

Welfare Dynamics under Time Limits

Jeffrey Grogger

University of California, Los Angeles and National Bureau of Economic Research

Charles Michalopoulos

Manpower Demonstration Research Corporation

Among the most important changes brought about by the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 are time limits, which provide consumers with an incentive to conserve their welfare benefits for future use. Among forward-looking, expected-utility-maximizing consumers who face liquidity constraints and earnings uncertainty, economic theory predicts that the incentive to conserve should be strongest among families with the youngest children. We test this prediction using data from Florida's Family Transition Program, a randomized welfare reform experiment. Our estimates generally exhibit the predicted age dependence, which suggests that time limits affect welfare use before they become binding. Our estimates indicate that, in the absence of other reforms that increased welfare use, FTP's time limit would have reduced welfare receipt by 16 percent.

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I. Introduction

The U.S. welfare system has changed dramatically as a result of recent welfare reform. Among the most important of these reforms is the imposition of time limits. Under the old Aid to Families with Dependent Children (AFDC) program, welfare benefits were an entitlement: all poor, single-parent families with at least one child under 18 years of age were eligible to receive aid.¹ The duration of welfare receipt was limited only by the age of the youngest child in the family. Under the new Temporary Aid to Needy Families (TANF) program, which replaced AFDC after the passage of the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 (PRWORA), benefits remain payable largely to poor, single-parent families with children under 18. However, the duration of welfare receipt is sharply limited: PRWORA allows families to receive federally funded benefits for no more than five years. Many states set even stricter limits.²

One of the implications of time limits is that consumers' current welfare choices affect their future opportunity sets. This represents a substantial departure from the old entitlement regime. It gives consumers an incentive to conserve their benefits for future use.

Economic theory predicts that the strength of this incentive should vary among families. For forward-looking, expected-utility-maximizing consumers who face credit constraints and unstable job prospects, this incentive should be stronger, the younger the youngest child in the family. The reason is that welfare acts as insurance in the consumer's lifetime utility-maximization problem, and the value of retaining one's eligibility for such insurance rises, the longer the horizon over which it could be used to smooth consumption. Since a family can no longer receive welfare once its youngest child turns 18, families with the youngest children have the longest eligibility horizons and thus the greatest incentive to preserve their future eligibility by reducing their current welfare use.³

¹ Some poor, married-couple families were also eligible under the Unemployed Parent component of AFDC, but this program never accounted for more than a small fraction of the AFDC caseload (Moffitt 1992).

² States can exempt up to 20 percent of their caseload from the five-year time limit. In addition, states can allow more individuals to continue receiving cash assistance for more than five years as long as they do not use federal funds for payments past the five-year limit. Several states have adopted plans that use this option. Several other states, including California, eliminate only the adults' portion of welfare grants when the five-year limit is imposed, allowing the families to continue receiving the children's portion of the grants.

³ This prediction is derived from a formal model presented in Grogger and Michalopoulos (1999). There we show that families should be less likely to use welfare, the greater the difference between their remaining eligibility horizon and their available stock of benefits. Since the available stock of benefits is equal to the time limit less welfare use since the time limit was imposed, it is endogenous. In contrast, the remaining eligibility horizon is largely determined by the age of the youngest child when time limits are

We test this prediction by using data from a randomized experiment, the Florida Family Transition Program (FTP). However, because the FTP treatment group was subject to other policy reforms in addition to the time limit, randomization by itself does not identify the effects of the time limit. To distinguish the effects of the time limit from the effects of the other reforms, we make use of a further implication of age dependence: a family whose youngest child exceeds a threshold age (which would be 13 in the case of a five-year limit) should be unaffected by the time limit. The reason is that such families will become age-ineligible for welfare before they could reach the time limit. Put differently, for a family whose youngest child is old enough, the time limit is a nonbinding constraint. We use such families to construct an estimate of the effect of FTP's other reforms. If the effects of those other reforms are age-invariant, then we can identify the effects of time limits using difference-in-difference methods. We present evidence from several other welfare reform experiments that supports the age-invariance assumption.

The estimated effects of time limits exhibit age dependence that is largely consistent with the prediction. Moreover, age dependence appears well before the families could have exhausted their benefits. The estimates indicate that, in the absence of FTP's other reforms, which tended to increase welfare use, the time limit would have caused welfare receipt to fall by as much as 16 percent.

Other researchers who have considered the effects of time limits include Council of Economic Advisers (1997, 1999), Swann (1998), Moffitt (1999), and Ziliak et al. (2000).⁴ Swann formulates a stochastic dynamic programming model and estimates its parameters with data on AFDC use from the Panel Study of Income Dynamics. The other authors have estimated the effects of time limits using aggregate state-level caseload data. None of them consider the age dependence issue, which proves to be essential to estimating the effects of time limits.⁵

Section II of the paper provides background on the FTP program and our data. Section III elaborates on the identifying assumptions under which we can distinguish the effects of FTP's time limit from its other policy reforms. It also provides evidence on the key age-invariance assumption. Section IV presents our main estimates. Section V provides some checks on the robustness of those estimates and some additional

imposed, which is exogenous. The age-dependence results that we focus on here can be thought of as "reduced-form" predictions of the model.

⁴ Bloom et al. (1997, 1998, 2000) have studied the FTP program using a subset of the data we analyze here, but they did not attempt to isolate the effects of the time limit from the effects of the other policy reforms.

⁵ See Grogger (2000) for further discussion and a reconciliation of the results presented here with those of the studies listed above.

evidence on the age-invariance assumptions. Section VI presents conclusions.

II. Data from Florida's Family Transition Program

A. Background

Florida's experimental FTP program was implemented in Escambia County (Pensacola) starting in May 1994 under a waiver from AFDC program rules.⁶ All welfare recipients in the county were randomized into one of two groups: the experimental FTP group, which was subject to time limits, or the control group, which was enrolled in the AFDC program. New entrants were randomized at the time they applied for benefits. Ongoing recipients, that is, persons already receiving welfare, were randomized at the time of their semiannual recertification interviews. Recruitment into the experiment continued until October 1996. Our sample includes all single-parent families ever drawn into the experiment. We follow them for 24 months, beginning with the month after random assignment. As we explain below, the time limit was such that none of the sample members could have exhausted their benefits within our 24-month follow-up period.

The data analyzed here come primarily from two sources: Florida administrative records and a short survey instrument known as the Background Information Form. Florida administrative records provide data on monthly benefit receipt. The survey was administered to welfare applicants (and those recertifying) at the time they applied (or were recertified) for benefits, prior to random assignment. It contains baseline demographic characteristics, which we summarize in table 1.

Comparing mean characteristics of the treatment and control groups indicates that the initial randomization was properly executed, since the characteristics of the two groups are so similar. Like welfare recipients elsewhere, those in our sample are disproportionately black and have relatively low levels of education, high levels of welfare use in the period prior to random assignment, and low levels of recent labor market experience.

B. FTP Policy Reforms and Conditions of AFDC Receipt

Although time limits were arguably the central component of the FTP program, members of the treatment group were also subject to a number of other policy reforms. This complicates our efforts to isolate the effects of time limits. We summarize the full set of FTP reforms, as well as the

⁶ Bloom et al. (1997, 1998, 2000) provide detailed information about the program and its impacts on numerous aspects of behavior.

TABLE 1
SUMMARY CHARACTERISTICS OF THE TREATMENT AND CONTROL GROUPS AT THE TIME
OF RANDOM ASSIGNMENT

Characteristic	FTP Group	AFDC Group	Total
Mother black	49.3 (50.0)	50.1 (50.0)	49.7 (50.0)
Mother's age	29.4 (7.4)	29.5 (7.4)	29.5 (7.4)
Years of schooling	11.1 (1.6)	11.2 (1.5)	11.1 (1.5)
Age of youngest child	5.1 (4.2)	5.1 (4.3)	5.1 (4.3)
Months of welfare utilization in 24 months prior to ran- dom assignment	10.0 (9.7)	10.0 (9.7)	10.0 (9.7)
Quarters of employment in year preceding random assignment	1.3 (1.6)	1.3 (1.6)	1.3 (1.6)
Number of persons	2,238	2,235	4,473

NOTE.—Table entries are sample means; figures in parentheses are standard deviations.

corresponding conditions imposed on the AFDC control group, in table 2.

The FTP families were subject to three different categories of reforms: the time limit, financial work incentives, and enhanced welfare-to-work services. Most FTP families faced a 24-month time limit, after which their benefits could be, and nearly always were, terminated. Particularly disadvantaged families, who made up 48 percent of the sample, received a 36-month time limit; AFDC recipients faced no time limit.

The FTP families also enjoyed relatively generous financial incentives: the first \$200 of monthly earnings was disregarded from income in determining their monthly benefits, and earnings in excess of \$200 were subject to a benefit reduction rate (i.e., a tax rate) of 50 percent. The AFDC group faced conventional AFDC financial incentives, which were substantially less generous, as table 2 shows. By themselves, FTP's financial incentives should have increased the family's welfare use, since they provided an incentive to combine welfare and work by raising the income eligibility threshold and by increasing payments to persons earning less than the threshold.

The FTP and AFDC groups both were required to spend 30 hours per week in mandatory work-related activities (MWRAs). These requirements could be satisfied by either working or participating in a welfare-to-work program. The FTP welfare-to-work program had a lower ratio of recipients to case managers than the AFDC welfare-to-work program and provided enhanced employment and training services. To the extent that FTP's enhanced services were valuable and were tied to welfare,

TABLE 2
SUMMARY OF FTP TREATMENTS AND CORRESPONDING CONDITIONS OF AFDC RECEIPT

Type of Treatment	FTP Group	AFDC Group
Time limits	24-month default time limit; 36-month time limit for particularly disadvantaged recipients	No time limits
Financial work incentives	\$200 earned income disregard and 50 percent benefit reduction rate	\$120 disregard and 67 percent benefit reduction rate for first four months of work; 100 percent benefit reduction rate after four months; \$90 disregard after 12 months
Mandatory work-related activities (MWRAs)	30 hours per week of either work or work-related activities Mandate could be satisfied by participating in a welfare-to-work program that provided enhanced employment and training services Exemptions only for mothers with infants under 6 months of age	30 hours per week of either work or work-related activities. Mandate could be satisfied by participating in a welfare-to-work program that provided conventional AFDC services Exemptions for mothers with children under 3 years old

they also could have increased welfare use, all else equal.⁷ The control group received conventional AFDC services.

For families with children under 3 years old, there was a further difference in the conditions faced by the treatment and control groups. Whereas AFDC mothers were exempted from the MWRAs if they had children younger than 3, FTP mothers were exempt only if they had children younger than 6 months old. Because of this, we are unable to isolate the effects of time limits on families in the 6-month to 2-year age group.⁸ The conditions under which we can isolate the effects of

⁷ The low staffing ratio in the FTP welfare-to-work program raises the possibility that FTP recipients may have been "coached" on how to deal with the time limit. However, Bloom et al. (1998, chap. 3) report that caseworkers were much more likely to counsel recipients to use their time on aid to get training than to counsel them to bank their months of eligibility for future use.

⁸ Both the FTP and AFDC groups were eligible for child care subsidies. Although these subsidies were intended to be equally available to both groups, early evidence gave us concern that in fact they had been more readily available to the treatment group than to the control group (Grogger and Michalopoulos 1999). However, more recent evidence suggests that any such differences were minor (Bloom et al. 2000). As a result, we do not include child care subsidies among the differences between the treatment and control groups.

TABLE 3
MONTHLY PROBABILITY OF RECEIVING AID DURING FIRST 24 MONTHS AFTER RANDOM
ASSIGNMENT, BY AGE OF YOUNGEST CHILD

AGE GROUP	FTP GROUP		AFDC GROUP		AGE-SPECIFIC IMPACT OF FTP (Col. 2–Col. 4)	EFFECT OF TIME LIMIT (6)
	Person- Months (1)	Mean (2)	Person- Months (3)	Mean (4)	(5)	
6 months to 2 years (group 0)	14,299	.473 (.014)	14,052	.473 (.014)	.000 (.020)	
3–5 (group 1)	18,506	.404 (.012)	18,913	.403 (.012)	.001 (.017)	–.085 (.054)
6–10 (group 2)	12,158	.344 (.016)	11,964	.375 (.016)	–.031 (.021)	–.117 (.056)
11–14/15 (group 3)	6,457	.368 (.021)	5,855	.313 (.021)	.055 (.030)	–.031 (.057)
15/16–17 (group 4)	1,703	.399 (.036)	2,242	.313 (.033)	.086 (.052)	
Total	53,123	.404 (.008)	53,026	.401 (.008)	.003 (.012)	

NOTE.—Standard errors (in parentheses) are adjusted for the presence of multiple observations per person.

the time limits from the effects of the other reforms are discussed further in the next section.

III. Identification and Evidence on the Age-Invariance Assumption

A. Identification and Age-Specific Estimates of the Effect of FTP

Table 3 presents age-specific estimates of the effect of FTP and helps illustrate the conditions under which we can identify the effects of the time limit. Distinguishing the effects of the time limit from the effects of the other reforms requires two assumptions: (i) the effects of the individual reforms are additive, and (ii) the effects of the financial work incentives and enhanced services are age-invariant. It also requires time limits to have no effect on families whose youngest children exceed the threshold age, as discussed above.

In table 3, the sample has been divided into five age groups. Group 0 consists of families whose youngest children are less than 3 years old. As mentioned above, because the exemptions from the MWRAs differed between the treatment and control groups for families with children under 3, we are unable to identify the effects of time limits on this age group.

Group 1 includes families whose youngest children are between 3 and 5. Group 2 consists of families whose youngest children are 6–10 years

old. Group 3 includes families whose youngest children range from 11 to the threshold age, which is 16 for families assigned a two-year limit and 15 for families assigned a three-year limit. Group 4 consists of families whose youngest children exceed the threshold age.⁹

The unit of observation in table 3, as in most of the other tables below, is the person-month. The entries in columns 2 and 4 give the mean rate of monthly welfare receipt during the first two years after random assignment. We focus on the first 24 months after entry into the program to ensure that none of the families could have actually reached their time limit and become ineligible for further aid during the sample period.¹⁰ Column 2 gives treatment sample means, and column 4 gives control sample means for each age group j , where $j = 0, 1, \dots, 4$.

The last entries in columns 2 and 4 show that, in a typical month, the treatment and control groups were equally likely to use welfare. The final entry in column 5 presents the estimated “impact” of the program, defined as the difference in mean welfare utilization rates between the treatment and control samples. It indicates that FTP left welfare use virtually unchanged in the full sample, increasing the monthly probability of welfare use by only 0.003 (with a standard error of 0.012). This replicates and extends the finding of Bloom et al. (1998). On the basis of a subset of the data that we analyze here, they concluded that FTP had essentially no effect on welfare use during the first two years after random assignment.

The other entries in column 5 present age group-specific estimates of the impact of FTP. Since these impact estimates reflect the combined effects of the time limit, the financial incentives, and the enhanced services, their signs generally cannot be predicted. However, the estimates suggest that the null effect of the program in the full sample masks some variation in its effects by age group. The program decreased welfare use slightly among age group 2 but increased it among age groups 3 and 4.

The next to last entry in column 5 shows that FTP increased the monthly welfare utilization rate among members of age group 4 by 0.086 (0.052). Since members of this age group should not have been affected by the time limit, we take this as an estimate of the combined effects

⁹ The age thresholds for the two oldest groups depend on the length of the family's time limit. Our classification scheme is based on an imputed time limit, which can be constructed for all families. The actual time limit, which was determined by county welfare officials, is available only for the FTP group. When we replace the imputation with the actual time limit for the FTP group, we obtain similar results.

¹⁰ Most families contribute 24 monthly observations to the sample; families may progress from one age group to the next as their youngest child ages. Families whose youngest children turn 18 during the sample period contribute observations only until the youngest child turns 18.

of the financial incentives and the enhanced services. The fact that it is positive is consistent with our expectation that the financial incentives should have increased welfare use, all else equal.

Imposing the assumption that the financial incentives and enhanced services had age-invariant effects, we can estimate the age-specific effects of time limits by subtracting the impact estimate for age group 4 from the other age group-specific impact estimates. These difference-in-difference estimates of the effects of the time limit are presented in column 6.

These preliminary estimates appear to provide mixed evidence as to whether time limits have greater effects among families with younger children. On the one hand, all the estimates are negative, as expected. Moreover, the estimate for age group 2 is significant and is significantly more negative than the estimate for age group 3 (the *t*-statistic for the test of equality is -2.39). On the other hand, the estimate for age group 2 is more negative than the estimate for age group 1. Potentially, this may represent a contradiction of the prediction from the model discussed above. Alternatively, it may indicate that child care issues pose constraints on the extent to which treatment group members with preschool age children can respond to the time limit. Finally, some data analysis revealed that FTP families in the 6–10 age group spent fewer months on aid during the 24 months prior to random assignment than AFDC families in the same age group. Since presample aid use is a strong predictor of current aid use, the regression-adjusted estimates presented in Section IV, which control for presample welfare use, provide evidence that is more consistent with the expected effects of time limits.¹¹

Of course, both the preliminary difference-in-difference estimates in table 3 and the main regression estimates below rely on the assumption that FTP's other reforms had age-invariant effects. If this assumption is violated, then none of our estimates isolate the effects of the program's time limit. Because this assumption is crucial to our estimation strategy, we use data from other welfare reform experiments to test it before proceeding to our main estimation results.

¹¹ Properly executed randomization ensures that the treatment and control groups will have identical ex ante characteristics on average. The figures in table 1 indicate that randomization was properly executed. However, because randomization is not carried out within strata defined by the age of the youngest child, there is no guarantee that treatment and control group characteristics will be identical within strata. Age group-specific treatment control differences in months on aid during the 24 months prior to random assignment for age groups 0–4, respectively, are 0.2, 0.3, -1.0 , 0.6, and 0.7.

B. Evidence on the Age-Invariance Assumption

The evidence on age invariance comes from a set of welfare reform experiments that, like FTP, involved financial incentives, MWRAs, or both. However, unlike FTP, none of these other experiments involved time limits. Our motivation in presenting these results is straightforward. If these other experiments had largely age-invariant effects, then that would reflect favorably on our assumption that the financial work incentives and enhanced services in FTP likewise had age-invariant effects. The analogy is not perfect because the financial incentives and MWRAs (and external conditions, such as the unemployment rate) varied among programs. However, if several experiments yield age-invariant results, despite the differences between them, it may help to provide support for the critical assumption underlying our analysis.

Table 4 presents age group-specific impact estimates from three different welfare reform experiments on the monthly probability of welfare receipt during the first 24 months after random assignment.¹² The experiments we analyze are the National Evaluation of Welfare-to-Work Services (NEWWS), the Vermont Welfare Restructuring Project (WRP), and the Minnesota Family Investment Program (MFIP).

The NEWWS program involved 11 subexperiments in seven different locations around the country; we present pooled estimates based on data from all 11 programs. In each subexperiment, the treatment group was subject to MWRAs. Both WRP and MFIP were dual-treatment experiments; that is, each program randomly assigned participants either to the control group or to one of two treatment groups. In both programs, one treatment group (referred to as the “incentives only” group) was subject to financial incentives. The other treatment group was subject both to the financial incentives and to MWRAs.

The generosity of the financial incentives varied between WRP, MFIP, and FTP. As in FTP, the MFIP financial incentive was unambiguously more generous than that of AFDC. In contrast, whether WRP was more generous than AFDC depended on the consumer’s work history and current hours of work.¹³

The estimates in column 6 of table 4 show that, overall, both NEWWS and MFIP had significant effects on welfare use. The MWRAs in NEWWS reduced welfare use by five percentage points, on average, whereas the MFIP financial incentives increased welfare use by eight to nine per-

¹² Like the FTP sample, the samples for the other programs are limited to single parents.

¹³ All three experiments imposed additional minor reforms on the treatment groups in addition to those described above, such as higher asset limits and, in the case of MFIP, a food stamp cash-out. Grogger, Karoly, and Klerman (2002, chap. 3) provide a more complete comparison of these and several other welfare reform experiments. Detailed descriptions and results from NEWWS, WRP, and MFIP are available in Freedman et al. (2000), Bloom, Hendra, and Michalopoulos (2000), and Miller et al. (2000), respectively.

TABLE 4
AGE-SPECIFIC IMPACTS FROM OTHER WELFARE REFORM DEMONSTRATIONS ON MONTHLY
WELFARE RECEIPT DURING YEARS 1 AND 2 AFTER RANDOM ASSIGNMENT

	AGE OF YOUNGEST CHILD					
	0-2 (1)	3-5 (2)	6-11 (3)	12-14 (4)	14-18 (5)	0-18 (6)
A. NEWWS Program: Mandatory Work-Related Activities ($\chi^2 = 10.28$)*						
Number of persons	9,914	17,656	12,283	5,996	2,607	48,456
Control group mean	.71	.73	.71	.58	.47	.69
Impact	-.05 (.01)	-.05 (.01)	-.06 (.01)	-.03 (.01)	-.04 (.01)	-.05 (.01)
B. WRP: Financial Work Incentives and Mandatory Work-Related Activities ($\chi^2 = 3.56$)						
Number of persons	1,422	999	1,019	508	210	4,158
Control group mean	.64	.66	.64	.62	.47	.64
Impact	-.03 (.02)	.02 (.02)	.03 (.03)	-.02 (.04)	.01 (.06)	.00 (.01)
C. WRP—Incentives Only: Financial Work Incentives ($\chi^2 = 1.46$)						
Number of persons	714	517	498	266	101	2,096
Control group mean	.67	.64	.62	.65	.45	.64
Impact	.01 (.03)	.04 (.03)	.03 (.03)	-.01 (.04)	-.03 (.07)	.02 (.02)
D. MFIP: Financial Work Incentives and Mandatory Work-Related Activities ($\chi^2 = 2.30$)						
Number of persons	2,659	1,529	1,325	668	333	6,514
Control group mean	.63	.63	.60	.58	.48	.61
Impact	.10 (.01)	.07 (.02)	.07 (.02)	.06 (.03)	.07 (.04)	.08 (.01)
E. MFIP—Incentives Only: Financial Work Incentives ($\chi^2 = 3.87$)						
Number of persons	2,107	1,197	1,039	482	262	5,087
Control group mean	.64	.66	.62	.59	.49	.63
Impact	.11 (.02)	.08 (.02)	.09 (.02)	.08 (.03)	.02 (.05)	.09 (.01)

NOTE.—Standard errors are in parentheses.

* χ^2 statistic for homogeneity (five degrees of freedom).

centage points, irrespective of the program's MWRAs.¹⁴ The WRP's less generous financial incentives had no significant effect on welfare use, either alone or in combination with the program's delayed work requirements.¹⁵

¹⁴ These effects are similar to the effects of FTP's financial work incentives and enhanced services, as measured by the impact of FTP on age group 4.

¹⁵ In contrast to the other programs, WRP's work requirement became effective only after the recipient had received welfare for 24 months.

Regardless of the overall effect of the program, however, there is little age variation in the impacts of the programs. In neither of the MFIP or WRP experiments do the treatment effects vary significantly by the age of the youngest child. The NEWWS estimates, which are based on data from over 48,000 individuals, differ by age at the 10 percent level, but not at the 5 percent level. Moreover, despite the marginal statistical significance of the differences, the substantive differences among the age-specific impact estimates are slight. Taken as a whole, these results suggest that age invariance is more the norm than the exception in reform programs involving various combinations of financial incentives and MWRAs. This provides some justification for the age-invariance assumption that is central to our estimation strategy.

IV. Regression Estimates

A. Two Regression Models

In this section we return to the FTP experiment, using regression methods to estimate the effect of time limits on welfare receipt. The regression estimates have three advantages over the simple difference-in-difference estimates. First, they control for personal characteristics of the experiment participants, such as different levels of presample welfare use. Second, they should be more precise, because the covariates in the model should reduce the variance of the error term. Third, they allow us to consider alternative functional forms for the key age-FTP interaction.

As in table 3, we analyze monthly welfare use, so the unit of observation is the person-month. We first allow the effect of time limits to depend on age according to a step function specification, which yields estimates that are directly comparable to the difference-in-difference estimates. This model is given by

$$y_{it} = \alpha + \alpha_0 A_{0it} + \alpha_1 A_{1it} + \alpha_2 A_{2it} + \alpha_3 A_{3it} + \tau_0 A_{0it} E_i + \tau_1^{TL} A_{1it} E_i + \tau_2^{TL} A_{2it} E_i + \tau_3^{TL} A_{3it} E_i + \tau E_i + \mathbf{X}_{it} \beta + \mu_i + \epsilon_{it} \quad (1)$$

for $i = 1, \dots, n$ and $t = 1, \dots, 24$, where n is the number of persons in the sample. The dependent variable y_{it} equals one if family i utilized welfare in period t , and equals zero otherwise. The age group dummies are defined as $A_{jit} = 1$ if the youngest child in the i th family at the time of random assignment falls into age group j at time t and $A_{jit} = 0$ otherwise, for $j = 0, 1, \dots, 4$. The variable E_i is the FTP, or experimental, dummy; $E_i = 1$ if family i is in the FTP group and $E_i = 0$ if family i is in the AFDC group. The vector \mathbf{X}_{it} includes a number of exogenous regressors including the mother's age at time t ; a dummy equal to one

if she is black and zero otherwise; a dummy equal to one if she had a three-year time limit and equal to zero if she had a two-year limit; the number of children in the family; the mother's years of schooling; the number of months in which the family had received welfare during the 24 months prior to random assignment; the number of quarters of employment during the year preceding random assignment; and a vector of year dummies. Time is measured in months from the date of random assignment, so $t = 0$ is the month of entry into the program.

The α , β , and τ terms are parameters to be estimated from the data. Under the assumption that the financial work incentives and the enhanced social services have age-invariant effects, their joint effect is given by τ , the coefficient on the FTP dummy, since we exclude the interaction between the FTP dummy and the dummy for age group 4. The effects of time limits for the younger age groups, τ_1^{TL} , τ_2^{TL} , and τ_3^{TL} , are given by the coefficients on the interactions between the corresponding age group dummies and the FTP dummy.

In our second specification, we allow the effects of the time limit to depend continuously on age, at least for ages from 3 to the threshold age. This "linear interaction" model is given by

$$y_{it} = \alpha + \alpha_0 A_{0it} + \alpha_1 A_{it} + \tau_0 A_{0it} E_i + \tau^{TL} A'_{it} E_i + \tau E_i + \mathbf{X}_{it} \beta + \mu_i + \epsilon_{it} \quad (2)$$

where A_{it} is the age at time t of the youngest child in family i ; $A'_{it} = A_{it} - \bar{A}_i$ if $3 \leq A_{it} < \bar{A}_i$ and $A'_{it} = 0$ otherwise; and \bar{A}_i denotes the threshold age for family i .¹⁶ Under this specification, the coefficient on the FTP dummy again gives the combined effect of the financial work incentives and the enhanced social supports.¹⁷ The effect of the time limit depends on the age of the youngest child via the interaction between A'_{it} and the FTP dummy. Under this specification, we would expect to find that $\tau^{TL} > 0$ since $A'_{it} \leq 0$.

In both specifications, the error term consists of two components, μ_i and ϵ_{it} . The former is a family effect, which gives rise to dependence among the monthly observations from a particular family. Since this groupwise dependence may cause conventional ordinary least squares standard errors to be biased downward, we employ a Huber-White covariance matrix estimator that corrects for such dependence. It also

¹⁶ Because eq. (2) includes A_{it} rather than the age group dummies, it implicitly imposes constraints on the intercepts for age groups 1, 2, and 3. When we relaxed these constraints by adding the age group dummies to the model, their coefficients were small and insignificant. Since including them had no effect on the other coefficients in the regression, we excluded them from the specifications reported below.

¹⁷ This is achieved by subtracting the threshold age from the age of the youngest child in constructing A'_{it} .

accounts for heteroskedasticity, which is an inherent property of the linear regression estimator when applied to a binary dependent variable.

B. Main Estimates

Results of these specifications are reported in table 5. (Summary statistics for all variables included in the regression model appear in App. table A1.) The coefficients on the FTP dummies, in the sixth row of the table, are positive. Under our identifying assumptions, they suggest that the combined effects of the financial work incentives and enhanced services act to raise welfare use by about six percentage points. This is slightly smaller than the corresponding difference-in-difference estimate from table 3.

The coefficients on the interaction between the FTP dummy and the dummy for age group 0 appear in the first row of the table. This age group includes families with children under age 3, for which the effects of time limits cannot be distinguished from the effects of MWRAs. The estimates are negative and at least marginally significant. They show that the combined effects of time limits and MWRAs reduce aid use by about seven percentage points. This is smaller than the corresponding estimate for age group 1, whereas we would expect time limits by themselves to have larger effects on the younger age group. This suggests that members of age group 0 satisfied their MWRAs by means that were more likely to keep them on welfare. Indeed, analysis of data from the Two-Year Client Survey (TYCS), which was administered to about 600 program participants during the first half of 1997, showed that members of age group 0 were more likely to take part in vocational training than members of age group 1.

In the step function specification, shown in column 1, the coefficients on the interactions between the FTP dummy and the age group dummies provide estimates of τ_1^{TL} , τ_2^{TL} , and τ_3^{TL} , the age group-specific effects of time limits. Given the discussion in Section 1, our expectation is that $\tau_1^{TL} < \tau_2^{TL} < \tau_3^{TL} < 0$. The regression estimates are more consistent with this expectation than the difference-in-difference estimates in table 3. Adding the regressors to the model has reduced the estimated group 2 effect, as expected, with the result that $\hat{\tau}_1^{TL} < \hat{\tau}_2^{TL} < \hat{\tau}_3^{TL} < 0$. Moreover, although $\hat{\tau}_1^{TL}$ and $\hat{\tau}_2^{TL}$ are only marginally significant, they are both significantly different from $\hat{\tau}_3^{TL}$ (t -statistics are -2.42 and -2.06 , respectively). However, even though $\hat{\tau}_1^{TL} < \hat{\tau}_2^{TL}$, their difference is small. One potential explanation for this is that, despite the child care subsidies available to both the treatment and control groups, nonprice barriers to obtaining child care prevented families with preschool age children from fully responding to the time limit.

The linear interaction specification, reported in column 2, provides

TABLE 5
 LINEAR REGRESSION ESTIMATES OF THE EFFECTS OF TIME LIMITS ON THE MONTHLY
 PROBABILITY OF RECEIVING AID (Sample Size 106,149)

Variable	Step Function Specification (1)	Linear Interaction Specification (2)
FTP dummy × youngest child between 6 months and 2 years	-.069 (.042)	-.066 (.028)
FTP dummy × youngest child between 3 and 5 ($\hat{\tau}_1^{Tt}$)	-.074 (.041)	
FTP dummy × youngest child between 6 and 10 ($\hat{\tau}_2^{Tt}$)	-.067 (.042)	
FTP dummy × youngest child between 11 and 14/15 ($\hat{\tau}_3^{Tt}$)	-.012 (.042)	
FTP dummy × A'_{it} ($\hat{\tau}^{Tt}$)		.007 (.002)
FTP dummy	.063 (.039)	.060 (.022)
Youngest child between 6 months and 2 years	.094 (.032)	.029 (.015)
Youngest child between 3 and 5	.054 (.030)	
Youngest child between 6 and 10	.047 (.030)	
Youngest child between 11 and 14/15	.034 (.029)	
Age of youngest child		-.004 (.002)
36-month time limit	.055 (.010)	.052 (.010)
Mother black	.072 (.010)	.073 (.010)
Mother's age	-.002 (.001)	-.001 (.001)
Number of children	.004 (.004)	.004 (.004)
Years of schooling	-.013 (.003)	-.013 (.003)
Months of welfare use in 24 months prior to random assignment	.019 (.001)	.019 (.001)
Quarters of employment in year preceding random assignment	-.011 (.003)	-.011 (.003)
1995 dummy	-.144 (.009)	-.144 (.009)
1996 dummy	-.288 (.011)	-.287 (.011)
1997 dummy	-.375 (.012)	-.374 (.012)
1998 dummy	-.454 (.014)	-.454 (.014)
Constant	.543 (.051)	.614 (.041)
Adjusted R^2	.280	.280

NOTE.—The term A'_{it} is defined as $A'_{it} = A_{it} - \bar{A}_i$ for $3 \leq A_{it} < \bar{A}_i$ and $A'_{it} = 0$ otherwise, where A_{it} is the age of the youngest child in family i at time t and \bar{A}_i is the threshold age that pertains to family i . Huber-White standard errors (in parentheses) account both for groupwise dependence arising from multiple observations per person and for heteroskedasticity.

the same fit to the data, as judged by the adjusted R^2 , but the key parameter estimate provides clearer support for the prediction that time limits should decrease welfare use the most among families with the youngest children. The coefficient on the interaction between the FTP dummy and A'_i is positive, as expected, and significant. Each one-year increase in the age of the youngest child increases the reduction in the likelihood of welfare use attributable to time limits by 0.7 percentage point, on average. This implies that, for a family with a 36-month time limit (and consequently a threshold age of 15) whose youngest child is 5 years old, the time limit reduces welfare use by seven percentage points. For a family with a 36-month time limit whose youngest child is 13 years old, the time limit reduces welfare use by 1.4 percentage points. These numbers are in line with the estimated effects of the time limit from the step function specification.

In both specifications, the other coefficients in the model are generally in accord with expectations based on previous research. The presence of young children increases the likelihood of welfare use, as do low levels of maternal education. Black mothers are more likely to use welfare than white mothers, all else equal. The mother's past welfare use, past employment, and assignment to a 36-month time limit are also associated with higher welfare use. The effect of welfare use prior to random assignment is positive and particularly significant. In conjunction with the fact that presample welfare use was lower among families in the 6–10 age group than among those in the 3–5 age group, this explains why adding the covariates to the model results in estimates more in accord with our expectations than the simple difference-in-difference estimates.

These regression-adjusted estimates suggest that time limits substantially reduce welfare use among families with young children. If we weight the estimated age-specific reductions in welfare use by the age distribution of the sample, we calculate that time limits by themselves would have led to a 16 percent reduction in welfare receipt among the FTP group.¹⁸ These results are particularly striking because they represent anticipatory responses to the time limit. None of the FTP families could have reached the time limit within our 24-month sample period. The estimates suggest that time limits substantially reduced welfare use, at least among families with younger children, well before any of the families in our sample could have exhausted their benefits.

¹⁸ This calculation is limited to families with youngest children age 3 and over, for which we can estimate the effects of time limits.

V. Additional Estimates

In this section, we provide additional evidence on the effects of time limits. First, we stratify the sample according to recipients' level of exposure to welfare prior to random assignment. Next, we consider estimates from shorter follow-up periods. We also report on other results designed to check the overall robustness of our findings. Finally, we discuss some results that shed further light on the age-invariance assumption.

A. *Estimates by Prior Welfare Exposure*

We stratify the results by prior welfare exposure for two reasons. First, one might be concerned that the age-FTP interaction was somehow picking up the effects of prior welfare exposure in a complicated way. Second, stratifying the sample allows us to see whether welfare recipients' response to time limits varies according to their level of welfare dependency. This is a particularly interesting question in light of concerns that recipients facing the greatest job market barriers might be the least likely to respond to time limits, leaving behind a more disadvantaged welfare population that would ultimately exhaust their benefits (Sawhill and Zedlewski 1995; Duncan, Harris, and Boisjoly 2000; Moffitt and Pavetti 2000). Unfortunately, as interesting as these questions are, our ability to answer them is seriously limited by sample size issues.

In table 6, we stratify the sample according to presample welfare use in two different ways. First, we divide the sample into those with 12 months or less of prior welfare use and those with more than 12 months. Second, to focus on the most welfare-dependent group, we divide the sample into those with less than 24 months of prior aid receipt and those with exactly 24 months.

For the first stratification scheme, estimates from the step function specification, reported in columns 1 and 3, are inconclusive. All the estimates are insignificant, the result of splitting the sample. For both groups of families—those with 12 or fewer months of presample welfare use and those with more—the regression coefficients are partially consistent with expectations, but partially inconsistent as well.

Estimates from the linear interaction specifications, in columns 2 and 4, are more precise. For families with both greater and lesser levels of presample welfare exposure, they are positive and at least marginally significant. They suggest that the effects of time limits are similar for both groups.

The results from the second stratification scheme are presented in columns 5–8. For families with fewer than 24 months of presample

TABLE 6
 LINEAR REGRESSION ESTIMATES OF THE EFFECTS OF TIME LIMITS ON THE PROBABILITY OF RECEIVING AID, BY EXTENT OF WELFARE RECEIPT DURING THE 24 MONTHS PRIOR TO RANDOM ASSIGNMENT

VARIABLE	12 MONTHS OR LESS VS. MORE THAN 12 MONTHS				LESS THAN 24 MONTHS VS. EXACTLY 24 MONTHS			
	12 Months or Less		More than 12 Months		Less than 24 Months		24 Months	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
FTP dummy × youngest child between 3 and 5 ($\hat{\tau}_1^{TL}$)	-.045 (.049)		-.129 (.076)		-.069 (.044)		-.105 (.116)	
FTP dummy × youngest child between 6 and 10 ($\hat{\tau}_2^{TL}$)	-.013 (.048)		-.158 (.078)		-.043 (.045)		-.194 (.118)	
FTP dummy × youngest child between 11 and 14/15 ($\hat{\tau}_3^{TL}$)	.028 (.048)		-.089 (.080)		-.006 (.045)		-.031 (.122)	
FTP dummy × A_{it}^U ($\hat{\tau}^{TL}$)		.006 (.002)		.007 (.004)		.006 (.002)		.007 (.006)
FTP dummy	.022 (.044)	.046 (.023)	.136 (.073)	.063 (.034)	.051 (.041)	.050 (.019)	.130 (.111)	.070 (.052)
Observations	63,447	63,447	42,702	42,702	88,251	88,251	17,898	17,898
R^2	.173	.173	.138	.137	.225	.225	.133	.131

NOTE.—The term A_{it}^U is defined as $A_{it}^U = A_{it} - \bar{A}_i$ for $3 \leq A_{it} < \bar{A}_i$ and $A_{it}^U = 0$ otherwise, where A_{it} is the age of the youngest child in family i at time t and \bar{A}_i is the threshold age that pertains to family i . Huber-White standard errors (in parentheses) account both for groupwise dependence arising from multiple observations per person and for heteroskedasticity. In addition to the variables shown, all regressions include all other variables shown in table 5.

welfare exposure, the step function estimates, in column 5, are similar to those from the full sample, as reported in table 5. The linear interaction coefficient, in column 6, is likewise positive and significant. Both sets of estimates are consistent with the notion that time limits should have greater effects on families with younger children.

Results for the most welfare-dependent families are presented in columns 7 and 8. In the step function specification, all the age-FTP interaction terms are negative, but the estimate for age group 2 is substantially more negative than the estimate for age group 1. Moreover, the linear age-FTP interaction coefficient is completely insignificant for this group, in contrast to the other groups. This suggests that the most welfare-dependent families may be unresponsive to the time limit, although the imprecision of the subsample estimates makes it difficult to draw any conclusions too strongly.

B. Estimates from Shorter Follow-up Periods

Above we interpreted our main results as indicating that time limits lead welfare families to leave welfare even before the time limit could begin to bind. Here we present some further evidence to ask more directly whether our results truly represent anticipatory responses to the time

TABLE 7
 LINEAR REGRESSION ESTIMATES OF THE EFFECTS OF TIME LIMITS ON THE MONTHLY
 PROBABILITY OF RECEIVING AID DURING VARIOUS SAMPLE PERIODS FOLLOWING RANDOM
 ASSIGNMENT

VARIABLE	SAMPLE PERIOD (Following Random Assignment)					
	6	12	18	6	12	18
	Months (1)	Months (2)	Months (3)	Months (4)	Months (5)	Months (6)
FTP dummy \times youngest child between 3 and 5 ($\hat{\tau}_1^{TL}$)	-.068 (.057)	-.084 (.049)	-.071 (.046)			
FTP dummy \times youngest child between 6 and 10 ($\hat{\tau}_2^{TL}$)	-.063 (.058)	-.078 (.051)	-.068 (.047)			
FTP dummy \times youngest child between 11 and 14/15 ($\hat{\tau}_3^{TL}$)	-.040 (.062)	-.022 (.052)	-.008 (.048)			
FTP dummy $\times A'_i(\hat{\tau}^{TL})$.003 (.003)	.007 (.003)	.007 (.003)
FTP dummy	.091 (.053)	.090 (.047)	.067 (.043)	.059 (.030)	.081 (.026)	.065 (.024)
R^2	.302	.292	.285	.302	.292	.285
Sample size	26,764	53,384	79,849	26,764	53,384	79,849

NOTE.—The term A'_i is defined as $A'_i = A_i - \bar{A}_i$ for $3 \leq A_i < \bar{A}_i$ and $A'_i = 0$ otherwise, where A_i is the age of the youngest child in family i at time t and \bar{A}_i is the threshold age that pertains to family i . Huber-White standard errors (in parentheses) account both for groupwise dependence arising from multiple observations per person and for heteroskedasticity. In addition to the variables shown, all regressions include all other variables shown in table 5.

limit. We do this by presenting estimates from shorter follow-up periods. The results are reported in table 7.

The general qualitative patterns that appear in our main results are present even in the models based on sample periods that extend for only 12 months after random assignment. By that time, the estimates are nearly the same as those from the full 24-month follow-up period. The estimates from the linear interaction specification are significant. This suggests that families subject to time limits did not wait until the last minute to leave the welfare rolls. Rather, they began leaving substantially earlier, consistent with our earlier interpretation of the full-sample results.

C. Further Estimation Results

In addition to the results reported so far, we estimated a number of other specifications to test the robustness of our findings. We included an urban/rural indicator in the regressions both in levels and interacted with the FTP dummy to accommodate the possibility that job markets may differ between Pensacola and outlying parts of Escambia County. We added a post-TANF dummy and FTP-TANF interactions to account for the possibility that the introduction of Florida's TANF program in October 1996 might have changed the behavior of program partici-

pants.¹⁹ In another specification, we replaced the year dummies that we use to control for period effects with month dummies. We also allowed for linear age effects within the oldest age group. None of these changes to the model substantially affected the main results.

We also estimated the effect of FTP on the likelihood of leaving Escambia County. Such mobility is important because it could change the family's experimental status. If an FTP group member left Escambia County before late 1996, when Florida implemented its TANF program statewide, then she would no longer have been subject to a time limit. After late 1996, however, her time limit "clock" would have followed her to any other jurisdiction in the state. Conversely, after late 1996, a control group member who left Escambia County would have become subject to the TANF program time limit (Bloom et al. 2000, p. 13).

The key question for us, of course, is whether FTP resulted in differential out-of-county mobility between treatment and control groups that varied significantly by age. To answer this question we make use of data from the Four-Year Client Survey (FYCS), which was administered in late 1999 to about 1,700 program participants. Compared to the TYCS, the larger sample size of the FYCS makes it more likely that we would reject the null of no age variation if age variation were indeed present. The disadvantage of the FYCS is that it captures behavior occurring over four years after random assignment, whereas all the results above focus on the two-year period preceding the time in which families could have exhausted their benefits.²⁰

Table 8 reports results from a regression in which the dependent variable is equal to one if the family ever relocated outside of Escambia County. In addition to the variables shown, the regression includes all the variables included in the models from table 5. Neither specification yields any evidence either of differential mobility between the treatment and control groups or of significant age differentials in mobility.

D. Further Evidence on the Age-Invariance Assumption

Finally, we computed some estimates based on the FTP data designed to provide additional evidence on the validity of the crucial age-invariance assumption.²¹ To test for age invariance in the effects of FTP's financial incentives, we estimated models like those in table 5 in which the dependent variable was replaced with a dummy that was equal to one if the consumer *both* received welfare *and* worked. The motivation

¹⁹ The FTP control group members remained subject to the old AFDC rules, even after Florida's TANF plan went into effect.

²⁰ The TYCS included no questions on out-of-county mobility.

²¹ The full set of estimates discussed in this subsection is available from the authors on request.

TABLE 8
 LINEAR REGRESSION ESTIMATES OF THE EFFECTS OF TIME LIMITS ON THE PROBABILITY
 OF LIVING OUTSIDE ESCAMBIA COUNTY AT SOME POINT WITHIN FOUR YEARS AFTER
 RANDOM ASSIGNMENT (Sample Size 1,726)

Variable	Step Function Specification (1)	Linear Interaction Specification (2)
FTP dummy \times youngest child be- tween 3 and 5 ($\hat{\tau}_1^{TL}$)	.007 (.013)	
FTP dummy \times youngest child be- tween 6 and 10 ($\hat{\tau}_2^{TL}$)	.010 (.013)	
FTP dummy \times youngest child be- tween 11 and 14/15 ($\hat{\tau}_3^{TL}$)	.006 (.014)	
FTP dummy $\times A'_i$ ($\hat{\tau}^{TL}$)		-.000 (.001)
FTP dummy	-.010 (.012)	-.004 (.005)
R^2	.005	.003

NOTE.—Unit of observation for these regressions is the person. The term A'_i is defined as $A'_i = A_i - \bar{A}_i$ for $3 \leq A_i < \bar{A}_i$ and $A'_i = 0$ otherwise, where A_i is the age of the youngest child in family i at time t and \bar{A}_i is the threshold age that pertains to family i . Huber-White standard errors (in parentheses) account both for groupwise dependence arising from multiple observations per person and for heteroskedasticity. In addition to the variables shown, all regressions include all other variables shown in table 5.

for this regression is simple: in order for the financial incentive to affect the consumer's income, she must combine work and welfare. If she receives welfare but does not work, or works but does not receive welfare, she cannot benefit from FTP's financial incentive. In these regressions, the coefficients on the FTP dummies were positive and significant, as expected. However, the age-FTP interaction terms were completely insignificant, which is consistent with age invariance in the effects of the financial incentive.

Our tests for age invariance in the effects of the enhanced services were less direct. They were based on the idea that, if these services included valuable training opportunities, then human capital theory predicts that they should be more valuable to younger mothers than to older mothers. Thus we added an interaction between the FTP dummy and maternal age to the model. The coefficients on the maternal age interactions were insignificant, and including them in the model had no effect on the estimated effects of time limits.

VI. Conclusions

Time limits are among the most fundamental of the recent reforms to the U.S. welfare system. Because they limit families' eligibility for assistance, they provide families with an incentive to conserve their benefits. Economic theory predicts that, among forward-looking, expected-utility-maximizing consumers who face liquidity constraints and earnings un-

certainty, these incentives should vary by the age of the youngest child in the family. Whereas families with older youngest children have short eligibility horizons and relatively little chance of prematurely exhausting their benefits, families with younger youngest children have longer eligibility horizons and greater risk of exhausting their benefits. Thus families with younger children should be more reluctant to utilize their benefits than families with older children.

This prediction is largely borne out by our empirical results. Indeed, our estimates suggest that the time limit in the FTP experiment had sizable effects, which, in the absence of other features of the program that worked to increase welfare use, would have reduced welfare receipt by as much as 16 percent. This accords in a general way with the finding that the states' TANF programs, most of which involve time limits, have had substantial effects on the welfare caseload in recent years (Council of Economic Advisers 1999; Wallace and Blank 1999; Schoeni and Blank 2000).

The age-varying reductions in welfare use that arise from time limits may have substantive implications for the well-being of children in poor families. They imply that any reductions in welfare payments that result from the imposition of time limits are more likely to occur earlier, rather than later, during childhood. Recent studies suggest that the adverse effects of family poverty on children's educational attainment are greater, the younger the child is when the family experiences poverty (Duncan et al. 1998; Guo 1998). If age-related reductions in welfare payments result in corresponding reductions in income, then time limits could have greater adverse consequences for children than policies with more age-neutral effects. The key question is whether the reductions in welfare use that arise from time limits translate into reductions in income. The one existing study on the topic suggests that they may not, but more research on the question is needed (Grogger 2003).

Because the time limit was not the only reform included in FTP, our results are based on assumptions regarding the effects of those other reforms. In particular, we assume that the effects of the program's financial work incentives and enhanced welfare-to-work services are age-invariant. Tests of those assumptions do not reject them, but such tests could never be as compelling as evidence from an experiment explicitly designed to isolate the effects of time limits. In the absence of any such experiment, it is encouraging that estimates based on two nationwide surveys, and a very different set of identifying assumptions, are similar to those presented here (Grogger 2002, 2004).

Appendix

TABLE A1
MEANS OF VARIABLES FROM FTP SAMPLE

Variable	Mean
Welfare utilization indicator (dependent variable)	.403
36-month time limit	.480
Mother black	.498
Mother's age	30.4 (7.3)
Number of children	2.0 (1.1)
Years of schooling	11.1 (1.5)
Months of welfare utilization in 24 months preceding random assignment	10.0 (9.7)
Quarters of employment in year preceding random assignment	1.3 (1.6)
1995 dummy	.301
1996 dummy	.367
1997 dummy	.199
1998 dummy	.071
Youngest child between 6 months and 2 years	.267
Youngest child between 3 and 5	.353
Youngest child between 6 and 10	.227
Youngest child between 11 and 14/15	.116
Age of youngest child	6.1 (4.1)
A'_i	-5.9 (4.8)
FTP dummy	.500
FTP dummy \times youngest child between 6 months and 2 years	.135
FTP dummy \times youngest child between 3 and 5	.174
FTP dummy \times youngest child between 6 and 10	.115
FTP dummy \times youngest child between 11 and 14/15	.061
FTP dummy $\times A'_i$	-3.0 (4.5)
Number of monthly observations	106,149

NOTE.—Standard deviations are in parentheses.

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