

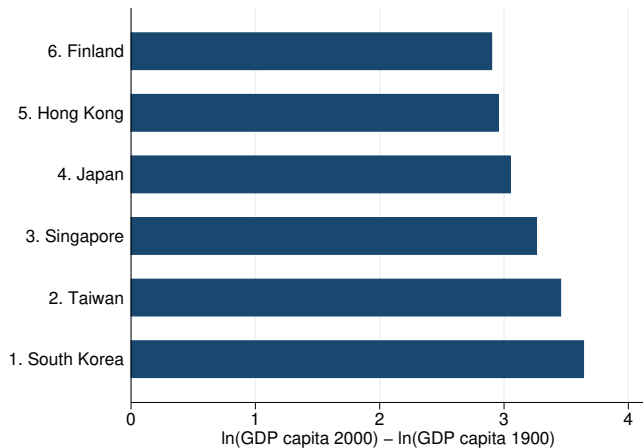
# Structural Change and Intergenerational Mobility: Evidence from the Finnish War Reparations

Matti Mitrunen

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# Motivation

## Fastest growing economies of the 20th century



Source: Bolt et al. 2018

# Motivation

- ▶ Can government jump-start industrialization?
  - ▶ East Asian miracle
- ▶ Old and big question of economic development.
  - ▶ (Rosenstein-Rodan 1943, Lewis 1955, Hirschman 1958)
  - ▶ Vast industrial policy literature. (Amsden 1992, Krueger 1990, Wade 1990, Harrison and Rodriguez-Clare 2009, Rodrik 2008, Juhász 2016, Lane 2017, Dell and Olken 2017)
  - ▶ Still limited causal evidence.

# Motivation

- ▶ Difficult to explore empirically.
    - ▶ Some sectors or places endogenously chosen to benefit.
  - ▶ Finnish war reparations 1944-1952 as a natural experiment combined with rich registry data
1. Possibility result of industrial policy working.
  2. Intergenerational data helps to track the impact.

# War Reparations

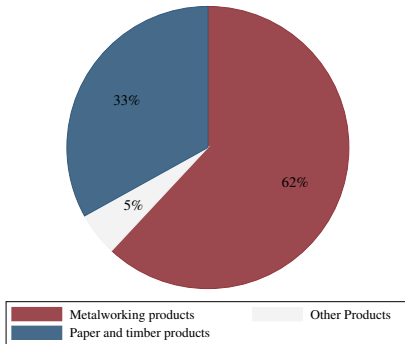
*“Losses caused by Finland to the Soviet Union by military operations and the occupation of Soviet territory will be indemnified by Finland to the Soviet Union to the amount of three hundred million dollars payable over six years in commodities (timber products, paper, cellulose, seagoing and river craft, sundry machinery). “*

*11th of Article of the 1944 Finnish-USSR Armistice.*

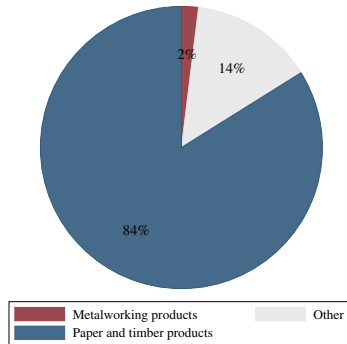
# War Reparations Shock

Structure differed starkly from existing production

War Reparations



Finnish Exports 1929–1938



► Industrial production

► Labor structure

# Not Negotiable

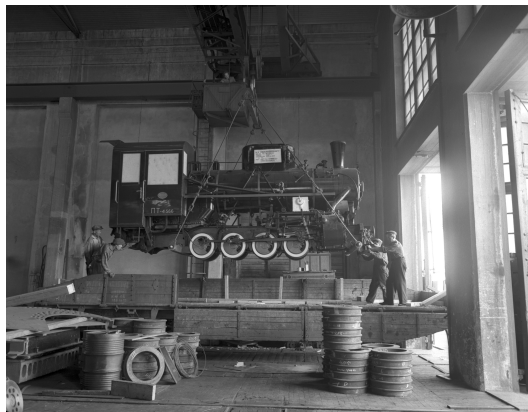
Dictated by the Soviet Union

*“You [the Finnish government] have asked to negotiate about the war reparation payments. I personally do not understand what is there to negotiate. Finland has signed a peace treaty, in which it has committed to carry out certain indemnities to the Soviet Union. Finland can either carry out these reparations or it will be occupied. “*

*Letter from Engineer Antonenko. The Head of Machinery Section in Carelia.*

## Type of Government Intervention

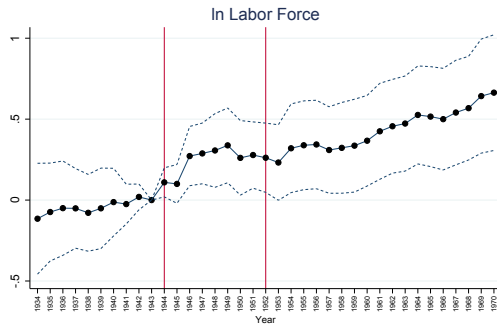
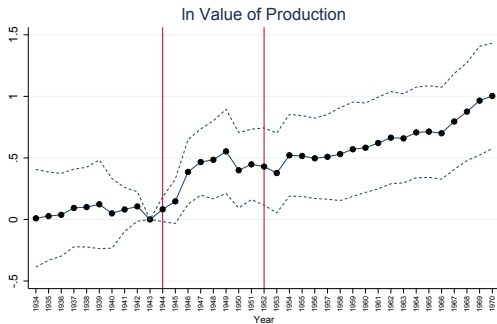
- ▶ Payments took **5% of the yearly Finnish GDP** for 8 years (1944-1952).
- ▶ Government paid companies. Financed through favorable international loans and taxation.
- ▶ Strict and specific quality requirements from the Soviets.
- ▶ Not just scaling up, but new and more difficult products
- ▶ Most significant items were **ships, trains, and other machinery**.





# Within Manufacturing Event Study

Estimated differences relative to 1943



$$Y_{It} = \beta_t \text{Reparations}_I + \gamma_I + \delta_t + \theta_t \mathbf{X}_I + \varepsilon_{It}$$

► Balance

► Table treatment

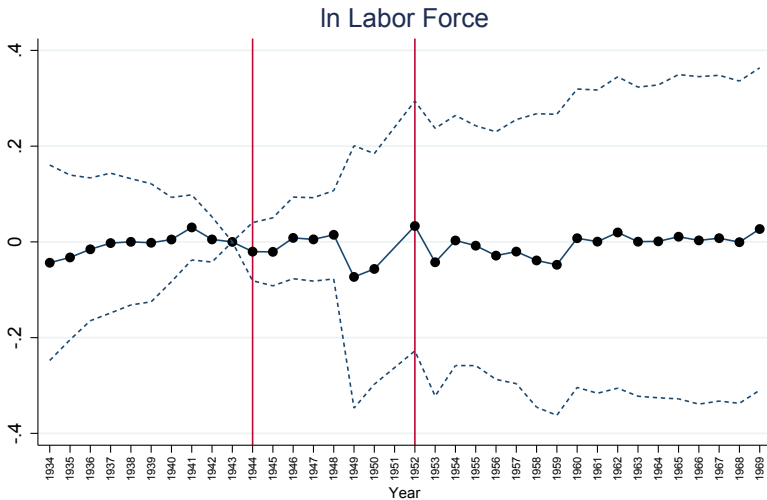
► Table log

► Exports

► Norway placebo

# Norway Placebo

Estimated differences relative to 1943

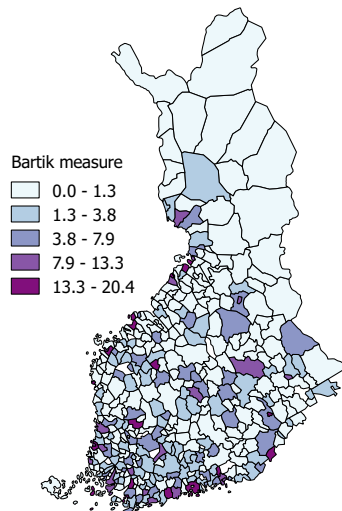


# Measuring Local Impact of the Policy

I construct a Bartik-measure for each municipality using **pre-treatment 1939 labor shares**:

$$Bartik_m = \sum_I \frac{L_{Im}}{L_m} \frac{Reparations_I}{L_I}$$

- ▶  $\frac{L_{Im}}{L_m}$  is share of industry  $i$  workers in municipality  $m$ .
- ▶  $\frac{Reparations_I}{L_I}$  is scaled reparations shock.



# Individual Impact of the Policy

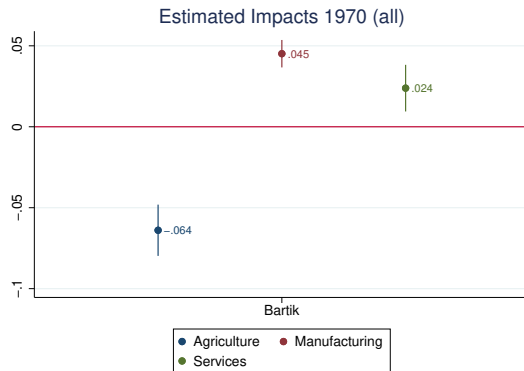
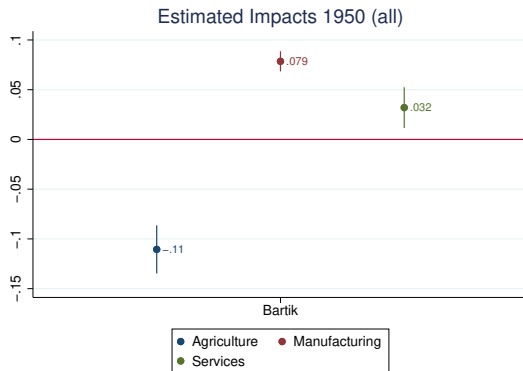
Workers 25-45 in 1950

Main data source is 1950 Finnish census.

- ▶ Can be linked to later censuses. I have social security numbers.
- ▶ Includes information about 1939 industry and place of residence.

I estimate the following model:

$$Y_{im} = \beta \text{Bartik}_m + \gamma \mathbf{X}_m + \varepsilon_{im} \quad (1)$$

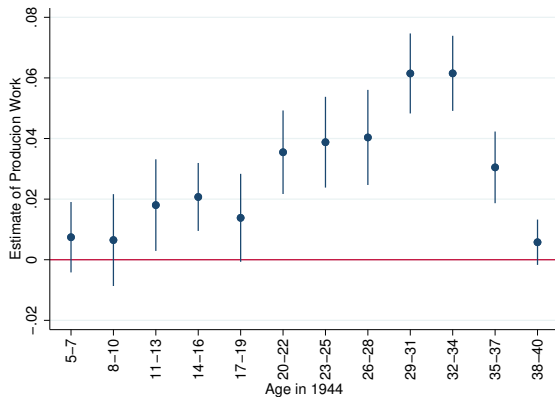


$$Sector_{im} = \beta Bartik_m + \gamma \mathbf{X}_m + \varepsilon_{im}$$

► Table 1950

► Table 1970

# Cohort Estimates for Blue-Collar Production Work in 1970



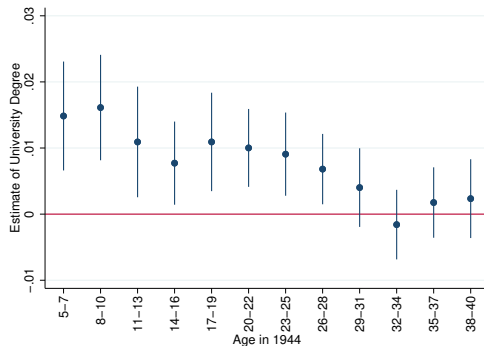
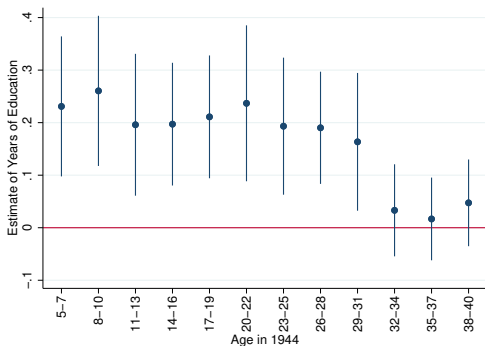
$$Occupation_{im} = \beta_c Bartik_m + \gamma \mathbf{X}_m + \varepsilon_{im}$$

# Occupations

	Agriculture	Production	White-collar	Executive
	(1)	(2)	(3)	(4)
Bartik $\times$ (30-40 in 1944)	-0.050*** (0.007)	0.040*** (0.004)	0.008*** (0.003)	0.003 (0.002)
Bartik $\times$ (under 30 in 1944)	-0.055*** (0.008)	0.024*** (0.004)	0.022*** (0.005)	0.013*** (0.004)
N	144804	144804	144804	144804
Y mean	0.267	0.324	0.163	0.071
$\beta_1 = \beta_2$ (p-val)	0.282	0.001	0.000	0.000

$$Occupation_{(1970)im} = \beta_1 (Bartik_m \times Old) + \beta_2 (Bartik_m \times Young) + \gamma \mathbf{X}_m + \varepsilon_{im}$$

# Human Capital Accumulation in 1970

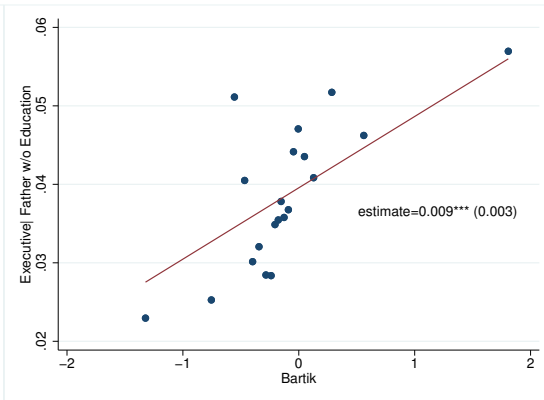
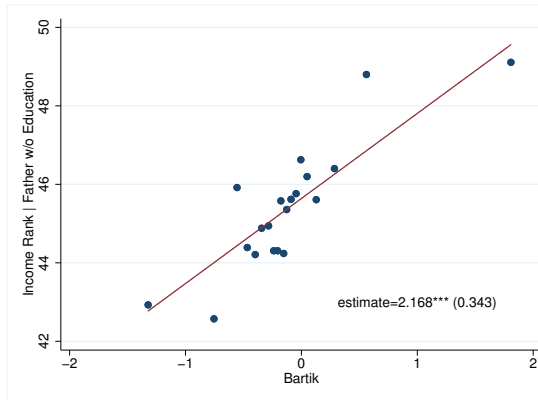


$$Education_{im} = \beta_c Bartik_m + \gamma X_m + \epsilon_{im}$$

[Table](#)
[Table Skill](#)
[Table Parent Income](#)
[Table Distance to University](#)
[Bartik](#)



# Upward Mobility



$$(Y_{im} | \text{Father without primary education}_i) = \beta_c \text{Bartik}_m + \gamma \mathbf{X}_m + \varepsilon_{im}$$

# Intergenerational Mobility

*“Substantial part of the rising trend in per capita income is due to interindustry shift, i.e., a shift of workers from lower-income to higher-income industries. The possibilities of rise due to such interindustry shifts in the service incomes of the initially high-income groups are much more limited than for the population as a whole: they are already in high-income occupations and industries and the range for them toward higher paid occupations is more narrowly circumscribed.”*

*Simon Kuznets. Economic Growth and Income Inequality (1955)*

# Conclusion

- ▶ The paper shows a case where temporary government action led to permanent structural change.
- ▶ The younger generation became more educated and more likely to work in white-collar occupations.
  - ▶ Can help to explain the persistence.
- ▶ Especially helped those from worse backgrounds → more upward mobility.