WOMEN'S LABOR FORCE PARTICIPATION AND THE DYNAMICS OF TRADITION*

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Abstract

We present a model in which the social norms regarding women's labor force participation (LFP) differ from the norms concerning men's. Assuming that these norms depend on past rates of women LFP creates a gradual increase in women LFP.

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I. INTRODUCTION

The Oxford Dictionary defines "tradition" as "the handing down from generation to generation of opinions, beliefs, customs, etc.". Here we incorporate tradition into a growth model that explores the effect of tradition on the dynamics of women's labor force participation (LFP).

The data in the Handbook of Labor Economics [1986] show that U.S. LFP of women has been lower than the LFP of men, and gradually increasing since 1890. Since Mincer's 1962 seminal work, the explanation for these phenomena focuses on the gradual increase in women wages. Along this line**,** Galor and Weil [1996] provide a theoretical explanation for the increase in women's wages and LFP by assuming productivity difference that springs from the physical difference between men and women. In the growth process that they present, as physical capital accumulates the importance of this physical difference decreases and therefore the wages of women approach those of men and so does women LFP. However, Smith and Ward [1985], Goldin [1990] and Juhn and Murphy [1997] find that although the increase in women's wage accounts for much of the increase in women LFP, it still leaves a large part unexplained. In spite of these findings, there are still no theoretical explanations that do not rely on wage dynamics for the variations over time in women LFP.

In this note we offer such an explanation. Our explanation assumes no productivity differences, and therefore no wage differences, between men and women. Instead, we rely on differences in the social norms regarding women's and men's LFP.

The first crucial assumption in our model is that a woman's employment outside her home may have a direct negative effect on her household's utility. Our second crucial assumption is that the size of this effect is decreasing in the level of women's LFP in the preceding period.[1] These assumptions enable a dynamic pattern where an increase in women's LFP in a certain period decreases the utility loss for women who work outside the household in the following period, and thus brings another increase in women's LFP.

In order to avoid a situation where either all women work outside the household, or none do, we also assume that the magnitude of the effect that the woman's employment outside the home has on the household's utility differs from one household to the other. Assuming a normal distribution for the magnitude of this effect yields an S-shaped dynamic path of the women's LFP, as consistent with the empirical evidence in Goldin [1990] regarding married women's LFP in the U.S.. This S-shape dynamics also yields the possibility of multiple stable steady-state equilibria.[2]

Lindbeck, Nyberg and Weibull [1999] have studied the role that social norms play in work decisions in the welfare state. They assume that living off one's own work is the social norm and that individuals suffer a utility loss when they deviate from this norm. This utility loss increases in the number of people that adhere to the norm. This technique of modeling the social norms by including in the individual's preferences a utility loss that depends on an aggregate variable is identical to ours. However, in their model the aggregate variable that the preferences depend on belongs to the current period, while in our model it belongs to the previous period. Thus, our paper adds the role of tradition to the analysis of the social norms' effect.[3]

To focus the model on the effect of the dynamics of tradition on women LFP, we make several simplifying assumptions. Thus, we assume that wages are constant over time. We also assume that men and women are identical in their productivity and therefore have identical returns from working in or outside the household.

II. THE MODEL

The economy consists of overlapping generations. At each period a generation is born and its individuals live two periods. There is no population growth and we normalize the size of each generation to 2. Each generation is equally divided between men and women. All women are married in both periods to men of their own generation. All the individuals work in their life's first period and retire in the second.

There is one good in the economy and two production possibilities. First, each individual can produce the amount H at home. Alternatively, each individual can participate in production held at the market and receive the wage W which is constant through time and satisfies $W>H$.

Each married couple derives utility from consumption in the second period of their life. In addition, each married couple's utility is affected if the woman works outside her home. This effect may be either positive or negative, depending on the married couple at hand. For simplicity sake we assume the following specific form for the utility of a couple born at period t:

$$U(C_{t+1}, I_t, T_t) \equiv C_{t+1} - T_t I_t \qquad (1)$$

where C_{t+1} is the couple's second period consumption and I_t is an indicator variable that equals 1 if the woman works in the market in period t and otherwise equals 0. T_t denotes the effect of the woman's working in the market on the couple's utility. We assume that T_t decreases in the number of women who worked in the market in period t-1. We also assume that T_t can differ from one couple to another and that it may be negative or positive. If T_t is positive then the couple suffers a utility loss when the woman works in the market, while if T_t is negative then the couple's utility increases when the woman works in the market, for a given level of consumption. We assume the following specific form for T_t:

$$T_t(D, X_{t\text{-}1}) \equiv D - bX_{t\text{-}1} \tag{2}$$

where $X_{t\text{-}1}$ is the number of women who worked in the market in period t-1, b>0, and D is a random variable whose C.D.F is denoted by $F(D)$.

Due to the assumptions about the utility function, each couple born at period t saves its first period income and uses this saving for its second period consumption. Since W>H, it is optimal for every man to work at the market instead of at home. On the other hand, due to the properties of the utility function, the married couple may find it optimal for the woman to work at home. These considerations sum up to:

$$C_{t+1} = \begin{cases} (W + H)(1 + r) & \textit{if} \;\; I_t = 0 \\ (W + W)(1 + r) & \textit{otherwise} \end{cases} \tag{3}$$

where r is the interest rate which is also assumed to be constant over time. From (1), (2) and (3), a woman born at period t works at the market if and only if:

$$D < (W - H)(1 + r) + bX_{t\text{-}1} \tag{4}$$

Thus, X_t, the number of women who work in the market in period t, must satisfy:

$$X_t = F[(W - H)(1 + r) + bX_{t\text{-}1}]. \tag{5}$$

(5) describes the dynamics of women's participation in the labor market. Figure 1 shows the dynamics of X_t when D has a normal distribution. The S-shape dynamics

shown in figure 1 springs from the S-shape of the normal distribution C.D.F. This shape is consistent with the observed pattern of married women's LFP in the U.S. between 1890-1988 according to the data in Goldin [1990].

As the mean of the distribution of D increases the burden of tradition is heavier and the dynamical system maps a lower X_t for each level of X_{t-1}. In figure 2 we use a larger value of μ, compared to figure 1. As figure 2 shows, in this case the dynamical system can exhibit multiple stable steady state. This analysis can explain differences across countries in women LFP in steady state.

III. Concluding Remarks

We have presented a model that highlights the role of tradition in explaining some of the observed features of married women LFP dynamics. We view our explanation as a supplement to the explanation based on shifts in the wage differences between the genders.

To model the manner by which the tradition affects the individuals labor decisions we relied on two assumptions. First, that a woman's employment outside her home may have a direct negative effect on her household's utility. Second, that the size of this effect is decreasing in the level of women's LFP in the preceding period. This technique can be applied in models that study the role of tradition in other fields such as fertility, religion and racial discrimination.

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[1] For empirical support to the first assumption see Humphries [1987], Goldin [1990] and Levine [1993]. There are no findings regarding the second assumption.

[2] The possibilty of multiple stable steady state equilibria springs from the non-convexity of the normal distribution C.D.F.

[3] Other models in which the individual's utility is affected by aggregate variables have been used in several recent articles. Abel [1990] and Campbell and Cochrane [1999] explain aggregate stock prices using models in which individual's utility is affected by the difference between their consumption and the aggregate consumption. Becker [1991] assumes that the individual's demand is positively related to the aggregate demand for products that consuming them are social activities. Blomquist [1993] assumes that the individual household utility depends on average household's consumption and average household's labor input. Carroll, Overland and Weil [1997] study consumption and saving dynamics in a growth model where the relations between their consumption and the aggregate consumption affect individuals' utility.

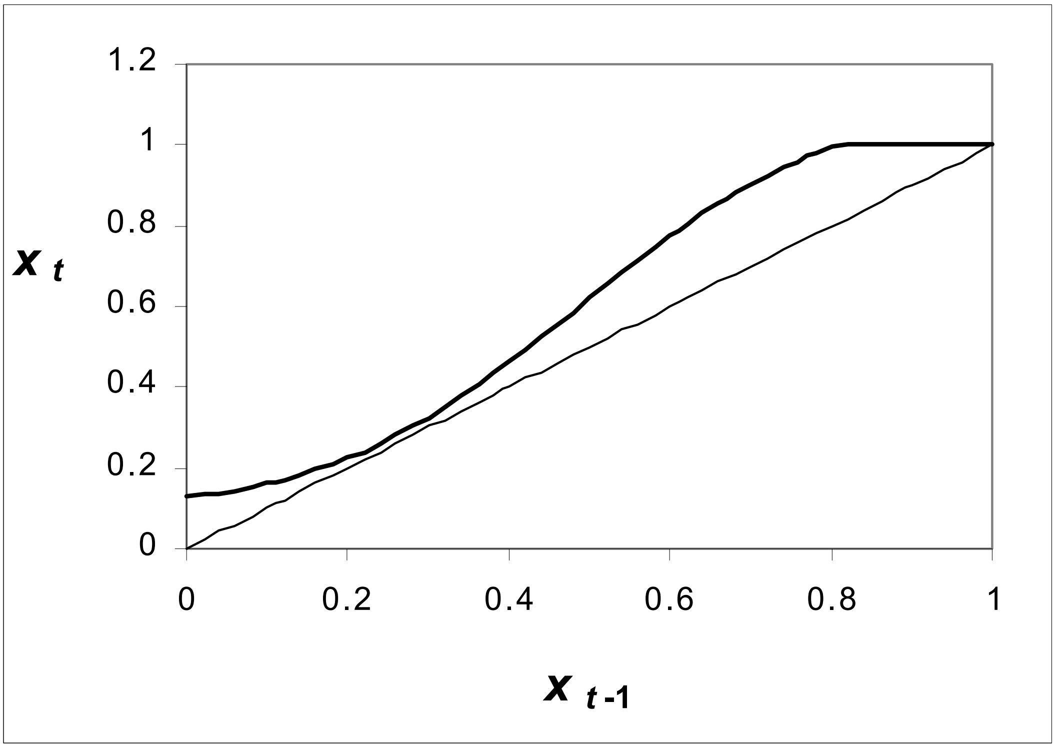

Figure I
The dynamical system. Parameter values: W=0.8, H=0.6, b=0.6, r=0.04, μ=0.5, σ=0.15.

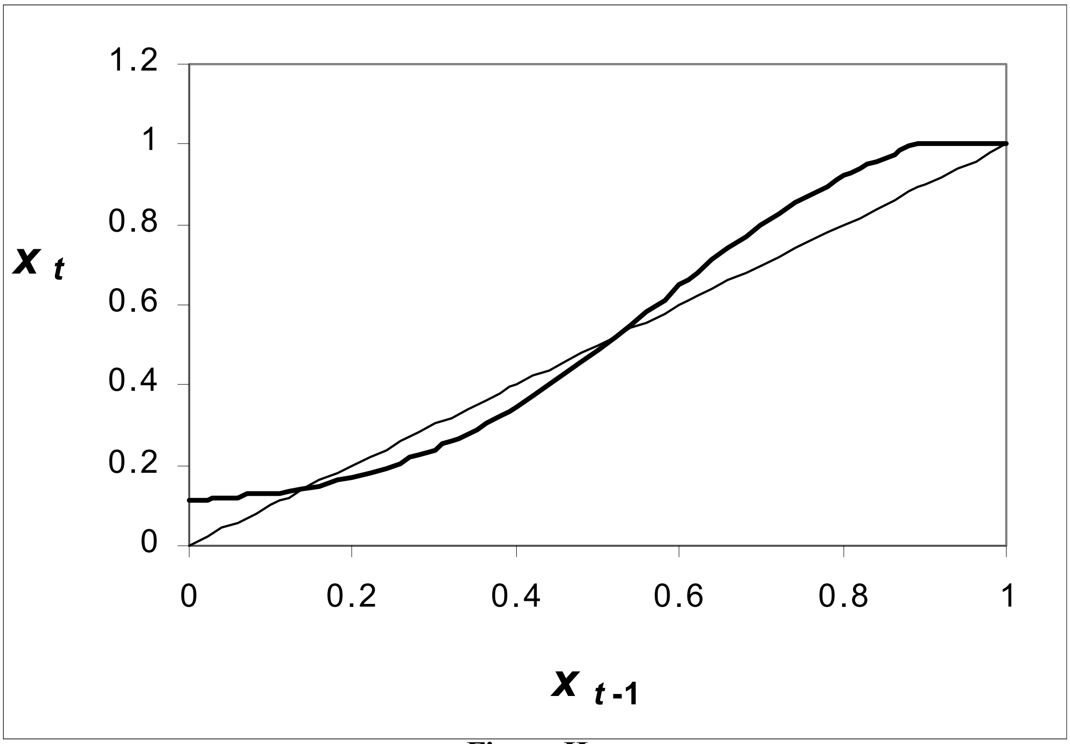

Figure II

The dynamical system. Parameter values: W=0.8, H=0.6, b=0.6, r=0.04, μ=0.55, σ=0.15.