

Project 1.

I. Literature Review

From the papers provided as context to the issue, I believe that there is weight to the worries of the consumer sentiment shock. Multiple sources provide precedence that sentiment does have a significant effect on the economy. The sitting president of Richmond Fed, Tom Barkin backs the importance of consumer sentiment in the economy, "In my view, sentiment has become both more important and more volatile. The result is an asymmetry in which firms are much more cautious about the downside than they are optimistic about the upside. Both consumers and firms may have a higher bar for spending and investment decisions." The stronger relationship between investment and consumer sentiment is especially important, as the purchase of a new car is defined as a long-term investment, one that consumers are unlikely to make during periods of reduced economic confidence.

The importance of consumer sentiment has also statistically been proven to be significant. The paper "Consumer Confidence and Consumer Spending" looks into consumer sentiment's ability to gauge the current economy and predict a future one. "It would hardly be surprising to find that confidence (sentiment) surveys reflect the current state of the economy. After all, most households should be aware of recent changes in their own economic situation." In terms of the ability of consumer sentiment to predict future consumer consumption, "The evidence from in-sample regressions suggests that measures of consumer confidence--taken alone—have important predictive power for quarterly consumer expenditure growth.

All this being said, there are concerns about consumer sentiment as a measure for the economy. For one, it provides a biased estimate of the economy. The data for consumer sentiment both from the University of Michigan and Conference Board is collected through a survey that asks the participants to provide their personal opinion, not numerical data to gauge the state of the economy. Two people in the same financial situation could give wildly different takes on the economy, there is no guarantee that participants are educated or aware enough to provide accurate estimates, and non-response bias is always a looming threat. Additionally, there are concerns about the sample size of Michigan's survey, which only interviews a total of 500 people. This could lead to problems when trying to extrapolate the results to the entire population.

As for the state of the economy, almost all evidence points to continued expansion. This being said, there is the possibility that consumer sentiment and hesitance from businesses and firms can drag the economy down into a recession alone. As Tom Barkin states, "They [households] are unlikely to spend on big-ticket items without at least some assurance of future stability. As a result, a sudden pullback in their expectations could easily affect expenditures and tip the economy into a recession . . . Firms are frustrated with political polarization and uncertainty about regulation. This limits their pricing courage and caps the upside on their spending and investment decisions. For these reasons, I don't discount the idea that we could talk ourselves into a recession." So, although it seems the economy would remain in an expansive state, management's fears of recession from solely consumer sentiment are not unfounded and entirely possible.

II. Methodology

How are the results achieved?

I used a simple linear regression of consumer sentiment and us recession data on motor vehicle assembly to get my results.

$$MVA = \beta_0 + \beta_1 * Consumer\ Sentiment + \beta_2 * Recession\ Dummy + \varepsilon$$

How do outcomes differ in a recession?

I calculated 3 point estimates that I then used to create 5 different outcomes depending on the likelihood of a recession vs an expansion. To the best of my knowledge, the economy is currently in an expansion, so only one baseline of consumer sentiment needs to be calculated, while 2, one for each possible state of the economy are needed after the CS drops to 80. To achieve the expansion results, the recession dummy is set to 0 and its marginal effect, β_2 , is ignored.

$$\text{After_R: } MVA = \beta_0 + \beta_1 * Consumer\ Sentiment + \beta_2 * Recession\ Dummy$$

$$\text{After_E: } MVA = \beta_0 + \beta_1 * Consumer\ Sentiment$$

From this, I created 5 outcomes detailing the percentage decrease in MVA after the 20-point decrease in CS, the two extreme cases, and 3 averages weighing the chances of each outcome.

$$\text{Expansion: } \frac{after_e - before}{before} * 100$$

$$75-25: (Expansion * .75 + Recession * .25)$$

$$50-50: (Expansion * .5 + Recession * .5)$$

$$25-75: (Expansion * .25 + Recession * .75)$$

$$\text{Recession: } \frac{after_r - before}{before} * 100$$

III. Results

The results of the regression coincide with the previous literature, there is a significant relationship between consumer sentiment and the level of motor vehicle assembly. My regression found a decrease in motor vehicle assembly of .079 (79,290 vehicles) for every point decrease in consumer sentiment and an additional drop of -1.44 (1,449,800 vehicles) in MVA in the presence of a recession. I am confident in my results; all coefficients were significant at the highest level with p-values far smaller than .05 as can be seen below.

Variable	Coeff	Std Error	T-Stat	Signif
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1. Constant	3.755827584	0.474611470	7.91348	0.00000000
2. USENT	0.079290029	0.005314554	14.91941	0.00000000
3. USREC	-1.449892634	0.201481265	-7.19617	0.00000000

The 5 possible outcomes mentioned earlier range from a -13.578% to -25.99% decrease in MVA:

Expansion: -13.578%

75-25: -16.68%

50-50: -19.784%

25-75: -22.887%

Recession: -25.99 %

IV. Conclusion

Preferably, these estimates would be used in tandem with financial data from the firm to estimate if production and sales could fall below the shutdown point. If the costs of operating at a loss during the period of decreased consumer confidence and vehicle manufacturing are greater than those of shutting down and reopening manufacturing plants then the firm should shut down and wait out the dip in CS. Ultimately, it would depend on the market share that the firm currently holds. For a smaller firm, a large market shrinkage could be fatal, if the firm currently captures a large percentage of the market, they may be able to weather the loss in production for less than it would cost to shut down their larger scale operation. It must also be stated that closing down may further contribute to the possibility of a recession, As quoted from Barkin in the literature review, firms being more hesitant with their spending is just as much a cause in the asymmetric behavior of sentiment as is consumer spending.

Is there enough evidence to justify shutting down?

Given the information provided, I feel as though there is enough information to justify a shutdown. A decrease in market production of 26% or three million cars in the worst-case scenario could be enough to significantly harm the firm. As stated in the literature review, consumer sentiment does have a significant effect on the economy, especially investment (like a new car). In response to 9/11, CS dropped from 91.5 to 81.8 and took 4 months to recover. Given the magnitude of the current shock, the firm may be facing decreased production and consumption for an even longer period. In conclusion, there is enough information to warrant a shutdown, but it would be unwise to decide without further examination of the firm's financial situation at lower levels of production.