

# Econometrics project

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## **Abstract**

The goal of this paper is to estimate the relationship between personal consumption and personal income among all Americans over the past 30 years. The data includes annual records for the four variables between the years 1980 and 2011. I have analyzed this data using the Ordinary Least Squares Method and ran a regression analysis in order to observe the relationship between my variables. In my model, I have used Real Personal Consumption Expenditures (PCE) as my independent variable, while the dependent variable is Real Disposable Personal Income Per-Capita. As well, I included two explanatory variables in my model which are the Consumer Price Index (CPI) and a Coincident Index. The model finds a positive relationship between personal consumption expenditures and personal income. It also shows that inflation is positively related to the independent variable of personal consumption.

However, the model demonstrates that there is an insignificant relationship between personal consumption and the Coincident Index. We can conclude that personal income has an effect on personal consumption and that there is a positive correlation between these two variables. Therefore, in general, we can assume according to this model that as personal income increases, personal consumption also increases.

## **Introduction**

Our economy is an ever-changing system that is affected by an infinite number of factors. Some of these factors include personal consumption, personal income, and inflation. I have chosen to look at how these factors

may influence one another within the American economy. More specifically, I have chosen to research the influence of income, inflation, and the Coincidence Index on Americans' consumption expenditures. I believe that individuals' consumption expenditures may vary based on two main factors: A change in these individuals' income and a change in inflation. Many believe that as income increases, people will have more and will, therefore, spend more money and consume more. Some research suggests that larger household wealth is associated with higher personal consumption. In terms of inflation, some theories suggest that as prices rise and rates of inflation create uncertainty for the future, people will lower their consumption expenditures. However, since prices are higher, the total Personal Consumption Expenditures may still increase along with inflation.

## **Theory and Hypothesis**

In March 2011, personal income increased by 0.5 percent, while personal consumption expenditures for Americans increased by 0.6 percent. Based on this information, it can be concluded that the percentage increases for these variables increased nearly proportionately. I believe that this is not just a coincidence and that these variables actually share a relationship.

Although this data is only for one month of one year, I hypothesize that this relationship would stay true if these statistics were to be taken over a period of several years. I believe that as Real Disposable Personal Income Per-Capita increases and individuals make more money, that people will spend more and consume more, meaning that PCE would increase. Since people would be making more money I expect that since they are more capable of spending money that they will indeed spend and consume more. I also

theorize that CPI will have an effect on personal consumption. CPI, which is an indication of inflation, is an increase in prices in an economy relative to the money available in that economy. Since inflation means that you must pay more for the same goods, I hypothesize that as inflation increases, and prices rise, people will spend less, and therefore PCE will decrease. I also theorized that as the Coincident Index increases, PCE would also increase. This is because I believe that if the Coincident Index, which describes current economic conditions, goes up, then people will consume more while economic conditions are better.

## **Empirical Model and Data**

Using a multiple regression model, I estimated the relationship among my time-series data in order to learn more about my hypotheses.

However, the t-value for the coincident index is not statistically significant, which means that we cannot conclude that it affects consumption. It can be assumed through this regression model that as personal income increases by 1 unit, consumption increases by 3.339 units. As well, as PCE increases by one unit, it can be assumed that PCE will increase by 6.888 units. Therefore, I can conclude that my hypotheses regarding the relationship between consumption and income and consumption and inflation are accurate according to my regression model. However, these results may vary if other factors were to be considered in my model. As well, the results may be slightly off due to including the insignificant factor, the coincidence index.

Conclusion In conclusion, I have found the majority of my hypotheses to be true. I have found that both Personal Income and Inflation have an effect on

Personal Consumption Expenditures and that both income and inflation have a positive relationship with consumption. However, based on my model, the Coincident Index does not share a relationship with PCE. I believe that this hypothesis of mine may be incorrect because the economic conditions of an economy may not play a significant enough role in individuals' consumption expenditures in order for this model to show that a relationship exists. Further research would need to be conducted in order for me to examine this relationship more closely. For example, other factors such as personal saving may influence personal consumption as well. In order to gather more clear and accurate results in the future, I would conduct more models, using more economic variables related to consumption in order to see what other potential factors may influence Personal Consumption Expenditures.

## References

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