

Anatomy of Welfare Reform: Announcement and Implementation Effects

Richard Blundell,^a Marco Francesconi,^b
Wilbert van der Klaauw^c

^a *UCL and IFS*

^b *Essex and IFS*

^c *New York Fed*

University of York

23 May 2012

What

- ▶ Key questions : “Do economic agents adjust their economic behavior in anticipation of, and in response to announcements about, welfare reform? How do **anticipation** and **announcement effects** affect the evaluation of impacts of welfare reform?”
- ▶ Objectives :
 - ▶ to provide an **economic model** that captures the main behavioral responses
 - ▶ analyze whether and how a specific group of individuals (single mothers) may have changed their labor market behavior in anticipation of the introduction of a **major tax credit reform in the UK**

Why (1)

Expectations are central to economic analysis. Many models and empirical analyses of behavioral responses by **forward looking** agents in anticipation of changes in choice environment:

Examples (among many):

- ▶ role of **news** and expectations as drivers of business cycles and stock prices (Beaudry and Portier 2006; Jaimovich and Rebelo 2009)
- ▶ role of expectations of future offers in understanding impact of a series of 'one-time' early retirement schemes (Pencavel, 1997).
- ▶ **tax rebates announcements** on consumption expenditures (Heim 2007)
- ▶ increased exercise of stock options by high income executives in anticipation of increase in **marginal income tax rates** (Goolsbee 2000)
- ▶ evidence of firms and high income individuals shifting taxable income to future periods in anticipation of the 1986 Tax Act (e.g., Auerbach and Siegel 2000)

Why (2)

Much less research has looked at pre-implementation responses to **welfare reform**

- ▶ Some examples include:
 - ▶ absence of jump in labor supply following social security reform attributed to full anticipation of reforms (Moffitt, 1987)
 - ▶ higher exit rate out of unemp. in response to anticipation of a requirement to receive employment & training services so to continue receiving benefits (Black et al, 1999)
 - ▶ effects of time limits on welfare receipt on welfare participation (Grogger and Michalopoulos, 2003)
- ▶ Remains common practice to rule out pre-implementation effects
- ▶ Yet last 20 years have witnessed a **massive introduction** of welfare reforms around the world
- ▶ Not allowing for announcement/anticipation effects may lead to **biased** evaluations.
- ▶ To understand impact of a reform it is important to quantify such effects.

Why (3)

Recent research on dynamic treatment effect models has highlighted the importance of a **no-anticipation assumption** for identifying treatment effects (Abbring and van den Berg, 2003)

- ▶ Evaluation relies on sequential randomization and no-anticipation assumptions which require potential outcomes to be unaffected by agent actions in response to different predictions of future treatments and outcomes (Abbring and Heckman, 2007)
- ▶ Heckman and Navarro (2007) spell out conditions under which it is possible to identify anticipatory effects
- ▶ Generally, valid inference requires an ability to condition on agent's information sets, including the likelihood of (as well as eligibility to) future policy reforms.

Why (4)

An important and attractive feature of structural models with forward looking behavior is that they require an explicit specification of an individual's information set, including individual beliefs about the likelihood of a future policy reform

- ▶ Keane and Wolpin (2002) simulate a model in which individuals form expectations about future welfare program changes, by specifying a stochastic process for changes in benefit rule parameters – find important effects on behavioral responses
- ▶ van der Klaauw and Wolpin (2008) allow for anticipation of future social security reform

How

- ▶ Formulate a simple **economic model** of female labor supply with welfare reform and announcement effects explicitly built in
- ▶ The model will stress **two mechanisms** through which women respond to the announcement of a reform:
 - a. **intertemporal substitution** (frictionless world);
 - b. **adjustment costs** (frictions)
- ▶ **Solve** and **simulate** the model, and assess the different role of the two mechanisms
- ▶ **Estimate** (non-structurally) the impact of a UK reform (WFTC) on single mothers' labor supply and childcare utilization decisions:
 - ▶ assess the presence and magnitude of announcement effects
 - ▶ estimate the bias of standard evaluations

Preview of Results

- ▶ Model:
 - ▶ shows the **economic mechanisms** through which anticipation and announcement effects operate on female labor supply;
 - ▶ makes clear the **difficulty** of identifying both sorts of effects;
- ▶ In the empirical application on WFTC, we find:
 - ▶ evidence in favor of **labor market frictions**;
 - ▶ earlier treatment effect estimates to be **biased downward** by up to 40%

Roadmap of the Talk

- ▶ Illustration: Simple model of female labor supply
- ▶ Simulation results
- ▶ Empirical application: Data
- ▶ Results
- ▶ Conclusion

Model of Female Labor Supply (1)

- ▶ Three-period economy in which each woman i chooses whether to work ($y_{it} = 1$) or not ($y_{it} = 0$)
- ▶ At any period $t = 1, 2, 3$, each woman chooses y_{it} to maximize:

$$E \left[\sum_{s=t}^3 \delta^{s-t} U_{is}(c_{is}, y_{is}, X_{is-1}) | \Omega_{is} \right],$$

where c_{it} =consumption; X_{it-1} =number of periods woman i has worked prior to period t (with $X_{i0} = 0$); δ =subjective discount factor; $E[\cdot]$ =expectation operator; Ω_{it} =individual's information set at time t (and includes information the woman has on possible implementation of a future policy reform).

- ▶ Work experience evolves according to

$$X_{it} = X_{it-1} + y_{it}.$$

Model (2)

- ▶ Period-by-period budget constraint (no saving or borrowing):

$$c_{it} = w_{it}y_{it} + N_{it},$$

where w_{it} =woman i 's potential earnings; N_{it} =nonlabor income

- ▶ Potential earnings are stochastic and depend on previous work experience:

$$w_{it} = w_0 + \alpha X_{it-1} + \beta d_t I(t \geq 2) y_{it} + \epsilon_{it},$$

where $I(z)$ =indicator function that is equal to 1 if z occurs and 0 otherwise; ϵ_{it} =technology shock that captures random fluctuations in earnings that are independent of the individual decision process, and assume ϵ_{it} has an identical and independent over time logistic distribution.

Model (3)

- ▶ d_t indicates **implementation of welfare reform** in form of a working tax credit (e.g., EITC), which, by assumption, could occur in period 2 or 3; i.e., $d_t = 1$ if the reform is or already has been implemented and $d_t = 0$ if the reform has not been implemented ($t = 2, 3$)
- ▶ Reform represents a **permanent increase** in each woman's wage rate or earnings (measured by β).
- ▶ In Ω_{it} we have **women's beliefs** about the likelihood that the reform will be in place in **future periods**
- ▶ Denote the beliefs in period 1 about a reform in period 2 by $\pi_{12} = \Pr(d_2 = 1 | \Omega_1)$. Beliefs in period $t = 1, 2$ about a reform in period 3 are denoted by $\pi_{t3}(d_2) = \Pr(d_3 = 1 | \Omega_t, d_2)$, where $\pi_{t3}(1) = 1$

Model (4)

- ▶ Per period **utility** is linear and additive in consumption:

$$U_{it} = c_{it} + \gamma_1 y_{it} + \gamma_2 X_{it-1} y_{it} + \gamma_3 c_{it} y_{it}$$

- ▶ U is decreasing in y_{it} (i.e., $\gamma_1 < 0$) reflecting disutility of work, and increasing in consumption, c_{it}
- ▶ If $\gamma_2 \neq 0$, then utility function is **not intertemporally separable**:
 - ▶ $\gamma_2 > 0$: **habit formation** in the labor market
 - ▶ $\gamma_2 < 0$: increasing current disutility of work with previous work effort or **increasing propensity to substitute nonmarket time in subsequent periods**

Model (5)

- ▶ **Labor market frictions**, reflected in the choice set available to women, that is $y_{it} \in J_{it}$, where J_{it} is the work decision choice set available to i in t :

$J_{it} = \{0\}$ (i.e., no job is available) with probability $(1 - \lambda_t)$
and

$J_{it} = \{0, 1\}$ (i.e., choice set includes both 'not working' and 'working') with probability λ_t

- ▶ Assume that there is no current labor market friction for a woman who worked in the previous period, that is, $\lambda_t(y_{it-1}) = 1$ if $y_{it-1} = 1$, while the arrival rate if not working in the last period is $\lambda_t(0) < 1$.

Solution (1)

- ▶ Standard solution method for finite horizon dynamic programs is **backward recursion**
- ▶ Let $V_{it}(X_{it-1}, d_t, \epsilon_{it})$ = maximum of expected discounted lifetime utility given X_{it-1} prior periods of employment and a wage draw of ϵ_{it} :

$$V_{it}(X_{it-1}, d_t, \epsilon_{it}) = \max[V_{it}^1(X_{it-1}, d_t, \epsilon_{it}), V_{it}^0(X_{it-1}, d_t, \epsilon_{it})],$$

where $V_{it}^1(\cdot)$ and $V_{it}^0(\cdot)$ denote the expected discounted lifetime utilities if the woman i works in t ($y_{it} = 1$) and does not work ($y_{it} = 0$) respectively

Solution (2)

- ▶ At $t = 3$, the value functions when $J_{i3} = \{0, 1\}$ are:

$$V_{i3}^1(X_{i2}, d_3, \epsilon_{i3}) = (1 + \gamma_3)(w_0 + \alpha X_{i2} + \beta d_3 + \epsilon_{i3} + N_{i3}) \\ + \gamma_1 + \gamma_2 X_{i2}$$

$$V_{i3}^0(X_{i2}, d_3) = N_{i3}.$$

- ▶ Woman works if $V_{it}^1(\cdot) > V_{it}^0(\cdot)$. That is:

$$y_{i3} = 1 \quad \text{iff} \quad \epsilon_{i3} \geq -w_0 - \alpha X_{i2} - \beta d_3 - \frac{(\gamma_3 N_{i3} + \gamma_1 + \gamma_2 X_{i2})}{1 + \gamma_3}$$

$$= \epsilon_{i3}^*(X_{i2}, d_3)$$

$$y_{i3} = 0 \quad \text{otherwise}$$

Solution (3)

- ▶ Thus, the expected value in period 3 for a woman who **does not face labor market frictions** is

$$\begin{aligned} E V_{i3}^{\{0,1\}}(X_{i2}, d_3) &= \Pr(\epsilon_{i3} > \epsilon_{i3}^*(X_{i2}, d_3)) \left\{ (1 + \gamma_3) \left[w_0 \right. \right. \\ &\quad \left. \left. + \alpha X_{i2} + \beta d_3 + N_{i3} \right. \right. \\ &\quad \left. \left. + E(\epsilon_{i3} | \epsilon_{i3} > \epsilon_{i3}^*(X_{i2}, d_3)) \right] + \gamma_1 + \gamma_2 X_{i2} \right\} \\ &\quad + \left[1 - \Pr(\epsilon_{i3} > \epsilon_{i3}^*(X_{i2}, d_3)) \right] N_{i3} \end{aligned}$$

Solution (4)

- ▶ When $J_{i3} = \{0\}$, that is, when the woman has **no job available** because of **labor market frictions**, the expected value is:

$$EV_{i3}^{\{0\}}(X_{i2}, d_3) = N_{i3}.$$

- ▶ Combining the two previous two value functions yields expected remaining lifetime utility value to each woman in period 3, namely

$$\begin{aligned} EV_{i3}(X_{i2}, y_{i2}, d_3) &= \lambda_3(y_{i2})EV_{i3}^{\{0,1\}}(X_{i2}, d_3) \\ &\quad + (1 - \lambda_3(y_{i2}))EV_{i3}^{\{0\}}(X_{i2}, d_3). \end{aligned}$$

Simulation Results (1)

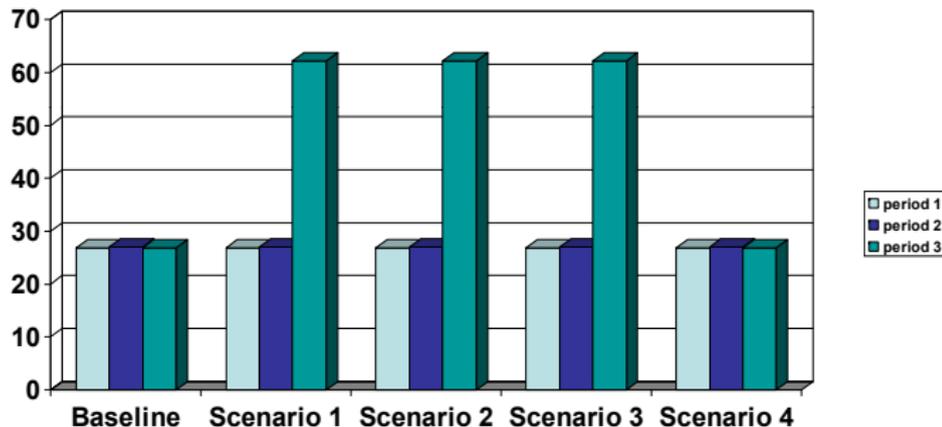
- ▶ Simulate choice decisions under **3 different alternative specifications**. Set $\delta = 0.9$, $w_0 = 1$, $\alpha = 0$, $\beta = 1$, $\gamma_1 = \gamma_3 = 0$
 - ▶ Case 1: no intertemporal substitution ($\gamma_2 = 0$) (utility is separable)
no labor market (search) frictions ($\lambda(0) = \lambda(1) = 1$)
 - ▶ Case 2: no intertemporal substitution ($\gamma_2 = 0$)
but labor market frictions ($\lambda(0) = 0.5$)
 - ▶ Case 3: no labor market frictions ($\lambda(0) = 1$),
but intertemporal substitution ($\gamma_2 = -1.5$, i.e., disutility of work depends on past work decisions)

Simulation Results (2)

- ▶ For each case, consider **5 different scenarios**:
 - ▶ Baseline scenario: No anticipation, No announcement, No reform: $\pi_{12} = \pi_{13} = \pi_{23} = d_2 = d_3 = 0$
 - ▶ Scenario 1: Unanticipated and unannounced reform in period 3: $\pi_{12} = \pi_{13} = \pi_{23} = d_2 = 0, d_3 = 1$
 - ▶ Scenario 2: No anticipation in period 1 ($\pi_{12} = \pi_{13} = 0$), and announcement at $t = 2$ of a reform at $t = 3$ ($\pi_{23} = d_3 = 1$)
 - ▶ Scenario 3: Some anticipation in period 1 ($\pi_{12} = \pi_{13} = 0.5$), and an announcement at $t = 2$ of a reform at $t = 3$ ($\pi_{23} = d_3 = 1$)
 - ▶ Scenario 4: Same as (2) but the reform in period 3 fails to materialize ($d_3 = 0$)

Simulation Results (3)

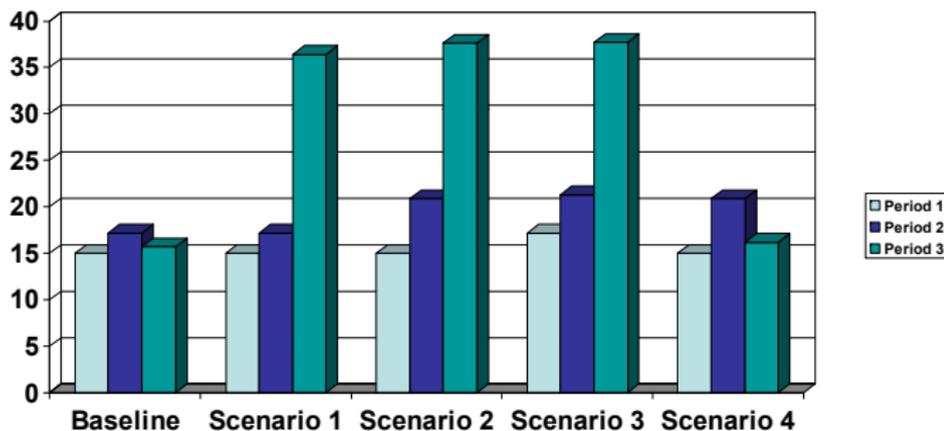
Fig 1. Trends in Employment Rates
No frictions and no intertemporal substitution



$\delta=0.9$, $\alpha=0$, $\beta=1$, $w_0=1$, $\gamma_1=\gamma_3=0$, $\lambda(\mathbf{0})=1$, $\mathbf{v}_2=\mathbf{0}$. Baseline: $\pi_1=\pi_2=0$ & no reform;
scenario 1: $\pi_1=\pi_2=0$ & reform in period 3; scenario 2: $\pi_1=0$, $\pi_2=1$ & reform in period 3;
scenario 3: $\pi_1=0.5$, $\pi_2=1$ & reform in period 3; scenario 4: $\pi_1=0$, $\pi_2=1$ & no reform in period 3;

Simulation Results (4)

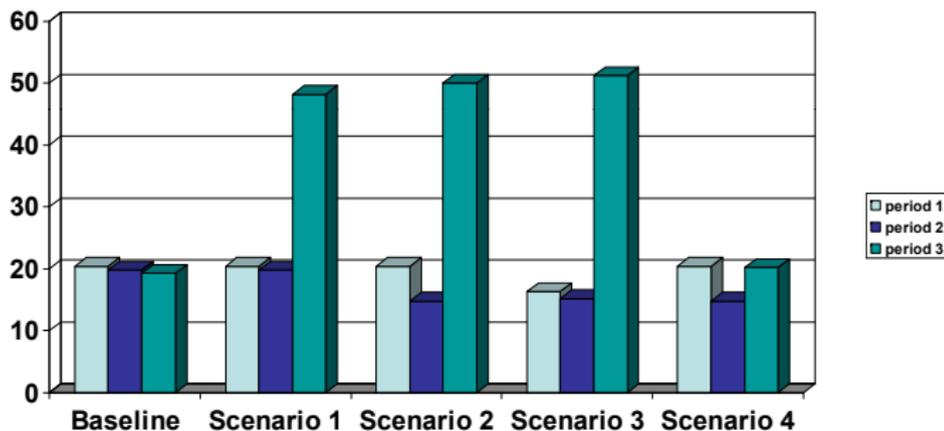
Fig 2. Trends in Employment Rates
Frictions - no intertemporal substitution



$\delta=0.9$, $\alpha=0$, $\beta=1$, $w_0=1$, $\gamma_1=\gamma_3=0$, $\lambda(\mathbf{0})=0.5$, $\gamma_2=0$. Baseline: $\pi_1=\pi_2=0$ & no reform;
scenario 1: $\pi_1=\pi_2=0$ & reform in period 3; scenario 2: $\pi_1=0$, $\pi_2=1$ & reform in period 3;
scenario 3: $\pi_1=0.5$, $\pi_2=1$ & reform in period 3; scenario 4: $\pi_1=0$, $\pi_2=1$ & no reform in period 3;

Simulation Results (5)

Fig 3. Trends in Employment Rates
No frictions - intertemporal substitution



$\delta=0.9$, $\alpha=0$, $\beta=1$, $w_0=1$, $\gamma_1=\gamma_3=0$, $\lambda(0)=1$, $\gamma_2=-1.5$. Baseline: $\pi_1=\pi_2=0$ & no reform;
scenario 1: $\pi_1=\pi_2=0$ & reform in period 3; scenario 2: $\pi_1=0$, $\pi_2=1$ & reform in period 3;
scenario 3: $\pi_1=0.5$, $\pi_2=1$ & reform in period 3; scenario 4: $\pi_1=0$, $\pi_2=1$ & no reform in period 3;

Summary of Simulation Results (1)

No frictions and **no intertemporal substitution** (Figure 1):

- ▶ Employment rates are **constant** before the reform, while there is a **large increase** in period 3 with introduction of the reform (true also when we allow for anticipation and announcement of the reform in period 2)
- ▶ Women are forward looking, but the fact they are does not affect their behavior

Frictions and **no intertemporal substitution** (Figure 2):

- ▶ Employment rates are **lower** (lower job arrival rate, due to frictions)
- ▶ Higher gains from working in the first two periods as it guarantees the option to work in the subsequent period
- ▶ Both **anticipation** of a possible reform and **announcement** in period 2 lead to an **increase in employment rates** in the pre-implementation periods

Summary of Simulation Results (2)

No frictions and **intertemporal substitution** (disutility of work increasing with work experience) (Figure 3):

- ▶ Employment rate **declines** over time before the last period
- ▶ If there is **announcement** of an unanticipated reform to be implemented in period 3, then employment rates in the same period 2 **fall**, in anticipation of the higher earnings and employment rates in period 3
- ▶ Anticipation of a possible future reform leads to a **lower employment rates** in period 1

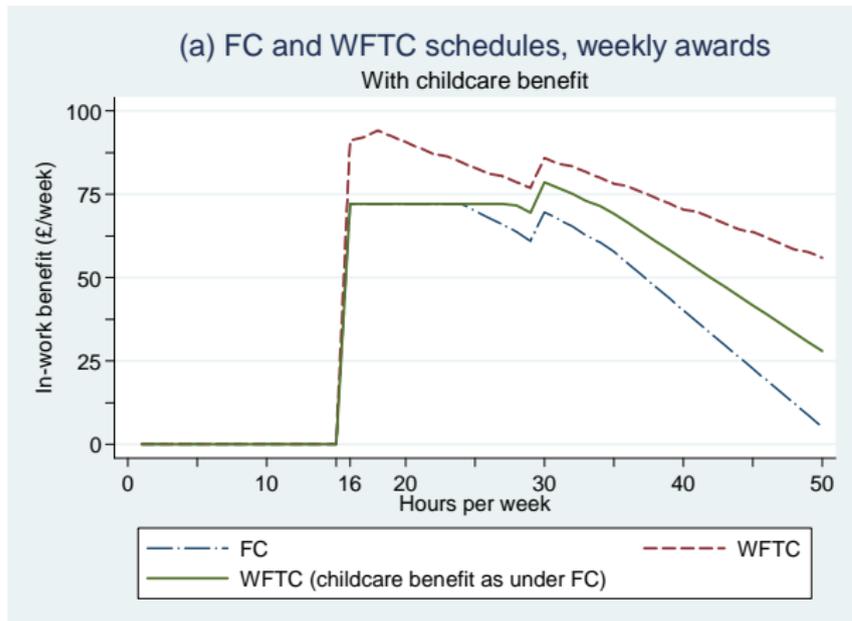
Application

- ▶ Analyze the introduction of the Working Families' Tax Credit (**WFTC**) in the UK in October 1999
- ▶ Evaluate the response of **single mothers** in terms of **labor supply** and **childcare utilization**
- ▶ Ample room for **announcement effects**:
 - ▶ November 1997: with the Pre-Budget Statement, the Government announced that a new tax credit for working families would be one fundamental element of its welfare-to-work strategy
 - ▶ March 1998: Budget speech set out the main features of the new WFTC, which was to replace Family Credit in October 1999

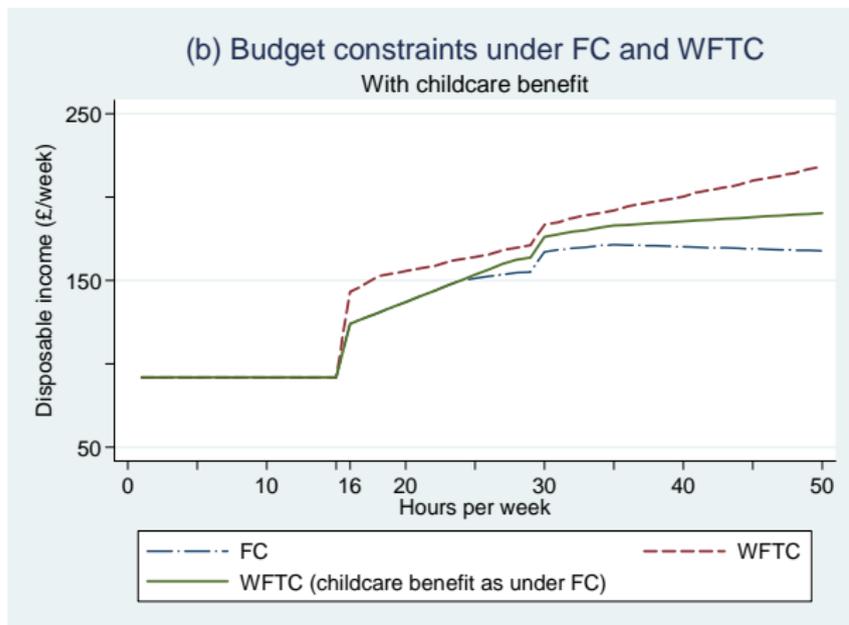
WFTC

- ▶ All single parents with dependent children were eligible to receive WFTC
- ▶ WFTC: very similar to EITC in the US (low income, threshold, taper rate)
- ▶ **Hours requirement:** Individuals had to work 16+ hours per week
- ▶ WFTC was especially 'generous' for women with very young children (childcare credit component)
- ▶ Much research has already shown WFTC to have had a fairly strong employment effect

WFTC (2) – Award schedules



WFTC (3) – Budget lines



Data Sources

▶ **British Household Panel Study 1991–2002**

- ▶ Longitudinal, (relatively) small sample
- ▶ Estimating sample: Almost 3,500 unmarried non-cohabiting women who are at least 16 and were born after 1941 (thus aged at most 60 in 2002) [excludes long-term sick and disabled, and those in full-time education in any given year], for a total of 15,260 person-wave observations (about 2,000 single childless and 1,500 single mothers)

▶ **Family Resources Survey 1995–2002**

- ▶ Repeated cross sectional survey, large sample
- ▶ Estimating sample: Approx. 76,000 single women (aged 16+ and less than 60), about 48,000 single childless and 28,000 single mothers

Reduced-Form Analysis

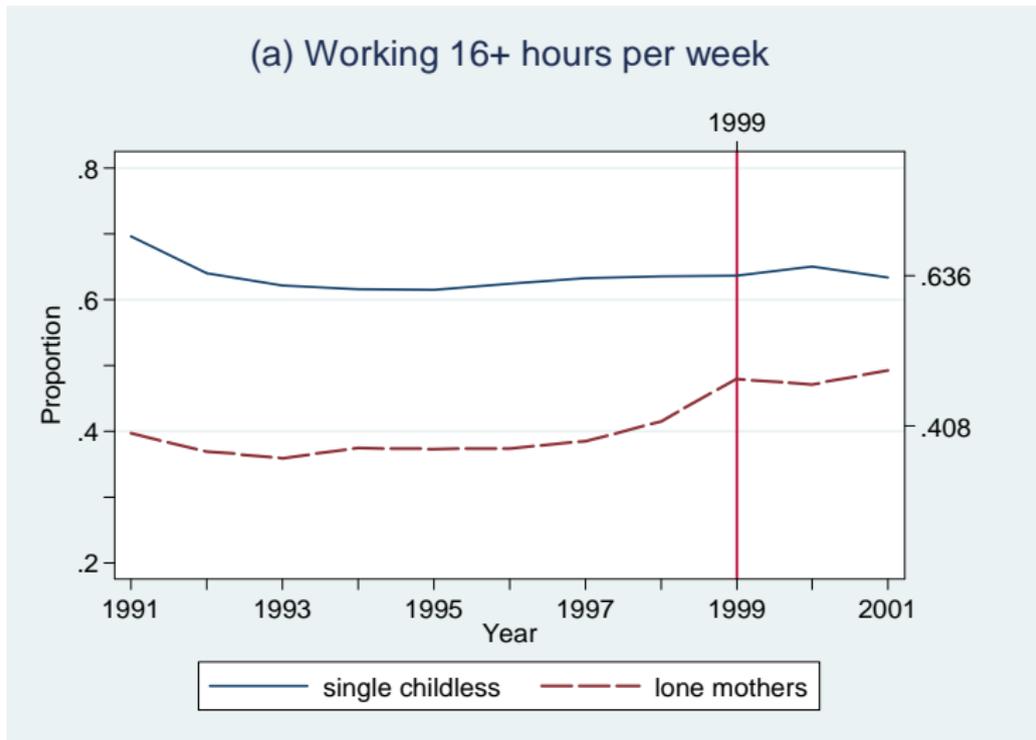
- ▶ Estimate reduced-form DDD regressions of the form:

$$y_{it} = a_1 + a_2 l_{it} + (a_{31} + a_{32} l_{it})t + [a_{41} + a_{42}(t - s)] I(t \geq s) \\ + b l_{it} I(t \geq s) + b_0 l_{i\tau} I(\tau = 1998) \\ + \mathbf{W}'_{it} \vartheta + \mu_i + \varepsilon_{it},$$

- ▶ $s = 1999$
- ▶ l_{it} = indicator for the treatment group (single women with children)
- ▶ b = implementation effect, b_0 = anticipation effect
- ▶ specification allows for different pre-reform trends for control and treatment groups
- ▶ allows for common non-WFTC related policy effect in 1999 (and after) both through change in intercept and slope
- ▶ includes fixed effects (μ_i), and allows for compositional changes over time (subscript t) and \mathbf{W} variables
- ▶ except for inclusion of regressors, this is similar to DDD approach

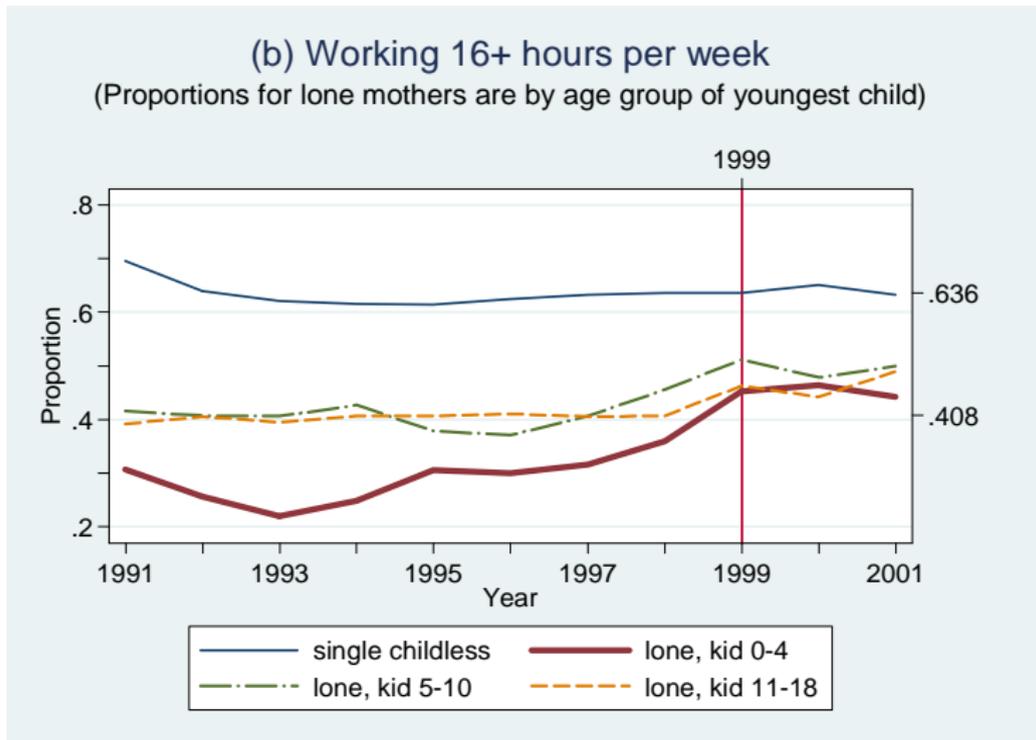
Graphical Overview of WFTC on Employment (1)

Figure 4. Working 16 or More Hours per Week – Single Childless Women and Lone Mothers (BHPS sample)



Graphical Overview of WFTC on Employment (2)

Figure 4. Working 16 or More Hours per Week – Single Childless Women and Lone Mothers (BHPS sample)



WFTC Treatment and Announcement Effects (1)

Outcome: Working 16 or more hours per week

	BHPS (N=15,260)	BHPS (N=15,260)	FRS (N=76,886)	FRS (N=76,886)
OLS				
Treatment	0.051 (0.016)	0.060 (0.018)	0.033 (0.008)	0.040 (0.011)
Announcement		0.029 (0.014)		0.018 (0.016)
FE				
Treatment	0.049 (0.018)	0.059 (0.019)		
Announcement		0.027 (0.015)		

WFTC Treatment and Announcement Effects (2)

Other Outcomes:

	BHPS	BHPS	FRS	FRS
Full time employment				
Treatment	0.045 (0.017)	0.054 (0.017)	0.030 (0.009)	0.039 (0.012)
Announcement		0.026 (0.013)		0.019 (0.009)
Employment				
Treatment	0.056 (0.017)	0.061 (0.020)	0.052 (0.020)	0.058 (0.021)
Announcement		0.017 (0.014)		0.016 (0.012)
Hours of work (including zeros)				
Treatment	3.32 (0.73)	4.60 (0.93)	3.58 (0.27)	4.21 (0.28)
Announcement		2.41 (0.75)		1.91 (0.29)

WFTC Treatment and Announcement Effects (3)

Eligible Employment by Age of Youngest Child and Number of Children — BHPS , FE estimates

	Specification (i)	Specification (ii)	
	Treatment	Treatment	Announcement
One child aged 0–4	0.085 (0.024)	0.096 (0.026)	0.038 (0.017)
One child aged 5–10	0.070 (0.031)	0.084 (0.024)	0.029 (0.013)
One child aged 11–18	0.032 (0.022)	0.028 (0.023)	0.011 (0.023)
Two children or more, youngest 0–4	0.038 (0.021)	0.043 (0.020)	0.016 (0.018)
Two children or more, youngest 5–10	0.020 (0.024)	0.019 (0.024)	0.010 (0.019)
Two children or more, youngest 11–18	0.009 (0.033)	0.011 (0.032)	-0.002 (0.025)

BHPS (N=5,616)

FRS (N=35,469)

Paid childcare utilization

Treatment	0.031 (0.010)	0.031 (0.011)	0.019 (0.004)	0.021 (0.004)
Announcement		-0.004 (0.011)		-0.007 (0.007)

Childcare use by child's age and number of childrenTreatment

One child aged 0-4	0.047 (0.010)	0.044 (0.013)	0.032 (0.038)	0.035 (0.010)
One child aged 5-10	0.038 (0.009)	0.041 (0.016)	0.028 (0.007)	0.028 (0.009)
Two children or more, youngest 0-4	0.013 (0.019)	0.011 (0.017)	0.003 (0.006)	0.005 (0.012)

Announcement

One child aged 0-4		0.003 (0.010)		-0.003 (0.014)
One child aged 5-10		0.002 (0.015)		-0.001 (0.006)
Two children or more, youngest 0-4		-0.006 (0.013)		-0.010 (0.009)

WFTC Treatment and Announcement Effects (5)

Eligible Employment Transitions (BHPS)

	Persistence probability		Entry probability	
Treatment	0.058 (0.028)	0.070 (0.033)	0.035 (0.015)	0.054 (0.023)
Announcement		0.024 (0.008)		0.022 (0.010)
N	6,478	6,478	5,429	5,429

- ▶ Announcement of reform led to both **reduction** in exit rates from jobs and **increase** in entry into jobs
- ▶ This suggests that labor market frictions dominated intertemporal substitution effects

Summary of WFTC Results

- ▶ Strong evidence of an **announcement** effect of WFTC on labor supply:
 - ▶ **Large** and **positive** in the case of **employment** outcomes
 - ▶ Robust across outcomes and across data sources
 - ▶ Treatment effect estimates that ignore announcement effects are **biased downward**, between 15% and 35%
 - ▶ Results are consistent with story based on **labor market frictions** rather than with story based on *intertemporal substitution*
- ▶ **Formal childcare** utilization:
 - ▶ **No announcement effect**: Women had to pay for formal childcare but would have *not* received benefits to cover such cost before the introduction of WFTC
 - ▶ Sizeable implementation effects
 - ▶ Work (not shown) shows strong announcement effects in the case of **informal (unpaid)** childcare utilization followed by zero implementaiton effects

Conclusions (1)

- ▶ Our analysis stresses the importance of performing welfare evaluations with the notion that agents are **forward looking**
- ▶ When this is the case, the announcement of a reform may have effects on behavior **even before** the **introduction** of the reform itself
 - ▶ Example of **WFTC** provides strong and convincing evidence of announcement effects
 - ▶ Results are consistent with the notion of **labor market frictions** (but also with human capital and habit formation) and not with intertemporal substitutability (nor with saving behavior)
 - ▶ Neglecting such effects may lead to **highly biased treatment effect estimates** along many important margins

Conclusions (2)

- ▶ If agents are forward looking and assign a non-zero probability to a future reform, behavior can be affected not only by the implementation of a reform but also by the **absence of a reform**
- ▶ Whether any reform is **anticipated** or **announced** in advance of its actual implementation may affect the appropriate choice of econometric evaluation procedure (e.g., pre-program period in DD or DDD methods) and can help explain size of the estimated impact

Conclusions (3)

What next?

- ▶ Characterize in more detail how anticipation effects affect the appropriate evaluation of program impacts:
 - ▶ What is the relevant counterfactual: world without reforms? world in which reform has not yet occurred?
 - ▶ In presence of anticipation effects, what are the precise conditions for the validity of DD and DDD methods?
- ▶ Estimate a structural model to explain behavior leading up to and after reform: gain additional insights from heterogeneity in anticipation and implementation effects.