# Expectations of Consumers spending

Empirical Research

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**Introduction**

The impact of future consumers' expenditures on economic activities is an important subject in economics. In 2008, consumer expenditures represented approximately 70% of gross domestic product (GPD) in United State of America (Lewis, 2014). Indeed, any minor shift in consumer spending has deep implications for economic growth and industries. Therefore, the economic policy goal is to create a balance in spending and saving. To the end, Federal Reserve has frequently cut interest rates to encourage individuals borrowing to create cash flow through spending activities (Fornell, Rust and Dekimpe, 2010).

Studying individuals' behavior in expected spending through observation is the main propose of this paper which will be determined by the future conditions of buying a vehicle. In addition, the consumer confidence takes a critical part in the model to analysis the consumers behavior. Consumer confidence measures were developed in the late 1940's by George Katona at the University of Michigan which directly include empirical measures of consumer expectations into models of spending and saving behavior (Bram and Ludvigson, 1998). It is also defined as the degree of optimism on the state of the economy that consumers have been expressing through their activities of spending and savings (Bram and Ludvigson, 1998).

Moreover, expected future personal income is the other critical component that affects the spending. High uncertainty about future income leads to lower consumption. Other factors such as future change in unemployment rate, prices, and inflation. The paper looks to draw conclusions about the following questions:

- Does consumer sentiment economically illustrate information about future consumer spending?

- Does an optimistic view about future personal finance demonstrate information about expected consumer spending?
- What is the effect of other factors such as expected inflation rate, expected unemployment rate, expected interest rate, expected change in prices, and expected business conditions for the country on future spending?

The hypothesis to be tested is there a significant relationship between consumers' expectation of vehicles buying conditions and consumer sentiment beside the other factors that will affect the future movements in consumer spending.

**Literature Reviews**

Source "*Does Consumer Confidence Forecast Household Expenditure?"* By Jason Bram and Sydney Ludvigson states investigating the effect of consumer behaviors on consumer spending (1998). The empirical analysis is to compare the forecasting of two widely measures of consumer attitudes —the Conference Board Consumer Confidence Index and the University of Michigan Index of Consumer Sentiment (Bram and Ludvigsonp, 1998). The clearest implication empirical results about Bram and Ludvigsonp paper is that predicts of total individuals spending may be made more accurate by utilizing the Conference Board's Consumer Confidence Index (1998). The future expectation about consumer spending are often enhanced either by replacing the Michigan index with the Conference Board or by combining the Michigan index data with more predictable economic variables such as income, consumption, and financial indicators (Bram and Ludvigsonp, 1998). This source is helpful to understand the more detailed information about the University of Michigan Index of Consumer Sentiment.

The source *"Income, Expenditure and Personal Wellbeing"* by James Lewis studies the relationship between personal well-being and household income and expenditure (2014).

Individuals with higher incomes illustrate higher life satisfaction and happiness, and lower anxiety, holding other factors fixed (Lewis, 2014). An increase in the ratio of household income from cash aid such as Housing Benefit and Jobseeker's Allowance is associated with lower well-being across all four measures (Lewis, 2014). Household expense represents to have a stronger relationship with people's life satisfaction, sense that the things they make in life are worthwhile, than families income (Lewis, 2014). This source was not closely connected to my topic however; it inspires me take into my consideration that household happiness is related to the things that they do more than the income they get.

The source "*The Effect of Customer Satisfaction on Consumer Spending Growth*" by Fornell, Rust and Dekimpe tested the implications of consumer satisfaction on expenditure growth (2010). The authors illustrate that the change in customer satisfaction, which participate in future demand, has a critical effect on spending growth. In addition, they find that customer satisfaction clarifies a good deal of expected growth in spending (Fornell, Rust and Dekimpe, 2010). However, it is moderated by raise in individuals' debt service ratio that impacts individuals' ability to spend (Fornell, Rust and Dekimpe, 2010). This source is beneficial to understand consumers' behavior in spending from customer satisfaction view and anther data set which is American Customer Satisfaction Index.

**Data and Main Variables**

The data used in the paper is the Surveys of Consumers by University of Michigan. The Surveys of Consumers has been managed by the Survey Research Center at the University of Michigan since 1946.

Each month, 500 individuals are randomly selected from the contiguous United States (48 states plus the District of Columbia) to participate in the Surveys of Consumers. The

questions asked cover three broad areas of consumer confidence: personal finances, business conditions, and future buying plans. The data period used in this study is monthly since 1997 until 2017.

The table 1 illustrates explanation about the variables and in which terms are represented in this paper. The dependent variable is the future buying circumstances of a vehicle (good time/ bad time to buy a vehicle). The main explanatory variable is Consumer Sentiment Index (CSI). Table 2 provides a summary Statistics of the variables that are used in the paper from the Consumer Survey.

**Research methods**

This paper results obtained from regression analysis which is a powerful tool used in finding the relationship below. The key benefit of regression analysis is to illustrate the critical variables which are matter in the spending behavioral. The regressions focus on future spending on vehicles.

$$y_{expected\ good\ time\ to\ buy\ a\ vehicle} = \beta_0 + \beta_1 x_{index\ consumer\ sentiment} + \beta_2 x_{better\ financial\ situation} + \beta_3 x_{worse\ financial\ situation} + \beta_4 x_{same\ financial\ situation} + \beta_5 x_{expected\ better\ financial\ situation} + \beta_6 x_{intrest\ rate\ go\ up} + \beta_7 x_{intrest\ rate\ go\ down} + \beta_8 x_{intrest\ rate\ stay\ same} + \beta_9 x_{price\ up} + \beta_{10} x_{price\ down} + \beta_{11} x_{good\ time\ financially} + \beta_{12} x_{bad\ time\ financially} + \beta_{13} x_{inflation} + \beta_{14} x_{less\ unemployment} + \beta_{15} x_{more\ unemployment} + \beta_{16} x_{same\ unemployment}$$

The table 3 shows the regression results here $y$ is the predicted of expectation about future to be a good time to buy a vehicle. The regression coefficient associated with Index of Consumer Sentiment is 0.81 suggesting that each one unit increase in Index of Consumer

Sentiment is associated with a 0.81-unit increase in expected good time to buy a vehicle. The association between CSI and expected good time to buy a vehicle is also statistically significant.

The analysis results illustrate a significant positive relationship between CSI and consumer's optimism about future spending on vehicles. The figure (1) is time-series analyses of the dependent variable and CSI. As the graph shows that the overall trend of CSI and the expectation about future to be good time to buy a vehicle are in the same directions. Which increased during 1997 to 2000 while through 2001 and 2008 it sharply dropped. However, during 2002 to 2004 and 2009 to 2011the curves trend in opposite directions where the consumer expectation of future as good time to buy a vehicle has upward trend more than CSI. In 2008, consumers agree that is not a good time to spend and were pessimistic about economy because of the 2008 financial crises.

The regression coefficients of reference past financial situation (better, same, worse) are 0.67, 0.91, and 0.82 respectively. The association between previous finance situation and expected good time to buy a vehicle is not statistically significant p- value respectively are 0.27, 0.13, and 0.18. The past finance situation does not really have a major effect on consumer decision for the future spending on vehicles.

The expectation of better financial situation in the next year shows statistically significant relationship with view of the future as a good time to buy a vehicle. The regression coefficient is 0.29 which states every unit increase in it, we expect o,29-unit increase in $y$, holding all other variables constant.

The expected change in interest rate also demonstrates statistically significant relationship in all its cases (go down, go up, and stay the same). The regression coefficients are 0.67, 0.76, and 0.91 respectively. Also, inflation regression coefficient is -0.37 means inflation

has an inverse relationship with forecasting a future as a good time to buy a vehicle. The other variables like business conditions in the country (good /bad) and the unemployment rate illustrate not statistically significant in the model.

In addition, the regression coefficient expected changes in prices to go down associated with it is o.73 suggesting that each one unit increase in the expectation of prices to go up is associated with a 0.73-unit increase in $y$ and it is statistically significant.

The $R^2$ is 0.67 which illustrates the greatest indication of the strength of the relationship. That means 67% of the variation in dependent variable can be explained by the regression. The figure 2 shows the data is normally distributed.

The previous model analyzes the consumers' optimism of future buying conditions while the model below will closely study the opposite view.

$$y_{expected\ bad\ time\ to\ buy\ a\ vehicle} = \beta_0 + \beta_1 x_{index\ consumer\ sentiment} + \beta_2 x_{better\ financial\ situation} + \beta_3 x_{worse\ financial\ situation} + \beta_4 x_{same\ financial\ situation} + \beta_5 x_{expected\ better\ financial\ situation} + \beta_6 x_{intrest\ rate\ go\ up} + \beta_7 x_{intrest\ rate\ go\ down} + \beta_8 x_{intrest\ rate\ stay\ same} + \beta_9 x_{price\ up} + \beta_{10} x_{price\ down} + \beta_{11} x_{good\ time\ financially} + \beta_{12} x_{bad\ time\ financially} + \beta_{13} x_{inflation} + \beta_{14} x_{less\ unemployment} + \beta_{15} x_{more\ unemployment} + \beta_{16} x_{same\ unemployment}$$

The table 4 demonstrates the regression analysis outputs. The regression coefficient associated with Index of Consumer Sentiment is -0.54 telling that each one unit increase in Index is associated with a 0.54 unit decrease in future as bad time to buy a vehicle. That provides statistical evidence of a negative relationship between the variables. The increase in the first variable will cause the decrease in the second variable. Which makes sense as people confidence about future they do not expect future as bad time to spending.

As the time-series analyses figure (3) illustrates the inverse movements of the dependent variable and ICS curves. The graph shows that as ICS trends upward the minority of consumers predict future to be bad time to buy a vehicle and the opposite when ICS trends downward the majority of consumer forecaster future as bad time to purchase a vehicle. That is obvious during the 2008-financial crises as shown in the graph.

The regression coefficients of reference past financial situation (better, same, worse) are -0.98, -1.10, and -1.01 respectively. The association between past finance situation (better, worse) and predict of future as a bad time to buy a vehicle is not statistically significant but when consumers do not expect any changes in her income. It demonstrates an inverse relationship and significant. Which means as consumer knows her financial situation she is certain about future is not bed time to spending.

The regression coefficient of predict future as better financial situation is -0.51. That indicates an inverse relationship between the variables. As individuals are forecasting their financial situation to be better in the next period, minority would agree about future as bad time to spend. On the other hand, the expected changes in interest rate do not demonstrates statistically significant relationship in all its cases (go down, go up, and stay the same).

Expected changes in prices show a statically significant relationship. When individuals expect prices to go down the regression coefficient associated with it is -0.61 suggesting that each one unit increase in the expectation prices to go up is associated with a 0.61-unit decrease in $y$. As well as when the individuals believe the prices will go up its regression coefficient is -0.24 which represents an opposite relationship.

The regression coefficient of good business conditions in the country is 0.20 and it is statistically significant. On the other hand, the business conditions in the country if it is bad,

inflation, and unemployment rate illustrate not statistically significant in the model. The $R^2$ is 0.77. That means 77% of the variation in dependent variable can be explained by the regression. The figure 4 shows the data is normally distributed.

**Conclusion**

This paper analyzes two models to understand the expectations of consumers' spending. The first model is about the consumers 'optimism regard buying conditions of a vehicle while the second model is about the pessimistic point of view. The paper infers that consumer sentiment significantly illustrates information about consumer future spending. As the regressions result is shown when CSI increases the individuals expect future to be a good time to purchase a vehicle and minority thank its bad.

Past personal finance situation does not demonstrate information about expectation of consumer spending in the first model while in the second model it shows as individuals income stay the same, they do not think it's a bad time to buy. On the other hand, consumer's optimism regard financial situation in the future shows statistically significant relationship with future spending in a vehicle in both models. However, it is positive with viewing future as a good time and negative when viewing future as bad time.

The expected changes in interest rate illustrates statistically significant relationship in the first model but not in the second model. Also, inflation shows an inverse relationship with forecasting of future as a good time to buy a vehicle in the first model while in the second model does not have any impact on the dependent variable.

In addition, expected change in prices show a statically significant result in both models but have different impact on the models. When, individuals expect prices to go down that shows a positive relationship with buying conditions (good) in the first model while in the second

model when they expect prices to go down the regression states an inverse relationship. The models' variables are considerable to realize the important factors that affect consumer future expenditure.

## Appendix

**Table 1:** Data variables

| Category | Survey questions | Variables in the model |
|---|---|---|
| Personal Finances | Individuals were asked are if they have better off or worse off financially compare to a year ago and if they expect better off financially, worse off, or just about the same as now. | variables are better financial situation compared with a year ago, same financial situation compared with a year ago, worse financial situation compared with a year ago, expected better off financial situation in a year, expected same financial situation in a year, and expected worse financial situation in a year |
| Spending in care condition | They were asked in about future spending are if the next year is a good time or a bad time to buy vehicles. | spending's variables are presented by good time to buy vehicles and bad time to buy vehicles). |
| Unemployment rate | The question is if they think unemployment will be more than now, about the same, or less | variables are unemployment, same unemployment, and less unemployment. |
| Interest rate | The question is if interest rates for borrowing money during the next 12 months will go up, stay the same, or go down. | variables are interest rates go up, stay the same, and go down |
| Prices | The question is if prices in general will go up, or go down, or stay where they are now and by what percent you expect prices to go up during the next 12 months. | Variables are prices down, prices same, prices up by 1-2%, prices up by 3-4%, prices up by 5%, prices up by 6-9%, prices up by 10-14%, and prices up by 15%+. |
| Inflation | Expected change in inflation | variable is inflation. |

| | | |
|---|---|---|
| Business conditions | The survey asked if we will have good times financially or bad times during the next 12 months. | variables are showed by good times financially and bad times financially. |
| Consumer Sentiment Index | | Consumer Sentiment Index(CSI) |

**Table 2: a statistical summary of Consumer Survey.**

summary statistics

| Statistic | N | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Month | 243 | 6.44 | 3.47 | 1 | 12 |
| Year | 243 | 2,006.63 | 5.86 | 1,997 | 2,017 |
| Index.of.Consumer.Sentiment | 243 | 87.04 | 13.51 | 55.30 | 112.00 |
| Better.Financial.Situation.Compared.with.a.Year.Ago | 243 | 39.12 | 9.68 | 16 | 57 |
| Same.Financial.Situation.Compared.with.a.Year.Ago | 243 | 28.08 | 3.41 | 17 | 37 |
| Worse.Financial.Situation.Compared.with.a.Year.Ago | 243 | 32.62 | 10.07 | 15 | 61 |
| Expected.Better.Off.financial.situation.in.a.year | 243 | 34.74 | 7.07 | 20 | 49 |
| Expected.Same.financial.situation.in.a.year | 243 | 50.80 | 3.95 | 41 | 60 |
| Expected.Worse.financial.situation.in.a.year | 243 | 11.98 | 4.37 | 3 | 25 |
| Less.Unemployment | 243 | 17.30 | 6.26 | 3 | 36 |
| Same..Unemployment | 243 | 49.13 | 8.05 | 20 | 64 |
| More.Unemployment | 243 | 32.53 | 11.07 | 16 | 69 |
| Interest.Rates.Go.Up | 243 | 53.79 | 13.84 | 25 | 85 |
| Interest.Rates.Stay.the.Same | 243 | 32.77 | 9.71 | 11 | 57 |
| Interest.Rates.Go.Down | 243 | 11.56 | 8.94 | 3 | 46 |
| Prices.Down | 243 | 3.44 | 3.21 | 0 | 23 |
| Prices.Same | 243 | 14.61 | 6.03 | 3 | 34 |
| Prices.Up.by.1.2. | 243 | 20.12 | 5.46 | 5 | 34 |
| Prices.Up.by.3.4. | 243 | 22.16 | 3.91 | 10 | 33 |
| Prices.Up.by.5. | 243 | 15.06 | 2.69 | 7 | 23 |
| Prices.Up.by.6.9. | 243 | 4.13 | 1.39 | 1 | 9 |
| Prices.Up.by.10.14. | 243 | 7.78 | 2.56 | 3 | 19 |
| Prices.Up.by.15.. | 243 | 2.33 | 1.61 | 0 | 11 |
| Prices.Up..DK.how.much | 243 | 9.42 | 2.20 | 5 | 16 |
| Good.time.to.buy.Large.Household.Goods | 243 | 69.28 | 8.88 | 41 | 84 |
| Bad.time.to.buy..Large.Household.Goods | 243 | 148.02 | 18.66 | 88 | 182 |
| Good.time.to.Buy.Vehicles | 243 | 64.58 | 5.97 | 43 | 79 |
| Bad.time.to.Buy.Vehicles | 243 | 27.35 | 7.49 | 13 | 52 |
| Good.time.to.Buy..Houses | 243 | 74.47 | 6.65 | 57 | 89 |
| Bad.time.to.Buy..Houses | 243 | 22.11 | 7.01 | 7 | 41 |
| Good.Times.financially | 243 | 43.86 | 14.87 | 12 | 77 |
| Bad.Times..financially | 243 | 42.89 | 15.39 | 12 | 81 |
| Inflation | 243 | 4.26 | 2.14 | 1.80 | 10.40 |

**Table 3: regression model I**

Regression result

| | Dependent variable: |
|---|---|
| | Good.time.to.Buy.Vehicles |
| Index.of.Consumer.Sentiment | 0.81*** |
| | (0.21) |
| Better.Financial.Situation.Compared.with.a.Year.Ago | 0.67 |
| | (0.62) |
| Worse.Financial.Situation.Compared.with.a.Year.Ago | 0.91 |
| | (0.61) |
| Same.Financial.Situation.Compared.with.a.Year.Ago | 0.82 |
| | (0.62) |
| Expected.Better.Off.financial.situation.in.a.year | 0.29*** |
| | (0.09) |
| Interest.Rates.Go.Down | 0.68** |
| | (0.30) |
| Interest.Rates.Go.Up | 0.77*** |
| | (0.29) |
| Interest.Rates.Stay.the.Same | 0.91*** |
| | (0.30) |
| Prices.Up..DK.how.much | -0.07 |
| | (0.13) |
| Prices.Down | 0.73*** |
| | (0.13) |
| Good.Times.financially | -0.15 |
| | (0.10) |
| Bad.Times..financially | 0.21* |
| | (0.11) |
| Inflation | -0.37* |
| | (0.21) |
| Less.Unemployment | 0.52 |
| | (0.33) |
| More.Unemployment | 0.28 |
| | (0.32) |
| Same..Unemployment | 0.35 |
| | (0.32) |
| Constant | -212.63*** |

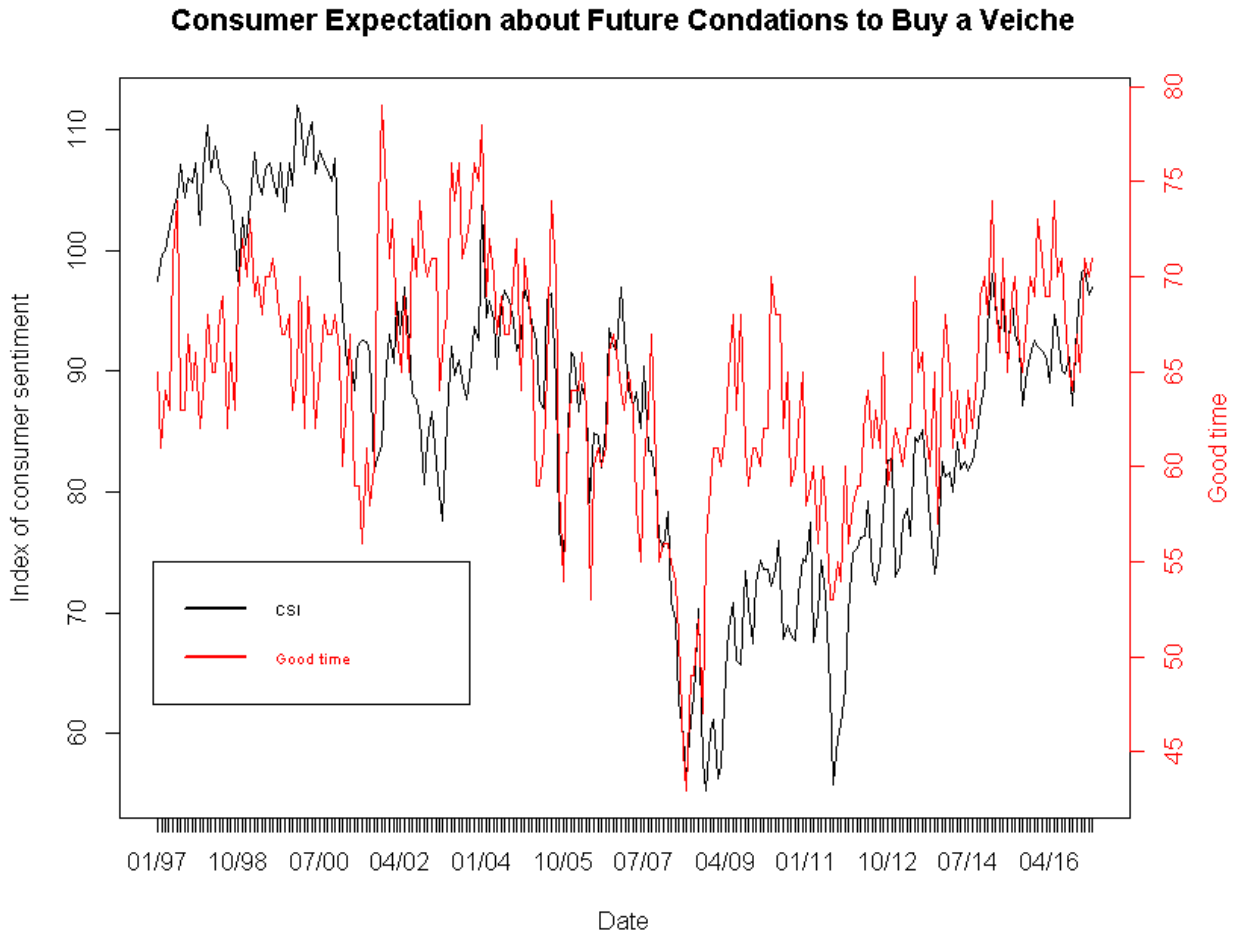
| | |
|---|---|
| | (70.32) |
| Observations | 243 |
| R2 | 0.67 |
| Adjusted R2 | 0.64 |
| Residual Std. Error | 3.56 (df = 226) |
| F Statistic | 28.42*** (df = 16; 226) |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

**Table 4: regression model II**

Regression result

| | Dependent variable: |
|---|---|
| | Bad.time.to.Buy.Vehicles |
| Index.of.Consumer.Sentiment | -0.54** |
| | (0.22) |
| Better.Financial.Situation.Compared.with.a.Year.Ago | -0.98 |
| | (0.65) |
| Worse.Financial.Situation.Compared.with.a.Year.Ago | -1.01 |
| | (0.65) |
| Same.Financial.Situation.Compared.with.a.Year.Ago | -1.10* |
| | (0.65) |
| Expected.Better.Off.financial.situation.in.a.year | -0.51*** |
| | (0.10) |
| Interest.Rates.Go.Down | 0.34 |
| | (0.32) |
| Interest.Rates.Go.Up | 0.26 |
| | (0.31) |
| Interest.Rates.Stay.the.Same | 0.14 |
| | (0.32) |
| Prices.Up..DK.how.much | -0.24* |
| | (0.13) |
| Prices.Down | -0.61*** |
| | (0.13) |
| Good.Times.financially | 0.20* |
| | (0.11) |
| Bad.Times..financially | -0.03 |
| | (0.12) |
| Inflation | 0.22 |
| | (0.22) |
| Less.Unemployment | -0.44 |
| | (0.35) |
| More.Unemployment | -0.27 |
| | (0.34) |
| Same..Unemployment | -0.30 |
| | (0.34) |
| Constant | 199.14*** |
| | (74.25) |
| Observations | 243 |
| R2 | 0.77 |
| Adjusted R2 | 0.75 |
| Residual Std. Error | 3.76 (df = 226) |
| F Statistic | 46.06*** (df = 16; 226) |
| Note: | *p<0.1; **p<0.05; ***p<0.01 |

**Figure 1**


Consumer Expectation about Future Condations to Buy a Veiche
Index of consumer sentiment
Good time
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07/00
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07/14
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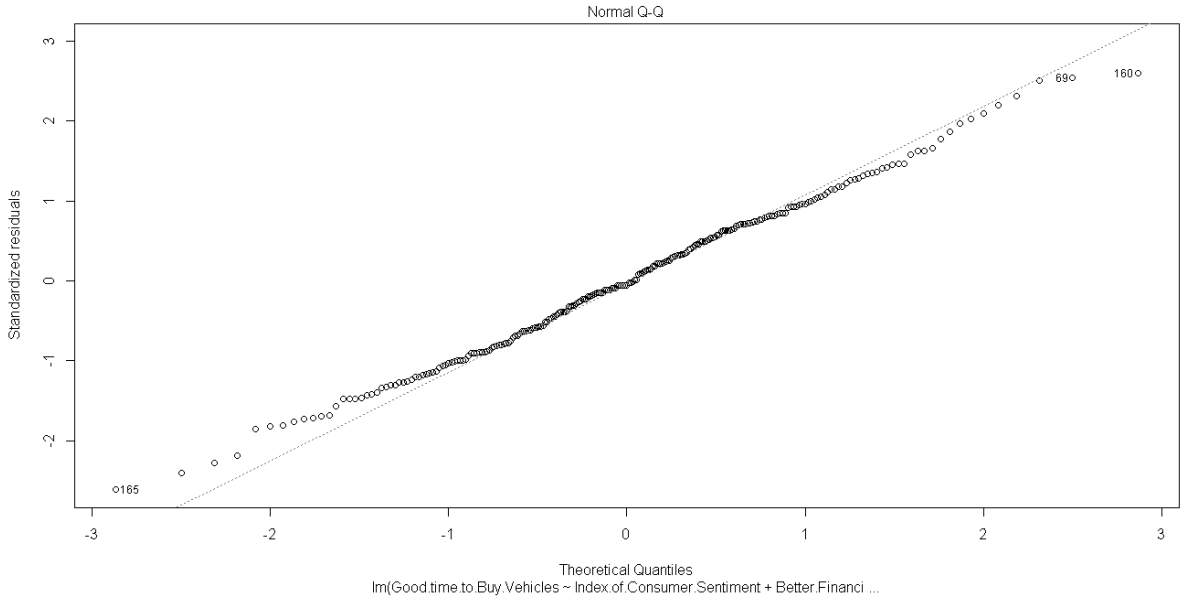
Date

**Figure (2)**


Normal Q-Q
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165
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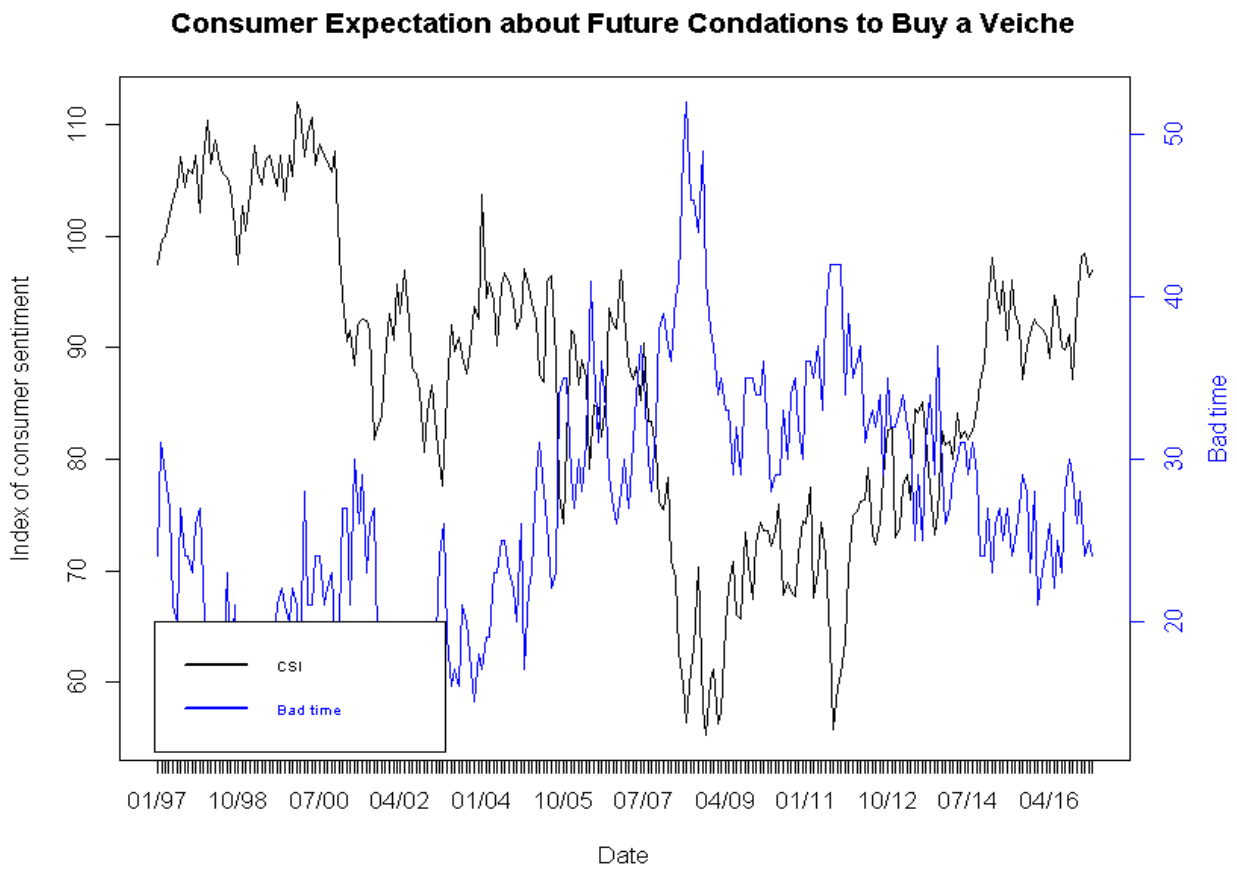
**Figure 3**


Consumer Expectation about Future Condations to Buy a Veiche
Index of consumer sentiment
60
70
80
90
100
110
Bad time
20
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csi
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01/97
10/98
07/00
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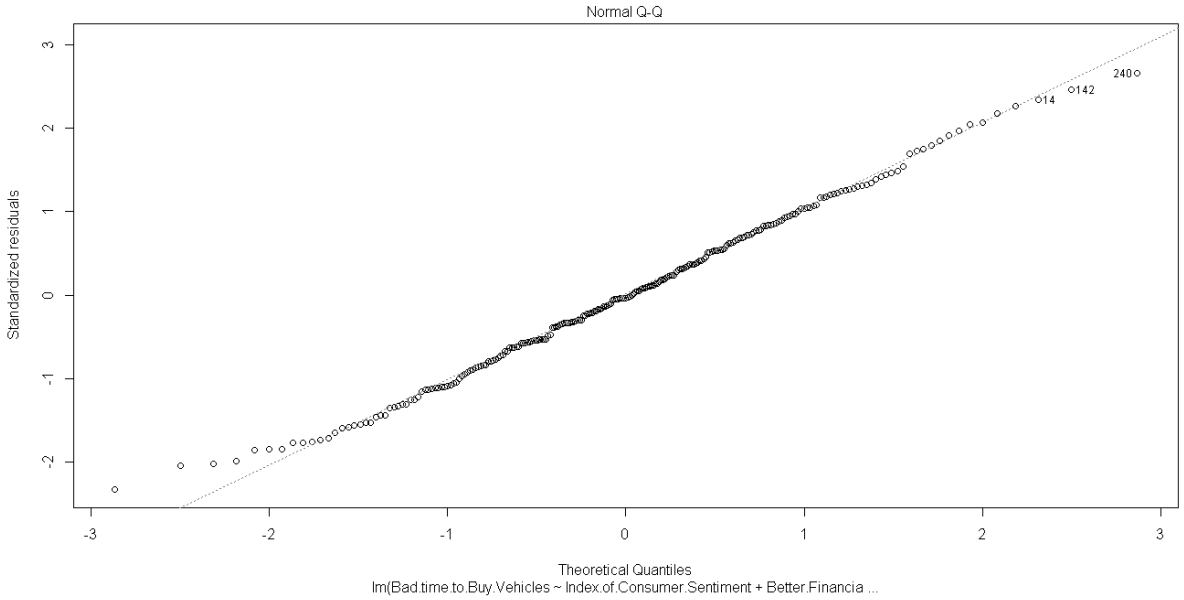
07/14
04/16
Date

**Figure 4**


Normal Q-Q
Standardized residuals
Theoretical Quantiles
lm(Bad.time.to.Buy.Vehicles ~ Index.of.Consumer.Sentiment + Better.Financia ...
240
142
14

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Surveys of Consumers University of Michigan . (n.d.). Retrieved April & may, 2017, from http://www.sca.isr.umich.edu/charts.html