Technical Change and Superstar Effects

Evidence from the Rollout of Television*

Abstract Technical change that improves economies of scale can generate large income growth among top earners at the expense of everyone else. I test this classic "superstar model" in the labor market for entertainers where the historic roll-out of television led to a natural experiment in scale-related technological change. The launch of a local TV station multiplied audiences of top entertainers nearly threefold and skewed the entertainer wage distribution to the right with the biggest impact on the very top tail of the distribution. Below the star level the effects diminish rapidly and all other workers are negatively impacted. The results confirm the predictions of the "superstar model" and are at odds with a wide range of canonical models of technical change.

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*I would love to hear from your and hope we get to talk in person soon. Please send me any comments: fkoenig@cmu.edu.

Motivation and Research Question

1. Why are labor market becoming winner take all markets?
2. Do scale related technical changes produce winner take all markets?
3. Aim: Use quasi-experiment to **test this "superstar" theory**

Setting: Television Made Entertainment Shows Scalable

- **Television is a text-book case of a scale improving technology** and made it easier for entertainers to reach mass audiences

Experiments and Regulatory Rules

Stage I: no TV

pre 1941

Stage II: local filming

1941-1955

Stage III: National

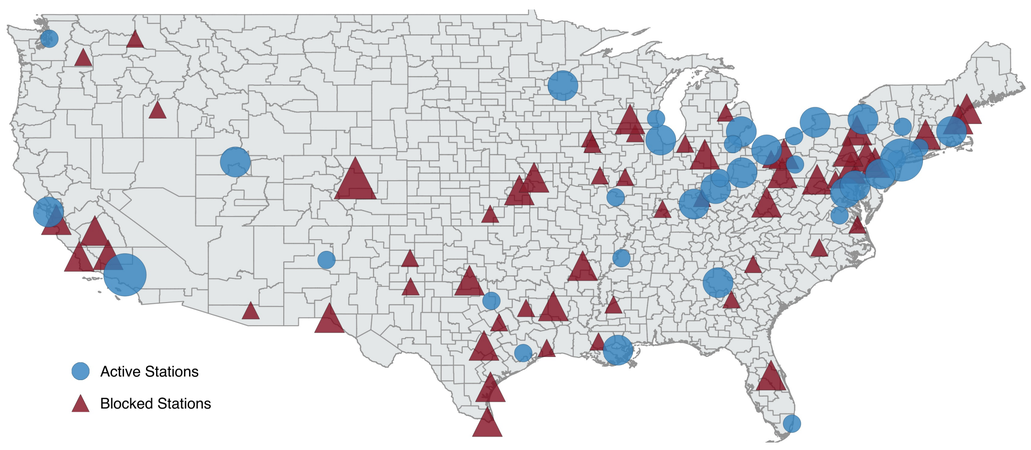
1956 onwards

- **Experiment A:** Television filming appeared in multiple locations, selected by **government priority rules** (Stage II). Data from archival records:

CITY-BY-CITY PRIORITIES
For Processing of Applications for New TV Stations
Indicating Order in Which FCC Will Handle Applications at Start of Processing, July 1, 1952
Issued by FCC May 22, 1952, as Public Notice 52-490
Based on Temporary Processing Procedure Specified in FCC's Sixth Report & Order of April 14, 1952, also known as *Final Allocation Report* (see p. 155 of printed copy published by *Television Digest*)

- **Experiment B:** Regulator shut-down leeds to **locations narrowly missing out** on television launches and creates "placebo stations"
- **Added placebo check:** Local filming eventually declines when **videotaping** makes national production in LA/NYC feasible. Can test if treatment effects disappear again (Stage III)

Location of TV Stations in 1949



Difference in Differences Strategy

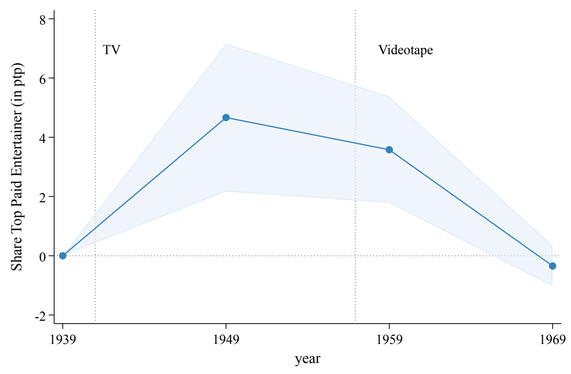
- **Difference in difference** regression of entertainer at top of wage distribution on TV studio

$$\frac{TopEarner_{rot}^{1\%}}{Emp_{ot}} = \alpha + \beta TV_r \times D_t^{TVlocal} + \eta \mathbf{X}_{rot} + \gamma_r + \delta_{ot} + \epsilon_{rot}$$

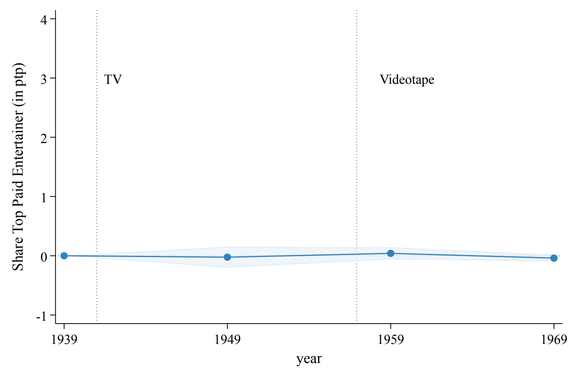
  - Commuting zone (r), occupation (o), year (t)
  - TV_r is the count of TV stations in area r, $D_t^{TVlocal}$ a dummy with value one when TV is produced locally

Effect of TV on Top Incomes in Entertainment

Rollout (Experiment A)

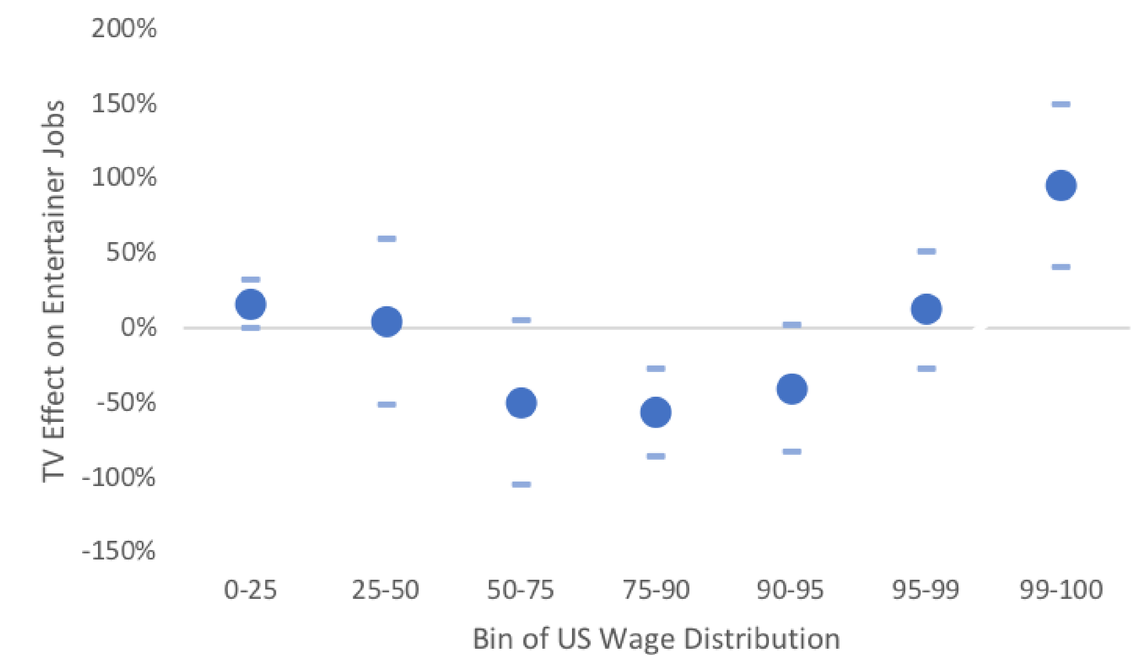


Placebo Stations (Experiment B)



- Share of entertainers among the 1 percent highest paid Americans doubles with a local TV station
- Local effects arise and disappear when local filming is introduced and disappears again
- No spurious effects in places that narrowly miss out on television launches.

Effect on all Percentiles of the Wage Distribution



- Growth in jobs paying extreme wages
- Decline in jobs at the middle of the wage distribution
- Entertainer labor market **moves towards winner take all market**

Testing the Superstar Theory

- Results confirm predictions of the superstar theory. Scale related technical leads to:

☑ Large income gains for top earners

☑ Non-supertars lose out

☑ Top income shares increase, with the largest gains for the top 0.1%, followed by the top 1% and modest gains for the top 10%