The Effect of Housing Assistance Program on Labor Supply and Family Formation

by

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Abstract

This paper studies the effect of U.S. Housing Choice Voucher Program Section 8 on low-income people’ labor supply and family formation. I analyse this effect using data from the 2014 Panel and 2018 Panel of the restricted-use Survey of Income and Program Participation (SIPP). My economic approach is to explore the policy which assigns housing vouchers based on an income cutoff as an instrument to study the effect of housing vouchers on low-income people’s employment and family formation. The assignment policy states that households with income lower than 50% of the median income for the MSA area are eligible for housing vouchers. With household eligibility status, I compare the households whose income is slightly below the income cutoff (eligible households) with the households whose income is slightly above the income cutoff (ineligible household) to identify the effect of housing vouchers on employment and family formation. I find that housing vouchers have a negative impact on individual labor supply through both extensive and intensive margins. In addition, housing vouchers also negatively impact family formation by decreasing marriage and increasing divorce rates. This project will contribute to understanding the effect of Section 8 Housing Vouchers on low income households’ labor supply and family formation.

Keyword: housing vouchers, labor supply, marriage, divorce

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1 Introduction

The effect of Section 8 Housing vouchers has been the focus of growing debate among both policymakers and social scientists. There is concern that the design of the program may create economic disincentives for working and distort marriage decisions. Understanding how means-tested housing assistance programs affect the behavior of recipients is relevant for policy decisions about how best to help poor people with their housing needs, including the optimal design of housing assistance programs.

The Section 8 program differs from other welfare programs in the following two aspects. First, the amount of housing assistance is inversely related to income (often referred to as the Department of Housing and Urban Development’s “HUD tax”). The subsidy is higher for lower-income households and lower for higher-income households because households with vouchers have to pay 30% of their income for rent. This feature of the housing assistance program creates economic disincentives for working and distorts labor supply decisions (Jacob and Ludwig, 2012). Second, housing vouchers are rationed. The program gives a large subsidy to only a small fraction of eligible households. According to HUD, the average housing voucher subsidy to a household is as large as $8000 per year, equivalent to the annual salary for a minimum wage part-time worker. However, the author’s calculations from the public available SIPP data show that only 10% of low-income families receive a housing voucher.

Though a lot of studies examine the effects of a variety of welfare programs, research studying the effect of housing assistance on low-income households’ behavior is still lacking. The limited existing literature on housing assistance either provides conclusions based on a very local sample and focuses on very short periods of time (Mills et al., 2006; Jacob and Ludwig, 2012), or fails to provide a causal interpretation (Painter, 2001; Heintze et al., 2006). In this paper, I investigate the causal effect of the Section 8 housing voucher program on low-income people’s labor supply and family formation.

Housing vouchers could have both positive effects and negative effects on individual labor supply so the overall effect is ambiguous. For one, Section 8 program rules dictate that paid rent is inversely related to family income. The standard static labor supply model thus predicts a reduction in labor supply through both income and substitution effects (Jacob and Ludwig, 2012).
Ludwig, 2012; Chan and Moffitt, 2018) For the other, housing vouchers may also increase labor supply because vouchers allow people to move to a place with better employment opportunities (Ong, 1998; Verma and Hendra, 2003). Given the combination of positive and negative channels, the effect of housing assistance on labor supply is therefore ambiguous.

Moreover, housing vouchers could also affect marriage (divorce) through multiple channels. On the one hand, marriage can work as insurance for people to hedge against labor market shocks and improve consumption efficiency via economies of scale (Low et al., 2018). Housing assistance subsidizes housing and increases consumption and wealth, which makes the individual more attractive in the marriage market, thus increasing marriage rates. On the other hand, housing assistance reduces the insurance value of marriage and improves options outside of marriage. For example, some low-income people have to rely on their partners for housing and goods consumption without a housing voucher. Whereas with housing vouchers, they can afford to live independently by themselves. In this sense, housing assistance increases the options outside of marriage and reduces marriage rates. Moreover, another common hypothesis in the literature on public assistance is that individuals forego marriage in order to avoid raising their household incomes and thus foregoing benefits. Hence, the overall effect of housing assistance on family formation is ambiguous.

To identify the causal effect, I explore the federal government policy assigning housing vouchers based on an income cutoff of 50% of the local median income. Households in metro areas with income lower than 50% of the local MSA median income are eligible for housing vouchers. This criterion is applied to a standard four-person family. For other family sizes, the cutoff will be adjusted. In order to infer the program eligibility of the household, I use respondents’ MSA code, metro status, household total income, and family size, which

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1 This is a federal government policy that is applied to all states without any exceptions. The local government receives housing assistance funding from The Department of Housing and Urban Development (HUD) and follows the federal government policy to assign housing assistance. For more details, please see https://www.hud.gov/topics/housing_choice_voucher_program_section_8

2 For a three-person family, the household income cutoff is 90% of the four-person family. For a two-person family, the household income cutoff is 80% of the four-person family. For a one-person family, the household income cutoff is 70% for the four-person family. For a five-person family, the household income cutoff is 108% of the four-person family. For a six-person family, the household income cutoff is 116% of the four-person family. For a seven-person family, the household income cutoff is 124% of the four-person family. For an eight and above person family, the household income cutoff is 132% of the four-person family. For more information, please see https://www.huduser.gov/portal/datasets/il.html2018
are available from the SIPP restricted-use data. As only eligible households have a chance to receive a housing voucher, I use the income cutoff as an instrument for voucher receipt. I then estimate the effect of receiving a housing voucher on individuals’ employment and marital status.

The data used in this paper is the restricted Survey of Income and Program Participation 2014 and 2018. The restricted SIPP 2014 and 2018 is ideal for studying the effect of housing vouchers. First, the restricted SIPP data has rich information on household demographics, employment, marital status, and welfare program participation and benefits. Second, the restricted SIPP data includes the sample’s MSA identifiers, which allows me to accurately identify whether the household is eligible for housing vouchers.

Using restricted SIPP data, I present the summary statistics of the overall sample, the sample eligible for housing vouchers, and the eligible sample that receive a voucher. I then implement the two-stage least square (2SLS) estimators by leveraging the variation from eligibility income cutoffs across MSAs as an instrument for voucher receipt. The first stage point estimates and their statistical significance show that eligibility is a strong instrument for predicting the probability of receiving a voucher. In particular, if the household is eligible, the probability of receiving a voucher will be 1% higher than ineligible households. The point estimate is significant at the 1% level. The magnitude of the point estimate is small because vouchers are rationed among eligible households. Thus, even if households are eligible, there is a large chance that the eligible household does not receive a voucher. Though this is the case, the strong first stage and meaningful estimates still show that the eligibility variable can strongly predict voucher receipt status. In the second stage, I apply the predicted voucher receipt status from the first stage to estimate the causal impact of housing vouchers on employment, hours worked, marriage, and divorce. I find that housing vouchers have a negative effect on employment and hours worked. In particular, receiving a voucher could reduce the monthly employment rate by as much as 11% and reduce hours worked per month by 135 hours. In addition to the effect on employment, voucher receipt also decreases the probabilities of being married by 6% and increases the probabilities of being divorced by 1%.

The rest of the paper is structured as follows. Section II reviews the background of the
Housing Voucher Program. Section III describes the data sets and summary statistics. Section IV discusses the empirical strategy used in this paper. Section VII shows the estimated results. The last section concludes this paper.

2 The Housing Voucher Program

The Housing Choice Voucher Program (Section 8), is initiated in the early 1980s to provide housing assistance for low-income families to pay for their rent. Figure 1 depicts the total number of households assisted by the program and the average amount of assistance per household. The number of households covered by the program increases from 1.5 million to 2.5 million and the average amount of subsidy per household increases from $550 to $700 (in real terms).

Figure 1: Number of Households Receiving Housing Vouchers and Average Subsidy

![Figure 1](image)

Notes: This figure displays the number of households covered by the housing voucher program and the monthly subsidy amount per household over time. The red dash line is the number of households receiving housing vouchers from 1998-2018 and the blue solid line is the average monthly subsidy amount per household in real terms (take 2010 as the base year). Source: Department of Housing and Urban Development’s (HUD’s) Office of Policy Development and Research (PDR).

Housing vouchers are funded by the federal government but administered locally by
public housing agencies (PHAs). Vouchers are rationed based on waiting lists or random lotteries. PHAs may also give preference to a family that is homeless or living in substandard housing, pays more than 50% of its income for rent, or is involuntarily displaced. Eligibility for the housing voucher program depends on family size and family total income. To be eligible, a four-person family’s gross income may not exceed 50% of the median income for the local Metropolitan Statistical Area (MSA). The income cutoff is adjusted by family size. Households who receive vouchers are required to find a suitable unit within 90 days from the issue of vouchers. Households can keep receiving subsidies for as long as they are income-eligible in the following periods. According to the HUD Picture of Subsidized Households, the average length of stay for housing voucher recipients was 5 years in 2004 and increased to 10 years by 2014.

3 Data and Stylized Facts about Housing Vouchers

3.1 Data

The data set used in this paper is the restricted Survey of Income and Program Participation (SIPP) 2014 and 2018 panels. The data set consists of short panels with representative households. The SIPP data contains rich information on individual demographics, employment, hours worked per month, marital status, welfare program participation, and benefits. In particular, the SIPP data includes a variable of whether a household is subsided by housing assistance through the Section 8 housing voucher program. For the 2014 and 2018 panels, respondents are interviewed annually and the reference period covered in each interview is the previous 12 months. More importantly, the restricted use SIPP data includes the MSA code for each household. Other than SIPP data, I also use the income limits data from the Department of Housing and Urban Development’s (HUD’s) Office of Policy Development and Research (PDR). This data is publicly available and is accessible through the HUD website. This data includes MSA and county-level median income from the year 2014 to 2018. I link the two data sets by MSA code and calendar year.

3Source: https://www.huduser.gov/portal/datasets/il/fmr99/sect82.html
With the matched data, I can infer the household eligibility for the housing voucher program by comparing household income with 50% of the median income of the local MSA/county. If the household income is lower than the cutoff, then the household is eligible for a housing voucher and the individuals in the household are in the treatment group; otherwise, they are in the control group. Then I can estimate the effect of housing vouchers on employment, marital status, and homeownership using the economic approach I stated in the methodology section. The key information to match the data and infer the eligibility as described in the methodology section is the MSA code/county code of the household. Without this data, it’s impossible to conduct the research design and estimate the causal impact of housing assistance on the outcomes of interest.

For the analysis in this paper, I restrict the sample to the working-age (18-60) individuals who has a high school education or below. This is the sample that is more likely to receive welfare benefits such as housing vouchers. I also exclude homeowners and households who live in public housing, as they are not the target of the housing voucher program.

3.2 Summary statistics

The summary statistics for the overall sample, a sample that is eligible for the voucher program and the eligible sample that receives vouchers are reported in Table 1. Column (1) reports the characteristics of the full sample. The statistics for eligible sample and voucher recipients sample are reported in columns (2) and (3). The average employment rate for the full sample is 0.71. The employment rate for the eligible sample and Voucher recipients’ sample are 0.48 and 0.66 respectively. The average hours worked per week for the full sample is 28, for the eligible sample is 15, and for the voucher recipient sample is 14. The total individual income and household income are much lower for the voucher recipient sample. The share of voucher recipient sample that is married is lower and that is divorced is higher. Voucher recipients are more likely to be female-headed households and more likely to be black. In addition, voucher recipients tend to have more children.
## Table 1: Summary Statistics (SIPP)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Full sample</th>
<th>Eligible sample</th>
<th>Voucher sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employed</td>
<td>0.7120</td>
<td>0.4810</td>
<td>0.6620</td>
</tr>
<tr>
<td></td>
<td>(0.4610)</td>
<td>(0.5220)</td>
<td>(0.4730)</td>
</tr>
<tr>
<td>Hours worked per week</td>
<td>27.83</td>
<td>14.81</td>
<td>13.68</td>
</tr>
<tr>
<td></td>
<td>(21.15)</td>
<td>(20.09)</td>
<td>(18.68)</td>
</tr>
<tr>
<td>Total individual income</td>
<td>7938</td>
<td>3407</td>
<td>1192</td>
</tr>
<tr>
<td></td>
<td>(18870)</td>
<td>(76700)</td>
<td>(866.9)</td>
</tr>
<tr>
<td>Household income</td>
<td>104000</td>
<td>26690</td>
<td>10000</td>
</tr>
<tr>
<td></td>
<td>(2372000)</td>
<td>(746400)</td>
<td>(13340)</td>
</tr>
<tr>
<td>Age</td>
<td>42.57</td>
<td>41.75</td>
<td>41.96</td>
</tr>
<tr>
<td></td>
<td>(11.22)</td>
<td>(11.72)</td>
<td>(10.86)</td>
</tr>
<tr>
<td>Sex</td>
<td>0.4600</td>
<td>0.4400</td>
<td>0.2600</td>
</tr>
<tr>
<td></td>
<td>(0.4980)</td>
<td>(0.4970)</td>
<td>(0.4370)</td>
</tr>
<tr>
<td>Black</td>
<td>0.1400</td>
<td>0.1500</td>
<td>0.4800</td>
</tr>
<tr>
<td></td>
<td>(0.3440)</td>
<td>(0.3590)</td>
<td>(0.5120)</td>
</tr>
<tr>
<td>Married</td>
<td>0.6200</td>
<td>0.5300</td>
<td>0.1800</td>
</tr>
<tr>
<td></td>
<td>(0.4870)</td>
<td>(0.4990)</td>
<td>(0.3830)</td>
</tr>
<tr>
<td>Divorced</td>
<td>0.1300</td>
<td>0.1400</td>
<td>0.2400</td>
</tr>
<tr>
<td></td>
<td>(0.3320)</td>
<td>(0.3490)</td>
<td>(0.3980)</td>
</tr>
<tr>
<td>Family size</td>
<td>2.780</td>
<td>2.670</td>
<td>2.750</td>
</tr>
<tr>
<td></td>
<td>(1.591)</td>
<td>(1.622)</td>
<td>(1.771)</td>
</tr>
<tr>
<td>N. of children</td>
<td>1.100</td>
<td>1.090</td>
<td>1.430</td>
</tr>
<tr>
<td></td>
<td>1.229</td>
<td>1.262</td>
<td>1.467</td>
</tr>
<tr>
<td>N of Obs.</td>
<td>1285000</td>
<td>672000</td>
<td>15000</td>
</tr>
</tbody>
</table>

**Notes:** This table shows the summary statistics of key variables from the SIPP data. Column (1) presents the statistics for the full sample, which consists of the working-age (18-60) low-income unassisted renters. Source: Data is drawn from the restricted SIPP (2014 and 2018 Panels).

### 4 Empirical Strategy

I apply the Two-Stage Least Square (2SLS) approach to identify the causal impact of vouchers on employment and marital status. This approach uses the income cutoff point specified by the 50% of the local MSA median income as an instrument. To be more specific, according to the federal government policy, households in metro areas with gross income less than 50% of the median income for the MSA are eligible for housing assistance. Using the cutoff specified by the policy, I construct the treatment group and control group. The treatment group is composed of households whose income is slightly below the cutoff and the control group is composed of households whose income is slightly above the cutoff. The treatment
group and control group are supposed to be very similar to each other in several dimensions, i.e. household income, age, gender, race, and education because they are clustered closely around the income cutoff. However, only the treatment group households are eligible for housing assistance. In the first stage, I regress receiving housing voucher dummy on the eligibility dummy to predict the probability of receiving a housing voucher. In the second stage, I regress the outcomes of interest, i.e., employment, hours worked, and marital status on the predicted probability of receiving a housing voucher to examine the effect of the housing voucher program.

4.1 Construct treatment and control group

To construct the treatment and control groups, I first link the income limits data from HUD to SIPP data using MSA code and year. Then I infer the eligibility for each household based on the household total income and the local median income. I divide the sample into treatment and control groups based on program eligibility. Note that to keep the control group as similar as possible to the treatment group, I will focus on the sample within a certain range around the cutoff point. Conceptually, there is a trade-off to select the range. On the one hand, the range should be wide enough to include an adequately large number of observations to maintain statistical power. On the other hand, the range should be narrow around the cutoff point to make the treatment and control group as similar as possible. Econometricians have developed several methods to account for the two aspects mentioned above. The idea is to start with a bandwidth that includes sufficient observations, then reweight the observations according to their difference with the cutoff: those closer to the cutoff point will get higher weight. The purpose of reweighting is to make the treatment group as similar as possible to the control group.

4.2 Main outcome variables of interest

My main dependent variables are: (1) dummy variable of individual employment status (working or not working); (2) usual hours worked during a month; (3) marital status, i.e. dummy variable of individual being married, and dummy variable of individual being di-
vorced. The first two variables are associated with employment and the last two are associated with family formation. Although eligibility for a housing voucher is based on the household unit, I am interested in the effect of housing voucher receipt on individual level employment and marital status to gauge the impact of housing vouchers on individual behavior.

4.3 Main independent variables

The independent variable is a dummy variable for receiving a housing voucher. However, this variable is not exogenous because the families with housing vouchers might be systematically different from those without housing vouchers. For example, we may expect that unemployed families or families with lower incomes are more likely to apply for a housing voucher. In this case, if we observe that housing vouchers are associated with less labor supply and lower wages, this may not due to the fact that housing vouchers reduce labor supply and wages, but rather due to the fact that unemployed families are selected into the housing voucher program. To solve this problem, I use the exogenous income cutoff as an instrument to predict the household’s probability of receiving a housing voucher.

4.4 Estimation Equation

I estimate the following equations using two-stage least square (2SLS).

\[
HV_{it} = \pi_1 Eligible_{it} + \pi_2 X_{it} + \gamma_t + \epsilon_{it} \tag{1}
\]

\[
y_{it} = \beta_1 HV_{it} + \beta_2 X_{it} + \gamma_t + u_{it} \tag{2}
\]

Equation 1 is the first stage, where \(i\) denotes individual and \(t\) denotes year-month. The term \(HV_{it}\) is the dummy variable indicating receiving a housing voucher; \(Eligible_{it}\) is the dummy variable of eligibility or treatment; \(X_{it}\) is a set of control variables that include individual and household level control variables: (1) age and age squared of the individual; (2) gender of the individual; (3) race/ethnicity of the individual; (4) education level of the individual; (5) household total income; (6) year dummy; \(\gamma_t\) is the year fixed effect and \(\epsilon_{it}\) is
the error term.

Equation 2 is the main specification I estimate. The term $y_{it}$ is the outcome variables including employment dummy, usual hours worked, being married dummy, and being divorced dummy. In the second stage, if the outcome variable is a dummy variable, i.e., employment, married, and divorced, we apply a Probit model to estimate the effect.

5 Results

The results for estimating Equation 1 and Equation 2 are reported in Table 2.

Table 2: Effects of Housing Vouchers

<table>
<thead>
<tr>
<th>VARIABLES</th>
<th>Voucher</th>
<th>Employed</th>
<th>Monthly hours worked</th>
<th>Married</th>
<th>Divorced</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eligible</td>
<td>0.0068***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0019)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voucher</td>
<td>-8.021***</td>
<td>-134.7***</td>
<td>-3.067***</td>
<td>0.122***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.4450)</td>
<td>(10.3100)</td>
<td>(0.1940)</td>
<td>(0.1270)</td>
<td></td>
</tr>
<tr>
<td>Observations</td>
<td>934000</td>
<td>934000</td>
<td>934000</td>
<td>934000</td>
<td>934000</td>
</tr>
</tbody>
</table>

Notes: This table shows the effects of housing vouchers on employment and marital status. Source: Data is drawn from the restricted SIPP (2014 and 2018 Panels).

5.1 First Stage: Effects of Eligibility of Voucher Receipts

Column (1) in Table 2 reports the first stage estimates. The point estimates and their statistical significance eligible is a strong instrument to predicting the probability of receiving a voucher. The coefficient is estimated based on a Probit model. To interpret the magnitude of the point estimate, I calculate the average marginal treatment effect, which indicates that being eligible increases the probability of receiving a voucher by 2%. The point estimate is significant at 1% level, with a first stage F-statistics greater than 10. The magnitude of the point estimates is small because the vouchers are rationed among eligible households.
Thus, even if households are eligible, there is a small chance for them to receive a voucher. The predicted values of the first stage are used for the second stage analysis of the effect of housing vouchers on employment and marital status.

5.2 Effects on Employment and Hours worked

The effects of receiving a voucher on individual monthly employment and hours worked are shown in columns (2) and (3) of Table 2. Employment is a dummy variable equals to 1 if the individual works more than 20 hours in the particular month and 0 otherwise. Since its a dummy variable, the coefficient is estimated based on a Probit model, which converts to a average marginal treatment effect of 11%. Thus, the point estimates indicate that having a voucher reduced individual employment by 11%. To further explore the intensive margin of labor supply, I examine the effect of housing vouchers on usual hours worked per month. I find that housing vouchers have a negative impact on hours worked as well. Specifically, receiving a voucher reduces hours worked per month by 135 and is significant at 1% level. Altogether, housing vouchers decrease individual labor supply in both extensive and intensive margins.

5.3 Effects on Marriage and Divorce

In the last two columns of Table 2, I report the estimates on the effects of housing vouchers on probability of being married and divorced. Column (4) and (5) show that having a housing voucher has negative impact of marriage and a positive impact on divorce. The point estimates are based on Probit models. The coefficient in column (4) shows that having a housing voucher reduces individual probability of being married by 6%, which is significant at 1%. On the other hand, housing vouchers also increase the divorce rate by 1%. In summary, vouchers have a negative impact on individual family formation by decreasing marriage rate and increasing divorce rate.
6 Conclusion

Economic theory yields ambiguous predictions of the effect of housing vouchers on labor supply and marital status. Existing evidence of the program’s effects on household labor supply and marital status is limited. In this paper, I apply a 2SLS approach to study the casual impact of housing vouchers on individual employment and marital status. I find a strong first stage effect, showing that eligibility is a strong instrument to predicting the probability of receiving a voucher. In particular, if the household is eligible, the probability of receiving a voucher will be 1% higher than ineligible households. The point estimate is significant at 1% level. The magnitude of the point estimate is small because vouchers are rationed among eligible households. Thus, even if households are eligible, there is a large chance that the eligible household does not receive a voucher. Though this is the case, the strong first stage and meaningful estimates still show that the eligibility variable can strongly predict voucher receipt status. In the second stage, I apply the predicted voucher receipt status from the first stage to estimate the causal impact of housing vouchers on employment, hours worked, marriage, and divorce. I find that housing vouchers have a negative effect on employment and hours worked. In particular, receiving a voucher could reduce monthly employment rate by as much as 11% and reduce hours worked per month by 135 hours. In addition to the effect on employment, voucher receipt also decreases the probabilities of being married by 6% and increases the probabilities of being divorced by 1%.
References


