

ECON 490: Capstone Paper Outline

Source of Income Policies and the Housing Choice Voucher Program

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1. Introduction

- **Research Question:** In this paper, I examine the effects of source of income (SOI) policies which explicitly protect housing choice vouchers as a protected source of income. I assess the effects of these policies on the renters who use housing choice vouchers, focusing on the time it takes for voucher recipients to secure housing.
- **Motivation for research question (I discuss these points further in the Background section):**
 - The housing choice voucher program is the primary housing assistance program in the United States and offers a range of important benefits for program participants.
 - Voucher holders must find private-market housing to participate in the voucher program, and many landlords engage in discrimination against housing choice voucher recipients.
- **Methods:**
 - County-by-year data on SOI policies merged with data from Housing and Urban Development (HUD) on voucher recipients in the Picture of Subsidized Housing (PSH).
 - Difference-in-difference and event study research designs used to identify effects of SOI policies on renter outcomes.
- **Key findings:**
 - 18 percent decline in wait times prior to securing housing for voucher recipients, causal interpretation of these findings supported by event study estimates.

2. Background

- **Theme 1:** Existing research has highlighted the benefits of participation in the HCV program.
- **Theme 2:** Landlord discrimination against voucher recipients has been documented by researchers.
- **Theme 3:** Several studies have examined SOI policies.

3. Methods

3.1 Data

Definitions and sourcing for key variables:

- **Key Explanatory Variable:** My key explanatory variable is whether or not a jurisdiction has an SOI policy in effect.
 - In my working data set, my SOI policy measure is a dummy variable set equal to 1 for jurisdictions with an SOI policy in effect, and 0 otherwise.
 - I use data from the Poverty & Race Research Action Council to identify which states, counties, and cities have implemented SOI policies between the years 2000 and 2020.
- **Key Outcome Variables:** My primary outcome variable is the number of months that voucher program participants must wait prior to being able to move into rental housing units using their voucher.
 - Data on wait times is downloaded from the Picture of Subsidized Households (PSH) county-by-year files available from the US Department of Housing and Urban Development (HUD).
 - In my working data set, I use the log value of wait times as my primary outcome variable. Because this is county-level data, there are no observations with wait times of 0 months (so we can log all values). I drop all counties that do not report average wait times for each year between 2000 and 2020.
- Additional demographic and economic control variables are calculated using the American Community Survey (ACS) state-by-year level data.
 - Demographic controls include fractions of the state population that are Black, Hispanic, and female, as well as average age, high school graduation rate, and the fraction of population that is married.
 - Economic controls include state employment-to-population ratio, the log value of average household income, the fraction of the population with incomes below the poverty threshold, as well as SSI and SNAP reciprocity rates.

Descriptive output for key variables:

- In Table 1, I present the average value of SOI policies and log wait times across all county-year observations in my working data set.

- In Figure 1, I show a map of the jurisdictions that have implemented SOI policies across the US.
 - Important pattern = SOI policies have been implemented throughout the country, including traditionally conservative jurisdictions such as Utah and counties in FL and TN.
- In Figure 2, I show the number of SOI policies implemented over time for my analysis sample.
 - Important trend = policies are increasingly common later in my sample, with most policies being implemented during or after 2014.

Structure of working data set:

- Each row of my working data set is a county in a particular year.
- The SOI policy variable indicates whether that county had an SOI policy in effect during that year, while the log wait time variable indicates the log value of the average wait time in months prior to moving into new housing for all voucher recipients in that county and year.

3.2 Empirical Strategy

- The goal of my data analysis is to identify the causal effect of SOI policies on wait times for voucher recipients.
- First stage of analysis – in Table 2, I present the results from a difference-in-difference research design, in which I estimate the following regression via OLS:

$$\log(\text{Wait Time}_{cst}) = \alpha_0 + \alpha_1 \text{SOI}_{cst} + \alpha_2 X_{st} + \gamma_c + \tau_t + \epsilon_{cst}$$

- My primary explanatory variable is SOI_{cst} , a dummy variable for whether county c in state s has an SOI policy in effect in year t .
- The coefficient α_1 is the estimated impact of SOI policies on wait times for voucher recipients living in county c .
- I include fixed effects for county and year, denoted γ_c and τ_t respectively, in addition to X_{st} , a set of time-varying, state-level economic and demographic controls (listed above).
- All standard errors are heteroskedasticity robust and clustered on the county level.
- Second stage of analysis – in Table 3, I present the results from estimating an event study variation of the approach described above.
 - Using an event study allows me to assess the parallel trends assumption required to interpret the results from the first stage of my analysis as the causal impact of SOI policies.

- I will show the estimated results from this event study as a figure, plotting point estimates and corresponding 95 pct. confidence intervals for the estimated effect of SOI policies on $\log(\text{wait times})$ in the years immediately before and after the implementation of SOI policies.
- Each estimated coefficient from this event study can be interpreted as the difference between $\log(\text{wait times})$ in jurisdictions that implemented an SOI policy relative to those that didn't, X years before or after the implementation of that policy.

4. Results

- The results from the first stage of your analysis
 - In Table 2, I estimate the effect of SOI policies on average $\log(\text{wait times})$. In each of the three panels, I add control variables (see tables notes for details).
 - In Column (3), the final / preferred specification, I find that SOI policies are associated with an approximately 18 percent reduction in the time that voucher recipients spend prior to moving into rental housing.
 - On average, new voucher applicants wait around 14 months between applying for a voucher and being able to move into housing using their voucher. The 18 percent estimated decline in wait times corresponds to a reduction of around 2.5 months in total wait times.
 - SOI policies have the ability to materially reduce the time that voucher recipients spend waiting to use their voucher; reducing this time allows voucher recipients to reap the benefits of program participation more quickly.
- The results from the second stage of your analysis
 - Use an event study to assess whether or not we can interpret the results above as the causal impact of SOI policies on wait times.
 - No evidence of differential trends in wait times prior to the implementation of SOI policies in treatment vs. control jurisdictions – pre-treatment coefficients are jointly indistinguishable from 0.
 - Results from the second stage of analysis support a causal interpretation of the results reported in Table 2 and explore the dynamic effects of SOI policies. Post-treatment effect of SOI policies suggests that declines in wait times increase in the years following policy implementation.

5. Conclusion

- The voucher program offers well-documented benefits to program participants including reducing housing security, homelessness, and poverty.
 - Reaping these benefits, however, requires that program participants are able to secure housing; many landlords in many jurisdictions discriminate against voucher holders.
 - SOI policies are intended to prevent this discrimination.
- This paper provides evidence that SOI policies allow voucher recipients to move into voucher-subsidized housing more quickly, with wait times for housing decreasing by ~18 pct. following the implementation of an SOI policy.

Table 1: *Summary statistics for SOI policy variable and key outcome variable.*

	Mean	SD	10 th Pct	90 th Pct
SOI Policy Indicator Variable	0.09	0.29	0	1
Log(Months Waiting Prior to Moving Into Housing)	2.65	0.87	1.48	3.67

NOTES: Data is aggregated to the county-by-year level. The analysis sample is comprised of the 1,640 counties for which non-missing records for log months waiting were available in all years between 2004 and 2019. This sample is comprised of 26,460 county-year observations.

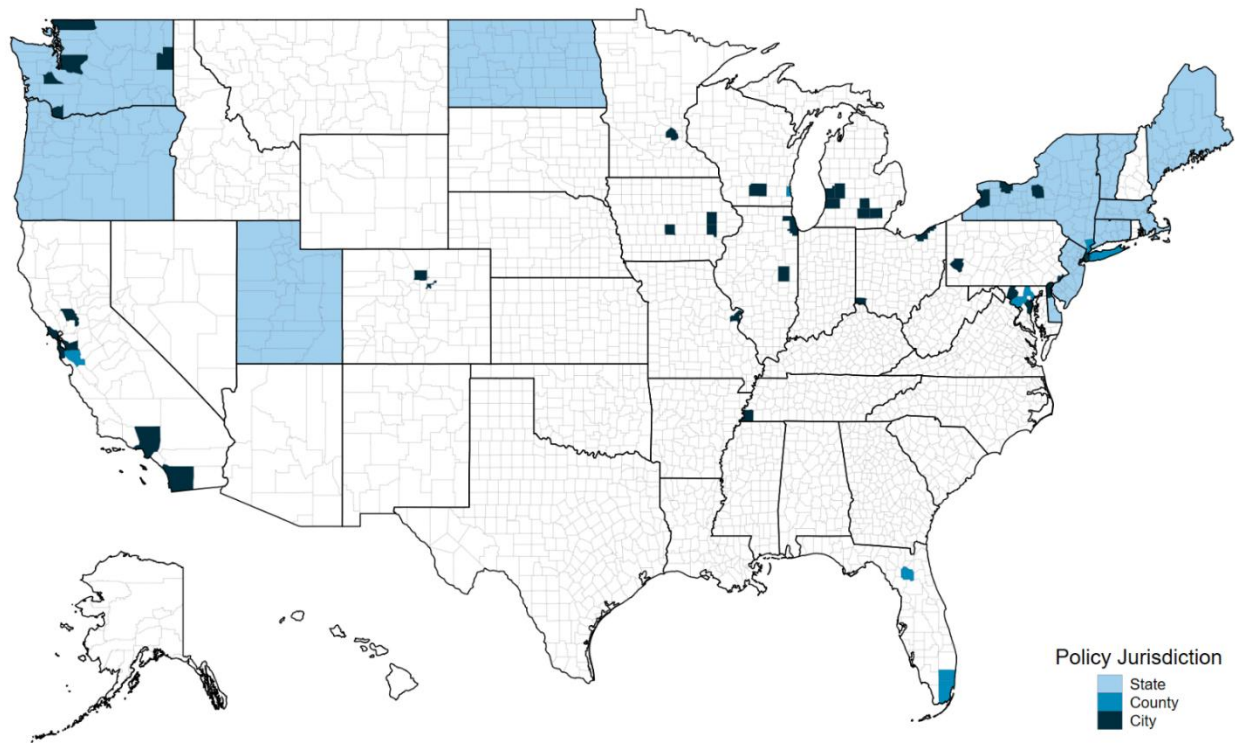
Table 2: *Difference-in-difference estimates of the effect of SOI policies on wait times for new voucher recipients prior to moving into housing*

Outcome: Log(Months Waiting)	(1)	(2)	(3)
Source of Income Law	-0.178*** (0.044)	-0.187*** (0.042)	-0.179*** (0.043)
Observations	26,240	26,240	26,240
Mean(Outcome)	2.65	2.65	2.65
<i>Controls</i>			
Demographic Shares	.	Y	Y
Economic Controls	.	.	Y

NOTES: Outcome data is from the Department of Housing and Urban Development's (HUD) Picture of Subsidized Households county-level records from 2004 to 2019. These records are aggregated to the county-by-year level and include 1,640 counties. All specifications include county and year fixed effects. Demographic shares include a vector of controls for the fractions of the state population that are Black, Hispanic, and female, as well as average age, high school graduation rate, and the fraction of population that is married. Economic controls include state employment-to-population ratio, the log value of average household income, the fraction of the population with incomes below the poverty threshold, as well as SSI and SNAP reciprocity rates. All standard errors are clustered at the county level.

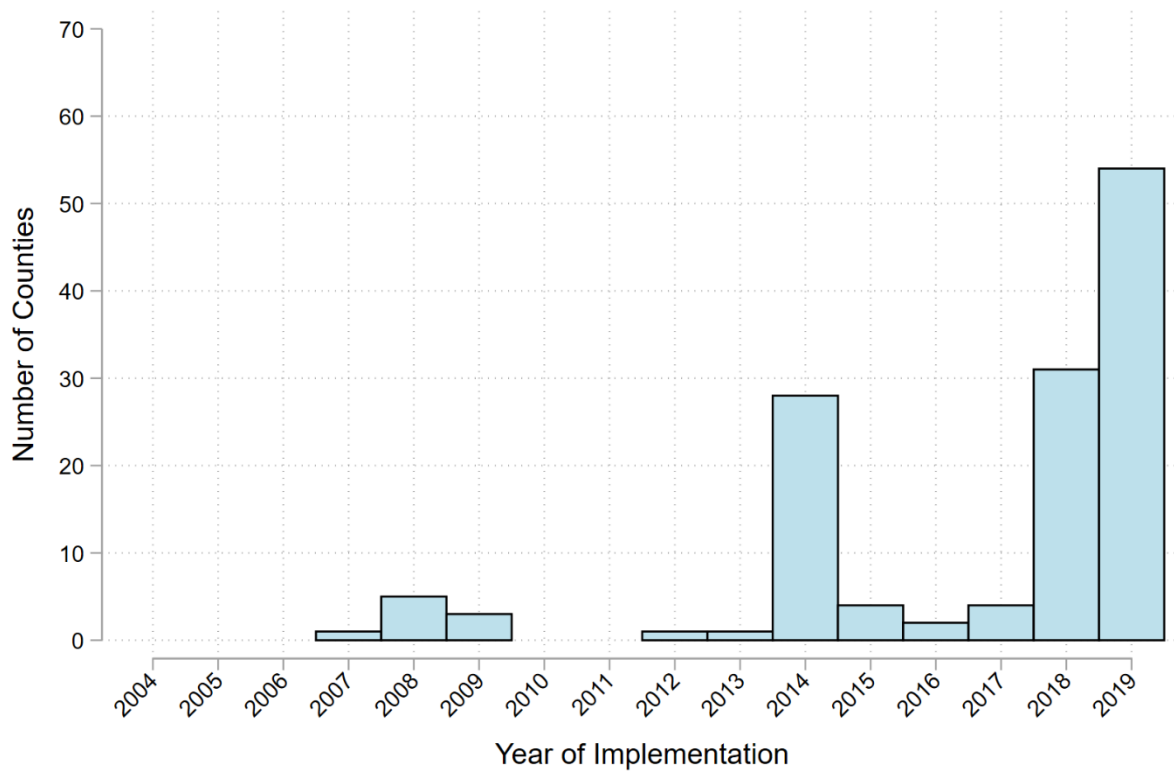
* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

Figure 1: *SOI policies implemented across the United States as of December 2019*



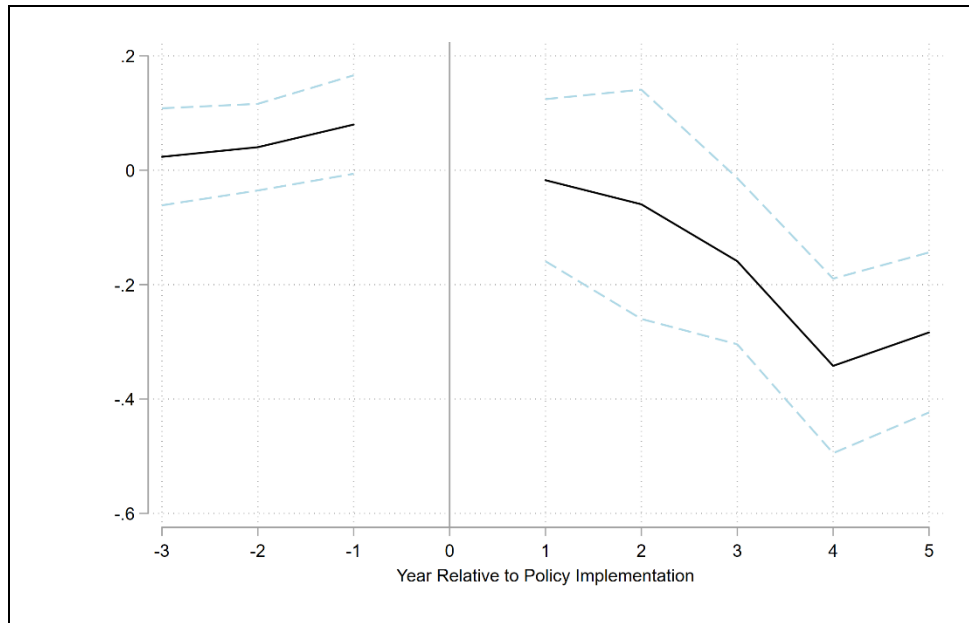
NOTES: All source of income (SOI) policies covering housing choice vouchers in effect as of the end of 2019 are plotted above. Policies are plotted across counties; “Policy Jurisdiction” denotes whether the first SOI policy affecting a given county was implemented at the state, county, or city level. Cities which implement SOI policies are matched to all counties which intersect with that city’s boundaries and each intersecting county is counted as having an SOI policy.

Figure 2: *Implementation of SOI policies over time*



NOTES: This graph reports the number of counties in which an SOI policy specifically covering housing choice vouchers was implemented each year between 2004 and 2019. The reported counts correspond to the number of counties newly treated by such policies in a given year (e.g., in 2014, 28 counties were treated by SOI policies as a result of the implementation of a state, county, and local policy). The sample of counties is restricted to the 1,640 counties that comprise the analysis sample for the county-level results presented in Tables 1 and 2; for a description of sample-inclusion criteria, see Data section of Outline.

Figure 3: *Difference-in-difference estimates of the effect of SOI policies on wait times for new voucher recipients prior to moving into housing*



NOTES: Outcome data is from the Department of Housing and Urban Development’s (HUD) Picture of Subsidized Households county-level records from 2004 to 2019. These records are aggregated to the county-by-year level and include 1,640 counties. Event study estimates are calculated using the imputation-based estimator from Borusyak et al. (2021); SOI policies implemented between 2007 and 2014 identify the event-time indicators above. All specifications include county and year fixed effects; standard errors are clustered at the county level. Dashed lines denote 95 percent confidence intervals.

Screenshot of Working Data: *Check requirements on Canvas page*

	statefip	state_abb	county_name	county_fip	year	log_months-g	D_SOI_effec~v
5	41	OR	CLATSOP	7	2004	3.295837	0
5	41	OR	CLATSOP	7	2005	2.890372	0
7	41	OR	CLATSOP	7	2006	2.995732	0
8	41	OR	CLATSOP	7	2007	2.995732	0
9	41	OR	CLATSOP	7	2008	2.995732	0
0	41	OR	CLATSOP	7	2009	0	0
.	41	OR	CLATSOP	7	2010	3.607595	0
2	41	OR	CLATSOP	7	2011	3.584722	0
3	41	OR	CLATSOP	7	2012	3.592605	0
4	41	OR	CLATSOP	7	2013	3.750941	0
5	41	OR	CLATSOP	7	2014	3.663562	1
5	41	OR	CLATSOP	7	2015	3.433987	1
7	41	OR	CLATSOP	7	2016	3.367296	1
8	41	OR	CLATSOP	7	2017	3.091043	1
9	41	OR	CLATSOP	7	2018	2.70805	1
0	41	OR	CLATSOP	7	2019	3.295837	1
.	41	OR	COLUMBIA	9	2004	3.526361	0
2	41	OR	COLUMBIA	9	2005	2.564949	0
3	41	OR	COLUMBIA	9	2006	2.944439	0
4	41	OR	COLUMBIA	9	2007	2.833213	0
5	41	OR	COLUMBIA	9	2008	2.944439	0
5	41	OR	COLUMBIA	9	2009	1.098612	0
7	41	OR	COLUMBIA	9	2010	3.529135	0
8	41	OR	COLUMBIA	9	2011	3.526459	0
9	41	OR	COLUMBIA	9	2012	3.745194	0
0	41	OR	COLUMBIA	9	2013	3.790326	0
.	41	OR	COLUMBIA	9	2014	3.583519	1
2	41	OR	COLUMBIA	9	2015	3.583519	1
3	41	OR	COLUMBIA	9	2016	3.465736	1
4	41	OR	COLUMBIA	9	2017	3.465736	1
5	41	OR	COLUMBIA	9	2018	3.295837	1
5	41	OR	COLUMBIA	9	2019	3.258096	1

Working data is at the county-by-year level, so each row corresponds to a particular county in a given year. Note that variable names are truncated a bit in screenshot:

- Outcome variable is log(months waiting).
- Primary explanatory variable is binary indicator (equal to 0 or 1) for whether a county has an SOI policy in a given year, denoted D_SOI_effective.

FINAL SUBMISSION CHECKLIST

Before submitting on Canvas, please confirm you've completed each of the following steps by writing "YES" after each bullet point:

- Reviewed all prior feedback on proposal and other assignments and made necessary changes: **YES**
- Defined a clear research question in 1-2 sentences and included motivation for question: **YES**
- Identified at least 2 important themes to discuss in your Background section: **YES**
- Explicitly defined key outcome and explanatory variables and structure of working data:
- Wrote out clear, well-defined regression equations following all instructions above: **YES**
- Provided at least 1 stage of your results output in a neatly formatted table: **YES**
- Described your intended output for all tables and figures (i.e., at a minimum, describing what each table and figure will be, even if you don't have results for all of them yet): **YES**
- Included a screenshot with your working data set: **YES**