Appendix for "Welfare Use when Approaching the Time Limit"

Francesca Mazzolari

Appendix 1

Description of Policy and Individual Variables

This section describes the construction of the variables used in the empirical analysis and lists the information sources.

A. Time Limit and other Welfare Reform policies

The welfare reform variables I use in this paper are based on various reports prepared for the U.S. Department of Health and Human Services. The main sources are the chapter "Specific Provisions of State Programs" in the fifth report to Congress (http://www.acf.hhs.gov/ programs/ofa/ annualreport5/ chap12.htm) and the report "State Implementation of Major Changes to Welfare Policies, 1992-1998" (http://aspe.hhs.gov/ hsp/Waiver-Policies99/ policy_CEA.htm). Detailed information on time limit policies is obtained from Bloom et al. (2002). I also use classification schemes presented in previous papers (CEA 1999; Blank 2001; Bitler, Gelbach and Hoynes 2002; Fang and Keane 2004). The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA) prohibits states from using federal Temporary Assistance for Needy Families (TANF) funds to provide benefits to adults beyond a 60-month lifetime time limit (although the federal provision only restricts how states use federal money, it has become known as “federal time limit”). States may use federal money to extend benefits beyond the 60-month limit up to 20 percent of their caseload and may use state money for families above that limit. As shown in

Table A1, only twenty-four states have adopted the simple PRWORA standard of a 60-month lifetime time limit. The rest of the states have adopted some other type of plan and, in fact, most of them have implemented time limits that are stricter than those required by PRWORA, sometimes dramatically so. For example, eight states impose a shorter lifetime limit than 60 months (ranging between 21 and 48 months). Eleven states impose not only a lifetime limit but also a shorter limit over fixed calendar intervals. This policy is referred to as "intermittent time limit" and it is implemented either by limiting individuals to receive no more than x months of receipt in every y months of calendar time, or by obliging recipients to stay out of the program for z months after receiving benefits for x months. Three states impose no lifetime limit but have intermittent limits. Only two states have no limits at all: Michigan and Vermont use state funds to continue benefits to recipients who have met the federal 60-month limit. The state of New York as well allows those reaching the 60-month limit to transition to a state and locally funded Safety Net (SNA) program, but benefits are 80 percent non-cash and available only for up to 24 months. Moreover, welfare staff does not advertise this option, which is only communicated to recipients in month 58 of assistance (Bloom et al. 2002). For this reason, I choose to classify New York as having a 60-month limit. Finally, eight states have relaxed the time limits implicit in PRWORA by adopting "reduction" rather than termination policies. A reduction limit is a limit only for adults, so that children can continue to receive benefits beyond 60 months (paid for out of state funds).

In the empirical exercise presented in this paper, the main results are for a state time limit N_s, denominated in months of welfare eligibility, that corresponds to the most binding time limit imposed in the state (that is, the intermittent time limit if in place), and no distinction is made between termination and reduction time limits. In section V.D of the paper

I discuss the effects of different kinds of time limit policies (depending on the breadth of coverage once the limit is reached or the length of the limit).

As regards state variation in the timing of implementation of time limit policies, I define the state implementation date $\overline{T}_s$ as the month when the state started to count periods of receipt toward time limits. Six states implemented time limits under waivers and continued them after PRWORA, so that the actual counting date is prior to TANF implementation. Even when time limits where implemented for the first time or restarted under TANF, there are ten states that started to count months toward time limits after their initial TANF implementation date.

Given that the dates since time limits started to be counted do not overlap completely either with waiver or with TANF dates, I can identify the collective effect of other welfare reform components by including a dummy for the implementation of "major" (in the sense of involving a significant deviation from the state's AFDC program) statewide waivers and a dummy for the date of implementation of a state TANF program (both sets of dates are reported in Table A1). The waiver dummy is set to zero when the TANF implementation dummy turns on (Bitler, Gelbach and Hoynes 2002).

B. Other state-level economic and policy variables

The other state-level economic and policy variables included as explanatory variables in the empirical analysis presented in Section V are the monthly unemployment rate (Bureau of Labor Statistics), the AFDC/TANF maximum monthly benefit for a family of three, and two measures of the Earned Income Tax Credit (EITC) generosity.

Benefit levels are available by year and expressed in 1996 dollars. Data are from

Blank (2001) (for the period 1990-1995) and from the 2000 and 2003 editions of The Green Book (U.S. House of Representatives, Committee on Ways and Means) (for the period 1996-2003).

The EITC provides a wage subsidy to low-income workers. Below a certain threshold, the EITC subsidy is a fraction of the earned income as expressed by the "phase-in" rate. Once a worker's earnings exceed a threshold that depends on the phase-in rate and the maximum credit, the EITC effectively provides a lump-sum transfer. Once earnings exceed a further threshold, the credit is phased out until it reaches zero at the break-even level of earnings. The EITC measure included in the analysis is the federal maximum credit. Very similar estimation results were obtained when using the combined federal and state phase-in rate as a measure of the EITC generosity, or when including both variables. Both measures vary by year and family size and were kindly provided by Hanming Fang and Michael Keane. The inclusion of these measures is only a simplified way to control for the effects of the EITC, given that the main goal of this paper is to investigate the impact of time limits. For an excellent methodology for summarizing the features of the complex, nonlinear budget sets created by the EITC, see Meyer and Rosenbaum (2001).

C. Individual socio-demographic characteristics

The individual-level data used in this paper come from the Survey of Income and Program Participation (SIPP). The SIPP consists of several separate panels, each of which constitutes an independent sample of the U.S. population. In each panel, data are collected at four-month intervals. At each interview, respondents are asked to provide information covering the four months since the previous interview, so that the data are on a monthly basis.

In this study I use data from the 1990, 1991, 1992, 1993, 1996 and 2001 panels. Given that previous work shows that respondents tend to give the same response for all four months within a wave (Blank and Ruggles 1996), I use only observations pertaining to the month before the interview. All regressions are weighted using SIPP month-individual weights. The use of weights is necessary given that the 1990 and 1996 SIPP panels oversample the low-income population.

I limit the sample to single women who are between 15 and 55 years old and have children younger than 18. The determination of whether a woman has children and how many she has (and of which ages) is obtained by matching the adult's identification number with the identification number of a child's parent or guardian. The sample is further restricted to women living in states that are separately identified in the SIPP. The nine excluded states are Alaska, Idaho, Iowa, Maine, Montana, North Dakota, South Dakota, Vermont and Wyoming. The dependent variable is a dummy equal to one if a woman receives positive income from AFDC/TANF in a certain month. The observable individual socio-demographic characteristics (X_{it}) included in the control set of all specifications are: mother's age (cubic polynomial), number of children between 0 and 5, between 6 and 12 and between 13 and 18, age of the youngest and the oldest child (less than 2, between 3 and 5, between 6 and 12, older than 13), marital status (never married, separated, divorced and widowed), education (at most 6th grade, 7th to 8th grade, 9th grade, 10th grade, 11^{th} grade, high school degree, at least some college), race (White, Black, American Indian and Asian), Hispanic origin, nativity (a foreign-born is someone born outside the U.S. and not of American parents), cohort of entry in the U.S. if foreign-born (before 1970, 1970-1979, 1980-1983, 1984-1993, 1994-1995 and 1996 or after) and living in a metropolitan area.

Table A2 presents details on the duration and size of each SIPP panel once we apply the sample restrictions and we only consider women with non-missing information for the variables included in the analysis.

D. Individual welfare participation history and remaining welfare eligibility under time limits

To define the remaining stock of available months of eligibility S_{its} for woman i in month t, we need information on individual prior welfare participation since the implementation of time limits, and this is obtained in the SIPP using both in-sample information and retrospective questions asked at the beginning of the panel.
Individuals sampled in the 1990-93 panels did not face time limits in any state. As regards the 1996 panel, the number of months of individual welfare use since time limit implementation is calculated exclusively using in-sample information. In fact, the first reference month of wave 1 (December 1995-March 1996 depending on the rotation group) is before the implementation of time limits. The only exception is Arizona that started to count months towards the limit in November 1995. For women living in Arizona I also use information from retrospective questions. A recipiency history module is asked to all respondents in the first wave of the survey. This information is crucial, together with in-sample information, to define welfare use since time limit implementation for women in the 2001 panel. The module asks if respondents not currently in welfare have ever received benefits, and if respondents currently in welfare have been authorized to receive public assistance other times. If so, respondents are asked when they received benefits for the first and the last time (year and month), so that it is possible to define the length of a continuous spell of prior welfare

participation since the reported first participation or the date of the state time limit implementation, whichever occurs later. Ideally, we would like to know for how many months individuals received benefits between the first and the last time. Unfortunately, respondents are only asked for how many "times" they received benefits (the possible answers being: one time, two times, three times, four times, five to six times, seven or more times). A continuous spell is the exact measure of the number of months of welfare use only when respondents received benefits one time (63 percent of the cases). In the other cases, we do not know the length of each welfare spell and how many of the spells occurred before the implementation of time limits. As an approximation, I use the continuous spell of participation as a measure of prior welfare use. Finally, welfare recipients in the first wave of the panel are asked when they applied for the benefits they are currently receiving. In these cases, I sum the length of the current spell to that of a prior spell.

Once I define the number of months of welfare use accumulated by each individual since the implementation of time limits, I build remaining benefits S_{its} as the difference between the state limit and the number of periods of welfare use accumulated since the clock started to tick. This formula does not take into account the fact that states may allow exemptions that temporarily stop the clock for some welfare recipients. In this case, welfare participation occurs without depleting the stock of remaining months of eligibility. Even if states define broad categories to whom exemptions can be applied, it is not feasible to include this information in defining Sits for two reasons. First, many categories are based on factors that the researcher cannot observe (such as being a victim of domestic violence, disability status, caring for a disabled family member). Second, welfare workers have large discretion in granting exemptions to recipients who apply for them (Bloom et al. 2002). As a result, I

define S_{its} abstracting from the existence of exemptions, and I test for the extent to which they were eventually granted by estimating the relationship between having exhausted benefits ($S_{its} \leq 0$) and the probability of welfare use in month t. The limitation of this approach is that it does not allow to separate the effects of exemptions from those of extensions.

References

Bitler, Marianne, Jonathan Gelbach, and Hilary Hoynes. 2002. "The Impact of Welfare Reform on Living Arrangements." Working Paper No. 8784. Cambridge, Mass.: National Bureau of Economic Research.

Blank, Rebecca 2001. "What Causes Public Assistance Caseloads to Grow?" *Journal of Human Resources* 36(1):85–118.

Blank, Rebecca, and Patricia Ruggles. 1996. "When Do Women Use Aid to Families with Dependent Children and Food Stamps? The Dynamics of Eligibility versus Participation." *Journal of Human Resources* 31(1):57–89.

Bloom, Dan, Mary Farrell, Barbara Fink, and Diana Adams-Ciardullo. 2002. "Welfare Time Limits: State Policies, Implementation, and Effects on Families." Washington, D.C.: U.S. Department of Health and Human Services.

Council of Economic Advisers. 1999. "The Effects of Welfare Policy and the Economic Expansion on Welfare Caseloads: An Update." Washington, D.C.: Council of Economic Advisers.

Fang, Hanming, and Michael Keane. 2004. "Assessing the Impact of Welfare Reform on Single Mothers." *Brookings Papers on Economic Activity* 1:1–116.

Meyer, Bruce, and Dan Rosenbaum. 2001. "Welfare, the EITC, and the Labor Supply of Single Mothers." *The Quarterly Journal of Economics* CXVI:1063–1114.

Wooldridge, Jeffrey. 2002. *Econometric Analysis of Cross Section and Panel Data*. Cambridge, Mass.: The MIT Press.

Table A1: State Welfare Policies

Features of State Time Limit Policies and Date of Implementation of Major Statewide Waivers, TANF Programs and Time Limits

	Lifetime Limit		Intermittent Time Limit				Implementation			
State	in place	duration (months)	in place	duration (months)	most binding TL (months)	reduction TL [i]	waiver [ii]	TANF	TL [iii]	date families might first exceed limit [iv]
Alabama	1	60	0		60	0		Nov-96	Nov-96	Nov-01
Alaska	1	60	0		60	0		Jul-97	Jul-97	Jul-02
Arizona	0	none	1	24 in 60	24	1	Nov-95	Oct-96	Nov-95	Nov-97
Arkansas	1	24	0		24	0	Jul-94	Jul-97	Jul-98	Jul-00
California	1	60	0		60	1	Dec-92	Jan-98	Jan-98	Jan-03
Colorado	1	60	0		60	0		Jul-97	Jul-97	Jul-02
Connecticut [a]	1	21	0		21	0	Jan-96	Oct-96	Jan-96	Oct-97
Delaware [a]	1	60	1	48 ineligible for 96	48	0	Oct-95 [2]	Mar-97	Mar-97	Oct-99
DC	1	60	0		60	0		Mar-97	Mar-97	Oct-02
Florida [a]	1	48	1	36 in 72	36	0	Jun-96	Oct-96	Oct-96	Oct-98
Florida [b]	1	48	1	24 in 60	24	0				
Georgia	1	48	0		48	0	Jan-94	Jan-97	Jan-97	Jan-01
Hawaii	1	60	0		60	0	Feb-97	Jun-97	Dec-96	Dec-01
Idaho	1	24	0		24	0	Aug-96	Jul-97	Jul-97	Jul-99
Illinois	1	60	0		60	0	Nov-93	Jul-97	Jul-97	Jul-02
Indiana	1	24	0		24	1	May-95 [3]	Oct-96	May-97	Jul-97
Iowa	1	60	0		60	0	Oct-93	Jan-97	Jan-97	Jan-02
Kansas	1	60	0		60	0		Oct-96	Oct-96	Oct-01
Kentucky	1	60	0		60	0		Oct-96	Oct-96	Oct-01
Louisiana	1	60	1	24 in 60	24	0		Jan-97	Jan-97	Jan-99
Maine	1	60	0		60	1	Jun-96	Nov-96	Nov-96	Nov-01
Maryland	1	60	0		60	1	Mar-96	Dec-96	Jan-97	Jan-02
Massachusetts	0	none	1	24 in 60	24	0	Nov-95	Sep-96	Dec-96	Dec-98
Michigan	0	none	0		.		Oct-92	Sep-96	----	----
Minnesota	1	60	0		60	0		Jul-97	Jul-97	Jul-02
Mississippi	1	60	0		60	0	Oct-95	Jul-97	Oct-96	Oct-01
Missouri	1	60	0		60	0	Jun-95	Dec-96	Jul-97	Jul-02
Montana	1	60	0		60	0	Feb-96	Feb-97	Feb-97	Feb-02
Nebraska	1	48	1	24 in 48	24	0	Oct-95	Dec-96	Dec-96	Dec-98
Nevada	1	60	1	24 ineligible for 12	24	0		Dec-96	Jan-98	Jan-00
New Hampshire	1	60	0		60	0	Jun-96	Oct-96	Oct-96	Oct-01
New Jersey	1	60	0		60	0	Oct-92	Jul-97	Mar-97	Mar-02
New Mexico	1	60	0		60	0		Jul-97 [6]	Jul-97	Jul-02
New York	0	60 [1]	0		60	1		Nov-97	Dec-96	Dec-01
North Carolina	1	60	1	24 ineligible for 36	24	0	Jul-96	Jan-97	Jul-96	Jul-98
North Dakota	1	60	0		60	0		Jul-97	Jul-97	Jul-02
Ohio	1	60	1	36 ineligible for 24	36	0	Jul-96	Oct-96	Oct-97	Oct-00
Oklahoma	1	60	0		60	0		Oct-96	Oct-96	Oct-01
Oregon	0	none	1	24 in 84	24	1	Feb-93	Oct-96	Jul-96	Jul-98
Pennsylvania	1	60	0		60	0		Mar-97	Mar-97	Mar-02
Rhode Island	1	60	0		60	1		May-97	May-97	May-02
South Carolina	1	60	1	24 in 120	24	0	May-96	Oct-96	Oct-96	Oct-98
South Dakota	1	60	0		60	0	Jun-94	Dec-96	Dec-96	Dec-01
Tennessee	1	60	1	18 ineligible for 3	18	0	Sep-96	Oct-96	Sep-96	Mar-98
Texas [a]	1	60	1	12 ineligible for 60	12	0	Jun-96 [4]	Nov-96	Sep-97	Jun-97
Texas [b]	1	60	1	24 ineligible for 60	24	0	"	"	"	Jun-98
Texas [c]	1	60	1	36 ineligible for 60	36	0	"	"	"	Jun-99
Utah	1	36	0		36	0	Jan-93	Oct-96	Jan-97	Jan-00
Vermont	0	none	0		.		Jul-94	Sep-96	----	----
Virginia	1	60	1	24 ineligible for 24	24	0	Jul-95 [5]	Feb-97	Oct-97	Oct-99
Washington	1	60	0		60	0	Jan-96	Jan-97	Aug-97	Aug-02
West Virginia	1	60	0		60	0		Jan-97	Jan-97	Jan-02
Wisconsin	1	60	0		60	0	Jan-96	Sep-97	Oct-96	Oct-01
Wyoming	1	60	0		60	0		Jan-97	Jan-97	Jan-02

Notes: [i] A reduction time limit (as opposed to the general case of termination time limit) means that the child portion of the welfare benefit continues after time limits exhaustion.

[ii] Implementation of major statewide waivers.

[iii] Effective date for time limits (actual counting date for statewide time limits).

[iv] Denotes the month following the date families could potentially accumulate the maximum number of months of TANF assistance.

Connecticut [a]: In October 2001 Connecticut imposed a new 60-month time limit that allows fewer exceptions than the previous 21 month limit, and that counts benefits received since October 1996.
Delaware [a]: In Januray 2000, Delaware introduced a new 36-month lifetime limit.
Florida [a] applies to women with age under 24 and who did not finish high school. Florida [b] applies to other women.
Texas [a] applies to women with at least a high school diploma. Texas [b] applies to women who completed three or more years of HS but do not hold a HS diploma. Texas [c] applies to other women.

[1] New York state allows those reaching a 60-month limit to transition to a state funded Safety Net Program that provides the same benefits for two years but only partly (20%) in cash.
[2] Delaware began implementation of its termination time limit with a small number of cases in October 1995; the policy became universal in March 1997.
[3] Indiana began implementation of its 24-month time limit policy for "job-ready" non-exempt cases in July 1995; beginning May 1997 the 24-month time limit was expanded to all non-exempt cases.
[4] Texas' 12, 24, or 36 month time limit began in one county in June 1996 and was expanded to the entire state by September 1997. The federal 60 month time limit was imposed beginning Nov 1996.
[5] Virginia's termination time limit began in five counties in July 1995 and was expanded to the entire state by October 1997.
[6] New Mexico implemented TANF again in 1998 after its first 1997 plan was ruled unconstitutional.

Sources: CEA (1999), Bloom et al. (2002), Fang and Keane (2004), Bitler et al. (2004), ASPE webpage (http://aspe.hhs.gov/hsp/waiver-Policies99/W1tim_limt.htm#N5)

Table A2
Sampling periods and size of the samples drawn from the 1990-2001 SIPP panels

Panel	Sampling period	Number of waves	Number of observations	Number of individuals
1990	Jan90-Aug92	8	13,534	2,481
1991	Jan91-Aug93	8	7,355	1,371
1992	Jan92-Dec94	9	12,070	2,044
1993	Jan93-Dec95	9	12,313	2,060
1996	March96-Feb00	12	35,009	5,005
2001 [(a)]	Oct00-Aug03	8	24,239	3,662
Total			104,520	16,623

Notes: (a) figures for the Sipp 2001 refer to the 8 waves released in August 2004
The sample is restricted to single mothers between the ages of 15 and 55. Observations for women living in Alaska, Idaho, Iowa, Maine, Montana, North Dakota, South Dakota, Vermont and Wyoming are excluded. Only one observation for each wave is kept (the one pertaining to the month before the interview).

Appendix 2

LPM versus Probit Estimates

Although pits is a binary variable, I estimate a linear probability model (LPM) with heteroskedasticity-robust standard errors instead of a probit model, because the main estimation issue in this application is the presence of endogenous explanatory variables and probits not only require very strong assumptions, but become computationally cumbersome in the presence of three binary endogenous variables and one continuous variable interacted with a dummy, such as in this case. In what follows,

I discuss some analyses I have run to compare LPM and probit estimates. Using a probit model and suppressing the subscripts for simplicity, Equation 2 becomes

$$(2'') \quad \mathrm{Prob}(p=1) = \Phi\left(I(t \geq \overline{T}_s)\left\{ \alpha I\left(0 < \frac{S}{H} < 1\right) + \beta \frac{S}{H} I\left(0 < \frac{S}{H} < 1\right) + \gamma I\left(\frac{S}{H} \geq 1\right) + \delta I\left(\frac{S}{H} \leq 0\right) \right\} + \varphi W \right)$$

where $\Phi(.)$ is the standard normal cdf and W is a vector including the regressors assumed to be exogenous.

The biggest difference between the LPM on one hand, and the probit model on the other, is that the LPM assumes constant marginal effects for the explanatory variables, while in a probit model the partial effects depend on the value of the independent variables. The LPM assumption cannot literally be true because continually increasing the values of the covariates would eventually drive the probability to be less than zero or greater than one. So, a main issue with LPM's is that they might produce predictions outside the unit interval. In our preferred specification (column 5 of Table 4) 8.1 percent of the fitted values are indeed outside the unit interval. Even with this weakness, the LPM often seems to give good estimates on the response probability near the center of the distribution of the covariates

(Wooldridge 2002). I try to determine how good an approximation of the time limit effects the LPM provides by comparing LPM to probit estimates obtained from two-stage procedures, that is estimation of equations of $\text{Prob}(p_{its} = 1)$ on fitted values from the first stage regressions (Equations 3). Only in a linear model this two-step approach is appropriate (in particular, in a perfectly identified model as ours, the 2SLS estimator and the IV estimator are identical). However, this approach does not produce consistent estimators in the probit case (solving correctly the two-step procedure in the probit case would not be less complicated than handling maximum likelihood estimation with four endogenous variables). So, the present analysis is meant to provide some insights on how LPM and probit estimates compare, but it is not rigorous in the way it handles the endogeneity problem in a nonlinear setting.

Given that the time limit variables $I(0 < S/H < 1)$, $I(S/H \geq 1)$ and $I(S/H \leq 0)$ are dummy variables for mutually exclusive and exhaustive categories if time limits are implemented (that is, if $I(t \geq \overline{T}_s) = 1$), then the partial effects of changing them from 0 (because time limits are not implemented) to 1 can be estimated respectively as:

(5) $\Phi(\hat{\alpha} + \hat{\beta}S/H + \hat{\varphi}W) - \Phi(\hat{\varphi}W)$

(6) $\Phi(\hat{\gamma} + \hat{\varphi}W) - \Phi(\hat{\varphi}W)$

(7) $\Phi(\hat{\delta} + \hat{\varphi}W) - \Phi(\hat{\varphi}W)$

These partial effects depend on the values of the other explanatory variables W's. I first evaluate them at the sample averages. Most of the variables in W are dummy variables. Putting in the averages for binary variables (which are the fractions of ones in the sample) means that the effect does not really correspond to a particular individual. For this reason, I also calculate the partial effects at some other values that correspond to specific realizations of socio-demographic characteristics, state of residence and month-year of observation.

To obtain standard errors of the partial effects I use the delta method. The program Stata does this calculation using the "predictnl" command.

2.1 Banking effects

Equation 5 is the change in the probability of welfare use due to banking behaviors, and it also depends on the value of S/H. The solid and dashed lines in Figure A1 represent the estimated banking effects (from LPM and probit respectively) as a function of S/H in (0, 1), when the values of the regressors W are set at the sample means. Based on the coefficients α and β estimated from LPM (as reported in column 5 of Table 4), women with very low coverage $S/H = 0.1$ are 3.3 percentage points less likely to use welfare than women not facing time limits $(-0.033 = -0.040 + 0.1 * 0.068)$. When coverage increases, the negative predicted effect decreases in magnitude at a rate equal to 0.068 until it becomes positive for a coverage more than $0.59 (= 0.040 / 0.068)$. Inspection of the empirical distribution of S/H reveals that 88 percent of the women with incomplete coverage actually have a coverage ≤ 0.59, so are predicted to participate less than women not facing time limits. The banking effects estimated from probit are somewhat smaller in magnitude but they are qualitatively similar in the way the vary over S/H .

Also, the LPM estimated effects fall in a 95 percent confidence interval of the probit estimates. When comparing banking effects from LPM and probit at a number of possible specific realizations for W, the results are very similar (the estimated partial effects over S/H resemble, and the LPM estimates fall inside a 95 percent confidence interval of the probit estimates).

2.2 Unconstrained hypothesis

The partial effect of $I(S/H \geq 1)$ is economically and statistically not significant at the mean of

W and for a number of possible specific realizations.

2.3 Enforcement effects

At the sample averages of W, the estimated partial effect of hitting the limit from a probit model –calculated as in Equation 7– is −0.16. The probit point estimate is lower than the effect calculated from the LPM (−0.86), but falls in its 95 percent confidence interval (−1.62, −0.10). Also, when calculating probit partial effects at specific realizations of W that account for the fact that enforcement is only feasible in late sample periods, then the effects increase, and are particularly high for realizations that correspond to women expected to be highly exposed to the risk of welfare based on observable socio-demographics. For example, the estimated enforcement effect from probits is:

• −0.42 (s.e. 0.15) for a woman with three children (2, 4 and 7 years old), aged 30, never married, who completed the eleventh grade, white, native-born, observed in January 1998, residing in a metropolitan area in Connecticut

• −0.56 (s.e. 0.17) for a woman with three children (2, 4 and 7 years old), aged 30, never married, who completed the eleventh grade, white, native-born, observed in January 2003, residing in a metropolitan area in Connecticut

• −0.45 (s.e. 0.12) for a woman with three children (2, 4 and 7 years old), aged 30, never married, who completed the eleventh grade, white, native-born, observed in January 2000, residing in a metropolitan area in New Jersey

• −0.59 (s.e. 0.15) for a woman with three children (2, 4 and 7 years old), aged 30, never married, who completed the eleventh grade, white, native-born, observed in January 2003, residing in a metropolitan area in New Jersey

• −0.10 (s.e. 0.07) for a woman with one child 7 years old, aged 30, never married, who

graduated from high school, white, native-born, observed in January 2000, residing in a metropolitan area in Connecticut

• −0.12 (s.e. 0.06) for a woman with one child 7 years old, aged 30, never married, who graduated from high school, white, native-born, observed in January 2000, residing in a metropolitan area in New Jersey

Once again, these comparisons should be taken with caution because, as acknowledged above, the two-step procedure in the probit case does not produce consistent estimates.

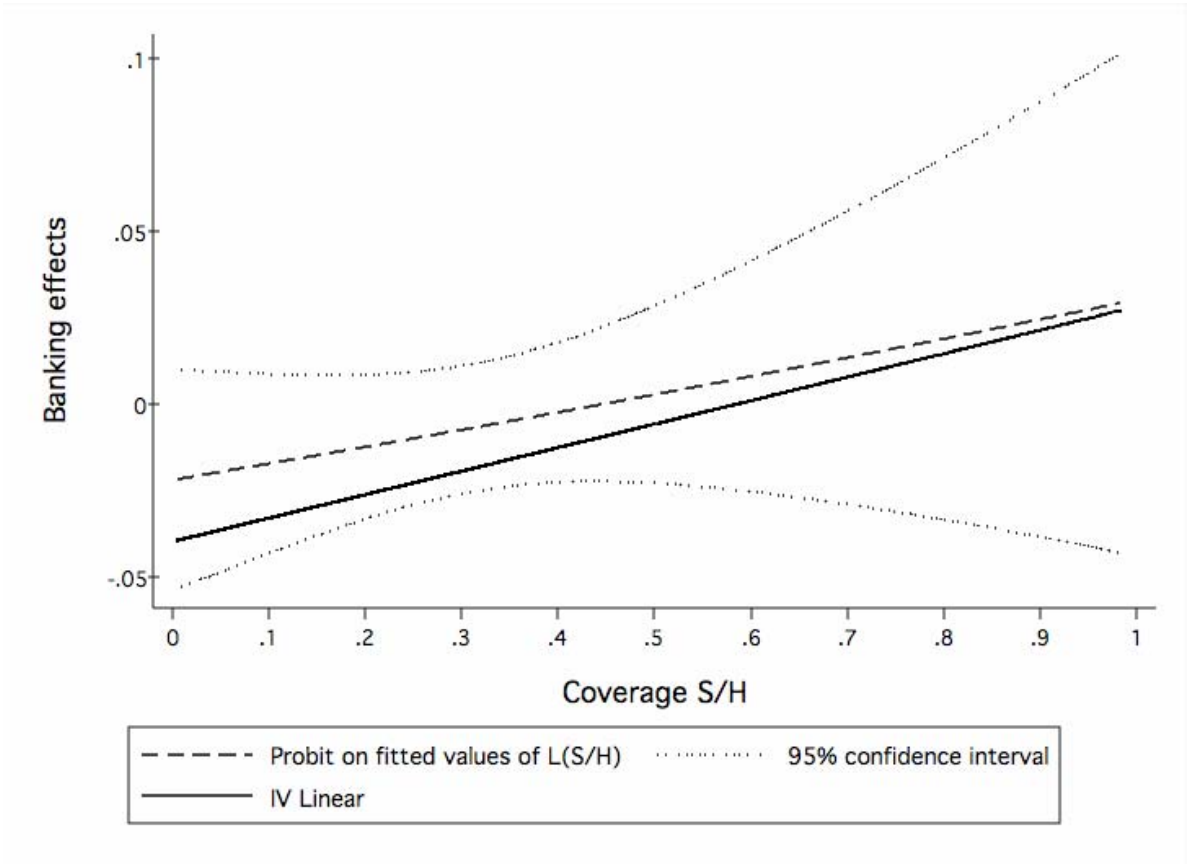

Figure A1
Probit versus LPM estimated banking effects

Appendix 3

Additional Figures and Tables reporting the results discussed in "Welfare Use when Approaching the Time Limit" by Francesca Mazzolari

Table A3
First Stage Regressions; Calibration based on k =1

Dependent variable	banking I(0<S/H<1)	banking S/H*(0<S/H<1)	unconstrained I(S ≥ H)	enforcement I(S ≤ 0)
	(1)	(2)	(4)	(5)
variable				
I(0<Z/H<1)	1.043***	0.247***	-0.042***	-0.014***
	(0.009)	(0.007)	(0.007)	(0.004)
Z/H*(0<Z/H<1)	-0.361***	0.204***	0.343***	0.032***
	(0.021)	(0.021)	(0.019)	(0.008)
I(Z ≥ H)	0.433***	0.040***	0.551***	0.011***
	(0.012)	(0.008)	(0.012)	(0.004)
I(Z ≤ 0)	0.934***	0.244***	0.011	0.038***
	(0.010)	(0.007)	(0.008)	(0.006)
R-squared	0.90	0.68	0.71	0.09
F-test[a]	7111.490	1806.504	579.829	31.062
Prob>F	0.00000	0.00000	0.00000	0.00000

Notes: OLS regressions. S and Z denote actual and predicted remaining months of eligibility, while H denotes the eligibility horizon under time limits. Predicted remaining benefits Z are defined using state time limits and exposure to time limits, calibrated by k=1 (see Equation 4). All regressions include controls for socio-demographic characteristics, policy and economic variables, state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level.
a. F-test of the joint significance of the instruments.

Table A4
First Stage Regressions; Calibration based on k =national average pre-reform welfare use

Dependent variable	banking I(0<S/H<1)	banking S/H*(0<S/H<1)	unconstrained I(S ≥ H)	enforcement I(S ≤ 0)
	(1)	(2)	(4)	(5)
variable				
I(0<Z/H<1)	-0.509***	0.191***	-0.144***	-0.003
	(0.019)	(0.007)	(0.006)	(0.005)
Z/H*(0<Z/H<1)	0.194***	0.389***	0.525***	-0.004
	(0.011)	(0.017)	(0.017)	(0.012)
I(Z ≥ H)	1.120***	0.016*	0.804***	-0.002
	(0.027)	(0.009)	(0.009)	(0.006)
I(Z ≤ 0)	0.934***	0.230***	-0.118***	-0.014
	(0.010)	(0.012)	(0.012)	(0.025)
R-squared	0.92	0.75	0.83	0.08
F-test[a]	11479.959	3313.996	2043.762	1.363
Prob>F	0.00000	0.00000	0.00000	0.24407

Notes: OLS regressions. OLS regressions. S and Z denote actual and predicted remaining months of eligibility, while H denotes the eligibility horizon under time limits. Predicted remaining benefits Z are defined using state time limits and exposure to time limits, calibrated by k = national average pre-reform welfare use (see Equation 4). All regressions include controls for socio-demographic characteristics, policy and economic variables, state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level.
a. F-test of the joint significance of the instruments.

Table A5
First Stage Regressions; Calibration based on k =national average pre-reform welfare use by number of children, education, and race

Dependent variable	banking I(0<S/H<1) (1)	banking S/H*(0<S/H<1) (2)	unconstrained I(S ≥ H) (3)	enforcement I(S ≤ 0) (4)
variable				
I(0<Z/H<1)	1.089***	0.154***	-0.111***	0.011**
	(0.008)	(0.006)	(0.006)	(0.005)
Z/H*(0<Z/H<1)	-0.368***	0.496***	0.416***	-0.037***
	(0.019)	(0.016)	(0.015)	(0.013)
I(Z ≥ H)	0.183***	0.018**	0.825***	-0.012*
	(0.011)	(0.009)	(0.010)	(0.007)
I(Z ≤ 0)	0.954***	0.164***	-0.064***	0.098***
	(0.023)	(0.009)	(0.010)	(0.022)
R-squared	0.93	0.77	0.85	0.09
F-test[a]	13376.949	4296.581	2191.617	7.170
Prob>F	0.00000	0.00000	0.00000	0.00001

Notes: OLS regressions. S and Z denote actual and predicted remaining months of eligibility, while H denotes the eligibility horizon under time limits. Predicted remaining benefits Z are defined using state time limits and exposure to time limits, calibrated by k = national average pre-reform welfare use (see Equation 4). All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child; education, number of children, race and their interaction), state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level.
a. F-test of the joint significance of the instruments.

Table A6
First Stage Regressions; Calibration based on k =national average pre-reform welfare use by number of children, education, race and marital status

Dependent variable	banking I(0<S/H<1) (1)	banking S/H*(0<S/H<1) (2)	unconstrained I(S ≥ H) (4)	enforcement I(S ≤ 0) (5)
variable				
I(0<Z/H<1)	1.067***	0.140***	-0.090***	0.012**
	(0.008)	(0.006)	(0.005)	(0.005)
Z/H*(0<Z/H<1)	-0.300***	0.539***	0.349***	-0.039***
	(0.018)	(0.015)	(0.015)	(0.012)
I(Z ≥ H)	0.177***	0.016**	0.835***	-0.016**
	(0.011)	(0.008)	(0.010)	(0.007)
I(Z ≤ 0)	0.923***	0.160***	-0.054***	0.119***
	(0.022)	(0.009)	(0.009)	(0.021)
R-squared	0.93	0.79	0.86	0.09
F-test[a]	14109.787	4797.352	2206.368	10.639
Prob>F	0.00000	0.00000	0.00000	0.00000

Notes: OLS regressions. S and Z denote actual and predicted remaining months of eligibility, while H denotes the eligibility horizon under time limits. Predicted remaining benefits Z are defined using state time limits and exposure to time limits, calibrated by k = national average pre-reform welfare use (see Equation 4). All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child; education, number of children, race, marital status and their interaction), state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level.
a. F-test of the joint significance of the instruments.

Table A7

First Stage Regressions; Calibration based on k =national average pre-reform welfare use by number of children, education, race, marital status and age

Dependent variable	banking I(0<S/H<1)	banking S/H*(0<S/H<1)	unconstrained I(S ≥ H)	enforcement I(S ≤ 0)
	(1)	(2)	(4)	(5)
variable				
I(0<Z/H<1)	1.062***	0.131***	-0.085***	0.012**
	(0.007)	(0.005)	(0.005)	(0.005)
Z/H*(0<Z/H<1)	-0.281***	0.568***	0.329***	-0.038***
	(0.018)	(0.015)	(0.014)	(0.013)
I(Z ≥ H)	0.166***	0.018**	0.847***	-0.017**
	(0.011)	(0.008)	(0.010)	(0.007)
I(Z ≤ 0)	0.914***	0.146***	-0.055***	0.129***
	(0.023)	(0.009)	(0.009)	(0.022)
R-squared	0.93	0.80	0.86	0.10
F-test[a]	14761.451	5275.951	2409.680	10.901
Prob>F	0.00000	0.00000	0.00000	0.00000

Notes: OLS regressions. S and Z denote actual and predicted remaining months of eligibility, while H denotes the eligibility horizon under time limits. Predicted remaining benefits Z are defined using state time limits and exposure to time limits, calibrated by k = national average pre-reform welfare use (see Equation 4). All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child; education, number of children, race, marital status, age and their interaction), state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level.

a. F-test of the joint significance of the instruments.

Table A8
Estimates of the Effects of Time Limits on Welfare Use

Variable		(1)	(2)
banking	I(0<S/H<1)	-0.094***	-0.040**
		(0.016)	(0.018)
banking	S/H * I(0<S/H<1)	0.202***	0.068*
		(0.037)	(0.040)
unconstrained	I(S ≥ H)	0.074***	0.019
		(0.016)	(0.020)
enforcement	I(S ≤ 0)	-1.183***	-0.863**
		(0.384)	(0.385)
Number of children 0-5 years old		0.118***	0.114***
		(0.011)	(0.013)
Number of children 6-12 years old		0.078***	0.073***
		(0.007)	(0.009)
Number of children 13-17 years old		0.066***	0.059***
		(0.010)	(0.012)
Youngest child 3-5 years old		-0.034***	-0.156
		(0.012)	(0.161)
Youngest child 6-12 years old		-0.038*	0.328*
		(0.021)	(0.183)
Youngest child 13-17 years old		-0.058**	0.377*
		(0.024)	(0.215)
Oldest child 3-5 years old		0.051***	0.202
		(0.015)	(0.203)
Oldest child 6-12 years old		0.069***	-0.161
		(0.018)	(0.213)
Oldest child 13-17 years old		0.059***	-0.156
		(0.022)	(0.235)
Mother's Age		0.042***	0.035**
		(0.014)	(0.014)
Mother's Age ^ 2		-0.002***	-0.001***
		(0.000)	(0.000)
Mother's Age ^ 3		0.000***	0.000***
		(0.000)	(0.000)
Woman separated		-0.071***	-0.069***
		(0.010)	(0.010)
Woman widow		-0.128***	-0.123***
		(0.018)	(0.017)
Woman divorced		-0.080***	-0.076***
		(0.010)	(0.009)
Seventh or eighth grade		0.057	0.046
		(0.037)	(0.035)
Ninth grade		0.038	0.029
		(0.035)	(0.033)

Tenth grade	0.017	0.006
	(0.031)	(0.030)
Eleventh grade	-0.017	-0.022
	(0.030)	(0.029)
High School graduate	-0.123***	0.302**
	(0.039)	(0.146)
At least some years of College	-0.185***	0.240
	(0.039)	(0.146)
Less than HS * 3 or more Children	0.008	0.337**
	(0.021)	(0.146)
Black	0.097***	0.094***
	(0.008)	(0.008)
American Indian	0.033	0.030
	(0.028)	(0.026)
Asian	0.081***	0.081***
	(0.024)	(0.024)
Hispanic	0.051***	0.052***
	(0.012)	(0.012)
Foreign-born	-0.035	-0.033
	(0.024)	(0.023)
Entry in the US: before 1970	0.070*	0.059*
	(0.039)	(0.035)
Entry in the US: 1970-1979	0.053	0.039
	(0.037)	(0.034)
Entry in the US: 1980-1984	0.046	0.028
	(0.040)	(0.037)
Entry in the US: 1985-1993	0.065	0.047
	(0.040)	(0.037)
Entry in the US: 1994-1995	0.044	0.036
	(0.050)	(0.046)
Unemployment Rate	-0.003	-0.011
	(0.004)	(0.011)
Log(max AFDC benefit)	-0.024	-0.019
	(0.076)	(0.078)
max EITC credit ($1000))	-0.019***	-0.021
	(0.007)	(0.026)
Waiver implemented	-0.003	0.002
	(0.012)	(0.051)
TANF program implemented	-0.029*	0.006
	(0.016)	(0.055)
Living in a metropolitan area	-0.006	-0.005
	(0.010)	(0.010)
Unemployment Rate * Youngest 3-5		0.009
		(0.008)
Unemployment Rate * Youngest 6-12		-0.007
		(0.009)

Unemployment Rate * Youngest 13-17	-0.009
	(0.011)
Unemployment Rate * Oldest 3-5	-0.002
	(0.010)
Unemployment Rate * Oldest 6-12	0.012
	(0.011)
Unemployment Rate * Oldest 13-17	0.015
	(0.012)
Unemployment * Less than HS	0.022
	(0.018)
Unemployment * 3+ Children	0.001
	(0.008)
Unemployment * Less than HS * 3+ Children	-0.015
	(0.014)
AFDC benefit * Youngest 3-5	0.004
	(0.024)
AFDC benefit * Youngest 6-12	-0.057**
	(0.029)
AFDC benefit * Youngest 13-17	-0.065**
	(0.033)
AFDC benefit * Oldest 3-5	-0.015
	(0.031)
AFDC benefit * Oldest 6-12	0.025
	(0.034)
AFDC benefit * Oldest 13-17	0.016
	(0.037)
AFDC benefit * Less than HS	0.048
	(0.032)
AFDC benefit * 3+ Children	0.006
	(0.011)
AFDC benefit * Less than HS * 3+ Children	-0.040
	(0.028)
EITC credit * Youngest 3-5	0.017
	(0.017)
EITC credit * Youngest 6-12	0.004
	(0.019)
EITC credit * Youngest 13-17	0.014
	(0.024)
EITC credit * Oldest 3-5	-0.027
	(0.023)
EITC credit * Oldest 6-12	-0.002
	(0.025)
EITC credit * Oldest 13-17	-0.005
	(0.028)
EITC credit * Less than HS	0.050
	(0.034)

EITC credit * 3+ Children		-0.002
		(0.017)
EITC credit * Less than HS * 3+ Children		-0.013
		(0.027)
Waiver * Youngest 3-5		-0.021
		(0.037)
Waiver * Youngest 6-12		-0.035
		(0.043)
Waiver * Youngest 13-17		-0.081
		(0.054)
Waiver * Oldest 3-5		0.037
		(0.047)
Waiver * Oldest 6-12		0.036
		(0.051)
Waiver * Oldest 13-17		0.093
		(0.060)
Waiver * Less than HS		-0.086
		(0.079)
Waiver * 3+ Children		-0.010
		(0.039)
Waiver * Less than HS * 3+ Children		0.012
		(0.060)
TANF * Youngest 3-5		0.008
		(0.042)
TANF * Youngest 6-12		0.045
		(0.048)
TANF * Youngest 13-17		0.017
		(0.061)
TANF * Oldest 3-5		0.017
		(0.049)
TANF * Oldest 6-12		0.032
		(0.053)
TANF * Oldest 13-17		0.079
		(0.063)
TANF * Less than HS		-0.156*
		(0.082)
TANF * 3+ Children		-0.051
		(0.044)
TANF * Less than HS * 3+ Children		0.026
		(0.068)
Constant	0.206	-0.147
	(0.509)	(0.525)
Observations	104,520	104,520
R-squared	0.11	0.16

Notes: The two columns report estimates from specifications that correspond respectively to those in Columns 3 and 5 of Table 4 in the paper. The regressions also include state and year fixed-effect and state linear and quadratic trends. The specifications are based on linear instrumental variables estimation where the four functions of remaining benefits S are instrumented by the same four functions of predicted remaining benefits Z, defined using state time limits and exposure to time limits (calibrated by national average pre-reform welfare use by education and number of children). H denotes the eligibility horizon under time limits. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990 - August 2003. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted.

Table A9
Estimates of the Effects of Time Limits on Welfare Use using different k's to define predicted remaining benefits

Calibration variable	(1) k=1	(2) k = average rate	(3) k by education & number children	(4) k by edu, num ch. & race	(5) k by edu, num ch, race, marital status	(6) k by edu, num ch, race, marital status, age
I(0<S/H<1)	-0.041*	-0.041	-0.040**	-0.047***	-0.051***	-0.049***
	(0.023)	(0.028)	(0.018)	(0.017)	(0.016)	(0.016)
S/H*I(0<S/H<1)	0.094	0.038	0.068*	0.092***	0.104***	0.101***
	(0.059)	(0.126)	(0.040)	(0.035)	(0.032)	(0.032)
I(S ≥ H)	-0.003	0.013	0.019	0.029	0.030	0.028
	(0.026)	(0.039)	(0.020)	(0.019)	(0.021)	(0.018)
I(S ≤ 0)	0.178	-3.338	-0.863**	-0.720**	-0.558**	-0.543**
	(0.146)	(8.161)	(0.385)	(0.317)	(0.217)	(0.223)

Notes: The specifications are based on linear instrumental variables estimation where the four functions of remaining benefits S are instrumented by the same four functions of predicted remaining benefits (Z). H denotes the eligibility horizon under time limits. Z is defined using state time limits and exposure to time limits calibrated by k=1 (Column 1), k = national average pre-reform welfare use (Column 2), k = national average pre-reform welfare use by education and number of children (Column 3), by education, number of children and race (Column 4), by education, number of children, race and marital status (Column 5), by education, number of children, race, marital status and age (Column 6). All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child; and the variables used to define the k's), state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted.

Table A10
OLS, IV and Fixed-effects Estimates of the Effects of Time Limits on Welfare Use

Estimation	(1) OLS	(2) IV	(3) Fixed-effects	(4) OLS	(5) IV	(6) Fixed-effects
variable						
Banking						
I(0<S/H<1)	0.110***	-0.040**	-0.033***	0.353***	0.066*	0.020*
	(0.014)	(0.018)	(0.007)	(0.021)	(0.038)	(0.011)
S/H*I(0<S/H<1)	-0.320***	0.068*	0.075***			
	(0.023)	(0.040)	(0.013)			
S*I(0<S/H<1)				-0.008***	0.000	0.0004*
				(0.000)	(0.001)	(0.0003)
H*I(0<S/H<1)				-0.000***	-0.001***	-0.000***
				(0.000)	(0.000)	(0.000)
Unconstrained						
I(S ≥ H)	-0.098***	0.019	0.045	-0.011	0.046**	0.041***
	(0.015)	(0.020)	(0.038)	(0.014)	(0.019)	(0.009)
Enforcement	0.413***	-0.863**	-0.113***	0.482***	-0.848**	-0.103***
I(S ≤ 0)	(0.030)	(0.385)	(0.015)	(0.031)	(0.358)	(0.015)

Notes: S denotes actual remaining months of eligibility, while H denotes the eligibility horizon under time limits. The specifications in Columns (2) and (5) are based on linear instrumental variables estimation where the four functions of remaining benefits S are instrumented by the same four functions of predicted remaining benefits Z, defined using state time limits and exposure to time limits (calibrated by national average pre-reform welfare use by education and number of children). All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child, education, number of children and their interaction), state and year fixed effects, state linear and quadratic trends. The sample is given by 104,520 observations on 16,623 single-mothers between the ages of 15 and 55. The sample period is January 1990- August 2003. Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted.

Table A11
Estimates of the Effects of Time Limits on Welfare Use by Mother's Age and Age of the Youngest Child.

Variable	(1)	(2)	(3)	mother aged 15-17 or 35-55 (4)	18-34 (5)
Banking					
I(0<S/H<1)	-0.040**	-0.121***	-0.293***	0.015	-0.070**
	(0.018)	(0.039)	(0.062)	(0.023)	(0.029)
I(0<S/H<1) * Age youngest child		0.015***			
		(0.004)			
I(0<S/H<1) * Mother's age			0.008***		
			(0.002)		
S/H * I(0<S/H<1)	0.068*	0.188	0.132	0.002	0.149*
	(0.040)	(0.165)	(0.163)	(0.042)	(0.087)
S/H*I(0<S/H<1) * Age youngest child		-0.019			
		(0.013)			
S/H * I(0<S/H<1) * Mother's age			-0.003		
			(0.004)		
Unconstrained					
I(S ≥ H)	0.019	0.067	-0.071	0.021	-0.094
	(0.020)	(0.091)	(0.069)	(0.019)	(0.068)
I(S ≥ H) * Age youngest child		-0.001			
		(0.006)			
I(S ≥ H) * Mother's age			0.003		
			(0.002)		
Enforcement					
I(S ≤ 0)	-0.863**	-0.870**	-0.834**	-0.256	-1.401*
	(0.385)	(0.361)	(0.374)	(0.325)	(0.722)
Observations	104,520	104,520	104,520	50,135	54,385
R-squared	0.16	0.16	0.17	0.17	0.12

Notes: Linear instrumental variables estimation where the four functions of remaining benefits S are instrumented by the same four functions of predicted remaining benefits Z, defined using

state time limits and exposure to time limits (calibrated by national average pre-reform welfare use by education and number of children). H denotes the eligibility horizon under time limits. All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with ages and number of children and mother's education), state and year fixed effects, state linear and quadratic trends. The specifications are based on linear IV estimation. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted.
The sample cut-offs in Columns 4 and 5 are justified by substantially lower birth rates for women below 18 (25.2 per 1,000 women aged 15-17) or above 35 (41.4 per 1,000 women aged 35-39 and 8.3 per 1,000 women aged 40-44) than for women aged 18-34 (ranging from 72.8 to 113.6). Data on age-specific birth rates are for year 2002 (see Figure 3 in Sutton, P. and T. Mathews, *Trends in Characteristics of Births by State: United States, 1990, 1995, and 2000-2002*, National Center for Health Statistics, Vital Health Statistic Series, Vol.52, No.19, at http://www.cdc.gov/nchs/data/nvsr/nvsr52/nvsr52_19.pdf).

Table A12

Estimates of the Effects of Termination Time Limits on Welfare Use by Benefit Level

Variable	(1)	(2)	(3)	(4) benefit above the mean	(5) benefit below the mean
Banking					
I(0<S/H<1)	-0.044**	0.140	-0.040*	-0.106**	-0.038*
	(0.020)	(0.333)	(0.022)	(0.047)	(0.023)
I(0<S/H<1) *Benefit		-0.033			
		(0.059)			
I(0<S/H<1) *I(B>mean)			-0.028		
			(0.046)		
S/H * I(0<S/H<1)	0.055	0.163	0.056	0.120	0.057
	(0.049)	(0.615)	(0.057)	(0.078)	(0.061)
S/H * I(0<S/H<1) *Benefit		-0.017			
		(0.106)			
S/H*I(0<S/H<1) *I(B>mean)			0.021		
			(0.090)		
Unconstrained					
I(S ≥ H)	0.031	0.033	0.032	0.031	0.038
	(0.022)	(0.023)	(0.022)	(0.043)	(0.027)
Enforcement					
I(S ≤ 0)	-1.182**	-1.144**	-1.176**	-1.097	-1.239
	(0.572)	(0.554)	(0.569)	(0.738)	(0.769)
Observations	74,826	74,826	74,826	21,839	52,987
R squared	0.12	0.13	0.12	0.24	0.05

Notes: I(B>mean) is a dummy equal to one state-month cells with benefit levels above the mean in the sample All regressions include controls for socio-demographic characteristics, policy and economic variables (and their interactions with the ages of the youngest and oldest child; education, number of children, and their interaction), state and year fixed effects, state linear and quadratic trends. The specifications are based on linear instrumental variables estimation where the four functions of remaining benefits S are instrumented by the same four functions of predicted remaining benefits Z, defined using state time limits and exposure to time limits (calibrated by national average pre-reform welfare use by education and number of children). Asterisks denote coefficients significantly different from zero at the 10% (*), 5% (**), and 1% (***) level. Standard errors (in parentheses) account for heteroskedasticity and presence of multiple observations per person. Estimates are weighted.

Table A13
Actual and Counterfactual Average Yearly Welfare Participation Rates across States

	Actual	Counterfactual			
		no time limits	no mechanical effects	no time limits	no mechanical effects
	(1)	(2)	(3)	(4)	(5)
Year 1990	0.281	0.281	0.281	0.281	0.281
Year 1991	0.284	0.284	0.284	0.284	0.284
Year 1992	0.289	0.289	0.289	0.289	0.289
Year 1993	0.307	0.307	0.307	0.307	0.307
Year 1994	0.304	0.304	0.304	0.304	0.304
Year 1995	0.301	0.301	0.301	0.301	0.301
Year 1996	0.233	0.236	0.233	0.235	0.233
Year 1997	0.198	0.205	0.198	0.205	0.198
Year 1998	0.160	0.176	0.165	0.175	0.164
Year 1999	0.128	0.155	0.144	0.151	0.139
Year 2000	0.104	0.152	0.139	0.142	0.129
Year 2001	0.095	0.148	0.134	0.136	0.124
Year 2002	0.082	0.148	0.134	0.132	0.120
Year 2003	0.081	0.160	0.148	0.141	0.130

Notes: Column 1 report average yearly welfare use across states. Predictions in Columns 2 and 3 are obtained from the model in Column 3 of Table 4 by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t. Predictions in Columns 4 and 5 are obtained from the model in column 5 of Table 4 by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t.
Welfare participation rates in Columns 1, 4 and 5 are plotted in Figure 1 in the paper.

Table A14

Actual and Counterfactual Average Yearly Welfare Participation Rates across States when allowing different effects of Termination versus Reduction Time Limits

	Actual			Counterfactual			
	T	R No CA	CA	no time limits T	no mechanical effects T	no time limits Flexible model	no mecha-nical effects Flexible model
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Year 1990	0.271	0.269	0.358	0.271	0.271	0.281	0.281
Year 1991	0.268	0.264	0.398	0.268	0.268	0.284	0.284
Year 1992	0.277	0.282	0.360	0.277	0.277	0.289	0.289
Year 1993	0.297	0.283	0.386	0.297	0.297	0.307	0.307
Year 1994	0.291	0.286	0.389	0.291	0.291	0.304	0.304
Year 1995	0.286	0.300	0.390	0.286	0.286	0.301	0.301
Year 1996	0.212	0.244	0.352	0.214	0.212	0.236	0.233
Year 1997	0.166	0.242	0.335	0.179	0.166	0.206	0.198
Year 1998	0.129	0.207	0.300	0.152	0.134	0.174	0.165
Year 1999	0.093	0.200	0.257	0.129	0.112	0.152	0.143
Year 2000	0.074	0.131	0.224	0.132	0.114	0.142	0.134
Year 2001	0.081	0.097	0.163	0.144	0.126	0.137	0.129
Year 2002	0.066	0.102	0.146	0.138	0.120	0.132	0.123
Year 2003	0.063	0.100	0.163	0.143	0.125	0.139	0.130

Notes: Columns 1, 2 and 3 report actual average yearly welfare use across states imposing termination time limits (T), across states imposing reduction time limits (R) except California and in California. Predictions in columns 4 and 5 are obtained from the model in column 1 of Table 5 in the paper by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t. Predictions in columns 6 and 7 are obtained from the model in Column 3 of Table 5 by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t.
Actual and counterfactual welfare participation rates in columns 1, 2, 3, 4 and 5 are plotted in Figure 2 in the paper.

Table A15

Actual and Counterfactual Average Yearly Welfare Participation Rates in States with termination Time Limits depending on the length of the limit

	60-month lifetime limit			Short limits		
	Actual	Counterfactual		Actual	Counterfactual	
		no time limits	no mechanical effects		no time limits	no mechanical effects
	(1)	(2)	(3)	(4)	(5)	(6)
Year 1990	0.284	0.284	0.284	0.235	0.235	0.235
Year 1991	0.266	0.266	0.266	0.254	0.254	0.254
Year 1992	0.270	0.270	0.270	0.269	0.269	0.269
Year 1993	0.282	0.282	0.282	0.293	0.293	0.293
Year 1994	0.290	0.290	0.290	0.278	0.278	0.278
Year 1995	0.279	0.279	0.279	0.268	0.268	0.268
Year 1996	0.203	0.204	0.203	0.208	0.208	0.212
Year 1997	0.164	0.175	0.164	0.160	0.160	0.176
Year 1998	0.128	0.142	0.128	0.120	0.131	0.155
Year 1999	0.088	0.102	0.088	0.091	0.132	0.155
Year 2000	0.074	0.093	0.074	0.061	0.144	0.166
Year 2001	0.085	0.106	0.085	0.070	0.160	0.182
Year 2002	0.073	0.094	0.073	0.060	0.148	0.170
Year 2003	0.071	0.092	0.071	0.062	0.160	0.182

Notes: Columns 1 and 4 report actual average yearly welfare use across states imposing a 60-month lifetime limit and across states imposing shorter limits (either lifetime limits or intermittent limits). Predictions in Columns 2 and 3 are obtained from the model in column 5 of Table 5 in the paper by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t. There are no mechanical effects in states imposing a 60-month lifetime limit so the counterfactual estimates in Column 3 correspond to the actual rates. Predictions in Columns 5 and 6 are obtained from the model in Column 6 of Table 5 in the paper by setting respectively $I(t \geq T_s)$ or $I(S_{it} \leq 0)$ equal to zero for all t.

Actual and counterfactual welfare participation rates in columns 1, 2, 4, 5 and 6 are plotted in Figure A2.

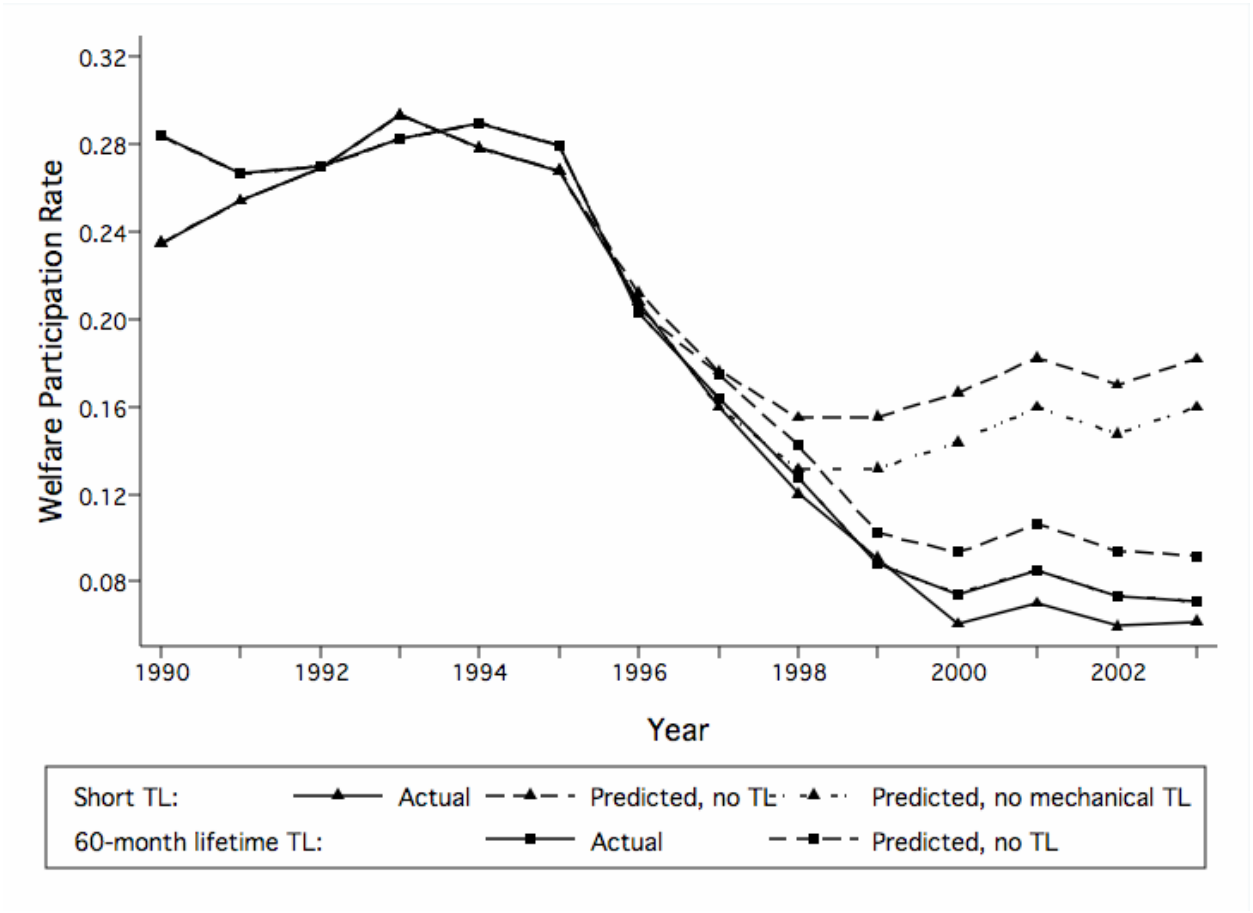

Figure A2
Average Yearly Welfare Participation Rates across States by length of the limit

Notes: Average welfare use rates plotted in this graph are reported in Table A15, in columns 4, 5 and 6, and 1 and 2 respectively.