DYNAMICS OF WELFARE REFORM

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Welfare Support

- Families face different shocks through their life-times - wages, employment, health
- Low-income families insure shocks through the welfare system
  - Different components (US): TANF, EITC, SNAP, (also SSI/DI)
  - In the U.S., focus on single mothers as the primary beneficiaries
- Focus of reform debates: limiting incentive costs
  - Disincentives to work
  - Incentives to be a single parent

1. Marital status and welfare eligibility are closely tied

2. Broader issue of trading off incentive costs against insurance value

Welfare Reforms in the US since the 1990s

- 10* increase in Earned Income Tax Credit (EITC)
  - Only applied to working families
- Expansion of Medicaid
  - Increased coverage for non-welfare families near poverty line
  - Further increases with Obamacare
- Cash assistance for parents:
  Aid to Families with Dependent Children (AFDC) replaced by
  Temporary Aid to Needy Families (TANF)
  - Work requirements, time limits and other measures to encourage work
  - Substantial declines in take-up (32% of low educated single mothers in 1996)
- Contrast to UK: increase of tax credits, but simultaneous increase of out-of-work payments

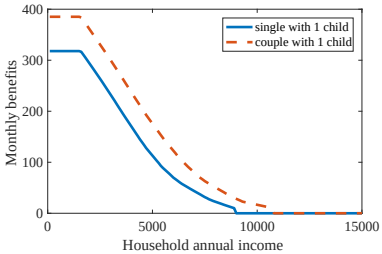
Welfare Reform in US since 1990s

- Multiple reforms at the same time: EITC increase, but also decline in welfare
- Key question: how to think about the dynamic and long run impacts of the welfare system
- More generally: how forward looking are welfare claimants
- Impacts on single parents versus married mothers
  Role of marriage

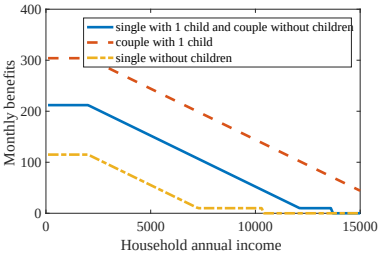
The 1996 Welfare Reform and Time Limits

- PRWORA signed in August 1996
- Shift from welfare entitlement to time limited support
- Childcare support
- Work requirements
- Federal block grants covering benefits for up to 60 months
  - Pre-reform (AFDC): eligible if youngest child under 18
  - Post reform (TANF): federal funding covers 5 years max
- States could impose their own rules: from 21 to 60 months
- State-level variation in timing of adoption (1995-1998)

Welfare generosity and household structure



(a) AFDC



(b) Food stamps

Notes: Average monthly AFDC and food stamps benefits by household annual income

Different Approaches

- Reduced-form evidence
  - Welfare program participation
  - Labour supply
  - Marital status
- Most evaluations study only single mothers and one outcome
- Use life-cycle structural model:
  - Incorporates dynamic incentives to claim and to work
  - Accounts for changes in household formation and dissolution
- Use structural model to simulate welfare reform

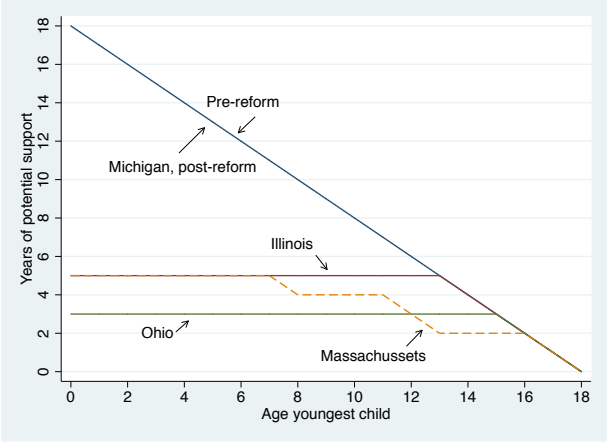
Reduced form evidence on the Effect of Time limits

- On single mothers:
  - Effect on welfare use:
    Grogger (2003)
  - Banking of benefits:
    Grogger and Michalopoulos (2003), Mazzolari and Ragusa (2012)
  - Effect on employment:
    Fang and Keane (2004) Kline and Tartari (2016)
  - Surveys:
    Blank (2002) Grogger and Karoly (2005)
- On married women, marriage and broader impacts:
  Bitler et al. (2004), Moffitt, Phelan, and Winkler (2020) Schoeni and Blank (2000)

Variation for Identification of the Effect of Time Limits

- Identification of the effect of time limits
- Variation in strictness across states
- Variation in the year when implemented
- Importance depends on age of the youngest child: if age over 13, then no impact.

Variation Across States and Age of Child



Sources: Grogger and Michalopoulos (2003), Mazzolari and Ragusa (2012)

Examples

- Youngest child is 10 in year t and the time limit is 5 years:
  $Exposed = 1$
- Youngest child is 13 in year t and the time limit is 5 years:
  $Exposed = 0$
- Youngest child is 13 in year t and the time limit is 2 years:
  $Exposed = 1$
- Youngest child is 17 in year t and the time limit is 2 years:
  $Exposed = 0$

Empirical strategy

Household i, demographic characteristics d, state s, year t:

$$y_{idst} = \alpha Expsd_{dst} Post_{st} + \beta' X_{idst} + f_{st} + f_{ds} + f_s + f_t + f_d + \varepsilon_{idst}$$

- $Exposed = 0$ unaffected households
- $Post = 1$ after the reform
- X controls, f fixed effects
  - Age dummies and Household structure controls
  - EITC and unemployment rate controls
  - Month-by-year fixed effects
  - Year-by-state fixed effects
  - State-by-demographic group fixed effects
- Identification is within state - between demographic groups: unaffected by work requirements

Datasets

- Survey of Income and Program Participation (SIPP)
  - Rolling Panel 1985-2008 (years 1984-2011)
  - Start with 1990 panel (after 1988 FSA)
  - Information on our outcomes of interest
- Current Population Survey
  - March survey
  - Data frame: 1990-2011
- Focus on women who did not complete college

Source: Low, Meghir, Pistaferri, and Voena (2022)

Welfare Utilization and Employment

	AFDC/TANF Utilization					
	Whole sample		Married women		Unmarried women	
	SIPP	CPS	SIPP	CPS	SIPP	CPS
$Exposed_{dst}Post_{st}$	-0.030***	-0.016***	-0.011***	-0.003**	-0.087***	-0.084***
	(0.004)	(0.003)	(0.003)	(0.002)	(0.015)	(0.013)
Mean pre-reform	0.098	0.077	0.035	0.019	0.297	0.304
Obs	254,627	112,128	188,483	88,522	66,144	23,606
R^2	0.12	0.07	0.08	0.03	0.26	0.15
	Employment					
	Whole sample		Married women		Unmarried women	
	SIPP	CPS	SIPP	CPS	SIPP	CPS
$Exposed_{dst}Post_{st}$	0.014	-0.002	-0.001	-0.017	0.050***	0.054**
	(0.012)	(0.011)	(0.014)	(0.011)	(0.014)	(0.026)
Mean pre-reform	0.640	0.647	0.643	0.654	0.631	0.620
Obs	254,627	112,128	188,483	88,522	66,144	23,606
R^2	0.12	0.06	0.11	0.05	0.21	0.13

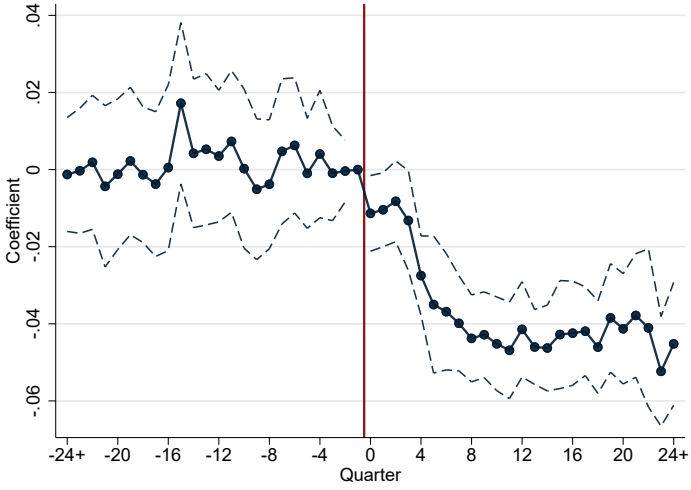
Notes: Standard errors in parentheses clustered at the state level.

Marriage

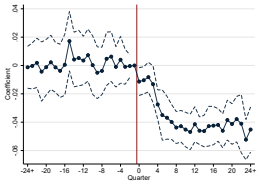
	Divorce/Separated		*Married*		*Newborn*$_{t+1}$ (*Annual*)	
	Whole sample		Whole sample		Whole sample	
	SIPP	CPS	SIPP	CPS	SIPP	CPS
$Exposed_{dst}Post_{st}$	-0.027***	-0.015*	0.004	-0.007	-0.001	-0.002
	(0.007)	(0.008)	(0.007)	(0.010)	(0.005)	(0.004)
Mean pre-reform	0.150	0.126	0.758	0.796	0.059	0.049
Obs	254,627	112,128	254,627	112,128	55,142	47,344
R^2	0.03	0.01	0.05	0.05	0.08	0.04

Notes: Standard errors in parentheses clustered at the state level.

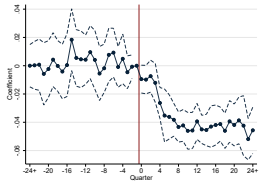
Program Participation



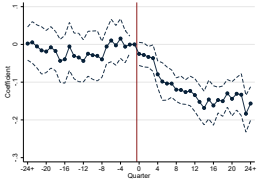
Program Participation and Employment Dynamics



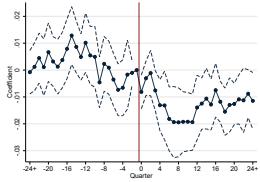
(a) Full sample



(b) Time limits above 24 months



(c) Single



(d) Married

Summary: Reduced Form Evidence

Effect of time limits:

1. Welfare utilization declined
2. Employment increased among single women
3. Decline in divorce
4. No robust effects on marriage (or fertility)

Modeling Welfare Programs

- For single mothers:

  Chan (2013): dynamic discrete choice, large welfare effects

  Ziliak (2015)

  Moffitt, Phelan, and Winkler (2020)

- With marriage:

  Swann (2005)

Banking of Benefits and the role of marriage

- Time limits cause women to bank benefits.
- Banking takes place as precaution: future reduced insurance.
- Family formation and asset accumulation crucial to understand the insurance channel.
- Shutting down marriage makes the prospects for singles worse because of possible source of insurance disappears.
- Shutting down divorce makes married mothers better insured but makes marriage harder.

Life-cycle Model of Marriage and Welfare

Low, Meghir, Pistaferri, and Voena (2022)

- Develop and estimate a dynamic model:
  - Incorporates dynamic incentives
  - Accounts for household formation and dissolution
- Use model to understand how marriage and divorce interact with the social safety net
- Need dynamics to understand the effects of time limits

Related literature

- Collective model and dynamic household decision making
  - Chiappori (1992), Blundell, Chiappori, and Meghir (2005), Mazzocco (2007)
  - Voena (2015), Fernández and Wong (2014)
- Dynamic models of labor supply
  - Keane and Wolpin (2010)
    Low, Meghir, and Pistaferri (2010)
    Blundell et al. (2016)

The model

- Life cycle setup
- Choices
  - Marriage and divorce
  - Participation in AFDC/TANF
  - Female labor supply
  - Consumption and savings
- Resources
  - AFDC/TANF, Food stamps, EITC
  - Stochastic wages
- Markets
  - Imperfect capital markets
  - Marriage market
  - Stochastic fertility

Welfare benefits and time limits

- Before welfare reform

$$b_t(k_t, w_t^W P_t^W, m_t y_t^M, A_t)$$

- After welfare reform

$$b_t(\cdot, TB_t) = \begin{cases} = 0 & if \quad TB_t > \text{time limit} \\ = b_t(\cdot) & if \quad TB_t \leq \text{time limit} \end{cases}$$

- Additional exogenous programs: food stamps, EITC

The problem of a single woman

- Chooses consumption, work and welfare participation
- Evaluates marital offers if they arrive (with prob. λ_t)
- May or may not have children

$$V_t^{Ws} = max \left\{ u(c_t^{Ws}, P_t^{Ws}, B_t^{Ws}) \right.$$
$$\left. +\beta E_t[\lambda_{t+1}[(1-m_{t+1})V_{t+1}^{Ws} + m_{t+1}V_{t+1}^{Wm}] + (1-\lambda_{t+1})V_{t+1}^{Ws}] \right\}$$

$s.t.$

$$\frac{A_{t+1}^{Ws}}{1+r} = A_t^{Ws} - \frac{c_t^{Ws}}{e(k_t)} + (w_t^{Ws} - CC^a)P_t^{Ws} + B_t^{Ws}b_t + G_t^{Ws}$$

The problem of a couple

- Chooses consumption, work and welfare participation
- Collective decision with limited commitment
- Anticipates possible future divorce

$$V_t^m = max \ \Big\{\theta_t^W \ u(c_t^{Wm}, P_t^{Wm}, B_t^m) + \theta_t^M \ u(c_t^{Mm}, P_t^{Mm}) + L^\tau \ [1.em] + \beta E_t \Big[(1-d_{t+1})V_{t+1}^m + d_{t+1}\left(\theta_t^W V_{t+1}^{Ws} + \theta_t^M V_{t+1}^{Ms}\right)\Big]\Big\}$$

$s.t.$

$$\frac{A_{t+1}}{1+r} = A_t - \frac{F(c_t^{Wm}, c_t^{Mm})}{e(k_t)} + (w_t^{Ws} - CC^a)P_t^{Wm} + y_t^M + B_t^m b_t + G_t$$

Marriage decision

- Singles meet a potential match with probability λ_t
  - Draw from singles' empirical distribution of $\{A_t^j, y_t^j, [k_t, TB_t]\}$
  - Draw match quality L^0
- Marriage decision
  - Get married $(m_t = 1)$ iff

$$\exists \ feasible \ \ \boldsymbol{\theta_t} \ \ s.t. \ \ V_t^{jm}(\theta_t^j) \geq V_t^{js} \quad \text{for} \quad j = H, W$$

  - $\boldsymbol{\theta_t}$ at the time of marriage equates gains from marriage

Divorce decision

- Uncertainty:
  match quality L^{τ}
  spouses' income
- Re-allocation of resources in the marriage
  - Limited commitment (see Mazzocco 2007, Voena 2015)
- Divorce $(d_t = 1)$ iff

$$\nexists \; feasible \;\; \boldsymbol{\theta_t} \;\; s.t. \;\; V_t^{jM}(\theta_t^j) \geq V_t^{jS} \quad \text{for} \;\; j = H, W$$

Fertility, Match quality, and Earnings

- Fertility process
  - $P(newborn_t|k_t^a) = g(t, m_{t-1})$
- Match quality
  - Initial quality L^0
  - After τ years of marriage: $L^\tau = L^{\tau-1} + \xi^\tau$
- Earnings process

$$
\begin{aligned}
&y_{it}^M \in \{0, w_{it}^M\} \\
&ln(w_{it}^j) = a_0^j + a_1^j age_t^j + a_2^j \cdot (age_t^j)^2 + z_{it}^j \\
&z_{it}^j = z_{i,t-1}^j + \zeta_{it}^j \\
&j \in \{F, M\}
\end{aligned}
$$

Estimation steps

- Estimation on pre-reform data - Unaffected by other changes such as work requirements

- Parameters
  1. Fix a set of parameters exogenously
  2. Estimate directly from data
     - ★ Wage and employment processes; Fertility process
     - ★ Singles' types distribution for men and women
  3. Remaining parameters by MSM targeting pre-reform moments
     - ★ Cost of working; Probability of meeting a partner
     - ★ Distribution of match quality
     - ★ Cost of welfare participation (stigma)

- Moments
  - Draw 4-year simulated panels as in SIPP data
  - Match pre-reform moments from 1960s birth cohort of SIPP

Pre-set parameters of the model and initial conditions

Parameter	Value/source
Panel A - Parameters fixed from other sources	
Relative risk aversion (γ)	1.5
Discount factor (β)	0.98
Childcare costs (CC^a)	CEX
Economies of scale in marriage (ρ)	1.23

Wage offer parameters

Parameter	Value
Panel A - Men	
Variance of fixed effect (earnings in period 1)	0.18
Variance of earnings shocks	0.027
Life cycle profile of log earnings (a_0^M, a_1^M, a_2^M)	9.76, 0.043, -0.001
Panel B - Women	
Variance of fixed effect (earnings in period 1)	0.15
Variance of earnings shocks	0.038
Life cycle profile of log earnings (a_0^W, a_1^W, a_2^W)	1.96, 0.022, -0.0003

Estimated singles' distributions

- Joint distributions of assets and productivity among singles
- Allow mass on zero assets
- Conditionally, $\{\ln(A_t^M), \ln(y_t^M)\} \sim BVN(\boldsymbol{\mu}_t^M, \boldsymbol{\Sigma}_t^M)$
- Conditionally, $\{\ln(A_t^W), \ln(w_t^W)\} \sim BVN(\boldsymbol{\mu}_{ta}^W, \boldsymbol{\Sigma}_{ta}^W)$
  - Include selection correction on women's wages

Model Parametrization

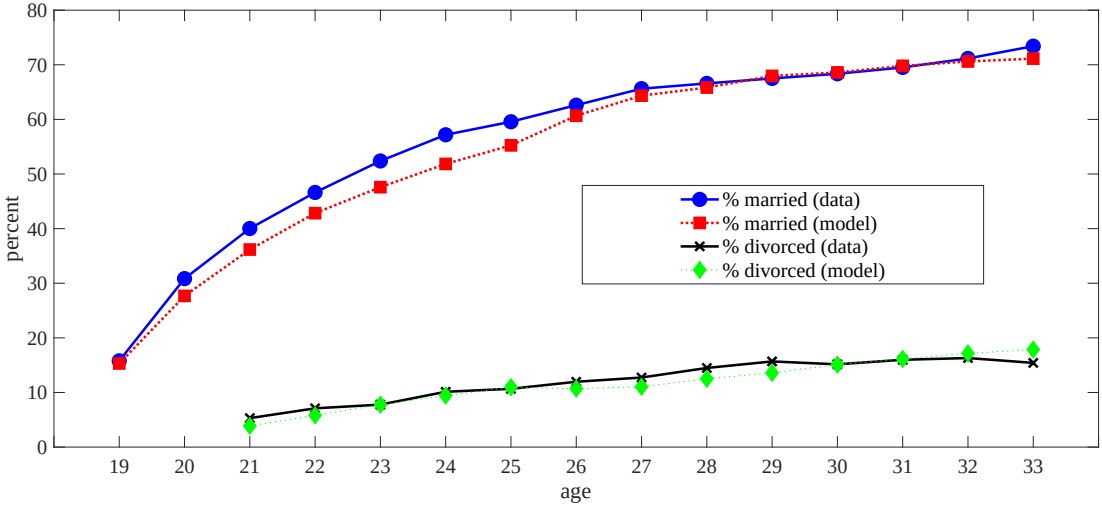
- Preferences: $u(c, P, B) = \frac{\left(c \cdot e^{\psi(M, k^a) \cdot P}\right)^{1-\gamma}}{1-\gamma} - \eta B$

- Meeting probabilities:

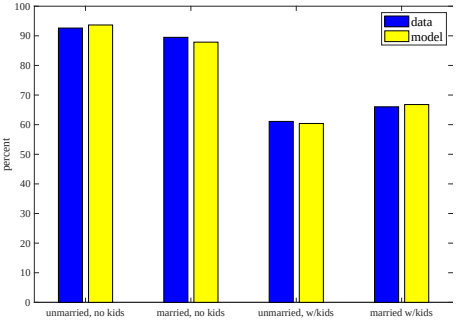
$$\lambda_t = min\{max\{\lambda_0 + \lambda_1 t + \lambda_2 t^2, 0\}, 1\}$$

- Match quality after τ years of marriage: $L^\tau = L^{\tau-1} + \xi^\tau$
  - $\xi_\tau \sim N(0, \sigma_\xi)$
  - $L^0 \sim N(0, \sigma_0)$

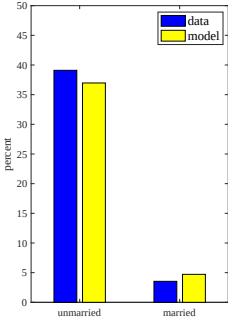
Target moments: Marital status



Target moments: Employment and Welfare Participation



(a) Employment moments



(b) Welfare moments

Parameter estimates

Table: Parameters Estimated by Method of Simulated Moments

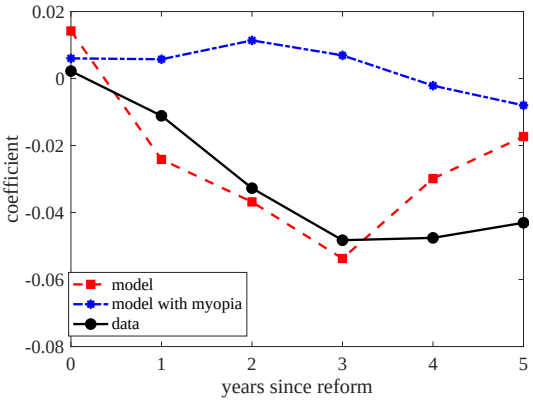
Parameter		**Estimate**	**(s.e.)**
Cost of work			
Unmarried, no children	$\exp\{\psi^{s0}\}$	0.338	(0.009)
Married, no children	$\exp\{\psi^{m0}\}$	0.584	(0.006)
Unmarried, with child	$\exp\{\psi^{s1}\}$	0.433	(0.014)
Married, with child	$\exp\{\psi^{m1}\}$	0.476	(0.007)
Cost of being on AFDC	η	0.003	(0.0002)
Match quality			
Variance at marriage	σ_0^2	0.097	(0.002)
Variance of innovations	σ_ξ^2	0.031	(0.002)

Simulate the Welfare Reform

Simulate the introduction of time limits, holding other features fixed

- Two issues:
  1. How forward looking is behaviour
  2. The importance of marriage and divorce in understanding behaviour
- Simulate the transition following welfare reform
  - Forward looking behaviour: dynamics of welfare banking
  - Validation: compare to the difference-in-differences estimates
- Long-term steady-state: heterogeneity of effect across the productivity distribution

Dynamic response of welfare utilization to time limits for mothers

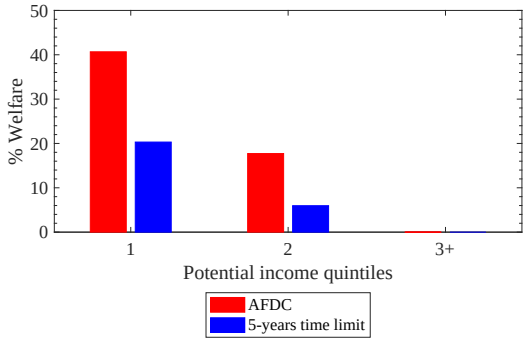


Notes: By *Model with myopia* we mean individuals who behave as if the introduction of time limits had not occurred (until they actually run out of benefits), but are forward looking in terms of other behavior.

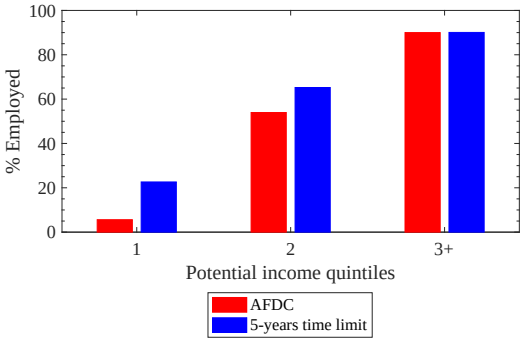
Difference-in-Differences Estimates: Simulated and CPS Data

	(1) Benefits Unmarr.	(2) Benefits Married	(3) Employed Unmarr.	(4) Employed Married	(5) Divorced
Coeff. - SIPP data	-0.093 [-0.131,-0.055]	-0.011 [-0.017,-0.004]	0.066 [0.039,0.093]	0.004 [-0.023,0.030]	-0.021 [-0.041,-0.001]
Baseline: Effect of Time limits	-0.078	-0.010	0.072	-0.018	-0.011
Alternatives: Time limits in no marriage model	-0.168	-	0.158	-	-
Time limits in no divorce model	-0.153	0.002	0.143	-0.011	-
Time limits in no assets model	-0.117	-0.006	0.117	-0.012	-0.012

Long-term effects of time limits



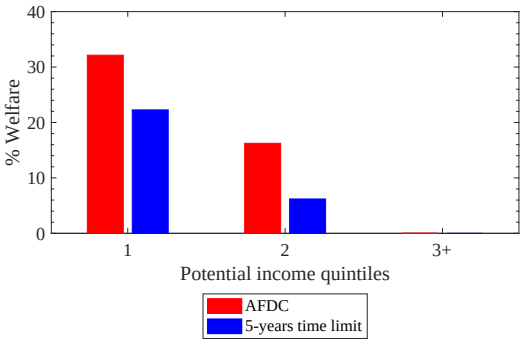
(a) Welfare use



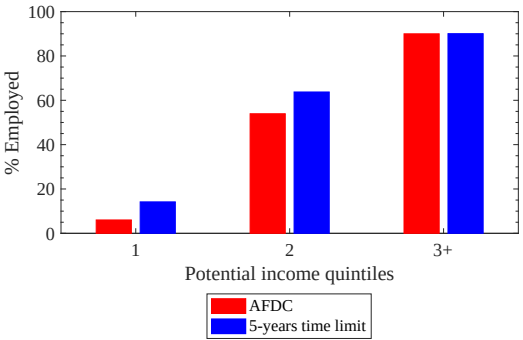
(b) Employment

Notes: Percentage of mothers on welfare (a) and working (b) by policy regime, by age-specific quintiles.

Anticipated Welfare Use and Employment

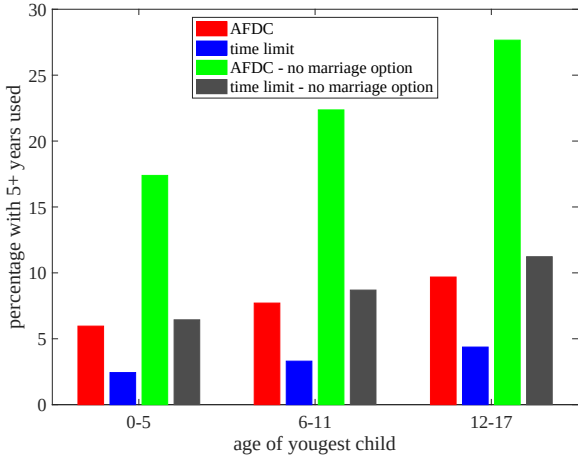


(c) Welfare use - not run out of benefits



(d) Employment - not run out of benefits

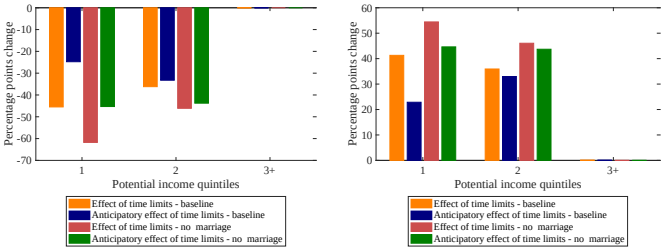
Long-term distribution of lifetime welfare utilization



Long term effects of time limits on mothers

Role of the marriage option

Figure: Welfare Use and Employment of Unmarried Mothers with and without Marriage Transitions



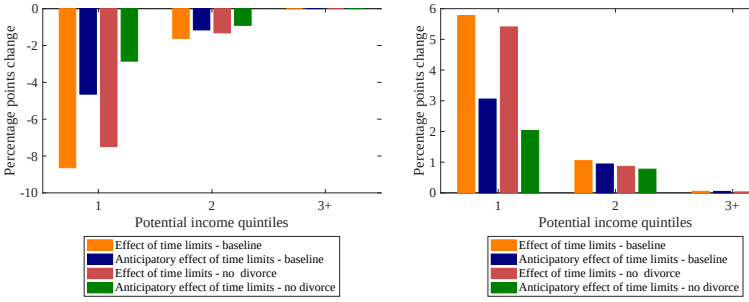
(a) Effect of time limit on welfare - decomposed

(b) Effect of time limit on employment - decomposed

- No marriage: less insurance, more cuts in welfare use in anticipation of limits

Long term effects of time limits on mothers

Role of the divorce option



(a) Welfare use (b) Employment

- No divorce: more insurance, less cuts in welfare use in anticipation of limits

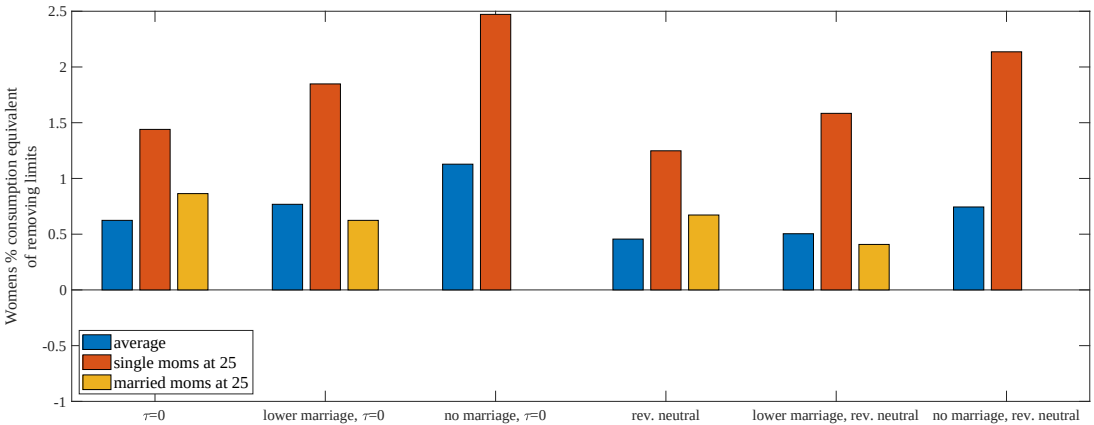
Computing the welfare effects of the reform

- Consider revenue neutral policies
  - Compute government saving from time limits
  - Return the government saving to households
    - **A.** As a negative payroll tax to women
    - **B.** As a negative payroll tax to women and men
- Compute the consumption equivalent
  - % of lifetime consumption that makes agents indifferent between having time limits or not

$$E_0\left[U\left(s,\tau\right)\right]|_\pi = \frac{1}{N}\sum_{i=1}^{N}\sum_{t=0}^{T-R}\beta^t\left(\frac{\left(\left(1-\pi^s\right)c_{i,t}^s\cdot e^{\psi(m_{i,t},k_{i,t}^a)\cdot P_{i,t}^s}\right)^{1-\gamma}}{1-\gamma}-\eta B_{i,t}^s+L_{i,t}m_{i,t}^s\right)$$

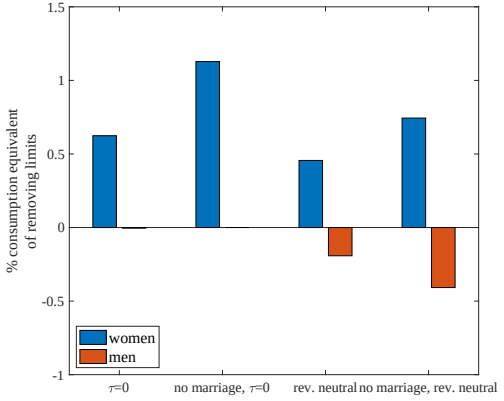
Consumption Equivalents

Figure: Lifetime Utility Costs Of Time Limits on Women



Consumption Equivalents - Women v Men

Figure: Lifetime Utility Costs Of Time Limits on Women and Men



Conclusions

- Reduced form evidence of time limits:
  - fall in welfare use
  - rise in employment
  - fall in divorce
- Joint modelling of decision over working, claiming benefits, marriage and divorce
  1. Forward looking behaviour: stop claiming in anticipation of time limit
  2. Stay married because outside option is worse
  3. Marriage and option of marriage provides insurance.
     Time limits larger reduction in claiming if focus on always single
  4. Time limits affect the lowest quintile of productivity the most
- Satisfies the "objectives" of the policy, but key groups worse off

References I

Bitler, Marianne P, Jonah B Gelbach, Hilary W Hoynes, and Madeline Zavodny. 2004. "The impact of welfare reform on marriage and divorce." *Demography* 41 (2):213–236.

Blank, RM. 2002. "Evaluating Welfare Reform in the United States." *Journal of Economic Literature* 40 (4):1105–1166.

Blundell, Richard, Pierre-André Chiappori, and Costas Meghir. 2005. "Collective labor supply with children." *Journal of political Economy* 113 (6):1277–1306.

Blundell, Richard, Monica Costa Dias, Costas Meghir, and Jonathan M Shaw. 2016. "Female labour supply, human capital and welfare reform." *Econometrica* 84 (5):1705–1753.

Chan, Marc K. 2013. "A Dynamic Model of Welfare Reform." *Econometrica* 81 (3):941–1001.

Chiappori, Pierre-André. 1992. "Collective labor supply and welfare." *Journal of Political Economy* :437–467.

References II

Fang, Hanming and Michael P Keane. 2004. "Assessing the impact of welfare reform on single mothers." *Brookings Papers on Economic Activity* 2004 (1):1–116.

Fernández, Raquel and Joyce Cheng Wong. 2014. "Divorce Risk, Wages and Working Wives: A Quantitative Life-Cycle Analysis of Female Labour Force Participation." *The Economic Journal* 124 (576):319–358.

Grogger, Jeffrey. 2003. "The effects of time limits, the EITC, and other policy changes on welfare use, work, and income among female-headed families." *Review of Economics and statistics* 85 (2):394–408.

Grogger, Jeffrey and Lynn A. Karoly. 2005. *Welfare Reform*. Harvard University Press.

Grogger, Jeffrey and Charles Michalopoulos. 2003. "Welfare Dynamics under Time Limits." *Journal of Political Economy* 111 (3).

References III

Keane, Michael P and Kenneth I Wolpin. 2010. "The Role of Labor and Marriage Markets, Preference Heterogeneity, and the Welfare System in the Life Cycle Decisions of Black, Hispanic, and White Women*." *International Economic Review* 51 (3):851–892.

Kline, Patrick and Melissa Tartari. 2016. "Bounding the Labor Supply Responses to a Randomized Welfare Experiment: A Revealed Preference Approach." *The American Economic Review* 106.

Low, Hamish, Costas Meghir, and Luigi Pistaferri. 2010. "Wage Risk and Employment Risk over the Life Cycle." *American Economic Review* 100:1432–1467.

Low, Hamish, Costas Meghir, Luigi Pistaferri, and Alessandra Voena. 2022. "Marriage, Labor Supply and the Dynamics of the Social Safety Net." Working Paper 24356, National Bureau of Economic Research. URL `http://www.nber.org/papers/w24356`.

Mazzocco, Maurizio. 2007. "Household intertemporal behaviour: A collective characterization and a test of commitment." *Review of Economic Studies* 74 (3):857–895.

References IV

Mazzolari, Francesca and Giuseppe Ragusa. 2012. "Time Limits: The Effects on Welfare Use and Other Consumption-Smoothing Mechanisms." IZA discussion paper No.6993.

Moffitt, Robert A, Brian J Phelan, and Anne E Winkler. 2020. "Welfare rules, incentives, and family structure." *Journal of Human Resources* 55 (1):1–42.

Schoeni, Robert F and Rebecca M Blank. 2000. "What has Welfare Reform Accomplished? Impacts on Welfare Participation, Employment, Income, Poverty, and Family Structure." Working Paper 7627, National Bureau of Economic Research. URL `http://www.nber.org/papers/w7627`.

Swann, Christopher A. 2005. "Welfare reform when recipients are forward-looking." *Journal of Human Resources* 40 (1):31–56.

Voena, Alessandra. 2015. "Yours, Mine and Ours: Do Divorce Laws Affect the Intertemporal Behavior of Married Couples?" *American Economic Review* .

References V

Ziliak, James P. 2015. "Temporary Assistance for Needy Families." *Economics of Means-Tested Transfer Programs in the United States* 1:303–394.