Assignment 1

EC313 - Fall 2025

1. Create a table of averages for the combined federal/state cigarette tax, the cost per pack, and cigarette sales per capita for the years 1979, 1999, and 2019. Comment on the changes in these variables over time. Your table should have the following format

|  |  | year |  |
| --- | --- | --- | --- |
| Variable | 1979 | 1999 | 2019 |
| State Tax Per Pack |  |  |  |
| Fed/State Tax Per Pack |  |  |  |
| Fed/State Tax Percent |  |  |  |
| Cost Per Pack |  |  |  |
| Sales Per Capita |  |  |  |
| Tax Revenue |  |  |  |

1. Use the **xtsum** command to compute the within-state and between-state standard deviations of the federal/state tax per pack, cost per pack, and sales per capita. Do these variables tend to vary more across states or over time within states? (Notes: the within-state standard deviation measures the variation of a variable over time within each state, whereas the between-state standard deviation measures the variation in a variable across states.)
2. Use the **xtline** command to create a matrix of time series plots of the federal/state tax per pack from 1970 to 2019. Comment on the differences in these time trends across states (Notes: (a) This will create a large set of graphs that could take some time to compute. (b) here are 50 states, so I am not expecting a detailed comparison of all of them. Make general comments, and highlight a few things that stand out).
3. Save the data to a file called **temp.dta** in the same directory as your dofile and original data file. Then use the **collapse** command to create a dataset with the average of each variable per year. Then on a single plot graph the average federal/state tax per pack and cost per pack from 1970 to 2019. You can do this using the **twoway line** command, noting that to plot two graphs together with the same variable on the horizontal axis you could type **twoway (line y x) (line z x)**. Do these trends suggest anything about the relationship between taxes and prices paid by consumers?
4. Open **temp.dta**. Run a regression of cost per pack on federal/state tax per pack using the **regress** command. Interpret the slope and intercept in this regression. Do the results suggest that cigarette taxes are fully passed through to consumers in the form of higher prices? Explain.
5. Repeat the same regression, but this time add a dummy variable for each state, and a dummy variable for each year (sometimes called **fixed effects**). Why are the results different from the previous question? Do the results suggest that cigarette taxes are fully passed through to consumers in the form of higher prices? (Note: do not report the coefficients of all the dummy variables. Just report the coefficients of the federal/state tax per pack and the intercept).
6. Run a regression of sales per capita on federal/state tax per pack with the fixed effects for state and year. Interpret the slope and intercept in this regression. Do the results suggest that higher cigarette taxes reduce cigarette sales? Explain.
7. Draw a demand and supply graph that illustrates the estimated effects of cigarette taxes on cigarette prices and sales. Explain how your graph relates to the results of the previous two questions, and indicate the economic incidence of the cigarette tax.