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Does Community Property Discourage Unpartnered Births? *

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ABSTRACT

This paper investigates the likelihood of an unpartnered birth as a function of individual and country characteristics, including laws regulating the division of joint property in case of divorce. Based on a rational choice model of marriage, we predict that women who don't plan to be primary earners are less likely to have an unpartnered birth when rules for the division of joint property are more advantageous to women. We derive more predictions regarding the effects of birth cohort, education, non-intact home, labour force participation, and religiosity. Analyses of the Family Fertility Surveys collected in the 1990s in 12 Western countries confirm most of our predictions. Our major findings are that after controlling for age, a time trend, and a number of other factors, the likelihood of an unpartnered birth is higher in countries that offer most women less access to joint property in case of divorce and among women who experienced a dramatic marriage squeeze.

Keywords: out-of-wedlock, cohabitation, fertility, divorce laws, joint marital property, unpartnered births

I. Introduction

In recent decades family institutions in the West have undergone radical changes, including large decreases in the proportion of children born in wedlock and a switch from marriage to cohabitation (Lesthaeghe and Moors 2000). Children born out-of-wedlock include two very different categories of children: children born to unwed couples, whose lives don't differ much from those of children born to married couples, and children born to lone mothers who don't reside with a partner. Not all children born to single mothers grow up without the benefit of having a father present in their lives, but that is often the case (see Mincy and Oliver 2000). Our goal is to investigate the determinants of out-of-couple births, i.e. unpartnered births.

Being raised by a single parent is often associated with lower achievement (McLanahan and Sandefur 1994, McLanahan and Sigle-Rushton 2004), such as poorer performance in school, a higher rate of depression, and higher participation in crime (Hobcraft 1998, Sigle-Rushton, Hobcraft, and Kiernan 2005). Even though divorce is the main reason why children are raised by single parents (Ermish 1991, Heuveline et al. 2003), unpartnered births contribute significantly to the prevalence of lone motherhood in many Western countries. Many countries therefore aim their policies at discouraging unpartnered births.

The existing literature indicates that the prevalence of unpartnered births is associated with mother's teenage status (Hawkes et al. 2004), low income (Wolfe et al. 2001), poor educational achievement (Ermish 1991, Ekert-Jaffe and Solaz 2001), parental divorce (McLanahan and Bumpass 1988, Kiernan and Cherlin 1999, Furstenberg and Kiernan 2001, Lichter et al. 1992, and Lehrer 2003,), religiosity (Sweet and Bumpass.

1990), low gender ratios (Heer and Grossbard-Shechtman 1981, Guttentag and Secord 1983, and Willis 1999), and price and effectiveness of birth control (Akerlof, Yellen and Katz 1996, and Willis 1999). Our goal in this paper is to examine whether rules of property division at divorce play a role in explaining variation in unpartnered births. We study the effect of cross-country variation in those rules, using a sample of Western countries.

Children may often be unintended and not the product of rational choices. Nevertheless, we present a model of women's rational choice between having a child alone or with a partner, whether in cohabitation or marriage.¹ Our model assumes that single women make a choice between having children with or without a partner as a function of the financial advantages and disadvantages associated with having a child under these two sets of circumstances. Societies often place a stigma on out-of-wedlock births, and this stigma may vary across countries, over time, and depending on whether the parents cohabit or not. Even though the role of financial factors may be limited relative to the importance of social factors such as stigma, our model focuses on financial advantages that we then tie empirically to variations in countries' rules of division of joint property at divorce.

Rules of division of joint property at divorce will have dramatically different effects depending on which spouse accumulated more financial assets before or after marriage. We also assume that most couples who have children are tradition-bound in the sense that they expect men to be the primary earners during a substantial part of the

¹ That out-of-wedlock childbearing results in part from rational choice was also assumed in Akerlof, Yellen, and Katz (1996), Willis (1999), Wolfe et al. (2001), and Grossbard-Shechtman, Ekert-Jaffe and Lemennicier (2002).

marriage. This does not mean that women expect to drop out of the labour force or work fewer hours in the labour force than their husband does.²

We predict that the more the law tends to protect tradition-bound mothers in case of dissolution, the higher women's financial advantages of giving birth in couple, and the lower the odds of an unpartnered birth. Section II develops this prediction in more detail. Our theoretical framework incorporates marriage market analysis: we assume that conditions in markets for marriage and cohabitation may also affect the financial advantages that tradition-bound women may derive from having a child in marriage or cohabitation. The generation of women born right after WWII is characterized by very low gender ratios (defined as ratios of men to women participating in the same marriage markets). We speculate that these low gender ratios may be associated with low financial benefits for tradition-bound women, making it less attractive for a woman to have a child in marriage or cohabitation. Therefore we predict higher rates of unpartnered births among women born right after WWII. We develop a number of other predictions regarding the effect of age, education, religiosity, labour force status and the combined effects of some of these variables and rules for the division of joint property in case of dissolution.

Section III presents our cross-country classification of divorce laws according to degree of protection offered to women who earn less than their partner. We posit that low

² Tradition-bound women may reduce their hours of work by dropping out of the labor force, working part-time, or working fewer extra hours. Tradition-bound women may also keep their hours of work unchanged but take a less demanding (full-time) job. In any event, tradition-bound women earn less than their partner who may be considered as the primary earner. In all the countries in our sample, a majority of couples are tradition-bound according to this definition (see Blau, Ferber, and Winkler 2006).

levels of protection are offered to such women in common law countries (our sample includes the U.S.A., part of Canada, and New Zealand) and, to a lesser extent, in Austria, where some major assets are excluded from Community Property, relatively to countries with Community Property regimes. We also distinguish between medium and high Community Property regimes. Countries such as Norway and Sweden have a high degree of community in marital financial assets: a couple's common assets typically also include assets obtained before the marriage. We classify Belgium, France, Germany, Italy, and Spain as countries with a medium degree of Community Property, given that Community Property in these countries only involves assets acquired during the marriage.

After presenting our data and methods (Section IV), we test our predictions using retrospective data on close to 30,000 women who gave birth to their first child between 1962 and around 1995 in 12 Western countries. The results reported in Section V indicate that, as predicted, the less a country provides financial protection to divorcing tradition-bound women, the more women are likely to have an unpartnered birth. In particular, we find that when we control for individual characteristics, (1) in countries with a high degree of Community Property—such as Sweden--women are less likely to give birth without a partner than in Belgium or France, countries that we call MC (Medium Community) and where fewer assets are included in Community Property; and (2) relative to MC countries, unpartnered births are more common in common law countries such as the United States, and Austria, where separation of assets is the norm.

We also find that even though the overall trend in the countries we covered has been towards more unpartnered births, an early cohort of women born in the years 1946-1950 has exhibited unusually high rates of unpartnered births. This finding makes sense

in light of marriage market analysis. Other findings that confirm our predictions include: (1) relative to employed women the likelihood of an unpartnered birth is lower among women out of the labour force; and (2) controlling for age at birth, women with at least some college are less likely to have unpartnered births than women with a high school education. Our analyses indicate a curvilinear effect of age: teenagers and women in their thirties have a higher likelihood of having unpartnered births than women in their twenties. Age appears to have a stronger effect on unpartnered births in countries with rules of division of joint property that are more advantageous to tradition-bound women.

II. Predicting Unpartnered Births

We assume that women make rational choices about whether to have a child alone or in couple.³ The more rationality can be presumed, the more the following model applies. While we assume that a sufficient degree of rationality applies to all women, we expect our rational-choice model to be more applicable when women can be expected to be more rational. It is therefore more applicable when women are more educated, less religious, and beyond teenage.⁴

The rational choice of a woman interested in becoming a mother involves comparing the expected net benefits of having a child alone with the expected net benefits of having a child in couple. These benefits (net of costs) can be of a financial,

³ This research is in the tradition of the economics of marriage pioneered by Becker (1973, 1981). Our model is based on Grossbard-Shechtman, Ekert-Jaffe, and Lemennicier (2002) and Grossbard (2005). In earlier models, Grossbard-Shechtman (1982) and Ekert-Jaffe and Sofer (1996), we modeled individuals as choosing between having a child in marriage or in cohabitation.

⁴ Even though it takes two to procreate, our model focuses on women's choices: fathers' preferences and opportunities only enter indirectly by influencing the benefits of in-couple births perceived by women.

emotional, or spiritual nature. For instance, there may be a stigma attached to lone motherhood. Here we focus on financial and material benefits.

We define A as the present value of benefits accruing to unpartnered mothers, and Y as the present value of the benefits of having a child in couple. The difference

$$(1) \quad R^* = A - Y$$

is defined as a latent variable representing the net benefit associated with having an unpartnered birth versus a child in couple; it is unobserved, but we observe R , the decision to have an unpartnered birth. We assume the decision rule:

$$(2) \quad \begin{cases} R^* > 0 \Rightarrow R = 1 \\ R^* < 0 \Rightarrow R = 0 \end{cases}$$

This rule implies that if the net benefits of having an unpartnered birth exceed the net benefits of having a child in couple, a woman will have an unpartnered birth; and if the net benefits of having a child in couple exceed the net benefits of having an unpartnered birth, a woman will have a child in couple. Both A and Y are a function of a woman's earnings potential. In most of the countries covered in our study governments subsidize both single mothers and mothers in couples, but A is more likely to be a function of financial support by governments than is the case with Y .⁵ Likewise, relatives are more likely to help single moms than married moms.

Y takes account of the expected financial benefits that women can expect from being in couple, the probability of keeping a partner, and of the expected benefits in case of dissolution. We assume that it takes the form

⁵ Few countries offer larger government transfers to single mothers than to mothers in couple, one of these countries being the U.S.A. However, welfare benefits are always based on income, and single mothers are likely to be poorer than married mothers.

$$(3) Y = f[(1 - p_d) B + p_d D],$$

where B are expected benefits accruing to mothers in couple while they are in couple, D is the present value of benefits accruing to mothers in case a couple dissolves, p_d is the probability of dissolution, and f is increasing so that $f' > 0$. Benefits B are material benefits that women obtain from their partner, net of the benefits that their partners obtain from them. The net material benefits that tradition-bound women expect from their partners are positive (tradition-bound women are defined as women who expect their male partner to be the principal earner). These benefits are also expected to be a function of women's relative bargaining power in marriage.⁶ *Ceteris paribus*, the higher the marital benefits B and the post-divorce benefits D , the higher Y , and the lower the probability of an unpartnered birth. Given that we expect the present value of in-marriage benefits B to exceed the present value of benefits at divorce D ($B - D > 0$), it follows that Y is a negative function of the probability of divorce p_d . The more women are tradition-bound, the more it can be assumed that B and D are positive, and the more our arguments apply.

Combining equations 1 and 3 gives:

$$(4) R^* = A - f[(1 - p_d) B + p_d D].$$

We obtain predictions regarding the determinants of the value of an unpartnered birth R^* by taking the partial derivatives of equation 4 according to B , D , and p_d . These partial derivatives are:

$$\partial R^*/\partial B = -(1 - p_d) f' < 0;$$

$$\partial R^*/\partial D = -f' p_d < 0; \text{ and}$$

⁶ This follows from market theories of marriage such as Becker (1973) and Grossbard (1984) as well as from bargaining theories such as Manser and Brown (1980), McElroy and Horney (1981), and Chiappori (1992).

$$\partial R^*/\partial p_d = -(D - B)f' > 0.$$

Given that the value of an unpartnered birth R^* and the likelihood of an unpartnered birth R are expected to move in the same direction, we predict that the higher the benefits that women can expect during marriage (B) or after divorce (D), the lower the likelihood of an unpartnered birth. In contrast, the probability of divorce is expected to increase the likelihood of an unpartnered birth. Given that we don't have good measures of B , D , or p_d , we have to make assumptions as to how the variables we have access to are related to benefits of marriage and divorce and the probability of divorce or separation. Next, we examine the predicted effects of three kinds of observable variables on the likelihood that a woman will have an unpartnered birth: macro-societal factors, women's individual characteristics, and interactions between macro factors and individual characteristics. Our predictions are summarized in Table 1.

Predicted Macro Effects: Legal Factors and Gender Ratio

To the extent that countries differ in their rules for the division of joint property in case of dissolution, women of similar characteristics and belonging to the same Western culture, but living in different countries, will perceive different benefits from having children in couple.⁷ In countries with legislation that offers tradition-bound women who separate from their partner a higher share of the combined property, the average D payment is higher. In turn, the higher the D a single tradition-bound woman expects in case of marriage and divorce, the higher Y , and the lower the probability of an unpartnered birth.

⁷ See Grossbard-Shechtman, Ekert-Jaffe, and Lemennicier (2002).

The more such a couple's joint property is considered community property, the more tradition-bound women are likely to benefit in case of dissolution (the higher the expected D).⁸ To the extent that a majority of a country's women are tradition-bound, we predict that the higher the degree of community of joint property, the lower the probability of an unpartnered birth. As will be elaborated in Section III, countries differ in the degree to which they consider joint property as community property and a cross-country comparison offers an opportunity to test this prediction.

Another macro factor is the gender ratio defined as the number of men divided by the number of women participating in the same markets for marriage and cohabitation (following the standard demographic definition of sex ratio, see Henry 1975). *Ceteris paribus* and according to the economic analysis of markets for marriage and cohabitation, we expect tradition-bound women facing low gender ratios to be offered less advantageous financial arrangements (lower B) by their potential partners than is the case with similar women facing high gender ratios (see Heer and Grossbard-Shechtman 1981 and Guttentag and Secord 1983). To the extent that in-marriage benefits B and post-marriage benefits D are correlated, women in low gender ratio markets may also face lower D values. Consequently, we expect that when and where men are relatively scarce, and marriage is less advantageous to them, tradition-bound women will be less likely to have children in couple (i.e. a higher probability R) than when gender ratios are high. To the extent that a majority of couples are tradition-bound, total rates of unpartnered births and gender ratios will be inversely related.

⁸ As cohabiting couples are increasingly treated like married couples, these laws affect both married and cohabiting couples. We are treating births in couple without distinguishing between married and cohabiting couples. Note that women who are NOT tradition-bound and instead prefer to be the principal earner, will prefer laws that involve LESS community property.

We recognize that each *birth cohort* of women experiences unique circumstances in markets for marriage and cohabitation, leading to unique preferences and opportunities. Cross-cohort differences in opportunities are in part a function of different gender ratios. Many of the countries in our sample experienced extremely rapid growth in births immediately after World War II (WWII, 1940-1945) and had low births during the war, causing an unusually low gender ratio for women born in the late 1940s and who are likely to marry men born in the early 1940s. In 2000, in many of the countries covered in our study the number of people born in the years 1946-1950 was substantially larger than the number of people born in the early 1940s: it was 28% higher in Norway, 30% in New Zealand, 31% in Belgium and the U.S.A., 43% in Finland, and 47% in France. Given that on average married men are older than married women in every single country, these large increases in post WWII births imply that women born immediately after the war experienced unusually low gender ratios. It follows that women born in these cohorts receive lower benefits B and D (which could be related to their higher labour force participation rates, see Grossbard-Shechtman and Granger 1998). We therefore predict that relative to rates of unpartnered births among women born at other times, and after taking account of other age and period effects, *rates of unpartnered births will be higher among women born during the late 1940s.*

Predicted Effects of Individual Women's Characteristics

Mother's age. The younger the woman, the more she is likely to make irrational decisions regarding pregnancy and motherhood, the less she is likely to be influenced by cost/benefit calculations, and therefore, the higher the probability of an unpartnered

birth.⁹ To the extent that she is rational, cost/benefit analysis may also lead a teenage woman to be more likely to have an unpartnered birth. Relative to comparable women in their twenties, teenage women interested in forming a couple with a provider are likely to receive lower offers of B in markets for dating and marriage, given that they are typically less mature and fit for parenting. Furthermore, the men who may be their partners may also be teenagers and are likely to have lower accumulated assets. Teenagers can also expect lower D in case of separation or divorce. Finally, teenagers are expected to perceive lower present values of benefits B and D to the extent that they have a higher divorce probability and higher discount rates. For all these reasons, and in light of the findings reported in the literature mentioned above, *teen-age mothers are expected to have more unpartnered births than mothers in their twenties.*

Women at the other extremity of the age scale are also likely to be less desirable to men (i.e. to receive lower offers of B), and therefore to have a higher probability of unpartnered birth. That probability is also expected to increase with age due to older women's increased ability to support a child without the help of a partner. However, being older (which we measure as older than 29) can be an advantage in markets for marriage and cohabitation to the extent that older women are more likely to be mature partners in parenting and are less likely to divorce. With these possible effects of age pulling in different directions, we don't have a clear prediction regarding the net effect of older age on R .

Growing up with divorced parents in a non-intact (NI) family is expected to affect total material benefits from marriage Y (and unpartnered births R) via the effects of NI on

⁹ Nevertheless, even the childbearing decisions of teenagers seem to indicate some rationality, as shown by Wolfe et al (2001).

B , the probability of divorce p_d , and D . We differentiate equation 4 according to NI , which gives:

$$\frac{\partial R^*}{\partial NI} = \frac{\partial R^*}{\partial p_d} \frac{\partial p_d}{\partial NI} + \frac{\partial R^*}{\partial B} \frac{\partial B}{\partial NI} + \frac{\partial R^*}{\partial D} \frac{\partial D}{\partial NI}$$

In turn, this expression is equal to

$$(5) \quad \frac{\partial R^*}{\partial NI} = -f'(D-B) \frac{\partial p_d}{\partial NI} - f'(1-p_d) \frac{\partial B}{\partial NI} - f' p_d \frac{\partial D}{\partial NI}$$

The first term in equation 5, $\frac{\partial p_d}{\partial NI} > 0$, states that women who grew up in non-intact families are more likely to divorce or separate. The existing literature offers plenty of evidence documenting that this is the case (see Kiernan and Cherlin 1999). Given that we have assumed that $(B - D) > 0$ the first term in equation 5 is positive. As for the second term, we expect that women who grew up as children of divorce may also be considered less attractive in the eyes of men participating in the same markets for marriage and cohabitation, leading to lower benefits in marriage B ,¹⁰ i.e. $\frac{\partial B}{\partial NI} < 0$. The second term in equation 5 is thus also positive. The third term is about the effect of growing up in a non-intact home on D , the expected financial settlement in case of divorce. To the extent that B and D move in the same direction (the higher a tradition-bound woman's material benefits during marriage, the more generous her divorce settlement), the third term in 5 is also expected to be positive. *We thus expect that growing up with divorced parents (in a non-intact family) will be associated with higher*

¹⁰ Mincy, Grossbard and Huang (2005) find that women from intact families who had children out-of-wedlock are more likely to marry their father's child. To the extent that women prefer marriage to other co-parenting partnerships, marriage can be seen as an aspect of B .

levels of unpartnered births. This prediction is in line with previous findings that women raised in *NI* families are more likely to have children out-of-wedlock (see e.g. McLanahan and Bumpass 1988, Lichter et al. 1992, Kiernan and Cherlin 1999, Furstenberg and Kiernan 2001, Lehrer 2003).

The existing literature indicates *that mother's low education is associated with a higher likelihood of an unpartnered birth R* (see Ermish 1991 and Ekert-Jaffe and Solaz 2001). We predict that this will also be the case in our study. The correlation between low education and *R* may be explained as follows: (1) having a child without a partner often curtails women's educational careers (see Klepinger, Lundberg and Plotnick 1999) and is associated with higher poverty rates (*cf* Lam 1988); (2) women who expect to have low education levels are less likely to be hurt by lone motherhood (see Ermisch 1991); (3) low education may indicate that women are less likely to follow a rational calculus; and (4) among those who are tradition-bound, men may prefer being in couple with more educated partners and therefore offer lower benefits *B* to women with low education.

Most of these arguments don't imply a linear effect of education. On the one hand, women with higher education earn more and are more able to support a child alone, they may be more independent, and less tradition-bound. Men may avoid partnering with women more educated than they are. On the other hand, men may find more educated women more desirable to the extent that they make better partners in parenting and better companions. After all, there must be reasons why associative mating by education prevails. More educated women may have lower discount rates and place more emphasis

on having their children growing up with a father.¹¹ In sum, the predicted effect of higher education (relative to an average education) is not clear.

Occupation. If we observe that women are out of the labour force around the time of birth, this may possibly indicate that they are more tradition-bound, that they have a lower divorce probability p_d and may expect higher D payments in case of divorce, that they have fewer employment possibilities, or that they receive higher benefits in marriage B from their husbands than comparable women in the labour force (see Grossbard-Shechtman and Granger 1998).¹² For all these reasons we expect that women out of the labour force have a higher ratio of Y to A than women who are employed, and that they therefore are less likely to have a child without a partner. When testing this prediction we avoid problems of endogeneity by measuring labour force attachment at the onset of pregnancy. Unfortunately, our data don't include comparable information on income and therefore don't permit us to test for income effects on unpartnered births.¹³

Religiosity. A woman's religiosity may affect her propensity to have an unpartnered birth to the extent that religious women are less likely to have (1) premarital relations (they place a higher value on marriage and most religions specifically prohibit premarital relations); and (2) abortions. The first reason leads to a negative association between religiosity and unpartnered births, whereas the second reason leads to a positive

¹¹ It is also true that there may be fewer tradition-bound women among highly educated women than among women with low education, and most of our arguments apply solely to tradition-bound women who expect to obtain financial transfer during marriage (cohabitation) or in case of dissolution.

¹² Higher benefits B that men pay women are expected to be positively associated with the gains from marriage. According to Becker (1981), the gains from marriage increase with specialization in household production. Gains from marriage can also be obtained in non-traditional households in which the wife is the principal earner.

¹³ Wolfe et al. (2001) showed that unpartnered births are more likely in low-income populations.

association. Which of these effects dominates may vary with the surrounding cultural and legal environment. Therefore we don't have a clear prediction regarding the effect of this variable.¹⁴

The number of siblings is likely to affect unpartnered births to the extent that it captures a tradition-bound woman's desire for a large family or is associated with her value in markets for marriage and cohabitation: it is possible that women born in a larger family of origin are more likely to know how to take care of children, leading tradition-bound men to offer higher expected benefits B . However, to the extent that parents with more children invest less in each child, a woman with more siblings may have less human capital and therefore obtain lower benefits B in markets for marriage and cohabitation. Depending on which of these forces prevail, number of siblings will have a positive or negative effect on the likelihood of an unpartnered birth R .

Next, we derive predictions regarding the combined effect of legal regime and a number of individual characteristics of women.

Interaction of Rule of Division of Joint Property (RDJP) and Teenager. The more women are rational and the lower their discount rate, the more we expect an effect of legal regime on the probability of an unpartnered birth. Teenagers are less rational and have a higher discount rate. *We therefore predict that legal regime will have less impact on unpartnered births among teenagers than among women in their twenties. This*

¹⁴ The existing evidence is mixed. Within a given country, evidence for the U.S. shows that religious practice is negatively correlated with adolescent sexual activity (Thornton and Camburn 1989, Murry 1992, and Kirby 1999) and premarital relations, regardless of age (Beck et al 1991). However, the cross-country correlation is not clear: the most religious country in our sample (the U.S., see Table 3) has relatively high levels of unpartnered births, whereas Italy and Spain, countries that have traditionally also been religious, have very low levels of unpartnered births.

implies that the sign of this interaction term will be of the opposite sign as that of the main effect of RDJP.

Interaction of RDJP and Non-Intact (NI) Family of Origin. On the one hand, women whose parents had divorced, and who consequently face a higher divorce probability, will have more appreciation for RDJP rules protecting them in case of dissolution. In this case, the interaction term ‘divorced parents and community property’ will go in the same direction as the main effect of RDJP on R . On the other hand, tradition-bound men may consider women with divorced parents as less attractive and therefore women from NI homes may obtain lower B and D benefits in markets for marriage and cohabitation. They will then stand to gain less from better protection in RDJP rules. This would lead this interaction term to go in the opposite direction than the main effect. The net predicted effect is not clear.

Interaction of RDJP and Religiosity. To the extent that religiosity reduces R by discouraging premarital relations, we expect more religious women to be more responsive to financial incentives that discourage unpartnered births such as favorable RDJPs. In this case both religiosity and the interaction between a high degree of community and religiosity will have negative effects on R .¹⁵ To the extent that religiosity encourages R due to the lower abortion rates of religious women, the effect of religiosity on R and the effect of the interaction between favorable RDJP and religiosity on R are both expected to be positive. Either way, *the simple effect of religiosity on unpartnered births and the combined effect of religiosity and favorable RDJP are predicted to go in the same direction.*

¹⁵ Alternatively, religious and legal institutions may be intertwined, and countries that offer less financial protection to women at divorce may also have religious organizations that offer less support to women trying to avoid premarital relations.

III. Cross-Country Differences in Law

For each country in our sample we examined the Rules for Division of Joint Property at divorce (RDJP, see Vogel 2002). The first two columns in Table 2 list type of rule for division of property at divorce for the countries in our sample. The table starts with the countries and provinces that appear to offer the least protection to mothers separating from a partner who took on the role of primary earner.

Where countries recognize more than one rule we chose the most commonly used RDJP. In three of our countries (Canada, Spain, and the U.S.) the rules used vary across states or provinces.¹⁶ Our data allowed us to separate Canadian provinces by RDJP, but we were not able to do so for the U.S.A. and Spain. Furthermore, RDJP can vary over time. In the 1970s and 1980s, a number of countries, states, and provinces adopted or extended the scope of Community Property rules. For instance, in 1985 the Canadian province of Ontario instituted rules similar to the Acquired Assets rules of division that had traditionally prevailed in Quebec, after a transition period from 1978 to 1985. A similar transition occurred in New Zealand in 1976. Around the same time, Italy (in 1975) and most of Spain (in 1981, after a transition period that started in 1978) instituted a rule of equal division of Acquired Assets.¹⁷

We created three categories capturing the degree of protection offered to women who consider having a child in couple with a man who acts as the principal earner: low

¹⁶ Note that in Spain Low Community with Separate Assets holds in Biscaye and Estrémadure, whereas extensive Community Property is found in the Balears.

¹⁷ Most of the countries in our sample offer similar benefits to partners who live together without marriage. Research has shown that even though it is more common for cohabitating women to earn more than their partner, a majority of both married and cohabiting women earn less than their partners.

degree of community in a couple's property (Low Community or LC), medium degree of community in joint property (Medium Community or MC), and high degree of community in a couple's property (High Community or HC). In all Community Property countries at divorce a couple's assets are subject to a 50/50 division rule. These countries are classified as either MC or HC, depending on the range of assets included in Community Property.

Countries with a low degree of community in joint property (LC). These include

- three Common Law countries (New Zealand before 1977, Canada's Common Law provinces, and the U.S.A.¹⁸ Even though some states in the U.S.A. follow Common Law and others follow restricted Community Property rules, the U.S.A. as a whole offers limited protection to tradition-bound women, given that it is easy for husbands/providers to move to Common Law states providing lower protection to divorcing tradition-bound women than is the case with Community Property states.¹⁹
- Austria, where individuals maintain various separate assets at marriage. Goods for personal or professional use (such as an office or assets in owned factories) are excluded from a couple's assets.

Countries with a medium degree of community in joint property (MC). These are countries that have limited Community Property: they consider assets as owned by a couple if the assets were acquired after marriage. In our sample they include France and

¹⁸ The three Common Law countries in our sample (U.S., Canada, and New Zealand) have laws based on British law.

¹⁹ Unfortunately, our data set does not give us a breakdown of the U.S. sample by state, so we can't include two sets of states for the U.S.

Belgium (Flanders only), the former West Germany, Finland, Quebec, the Canadian province of Ontario since 1985, and Italy and Spain after they legalized divorce.

Countries with a high degree of Community Property (HC). These are countries that have an extensive form of Community Property. In our sample, this includes Norway and Sweden, where most assets are considered as belonging to a couple, even if they were acquired prior to couple formation. However, it is common for heirs to stipulate that their inheritances will not be covered in Community Property.

We also distinguished a fourth category:

Countries with no divorce. While limiting individual freedom, rules that prohibited divorce offered some form of financial protection to tradition-bound women. This includes Italy and Spain before they legalized divorce in 1975 and 1981 respectively.

In the previous section we predicted that the more favorable the RDJP is to women, the lower the probability of an unpartnered birth. It follows that we expect unpartnered births to be more common in countries and provinces that don't have Community Property laws, such as the Common Law countries. We also expect that unpartnered births will be less common in HC countries such as Norway and Sweden than in MC countries such as France.

Simple correlations provide some support to our predictions. Our data indicate an inverse relationship between unpartnered births and a country's degree of community in RDJPs. It can be seen from Table 2 that countries with a division of property based on common law (which we categorized as LC, low degree of community) exhibit among the highest rates of unpartnered births. Austria, another LC country, has a high percentage of unpartnered births as well. In contrast, Sweden, a HC country, has a low percentage of

unpartnered births. Low percentages of unpartnered births are also found in countries that traditionally made divorce illegal--Italy and Spain—and later switched to a MC rule. New Zealand exhibited a rate as high as 15% before the Matrimonial Property Act of 1976 was passed, instituting Community Property; unpartnered births for the period 1976-1995 then fell to 9%. The correlation is not perfect. For instance, Norway, a HC country, has a relatively high percentage of unpartnered births.

IV. Data and Methods

Demographic Data. Our demographic data were drawn from the common core of the Family Fertility Surveys (FFS), a project that was coordinated by the Population Activities Unit (PAU) of the U.N. Economic Commission for Europe (UNECE). This project's objective was to construct a standardized, comparable database in order to put family formation in a multidimensional biographical perspective and to unveil interactions between individuals' educational, occupational, residential, and familial characteristics (Festy and Prioux 2002). In the mid-1990s retrospective data were collected for women aged 15-59 in 24 industrial countries of the UNECE.²⁰ We selected a sample of women who had their first birth in the years 1963-1992.²¹ For countries that experienced changes in RDJP during this period, we dropped years of transition between legal regimes. For this reason, we dropped observations for the transition period 1978-1984 in Ontario, Canada; we dropped years 1971-1974 in Italy and 1979-1980 in Spain. We selected 12 Western countries (or parts thereof) that had all or some of the data

²⁰ The age range and years of survey varied slightly across countries.

²¹ Most unpartnered births are first births. Given our sample sizes, further order unpartnered births are too rare to justify separate estimations. Furthermore, to model higher parity births is more complicated, given the number of possible paths that women may take after a first birth.

crucial to our study, including mother's year of birth and whether a woman was married or cohabited around the time she gave birth to her first child: Austria, Belgium (Flanders), Canada, Finland, France, (the former West) Germany, Italy, New Zealand, Norway, Spain, Sweden, and the United States. We estimated two sets of models: in the first set marriage and cohabitation were measured three months prior to birth; in the second set of regressions, marriage and cohabitation were measured at the time of birth.²²

Three related variables that influence the probability of an unpartnered birth are period, mother's age at birth, and mother's birth cohort. Due to collinearity--mother's (single year) birth cohort is the difference between child's year of birth and age of the mother at birth--we have to choose two of them. We opted for mother's age and child's year of birth, an indicator of time trend.²³

We include mother's age at birth and the square of age, centered at its sample mean (23 years).²⁴ We also include one categorical value of age (older than 29). During the period covered here, the trend for most European countries was a substantial increase in unmarried cohabitation and unpartnered births.²⁵ A mother's cohort effect²⁶ on the

²² We also estimated regressions where marital status was measured at pregnancy and six months prior to birth. The results were identical to the results for marital status measured three months before birth.

²³ We tried to introduce categorical values and a quadratic term for the trend, but these did not improve the estimates.

²⁴ We thus conceive of the function of unpartnered births and age as fitting a parabolic curve, with higher values of unpartnered births at both extremity of the age scale: teens and over 29. We chose the quadratic model after experimenting with a number of alternative models, including a model with all categorical values of mother's age at child's birth --under 18, 19-20, etc.--and a spline model. The quadratic form is more parcimonious and fits the data better according to the AIC and Schwarz criteria. The quadratic form is also consistent with the fact that women as childbearers may obtain lower *B* benefits in marriage when they are teenagers and when they are closer to the end of their fertile state (see Grossbard-Shechtman 1993 Chapters 4 and 10).

²⁵ Some have described these trends as part of the second demographic transition (see Lesthaeghe and Moors 2000).

probability of an unpartnered birth can thus be inferred from the difference between child's year of birth and mother's age at birth.²⁷ We also test for non-linearity of the cohort effect by including a dummy 'mother born in the years 1946-1950'. This cohort, born right after World War II, was part of a dramatically rapid baby-boom. Therefore, marriage market analysis leads us to expect particularly low values of B , in-marriage benefits, for the majority of that cohort's women expecting a husband taking on the role of primary earner.²⁸

Interactions between age dummies and RDJP were introduced to test whether legal regime affects unpartnered births differently depending on women's age.

For ten of the twelve countries, information is included on whether a woman's parents were divorced when she was 15 years old.²⁹ We interpret this variable as exogenous to a woman's decision to have a child without the presence of a partner.³⁰ For nine of the twelve countries individual histories made it possible to calculate a woman's occupation and education nine months prior to giving birth to her first child.³¹ Our education variables consist of two dummies: at least some college education or a college degree, and more than college. Our education variable takes account of age at completion of education, the highest grade attended, the current age at first birth and an

²⁶ Defined as continuous year of birth.

²⁷ Controlling for mother's age at birth, the earlier the child is born, the earlier the cohort the mother belongs to.

²⁸ We experimented with singling out a number of other birth cohorts, but only the cohort born in the years 1946-50 seems to behave very differently from the other cohorts.

²⁹ This information was not available for Norway and New Zealand.

³⁰ We also interpret this variable as an exogenous indicator of expected divorce rate.

³¹ This information was not available for Canada, France and New Zealand. Calculating these at pregnancy enables us to avoid some of the endogeneity between education and fertility decisions.

external source of distribution of age at school completion to assure that our educational attainment categories are measured in an equivalent way, in spite of the diverse educational systems (see also Dourleijn et al. 2002).³² The three categories are: school completion when younger than 19 with a maximum of high school level, school completion at ages 19-23 with (some) college level attended, and school completed after age 23 or graduate education. These same 9 countries also provide a complete individual history of women's successive jobs and job interruptions, enabling us to calculate mother's employment status prior to pregnancy. For another nine countries, information is available on individual religiosity defined as attendance to religious services at least once a month.³³ The seven countries with information on all variables are Austria, Finland, (the former West) Germany, Italy, Spain, Sweden, and the United States.

We estimated the basic model described above for the whole sample of twelve countries and for three sub-samples: a/ the ten countries for which we have information on divorce; b/ the eight countries for which we have information on both divorce and religion (excludes Belgium, France, New Zealand, and Norway); and c/ the seven countries for which we can estimate a full model (also excludes Canada).

Table 3 presents means and variances for the variables used in the empirical model. We present these means for each country included in the sample, and then for women from all twelve countries and for the sample of women from seven countries on

³² It was difficult to use a continuous education variable given the cross-country differences in education systems. In particular, it is difficult to establish whether a respondent has completed high school or not. For instance, in the USA it is illegal to drop out of school before age 18. In contrast, in Austria, Italy and Spain, there is a large population of respondents who completed school by age 16, especially among older cohort.

³³ This information was not available or not comparable for Belgium, France, and New Zealand.

which we have full information. The table highlights cross-country disparities in age, educational system, and occupational status.³⁴

Methods. We estimated weighted logit regressions of the likelihood of an unpartnered birth, where weights take account of the different sizes of each country's samples and sampling methods. The logit method is most appropriate when considering a two-way choice between giving birth with or without a partner, given that women were having a child. An alternative model is a hazard model of a single woman's chance of having a child in couple (censoring when she is no longer single; see for instance Ermisch (1991) and Ekert and al. (2002)). However, this method mixes the modeling of annual risk of a first birth and mother's marital status, which we did not want to do: our focus is on whether the mother is in couple around the time of birth.³⁵ Our models include both macro and individual characteristics. We corrected the estimated variances associated with macro variables given that they are mechanically smaller than the variances of individual characteristics (Moulton 1990). The following models were estimated:

1/ a basic model of the likelihood of an unpartnered birth, R . The dependent variable is the logit of R . The explanatory variables are dummies for country's legal system, child's year of birth, mother's year of birth, a dummy for mother born in 1946-1950, age, centered age square, a dummy for mother older than 29, and four interaction

³⁴ We estimated numerous models for various sample and variable specifications, to check whether these disparities would invalidate our results.

³⁵ Even though cohabitation or marriage often follows pregnancy, in a majority of cases people first form couples and then have children, and we were not interested in the detailed timing of couple formation.

terms between mother age dummies and legal system dummies . Table 4 reports this basic model for twelve countries, ten countries, and seven countries (columns 1 to 3).

2/ an augmented model including information on whether a woman's parents had divorced and an interaction term between parental divorce and legal regime. This is a *ten-country model* given that information on divorce is available for ten countries (col. 4 in Table 4).

3/ an augmented model that includes whether a woman's parents had divorced, the mother's level of religiosity, an interaction term between parental divorce and legal regime, and an interaction term between religiosity and legal regime. This is an *eight-country model* given that information on both divorce and religion is available for eight countries (col. 5 in Table 4).

4/ an augmented model that includes all variables included in the eight-country model plus education dummies, family size, and work and study status dummies. This *seven-country model* was estimated for the seven countries for which information is available on all the variables (col. 6 in Table 4).

V. Regression Results

Tables 4 and 5 report the results of our logit regressions estimated for four samples of Western women: a 12-country sample composed of 31,449 women, a 10-country sample composed of 27,119 women, an eight-country sample composed of 23,467 women, and a seven-country sample composed of 20,933 women. In Table 4 partnership is measured three months prior to birth whereas in Table 5 it is measured at birth. Note that results in bold have the highest level of significance.

Effect of Rule of Division of Joint Property (RDJP). We find evidence for our major prediction: the lower the degree of community in a country's divorce laws, the higher women's likelihood of having an unpartnered birth. In all our regressions (even those not shown) we find that women living in countries with medium levels of Community Property (MC) have a lower likelihood of giving birth without a partner than women in countries with low levels of Community Property (LC), and the positive sign of LC is highly significant, statistically, in all our regressions. Furthermore, it appears from our seven- and eight-country models in both tables that in countries with a high degree of community in joint property (HC) women have a significantly lower percent of unpartnered births than in countries with MC (medium levels of Community Property). This result is also found for the 10-country model in column 4 of Table 4. Most unlikely to give birth without a partner were women in countries where divorce was illegal, a finding significant at the highest level.

It appears from Tables 4 and 5 that the effect of LC (low community) is robust to the introduction of individual economic and social characteristics and does not depend on the point in time where partnership is defined

Effect of cohort, trend, and age. We predicted that women born right after WWII, at a time of rapid increases in number of births after a period of low births, will have a higher likelihood of unpartnered births (due the particularly unfavorable marriage market conditions that tradition-bound women of this cohort have faced). All our models confirm that women born in the years 1946-50 are more likely to have an unpartnered birth than women born at other times, and this finding takes the highest level of significance. This post-WWII baby-boomer effect is striking, for it contrasts with the upward trend in

unpartnered births observed in all our models. This positive trend factor is statistically significant in the 12-country and 10-country models in Tables 4 and 5. This reflects the strong positive trend found for countries included in the 12-country but not the 7-country models: New Zealand, Norway, Belgium, France, and Canada. The 7-country models include some countries with high rates of unpartnered births throughout the period (the U.S. and Austria) and consistently low rates of unpartnered births (Sweden, Italy, and Spain).

We find that relatively to birth patterns for women in their twenties, unpartnered births are more common among women who are younger than 20 (including teenagers) and older than 29. These findings are significant in all our models, at the highest level of significance. They are represented both by a quadratic term, a function of the age at birth minus 23, and by a dummy indicating whether a woman is older than 29. This last term balances the negative coefficient of age at birth that would have led to a smaller increase in unpartnered births at older ages. It appears that between ages 20 and 29 the benefits of age exceed the disadvantages of age, but after age 29 the negative effects of age on marriage prospects (possibly a function of fecundity) appear to dominate.

Both findings of a positive effect of child's birth year and a negative effect of mother's age at birth have implications for cohort effects. Controlling for mother's age at birth, the later the child is born, the younger the cohort the mother belongs to, so later cohorts have a higher R . Furthermore, controlling for child's birth year, for the entire period we study (1961-1995), younger women (who also belong to younger cohorts) appear to be more likely to have an unpartnered birth. This could reflect a decreasing stigma associated with an unpartnered birth. Against this trend, the high rates of

unpartnered births of older post-WWII baby-boomers are a striking exception. If there has been a decrease in the stigma associated with an unpartnered birth, it only seems to apply for cohorts born after 1950.

We had also predicted that RDJC will have less impact on unpartnered births among teenagers than among more mature women. We find that indeed, relative to the main effects of RDJP, the interactions between ‘Younger than 20’ and one RDJC dummy (HC) goes in the opposite direction of the main effects of RDJC.³⁶ The interaction term with HC is positive at the highest level of significance in all regressions, with a magnitude that exceeds that of the main effect to such an extent that in HC countries the likelihood of an unpartnered birth among teenagers is even higher than that found in MC countries (but it is smaller than the rate of unpartnered births among teenagers in LC countries).

It can be seen from Tables 4 and 5 that the effect of ‘older than 29’ on an unpartnered birth is larger in a MC country than in a LC country (the sign of the interaction with LC is negative). That the interaction goes in the opposite direction of the main effect indicates that the higher protection offered by a more advantageous RDJP means less to women having a first birth past age 29 than to women doing so in their twenties.³⁷ This finding is consistent with a worsened marriage market position for tradition-bound women past age 30 (leading to lower benefits from marriage *B* and value of divorce settlement *D*) and with higher proportions of older women bypassing traditional gender roles and supporting a child without living with a partner. It is even

³⁶ Significance for the interaction term with ‘No divorce’ is at the 5% or 7% level, depending on whether we controlled for religiosity or not.

³⁷ This result achieves the highest level of significance in all our models..

possible that for women receiving no positive benefit B during marriage, higher degrees of community property are a drawback, for in this case they protect men more than women.

All the models including the variable ‘non-intact family of origin’ support our prediction that parental divorce is associated with a higher likelihood of an unpartnered birth.³⁸ We also find a negative impact of non-intact family background on the behavioural influence of Low Community in our ten-country model in both tables, and a weak result in the same direction in the 8-country model. We thus find that three groups of women with characteristics that are not considered appealing in markets for marriage and cohabitation (from the perspective of potential husbands/providers) have a higher likelihood of unpartnered birth: teenagers, women past age 30, and children of divorce. In the case of teenagers and children of divorce this marriage market effect (leading to lower D in case of divorce) seems to dominate the possible effect of a higher predicted divorce probability p_d , resulting in a lower impact of RDJP rules.

It appears from the full seven-country model in Tables 4 and 5 that unpartnered births are most likely to occur among women who completed their studies before age 19 and don’t have more than a high school education. This confirms our unambiguous prediction regarding the association between low education and unpartnered births R . We also find that any education beyond high school is associated with a lower R at the

³⁸ This finding obtains the highest level of significance for the ten-country and the eight-country models (column 4 and 5) and reaches a 5% level of significance in the seven-country model (column 6). The lower level of significance for the 7-countries sample seems to be caused by the exclusion of Canada. Canada experienced rapid increases in divorce rate towards the end of our sample years. It is possible that therefore information on parental divorce is not as a good an indicator of women’s divorce prospects in Canada than in other countries included in the sample.

highest significance level and that the impact of a post-graduate education is not significantly different from that of a college education. This is consistent with the fact that in the U.S.A. more educated women are more likely to be married (see Rose 2005). We don't find evidence for the prediction of a positive association between participation in the labour force and unpartnered birth (labour force participation was defined at the time of pregnancy). In a fluid labour market, being out of the labour force in the year prior to pregnancy does not necessary mean that women's work attachment is permanent. The 7-country models also show that women who were students before giving birth are more likely to have a child alone³⁹ and that women with 1 to 3 siblings are less likely to be mothers without a partner than women who either have no siblings or came from a family of five or more children.⁴⁰

It is apparent from the eight-country models in both tables that observant women (attending a religious service at least once a week) are less likely to have an unpartnered birth. This indicates that for this group of countries, the discouraging effect of religion on extra-marital relations dominates the effect of religion on R via prohibition of abortions. However, this effect does not hold for LC countries, according to both the eight-country model (column 5) and the seven-country model (column 6): the interaction term with LC

³⁹ We have a number of possible explanations for this: students may be more willing to challenge norms; students tend to have a lower income and therefore are more likely to qualify for government benefits if they have a child without a partner; students are more likely to receive help from their parents; or couples including a student are more unstable.

⁴⁰ This may indicate either that women with no siblings or from a very large family are more interested in having a child without a partner or that women with such background are considered as less attractive potential co-parents by men willing to act as primary earners (leading to lower offers of B). In addition, very large families or one child families can be proxies for lower social class.

is positive and of a magnitude similar to that of the main effect.⁴¹ This confirms the prediction that religiosity would have less of an effect on unpartnered births in LC countries.⁴²

Models' Robustness. In addition to the models reported in Tables 4 and 5, we estimated many more models to test our major prediction, namely that rules of division of property at divorce are associated with unpartnered births. Wondering whether our RDJP variables (the LC and HC dummies) were picking up other national characteristics, we estimated models that included other country-level variables that are correlated with our RDJP dummies. Given the small number of countries in our sample, we had to be careful not to include too many country-level variables at once.⁴³ We estimated regressions including country-level divorce rate and country-level religiosity as estimated from our data (Low Community countries such as the U.S.A. and parts of Canada also have high divorce rates). We also experimented with a dummy capturing whether a country has a catholic majority and with dummies for the year a country legalized abortions. In most of these estimations the RDJP variables continued to have an effect on R similar to the one reported in Table 4.⁴⁴ This effect dominated the effects of some related variables, in

⁴¹ Interestingly, if we don't include the interaction between religiosity and LC, the effect of religiosity disappears.

⁴² A possible interpretation for this finding: to the extent that religiosity reduces R by discouraging premarital relations, we expect observant tradition-bound women, who have more control over their premarital relations, to respond more to the financial incentives offered in MC countries but not in LC countries.

⁴³ Furthermore, multi-level analysis modeling two levels (country and individual, see Goldstein 2003) gives the same estimates of direct effects: testing for random covariates indicated that all the coefficients are the same, except for the constant term that has a significant variance- this fact is consistent with an effect of RDJP. Furthermore, the interaction term "RDJP and Older than 29" is not significant in a multi-level analysis.

⁴⁴ At the 5% significance level when the sample became too small for supporting the amount of variables.

magnitude and level of significance.⁴⁵ We considered including information on each country's welfare benefits and other indications of a country's generosity to mothers who are either single, cohabiting, or married, but were not successful in obtaining comparable data. At first glance, this variable would not detract much from the effects of RDJP: most countries in our sample don't have welfare programs that are specifically geared towards lone mothers, except for the USA (a LC country with high prevalence of unpartnered births) and Sweden (a HC country with low prevalence of unpartnered births). Degree of Community Property and welfare programs geared towards lone mothers thus don't seem to be positively correlated.⁴⁶

⁴⁵ One model that we estimated included average country-level parental divorce rate (calculated from our data about women's parental divorce) in addition to the variables in Table 4. This variable had a significantly negative effect on the likelihood of an unpartnered birth, reflecting the relatively high divorce rate of Sweden, the only high Community Property country included in our eight-country model. In this regression, the effect of country-level parental divorce replaced the effect of high degree of Community Property. The LC effects documented in Table 4, including interaction terms, continued to hold, and most of our other results appeared to be robust. This model's log likelihood ratio was higher than the one we obtained in Table 4 (column 6). We also estimated a model similar to the model in column 6, but including country-level religiosity level (as estimated from our data for each country), dummies for low and high Community Property, and replacing the interaction terms reported in column 6 with interactions between personal characteristics and country-level religiosity. The higher the country-level religiosity, the higher the likelihood of an unpartnered birth. This result is probably dominated by the influence of the U.S., a country with particularly high religiosity that we categorized as having a low level of Community Property. We continue to obtain a large and significantly positive effect of Low Community Property (LC), reflecting the high likelihood of an unpartnered birth in Austria, another one of the eight countries included in that model. This model yielded a lower log likelihood ratio. The interaction terms between age and national religiosity have the same signs as the interaction terms between age and degree of Community Property that we reported above. However, whereas the interaction term between LC and parental divorce was negative in columns 4 and 5 of Table 4, the interaction term between religiosity and parental divorce was statistically insignificant.

⁴⁶ It would be beyond the scope of this paper to construct good measures of countries' generosity to lone mothers and mothers in couple.

VI. Conclusions

The main purpose of this paper was to examine whether rules of division of couples' joint property (RDJP) affect the likelihood that women have unpartnered births. Based on a simple model assuming that women are rational and that men's earnings are higher than women's during a substantial part of the union (i.e. men are the principal earners), we predicted that women would find having a child in couple less attractive in countries with rules offering less advantageous conditions to divorcing women who are secondary earners, i.e. divorcing tradition-bound women. Hence the prediction that in such countries there will be a higher likelihood of unpartnered birth.

Based on a simple model assuming that women are rational and men are principal earners, we predicted that women would find having a child in couple less attractive in countries with rules offering less advantageous conditions to divorcing women who are secondary earners, i.e. divorcing tradition-bound women. Hence the prediction that in such countries there will be a higher likelihood of unpartnered birth.

We argue that common law countries and countries with separation of assets (which we classify as LC countries) typically offer tradition-bound women less advantageous RDJP relative to countries with Community Property (MC and HC) countries. Therefore we expect that there will be a higher likelihood of unpartnered birth in LC countries than in Community Property countries. We also expect more unpartnered births in countries where Community Property includes a lower proportion of assets (MC relative to HC countries).

Our analyses of first births to women from twelve industrialized Western countries show that in accordance with our predictions, in countries with RDJP that are

more advantageous to tradition-bound women the likelihood of an unpartnered birth is lower. Women in countries with a high degree of community in joint property (HC) tend to have a lower percentage of unpartnered births than women in countries with MC (medium levels of Community Property), and women living in countries with medium levels of Community Property (MC) have a lower likelihood of giving birth without a partner than women in countries with low levels of Community Property (LC). This last finding holds for a number of samples and is robust to many different model specifications.

We also find that the effect of RDJP depends on three individual characteristics of mothers included in our study: age, non-intact family of origin, and religious observance. We find that RDJPs have less impact on unpartnered births among teenagers, women past age 29, and women growing up in a non-intact home. However, they have more impact on women who are religiously observant.

This study also reproduces some well-known results: teenagers and women who grew up in broken homes have higher rates of unpartnered births. What is less evident is our finding that women past their twenties are also more likely to have a child without a partner. Unpartnered births appear to concentrate among women with low education: women with at least some college are less likely to have unpartnered births than women with a high school education. Relative to employed women the likelihood of an unpartnered birth is higher among women who are enrolled in school.

As noticed by many researchers before us, the overall trend in the countries we covered has been towards more unpartnered births. We find that one particular 5-year cohort is an exception to this trend: the women born right after WWII, in the years 1946-

1950. Based on marriage market analysis, we predicted that the generation born right after WWII--a generation characterized by very low gender ratios--would diverge from this trend.

Our research can be viewed as a first step in examining the tie between unpartnered births and laws regulating division of joint property in case of divorce or separation. This line of research could benefit from further work both at the theoretical and empirical level. Our study is based on a small number of countries and the magnitude of the coefficients depends on the countries included in the sample and our legal classification. We recommend that future cross-country comparisons include more variables, more countries, and more detailed analyses of legal differences, and that analyses similar to ours be performed for individual countries, such as the U.S.A, Canada, and Spain, where various legal regimes with different RDJP coexist.

References

- Akerlof, George A., Janet L. Yellen, and Michael L. Katz, (1996). "An Analysis of Out-of-Wedlock Childbearing in the United States." *Quarterly Journal of Economics* 111: 277-317.
- Beck, Scott H., Bettie S. Cole, and Judith A. Hammond, (1991). "Religious Heritage and Premarital Sex: Evidence from a National Sample of Young Adults." *Journal for the Scientific Study of Religion* 30 (2): 173-180.
- Becker, Gary S. (1973). "A Theory of Marriage: Part I." *Journal of Political Economy* 81: 813-846.
- ____ (1981). *A Treatise on the Family*, 1st edition. Cambridge: Harvard University Press.
- Blau, Francine D., Marianne A. Ferber, and Anne E. Winkler. (2006). *The Economics of Women, Men, and Work*. Fifth Edition. New Jersey: Pearson Prentice Hall.
- Chiappori, Pierre-André (1992). "Collective Labor Supply and Welfare." *Journal of Political Economy* 100: 437-67.
- Dourleijn, Edith, Aat C. Liefbroer and Gijs C.N. Beets (2002). Comparing the 1988 International Standard Classification of Education (ISCED) with Retrospective Information from Educational Histories in Martine Corijn and Erik Klijzing (eds.)

Dynamics of Fertility and Partnership in Europe: Insights and Lessons from Comparative Research, Vol. II ; 157-172; New-York & Geneva: United Nations.

- Ekert-Jaffé, Olivia and Catherine Sofer (1991). "Un point de vue d'économiste sur la nuptialité", in Thérèse Hibert and Louis Roussel (eds.). *La nuptialité : évolution récente en France et dans les pays développés*. Hibert Thérèse and Louis Roussel (eds.), *INED*, Congrès et Colloques 8 : 19-37.
- Ekert-Jaffé, Olivia and Catherine Sofer (1996). "Formal Versus Informal Marriage: Explaining Factors." in *Evolution or Revolution in European Population*, vol. 2, EAPS, 65-85.
- Ekert-Jaffé, Olivia and Anne Solaz (2001). "Unemployment, Marriage, and Cohabitation in France." *Journal of Socio-Economics* 30: 75-98.
- Ekert-Jaffé Olivia, Heather Joshi, Kevin Lynch, Rémi Mouglin, and Michael Rendall (2002). "Fertility, Timing of Births and Socio-economic Status in France and Britain". *Population (English)* 7(3): 475-508.
- Ermisch, John F. (1991). *Lone Parenthood: an Economic Analysis*; xv, 194, National Institute of Economic and Social Research Occasional Papers, 44, Cambridge University Press.
- Festy, Patrick and Prioux France (2002). "An Evaluation of the FFS Project: Comparability of the International Database." Economic Commission for Europe, Economic series, United Nations.
- Furstenberg Frank. F. and Kathleen E Kiernan (2001). "Delayed Parental Divorce: How Much do Children Benefit ?" *Journal of Marriage and the Family* 63(2): 446-457.
- Goldstein, Harvey (2003). *Multilevel Statistical Methods*, 3rd edition, Kendall's Library of Statistics.
- Grossbard, Shoshana (2005). "A Theory of Women's Welfare Dependency, Marriage, and Labour Supply." *Labour* 19: 211-241.
- Grossbard-Shechtman, Amyra (1982). "A Theory of Marriage Formality: The Case of Guatemala." *Economic Development and Cultural Change* 30: 813-30.
- Grossbard-Shechtman, Shoshana A. (1993). *On the Economics of Marriage*. Boulder, Co.: Westview Press.
- Grossbard-Shechtman, Shoshana, Olivia Ekert-Jaffé, and Bertrand Lemennicier (2002). "Property Division at Divorce and Demographic Behavior." Paper presented at the American Economic Association, January.
- Grossbard-Shechtman, Shoshana and Clive W.J. Granger (1998). "Women's Jobs and Marriage : Baby-Boom or Baby Bust." *Population* 53: 731-52 (In French).
- Guttentag, Marcia and Paul F. Secord (1983). *Too Many Women: The Sex Ratio Question*. Beverly Hills: Sage Publications.
- Hawkes, Denise, Heather Joshi, and Kelly Ward (2004). Unequal Entry to Motherhood and Unequal Start to Life : Evidence from the First Survey of the UK Millennium

Cohort. CLS Cohort Studies Working Paper n° 6, London: Centre for Longitudinal Studies, Institute of Education.

- Heer, David M. and Amyra Grossbard-Shechtman (1981). "The Impact of the Female Marriage Squeeze and the Contraceptive Revolution on Sex Roles and the Women's Liberation Movement in the United States, 1960 to 1975." *Journal of Marriage and the Family* 43: 49-65.
- Henry, Louis (1975). "Schéma d'évolution des mariages après de grandes variations des naissances." *Population* 30: 759-779.
- Heuveline, Patrick, Jeffrey M. Timberlake., and Frank F Furstenberg Jr. (2003). "Shifting Childrearing to Single Mothers : Results from 17 Western Countries." *Population and Development Review* 29(1): 47-72.
- Hobcraft John N. (1998) "Intergenerational and Life-Course Transmission of Social Exclusion: Influence of Child Poverty, Family Disruption, and Contact with Police" CASE Paper 1, ESRC Centre for Analysis of Social Exclusion, London School of Economics
- Hobcraft John and Kathleen Kiernan (2001). "Childhood Poverty, Early Motherhood and Adult Social Exclusion." *British Journal of Sociology* 52(3): 495-517
- Kiernan, Kathleen E. and Andrew J. Cherlin (1999). "Parental Divorce and Partnership Dissolution in Adulthood: Evidence from a British Cohort Study." *Population Studies* 53 (2) : 39-48.
- Kirby, Douglas (1999). "Reflections on Two Decades of Research on Teen Sexual Behavior and Pregnancy". *Journal of School Health* 69(3): 89-94.
- Klepinger, Daniel H., Shelly Lundberg, and Robert Plotnick (1999). "How Does Adolescent Fertility Affect the Human Capital and Wages of Young Women?" *Journal of Human Resources* 34(3): 421-448.
- Lam, David (1988). "Marriage Markets and Assortative Mating with Household Public Goods : Theoretical Results and Empirical Implications." *Journal of Human Resources*, 23 (4), 462-487.
- Lehrer, Evelyn L. (2003). "The Economics of Divorce." In Shoshana Grossbard-Shechtman, (ed.). *Marriage and the Economy*. Cambridge and New York: Cambridge University Press.
- Lesthaeghe, Ron and Guy Moors (2000). "Recent Trends in Fertility and Household Formation in the Industrialized World." *Review of Population and Social Policy* 9: 121-170.
- Lichter, Daniel T., Diane K. McLaughlin, George Kephart, and David J. Landry (1992). "Race and the Retreat from Marriage: A Shortage of Marriageable Men?" *American Sociological Review* 57 (December): 781-799.
- Lundberg, Shelly and Robert A. Pollak (1993). "Separate Sphere Bargaining and the Marriage Market." *Journal of Political Economy* 101: 988-1010.

- Manser, Marilyn and Murray Brown (1980). "Marriage and Household Decision Making: a Bargaining Analysis." *International Economic Review* 21: 31-44.
- McElroy, Marjorie B. and Mary Jean Horney (1981). "Nash Bargained Household Decisions : Toward a Generalization of the Theory of Demand." *International Economic Review* 22: 333-49.
- McLanahan, Sara S. (1997). "Parent Absence or Poverty: Which Matters More?" in *Consequences of Growing Up Poor*. Greg. J. Duncan and Jeanne Brooks-Gunn (eds.), New York: Russell Sage Foundation.
- McLanahan, Sara S. and Larry Bumpass (1988). "Intergenerational Consequences of Family Disruption." *American Journal of Sociology* 4 (July): 130-52.
- McLanahan, Sara S. and Gary Sandefur (1994). *Growing Up with a Single Parent: What Hurts, What Helps*. Cambridge, Mass.: Harvard University Press.
- McLanahan, Sara S. and Wendy Sigle-Rushton (2004). "Father Absence and Child Well-being: A Critical Review", in *The Future of the Family*. Moynihan, D.P., T.M. Smeeding, and L. Rainwater (eds.). New York, NY: Russell Sage Foundation.
- Mincy, Ronald B., Shoshana Grossbard and Chien-Chung Huang (2005). "An Economic Analysis of Co-Parenting Choices: Single Parent, Visiting Father, Cohabitation, Marriage." Paper presented at the European Society for Population Economics, Paris, June.
- Mincy, Ronald B. and Helen Oliver (2003). "Age, Race, and Children's Living Arrangements: Implications for T.A.N.F. Reauthorization." Washington, DC: The Urban Institute.
- Moulton, Brent R. (1990) "An Illustration of a Pitfall in Estimating the Effects of Aggregate Variables on Micro Units". *Review of Economics and Statistics*, 72: 334-38.
- Murry, Velma McBride (1992). "Incidence of First Pregnancy among Black Adolescent Females Over Three Decades," *Youth and Society* 23 (4, June): 478-506.
- Rose, Elaina (2005). "Education, Hypergamy, and the "Success Gap," Paper Presented at the Annual Meetings of the Society of Labor Economists, San Francisco.
- Sigle-Rushton, Wendy, John Hobcraft, and Kathleen E. Kiernan (2005). "Parental Disruption and Adult Well-Being: A Cross Cohort Comparison", *Demography* 42(3): 427-446.
- Sweet, James A. and Larry L. Bumpass (1990). "Religious differentials in Marriage Behavior and Attitudes," NSFH Working Paper n°. 15, University of Wisconsin.
- Thornton, Arland and Donald Camburn (1989). "Religious Participation and Adolescent Sexual Behavior and Attitudes," *Journal of Marriage and the Family* 51 (August): 641-653.
- Vogel, Louis, ed. (2002). *Juris-classeur de Droit Comparé*. Paris: Michele Klein, Edition du Juris-classeur.

Willis Robert J. (1999). "A Theory of Out-of-Wedlock Childbearing." *Journal of Political Economy* 107: S33-S64.

Wolfe, Barbara, Kathryn Wilson, and Robert Haveman (2001). "The Role of Economic Incentives in Teenage Nonmarital Childbearing Choices." *Journal of Public Economics* 81: 473-511.

Table 1: Predicted Effects on Unpartnered Births

Variable	Effect on Unpartnered Birth
<u>Aggregate Variables:</u>	
Rule for Division of Joint Property (RDJP)	
Low degree of Community Property (LC)	+
High degree of Community Property (HC)	-
Cohort of 1946-1950	+
<u>Mother's Personal Characteristics:</u>	
Teenage mother	+
Mother comes from a Non-Intact (NI) family	+
Mother has low education	+
Mother out of labor force	-
<u>Interactions with RDJP</u>	
Teenager in LC country	-
Teenager in HC country	+
Non-intact family in LC country	?
Observant of religion in LC country	Sign in opposite direction than the main effect of religious observance
Observant of religion in HC country	Sign same as the sign of the main effect of religious observance

Table 2. Unpartnered First Births and Rule for Division of Marital Property in Case of Divorce

Country and Year of Survey	Rule for Division of Marital Property	Degree of Community	Percent of Unpartnered First Births ^a
New Zealand 1995	Common Law/ Some Acquired Assets since 1976	LOW	11
USA 1995	Common Law	LOW	15
Canada ^b 1995	Common Law	LOW	19
Quebec + Ontario ^c 1995	Acquired Assets ^d	MEDIUM	11
Austria 1995	Some Acquired Assets	LOW	20
Germany 1992	Acquired Assets	MEDIUM	11
Belgium (Flanders) 1992	Acquired Assets ^d	MEDIUM	3
France 1994	Acquired Assets ^d	MEDIUM	7
Finland 1990	Acquired Assets / Unrestricted Community ^e	MEDIUM	10
Norway 1989	Unrestricted Community ^e	HIGH	13
Sweden 1993	Unrestricted Community ^e	HIGH	8
Italy 1995/6	No divorce/ Acquired Assets ^f	No divorce/MEDIUM	4
Spain 1995	No divorce/ Acquired Assets ^f	No divorce/MEDIUM	4

Notes: a) Unpartnered status observed three months before birth; mothers born in 1946-1970 giving birth in 1962-1992; b) Excludes Quebec for the entire period and Ontario after 1978; c) Ontario: for births after 1985; d) Community property only for assets acquired during the marriage; e) Community property is unrestricted: includes assets acquired before and after marriage; f) Acquired Assets from 1975 in Italy and from 1981 in most of Spain; before these dates, separation of assets in rare cases of marriage annulment.

Table 3. Women's Characteristics Prior to their First Child's Birth

	Austria	New Zealand	USA	Canada	Belgium: Flanders	France	West Germany	Italy	Spain	Finland	Norway	Sweden	All 12 Countries	Total 7 Countries
Year of Survey	1995	1995	1995	1995	1992	1994	1992	1996	1995	1990	1989	1993		
Sample size	2923	1873	6274	2252	1983	2111	1352	2826	2486	3038	2457	2316	31891	21215
<u>Birth Cohort and period</u>														
Mother born 1946-50 (%)	22	22	3	22	0	26	0	21	19	34	43	27	20	17
Mean Child's Year of Birth	80	80	82	81	81	79	83	80	81	77	76	80	81	81
<u>Age at First Birth</u>														
Mean Age	22	23	23	24	23	23	23	24	24	24	22	23	23.6	23.6
Variance	17	21	23	23	11	18	15	20	18	19	15	19	19.4	20.7
>29 (%)	7	11	11	15	4	8	6	11	9	10	6	11	10	10
<20 (%)	21	17	27	10	10	15	17	13	10	14	21	14	18	19
Parents are Divorced (%)	11	.	24	17	7	11	10	2	4	7	.	13		12
Religiously Observant (%)	21	.	38	21	.	.	11	34	20	4	5	4		22
<u>1, 2 or 3 Siblings (%)</u>	65	58	55	53	59	.	70	65	57	57	71	72		62
<u>Education before pregnancy</u>														
High School or less (%)	88	.	74	.	78	81	73	74	84	71	79	75		77
College (%)	8	.	17	.	24	10	19	5	8	17	16	11		13
More than College (%)	4	.	9	.	4	9	8	11	8	12	5	14		10
<u>Occupational Status</u>														
<u>Before pregnancy</u>														
In School (%)	10	.	8	.	3	4	10	5	7	19	7	14		10
In Employment (%)	64		35		51		61	27	34	62	63	65		47
Out of Labor Force (%)	26		57		45		28	67	58	17	29	20		43

Table 4. Pooled Logit Regressions of Proportion of Unpartnered Births; Partnership Measured 3 Months Prior to Birth

Variables	Basic model			Model including socio-economic variables		
	12 countries (1)	10 countries (2)	7 countries (3)	10 countries (4)	8 countries (5)	7 countries (6)
Intercept	0.7114 (0.52)	0.8217 (0.59)	1.495** (0.73)	0.8467 (0.60)	1.374 (0.58)	1.097 ** (0.61)
Macro Factors						
<u>Rule for Division of Joint Property (RDJP)</u>						
Low Community Property (LC)	0.702 (0.239)	0.7791 (0.249)	0.6590 (0.272)	0.8174 (0.260)	0.5071 (0.213)	0.5435 (0.208)
High (HC)	0.005 (0.241)	-0.2583 (0.176)	-0.3507* (0.190)	-0.288* (0.169)	-0.4662 (0.144)	-0.3576 (0.145)
Divorce Prohibited	-0.841 (0.228)	-0.8407 (0.230)	-0.9693 (0.250)	-0.8221 (0.235)	-0.9601 (0.244)	-0.8373 (0.271)
<u>Cohort and Period</u>						
Mother Born in 1946-52	0.484 (0.108)	0.5438 (0.125)	0.4797 (0.131)	0.5376 (0.126)	0.4677 (0.123)	0.4526 (0.133)
Trend : Child's Year of Birth	0.022 (0.007)	0.189** (0.008)	0.0087 (.0100)	0.0172** (0.007)	0.0129* (0.008)	0.010 (0.009)
Women's Characteristics						
<u>Age at First Birth and Interactions with RDJP</u>						
Age	-0.2377 (0.017)	-0.2302 (0.018)	-0.2183 (0.020)	-0.2273 (0.018)	-0.2242 (0.017)	-0.1995 (0.209)
(Age-23) Square	0.0141 (0.001)	0.0131 (0.013)	0.0118 (0.001)	0.0130 (0.001)	0.0123 (0.001)	0.0118 (0.001)
Older than 29	0.5908 (0.173)	0.6877 (0.176)	0.6751 (0.224)	0.6966 (0.176)	0.6395 (0.208)	0.6547 (0.254)
Younger than 20 in a HC Country	0.5903 (0.111)	0.7340 (0.077)	0.7490 (0.097)	0.7472 (0.076)	0.7350 (0.077)	0.7063 (0.100)
Older than 29 in a LC Country	0.5533 (0.140)	-0.6493 (0.114)	-0.5526 (0.132)	-0.6632 (0.114)	-0.5470 (0.110)	-0.5711 (0.127)
<u>Family of Origin and RDJP</u>						
Non-intact Family of Origin				0.4467 (0.121)	0.3323 (0.117)	0.2526 (0.099)
Non-intact in a LC Country				-0.3845 (0.133)	-0.2409* (0.129)	-0.1230 (0.111)
<u>Religious Observance and RDJP</u>						
Observant					-0.4228** (0.210)	-0.5292 (0.150)
Observant in a LC Country					0.5763** (0.268)	0.7383 (0.148)
<u>Number of Siblings Between 1 and 3</u>						-0.1651 (0.052)
<u>Education</u>						
Education: Some College						-0.3632** (0.17)
Education :More than College						-0.5158 (0.16)
<u>Occupational Status prior to Pregnancy</u>						
In School						0.5398 (0.060)
Out of Labour Force and not in School						-0.7774 (0.078)
Sample Size	31449	27119	20933	27119	23467	20933
Log (Pseudo-Likelihood)	-7914	-7915	-6391	-7903	-7148	-6334

Column 1: all Countries in Table 1; Columns 2 and 4: column 1 except Norway and New Zealand; Columns 3 and 6: column 2 except Canada, Belgium and France; Column 5: column 2 except Belgium and France. Bold= significant at 1% level, **: significant at 5%, *: significant at 10%.

In the full model, the reference group consists of non-observant women coming from intact families, living in a Medium Community property country, born after 1951, working in the labour force, and who had at most a high school degree before pregnancy.

Table 5. Proportion of Out-of-Couple Births: Pooled Logit Regressions; Partnership Measured at Birth

Variables	Basic model	Model including socio-economic variables		
	12 countries (1)	10 countries (2)	8 countries (3)	7 countries (4)
Intercept	0.6283 (0.56)	0.7267 (0.63)	1.2856 (0.60)	0.96**(0.60)
Macro Factors				
<u>Rule for Division of Joint Property (RDJP)</u>				
Low Community Property (LC)	0.7042 (0.240)	0.8113 (0.270)	0.4459 (0.193)	0.555 (0.188)
High (HC)	0.1209 (0.260)	-0.1754 (0.189)	-0.3599 (0.149)	-0.3158** (0.147)
Divorce Prohibited	-0.7909 (0.251)	-0.7456 (0.270)	-0.8814 (0.262)	-0.8383 (0.282)
<u>Cohort and Period</u>				
Mother Born in 1946-52	0.4077 (0.118)	0.4325 (0.143)	0.3348 (0.127)	0.3922 (0.138)
Trend : Child's Year of Birth	0.0214 (0.006)	0.01602** (0.007)	0.0120* (0.007)	0.010 (0.008)
<u>Women's Characteristics</u>				
<u>Age at First Birth and Interactions with RDJP</u>				
Age	-0.2347 (0.018)	-0.2232 (0.017)	-0.2216 (0.017)	-0.1969 (0.020)
(Age-23) Square	0.0137 (0.014)	0.0126 (0.014)	0.0120 (0.014)	0.0115 (0.017)
Older than 29	0.6316 (0.178)	0.7395 (0.183)	0.6780 (0.220)	0.6496 (0.263)
Younger than 20 in a HC Country	0.5185 (0.122)	0.6942 (0.090)	0.6784 (0.092)	0.6507 (0.119)
Older than 29 in a LC Country	0.5882 (0.160)	-0.6920 (0.151)	-0.5620 (0.149)	-0.6082 (0.152)
<u>Family of Origin and RDJP</u>				
Non-intact Family of Origin		0.3952 (0.119)	0.2591 (0.098)	0.2893 (0.089)
Non-intact in a LC Country		-0.2937 (0.150)	-0.1205 (0.120)	-0.1654 (0.101)
<u>Religious Observance and RDJP</u>				
Observant			-0.4824 (0.170)	-0.5535 (0.136)
Observant in a LC Country			0.7062 (0.186)	0.7576 (0.139)
<u>Number of Siblings Between 1 and 3</u>				-0.1543 (0.045)
<u>Education</u>				
Education: Some College				-0.3343* (0.177)
Education :More than College				-0.5312 (0.160))
<u>Occupational Status prior to Pregnancy</u>				
In School				0.5197 (0.070)
Out of Labour Force and not in School				-0.0448 (0.071)
Sample Size	29780	25450	23467	21215
Log (Pseudo Likelihood)	-8767	-7356	-6679	-6087

Column 1: all Countries in Table 1; Columns 2 and 4: column 1 except Norway and New Zealand; Columns 3 and 6: column 2 except Canada, Belgium and France; Column 5: column 2 except Belgium and France. Bold= significant at 1%level, **: significant at 5%, *: significant at 10%.

In the full model, the reference group consists of non-observant women coming from intact families, living in a Medium Community property country, born after 1951, working in the labour force, and who had at most a high school degree before pregnancy.