# Topics in Macroeconomics

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UCSD, Spring 2022

# Outline


1. Introduction
2. Goldsmith-Pinkham, Sorkin, and Swift, AER 2020
3. Borusyak, Hull, and Jaravel, RESTUD 2022
4. Nakamura and Steinsson, AER 2014
5. Mian, Rao, and Sufi, QJE 2013

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# Cross-Sectional Regressions

$$Y_i = \alpha_i + \beta X_i + \varepsilon_i$$

- Interested in $\beta$.
- Can identify $\beta$ if $E(\varepsilon_i | X_i) = 0$ or suitable instrument with $E(\varepsilon_i | Z_i) = 0$.
- What's the DGP? Two views:
  1. $X_i$ / $Z_i$ is quasi-random heterogenous exposure to the same endogenous shock.
  2. $X_i$ / $Z_i$ is heterogenous, endogenous exposure to heterogenous, quasi-random shocks.

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# Bartik: Canonical Example

- Structural equation:

$$y_l = \tau + \beta x_l + \varepsilon_l$$

  - $y_l$: wage growth in area $l$.
  - $x_l$: employment growth in area $l$.

- Identities:

$$x_l = \sum_k z_{l,k} g_{l,k}, \qquad g_{l,k} = g_k + \tilde{g}_{l,k}$$

  - $z_{l,k}$: employment share in area $l$ in industry $k$.
  - $g_{l,k}$: employment growth in area $l$ in industry $k$.
  - $g_k$: national employment growth in industry $k$.
  - $\tilde{g}_{l,k}$: idiosyncratic component of employment growth rate.

- Bartik (1991) instrument to estimate inverse labor supply elasticity:

$$B_l = \sum_k z_{l,k} g_k$$

- What is exogenous? Shares? Shocks? Product?

# General Setup

- $X$

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