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.

- 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.

- 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 250% more childcare to children up to 5 years old than the “average” Jack Nicholson thirty years earlier (weekly hours).

- 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 possibility 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 \( j = H \) or \( W \)

- Time use choices for each household member (i.e. \( x_2 \) for married households, \( x_1 \) for singles):
  - labor supply \( k \)
  - chores \( d \)
  - childcare \( r \)
  - 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's preferences over two consumption goods and leisure
     - vector of taste shifts (children, random tasks, etc.)
     - single person's preferences

  2. Home production of two goods (e.g. Del Boca et al. 2014):
     - parental consumption \( c^i = f^i(d^i, d^j, q_i, j) \) technology
     - child utility \( c^i = f^i(x^i, z^i) \)

  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 \( A \) at time \( t \) is due to:
     - value of marriage for spouse \( j \) and 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 \( e^i \)
     - experience accumulates & depreciates endogenously depending on labor supply
     - stochastic component is AR(1) subject to persistent shocks
     - shocks are correlated between spouses
     - where \( \lambda_d = \rho_d + g(h^d_t) \) 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, labor 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 1965 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 1965 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 labor supply, must thus also account for chores and childcare (or other assignable goods other than labor supply).