

Cities the place of women: local labor markets and the gender wage gap

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Introduction

Introduction

- There is a wage premium from living in a large labor market [citations here].
- But little attention has been paid as to how this premium varies by gender.

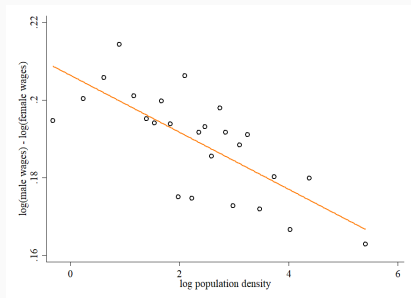
In this paper I document three facts that link the gender wage-gap with the urban wage premium:

1. Today, women **gain relatively** more from being in a denser labor market \implies denser labor markets have **a narrower gender-wage gap**.
2. Women relative gain from being in a denser labor market has increased since 1970 \implies the gender gap-density elasticity went from **0.04** to **-0.01**.
3. sth about possible channels here

- Gender gap literature
- Decline in the urban wage premium
- Urban literature.

Today the gender gap is **narrower** in denser labor markets

Figure 1: Gender wage gap and population density in 2020



Note: figure restricts to CZ with more than 1 people per km². Each point represents about 25 CZ. Year fixed effects are absorbed. Figure generated on 10 Nov 2020 at 18:18:41. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

The negative gradient is robust to:

- Limiting to the largest CZ

Largest CZ

- Weighting scheme

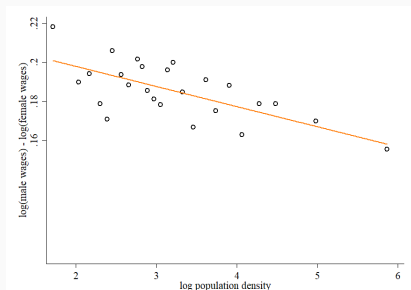
- Controlling for individual characteristics

Residualized wages

The negative correlation is robust

Limiting to the largest CZ

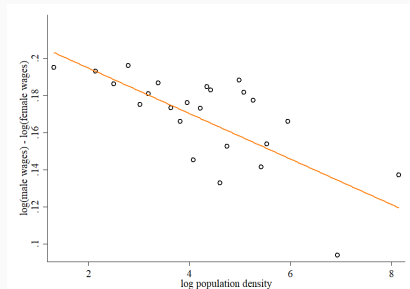
Figure 2: Gender wage gap and population density in the largest CZ



Note: figure restricts to CZ with more than 1 people per km^2 . Each point represents about 13 CZ. Figure generated on 10 Nov 2020 at 18:18:42. Figure generated using the dofile 2.analysis/code_files/write_regression_coefplots.do.

Weighting by population

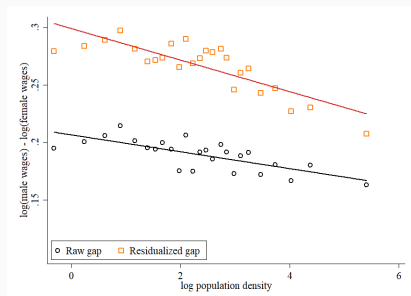
Figure 3: Gender wage gap and population density in 2020 (population weighted)



Note: figure restricts to CZ with more than 1 people per km^2 . Each point represents about 4 percent of the working age population. Figure generated on 10 Nov 2020 at 18:18:42. Figure generated using the dofile 2.analysis/code_files/write_regression_coefplots.do.

It is robust to accounting for individual characteristics

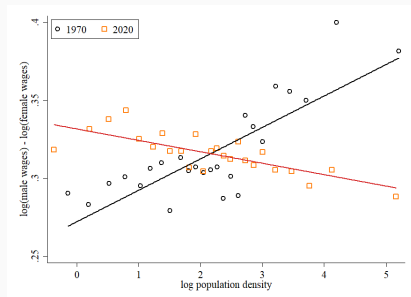
Figure 4: Gender wage gap and population density in 2020 (population weighted)



Note: figure restricts to CZ with more than 1 people per km^2 . Each point represents about 4 percent of the working age population. Figure generated on 10 Nov 2020 at 18:18:43. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

The gender-gap density gradient has declined since 1970

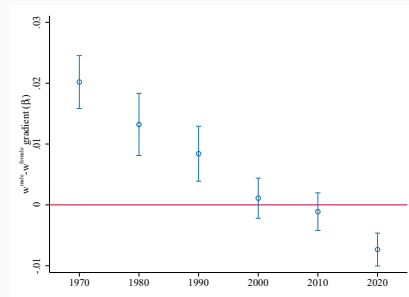
Figure 5: Gender wage gap and population density



Note: figure restricts to CZ with more than 1 people per km². Each point represents about 25 CZ. Year fixed effects are absorbed. Figure generated on 8 Nov 2020 at 14:00:23. Figure generated using the dofile 2_analysis/code_files/write_regression_coefplots.do.

Graph without absorb

Figure 6: Coefficient on population density β_t



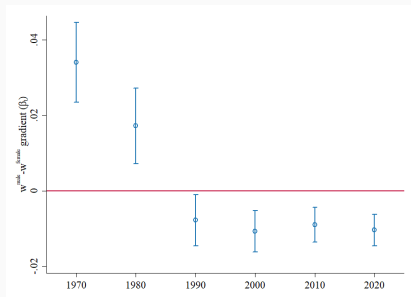
Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:51. Figure generated using the dofile 2_analysis/code_files/write_regression_coefplots.do.

With individual controls

The change in the gradient is robust to:

- Limiting regressions to the biggest CZ biggest CZ.
- Using weighting schemes commonly used in the literature (estimates become much more imprecise) population weighting.
- Using only within-region / within-state variation adding FE.
- Adjusting wages by: age, education, foreign born dummy, and education residualizing wages.
- Using log of CZ population as independent variable .

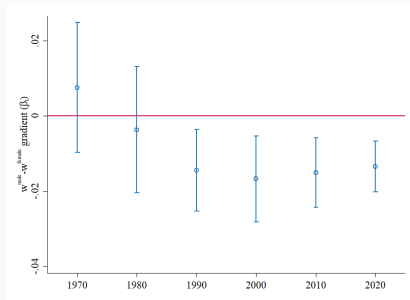
Figure 7: Coefficient on population density β_t for largest CZ



Note: figure restricts to more than 2 people per km² in 1950. Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:52. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

With individual controls

Figure 8: Coefficient on population density β_t (population weighted)

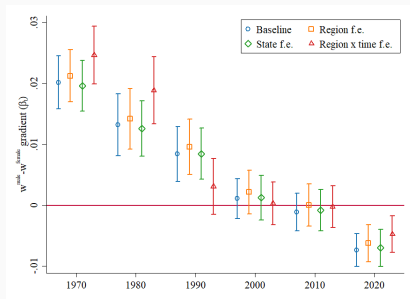


Note: figure restricts to more than 1 people per km² in 1950. Regressions weighted by the CZ population in 1970. Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:52. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

Graph without absorb

Robustness

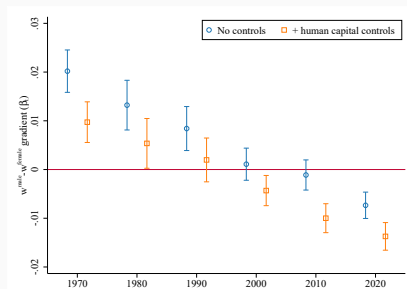
Figure 9: Coefficient on population density β_t adding fixed effects



Note: figure restricts to more than 1 people per km² in 1950. Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:53. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

With individual controls

Figure 10: Coefficient on population density β_t controlling for worker characteristics



Note: figure restricts to CZ with more than 1 people per km². The regressions are done on data aggregated at the CZ level. Bars show 95% robust confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:53. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

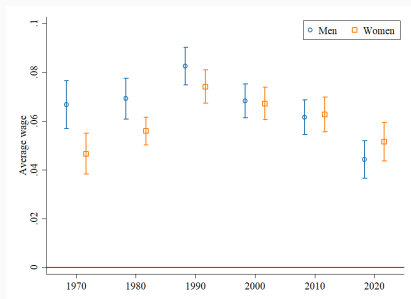
Graph without absorb

The gradient decline in perspective: several benchmarks

- Translate coefficients in terms of gap from small vs densest CZ
- Coefficients are percent of gender gap sd.
- Change in coefficients in terms of urban wage premium.

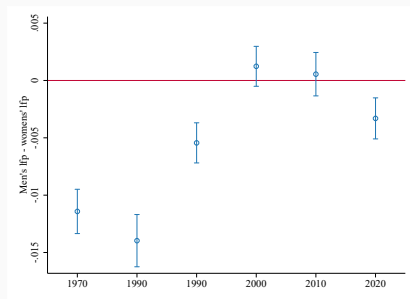
A tale of women's success and male decline in denser labor markets

Figure 11: Coefficient on population density β_t



Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 8 Nov 2020 at 14:00:12. Figure generated using the dofile 2_analysis/code_files/write_regression_coefplots.do.

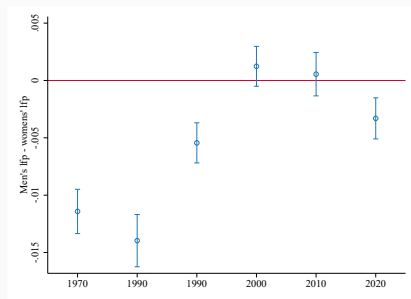
Figure 12: Coefficient on population density β_t



Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 8 Nov 2020 at 14:00:13. Figure generated using the dofile 2_analysis/code_files/write_regression_coefplots.do.

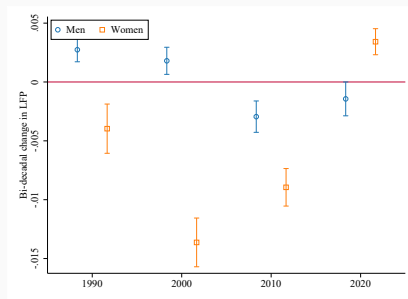
A tale of women's success and male decline in denser labor markets

Figure 13: Coefficient on population density β_t



Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 8 Nov 2020 at 13:34:16. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

Figure 14: Coefficient on population density β_t



Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 8 Nov 2020 at 14:00:13. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

What can explain the decline in the gradient?

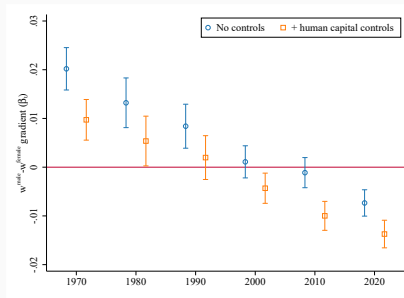
- Increased sorting of high-skill women in the densest CZ.
- Rise of women college education
- CZ industrial structure.

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- Rise of women college education
- CZ industrial structure.

Not readily explained by sorting on human-capital variables

- If high-skill women increasingly sort into denser labor markets (relative to men) \implies gender gaps in denser CZ will decrease faster over time.
 - Decrease in the gradient should disappear once education is taken into account.
 - Not supported by the data.

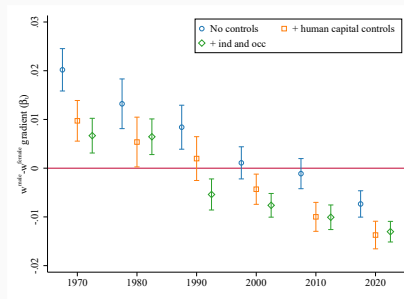
Figure 15: Coefficient on population density β_t controlling for worker characteristics



Note: figure restricts to CZ with more than 1 people per km². The regressions are done on data aggregated at the CZ level. Bars show 95% robust confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:53. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

Change in the gender gap gradient is concentrated in workers without a college degree

Figure 16: Coefficient on population density β_t controlling for worker characteristics



Note: figure restricts to CZ with more than 1 people per km². The regressions are done on data aggregated at the CZ level. Bars show 95% robust confidence intervals. Standard errors clustered at the CZ level. Figure generated on 11 Nov 2020 at 19:32:54. Figure generated using the `dofile 2_analysis/code_files/write_regression_coefplots.do`.

Is it polarization of the occupational structure?

-

Not explained by increase in inequality

-

Fact 1: there are persistent differences in the level of the gender gap across CZ

Table 1: CZ-level gender gap statistics

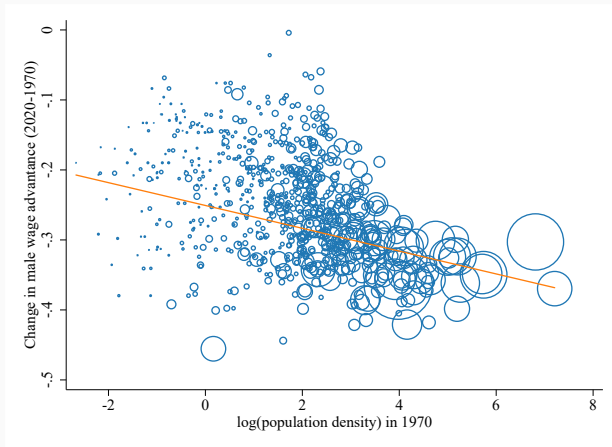
Statistic	Census year					
	1970	1980	1990	2000	2010	2020
Average gap	0.44	0.41	0.33	0.26	0.21	0.19
Standard deviation	0.07	0.08	0.06	0.05	0.05	0.05
Distribution						
p90	0.53	0.51	0.40	0.32	0.26	0.25
p75	0.49	0.47	0.37	0.29	0.24	0.22
Median	0.44	0.41	0.33	0.26	0.21	0.19
p25	0.40	0.36	0.29	0.23	0.17	0.16
p10	0.35	0.32	0.26	0.20	0.15	0.13

Persistence: 20-year auto-correlation coefficient $> 50\%$.

Fact 2: there is wide variation in the change of gender wage gap across CZ

Fact 3: decline of the gender gap was faster in denser CZ

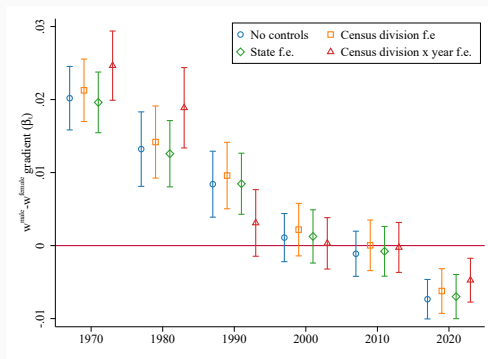
Figure 17: Change in male wage advantage in US CZ



Fact 4: the gender gap - density gradient has inverted

Regression specification: $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t \ln(density)_{rt} + \dots$

Figure 18: Coefficient on population density β_t



Note: figure restricts to CZ with more than 1 people per km². Bars show 95% confidence intervals. Standard errors clustered at the CZ level. Figure generated on 19 Oct 2020 at 19:41:25. Figure generated using the dofile 2_analysis/code_files/write_regression_coefplots.do.

The change in the gender-gap gradient is big

-
- Men vs women urban wage premium

This change in the gradient:

- is not driven **permanent** regional differences across the US [graph adding the fixed effects].
- is not driven any single CZ [1970 vs 2020 graph].
- is not present when looking at race race graphs.
- is also present when I zoom in on the 240 most dense labor markets [limit to the 40% most dense labor markets]
- also appears when including part-time workers in the sample

On coefficient size

Distribution illustration

Within-group graphs

What is driving these pattern? A mix of women's progress and men decline

There are two distinct periods:

- **1970-1990:** both sexes gain in denser CZ, but women's gains are larger.
- **1990-2010:** changes in the gradient are driven by men's decline in denser labor markets.

How big are these coefficients?

Table 2: Male advantage changes implied by estimated elasticities

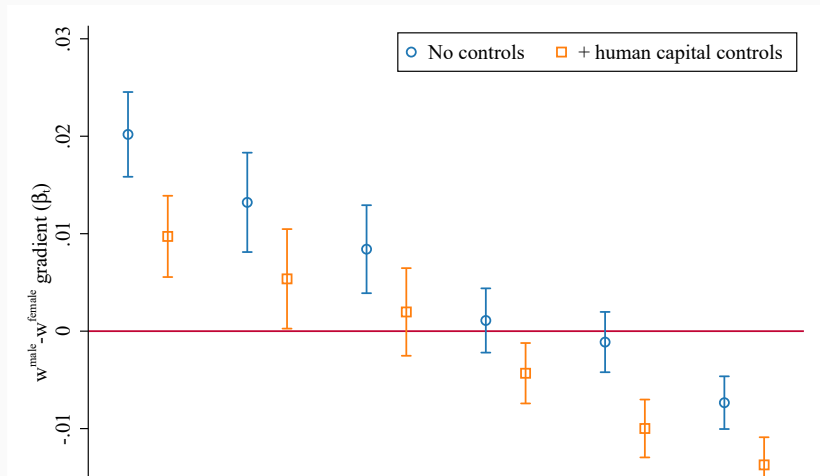
	1970	1980	1990	2000	2010	2020
Density elasticity (β)	0.020	0.013	0.008	0.001	-0.001	-0.007
s.d. wage gap	0.073	0.077	0.060	0.049	0.049	0.050
β/sd	0.278	0.173	0.141	0.022	-0.023	-0.146
IC range	0.029	0.019	0.013	0.002	-0.002	-0.012
(% mean gap)	0.065	0.047	0.040	0.007	-0.009	-0.064
90 - 10 pctl range	0.061	0.040	0.027	0.004	-0.004	-0.025
(% mean gap)	0.137	0.097	0.082	0.014	-0.018	-0.133

Note: changes based on unweighted estimated elasticities. Sample restricted to full-time year-round workers. Table generated on 28 Sep 2020 at 15:15:18.

What can account for the change in the density-gradient?

Regression specification: $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t \ln(density)_t$

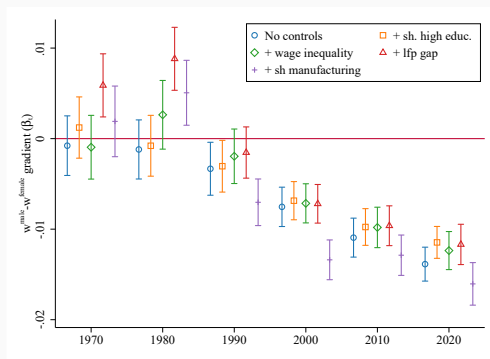
Figure 19: Coefficient on population density β_t controlling for worker characteristics



Adding czone-level variables

Regression specification: $w_{rt}^{men} - w_{rt}^{women} = \alpha_{rt} + \beta_t \ln(density)_t + X_{rt}\gamma_t$

Figure 20: Coefficient on population density β_t controlling for worker characteristics



Note: figure restricts to CZ with more than 1 people per km². Regression includes census division \times year fixed-effects. Additional controls include number of children, marital status and being a female head of household. The regressions are done on data aggregated at the CZ level. Bars show 95% robust confidence intervals. Standard errors clustered at the CZ level. Figure generated on 19 Oct 2020 at 19:41:29.