

Family Time Allocations over the Last Half Century

Alexandros Theloudis - www.theloudis.net

LISER Luxembourg Institute for Socio-Economic Research

1. Dramatic changes in married people's time use

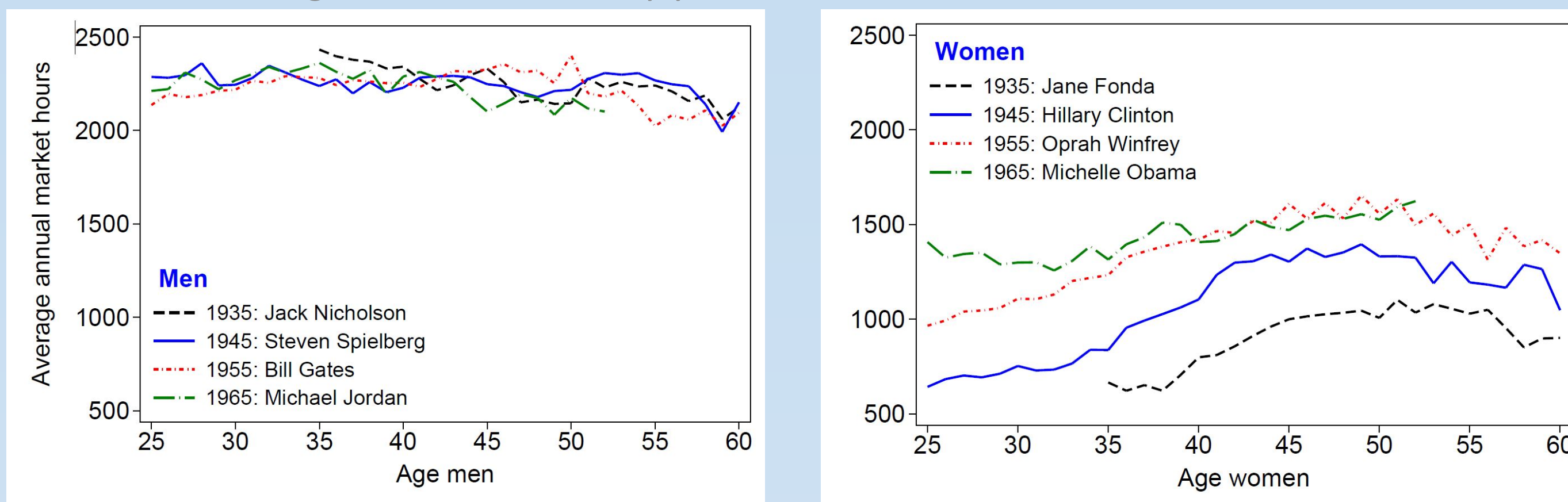
Consider four cohorts of American men and women:

1. **people born in 1935, like Jack Nicholson and Jane Fonda**
2. **people born in 1945, like Steven Spielberg and Hillary Clinton**
3. **people born in 1955, like Bill Gates and Oprah Winfrey**
4. **people born in 1965, like Michael Jordan and Michelle Obama**

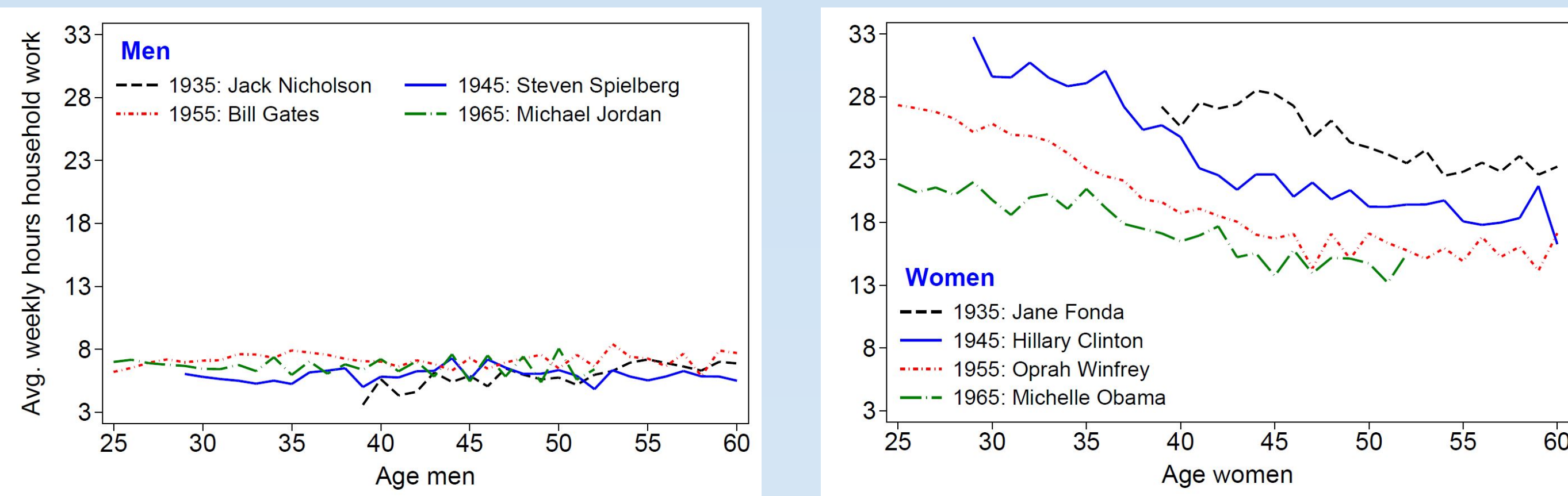
Consider the time spent on **paid work**, **household chores**, and **childcare**.

All data come from the **Panel Study of Income Dynamics PSID** (1968-2017) and the **Multinational Time Use Survey MTUS** (1965-2017; intermittently).

Paid work: female labor supply increased dramatically; male labor supply declined to a small extent. For example, the "average" Michelle Obama works over her lifetime for twice as much time as the "average" Jane Fonda thirty years earlier.



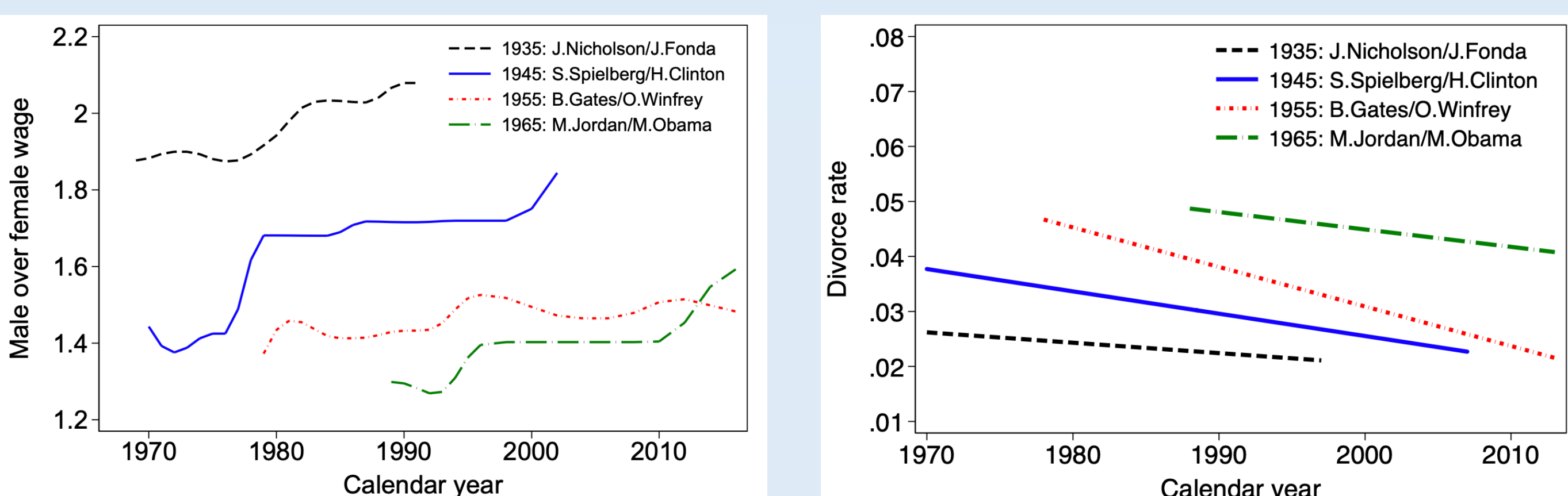
Chores: female chores dropped dramatically; men's involvement in chores increased at the intensive and extensive margins. The "average" Michael Jordan has had a 10% probability to not do any chores at all, compared to 30% for the "average" Jack Nicholson (weekly hours)



Childcare: both men and women increased their childcare time; men by far more even though women remain the main carer. The "average" Michael Jordan offers 150% more childcare to children up to 5 years old than the "average" Jack Nicholson thirty years earlier (weekly hours)

Age of youngest child:	Men			Women		
	up to 5	5-10	10-18	up to 5	5-10	10-18
1935: J.Nicholson/J.Fonda	3.95	2.08	0.59	14.43	4.97	2.89
1945: S.Spielberg/H.Clinton	3.39	2.53	0.88	11.72	5.84	1.74
1955: B.Gates/O.Winfrey	7.19	5.11	1.64	11.33	7.60	3.55
1965: M.Jordan/M.Obama	9.89	5.10	2.34	18.27	10.31	4.43

Over the same period, the **gender wage gap** narrowed down dramatically (LHS), and **divorce rates** slightly increased (RHS).



In addition, the **college gender gap** reversed, **education assortative matching** increased, **fertility** is lower and later, and couples have access to **better technology** at home.

2. Question

What explains these dramatic changes in family time allocations?

Aim of paper: Construct **model of family time allocations** that can explain these patterns with realistic changes in key parameters and key exogenous variables.

- A meaningful investigation should look at least into the role (possibly joint) of:
 - Wages (human capital, narrowing gender wage gap etc), e.g. Attanasio et al. 2008
 - Unilateral divorce, e.g. Voena 2015
 - Technical change, e.g. Greenwood et al. 2005
 - Changing demographics and marriage markets, e.g. Chiappori et al. 2017

3. Dynamic collective model with divorce

Two types of households in the model:

- married household = two decision making spouses, husband $j = H$ and wife $j = W$
- divorced household = one person $j = \{H, W\}$

Time use choices for each household member (i.e. x_2 for married households, x_1 for singles):

- labor supply h
- chores d
- childcare τ
- leisure l

Other choices in the model:

- expenditure q
- common savings a'
- divorce D

Model has five fundamental features:

1. **Collective** (e.g. Chiappori 1988):

- married person j 's preferences over two consumption goods and leisure

$$u^j(c^p, c^k, l^j; z^j)$$

z^j vector of taste shifters (children, random tastes, etc.)

- single person j 's preferences

$$u^{j,d} = u^j + \xi^j$$

ξ^j stochastic component reflecting shifts in marital preference, remarriage value etc.

2. **Home production of two goods** (e.g. Del Boca et al 2014):

- parental consumption $c^p = f^p(d^H, d^W, q | technology)$
- child utility $c^k = f^k(\tau^H, \tau^W)$

3. **Dynamic:** choices over lifecycle, borrowing, saving, human capital

4. **Limited commitment** to lifetime marriage, spouses can unilaterally divorce

(e.g. Mazzocco 2007, Chiappori et al. 2020):

- decision to divorce determined by individual participation constraints
- divorce $D_t = 1$ at t is due to:

$$V_t^{H,m} < V_t^{H,d} \quad \text{or} \quad V_t^{W,m} < V_t^{W,d}$$

where $V_t^{j,m}$ is value of marriage for spouse j and $V_t^{j,d}$ is value of divorce

- variables affecting value of divorce affect bargaining power of spouses in marriage

5. **Rich earnings dynamics** (e.g. Blundell et al. 2016):

- deterministic profile of hourly wages depends on labor market experience e^j
- experience accumulates & depreciates endogenously depending on labor supply
- stochastic component is $AR(1)$ subject to persistent shocks
- shocks are correlated between spouses

$$\ln w_t^j = b_0^j + b_1^j \ln(e_t^j + 1) + v_t^j$$

$$v_t^j = \rho^j v_{t-1}^j + \zeta_t^j$$

$$e_{t+1} = (1 - \delta^j)e_t + g(h^j)$$

where δ is the depreciation rate and $g(h^j)$ determines accrual from current work.

4. Estimation and results (preliminary & in progress)

Two-stage estimation:

1. **fit model to one cohort**, e.g. **1945 Steven Spielberg and Hillary Clinton**
 - exclusion restrictions for formal identification of preferences, paper discusses

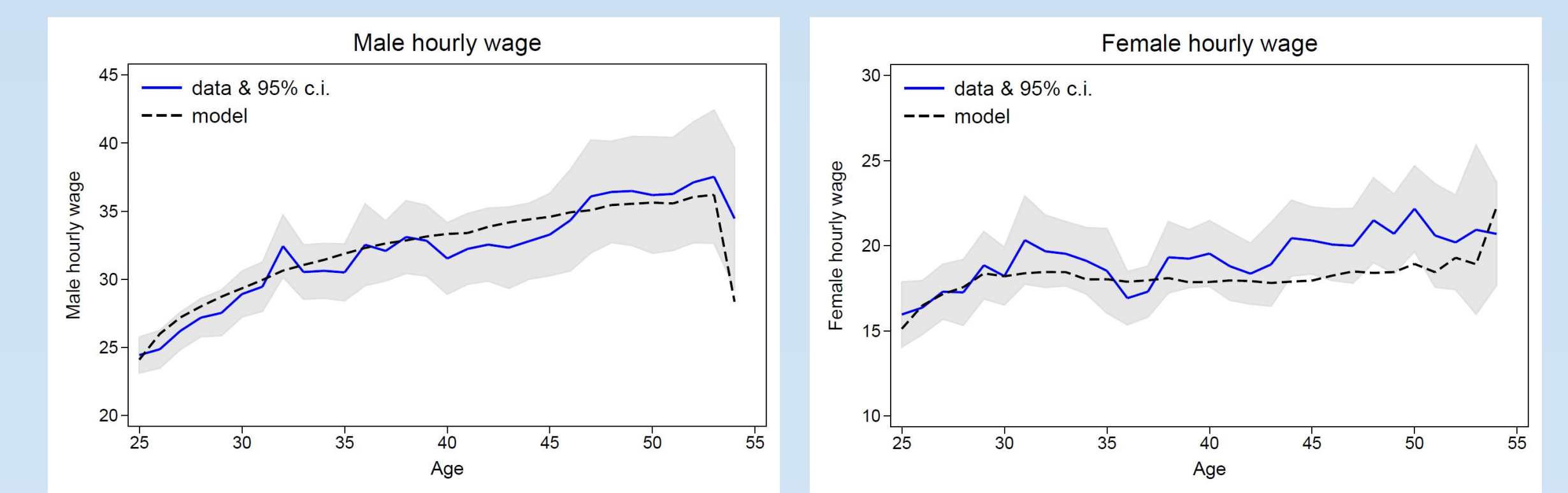
2. **estimate on other cohorts** holding preferences fixed but allowing exogenous variables (e.g. start of life gender wage gap, fertility) and wage & bargaining parameters to vary
 - normalization of intra-family bargaining power in one cohort at one point in time

Data on array of time use, wages, labour market experience, divorce for married and singles

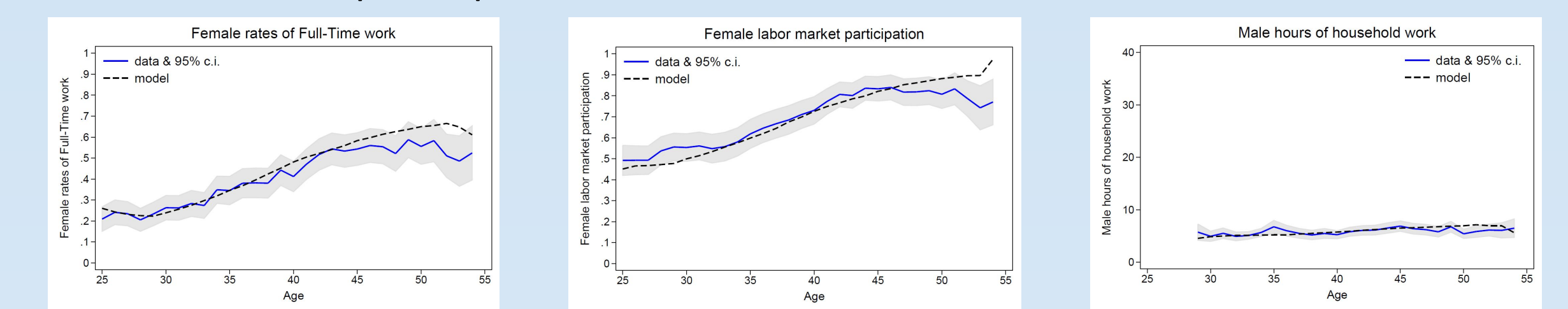
- levels, transition probabilities, conditional probabilities in the couple, by cohort.

Preliminary fit to **1945 Steven Spielberg and Hillary Clinton** birth cohort:

- male and female wages (non-targeted moments):



- female market participation & rate of full-time work, male hours of chores:



Bring in additional cohort **1955 Bill Gates and Oprah Winfrey**

Three factors are sufficient to generate the changes in time use between the two cohorts:

- narrowing gender wage gap
- technical change at home
- improvements in women's intra-family bargaining power

Given model, **narrowing of the gender wage gap** induces:

- income + substitution effects on time use
- bargaining effects on time use as it improves women's value of divorce

Narrowing of the gender wage gap between **1945 Steven Spielberg and Hillary Clinton** and **1955 Bill Gates and Oprah Winfrey** cohorts & **lower fertility** explains most of the increase in female labor supply

Narrowing of gender wage gap accounts for about 2/3 of dramatic decline in female chores:

- 50% of this is **mechanical reallocation of time**: women enter the labor market and work full-time.
- another 50% is women transferring chores to their husbands due to **improvement in women's bargaining power** in response to improved value of divorce.

Technology explains the remaining 1/3 of the decline in female chores.

Work to incorporate remaining cohorts is ongoing.

These preliminary findings have implications for **how researchers think of women's bargaining position** in the household. Models abstracting from chores and childcare will **underestimate modern women's true bargaining power** in the family because female leisure (and thus welfare) would appear to drop dramatically due to the big increase in women's paid work.

Models of family decision-making, which typically only model labour supply, **must thus also account for chores and childcare** (or other assignable goods other than labor supply).