coefficients  $\gamma^+$  and  $\gamma^-$  have the expected sign and are statistically significant at the 5% level. The negative estimated coefficient, however, is more than twice as large as the positive coefficient, indicating asymmetric shifts in confidence changes in response to stock market changes. Turning to the sub-indices, the estimated coefficients on the dummy variables have the expected signs. The estimated  $\gamma^-$  is statistically significant at the 5% level. By contrast, the estimated  $\gamma^+$  is not statistically significant for either the wealth or the confidence channels. In fact, the null hypothesis of equality of these two coefficients is rejected. As for the national index, the absolute value of the negative estimated coefficient is more than twice as large as the positive coefficient.

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<sup>3</sup>For parsimony we show the results for the coefficients for the dummy variables only.

Three implications follow from the findings in Table 6. First, conditional on past changes in the confidence index and stock market, negative stock market changes appear to induce relatively more pessimism than positive changes induce optimism. Second, negative stock market changes have a statistically significant negative effect on confidence change whereas positive stock market changes do not have a statistically significant effect. These asymmetric effects appear despite the fact that positive changes have been large and more frequent relative to negative changes, especially since the early 2000s. Figure 2 shows the squared changes in the stock market index to illustrate this point. One exception to this general tendency is the large negative change in the third quarter of 1998. Nevertheless, the findings regarding the asymmetry are robust to the exclusion of this particular observation.<sup>4</sup> Third, the asymmetric effects on confidence changes manifest via *both* the wealth *and* the confidence channels.

Do larger negative changes in the TSX have a larger effect on consumer confidence relative to smaller negative changes, conditional on past changes in both the confidence and the stock indices? To answer this question we consider the second specification

$$\Delta CC_t = \alpha_0 + \sum_{i=1}^k \alpha_{1i} \Delta CC_{t-i} + \sum_{i=1}^k \alpha_{2i} \Delta TSX_{t-i} + \sum_{i=1}^k \alpha_{3i} D^- * \Delta TSX_{t-i} + \gamma^- D^- + \varepsilon_t, \quad (4)$$

where  $\varepsilon_t$  is mean-zero normally distributed error term. The main difference relative to (3) is that specification (4) includes an interaction or a slope dummy,  $D^- * \Delta TSX_{t-i}$ , in addition to the intercept dummy. This specification allows us to assess whether the size of the past negative changes in the stock market by itself matters for current changes in consumer confidence.

Table 7 provides the results of three null hypotheses that test for the asymmetry: (i) no asymmetric effects through a slope or an intercept ( $\sum_{i=1}^k \alpha_{3i} = 0, \gamma^- = 0$ ); (ii) no asymmetric slope effects ( $\sum_{i=1}^k \alpha_{3i} = 0$ ) and (iii) no asymmetric intercept effects ( $\gamma^- = 0$ ). For each hypothesis, the Table reports the test statistics and the exact significance level. Overall, the findings from specification (4) are consistent with those from specification (3).

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<sup>4</sup>The test results for asymmetry that excludes 1998:III are available upon request.

First, the null hypothesis of no asymmetric effects can be rejected for the overall confidence index and the two sub-indices (columns 2 and 3). Second, the null hypothesis of no asymmetric slope effects cannot be rejected for all three measures of consumer confidence (columns 4 and 5). Third, the null of no asymmetric intercept effects can be rejected for all three confidence indices (columns 6 and 7). These results imply that while larger negative changes do not have a larger asymmetric effect on changes in the confidence index, negative changes in the stock index do imply asymmetric level shifts in confidence changes. Moreover, these effects work through both the wealth and the consumer confidence channels. Finally, the fit of the regressions in terms of  $\bar{R}^2$  between specifications (3) and (4) are similar, with the confidence channel specification based on the Q3-index receiving a relatively better fit.<sup>5</sup>

## 4. Conclusion

Stock market movements can influence agents' consumption directly through changes in wealth (the wealth channel) or indirectly by influencing consumer confidence (the consumer confidence channel). The idea behind the latter channel is that stock market movements may influence consumer confidence which in turn affects consumption. Building upon the previous research that documents the importance of consumer confidence in explaining consumption, this paper examines a link between the stock market movements and consumer confidence in Canada.

We find that changes in the stock index and the consumer confidence are positively correlated, and that stock market changes Granger-cause consumer confidence indices related to both the wealth and the confidence channels. Moreover, we find evidence of asymmetric effects in that negative changes in the stock market have a statistically significant effect on confidence indices while positive changes do not. Our findings imply that the confidence channel may amplify the effects of stock market changes on aggregate consumption in Canada, especially during periods of negative changes observed since the global financial crisis of 2007-08.

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<sup>5</sup>The standard errors in the estimation of (3) and (4) are Heteroscedasticity and Autocorrelation Consistent (HAC).

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## A. Appendix

### A.1 Construction of consumer confidence indices

The survey asks four attitudinal questions:<sup>6</sup>

Q1 (Personal financial position realization): Considering everything, would you say that your family is better or worse off financially than six months ago?

Q2 (Personal financial position expectation): Again, considering everything, do you think that your family will be better off, the same or worse off financially six months from now?

Q3 (Community employment prospects): How do you feel the job situation and overall employment will be in this community six months from now?

Q4 (Current buying conditions): 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?

An index of consumer confidence for each question is constructed by taking a ratio of the percentage of positive responses relative to the sum of positive and negative responses. The Conference Board of Canada defines positive (negative) responses as beliefs that a consumer's financial situation improved (worsened) over the past six months or will improve (worsen) over the next six months, that more (less) jobs will be available over the near term, or that now is a good (bad) time to make a major purchase. The aggregate index is computed as the average of the four subindices, normalized to 100 in 2002. The indices of consumer confidence are available at the national level as well as for five Canadian regions (the Atlantic Provinces, Quebec, Ontario, the Prairies, and the British Columbia). Our analysis is based on both the aggregate index and the subindices of consumer confidence. For comparability of the results across the questions, we normalize the subindices to 100 in 2002.

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<sup>6</sup><http://www2.conferenceboard.ca/weblinx/ica/Default.htm>

Table 1: Diagnostics: Augmented Dickey-Fuller unit root tests

	Lags	With intercept	With intercept and trend	Without intercept or trend
CI	6	-2.62	-2.89	-0.61
Q2	6	-2.47	-3.16	-0.71
Q3	6	-2.29	-3.38	-0.71
TSX	4	2.26	0.25	3.15
<i>5% Critical value</i>		-2.87	-3.43	-1.94

*Notes:* The lag length was established using the Akaike information criteria. CI stands for the Conference Board of Canada index of consumer confidence. Q2 and Q3 are the indices based on the responses to questions two and three of the consumer confidence survey. The sample is 1961:I-2008:II.

Table 2: Diagnostics: Johansen cointegration tests

Null Hypothesis		$J_{\text{trace}}$	$J_{\text{max}}$
$r = 0$	CI	12.65	9.09
	Q2	11.43	8.18
	Q3	12.80	9.70
<i>5% Critical Value</i>		15.41	15.90

*Notes:* The tests are conducted with four lags and a constant. The variable  $r$  denotes the number of cointegrating vectors,  $J_{\text{trace}}$  is the trace statistics, and  $J_{\text{max}}$  is the maximum eigenvalue statistics. CI stands for the Conference Board of Canada index of consumer confidence. Q2 and Q3 are the indices based on the responses to questions two and three of the consumer confidence survey. The sample is 1961:I-2008:II.

Table 3: Correlation between changes in the Canadian consumer confidence indices

$\text{Corr}(\Delta\text{CI},\Delta\text{Q2})$	$\text{Corr}(\Delta\text{CI},\Delta\text{Q3})$	$\text{Corr}(\Delta\text{Q2},\Delta\text{Q3})$
0.76	0.74	0.33

*Notes:* The symbol  $\Delta$  denotes the first difference. CI stands for the Conference Board of Canada index of consumer confidence. Q2 and Q3 are the indices based on the responses to questions two and three of the consumer confidence survey. All correlations are significant at the 5% level. The sample is 1961:I-2008:II.

Table 4: Correlation between the changes in the overall Canadian and regional indices of consumer confidence

	Atlantic	Quebec	Ontario	Prairies	BC
Canada	0.68	0.80	0.90	0.75	0.69
Atlantic	1	0.53	0.52	0.50	0.44
Quebec		1	0.65	0.51	0.47
Ontario			1	0.59	0.55
Prairies				1	0.52

*Notes:* All correlations are significant at the 5% level.

Table 5: Relation between changes in stock prices and consumer confidence

	Correlation		Optimal lag	Granger causality: p-values	
	Estimate	p-value		$\Delta\text{TSX} \rightarrow \Delta\text{CC}$	$\Delta\text{CC} \rightarrow \Delta\text{TSX}$
<i>Canada</i>					
CI: Overall index	0.16	0.03	4	0.03	0.03
Q2: Wealth channel	0.05	0.48	1	0.07	0.81
Q3: Confidence channel	0.15	0.04	5	0.00	0.44
<i>Atlantic provinces</i>					
CI: Overall index	0.09	0.87	3	0.44	0.00
Q2: Wealth channel	0.04	0.56	2	0.28	0.00
			[1]	[0.08]	[0.20]
Q3: Confidence channel	0.08	0.26	1	1.00	0.46
<i>Quebec</i>					
CI: Overall index	0.13	0.08	4	0.14	0.09
Q2: Wealth channel	0.04	0.90	3	0.34	0.19
			[1]	[0.06]	[0.86]
Q3: Confidence channel	0.12	0.09	4	0.03	0.47
<i>Ontario</i>					
CI: Overall index	0.17	0.02	4	0.02	0.02
Q2: Wealth channel	0.09	0.20	4	0.33	0.01
			[1]	[0.05]	[0.79]
Q3: Confidence channel	0.16	0.03	7	0.04	0.42
<i>Prairies</i>					
CI: Overall index	0.11	0.13	4	0.04	0.09
Q2: Wealth channel	0.05	0.51	7	0.94	0.27
			[1]	[0.37]	[0.31]
Q3: Confidence channel	0.07	0.34	6	0.02	0.46
<i>British Columbia</i>					
CI: Overall index	0.11	0.13	4	0.08	0.69
Q2: Wealth channel	-0.02	0.83	1	0.85	0.38
Q3: Confidence channel	0.11	0.13	1	0.45	0.77

*Notes:*  $\Delta X$  denotes the first difference of the variable  $X$ . CI stands for the Conference Board of Canada index of consumer confidence. Q2 and Q3 are the indices based on the responses to questions two and three of the consumer confidence survey. Optimal lag is computed based on the Akaike information criterion. The values in brackets correspond to the system with one lag. The sample is 1961:I-2008:II.

Table 6: Asymmetric effects on the confidence indices: Specification (3)

	$\gamma^+$	$p$ -value	$\gamma^-$	$p$ -value	$k$	$\bar{R}^2$	$H_0 : \gamma^+ = \gamma^-$	Sig. Level
$\Delta CI$	1.68 (0.73)	0.02	-3.65 (0.83)	0.00	6	0.25	$\chi^2(1) = 23.66$	0.00
$\Delta Q2$	0.93 (0.73)	0.20	-2.45 (1.15)	0.05	6	0.14	$\chi^2(1) = 5.67$	0.02
$\Delta Q3$	2.56 (1.68)	0.13	-5.62 (1.82)	0.00	6	0.63	$\chi^2(1) = 11.33$	0.00

Notes: Heteroscedasticity and Autocorrelation Consistent (HAC) standard errors are in parenthesis. Sig. Level denotes the exact significance level of the test statistics.

Table 7: Asymmetric effects on the confidence indices: Specification (4)

	$H_0 : \sum_{i=1}^k \alpha_{3i} = 0, \gamma^- = 0$		$H_0 : \sum_{i=1}^k \alpha_{3i} = 0$		$H_0 : \gamma^- = 0$		$\bar{R}^2$
	$F(2, 163)$	Sig. Level	$\chi^2(1)$	Sig. Level	$\chi^2(1)$	Sig. Level	
$\Delta CI$	13.47	0.00	2.23	0.13	11.93	0.00	0.26
$\Delta Q2$	3.52	0.03	0.50	0.48	4.75	0.03	0.15
$\Delta Q3$	5.03	0.01	0.40	0.52	5.34	0.02	0.63

Notes:  $k = 6$ . Sig. Level denotes the exact significance level of the test statistic.

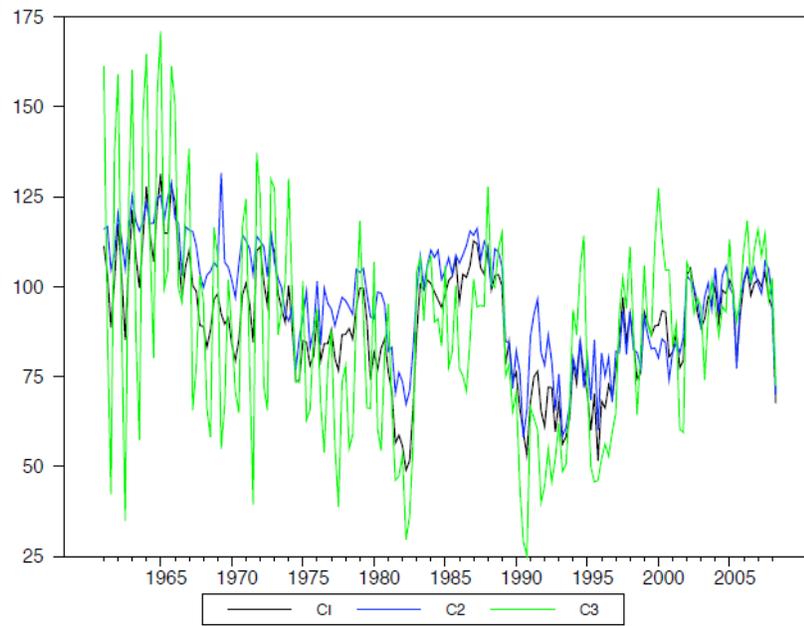


Figure 1: Aggregate confidence index (CI) and sub-indices (Q2, Q3)

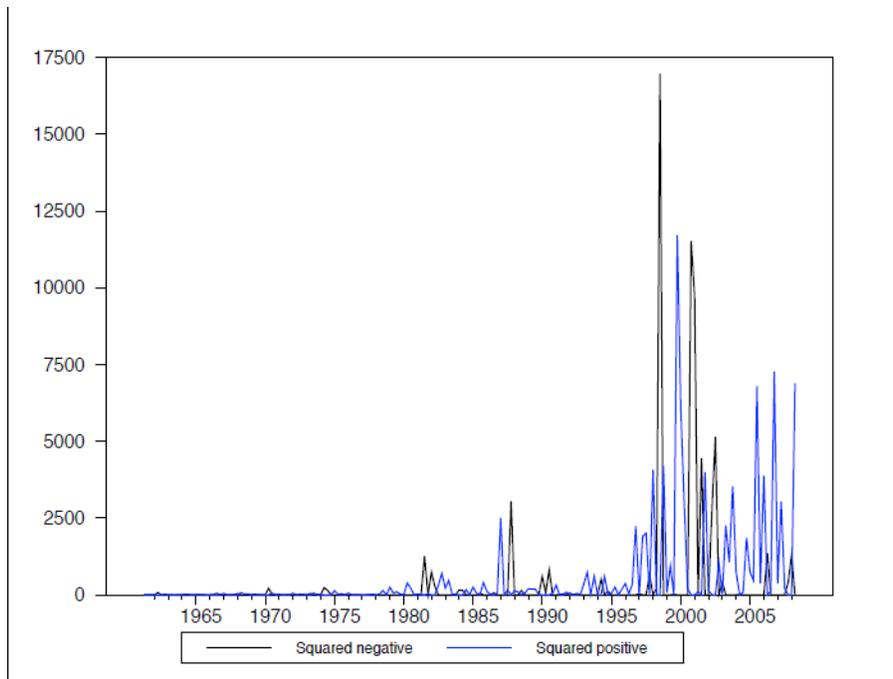


Figure 2: Squared positive and negative changes in the stock market index