

MINIMUM WAGE IMPACTS AND OLIGOPSONY

How to proceed
at National Treasury Secure Data Facility

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<http://seirito.github.io/MinWageMarketPower/docs/HowWeProceedAtNTSDF.html>

TABLE OF CONTENTS

- Estimation
- Task implementation and communications
- Contracts

ESTIMATION

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- Want to test: Disemployment impacts $\sim \bar{\text{HHI}}$
 1. First stage: $w^M \Rightarrow y_{jmt}$ (mean earnings), MW earnings elasticity b at
 - a. **Market m level (Azar et al. 2023, n=56K-57K)** Compute&use market m mean of each year t
 - b. **Establishment j level of market m** Compute&use establishment j mean of market m of each year t
 - c. **Individual i level of establishment j , market m** Use individual i earning of establishment m , market m of each year t
 2. Second stage: $w^M \Rightarrow L_{mt}$ (employment), MW employment elasticity $\beta + \delta$ at
 - a. **Market m level**
 - b. **Establishment j level of market m**

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Azar et al. (2023)

- Use General Merchandise sector's stock clerks and order fillers (SOC 43-5081), retail salespersons (SOC 41-2031), and cashiers (SOC 41-2011) in Burning Glass data, 2010q1-2016q4
 - Use all county-quarter obs with at least 2 obs in Table 2
 - Restricting to all county-quarter obs with at least 8 obs in their Table A7 (n=47K-56K)
- “Labour market” = occupation by county i
 - Estimate separately by occupation
 - HHI_{mt} of market m (occupation (SOC-6) level by county for all posters of all industries) in quarter t
 - Citing Schubert, Stansbury, and Taska (2024), job switches are stable at 6 digit level occupation code

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Azar et al. (2023)

- Use mean \overline{HHI}_m of HHI_{mt} for all t as concentration measure
 - Endogeneity? OK, because $\text{corr}[HHI_{mt}, w^M] \simeq 0$ and robust to using only pre-period \overline{HHI}_m
- Also use a binary low/high concentration: $HHI^h = 1$ if $\overline{HHI}_m > .25$

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$$\ln Y_{it} = \alpha + \underbrace{\beta \ln w_{it}^M + \psi HHI_i + \delta \ln w_{it}^M * HHI_i}_{\text{productivity proxy}} + \underbrace{\zeta \ln TotEarnings_{it} + \phi \ln TotEmployed_{it} + \eta \ln Pop_{it} + \tau_t \ln Unemp_{it}}_{\text{market level heterogenous trends}} + \gamma_i + \tau_{ct} + \chi I_{st}.$$

Y_{it} : Employment of county i in quarter t

τ_{ct} : census division specific quarter fixed effects

χ : state specific linear trends

Clustering at state level

- $\delta > 0$ in Azar et al. (2023), Table 2
- $\beta < 0$ only when HHI is added
- $\beta = 0$ when HHI is not added as a covariate (Table A3)



Our specification 1, aligned to Azar et al. (2023)

$$\begin{aligned}
 \ln Y_{jt} = & \alpha_t + \beta_t \ln w_t^M + \psi HHI_i + \delta_t \ln w_t^M * HHI_i \\
 & + \zeta \ln TotEarnings_{it} \\
 & + \phi \ln TotEmployed_{it} + \eta \ln Pop_{it} + \tau_t \ln Unemp_{it} \\
 & + \gamma_i + \pi_{it} + \chi I_s t + \epsilon_{it}.
 \end{aligned}$$

τ_{it} : market-by-year fixed effects needs to be dropped, due to collinearity with
 $\ln w_t^M * HHI_i$



Our specification 2, aligned to Harasztsosi and Lindner (2019)

% change in $Y_{jt} = \alpha_t + \beta_t FA_j + \psi HHI_i + \delta_t FA_j * HHI_i + \gamma' \mathbf{x}_{it} + \epsilon_{it}$.

More in detail

$$\frac{Y_{jt} - Y_{j2012}}{Y_{j2012}} = \alpha_t + \beta_t FA_j + \psi HHI_i + \delta_t FA_j * HHI_i + \zeta \ln TotEarnings_{it} + \phi \ln TotEmployed_{it} + \eta \ln Pop_{it} + \tau_t \ln Unemp_{it} + \gamma_i + \chi I_s t + \epsilon_{it}.$$

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Other specifications in Azar et al. (2023)

- Heterogenous impacts by sequentially adding covariates of “market level heterogenous trends” (Table 5)
- Wage distribution change below/above w^M : Bunching design of Cengiz et al. (2019)
 - $w^M + HHI + w^M * HHI_i \Rightarrow$ output prices [local (CBSA) all items CPI subcategory (Table A19), commodities CPI subcategory (Table A20)]

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Placebo tests

- Use other sector firms/workers with no minimum wage workers
 - Finance, dentists, accounting, consulting?
 - By occupation: Physicians' offices, registered nurses, medical assistants, vocational nurses, medical accountant-auditor, accounting, tax preparation, book keeping, payroll service providers ([Azar et al. 2023, Table A](#))
- Use pre-period observations
 - Only 2 years are used in Kilumelume et al. (2024). Can use a separate sample that extends backwards, which is used only for placebo testing because the attrition rate is high.



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TASK IMPLEMENTATION AND COMMUNICATIONS

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Main analysis data

IRP5-HHI

- IRP5/Job level/v5/beta/IRP5_20YY_cleaned.dta, 2008-2022 → HHI
- HHIs are computed at main place, local municipality, district, province levels, by
 - low/high wage
 - seasonal/non-seasonal jobs: period employed from, period employed to
 - gender: gender
 - age group: dateofbirth
 - Need more South African elements.

CIT-IRP5 (Michael's estimation data)

- CIT-IRP5/v5 with SIC7 2 digits = 11-16, available 2008-2022 but use 2011-2018/2021
- Replicated by Noreen

[http://seirioito.github.io/MinWageMarketPower/docs/HowWeProceedAtNTSDF.html?print-pdf#](http://seirioito.github.io/MinWageMarketPower/docs/HowWeProceedAtNTSDF.html?print-pdf=)/references

1	Imputed Main Industry Code 5 digit level (SIC 7)
2	1610. Support activities for crop production 15,871
3	1620. Support activities for animal production 7,294
4	1630. Post-harvest crop activities 5,174
5	1640. Seed processing for propagation 1,918
6	Total 30,257

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Once merged, use R/rmarkdown for estimation and visualisation.

- Need `pandoc` to be installed on local c drive.
- Is TinyTex installed? Need to run: `tinytex::install_tinytex()` in R
 - For portable zip files, see <https://github.com/rstudio/tinytex-releases>

Share scripts on Github

- My `MinWageMarketPower` repo
- Noreen needs to install git for windows in her PC

<https://github.com/git-for-windows/git/releases/download/v2.47.0.windows.2/Git-2.47.0.2-64-bit.exe>

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Online meetings: @NT-DSF, @Tokyo, @Stellenbosch

- Use google meet on laptop/phone @NT-SDF to share terminal screen
- Biweekly, wednesday 09:30-10:00 SAST (16:30-17:00 JST)
- Airtme: R199 (20GB anytime + 20GB night for 32 days) * 7 (Nov-May) = R1400

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CONTRACTS

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- Signees: IDE and Stellenbosch U
- SU subcontracts out the tasks to Noreen
- Periods: Dec/Jan - Feb
- Amount: About 70K Rands (depends on FX rate fluctuations)
- Deliverable: Result html produced by rmarkdown

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Results with SIC7-2digits = 11-16

	Unbalanced	Survivors
Avg wage of low wage workers	↑ +1 to +3	↑ +3 to +4
Capital	No change	↑ +2 to +4
Employment	↓ +2 to +3, +4 barely above pval 10%	↓ +2 to +4
Capital intensity	↑ at +3, +4 barely above pval 10%	↑ at +1 to +4
Labour costs per worker	↑ at +3, +2 barely above pval 10%	↑ +2 to +4
Non-seasonal employment	↓ +2 to +4	↓ at +4, point estimates ↓ from +1
Seasonal employment	↓ at +2 barely above pval 10%	No change

In general, Survivor sample shows stronger responses, while Unbalanced sample shows weaker responses

Azar, José, Emiliano Huet-Vaughn, Ioana Marinescu, Bledi Taska, and Till von Wachter. 2023. "Minimum wage employment effects and labour market concentration." *The Review of Economic Studies* 91 (4): 1843–83.

<https://doi.org/10.1093/restud/rdad091>.

Cengiz, Doruk, Arindrajit Dube, Attila Lindner, and Ben Zipperer. 2019. "The effect of minimum wages on low-wage jobs." *The Quarterly Journal of Economics* 134 (3): 1405–54. <https://doi.org/10.1093/qje/qjz014>.

Harasztsosi, Péter, and Attila Lindner. 2019. "Who Pays for the Minimum Wage?" *American Economic Review* 109 (8): 2693–2727.

Schubert, Gregor, Anna Stansbury, and Bledi Taska. 2024. "Employer Concentration and Outside Options." Available at SSRN 3599454.

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