

Economic History

Assignment 1

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The goal of this problem set is to investigate the relationship between the stock market crash of October 1929 and the advent of the Great Depression. To do so, you are going to run a regression of the type:

$$y_{st} = \alpha + \beta x_s \times D_t + \gamma_t + \mu_s + e_{st} \quad (1)$$

where y_{ct} is a measure of consumption in state s at time t , x_s a measure of exposure to the stock market crash at the state level, D_t a post-crash dummy, γ_t a time fixed effect, μ_s a state fixed effect, and e_{st} an error term.

You may use any software of your choosing, probably R, Python, or Stata. R and Python are open source. Stata requires a license, but you can access it at the library.¹ You can work in groups of up to 4 people. Submit one set of code and answers per group. Answers don't need to be long.

1. Read Romer (1990) and Chodorow-Reich et al. (2021) for context.
2. Download the Excel files that are on Moodle. Place those files in a dedicated folder on your computer. `stock_income.xlsx` contains data which I digitized from the 1928 *Statistics of Income*. Each column is the state total for various types of income, the number of tax returns filed and population. `StateNewCarRegistrations.xlsx` comes from the replication package of Hausman et al. (2019).² It contains car sales data by state for each month from January 1929 to December 1934.
3. Create a single database that consolidates the two files. Each observation of the database should be a state-time pair. For each observation, you should have car sales and the 1928 tax variables. Note that those tax variables will be constant across months within states. Your database should look something

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¹See here: <https://www.sciencespo.fr/bibliotheque/fr/rechercher/ressources/#/resource/2025>.

²Available here: <https://www.aeaweb.org/articles?id=10.1257/aer.20170237>.

like table 1. Ideally, you should do every data manipulation with the statistical software that you have chosen.

Table 1: Model database

state	year	month	capital_gains	div_income	total_income	nb_returns	population	car_sales
AL	1929	1	9440722	15540573	166639611	26891	2573000	1949
AL	1929	2	9440722	15540573	166639611	26891	2573000	1161
⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮	⋮
WY	1934	12	1194441	2637328	37745678	8622	247000	283

4. Create a post-crash dummy—a variable that takes value 0 until October 1929 and 1 from November 1929.
5. In an ideal world, what should x_s be if we're interested in the wealth channel of the crash?
6. Construct a variable which measures the exposure of a state to the stock market:

$$x_s = \frac{\text{dividend_income}_s}{\text{total_income}_s}$$

Explain the idea behind this measure.

7. Explain the idea behind regression (1). What are the identification concerns?
8. Run regression (1) with the natural logarithm of car sales as the measure of consumption, using the 1929–30 data. Present and explain your results clearly—no need for pretty formatting. Hint: the results won't necessarily have the right sign or be statistically significant.
9. Assuming our measure of exposure to the stock market is the right one, would regression (1) be appropriate to capture the wealth channel of the crash? Would it capture the uncertainty channel that Romer writes about?
10. The income data comes from federal tax returns. Do you see a potential problem there? Hint: less than 5% of population paid federal income tax in the 1920s.
11. Bonus: run the following variant of (1):

$$y_{st} = \alpha + \beta x_s \times MD_t + \gamma_t + \mu_s + e_{st} \quad (2)$$

where MD_t is a time dummy. Note that you will have to drop the dummy for one time period since those are co-linear with the time and state fixed effects. Drop October 1929.

References

- Chodorow-Reich, G., P. T. Nenov, and A. Simsek (2021). Stock market wealth and the real economy: A local labor market approach. *American Economic Review* 111(5), 1613—1657.
- Hausman, J. K., P. W. Rhode, and J. F. Wieland (2019). Recovery from the Great Depression: The farm channel in spring 1933. *American Economic Review* 109(2), 427–472.
- Romer, C. D. (1990). The great crash and the onset of the Great Depression. *Quarterly Journal of Economics* 105(3), 597–624.