**Abstract**

By matching county-level data from the Quarterly Census of Employment and Wages (QCEW) program to data collected from Connecticut's Department of Social Services (DSS), we examined impacts of welfare reform on relative earnings in the low-wage, retail sector. The statistical analysis in this study adapts for endogenous changes in blanket caseloads using instrumental variables approach while testing for instrument strength and over-identification. We found that Connecticut's "Jobs-First" approach to welfare reform significantly reduces the relative wages of retail workers. Among several important welfare characteristics, percent of welfare cases placed under time limits, the proportion of time-limited cases requesting extensions, and the ratio of extensions granted to extensions denied have sizeable influence on this process. In demonstrating that a "Jobs-First" reform contributes to increased wage inequality, the results provide motivation for policy makers to consider these specific distributional effects when designing welfare policy and related income-support programs.

**The Data**

To construct our data set, we:

1. Recorded the monthly data on welfare implementation for each of the five DSS regions; Central, South West, South East, North West, North East.
2. Converted the monthly regional data to quarterly figures for each region.
3. Matched this regional information on welfare characteristics to quarterly-level QCEW data on employment and wages by detailed industry category.

• The resulting data set provides a quarterly, regional panel containing six years of post-reform information along with a considerable stretch of pre-reform information on local labor markets and welfare attributes for the period from 1990:1 to 2002:4.

**Table 1. Descriptive Statistics of Welfare Variables and Labor-Market Variables**

<table>
<thead>
<tr>
<th>Variable Name</th>
<th>Welfare Variables</th>
<th>Labor-Market Variables</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAER</td>
<td>County-area employment rates for females with POS in DSS regions in quarter t</td>
<td>Wages ( W_{it} ) in Retail and Non-Retail Sector</td>
</tr>
<tr>
<td>TIMED</td>
<td>Monthly duration of receipt for POS in DSS regions in quarter t</td>
<td></td>
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<tr>
<td>SANTION</td>
<td>Monthly termination rates from POS in DSS regions in quarter t</td>
<td></td>
</tr>
<tr>
<td>LHH</td>
<td>Monthly labor supply for POS in DSS regions in quarter t</td>
<td></td>
</tr>
<tr>
<td>REQUEST</td>
<td>Monthly number of requests for extensions from POS in DSS regions in quarter t</td>
<td></td>
</tr>
<tr>
<td>GRANTED-TO-DENIED</td>
<td>Monthly number of granted-extension requests for POS in DSS regions in quarter t</td>
<td></td>
</tr>
<tr>
<td>QUITS</td>
<td>Monthly number of quit requests for POS in DSS regions in quarter t</td>
<td></td>
</tr>
</tbody>
</table>

**The Empirical Specification**

**Limits of OLS estimation**

• OLS produces biased estimates of the link between caseload reductions and wages, as tight labor markets push wages upward, the expansion of job opportunities causes welfare caseloads to fall. This spurious, negative correlation between wages and caseloads can swamp the direct impact on wages of policy-induced caseload reductions.

**Two Stage IV Procedure**

• To identify the significance and size of such effect, we implemented the following IV procedure (all estimates approach a fixed-effects model):

  **First Stage Equation:** estimates and predicts welfare caseloads

  \[ C_{it} = \beta_0 + \beta_1 (Wages_{it-1}) + \beta_2 (\bar{L}_{it}) + \beta_3 (P_{it}) + \epsilon + \nu_i + \nu_t \]

  where

  - \( Wages_{it} \) = Relative wages per worker in retail trade for DSS region \( i \), quarter \( t-1 \).
  - \( \bar{L}_{it} \) = Vector of labor demand and supply conditions for DSS region \( i \), quarter \( t \).
  - \( P_{it} \) = Vector of welfare program variables in DSS region \( i \), quarter \( t \).
  - \( \nu_i \) = Vector of regional fixed effects for each of the DSS regions.
  - \( \epsilon \) = An i.i.d. random error term.

  **Second Stage Equation:** explains wages using the predicted values of the caseload variable derived from the first equation

  \[ Wages_{it} = \alpha_0 + \alpha_1 (Wages_{it-1}) + \alpha_2 (\bar{L}_{it}) + \alpha_3 (\bar{C}_{it}) + \epsilon + \nu_i + \nu_t \]

  where

  - \( Wages_{it} \) = Relative wages per employee for retail trade in DSS region \( i \), quarter \( t \).
  - \( \bar{L}_{it} \) = Vector of labor demand and supply conditions for DSS region \( i \), quarter \( t \).
  - \( \bar{C}_{it} \) = predicted caseloads per capita for DSS region \( i \), quarter \( t \).

**Results**

**The Initial Estimates from the Caseload Equation**

1. Analysis limited to the labor market variables only (EQ1):
   • All labor-market variables have a negative and significant impact on caseloads except for hours and lagged wage variables:
     • a negative spurious correlation is swamping a positive causal link

2. Welfare instruments and squares, one-period lags of the labor-market variables to add to EQ1:
   • All welfare instruments exhibit joint significance with their squared terms
   • No major changes in the estimated impacts of the welfare measures or in their significance. Although not much changes with the new labor market specification, the lags help in correcting the model for over-identification.

**Initial Estimates from the Wage Equation**

1. Analysis limited to the labor market variables only (EQ1):
   • Changes in actual caseload not significantly different from zero
   • implies a lack of relationship or a relationship hidden by opposing spurious correlation

2. Adding the welfare instruments & squares, and one-period lags to EQ1:
   • With IV procedure, the estimated coefficient on the caseload rises from 0.01 to 0.11 with a significance level of 0.3 percent
   • This estimate links a one percentage point (or 78%) decline in the predicted caseload figures with a 23.8% decline in relative retail wages.

**Sensitivity of the Results**

The models above suffer from over-identification and weak instrument bias, and relative retail wages are not significantly linked to declines in actual caseloads. To correct for such problem:

• varied the combination of instruments by dropping any instruments that lack significance at 10% level while looking for a model that passes both the identification and the tests for adequate instruments. Subsequently:
  - we omitted the variable SANCTIONS and its square based on their high correlation with the remaining welfare instruments
  - then basing our decision on high collinearity with other instruments, we also omitted the variable AT-RISK and its square
  - the test for weak instruments and over-identification improved the most with:
    - TIMED, REQUESTS and its squared term, and GRANTED-TO-DENIED
    - F statistic: 15.088 with p-value [0.000]
  - Stock and Yogo test at 5% significance level:
    • the estimated coefficient bias relative to OLS: 0.5%
    • the bias relative to OLS in terms of size: 15%
    • Sargan test:
      - Chi-square: 2.886 with p-value [0.4096]
      - Low Chi-square and high p-value: more forceful case for rejecting the hypothesis of over-identification

With the new specification, we found that:

• estimated impact rose from 0.015 to 0.11, with a p-value 0.003
• a JF-related decline in welfare cases of 10% is associated with a 3.015% drop in relative wages

**Simulation of a "No-Reform" Counterfactual**

With the range of estimates obtained, we constructed a "reform" simulation and a "no-reform" counterfactual.

**Figure 1. Wage paths with and without welfare reform**

Welfare reform results in greater wages for non-retail worker and smaller wages for retail worker, thereby inducing greater income gap between the retail sector and non-retail sector.

The two dashed lines show that, in the absence of the program, the gap between retail and non-retail workers in CT would have narrowed. In the presence of the JF pressures (the solid lines), the wage gap clearly expands.

**Conclusion**

• Caseloads respond significantly to time-limiting, to extensions granted relative to those denied, and to the act of sanctioning specifically for a voluntary quit.
• A reform-driven reduction in caseloads per capita of 10 percent will lower relative wages in the retail sector by 3 percent, a non-trivial loss for workers already in one of the lowest wage sectors.
• The estimated losses in relative wages are far from negligible for low-wage workers especially since they already face heightened international competition and technological change that frequently favors higher skills.

**What's Next?**

How did welfare reform affect relative wages in service sector?