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Consumer Confidence in Recovery Period From a Microeconomic Perspective

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An abstract of
a thesis submitted to the Faculty of Emory College of Arts and Sciences
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Abstract
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Consumer Confidence is an economic indicator, which measures the degree of optimistic that consumers feel about the overall status of the economy and their personal financial situations. People's confidence in the economy or their personal financial situation will significantly influence their purchasing decisions. As many scholars have done research on relationship between macroeconomic data and consumer confidence, few work have focused on how do those macroeconomic factors affect consumer confidence within different demographic groups.

Using OLS regression method, I derive data from Survey of Consumer Behavior and Attitude and use the Index of Consumer Expectation as the proxy for consumer confidence. I used four groups of variables to examine the effect of macroeconomic and microeconomic factors: macroeconomics factors, personal characteristics, news heard and their interactions. I observe the macroeconomic effects on consumer confidence with respect to confidence in government, holding stocks or not, gender, income level and education.

I find that not only macroeconomic factors affect people's expectation towards future economy; their effects are weighted by different demographic characteristics. People with different gender, education level, confidence in government, financial instrument holdings and income level have different sensitivity and response differently to variation of macroeconomic data. Also, men and people who are confident in the government tend to be more optimistic about the economy intuitively compared with other demographic groups.

Given these findings, government and financial service institutions issue take demographic characteristics into consideration when issuing stimulus and financial products. Understanding the different effect of macroeconomic on consumer confidence would help them to better interpret consumer confidence in economic analysis and evaluating financial confidence and find more efficient approach to stimulate consumption.

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1. Introduction & Literature review

The early 2000s recession was a drastic decline in economic conditions, which mainly occurred in the developed countries. From 2001, the Federal Reserve initiated a move to quell the stock market, caused successive inflation in interest rate, thus "plunging the country into" the worldwide economic recession (Ruddy, 2006). The annual GDP growth rate dropped below 1% along with significant downturn on U.S. housing and stock market. From 2002, the economy started to recover from the recession: the GDP growth rate slightly increased every month, the monthly house price index increased and the S&P index increased with an approximate one year lag. The year 2002 and 2003 are the "golden age" of recovery. The annual GDP growth rate increased to 2%-3% and the housing price index increases significantly with a slight increase in stock prices in 2003. Interestingly, although the GDP growth rate and the house price index started to increase in 2002, the stock market remained in recession until the end of the year.

Consumer Confidence is an economic indicator, which government should take specific actions to improve to accelerate the process of economic recovery. People's confidence in the economy or their personal financial situation will significantly influence their purchasing decisions.[1] A booming economy is likely to generate a belief that current financial investments will gain valuable profits in the future; a strong trend in investment will be amplified by rising confidence since people are willing to spend more money in the market. Also, people tend to make bold investment decisions when they are optimistic about the economy. In the recovery period, if consumers were confident in the economy, their increasing spending and investment

[1] Carroll, Fuhrer and Cox (1994) and Bram and Ludvigson(1998) find that improvements in consumer sentiment

would increase the rate of recovery, which is vital to the recovery process. Therefore, studying the determinants of people's attitude towards the economy would be important for both companies and policy makers: investors can make wise investment decisions based on their target customers' characteristics and policy makers can adjust the policy to instill confidence in the economy, thus further stimulate the economics growth rate.

This paper aims to answer two questions: what characteristics, both demographically and economically, determine people's perception of the economy and people's confidence in U.S. economy. How do macroeconomic factors influence consumer confidence in different groups of people? I used data from Survey of Consumer Attitude and Behavior by University of Michigan, Survey Research Center and examine the relationship between the Index of Consumer Expectation and four categories of parameters: demographic variables, macroeconomic factors, news heard and their interactions to observe interacting effect of demographic factors and macroeconomic factors. In Part 1, I introduced the methodology, variables and data I used in this project. In Part 2, I analysis the general effects of macroeconomic factors and social demographic characteristics and have a more detailed analysis for each of social demographic groups. In Part 3, specific results and analysis are given for the models. Section 3.1 observes the basic and ordinary effect of the macroeconomic and microeconomic factors on consumer confidence while section 3.2 to section 3.6 gives a closer look on interactive effect micro and macro factors have on the consumer confidence.

In the popular press and much of the business communities, it is always a saying that consumer confidence has significant impact in macroeconomics. It is important to measure

consumer confidence because it plays an important role both in prediction and in understanding the causes of business cycles. However, on the other hand, there are rather limited academic literatures on macroeconomic effects for consumer confidence. There are two common roles to study the consumer confidence and the macroeconomics: one is animal spirits view and the other is information and news view (B.Barsky and R.Sims). In B. Barsky and R. Sims work, the empirical results show that "fundamental news is the main driving force behind the observed relationship between confidence and subsequent economic activities" while animal spirits shocks have only limited impact on consumer confidence. B. Barsky and R. Sims' work explore the correlation between economic information and news and consumer confidence, but they do not specify how the macroeconomic factors influence consumer confidence in the economy.

While it is generally assumed that monthly reports of the nation's level of consumer confidence responds to objective economic conditions, politics is also an important factor for understanding consumer confidence beyond what we know from economic conditions.[2] They demonstrate a direct effect of political evaluations as well as an indirect effect of media coverage of the economy and presents evidence that the economic expectations are significantly influenced by political events.

As scholars believe that rising stock market may stimulate consumers' consumption, Jansen and Nahuis(2002) studies the short run effect the stock market developments had on consumer confidence with empirical evidence from eleven European countries over the year 1986-2001. Their study shows that the consumer confidence is positively correlated with stock prices. In

[2] Boef and M. Kellstedt(2004)

addition, their work states that the stock returns Granger-cause consumer confidence with a short horizon of two weeks to one month, not vice versa, thus indicating that stock market variation cause changes in consumer confidence.

Besides the macroeconomic factor and political effect，it is reasonable to assume that people's perception of the risk and economy can vary as a function of demographic characteristics associated with other social economics factors.

2. Data and Methodology

Methodology

I choose the Index of Consumer Expectation provided in the survey as the measure of consumer confidence. The higher the index, the more optimistic people are, thus indicates stronger confident in the economy.

I utilize the OLS regression model to observe the effect of those variables on consumer confidence with cluster of the time (Month).

The regression equation is:

$$ICE_{i,t} = \beta_0 + \sum \beta_k \, Personal\ Characteristics_{k,i,t} + \sum \beta_k \, Macroeconomics\ Factors_{k,t} + \sum \beta_k \, News_{k,i,t} + \sum \beta_k \, Interactive\ Variables_{k,i,t} + \varepsilon_{i,t}$$

Where ICE is Index of Consumer Expectation provided in the Survey. *Personal Characteristics* refer to a group of demographic characteristics that may influence consumer confidence,

Macroeconomics Factors are variables of macroeconomic indicators, and *News* is a group of four variables that refer to four different types of News that effect people's expectation of the economy. In addition, I incorporate interactive variables to observe the specific effect of some characteristics on consumer confidence.

Data

For this project, I use data from the monthly survey of Consumer Attitudes and Behavior, conducted by the Survey Research Center of University of Michigan in the years 2002 and 2003. There are approximately 500 participants in each survey and every participant is asked to answer questions on their personal information, financial condition, expectation for personal finance and economy, holdings of vehicles and stock. The survey was conducted by phone interview, and the participants include people with different age, education and race across the U.S. I utilize data from participants' personal characteristics, including race, education, income and age. Also, Macroeconomic indexes and objective reasons provided in the questionnaire are used to study the determinants of people's optimism towards the economy and business condition.

In order to avoid the bias from missing data, I constrained my data to observations that had response to the question "Now turning to business conditions in the country as a whole – do you think that during the next 12 months we'll have good times financially or bad times, or what?" Table 3.1 presents the summary statistics of the remaining 7247 observations. Since some of the variables have missing data, the number of observations varies per variable. Appendix I describes the definition and explanation of values of each variable.

Observe from table 3.1 and information from Appendix I, the dataset can represent attitude of the general population since it represents a nice spread of age group, education level, income level and gender and race. I expect to see large dispersion on the optimism between different age and gender because of the social stereotypes and their roles in family and society. In real life, ethnicity may also be an important factor on consumer confidence: because of different cultural rituals and backgrounds, people of different race may hold different opinions of the economy given the same business condition.

Variables

I choose the Index of Consumer Expectation (ICE) to measure consumer confidence for future economy and business condition. The description of the Index is given in the Appendix II.

I use four different groups of parameters to study the determinants that effect people's optimism about the economy: personal characteristics, macroeconomic factors, interactive variables, experiences and news heard.

I derive demographic characteristics from the Survey with individual level data. Demographical characteristics include basic personal information like age, gender, race, education level and income level. However, in the survey I used, the participants were predominately "white except Hispanic", which is significantly biased statistically, I did not include this parameter in my regression function. (table 3.2)

Education and income level determine their understanding of how the economy works, thus affect their expectations for their personal finance or macroeconomics. I also take holdings of

stocks into consideration since people with financial assets may be more conscious about changes in the economy, thus will be more optimistic when they see improvements in business condition in the recovery period.

Economic reality structures the economy subjectively: people feel more optimistic about the future economy when they see the present economy is good or they are currently in a good financial condition. Therefore, I expect that the economic condition forms the foundation of consumer expectation, then, variation in the index of consumer expectation would be directly or indirectly correlated with the macroeconomic condition. I derive monthly inflation rate, unemployment rate and term spread (calculated with 5-year treasury bill rate minus federal reserve rate) to present the current macroeconomic condition. When unemployment rate is high, consumers may be pessimistic about the economy, then I expect a negative correlation between ICE and unemployment rate. The term spread is an indicator of good economy, thus a positive relationship is expected. However, inflation rate is a different story: a booming economy has a rising inflation but if inflation is too high, the economic system would very risky. Therefore, the effect of inflation rate would depend on consumers' interpretations. Also, I choose the monthly S&P500 index to present the condition of stock market. A rising stock market may make consumers feel better about the future, thus induce consumers to spend more.

I derive data for media and news effect mainly from the survey question:

"During the last few months, have you heard of any favorable or unfavorable changes in business conditions? What did you hear? (Have you heard of any other favorable or unfavorable changes in business conditions?)"

I generate four dummy variables according to four categories of news: government and defense, employment and purchasing power, prices and miscellaneous news. The specific news was listed in Appendix V. I coded favorable changes as 1 and unfavorable changes as -1 in the dummy variables; if the participants did "hear" news in one category, the dummy variable equals zero.

In addition, I believe that some financial or educational difference may add some edge on conceiving the news or interpreting the macroeconomic data. For instance, people who hold stocks may concern more about the S&P500 index, thus that index may weigh more on consumers' expectations for the economy. Therefore, I incorporated groups of interactive variables to observe the difference of certain effects on consumer confidence. Appendix I gives the summary of variable descriptions.

The dummy variable "*gov*" is derived from the question "As to the economic policy of the government – I mean steps taken to fight inflation or unemployment –would you say the government is doing a good job, only fair, or a poor job?" It is often assumed that economics drives politics, while both intuition and evidence suggest that politics influences consumer confidence. Boef and M.Kellstedt (2004) state:

> *"Simple intuition tells us that it is quite sensible to suspect that confidence in the future of the economy – something that is remarkably difficult to predict, particularly in an era of increased global interdependency – would be, to some extent, at least, a function of confidence in the country's political leadership. If people have confidence in the political leaders who shape economic policy, this may enhance their confidence in the future of the*

economy."

Therefore, I believe that confidence/trust in government would make a difference on people's sensitivity on macroeconomic changes or policy changes thus will influence their confidence in the economy.

3. Results & Analysis

As for the three parameters that are used to calculate ICE, I summarized people's confidence on personal finance and U.S. Economy of 2002 and 2003 in Appendix III. Observed from the data, over 90% of the population feel confident in their personal finance for next year. For the macro economy, people were not so happy with the current situation at the beginning of 2002, but more people felt the process of recovery as time passes. As for the prediction of next year, the participants consistently hold an optimistic attitude. The trend of increasing confidence is most obvious for the "economy this year" section. As time passes, more people feel confident for 2002 economy compared with that of the year 2001, and consumers hold positive attitude toward the future economy in 2003. I observed the most significant increase in optimism for the prediction of the economy in next 5 years: at the beginning of 2002, there are only approximately 40% participants that are optimistic about the economy for next year; the end of 2002, the percentage of optimistic participants increased to 50%.

If we look at the distribution of ICE of the beginning of this period and the end of the period (Figure 1 and Figure 2), compared with January 2002, there is an obvious move to the higher ICE end in December 2003. This trend indicates that consumer's expectation Index is getting

higher, which applies to the recovery of economy in 2002 and 2003.

Section 3.1 Model 1 : Macroeconomic and Demographic Effects

First, I run the regression without interactive variables to observe the effects of personal characteristics, macroeconomic factors and different categories of news heard. According to Appendix IV, region is an insignificant variables on a 90% significance level. Therefore, according to the data in this survey, region does not have any effect on consumer confidence (or ICE) statistically

I decided to drop that variable. The new statistics is summarized in table 3.1 Then, the function is:

$$ICE_{i,t} = \beta_0 + \beta_1\, AGE_{i,t} + \beta_2\, gender_{i,t} + \beta_3\, college_{i,t} + \beta_4\, inclevel_{i,t} +$$

$$\beta_5\, stock_{i,t} + \beta_6\, gov_{i,t} + \beta_7\, spread_t + \beta_8\, logsp_t + \beta_9\, i\square flation_t + \beta_{10}\, unemp_t +$$

$$\beta_{11}\, reasonpp_{i,t} + \beta_{12}\, reasonpr_{i,t} + \beta_{13}\, reasongo_{i,t} + \beta_{14}\, reasonm_{i,t} + \varepsilon$$

From table 3.1, we observe that all the variables are statistically significant parameters at 95% significance level of ICE, except for "*college*", "*spread*" and "*unemp*" which are significant at 90% significance level. For demographic characteristics, males and participants with college degrees and family annual income above 40,000 U.S. dollars, and participants who hold stocks are more optimistic about the economy. Interestingly, the coefficient of the variable AGE is a negative number, indicating that consumer confidence in the economy is negatively correlated with age. However, since the coefficient is only -0.32 (a relative small number, indicating that people with

small age difference may not have different optimistic, but large age gaps may result in different confidence level of the economy), age only have a small negative effect on people's optimistic, which may because "pessimism people live longer" (LiveScience).

We observe from table 3.1, as I expected, confidence in government is not only statistically significant correlated with consumer confidence, but also has a big effect with a coefficient of 24.3, which is the largest among the variables. Additionally, news heard from government policy and defense has the most influence among the four categories of news.

For the macroeconomic factors, ICE increases if S&P500 index and inflation rate increase. As a big part of the financial world, stock market is always an indicator of the economy as a whole, and the crush in stock market is usually the cause of severe economic recessions. However, from the regression statistics, I observe a negative coefficient on the logged S&P500 index, indicating that when stock price increases, people become less optimistic about the future economy. Considering the special time period, people may regard a rising stock market to risky, which may induces another economic crush, therefore consumers become nervous about the future when stock prices increases. Unexpectedly, *unemp* has a positive coefficient, thus indicating that consumers are more optimistic about the economy when unemployment rate increase, which contrasts with the common sense. The contrasts may due to misinterpretation of unemployment rate or omitted variable biases (since the R-square is on 0.32, indicates that the parameters could represents approximately 32% of the variation of ICE). As for the unemployment rate, people expect the government to take action to manipulate the economy, thus be optimistic about the future. Therefore, instead of being optimistic because of

unemployment rate, I would say that people be optimistic of government intervention.

Section 3.2 Model 2: Rule of Stock Holding

There are a lot research, and my statistics from model 1, that address stock market condition an inevitable effect in consumer confidence. Also, it is common sense that people would care more about things that they possessed. Then, I expect that people who hold stocks may be more (or less) sensitive about some aspects. Table 3.2.1 proves my expectation with a higher mean ICE (approximately 87.3) for people with stock holdings while people without stock holdings have lower mean ICE (approximately 73). Therefore, holding stocks do make people feel better about the future economy.

I replace the variable "stock" with several interactive variables.

$$
\begin{aligned}
ICE_{i,t} = \beta_0 + \beta_1\, AGE_{i,t} + \beta_2\, gender_{i,t} + \beta_3\, college_{i,t} + \beta_4\, inclevel_{i,t} + \beta_5\, gov_{i,t} \\
+ \beta_6\, spread_t + \beta_7\, logsp_t + \beta_8\, inflation_t + \beta_9\, unemp_t + \beta_{10}\, reasonpp_{i,t} \\
+ \beta_{11}\, reasonpr_{i,t} + \beta_{12}\, reasongo_{i,t} + \beta_{13}\, reasonm_{i,t} + \beta_{14}\, stom_{i,t} \\
+ \beta_{15}\, stopp_{i,t} + \beta_{16}\, stopr_{i,t} + \beta_{17}\, stogo_{i,t} + \beta_{18}\, stosp500_{i,t} \\
+ \beta_{19}\, stospread_{i,t} + \beta_{20}\, stoinf_{i,t} + \beta_{21}\, stounemp_{i,t} + \varepsilon
\end{aligned}
$$

After eliminating insignificant variables, the statistics is shown in table 3.2.2.

Still, the replacement of variables does not change the coefficient of other variables nor does it change the R-square. Therefore, the effect of holding stocks was presented by the interactive

variables: *stom* and *stosp500*. The coefficient of *stom* is the same with reason, indicating that people who hold stocks are more sensitive about miscellaneous news. Because financial market is closely related to information, favorable news may significantly increase the stock price (an unfavorable news may significantly decrease the stock price), therefore, the consumer confidence of consumers who buy stocks would be influenced more by miscellaneous news. From table 3.3.2 we see a positive coefficient for the variable *stosp500* and a negative coefficient for *logsp*, meaning that people who hold stocks are more conservative for changes in stock market. Those stockholders may be more conscious that stock market changes every second, so they would not change their expectation of the economy or personal finance due to small changes in the S&P500 index.

Section 3.3 Model 3: Rule of Income Level

Last but not least, I want to observe the effect of income level on consumer confidence. Table 3.3.1 shows that people who earn higher than 40,00 U.S. dollar annually would be more optimistic than people with lower than 40,000 U.S. dollar annual household income. High income people might feels better about the economy if they can maintain a above average income, while lower income population may suffer economically and their difficulty in personal finance results in a pessimistic personality.

The new model is:

$$ICE_{i,t} = \beta_0 + \beta_1 AGE_{i,t} + \beta_2 stock_{i,t} + \beta_3 gender_{i,t} + \beta_4 college_{i,t} + \beta_5 gov_{i,t}$$
$$+ \beta_6 spread_t + \beta_7 logsp_t + \beta_8 inflati\square n_t + \beta_9 unemp_t + \beta_{10} reasonpp_{i,t}$$
$$+ \beta_{11} reasonpr_{i,t} + \beta_{12} reasongo_{i,t} + \beta_{13} reasonm_{i,t} + \beta_{14} incm_{i,t}$$
$$+ \beta_{15} incpp_{i,t} + \beta_{16} incpr_{i,t} + \beta_{17} incgo_{i,t} + \beta_{18} incsp_{i,t}$$
$$+ \beta_{19} incspread_{i,t} + \beta_{20} incinf_{i,t} + \beta_{21} incunemp_{i,t} + \varepsilon$$

Table 3.3.2 summarized the statistics for model 6 after dropping insignificant variables.

Still, the replacement of variables does not change other variables' coefficients, except for the variable spread, not does it change the R-square by large scale. So the replacement can represents group difference between people with above average income and below average income on consumer confidence.

From the table, we see a positive coefficient, 4.4, of the variable *incspread*, indicates that people with above-average income levels tend to be more sensitive on changes of spread term while people with lower than 40,000 annual household income do not consider that indicator at all.

We also find a positive coefficient on *incinf*, which is opposite to the coefficient of inflation rate, indicating that people with high household income are less sensitive about the inflation rate. Similar to inflation, consumer with higher income level seems to be less sensitive to unemployment rate compared with consumer with lower income level.

Section 3.4 Model 4: Rule of Education

Experience and economic knowledge also play an important role in determining consumer

expectation towards economy. A business manager and financial analyst may interpret the stock price or term spread differently from a farmer. Therefore, assuming people gain knowledge in economics in college education, or they can interpret economic indexes more rationally and precisely than people who do not go to college, then I expect that a college diploma will make a difference in consumer confidence in general.

Statistics from table 3.4.1 validates my expectation and shows that consumer with college diploma are more optimistic about the economic condition because of its higher sample mean.

In model 4, I want to observe the effective factors on consumer confidence for people with college degree and people without college degree. Following the same approach:

$$\begin{aligned} ICE_{i,t} = \beta_0 &+ \beta_1\, AGE_{i,t} + \beta_2\, stock_{i,t} + \beta_3 gender_{i,t} + \beta_4\, inclevel_{i,t} + \beta_5\, gov_{i,t} \\ &+ \beta_6\, spread_t + \beta_7\, logsp_t + \beta_8\, inflation_t + \beta_9\, unemp_t \\ &+ \beta_{10}\, reasonpp_{i,t} + \beta_{11}\, reasonpr_{i,t} + \beta_{12}\, reasongo_{i,t} \\ &+ \beta_{13}\, reason\square_{i,t} + \beta_{14}\, colm_{i,t} + \beta_{15}\, colpp_{i,t} + \beta_{16}\, colpr_{i,t} \\ &+ \beta_{17}\, colgo_{i,t} + \beta_{18}\, colsp_{i,t} + \beta_{19}\, colspread_{i,t} + \beta_{20}\, colinf_{i,t} \\ &+ \beta_{21}\, colunemp_{i,t} + \varepsilon \end{aligned}$$

Results after eliminating insignificant variables are summarized in table 3.4.2.

The only significant interactive variables are *colsp* and *colunemp*. The positive coefficient on *colunemp* indicates that people with a college diploma would be more optimistic about the economy given the same unemployment rate. Or, we can say that people with college diploma

are more sensitive about changes in unemployment rate compared with people without college diploma. The difference may due to the education and knowledge one obtained from college may help them to interpret the unemployment rate differently from other people. However, since the coefficient is relatively small, having a college diploma or not may not affect people's optimistic towards the economy on a noticeable scale. The variable colsp has a positive coefficient, which is opposite to the coefficient of logsp. People who finished college education behave more rationally regarding changes in stock market, and their confidence in economy is not as sensitive to stock prices as people without college education do.

Section 3.5 Model 5: Rule of Gender

Among the four characteristics in demographic factors, gender makes the most difference, indicating that men are more optimistic about the economy in general than women. Statistics from table 3.5.1 further states the optimistic of male consumers.

In this model, I want to observe the difference of consumer confidence between male and female consumers. From the table 3.5.1, men are more optimistic about the economy than women in general (higher mean, and similar standard deviation). Then, how and why do male and females differentiate on consumer confidence?

In order to further study the effect of gender: whether it is a intuitive animal spirits between male and female or if it is due to difference in interpreting economic information between male and female, I followed the approach in previous models. Replaced the dummy variable *gender* , the model becomes :

$$ICE_{i,t} = \beta_0 + \beta_1\, AGE_{i,t} + \beta_2\, stock_{i,t} + \beta_3\, college_{i,t} + \beta_4\, inclevel_{i,t} + \beta_5\, gov_{i,t}$$
$$+ \beta_6\, spread_t + \beta_7\, logsp_t + \beta_8\, inflation_t + \beta_9\, unemp_t$$
$$+ \beta_{10}\, reasonpp_{i,t} + \beta_{11}\, reasonpr_{i,t} + \beta_{12}\, reasongo_{i,t}$$
$$+ \beta_{13}\, reasonm_{i,t} + \beta_{14}\, genm_{i,t} + \beta_{15}\, genpp_{i,t} + \beta_{16}\, genpr_{i,t}$$
$$+ \beta_{17}\, gengo_{i,t} + \beta_{18}\, gensp_{i,t} + \beta_{19}\, \square enspread_{i,t} + \beta_{20}\, geninf_{i,t}$$
$$+ \beta_{21}\, genunemp_{i,t} + \varepsilon$$

Table 3.5.2 shows the statistics after dropping insignificant variables.

Notice that although the replacement of the dummy variable *gender* does not significantly change the adjusted R-square or the coefficient of other variables, it made some variables in model 1 insignificant. Those variables are: *logsp, spread and unemp*. These three variables were replaced by the new interactive variables: *gensp and genunemp (these two variables are zero for female participants)*. Referring to the Appendix I, we know that *gensp* indicates the effect of S&P500 index on male consumers' confidence in the economy and *genunmep* indicates the effect of unemployment rate on male consumers' confidence in the economy. The elimination of *logsp, spread and unemp* indicates that S&P500 index, term spread and unemployment rate, in general, does not affect female's expectation in the economy. This statement may sounds too extreme, but it more or less reflects the difference aspect between men and women when thinking about the economy in the future. Besides, the positive coefficient on the variable *gengo* indicates that men concerns more about government policy or defense actions than women do.

Additionally, it is worth to note that the constant in the regression is significantly larger than the original constant. The change in constant indicates that there is a large portion of the difference between female and male consumers' optimistic that did not captured by the parameters. Besides the different perceptions and different angles to interpreting economic indexes, women and men are different in their intuitive optimistic towards the economy, which may due to the animal spirits.

Section 3.6 Model 6 Rule of Government Confidence

In this section, I tried to have a closer look on effect of government confidence on consumer confidence. From table 3.6.1, people with strong confident in government work tend to be more optimistic towards the economic condition (higher mean of ICE) while people with less confidence or no confidence tend to be pessimistic about the economy.

I incorporated interactive variables that examine the difference of other variables between consumers who are confident in government or not confident in government. I replace the variable *gov* with multiple interactive variables of government confidence.

$$
\begin{aligned}
ICE_{i,t} = \beta_0 + \beta_1\, AGE_{i,t} + \beta_2\, gender_{i,t} + \beta_3\, college_{i,t} + \beta_4\, inclevel_{i,t} + \beta_5\, stock_{i,t} \\
+ \beta_6\, spread_t + \beta_7\, logsp_t + \beta_8\, inflation_t + \beta_9\, unemp_t + \beta_{10}\, reasonpp_{i,t} \\
+ \beta_{11}\, reasonpr_{i,t} + \beta_{12}\, reasongo_{i,t} + \beta_{13}\, reasonm_{i,t} + \beta_{14}\, govm_{i,t} \\
+ \beta_{15}\, govpp_{i,t} + \beta_{16}\, govpr_{i,t} + \beta_{17}\, govgo_{i,t} + \beta_{18}\, govsp_{i,t} \\
+ \beta_{19}\, govspread_{i,t} + \beta_{20}\, govinf_{i,t} + \beta_{21}\, govunemp_{i,t} + \varepsilon
\end{aligned}
$$

The statistics of model 6 is summarized in Appendix IV. After dropping the insignificant variables, the results is shown in table 3.6.2. （for the convenience, I also summarized all coefficient for all the models in table 3.8）

The coefficients four variables in model 1 does not change a lot, then it shows that the interactive variables only shows the effect of having confidence in government or not, without effect other variables. From table 3.6.2, consumers who are confident in the government are more sensitive about changes unemployment rate changes. That observation proves the plausibility of my hypothesis in last model – increasing unemployment rate is an indicator for government intervention, while people's confidence in government makes them more optimistic about the future economy. Since *govsp* and *logsp* has opposite signs on their coefficient, people who are confident in the government cares less about the stock market. Also, the statistics shows that people who holds positive attitude for government care less about miscellaneous news. The decrease in inflation and miscellaneous new may due to they trust the government so much that they believe that the government can deal with those problems and make the economy better.

Section 3.7 Model 7 Taking lag into consideration

Since people use information and knowledge to adjust their expectations to the economy, the information should not be limited in the current time period. Macroeconomic data may have a lagged effect on consumers' confidence and expectation, therefore data from previous month, even previous several months should be take into consideration in my regression model. Among

the four significant macroeconomic variables S&P500 Index, spread term, inflation rate and unemployment rate, only S&P500 index has a significant lagged effect with one-month lag. The regression statistics is summarized in table 4.

From table 3.7, even though the coefficient on the variable logsp500 is still negative, the one-month lagged stock price variable *logsplag1* has a positive coefficient, indicating that when people observe high stock price from the previous month, they tend to be more optimistic about the economy.

However, with the inclusion of lagged stock price, unemployment rate and the spread term variables become insignificant because of strong collinearity. Since the purpose of this project is to observe specific effect macroeconomic factors have on consumer confidence, I want to observe more macroeconomic factors. In this section, after adding the lagged effect, there are only two macroeconomic factors left. Therefore, I use the significant variables in section 3.1 in the following models.

In model 2 to model 6, I replaced the variable gov, stock, gender, college and inclevel by groups of interactive variables respectively to observe specific effect those parameters have on consumer confidence. From table 3.8, I know that the coefficients of other variables did not change significantly considering the range of ICE ([2,134xxxx]) with the replacement of variables. The R-square did not change over the six models either, and all the six models could represent approximately 32% of the variation of the ICE. Notice that only the constants in model 2 and model 4 changed within a noticeable range, indicating that there is a small intuitive

difference in consumer confidence between people who trust the government and people who do not, and a large difference in consumer confidence between male and female.

4. Conclusion

This paper gives an overview of what kind of determinants, including personal characteristics, macroeconomic factors and media and news effects, would influence consumer confidence in the economy and how do those parameters influence consumer confidence. The results show that consumer confidence is closely related to macroeconomic factors and the information people gain in daily life. Difference in demographic characteristics also changes the weigh of macroeconomic effects and news effect.

I run six models in total to observe the general effect of the parameters and a closer look at different aspects of some characters. From the results, I observed that Age has a negative effect on consumer confidence with a small coefficient, indicating that when people become older, they become less optimistic about the economic condition. As indicators for the future economy, macroeconomic data also play an important role in people's estimating for the future economy. When the spread term increases, people become more optimistic about the economy and when inflation rate rises, people become nerves and tend to be pessimistic about the future economy. Interestingly, from the regression statistics, the logged S&P500 index (which is an important index for the stock market) is negatively correlated with the Index of Consumer expectation,

indicating that when the stock market increase, people get pessimistic about the future economy. This observation contradicts my expectation and common sense. Considering the special time period the survey was conducted (recovery period after the 2001 economic depression), people might be too nervous to interpret the S&P500 index rationally: people may consider the increase in stock market a signal for the next depression. Similarly, the positive coefficient on unemployment rate contradicts the common sense, indicating that people become more optimistic about the economy when the unemployment rate increases. That might be due to the fact that people expect the government to take action when the unemployment rate is high; people trust in government intervention, thus are optimistic about the future economy.

Among the four macroeconomic variables, S&P 500 index has a lagged positive effect of one month on consumer confidence. The higher the stock price in the previous month would result in higher consumer confidence in the current month. The lag effect can partially explain the negative coefficient on S&P500 index. Also, by adding the lagged stock price variable, the spread term and unemployment rate become statistically insignificant, indicating a strong collinearity between stock price and term spread.

Being a male, with a college diploma, having a higher than average annual income, holding stocks and being confident in the government's work are four demographic factors that make consumers more optimistic about the economy. In the following five models, I inspect the effect of those four demographic factors respectively using interactive variables.

If a consumer thinks the government is doing a good job, he/she will be more sensitive about changes in inflation rate and unemployment rate. Also, people care less about miscellaneous

news if they trust the government could take good care of the economy. Similarly, holding stocks or not, with or without a college degree and above or under average annual income make difference on how people interpreting different sources of information and how does that information weigh on their expectation of the future economy. However, gender does not only make a difference in perceiving economic indexes, but also induces a difference in their intuitive expectation towards the economy.

More studies can be done to build upon the research of this project. Also, the time period of the dataset is short due to the limited availability of the survey. With a longer time period, people can observe a clearer trend and correlation between macroeconomic factors and consumer confidence. In addition, the survey also provides an interview and re-interview ID number which could help to locate the same interviewer's response and observe the changes in their response in individual cases.

There are some findings that contradict with our common sense and need further empirical evidence and verifications. Why do people have a negative attitude about the raising stock market? We need further evidence to determine whether this unconventional attitude is a common phenomenon in the regression periods, a bias from the survey data or is it a common phenomenal in general? Also, the positive attitude towards unemployment needs further study to determine its generality. Empirical studies on other depression periods and in a booming economy time could be conducted to clarify those questions.

Consumer confidence is an important factor, both prognostic and causal, in macroeconomics while macroeconomic factors influences consumer's expectations and confidence with different

weight in different demographic groups. Government or financial service institutions should issue policies or offer services considering different demographic groups to increase consumer confidence. With a high confidence in the economy, consumers would be more willing to spend and invest, thus maximize the effect of economic policies and stimulate the development of the economy.

5. Figures and Graphs

Table 2.1. General Summary Statistics of Variables

Variable	Mean	Std. Dev.	Min	Max
Age	48.00	15.72	18	99
Education	4.38	1.23	1	9
Region	2.67	1.15	1	4
Race	1.45	1.35	1	9
Marry	2.21	1.65	1	9
Age group	3.78	1.48	1	9
		.		.
		Freq	Percent	Cum
	18-24 years	401	5.53	5.53
	25-34 years	1089	15.03	20.56
	35-44 years	1726	23.82	44.38
	45-54 years	1747	24.11	68.48
	55-64 years	1137	15.69	84.17
	65-97 years	1109	15.30	99.48
	NA	38	0.52	100.00
Observations	7247			

Table 2.2 Statistics Summary of RACE

RACE	Freq.	Percent	Cum.
WHITE EXCEPT HISPANIC	6,022	83.1	83.1
BLACK EXCEPT HISPANIC	496	6.84	89.94
HISPANIC (incl. interviews in Spanish)	362	5	94.94
AMERICAN INDIAN OR ALASKAN NATIVE	50	0.69	95.63
ASIAN OR PACIFIC ISLANDER	161	2.22	97.85
DK	17	0.23	98.08
NA	139	1.92	100
Total	7,247	100	

Figure 1 Distribution of ICE in Jan. 2002

Figure 2 Distribution of ICE in Dec. 2003

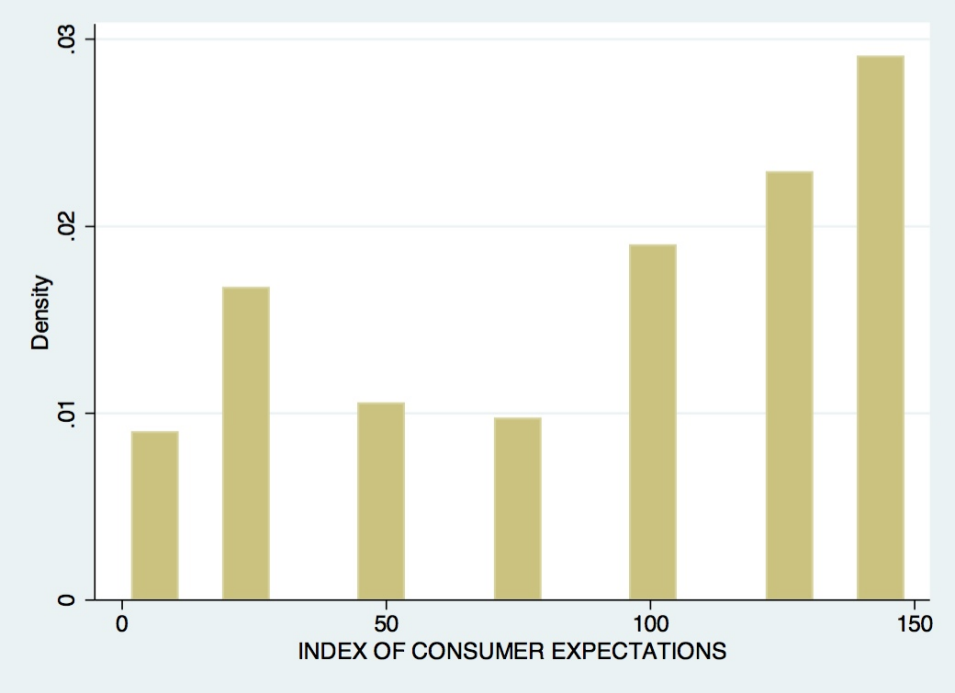

Table 3.1 Statistics Summary for Baseline Model

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3238984	0.0358095	-9.05	0	-0.3981627	-0.249634
gender	11.22518	1.116467	10.05	0	8.909771	13.54059
college	1.877224*[3]	1.106184	1.7	0.104	-0.4168618	4.171311
inclevel	2.842571	1.3	2.19	0.04	0.1465358	5.538607
stock	5.424561	0.9084236	5.97	0	3.540606	7.308516
gov	24.27562	0.8539873	28.43	0	22.50456	26.04668
Macroeconomic Factors						
spread	3.253595*	1.776854	1.83	0.081	-0.4313734	6.938564
logsp	-2.361965	0.8053968	-2.93	0.008	-4.032256	-0.6916748
inflation	-6.654362	1.498043	-4.44	0	-9.761113	-3.547611
unemp	8.830019*	5.354751	1.65	0.113	-2.275054	19.93509
News						
reasonpp	13.15989	0.8583638	15.33	0	11.37975	14.94003
reasonpr	8.020726	1.187797	6.75	0	5.557387	10.48407
reasongo	8.838801	1.337126	6.61	0	6.065771	11.61183
reasonm	9.883851	0.8999896	10.98	0	8.017387	11.75031
_cons	64.2705	26.04713	2.47	0.022	10.25206	118.289

[3] * : the coefficient is statistically significant at 90% significance level
otherwise, the coefficient is statistically significant at 95% significance level

Table 3.2.1 Summary of Variable *Stock*

ICE	Obs.	Mean	Std.Dev.	Min	Max
Holding Stocks	4484	87.29921	47.80214	2	147.8647
Not Holding Stocks	2440	72.91975	46.42724	2	147.8647

Table 3.2.2 Statistics Summary for *Stock*

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3232325	.035841	-9.02	0.000	-0.3975621	-0.2489029
gender	11.12994	1.130617	9.84	0.000	8.785181	13.47469
college	1.839987*	1.10228	1.67	0.109	-0.4460012	4.125976
inclevel	2.852507	1.299437	2.20	0.039	0.1576382	5.547375
gov	24.29773	.8540217	28.45	0.000	22.5266	26.06886
Macroeconomic Factors						
spread	3.177747*	1.758049	1.81	0.084	-0.4682244	6.823718
logsp	-2.926322	.8374498	-3.49	0.002	-4.663086	-1.189557
inflation	-6.735421	1.492626	-4.51	0.000	-9.830937	-3.639905
unemp	8.931336*	5.30519	1.68	0.106	-2.070955	19.93363
News						
reasonpp	13.11835	.8486952	15.46	0.000	11.35826	14.87843
reasonpr	7.908552	1.188844	6.65	0.000	5.443041	10.37406
reasongo	8.813446	1.339883	6.58	0.000	6.034699	11.59219
reasonm	7.412569	1.375093	5.39	0.000	4.560801	10.26434
Interactive Variables						
stom	3.678491	1.721791	2.14	0.044	0.1077156	7.249266
stosp500	0.9000283	.141624	6.36	0.000	0.6063181	1.193738
_cons	67.29252	25.96798	2.59	0.017	13.43822	121.1468

Table 3.3.1 Summary of Variable *inclevel*

ICE	Obs.	Mean	Std.Dev.	Min	Max
Above 40,000	4695	87.02304	47.92743	2	147.8647
Under 40,000	2025	73.15558	46.41294	2	147.8647

Table 3.3.2 Statitics Summary of Effects of Income Level

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3235722	0.0356853	-9.07	0	-0.397579	-0.2495654
gender	11.25843	1.115657	10.09	0	8.944702	13.57217
college	1.852109*	1.113336	1.66	0.11	-0.4568079	4.161026
stock	5.490904	0.9028936	6.08	0	3.618417	7.36339
gov	24.29621	0.8500746	28.58	0	22.53326	26.05915
Macroeconomic Factors						
logsp	-2.299362	0.7873844	-2.92	0.008	-3.932297	-0.6664264
inflation	-10.0319	1.471387	-6.82	0	-13.08337	-6.980425
unemp	10.67908	5.561568	1.92	0.068	-0.8549026	22.21307
News						
reasonpp	13.1394	0.8585935	15.3	0	11.35879	14.92002
reasonpr	8.009738	1.184491	6.76	0	5.553254	10.46622
reasongo	8.897222	1.334595	6.67	0	6.129441	11.665
reasonm	9.849023	0.8730067	11.28	0	8.038518	11.65953
Interactive Variables						
incspread	4.38236	1.384361	3.17	0.004	1.511372	7.253348
incunemp	-2.597263	1.057913	-2.46	0.022	-4.79124	-0.4032858
incinf	4.746452	2.051362	2.31	0.03	0.4921876	9.000716
_cons	66.06451	28.01154	2.36	0.028	7.972127	124.1569

Table 3.4.1 Summary of *college*

ICE	Obs.	Mean	Std.Dev.	Min	Max
With College Diploma	3604	86.30528	47.89634	2	147.8647
Without College Diploma	3618	78.52725	47.57162	2	147.8647

Table 3.4.2 Statitics Summary of College Education

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3236861	0.0358201	-9.04	0	-0.3979725	-0.2493996
stock	5.4235	0.9064056	5.98	0	3.54373	7.30327
gender	11.22931	1.115413	10.07	0	8.91609	13.54254
inclevel	2.826138	1.306423	2.16	0.042	0.1167823	5.535493
gov	24.27919	0.8516147	28.51	0	22.51305	26.04534
Macroeconomic Factors						
spread	3.263077*	1.777257	1.84	0.08	-0.4227283	6.948882
logsp	-3.471139	0.993515	-3.49	0.002	-5.531563	-1.410715
inflation	-6.65905	1.499721	-4.44	0	-9.76928	-3.54882
unemp	10.04091*	5.647374	1.78	0.089	-1.671024	21.75285
News						
reasonpp	13.16618	0.8540288	15.42	0	11.39504	14.93733
reasonpr	8.00451	1.181486	6.77	0	5.554258	10.45476
reasongo	8.828018	1.332694	6.62	0	6.06418	11.59186
reasonm	9.871932	0.9029145	10.93	0	7.999402	11.74446
Interactive Variables						
colsp	2.210648	0.8862196	2.49	0.021	0.3727407	4.048555
colunemp	-2.311835	1.055487	-2.19	0.039	-4.500782	-0.1228885
_cons	64.90805	26.12263	2.48	0.021	10.73302	119.0831

Table 3.5.1 Summary of *gender*

ICE	Obs.	Mean	Std.Dev.	Min	Max
Male	3268	92.3546	48.2511	2	147.8647
Female	3979	74.10144	46.0145	2	147.8647

Table 3.5.2 Statistics Summary of gender effect

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3230499	0.0354106	-9.12	0	-0.396487	-0.2496129
college	1.884298*	1.113889	1.69	0.105	-0.425766	4.194362
inclevel	2.759689	1.31735	2.09	0.048	0.0276725	5.491705
stock	5.588894	0.9112797	6.13	0	3.699016	7.478773
gov	24.2098	0.8445827	28.66	0	22.45824	25.96136
Macroeconomic Factors						
inflation	-7.52536	0.9764725	-7.71	0	-9.55044	-5.50028
News						
reasonpp	13.2204	0.8441391	15.66	0	11.46977	14.97104
reasonpr	8.347164	1.052745	7.93	0	6.163904	10.53042
reasongo	5.562081	1.706591	3.26	0.004	2.022828	9.101334
reasonm	10.26984	0.860279	11.94	0	8.485735	12.05395
Interactive Variables						
gengo	6.089583	2.997552	2.03	0.054	-0.1269596	12.30613
gensp	-4.10671	0.8757647	-4.69	0	-5.922935	-2.290485
genunemp	6.86872	1.098324	6.25	0	4.590936	9.146504
_cons	107.6738	2.135903	50.41	0	103.2442	112.1034

Table 3.6.1 Summary of Variable *gov*

ICE	Obs.	Mean	Std.Dev.	Min	Max
Confident in Government	1831	112.0292	39.22681	2	147.8647
Pro-Con	3532	82.90289	45.65733	2	147.8647
Not confident in Government	1776	50.89535	40.14324	2	147.8647

Table 3.6.2 Statistics Summary of Government Confidence Effect

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3238429	0.0361616	-8.96	0	-0.3988375	-0.2488482
gender	11.32071	1.105524	10.24	0	9.027991	13.61342
college	1.863343*	1.094599	1.7	0.103	-0.4067158	4.133401
inclevel	2.869558	1.295907	2.21	0.037	0.1820113	5.557105
stock	5.375249	0.9038734	5.95	0	3.500731	7.249768
Macroeconomic Factors						
spread	3.31243	1.805325	1.83	0.08	-0.4315854	7.056446
logsp	-1.839061	0.8758521	-2.1	0.047	-3.655467	-0.0226552
inflation	-6.630074	1.517517	-4.37	0	-9.777211	-3.482936
unemp	9.127657	5.388082	1.69	0.104	-2.04654	20.30185
News						
reasonpp	13.23142	0.8675252	15.25	0	11.43228	15.03055
reasonpr	8.102393	1.187259	6.82	0	5.640168	10.56462
reasongo	8.841084	1.379484	6.41	0	5.98021	11.70196
reasonm	10.08022	0.9116389	11.06	0	8.189596	11.97084
Interactive Variables						
govm	-2.589761*	1.442498	-1.8	0.086	-5.58132	0.4017966
govsp	-2.635597	0.9301946	-2.83	0.01	-4.564702	-0.706491
govunemp	7.178981	1.130415	6.35	0	4.834644	9.523318
_cons	59.01107	26.36107	2.24	0.036	4.341561	113.6806

Table 3.7 Statistics for Regression with Lagged Variables

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Personal Characteristics						
AGE	-0.3231077	0.0354141	-9.12	0	-0.3965521	-0.2496633
gender	11.22767	1.105953	10.15	0	8.934059	13.52127
college	1.92895*	1.100504	1.75	0.094	-0.3533557	4.211255
inclevel	2.803372	1.293875	2.17	0.041	0.1200394	5.486705
stock	5.508694	0.8579523	6.42	0	3.72941	7.287978
gov	24.19981	0.8474886	28.55	0	22.44223	25.95739
Macroeconomic Factors						
logsp	-1.963565	0.558332	-3.52	0.002	-3.121475	-0.8056551
logsplag1	27.73775	7.685568	3.61	0.002	11.79885	43.67664
inflation	-3.158821	1.304378	-2.42	0.024	-5.863934	-0.4537073
News						
reasonpp	13.06597	0.8569602	15.25	0	11.28874	14.84319
reasonpr	8.0511	1.165375	6.91	0	5.63426	10.46794
reasongo	8.891642	1.319848	6.74	0	6.154446	11.62884
reasonm	9.868146	0.8553377	11.54	0	8.094284	11.64201
_cons	-77.90645	53.4714	-1.46	0.159	-188.7993	32.98646

Table 3.8 Summary of Models

	Genderal	Lag	Stock	Income	Education	Gender	Govern.
Variables	Coefficients	Coefficients	Coefficients	Coefficients	Coefficients	Coefficients	Coefficients
Personal Characteristics							
AGE	-0.3238984	-0.3231077	-0.3238429	-0.3232325	-0.3230499	-0.3236861	-0.3235722
gender	11.22518	11.22767	11.32071	11.12994		11.22931	11.25843
college	1.877224	1.92895	1.863343	1.839987	1.884298		1.852109
inclevel	2.842571	2.803372	2.869558	2.852507	2.759689	2.826138	
stock	5.424561	5.508694	5.375249		5.588894	5.4235	5.490904
Gov	24.27562	24.19981		24.29773	24.2098	24.27919	24.29621
logsplag1		27.73775					
Macroeconomic Factors							
spread	3.253595		3.31243	3.177747		3.263077	
logsp	-2.361965	-1.963565	-1.839061	-2.926322		-3.471139	-2.299362
inflation	-6.654362	-3.158821	-6.630074	-6.735421	-7.52536	-6.65905	-10.0319
unemp	8.830019		9.127657	8.931336		10.04091	10.67908
News							
reasonpp	13.15989	13.06597	13.23142	13.11835	13.2204	13.16618	13.1394
reasonpr	8.020726	8.0511	8.102393	7.908552	8.347164	8.00451	8.009738
reasongo	8.838801	8.891642	8.841084	8.813446	5.562081	8.828018	8.897222
reasonm	9.883851	9.868146	10.08022	7.412569	10.26984	9.871932	9.849023
Interactive Variables							
govm			-2.589761				
govsp			-2.635597				
govunemp			7.178981				
stom				3.678491			
stosp500				0.9000283			
gengo					6.089583		
gensp					-4.10671		
genunemp					6.86872		
colsp						2.210648	
colunemp						-2.311835	
incspread							4.38236
incinf							4.746452
incunemp							-2.597263
_cons	64.2705	-77.90645	59.01107	67.29252	107.6738	64.90805	66.06451
R-squared	0.3208	0.3208	0.3223	0.3214	0.3208	0.3209	0.3212

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Appendix I Variable Description

Variables	Type	Description & Coding
Personal Characteristics		
AGE	numerical	the age of participants
Gender	Dummy	if participant is male, this variable equals 1; if participant if female, equals 0.
College	Dummy	if participant has college diploma, this varialbe equals 1; if not, equals 0.
Inclevel	Dummy	if participant has annual household income above 40,000 dollars, this variable equals 1; if income is under 40,000 U.S. dollars, equals 0.
stock	dummy	if participant holds shares of stocks, this varialbe equals 1; otherwise, equals 0.
Gov	Dummy	response to the quesiton: "As to the economic policy of the government – I mean steps taken to fight inflation or unemployment –would you say the government is doing a good job, only fair, or a poor job?" "good job"=1, "only fair"=0, "poor job"=-1
Macroeconomic factors		
Spread	Numerical	monthly spread term. Calculated using 5-year treasury bill interest rate and Federal Reserve interst rate
logsp	numerical	logged monthly S&P500 index.
inflation	numerical	monthly inflation rate
unemp	numerical	monthly national unemployment rate
Logsplag1	numerical	1-month lag of logged S&P500 index
News Heard		
Reasonpp	Dummy	news heard in government, defense. Heard favorable news = 1, heard unfavorable news =-1, otherwise =0.
Reasonpr	Dummy	news heard in employment and purchasing power; heard favorable news =1, heared unfavorable news =-1, otherwise =0
Reasongo	Dummy	news heard refers to prices; heard favroabel changes =1, unfavorable changes=-1, otherwise =0.
Reason	Dummy	miscellaneous news heard; favorable news =1, unfavorable news =-1 ,otherwise =0.
Interactive Variables		
govpp	interactive	gov * reasonpp
govgo	interactive	gov * reasongo
govpr	interactive	gov * reasonpr
govm	interactive	gov * reasonm

govspread	interactive	gov * spread
govinf	interactive	gov * inflation
govsp	interactive	gov * logsp
govunemp	interactive	gov * unemp
stom	interactive	stock * reasonm
stopp	interactive	stock * reasonpp
stopr	interactive	stock * reasonpr
stogo	interactive	stock * reasongo
stosp500	interactive	stock * logsp
stospread	interactive	stock * spread
stoinf	interactive	stock * inflation
stounemp	interactive	stock * unemp
genm	interactive	gender * reasonm
genpp	interactive	gender * reasonpp
genpr	interactive	gender * reasonpr
gengo	interactive	gender * reasongo
gensp	interactive	gender * logsp
genspread	interactive	gender * spread
geninf	interactive	gender * inflation
genunemp	interactive	gender * unemp
colm	interactive	college * reasonm
colpp	interactive	college * reasonpp
colpr	interactive	college * reasonpr
colgo	interactive	college * reasongo
colsp	interactive	college * logsp
colspread	interactive	college * spread
colinf	interactive	college * inflation
colunemp	interactive	college * unemp
incpp	interactive	inclevel * reasonpp
incpr	interactive	inclevel * reasonpr
incgo	interactive	inclevel * reasongo
incm	interactive	inclevel * reasonm
incspread	interactive	inclevel * spread
incsp	interactive	inclevel * logsp
incunemp	interactive	inclevel * unemp
incinf	interactive	inclevel * inflation

Appendix II Explanation of ICE

The Index of Consumer Expectation is calculated using the following formula based on participants' response on three questions in the survey. According to Survey Research Center of University of Michigan, the relative score of the three component questions are used in the equation and are defined as the percent giving favorable replies minus the percent giving unfavorable replies, plus 100. The denominator of the formula is the 1966 base period total of 4.1134, and the added constant (n) is to correct for sample design changes from the 1950s. For December 1981 and after, n=2.0. Each relative score is rounded to the nearest whole number.

$$ICE = \frac{X_1 + X_2 + X_3}{4.1134} + n$$

The Index of Consumer Expectation is derived from the following three questions:

X_1 = "Now looking ahead – do you think that a year from now you (and yoru family living there) will be better off financially, or worse off, or just about the same as now?"

X_2 = "Now turning to business conditions in the country as a whole – do you think that during the next twelve months we'll have good times financially, or bad times , or what?"

X_3 = "Looking ahead, which would you say is more likely – that in the country as a whole we'll have continuous good times during the next five years or so, or what we weill have periods of wide spread unemployment or depression, or what?"

Appendix III Statistics Summary of Questions Response in Appendix II

Year 2002	Personal next year			Economy next year			Economy next 5 years		
	Better %	Same %	Worse %	Better %	Same %	Worse %	Better %	Same %	Worse %
January	47.38	41.85	7.08	43.38	5.85	50.77	39.87	5.88	54.25
February	46.22	45.32	5.74	44.41	5.74	49.85	39.59	7.85	52.56
March	45.62	47.43	5.14	37.16	3.32	59.52	32.45	5.30	62.25
April	44.92	42.62	10.49	39.02	7.87	53.11	38.49	6.12	55.40
May	41.99	48.40	7.83	37.37	6.41	56.23	36.70	4.12	59.18
June	44.29	45.33	7.27	40.14	7.96	51.90	44.00	7.27	48.73
July	39.04	49.55	9.01	57.06	7.21	35.74	48.57	6.03	45.40
August	40.23	49.58	8.22	51.56	7.65	40.79	46.84	10.44	42.72
Sep.	42.33	42.00	13.00	52.33	5.00	42.67	52.54	3.99	43.48
October	44.55	39.93	12.87	62.38	5.94	31.68	51.93	8.42	39.65
Nov.	39.93	46.88	10.76	51.39	6.94	41.67	50.77	5.38	43.85
Dec.	45.61	45.61	7.02	55.44	5.61	38.95	48.88	4.85	46.27

Year 2003	Personal next year			Economy next year			Economy next 5 years		
	Better %	Same %	Worse %	Better %	Same %	Worse %	Better %	Same %	Worse %
January	38.46	49.36	11.54	60.26	6.73	33.01	51.35	10.47	38.18
February	41.40	42.68	14.01	68.15	6.05	25.80	56.91	4.28	38.82
March	41.25	39.69	15.94	68.75	3.12	28.12	57.28	4.97	37.75
April	41.45	45.09	10.91	56.36	5.09	38.55	47.55	6.04	46.42
May	44.41	44.76	9.79	44.76	3.50	51.75	45.82	6.55	47.64
June	45.20	40.93	12.10	43.06	3.56	53.38	40.30	9.33	50.37
July	45.95	41.70	9.27	47.88	0.77	51.35	53.01	6.02	40.96
August	37.91	49.82	11.19	46.21	4.69	49.10	52.08	3.40	44.53
Sep.	41.18	46.75	11.46	50.77	2.17	47.06	48.54	5.18	46.28
October	38.41	46.38	13.04	49.28	2.54	48.19	47.13	5.75	47.13
Nov.	43.14	45.48	9.70	34.78	2.01	63.21	38.16	4.59	57.24
Dec.	42.86	43.19	12.96	32.89	4.32	62.79	40.89	7.90	51.20

Appendix IV： Statistics Summary for Models (Without dropping variables)

Baseline model

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3265858	0.0329073	-9.92	0	-0.3910954	-0.2620762
gender	11.21904	1.017986	11.02	0	9.223445	13.21464
RACE	-0.3449371**[4]	0.4074916	-0.85	0.397	-1.143759	0.4538847
REGION	0.2513486**	0.4311333	0.58	0.56	-0.5938191	1.096516
college	1.895162*	1.053024	1.8	0.072	-0.1691229	3.959448
inclevel	2.828851	1.222684	2.31	0.021	0.431975	5.225727
stock	5.372671	1.172718	4.58	0	3.073746	7.671595
gov	24.22553	0.7346232	32.98	0	22.78542	25.66564
spread	3.279874	1.187847	2.76	0.006	0.951291	5.608458
logsp	-2.366855	1.201795	-1.97	0.049	-4.722781	-0.0109297
inflation	-6.661688	1.246259	-5.35	0	-9.10478	-4.218597
unemp	8.907837	3.377469	2.64	0.008	2.286852	15.52882
reasonpp	13.16534	0.8064643	16.32	0	11.5844	14.74629
reasonpr	8.022577	0.9937627	8.07	0	6.074464	9.970689
reasongo	8.828197	1.490485	5.92	0	5.90634	11.75005
reasonm	9.891146	0.8005608	12.36	0	8.321775	11.46052
_cons	63.79108	19.57072	3.26	0.001	25.42582	102.1563

[4] * : the coefficient is statistically significant at 90% significance level
**: the coefficient is not statistically significant
otherwise, the coefficient is statistically significant at 95% significance level

Confidence in government

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3218728	0.0362615	-8.88	0	-0.3970747	-0.246671
gender	11.33083	1.117513	10.14	0	9.013249	13.64841
college	1.865385	1.082136	1.72	0.099	-0.3788282	4.109598
inclevel	2.901821	1.307679	2.22	0.037	0.1898613	5.613781
stock	5.397832	0.9161533	5.89	0	3.497846	7.297818
spread	3.226802	1.719693	1.88	0.074	-0.339623	6.793227
logsp	-1.784751	0.8687383	-2.05	0.052	-3.586404	0.0169016
inflation	-6.534341	1.450494	-4.5	0	-9.542483	-3.5262
unemp	9.061163	5.314038	1.71	0.102	-1.959477	20.0818
reasonpp	13.31971	0.8583928	15.52	0	11.53951	15.09991
reasonpr	8.191397	1.197224	6.84	0	5.708506	10.67429
reasongo	8.912286	1.384716	6.44	0	6.040562	11.78401
reasonm	10.18221	0.885271	11.5	0	8.346268	12.01815
govpp	-0.9441554	0.8949525	-1.05	0.303	-2.800173	0.9118625
govgo	-0.4954108	1.904286	-0.26	0.797	-4.444659	3.453837
govpr	-0.9671039	1.32159	-0.73	0.472	-3.707914	1.773706
govm	-2.794897	1.352617	-2.07	0.051	-5.600053	0.0102593
govspread	2.735899	1.291689	2.12	0.046	0.057099	5.414698
govinf	2.983189	2.040677	1.46	0.158	-1.248916	7.215293
govsp	-2.684144	1.281672	-2.09	0.048	-5.34217	-0.026118
govunemp	5.227032	2.057912	2.54	0.019	0.9591838	9.49488
_cons	59.09374	26.46494	2.23	0.036	4.208819	113.9787

Holding Stocks or not

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3222258	0.0359586	-8.96	0	-0.3967995	-0.2476521
gender	11.11721	1.13443	9.8	0	8.764547	13.46988
college	1.839977	1.099705	1.67	0.108	-0.4406714	4.120626
inclevel	2.904937	1.2808	2.27	0.033	0.2487203	5.561154
gov	24.29984	0.8598105	28.26	0	22.51671	26.08298
spread	2.605284	2.582446	1.01	0.324	-2.750381	7.960949
logsp	-3.986079	0.8765862	-4.55	0	-5.804008	-2.16815
inflation	-7.590209	2.181841	-3.48	0.002	-12.11507	-3.065347
unemp	10.77954	6.232347	1.73	0.098	-2.145552	23.70464
reasonpp	13.83595	1.606293	8.61	0	10.50471	17.1672
reasonpr	7.564077	2.45876	3.08	0.006	2.46492	12.66323
reasongo	8.670326	2.228357	3.89	0.001	4.048997	13.29166
reasonm	7.507594	1.390914	5.4	0	4.623015	10.39217
stom	3.528987	1.725432	2.05	0.053	-0.0493407	7.107315
stopp	-1.028476	1.952447	-0.53	0.604	-5.077605	3.020652
stopr	0.5064683	2.7317	0.19	0.855	-5.15873	6.171667
stogo	0.234338	2.871588	0.08	0.936	-5.720971	6.189647
stosp500	2.470554	1.071853	2.3	0.031	0.2476676	4.693441
stospread	0.9127955	1.693785	0.54	0.595	-2.599899	4.42549
stoinf	1.31784	1.875161	0.7	0.49	-2.571006	5.206687
stounemp	-2.692536	1.974248	-1.36	0.186	-6.786876	1.401803
_cons	66.91093	26.53199	2.52	0.019	11.88696	121.9349

Gender

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3215124	0.0354345	-9.07	0	-0.394999	-0.2480257
college	1.867948*	1.110462	1.68	0.107	-0.4350097	4.170905
inclevel	2.864329	1.304941	2.19	0.039	0.1580464	5.570611
stock	5.464646	0.9121867	5.99	0	3.572886	7.356405
gov	24.25759	0.8601753	28.2	0	22.4737	26.04148
spread	2.689888**	2.504762	1.07	0.295	-2.50467	7.884447
logsp	-0.7858671**	1.006894	-0.78	0.443	-2.874038	1.302304
inflation	-7.725973	2.073421	-3.73	0.001	-12.02598	-3.425962
unemp	6.425406**	5.94647	1.08	0.292	-5.906818	18.75763
reasonpp	14.23281	1.082602	13.15	0	11.98763	16.47799
reasonpr	7.782031	1.315399	5.92	0	5.05406	10.51
reasongo	5.566576	1.720943	3.23	0.004	1.997559	9.135592
reasonm	9.512196	1.075251	8.85	0	7.282262	11.74213
genm	0.7685832**	1.62056	0.47	0.64	-2.592252	4.129418
genpp	-2.220224**	1.853228	-1.2	0.244	-6.063584	1.623136
genpr	0.4087182**	1.967149	0.21	0.837	-3.6709	4.488336
gengo	6.542846	2.979505	2.2	0.039	0.3637304	12.72196
gensp	-3.572149	1.318377	-2.71	0.013	-6.306296	-0.8380018
genspread	1.454143**	2.118171	0.69	0.5	-2.938675	5.846961
geninf	2.568068**	1.951401	1.32	0.202	-1.478889	6.615026
genunemp	4.795491	2.21949	2.16	0.042	0.1925494	9.398432
_cons	70.55924	26.18333	2.69	0.013	16.25834	124.8601

Education – college diploma

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3221999	0.0354228	-9.1	0	-0.3956623	-0.2487376
stock	5.405051	0.8925819	6.06	0	3.553949	7.256152
gender	11.20944	1.134038	9.88	0	8.857585	13.56129
inclevel	2.76796	1.299676	2.13	0.045	0.0725955	5.463324
gov	24.28745	0.8592935	28.26	0	22.50538	26.06951
spread	3.07448**	2.49228	1.23	0.23	-2.094193	8.243154
logsp	-3.052098	1.35494	-2.25	0.035	-5.862071	-0.2421243
inflation	-5.999913	2.206577	-2.72	0.013	-10.57607	-1.423752
unemp	9.34504**	5.947419	1.57	0.13	-2.989153	21.67923
reasonpp	14.06966	1.312396	10.72	0	11.34792	16.7914
reasonpr	9.470929	2.188871	4.33	0	4.931488	14.01037
reasongo	8.699072	2.384662	3.65	0.001	3.753585	13.64456
reasonm	9.372953	1.292872	7.25	0	6.691701	12.05421
colm	1.072158**	1.373622	0.78	0.443	-1.776559	3.920876
colpp	-1.696683**	1.606279	-1.06	0.302	-5.027902	1.634536
colpr	-2.45432**	2.25663	-1.09	0.289	-7.134283	2.225644
colgo	0.2493815**	3.304068	0.08	0.941	-6.602835	7.101598
colsp	1.379801**	1.29726	1.06	0.299	-1.310551	4.070153
colspread	0.2862718**	1.853511	0.15	0.879	-3.557675	4.130218
colinf	-1.376028**	1.965328	-0.7	0.491	-5.451869	2.699813
colunemp	-1.050737**	1.942867	-0.54	0.594	-5.079996	2.978521
_cons	65.50751	26.05801	2.51	0.02	11.46651	119.5485

Income Level

ICE	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
AGE	-0.3228912	0.0355937	-9.07	0	-0.396708	-0.2490744
gender	11.24692	1.128729	9.96	0	8.906076	13.58776
college	1.868527*	1.123465	1.66	0.11	-0.4613972	4.198451
inclevel	19.76379**	48.91734	0.4	0.69	-81.68457	121.2121
stock	5.467384	0.8913793	6.13	0	3.618777	7.315992
gov	24.29683	0.8544289	28.44	0	22.52485	26.06881
spread	0.6543116**	3.431954	0.19	0.851	-6.463126	7.771749
logsp	-1.54068**	1.173813	-1.31	0.203	-3.97502	0.8936605
inflation	-9.496533	2.649127	-3.58	0.002	-14.99049	-4.00258
unemp	11.71802**	10.70044	1.1	0.285	-10.47333	33.90936
reasonpp	13.31484	1.548151	8.6	0	10.10417	16.52551
reasonpr	6.305903	1.755452	3.59	0.002	2.665317	9.946489
reasongo	9.638615	2.724086	3.54	0.002	3.989206	15.28802
reasonm	8.930134	1.491827	5.99	0	5.836273	12.02399
incpp	-0.2818714**	1.900183	-0.15	0.883	-4.222609	3.658866
incpr	2.234367**	1.855277	1.2	0.241	-1.613241	6.081975
incgo	-1.129924**	3.061672	-0.37	0.716	-7.479444	5.219595
incm	1.257119**	1.672568	0.75	0.46	-2.211575	4.725813
incspread	3.676696**	3.089243	1.19	0.247	-2.730001	10.08339
incsp	-1.161643**	1.039318	-1.12	0.276	-3.317056	0.9937705
incunemp	-4.057529**	9.425374	-0.43	0.671	-23.60456	15.4895
incinf	4.051595**	2.525138	1.6	0.123	-1.185221	9.288411
_cons	52.02286**	53.11018	0.98	0.338	-58.12092	162.1666

Appendix V

Favorable changes
Government, Defense
Recent or upcoming elections; new administration/Congress/ President.
More defense/military spending or production; worsening international situation/prospects; acceleration of war/tensions； more uncertainty about world peace
Less defense/military spending or production; better international prospects; fewer international tensions; less uncertainty about world peace.
Specific government spending programs reformed/changed/improved--NA whether increase or decrease in spending programs, begun or increased/ continued (other than defense) (e.g., employment, foreign aid, space, welfare) (incl. programs "modified"/"improved" if increased spending is stated or implied--otherwise code 13)
Specific government spending programs eliminated or decreased (other than defense) (e.g., employment, foreign aid, space, welfare) government facilities/bases closed
Taxes: tax changes/ reforms; tax rebates
Fiscal policy general; budgets; deficits; government spending in general
Government/Congress/Administration/President is taking steps to improve business conditions/is taking right/helpful actions (not codeable above)
Other reference to government
Employment and Purchasing Power
Opening of plants and factories (government facilities, code 14); opening of stores (e.g., Meijer)
Consumer or auto demand is (will be) high; people want to buy; are buying.
Purchasing power is (will be) high; people have money to spend; wages high/will go up; any kind of personal income high or higher.
Employment has risen/is rising; more overtime; plenty of jobs or work around; unemployment declining
Population increase; more people to buy/use goods and services

Low (lower) debts; high (higher) assets/savings; people/businessinvesting; investments up.
Production is increasing/is high; GNP is up.
Unemployment has risen/will rise (and that's good or necessary for the economy)
Other references to employment and purchasing power
Prices
Tight money; interest rates high; credit harder to get
Lower or stable prices; prices won't rise; lower prices; less inflation; price rebates
High(er) prices; inflation; prices will rise (incl. specificprices) (and that's good)
Easier money; credit easy to get; lower interest rates
Profits high/rising
Stock market; rise in price of stocks
Balance of payments; world monetary situation; foreign competition; dollar devaluation
Controls (price and/or wage)
Other references to prices/credits
Miscellaneous
Better race relations; less racial unrest; few urban social problems; less crime
Union disputes/strikes have been (will be) settled; labor-management relations good labor
Times are (business is) good now and won't change (much) in the next year
Bad times can't last; we are due for good times
R sees signs of improvement already; R has heard or read that) business is improving/good
Improvements in specific industries; prospects good (favorable changes) in R's line of work (except farming, code 46) or in R's locality.
Farm situation good; crops good.
Economy in general more stable/under control; confidence, optimismon part of consumers in

general (not individual)
Other good factors or favorable references (include R has heard or read that business will improve--no specific reason)
Energy crisis, depletion of natural resources; control of pollution; shortages; energy crisis lessened

Unfavorable changes
Government, Defense
Recent or upcoming elections; new administration/President
More defense/military spending or production; worsening international situation/prospects; acceleration of war/tensions;
Less defense/military spending or production; better international prospects; fewer international tensions; less uncertainty about world peace; military bases close.
Specific government spending programs reformed/changed/improved--NA whether increase or decrease in spending
Specific government spending programs eliminated or decreased (other than defense) (e.g., employment, foreign aid, space; government facilities closed.
Specific government spending programs begun or increased/continued (other than defense)(e.g., employment, foreign aid, space, welfare.
Taxes: tax changes/reforms; tax rebates;
Fiscal policy general; budgets; deficits; government spending in general
Government/Congress/Administration/President is taking steps to improve business conditions/is taking right/helpful
Other references to government
Employment and Purchasing Power
Closing of plants and factories (general or specific) (if government facilities, code 54); closing

of stores (e.g., Grant's)
Consumer or auto demand is (will be) low; people don't want/need to buy, aren't buying; people are saving their money; inventories high; sales down
Lack of purchasing power; people don't have money to spend; low wages; any kind of personal income low or lower
Drop in employment (except 60); high or higher unemployment; layoffs; less overtime; short hours; automation
Population increase; immigration
High (higher) debts; lower assets/savings; people/business not investing; investments down
Production decreasing; production is low; GNP is down
Other references to employment and purchasing power, not codeable above.
Prices
Prices are falling/will fall/are too low; deflation
Prices are high, are rising, inflation; wages lag behind prices
Tight money; credit hard to get; interest rates too high, rising
Profits low, falling.
Profits high; too high
Stock market references; decline in price of stocks
Balance of payments; foreign competition; world monetary situation; dollar devaluation; international trade
Controls (price and/or wage)
Other references to prices/credits
Miscellaneous
Bad race relations; racial unrest; riots, civil disorders; urban social problems; (more) crime

Excessive wage or other demands by unions; strikes; labor unrest; labor-management relations bad.
Times are (business is) bad now and won't change (much) in next year
Good times can't last--we are due for a fall
R sees signs of downward trend in business already; ® has heard or read that) business is bad/worsening
Decline in specific industries; problem in R's line of work (excl. farming, code 86) or in R's locality
Farm situation is bad; drought; low farm prices
Economy in general less stable/not under control; lack of confidence on the part of consumers in general
Energy crisis; depletion of natural resources; pollution; shortages
Other unfavorable or bad factors (include R has heard or read that business will decline--no specific reason) (hasn't happened yet)