



Contents lists available at ScienceDirect

Journal of Monetary Economics

journal homepage: www.elsevier.com/locate/jme

Marriage stability, taxation and aggregate labor supply in the U.S. vs. Europe

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ARTICLE INFO

Article history:

Received 11 November 2012

Received in revised form

6 January 2015

Accepted 7 January 2015

Keywords:

Aggregate labor supply

Taxation

Marriage

Divorce

Heterogeneous households

ABSTRACT

Americans work more than Europeans. Using micro-data from the United States and 17 European countries, we document that women are typically the largest contributors to the cross-country differences in work hours. We also show that there is a negative relation between taxes and annual hours worked, driven by men, and a positive relation between divorce rates and annual hours worked, driven by women. In a calibrated life-cycle model with heterogeneous agents, marriage and divorce, we find that the divorce and tax mechanisms together can explain 45% of the variation in labor supply between the United States and the European countries.

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1. Introduction

It is a well-known empirical finding that aggregate hours worked are higher in the United States than in Europe and that there is also substantial variation among European countries; see for instance Prescott (2004) and Rogerson (2006). These differences deserve attention: Rogerson (2006) notes that they are an order of magnitude larger than the fluctuations at business cycle frequencies in post-WWII U.S. data. Are the differences in hours worked due to public policies or are they due to other fundamental differences between societies?

This paper has two contributions: first, it documents, using cross-country data, that there is a negative relation between taxes and annual hours worked and a positive relation between divorce rate and annual hours worked. While the first relation is well-known, the second one is new, at least from a cross-country perspective. Furthermore, this paper shows that the negative relation between taxes and hours is driven by the behavior of men (i.e. for women the correlation between taxes and hours is close to zero) and the positive relation between divorce and hours is driven by the behavior of women (i.e. for men the correlation between divorce and hours is close to zero).

Second, motivated by these two facts, this paper builds a life cycle model economy populated by heterogeneous agents in which both taxes and marital instability affect hours of work. In the model economy, the marital transitions are exogenous, but given these exogenous transitions agents adjust their labor supply and savings behavior. An important assumption is that the labor force participation is associated with higher future earnings, as agents accumulate experience. The model is

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then calibrated to the U.S. and is used to evaluate how much cross-country differences in taxes and marriage and divorce rates can account for cross-country differences in hours worked. To this end, we use the calibrated economy and change taxes and/or marriage and divorce rates. The results show that taxes play an important role for differences in male hours, while differences in marriage and divorce explain differences in female hours.

We begin by using micro-level data to document the contribution of various demographic groups to the aggregate differences in hours worked between the U.S. and 17 European countries (Western Europe, except Iceland and Lichtenstein). We divide the populations into 12 demographic groups, by age, gender and marital status, and find that the largest contribution comes from prime-aged women. In most European countries, women work substantially less than in the United States while the difference in hours worked between European and American men is smaller.¹ This is especially true for married women, but also holds for single women, and for women with and without children. Next, we document the main motivation for this paper: a negative cross-country correlation between tax levels and hours worked, and a positive correlation between divorce rates and hours worked across countries. However, taxes are in particular correlated with male work hours, while divorce rates are in particular correlated with female work hours.

Why should divorce rates affect labor supply? The value of marriage as consumption insurance has been pointed out in the literature.² This paper argues that a higher probability of divorce affects labor supply by reducing the expected value of insurance provided by marriage. In response, individuals self-insure by investing in experience accumulation in the labor market. The argument also applies to individuals who have not yet married. Thus, differences in divorce rates can help explain cross-country differences in labor supply.

To quantitatively assess the impact of taxes and marriage stability on labor supply, we develop a life-cycle, overlapping-generations model with heterogeneous agents, marriage and divorce. There are three types of households: single men, single women and married couples. Divorces and marriages occur stochastically.³ We calibrate our model to U.S. data and study how labor supply in the U.S. changes as we introduce divorce and marriage probabilities and tax systems from other countries. We find that making marriages more stable results in a reduction of labor supply, particularly for women. This is because women are usually the second earners in a married couple. The insurance effect of marriage is therefore stronger for women, and female labor supply is more sensitive to divorce and marriage rates.

When treated with both divorce and marriage probabilities and tax systems from the European countries at the same time, the model can explain 45% of the variation in aggregate labor supply between the U.S. and the European countries. Changing only the probabilities of marriage and divorce in the U.S. to their European equivalents accounts for 17% of the cross-country differences in aggregate hours worked. When we only introduce European taxes, we can account for 32% of the variation in aggregate hours worked between the U.S. and the European countries. For female labor supply, marriage stability explains 22% of the variation in work hours. However, taxes are unable to explain any variation in female labor supply. Taxes are on the other hand very good predictors of male labor supply. For men, taxes explain 71% of the variation between the U.S. and the 17 European countries compared to 9% explained by divorce and marriage rates. In Section 6 we relate the differential impact of taxation on male and female labor supply to the fact that countries with high tax average levels also tend to have progressive taxes and separate taxation of married couples.

There is a substantial literature devoted to the rise in female work hours in the US over time. The same explanations may be important from a cross country perspective. Divorce rates have been shown to have a significant effect on female labor supply (see Johnson and Skinner, 1986; Stevenson, 2008). In a contemporary paper which is closely related to ours, Fernández and Wong (2013) find that divorce rates can help explain the rise in female labor force participation over time in the U.S. Building a life-cycle model and treating it with exogenous divorce and marriage rates the authors can explain a significant fraction of the increase in labor force participation of married women in the 1955 cohort compared to the 1935 cohort. The rest is explained by changes in wage structure. Kaygusuz (2010) finds that 20–24% of the 13% points rise in labor force participation of U.S. married women between 1980 and 1990 can be explained by changes in taxes. In another related contemporary paper by Guvenen and Rendall (2013), women can achieve insurance against a bad marriage through education. Guvenen and Rendall (2013) are able to explain the rise in divorce and decline in marriage rates in U.S. using their framework. Attanasio et al. (2008) look at the life-cycle labor supply of American women born in the 1930s, 1940s and 1950s and find that a combination of a reduction in the cost of children alongside a reduction in the wage-gender gap is needed to explain the increase in participation of the youngest cohort. Jones et al. (2003) study the increase in labor supply of married women in U.S. between 1950 and 1990 and find that the gender wage gap plays an important role, while technological improvements in the household have limited impact on the increase in labor supply by married women. On the other hand, Greenwood et al. (2005) find that new household technologies can help explain the rise in married female labor force participation. Fernández et al. (2004) argue that changes in characteristics of men – whose mothers have worked themselves – help explain the labor participation decisions of their wives.

¹ The Nordic countries are an exception.

² See for instance Kotlikoff and Spivak (1981) who study the gains from marriage due to risk sharing. Johnson and Skinner (1986) and Stevenson (2008) have shown that divorce rates have significant effects on female labor supply.

³ Two recent papers also making the assumption of exogenous divorce and marriage rates are Cubeddu and Rios-Rull (2003) and Fernández and Wong (2013). This is reasonable because literature has shown that cultural, legal and birth control factors play an important role for cross-country differences in divorce and marriage rates (See Johnson and Skinner, 1986; Goldin and Katz, 2002; Crouch and Beaulieu, 2006; Stevenson, 2008; McDermott et al., 2009; Gonzalez and Viitanen, 2009; Furtado et al., 2010; Kennes and Knowles, 2012 among others).

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