Culture and Women's Work

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Introduction

- Success of economic methodology largely based on thinking about the incentives faced by "economic man" with given preferences (desires and beliefs).
- But where do these preferences and beliefs come from?
- How do they change?
- Do they vary across time and space?
- Can they be influenced by policies?

  Does economics need to worry about these questions?

  Yes, *if systematic variation in preferences and beliefs, i.e. variations in culture, translates to differences in economic outcomes.*

  Yes, *if preferences and beliefs can be changed.*

A Working Definition

- Culture: A body of shared knowledge, understanding, and practice.
- By 1950, Kroeber and Kluckhohn (1952) provided over 150 definitions of culture...
- For our purposes:

Differences in culture as systematic variation in beliefs and preferences across time, space, or social groups.

Note: Culture need not be irrational nor static.

Economists and Culture

Why have economists been so reluctant to consider culture?

Stigler-Becker dictum: "De gustibus non est disputandum."

- Theory: Ad hoc analysis
- Empirical counterpart: culture as the residual – as what is left unexplained (e.g., in a cross country regression) – is not rigorous.

Difficulty in conducting welfare analysis if preferences are endogenous.

The main obstacle: absence of convincing empirical work showing that culture matters.

We cannot identify culture by:

- Differences in what groups of people do.
- Differences in attitudes expressed by groups of people (e.g. in surveys).

Main challenge: How to separate differences in beliefs and preferences from differences in environments (e.g. institutions) or individual endowments (e.g. education)?

A Brief Review of the Literature: Historical Case Studies

- Greif (1994): cultural beliefs (collectivist versus individualist) reflected in the way societies set up trading institutions in 11th century.
- Genoese: vertical trading arrangements; specialized merchants and traders.
- Maghrebi set up horizontal arrangements; non-specialized.
- Genoese had contractual institutions which allowed them to more easily take advantage of overseas expansion into new areas.

- Botticini and Eckstein (2005): Culture and Jewish occupational patterns
- Pharisees became the dominant religious group after fall of temple in 70 CE.
- Judaism transformed from a religion based on sacrifices to requiring males to read and learn the Torah.
- Reform was implemented in places where most Jews were farmers who would not gain anything from investing in education.
- When urbanization expanded many centuries later, Jews had a comparative advantage in the skilled occupations demanded in the new urban centers.

A Brief Review of the Literature: Experience

Some examples:

- Importance of historical experience:
- allocation of land titles to squatters in Argentina (DiTella, Galiani, Schargrodsky, 2006)
- effect of communism on German attitudes towards role of the state (Alesina and Fuchs-Schundeln, 2007)
- experience of recession and belief in luck vs ability and role of distribution (Giuliano and Spilimbergo, 2009)

A Brief Review of the Literature: Experiments

- Experimental evidence:

- Several experiments provide evidence suggestive of differences in cultural attitudes: Malays vs UK students (Chuah et al.,2007,2009)
- Series of experiments in 15 small-scale societies in many countries (ultimatum game, dictator game, etc). (Henrich et al.2000,2001)
- Oosterbeek et al. (2004) conduct meta analysis of experimental literature and do not find that attitudes as reflected in WVS are capable of explaining x-country variation in outcomes after including several controls.

The Epidemiological Approach: Fernández 2007

Epidemiologists ask:

- Are cross-country health differences driven by genetic or environmental (including cultural) factors?

- Compare a health outcome (e.g. heart disease) for immigrants with that for natives.
- Is there convergence in health outcomes?

  - If convergence $\rightarrow$ environment
  - If convergence is not observed, one cannot automatically conclude genetics.

The Epidemiological Approach in Economics

Does culture play a role in generating cross-country differences in an economic outcome (e.g. saving rates)?

A different set of problems:

- The behavior of immigrants may be differentially affected by "shocks" (e.g., language, employment, etc.)
- Assimilation: beliefs influenced by mainstream culture
- Selection: immigrants are not the "average" individual
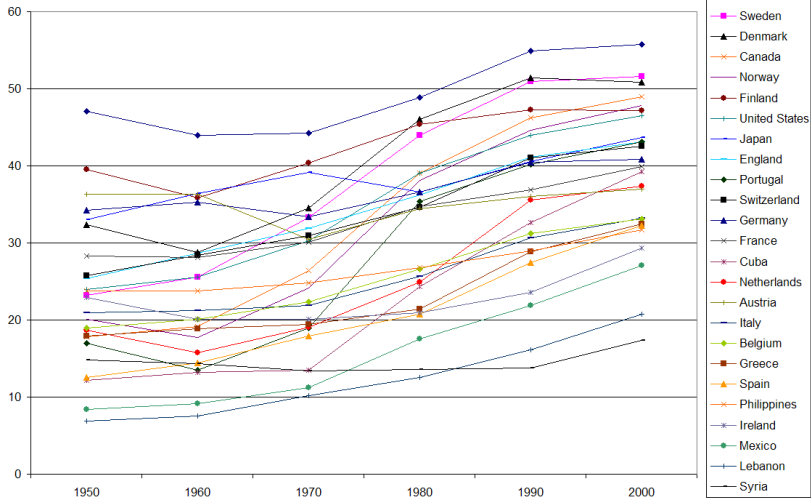- Endowments: human capital differences, etc.

First paper: Carroll, Rhee, and Rhee (1994):

- Studied savings behavior of immigrants to Canada.
- Found no significant effect of culture, e.g., Asian immigrants did not save at higher rates.

Women, Work, and Culture

An Application of the Epidemiological Approach

Female Labor Force Participation 1950-2000

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Why does women's LFP differ across countries?

- Structure of the economy
  - Income differences
  - Production/sectoral composition
  - Policy differences (unemployment insurance, social security, ...)
  - Institutional differences (divorce laws, childcare arrangements, welfare system, extended households...)

- What about differences in attitudes or culture?

Being Housewife is as Fulfilling as Working for Pay

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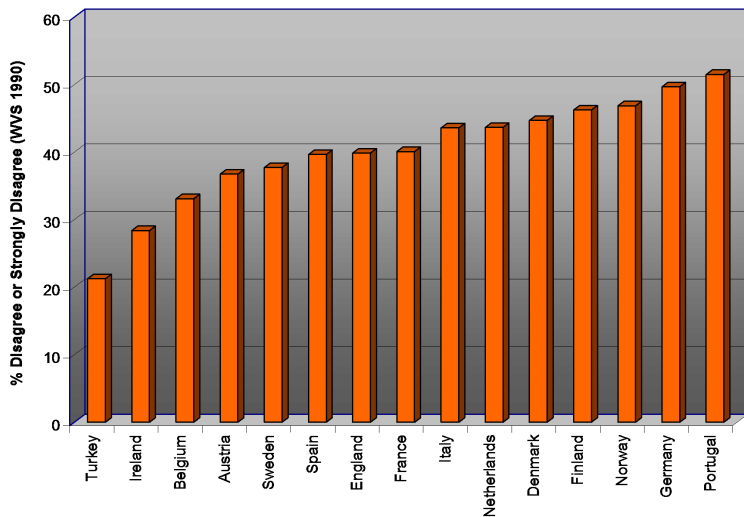
Fernández and Fogli (2006,2009), Fernández (2007b)

Use the epidemiological approach to study married women's LFP and fertility. Examine an arguably less problematic sample: second generation Americans.

- Shocks and unobserved economic factors less important.
- Problem of cultural assimilation is worse.

Basic hypothesis: Women born in US with foreign-born parents face same economic and institutional environment.

Different ancestries $\rightarrow$ different cultures (beliefs about women's role, ideal family size, etc.)

- Country dummy is a bit of a "black box". Use past level of female LFP in the country of ancestry as a "proxy" for culture.

The Argument

Cultural proxy $=$ Female LFP in country of ancestry. It is affected by:

Economic and institutional factors:

- wages; probability of finding a job; location; husband's income; daycare cost and quality, etc.

Cultural factors:

- one's own beliefs/preferences about working/not working;
- treatment by family, friends, neighbors, if one works/does not work; how working women are portrayed (media); etc.

In a different country all women with a common environment.

Female LFP in country of ancestry should affect women only through the cultural component.

There are many reasons why female LFP may not have explanatory value even if culture matters:

- assimilation
- mismeasurement of female LFP
- selection
- social incentives may be different – culture is a social phenomena!

Thus, had we found no explanatory value for female LFP, it would not imply that culture is irrelevant.

This is a very demanding test!

Challenge

There also exist **economic** channels of intergenerational transmission: wealth, education, ability, etc.

Have we adequately controlled for differences in economic variables?

Sample selection

The 1970 US census (last census to ask individuals where their parents were born).

- We use father's birthplace as ancestry.
- Married women 30-40 yrs old, born in US. Not living in institutions, not living on a farm, occuption not in agriculture.

- From which decade should we take female LFP in country of ancestry? 1930-1970?
  - Because of data limitations $\rightarrow$ 1950.
  - Also argument for 1970 LFP.
  - Robust to later decades. Very high correlation over the decades (1950-2000).

- Exclude USSR and 10 European countries which became centrally-planned economies around WWII
  - Culture may have changed significantly and parents were living in the US then.

Summary Statistics

Final sample: 6774 women from 25 countries

	Individuals		*Countries*	
	Hours	Children	LFP 1950	TFR 1950
Avg	10.2	3.1	24.4	3.7
St.dev	16.3	1.8	11.4	1.8
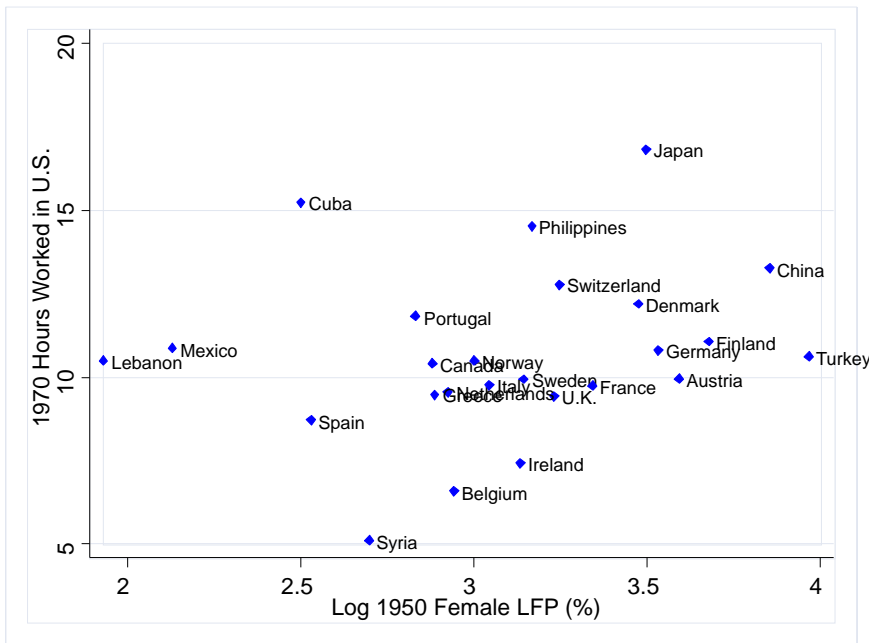
	(i)	(ii)	(iii)
Dependent variable is Hours Worked in 1970			
Female LFP 1950	0.047** (0.012)		
High School			
Some College			
College +			
Husband High School			
Husband Some College			
Husband College +			
Husband Total Income			
Obs.	6774		
Adj. R-sq	0.018		

	Dependent variable is Hours Worked in 1970		
	(i)	(ii)	(iii)
Female LFP 1950	0.047** (0.012)	0.041* (0.016)	
High School		0.490 (0.520)	
Some College		-0.147 (1.078)	
College +		0.815+ (0.492)	
Husband High School			
Husband Some College			
Husband College +			
Husband Total Income			
Obs.	6774	6774	
Adj. R-sq	0.018	0.024	

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Dependent variable is Hours Worked in 1970

	(i)	(ii)	(iii)
Female **LFP 1950**	0.047** (0.012)	0.041* (0.016)	0.072** (0.015)
High School		0.490 (0.520)	2.136** (0.575)
Some College		-0.147 (1.078)	3.205** (1.034)
College +		0.815+ (0.492)	6.032** (0.494)
Husband **High School**			-1.737* (0.730)
Husband **Some College**			-1.329 (0.829)
Husband **College +**			-5.003** (0.452)
Husband **Total Income**			-2.844** (0.308)
Obs.	6774	6774	6774
Adj. R-sq	0.018	0.024	0.053

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Magnitudes:

- Increase in LFP 1950 by 1 std dev. (11.4) is associated with an increase of .83 hours worked in 1970.

    - This is 32% of std dev. in hours worked in US across countries of ancestry.

- Take average married woman in sample – she has the average level of married women's education and is married to the average (average education and average income).

    - Having parents from Finland rather than from Lebanon increases the amount this woman works on average (in the US in 1970) by 22%.

Potential Problem

Can a "strictly economic" variable be responsible for the positive correlation btwn cultural proxy and economic outcome?

Main source of concern: Unobserved human capital embodied either in the woman herself or in her ethnic network.

- Include GDP pc in 1950 (also other years)

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- Cross-country measures of quality of education (Hanushek and Kimko)
- Wage regressions – if there is unobserved human capital, LFP variable should help explain wages.

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- Wage regressions

Attitudes and Work

I use two questions from the World Value Survey 1990 (for Europe) that potentially reflect attitudes towards women's work.

1. *Being a housewife is just as fulfilling as working for pay.*

2. *Having a job is the best way for a woman to be an independent person.*

- Run individual level Probit on whether individuals agreed (strongly or agree) with statement on country dummy.
- Restrict sample to Europe (only 2-3 non-European cos. Approx. 1000 indivs./country.)
- Control for age, age sq., sex, and marital status composition. Obs. clustered at country level.
- Use marginal effects associated with country dummies (or simply proportion who agreed) as proxies for culture.
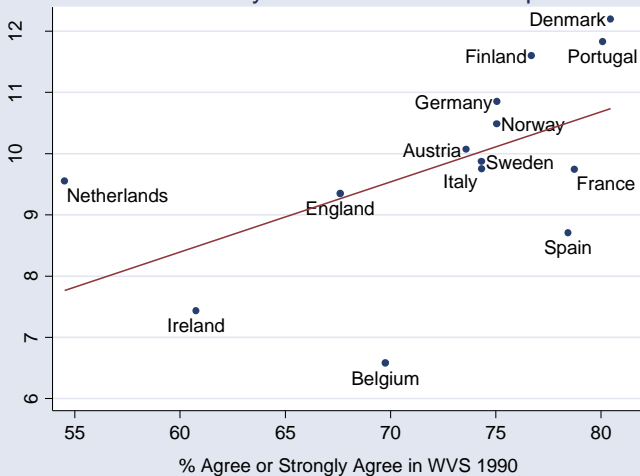
Does the country's marginal effect (1990) help explain the work behavior in US 1970 of second-generation American women of same ancestry?

This is the same epidemiological structure as before.

Being Housewife is as Fulfilling as Working for Pay

% Disagree or Strongly Disagree (WVS 1990)

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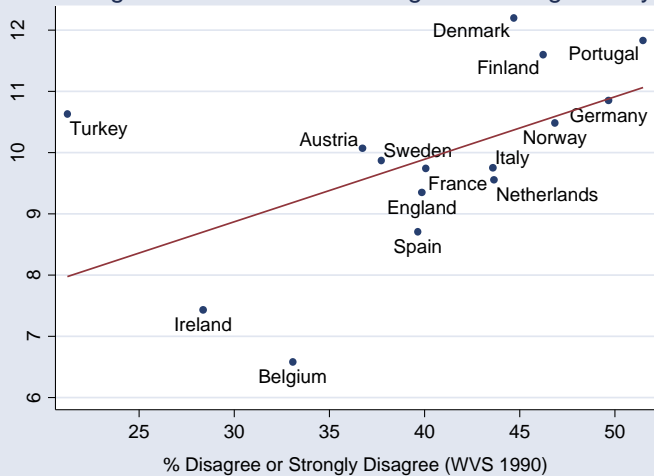
Job is Best Way for Women to be Independent

The Transmission of Culture

Does the neighborhood play a role in "preserving" culture?

- Ethnic neighborhood density data (measures of residential segregation for 2nd generation Americans) from Borjas (1995).
- Mexico (18.1%), Japan (12.6%), Italy (12.1%), vs Turkey (0.3%), France (0.3%), and Lebanon (0.4%).

We find that the effect of the cultural proxy is increasing in ethnic density.

Ethnic groups that tend to cluster together see a higher effect of the cultural variable.

Other Applications of the Epidemiological Approach

A selected sample:

- Fertility: Guinnane et al. (2006): Irish fertility in 1910 US; Fernández and Fogli (2006, 2009);

- Gender preference for children: Almond, Edlund, and Milligan (2009): Asian immigrants in Canada and sex of 3rd child.

- Family living arrangements: Giuliano (2007)

- Ethics: Fisman and Miguel (2007): Parking behavior of UN officials in Manhattan and indices of corruption.

- Violence: Miguel, Saiegh, and Satyanath (2008): soocer player's red and green card in major european leagues and civil war incidence.

- Shirking: Ichino and Maggi (2000): Movers from S. Italy to N. Italy and rate of absenteeism.

- GDP growth: Algan and Cahuc (2010): use variation in arrival times of individual's ancestors (parents vs grandparents) to the US to proxy for attitudes in country over 2 time periods (1935 and 2000). Show that change in level of trust in US by ancestry arrival is correlated with change in per capita income (24 countries).

The Dynamics of Culture

Cultural Change as Learning

Married Women's LFP (Age 25-45)
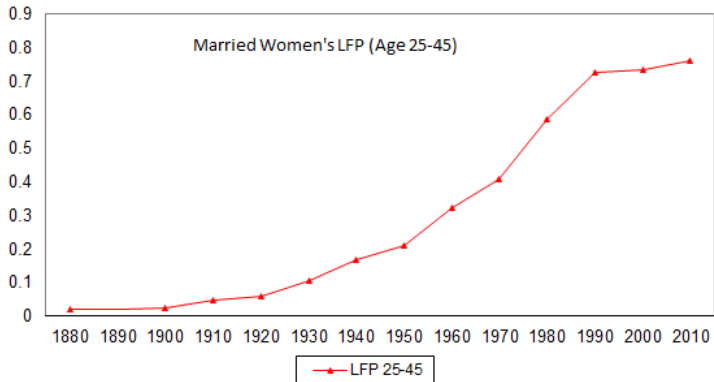
Why has women's role changed?

Many Explanations:

- Technological change
  - household technology: Greenwood, Seshadri, Yorukoglu (2005)

  - work place technology (sectoral change): Goldin (1990), Rendall (2010)

  - medical technology (contraception, maternal mortality, etc):
    Goldin & Katz (2002), Albanesi & Olivetti (2009), Knowles (2009)

- Wage changes
  - returns to experience: Olivetti (2006). Knowles (2007)

  - gender wage gap; Jones, Manuelli, & McGrattan (2003), Gayle & Golan (2010)

- Institutional change
  - Changes in cost of child care: Attanasio, Low, & Sanchez-Marcos (2008)

  - Divorce laws: Fernández and Wong (2012)

What about differences in culture?

Approve of Wife working if Husband can Support (%)
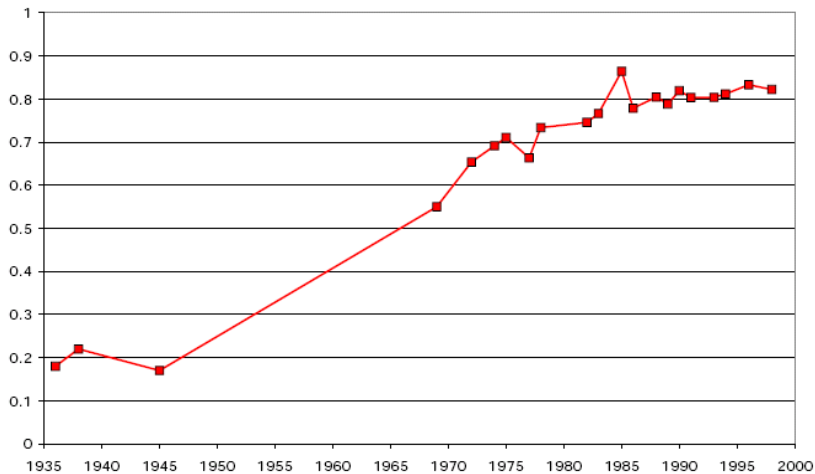
To say opinions have changed is not very enlightening by itself.

- Why did culture change over these 120 years?

- Why did these changes affect behavior in such a gradual and uneven fashion?

- Are the shifts in beliefs simply reflections of changes in material conditions?

Few models of cultural change

- Identifying culture with a selection mechanism in game with multiple equil. not very helpful w/o theory as to why culture changes $\rightarrow$ sunspots? evolutionary model?

Hypothesis

- Cultural change as the evolution of beliefs in a rational inter-generational learning process.

- S-shape figure of female LFP may be clue that process similar to tech. diffusion may be taking place (albeit much slower)

Other Countries S-Shapes
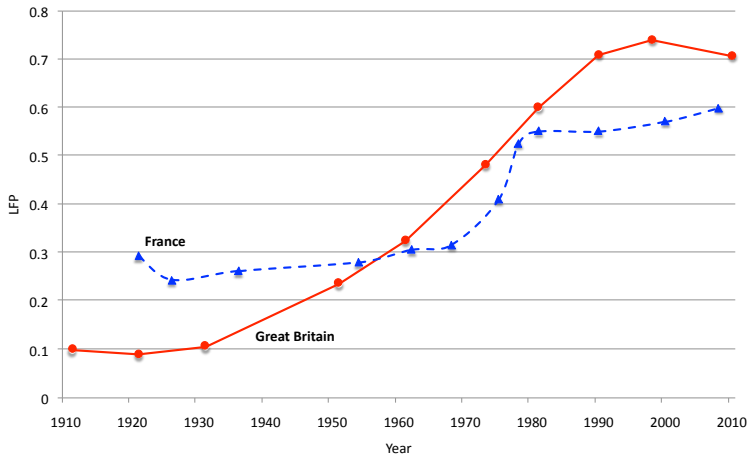
Data for Great Britain is from Table 1 in Costa (2000). Data for France is compiled from Tables 1 and 2 in Reboud (1985). See the online Appendix for details on data.

What might women be learning about?

Throughout last century, great uncertainty and debate about long-run consequences of women's work for:

- a woman's marriage;
- her psyche;
- her children's emotional and intellectual welfare

Consequences of women's work still debated:

- e.g. huge attention devoted to Belsky et al. (2007) findings of (small) positive relationship between day care and subsequent behavioral problems

Cultural Change as Learning

Develop a simple model of women's work decisions in a framework broadly similar to Vives (1993) and Chamley (1999).

Beliefs about the (long-run) payoff to working evolve endogenously over time.

- Private signal about cost of working.   Static learning.

- Inter-generational public signal about others' actions (i.e. about their private information) $\rightarrow$ Intergenerational learning.   Dynamic effects.

- Model generically generates an S-shaped figure for LFP resulting from the dynamics of learning.

- Model yields novel insights into potential dynamic role played by increases in female earnings or technological change.

- Calibrated model does a good job in generating LFP path over 120 years.

Some Related Literature

Learning and technology adoption:

- Foster and Rosenzweig (1995), Conley and Udry (2003), Munshi (2004), Bandiera and Rasul (2006)).

- Munshi and Myaux (2006): model of multiple equilibria enforced by social norms (punishment strategy). Shift to diff. equil. possible thru learning about proportion of "reformers" in population in a random matching model.

Learning Model

Model with private (intragen.) and social inter-generational learning.

Women max.:

$$\frac{c^{1-\gamma}}{1-\gamma} - \mathbf{1}(E_{it} v_i)$$

$$c = w_h + \mathbf{1} w_f$$

$$v_i = \beta + I_i \qquad I \sim N(0, \sigma_I^2); \quad G(I_j)$$

$$\beta \in \{\beta_H, \beta_L\} \qquad\qquad \beta_H > \beta_L > 0$$

Private Beliefs

Society starts t with **common prior**:

$$LLR: \quad \lambda_t = \ln \frac{Pr(\beta^* = \beta_L)}{Pr(\beta^* = \beta_H)}$$

This is **updated with**: private signal s (inherited from mother)

$$s_t = \beta^* + \epsilon_t$$

$$\epsilon_t \sim N(0, \sigma_\epsilon^2) \qquad F\left(\cdot; \sigma_\epsilon^2\right)$$

$$
\begin{aligned}
\lambda_{it}(s) &= \lambda_t + \ln\left(\frac{Pr(s|\beta^* = \beta_L)}{Pr(s|\beta^* = \beta_H)}\right) \\
&= \lambda_t - \left(\frac{\beta_H - \beta_L}{\sigma_\epsilon^2}\right)(s - \overline{\beta})
\end{aligned}
$$

where $\overline{\beta} = \frac{(\beta_L + \beta_H)}{2}$

Work Decision

$$\lambda_{it}(s) = \lambda_t - \left(\frac{\beta_H - \beta_L}{\sigma_\epsilon^2}\right)(s - \overline{\beta})$$

Work if:

$$\underbrace{\frac{1}{1-\gamma}[(w_{ht} + w_{ft})^{1-\gamma} - w_{ht}^{1-\gamma}]}_{W(w_{ht}, w_{ft})} - E_{it}(\beta) \geq I_i$$
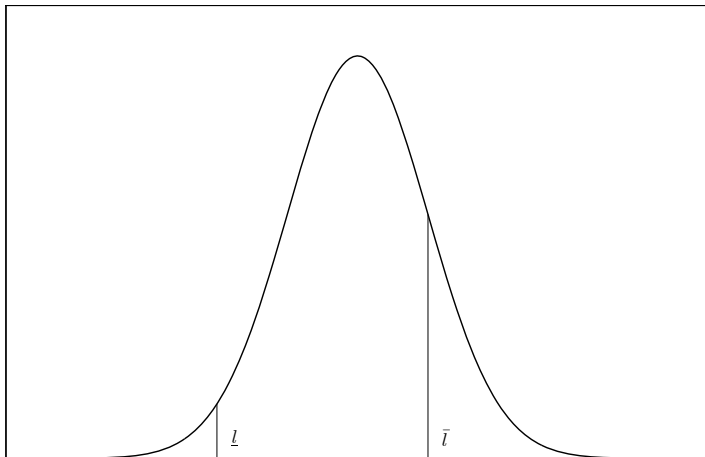
Prop. of women who work, $L_t = ?$

- Very low I's ($I \leq \underline{I}(w_h, w_f)$) work:

$$\underline{I}(w_{ht}, w_{ft}) \equiv W(w_{ht}, w_{ft}) - \beta_H$$

- Very high I's don't work ($I \geq \overline{I}(w_h, w_f)$)

$$\overline{I}(w_{ht}, w_{ft}) \equiv W(w_{ht}, w_{ft}) - \beta_L$$

PDF of l types

For each l_j type, solve for $s_j^*(\lambda_t)$ s.t indiff.

$$s_j^*(\lambda_t) = \bar{\beta} + \left(\frac{\sigma_\epsilon^2}{\beta_H - \beta_L}\right)\left(\lambda_t + \ln\left(\frac{\bar{l}(w_f, w_h) - l_j}{l_j - \underline{l}(w_f, w_h)}\right)\right)$$

The proportion of type j that works, are those with $s \leq s_j^*$, i.e.,

$$\epsilon \leq s_j^* - \beta^*$$

$$L_{jt}(\beta^*; \lambda_t) = F(s_j^*(\lambda_t) - \beta^*; \sigma_\epsilon)$$

Integrating over the l_j types:

$$L_t(\beta^*; \lambda_t) = G(\underline{l}) + \int_{\underline{l}}^{\bar{l}} F(s_j^*(\lambda_t) - \beta^*; \sigma_\epsilon) g(l_j) dl_j$$

Intergenerational Transmission

$$\lambda_t \ \rightarrow \ \lambda_{it}(s) \ \rightarrow \ L_t \ \rightarrow \ \lambda_{t+1}$$

- If generation $t+1$ simply inherited prior generation's private info $\implies$ static problem.
- If generation $t+1$ observed L_t, then by LLN all info. revealed.
- Following lit., assume women observe a noisy function of L_t

$$y_t\left(\beta\right) = L_t\left(\beta\right) + \eta_t$$

$$\eta_t \sim N(0, \sigma_\eta^2) \qquad H\left(\cdot; \sigma_\eta^2\right)$$

Alternative assumptions:

Individuals do not know

- distribution of wages

or

- distribution of idiosyncratic utility cost of working (which depends on unobservable aggregate state of nature).

Equivalent interpretations:

- Generation $t+1$ inherits the common prior of generation t, λ_t.
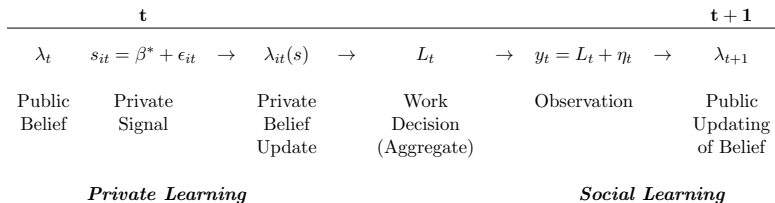
  Prior λ_t updated with $y_t \longrightarrow \lambda_{t+1}$

- Women have original prior λ_0. Know $h_t = (y_1, y_2, ..., y_t)$. Update λ_0 prior.

$$\lambda_{t+1} = \lambda_t + \ln \frac{h(y_t|\beta^* = \beta_L)}{h(y_t|\beta^* = \beta_H)} =$$

$$\lambda_t + \left(\frac{L_t(\beta_L) - L_t(\beta_H)}{\sigma_\eta^2} \right) \left(y_t - \frac{L_t(\beta_L) + L_t(\beta)}{2} \right)$$

Timeline

	t							**t + 1**
λ_t	$s_{it} = \beta^* + \epsilon_{it}$	$\rightarrow$	$\lambda_{it}(s)$	$\rightarrow$	L_t	$\rightarrow$ $y_t = L_t + \eta_t$ $\rightarrow$		λ_{t+1}
Public Belief	Private Signal		Private Belief Update		Work Decision (Aggregate)	Observation		Public Updating of Belief

Private Learning   *Social Learning*

Some Properties of the Learning Model

- beliefs are unbounded $\rightarrow$ long-run convergence to the truth (likely $\beta^* = \beta_L$).

- naturally generates S-shaped curve.

$$\lambda_{t+1} = \lambda_t + \frac{L_t(\beta_L) - L_t(\beta_H)}{\sigma_\eta^2}(\eta_t + \frac{L_t(\beta_L) - L_t(\beta_H)}{2})$$

Change in LLR $\uparrow$ in $L_t(\beta_L) - L_t(\beta_H)$.

When will this difference be large?

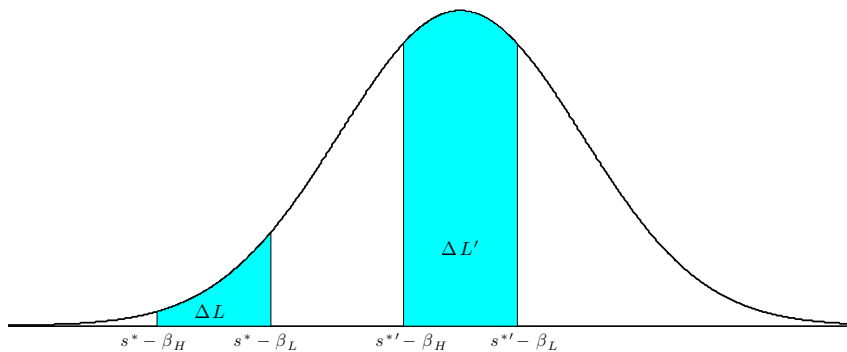$$\Delta L_t \equiv L_t(\beta_L) - L_t(\beta_H)$$

so, for a given I_j type,

$$\Delta L_{jt} = F(s_j^*(\lambda_t) - \beta_L; \sigma_\epsilon) - F(s_j^*(\lambda_t) - \beta_H; \sigma_\epsilon)$$

Taking the derivative w.r.t. s_j^*

$$f\left(s_j^* - \beta_L\right) - f\left(s_j^* - \beta_H\right) = 0$$

i.e., min at $s_j^* = \pm\infty$ and max at $s_j^* = \frac{\beta_H + \beta_L}{2}$

Signal Extraction

Similar conclusion holds once we aggregate:

$$\frac{\partial L_t}{\partial s_j^*} \frac{\partial s_j^*}{\partial \lambda_t} = \frac{\sigma_\epsilon^2}{\beta_H - \beta_L} \times$$

$$\int_{\underline{l}}^{\overline{l}} \left[f\left(s_j^*(\lambda_t) - \beta_L \right) - f\left(s_j^*(\lambda_t) - \beta_H \right) \right] g(l_j) dl_j$$

- If s_j^* for the average indiv $\in (\underline{l}, \overline{l})$ is far from $\overline{\beta} \to$ Information in $y_t(\beta)$ is swamped by noise $\eta_t \to$ intergen. updating is small $\to$ slow evolution of LFP.

- If s_j^* is close to $\overline{\beta} \to$ rapid learning.

If in 1880 women started out with pessimistic beliefs (i.e., λ_{1880} small), then, at the beginning:

- s^* is very small for average woman

- few women work

- learning is slow

- change in female LFP is slow

After some time, s^* for avg. woman is close to $\overline{\beta}$, then learning and the change in LFP accelerate until λ is high.

Thereafter,

- s^* is very high for average woman

- many women work

- learning is slow

- change in female LFP is slow (converges).

$\implies$ S-shaped curve of female LFP dynamics

Implications

Model generates very different predictions regarding effect of increases in female wages (or any technological or policy changes that makes it more attractive for women to work).

If this change occurs when women are pessimistic (in particular, when they require extreme values of the private signal to change their behavior), then they have spillover effects for the next generation $\rightarrow$ accelerates learning.

Points to potential welfare improving role of policies that lean against the prevailing culture (e.g. subsidize the unpopular action) when beliefs are extreme.

Empirical Analysis

Confront agents with historical earnings series for men and women.

- First shut down learning. Calibrate model to 3 key statistics in 2000 (wage elasticies of LFP and LFP).

- Find model without learning does a terrible job of replicating the LFP path.

- Allow learning and calibrate model to 4 additional statistics

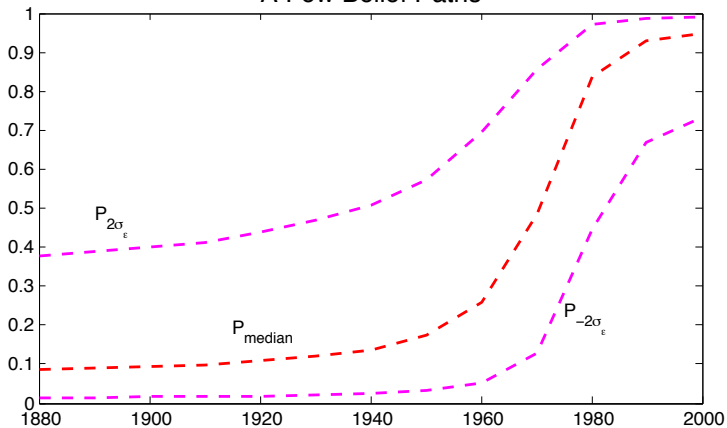- Use model to evaluate quantitative importance of beliefs and static and dynamic contributions of earnings

Earnings Only Model, Calibrated to the year 2000

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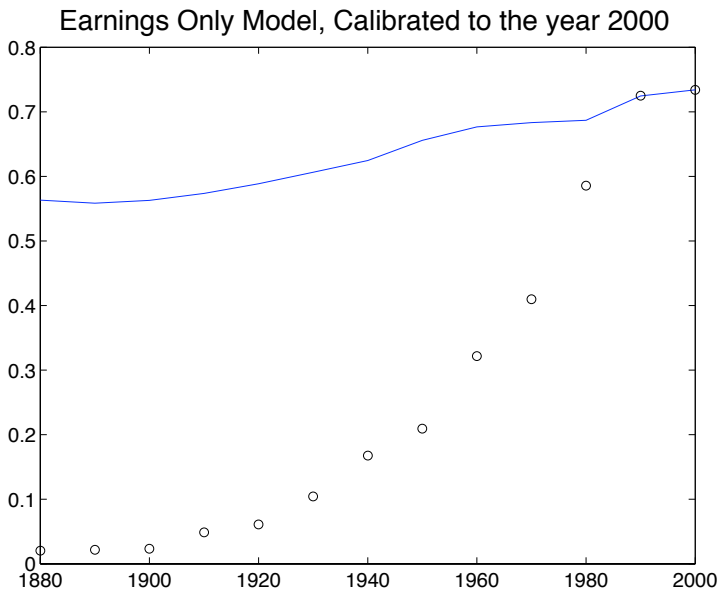
Calibrated Learning Model
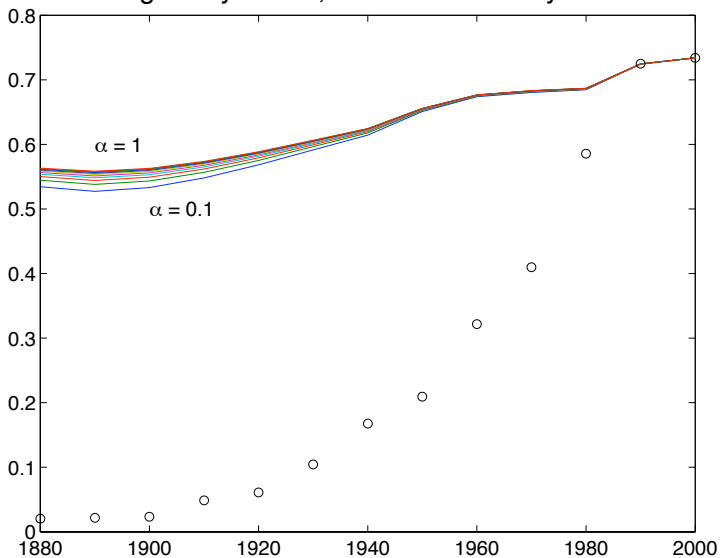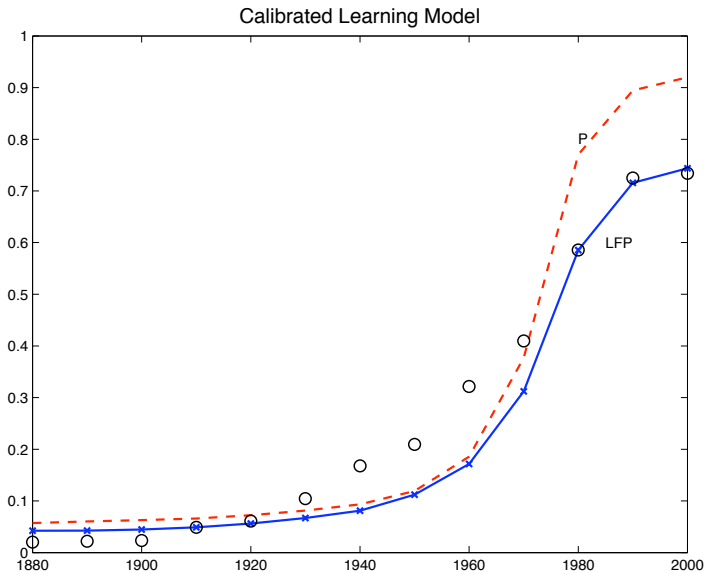
A Few Belief Paths

This shows $\Pr(\beta = \beta_L)$ for agents with $s = \beta_L$ and $s = \beta_L \pm 2\sigma_\varepsilon$.
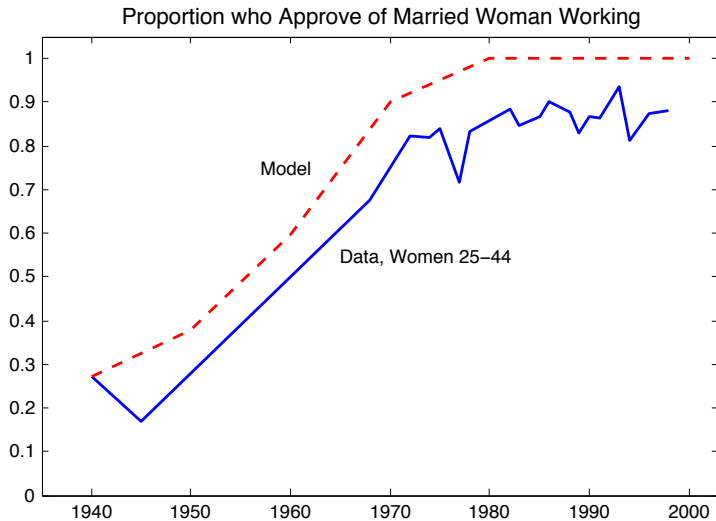
Calibrated Model: Beliefs

We can contrast poll data with model's prediction about social attitudes.

- Need to map distribution of probabilities to binary variable: approve vs disapprove used in poll.
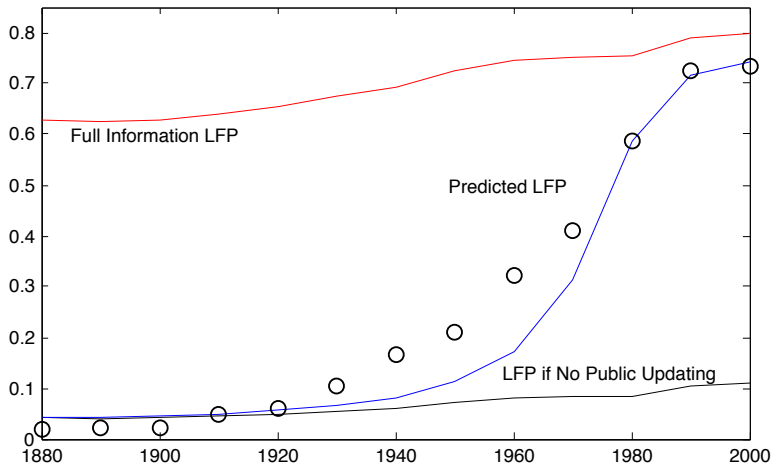
- Use

$$\lambda_t \sim N\left(\lambda_t - \left(\frac{\beta_H - \beta_L}{\sigma_\varepsilon^2}\right)(\beta_L - \bar{\beta}), \frac{(\beta_H - \beta_L)^2}{\sigma_\varepsilon^2}\right)$$

to find $\widetilde{\lambda}$ such that those with $\lambda > \widetilde{\lambda} = 0.27$ which is interpolated (1938 and 1945) value for 1940.

- Assume women with $\lambda_{it} > \widetilde{\lambda}$ approve at time t.

Proportion who approve of woman working if husband can support her, data vs model. Poll data as described in the online Appendix. The sample is restricted to white married women between the ages of 25 and 44.

Uses the solution parameters from calibrated model but without public learning.

Static vs Dynamic Effects of Wage Changes
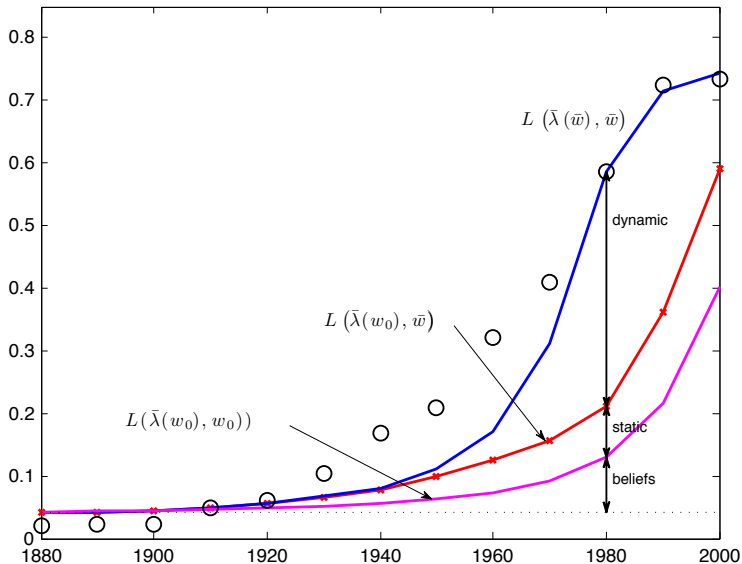
Some Directions for Future Research

- Investigate role of policy (inefficiency)
- Examine sharper hypotheses using microdata that take more seriously women's social networks (e.g., Bandiera and Rasul (2006), Conley and Udry (2003), Mira (2005))
- Incorporate and quantify importance of learning relative to social rewards/punishments (Munshi and Myaux (2006))
- Political economy and culture
  - E.g., Calibration yields an initial pessimistic prior. Where does initial negative prior come from?
  - Model and evidence regarding the political economy of belief creation/transmission.
- Culture and Institutions – how do these interact?
  - These influence one another – institutions created reflect culture
  - Cultural change influenced by institutions and vice versa.