# On unilateral divorce and the "selection of marriages" hypothesis

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*Come on now, honey*
*Don't you wanna live with me?*
(M. Jagger - K. Richards)

*[Ah! Gudule]*
*Excuse-toi*
*Ou je reprends tout ça.*
(B. Vian)

## 1 Introduction

The economic approach to household formation and marriage dissolution takes as a starting point the idea that people will engage in marriage rather than stay single and stay married as long as they feel better off that way, taking as constraints both the economic and the legal environment. Thus an important issue arises, which is whether or not divorce law affects the likelihood of divorce and the frequency of marriage. At a basic level, divorce law might be important because of the allocation of rights on marriage dissolution (Becker (1991), Peters (1986)). Thus, a liberal (unilateral/no-fault) divorce law seems to be more likely to induce divorce than a legislation requiring mutual consent.

The coasian tradition (Becker, Landes and Michael (1977)) has challenged this view, arguing that as long as the negotiation is costless and all payments are feasible between spouses, separation occurs (marriage continues) as soon as the joint surplus from divorce (respectively, marriage) is higher than from marriage (divorce). Hence, the law on divorce does not

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matter. Criticisms of the coasian view have focused on transaction costs, indivisibilities or imperfect transferability to explain why negotiation may fail between spouses. Sources of non transferable utility come from the production of some specific (quasi-public) assets within the household, such as children (Becker (1991), Weiss and Willis (1997), Zelder (1993)) or the existence of large components of joint consumption such as housing services coming from the family home (Fella, Manzini and Mariotti (2004)), or imperfect information (Allen and Brinig (2000), Peters (1986)). This also includes gender differences over lifetime contributions to marriage and childcare (Cohen (1987)) and the existence of non contractible relationship-specific investments by spouses (Wickelgren (2008)). However, the way in which divorce law does matter may be connected to the very nature of the threat point in the bargaining process between spouses. Zelder (1993) points out that as long as divorce is the only alternative option to marriage, the divorce is more likely to occur under the unilateral (no-fault) divorce law, while mutual consent divorce restores efficiency by thwarting unilateral terminations. In contrast Fella, Manzini and Mariotti (2004) show that an efficient marriage may not necessarily survive under a mutual consent divorce law when each spouse may credibly use the threat to lock the other in a non-cooperative marriage (perpetual disagreement), a situation which is worse than either divorce or agreement in marriage.

Interestingly, it has been shown that divorce law also matters in the absence of any transaction costs, indivisibilities or informational asymmetries. Clark (1999) gives several examples where the opportunities to reach a mutually beneficial agreement are less dependent on the allocation of dissolution rights than on the allocation of property rights, which is achieved through the marital property law under mutual consent and the alimony law under unilateral law. Bowles and Garoupa (2003) show more specifically that considering the parents' altruism and the issue of explicit legal provisions in favour of the children involved in a divorce introduces difficulties in the implementation of "expectation damages awards" and an inevitable tension between efficiency in divorces and efficiency in marriage.

A main limitation of the controversy is that it focuses on the short run effects of divorce law, analyzing the opportunity to divorce of married people [1]

[1] Everything goes as if they undertake myopic decisions at each date of their lifetime cycle. The usual motivation for this point of view is well known: the marriage contract is an incomplete one, since it is not possible to write a detailed program of actions which may commit the couple to a prescribed behavior in every circumstance of their marital life (Bergstrom (1996)). This justifies the way that partners in a marriage evaluate the opportunity to undertake new decisions when needed, thus engaging in a continuous bargaining process, such that the marriage itself may be renegociated at any date (Wax (1998)). Nevertheless, this argument is not immune to the criticism that even if people have incomplete information regarding the future or if the law forbids them to write complete marriage contracts, it is in their own interest to take into account all the available information, including the fact that it may be better, or they may be constrained, to renegotiate in the future. Moreover, given that in European countries for example, and especially in France, between one marriage in two (in urban areas) or one marriage in three ends in divorce, candidates for marriage cannot ignore this issue. Our paper aims to capture this issue.

but ignoring the feedback of divorce law on the initial decision to enter into marriage. Recently, Mechoulan (2005, 2006) has developed the hypothesis of the "selection of marriages": a shift to a liberal divorce law may have different effects on couples depending on whether they married before or after a legal reform (when unexpected). The argument runs as follows. On the one hand, since the legal change modifies the odds of divorce for marriages contracted before a new law is passed, the most poorly matched among these marriages would be more easily broken, leading to an increase in the short run divorce rate. In these cases the key parameter is the new law governing property division and spousal support. In contrast, for marriages contracted after the legal changes the key issue is the reallocation of property rights away from the spouse who does not want the marriage to end. Despite the decrease in the cost of a divorce (since it is easier to get out of in case of poor quality matching), for such marriages a unilateral divorce law increases the risk of being confronted to the opportunism of the partner, and thus gives spouses incentives to increase the quality of matching. This is the dominant effect in the long run, which explains the decrease in divorces.

Our paper does not consider the issue of the consequences of a *change* in law, but provides a basic extension of the economic analysis of marriage and divorce decisions to a simple two-period game in order to give some new insights into the issue concerning the short-run and the long-run (feed-back) consequences of the law on divorces and marriages, specifically when a divorce law is based on the disconnection between the allocation of the rights to divorce and the setting of the rules of alimony or damage awards. In a sense, while criticisms of the coasian views have focused on the situations where the consensual divorce law yields inefficient divorces (thus it does not do better than the unilateral one), we investigate when the unilateral law yields efficient divorces [2] in the short run (hence it does as well as a mutual consensual law, since it allows concealment of the interest of both partners and achievement of *implicit* mutual consent), and which are the feedback constraints on potential partners considering their initial decision to enter into marriage, depending on the property division law. We assume that individuals have opportunistic behaviors at each date, *i.e.* they proceed to a basic cost-benefit analysis in order to choose between marrying or staying alone, and continuing in marriage or divorcing. The source of non transferability which limits the negotiation within the marriage is due to household expenditures which have a large joint component corresponding to the existence of fixed costs (child care, housing rent and/or maintenance, taxes ...) which yield scale economies.

We show that the equilibria arising depend both on the way the rights on marriage dissolution are held and on the setting of the damage rule

[2] By efficient divorce, we mean as in the rest of the literature that the total surplus in divorce is larger than in marriage.

awarded to the parent who has custody of the children. We also find that any given damage rule may yield multiple equilibria, with efficient as well as inefficient divorces, depending on the allocation of the rights on marriage dissolution with which it is associated. The reason is that when household consumption has a large joint component, divorce creates an externality (either positive or negative) which is reallocated through the property division law. Moreover, we show that when the main issue of the divorce is the furnishing of legal provision for the children, the opportunity of mutual benefit in divorce never exists between altruistic the parents. Regarding the incentives to enter into marriage initially, we find that these are less dependent on the way the rights on marriage dissolution are allocated than on the choice of an alimony rule. In other words, the specific combination of an allocation of rights on marriage and of the damage awards rule yields different consequences in terms of marriage selection, with the result of a harsher (participation) constraint for the parent who will have to bear the externality created by the divorce. Finally, we focus on the consequences on marriage contracting of a decrease in the costs associated with the divorce proceedings and find that these are not commonplace. We find that they are generally ambiguous, and such a decrease in the cost of divorce may yield more marriages, especially when children are involved.

Section 2 introduces the basic model. Section 3 considers the issue of protective measures in favor of children. Finally, section 4 discusses the scope and limits of our results in the light of some stylized facts.

## 2 The model

In order to focus on the main issue of the paper, we consider that the decisions regarding the allocation of time or household expenditures are exogenously given. This may reflect the existence either of legal constraints (income taxes, legal working time) or the influence of social norms (household production and role of spouses, or ostentatious consumption behaviors). The general story is as follows.

At date 0 (or first period), two adult parties $i$[3] and $j$ decide to stay alone or to engage in marriage. We assume that individual participation in the labor market and labor supplies are exogenously set, without loss of generality. Due to the existence of large amounts of joint consumption, the parents are supposed to cooperate in marriage, meaning that they are sharing the surplus of the marriage equally.

[3] Moreover, the at-fault/leaving partner is labelled "he" throughout the paper: this is not for the sake of concreteness or realism (since the majority of filers in divorce are women), but once more, only for ease of exposition. But read "she" if you prefer.

At the beginning of date 1 (or second period) the parents contemplate the opportunity to leave rather than stay in the marriage *and* continue to cooperate. There exists an explicit agreement between the parents concerning the child custody in cases where the parents go on to separate: if divorce occurs, the children will live with partner *j*.

In this framework, the law is designed according to two features: first, it specifies an amount of damages/alimony paid by the leaving parent to the parent having the child custody; second, the law allocates the exclusive rights on the marriage (i.e. the full rights to divorce) to one of the parents. Hence, such a law allows for a unilateral decision to divorce. Its main implication is that the law grants the divorce to the parent as soon as it is in his/her own interest to divorce.

## 2.1 The timing of decisions

The timing of the game may be stylized according to figure 1, in the case where the exclusive rights to divorce are granted to partner *i*.

At date 0, the first node corresponds to the move of $i$ choosing either to get married ($M_i$) or stay alone ($NM_i$); at the second node, $j$ chooses either to accept ($A_j$) or refuse ($R_j$) to engage in marriage with $i$. If $j$ refuses, the game is over. If $j$ accepts, the game attains the third node. Depending on the legal alimony, parent $i$ may choose to stay married ($SM_i$) or get divorced ($GD_i$). At terminal nodes, we have written the individual outcomes at each date, assuming a constant marginal utility for both the parents, and the same discounting factor $\delta \in [0,1]$ for both. At date 1 partner $i$ has to decide to stay in the marriage or leave. At date 0, both the parents have to choose whether to engage in marriage or stay alone, only knowing the probability of divorce tomorrow.

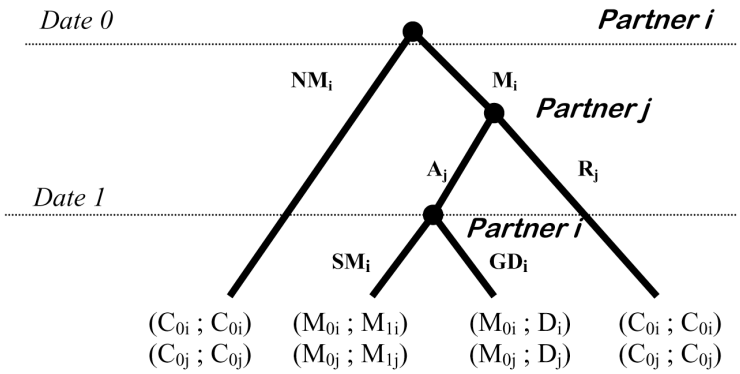


**Figure 1**

### 2.2 The instantaneous payoffs

In the following, $y_i$, $y_j$ will denote individual incomes, while $k_i$, $k_j$, $c_i$, $c_j$, $c$ will correspond to some positive fixed costs.

If the individuals stay alone at date 0, they will be alone also at date 1. Thus, $i$ obtains as for his instantaneous utility levels:

$$C_{0i} = y_i - k_i = C_{1i} \text{ at each date}$$

and $j$ obtains:

$$C_{0j} = y_j - k_j = C_{1j} \text{ at each date}$$

When individuals engage in a cooperative marriage at date 0, they obtain the same utility level, corresponding to the sharing of the aggregate household income minus expenditures:

$$M_{0i} = M_{0j} = M_0 = \frac{y_i + y_j - c}{2}$$

with $c > 0$ representing for example the children's consumption. The second period utility levels associated with the marriage are respectively defined by:

$$M_{1i} = M_0 = M_{1j}$$

Conversely, the dissolution of the marriage would give the following individual utility for the separating partners:

$$D_i = y_i - m - c_i \; ; \; D_j = y_j + m - c_j$$

Note that both $c_i$ and $c_j$ may be understood in a broader sense to encompass for example the parents' legal expenditures related to the divorce proceedings, and the monetary equivalents of the psychological penalties/benefits associated with the divorce - as a result of pain, distress and suffering or in contrast euphoria, recovered optimism and a feeling of freedom. Whether divorce lessens or not the spouses' feeling of well-being is a matter of debate, although the parents perceive that divorce hurts their children (see Brinig and Allen (2000) and Gardner and Oswald (2006)).

The introduction of $m$ also deserves some clarifications. It reflects that Courts have been led in the long run to adjust their practice regarding the financial aspects of divorce under unilateral divorce legislations[4] with a better consideration of human capital (recognizing cases where one spouse has accepted a sacrifice in terms of education or work opportunities to raise children for example) or a better assessment of a child's cost. According to this view, it also seems reasonable to consider that Courts are willing to conceal the parents' interest, and choose a transfer $m$ which limits distortive effects. This is why we focus in the rest of the paper on the opportunity

to choose a $m$ in the set of possible agreements [5]. For the moment we treat $m$ as a gross payment without distinguishing between the recovery of spouse and child support, the model applies here both to the cases of purely selfish the parents or to a household without children. In section 3 these different payments will be disconnected.

### 2.3 Preliminary : incentives to file for divorce

Let us first briefly investigate the basic consequences of alternative legal alimony rules on partners' decisions in the second period. Since the law on divorce introduces an explicit monetary transfer in favor of the custodial parent ($m > 0$), the individual incentives may change with its size. For example when $m > 0$, parent $i$ prefers to leave as long as:

$$D_i \geq M_{1i} \Leftrightarrow m \leq \frac{y_i - y_j}{2} - \left(c_i - \frac{c}{2}\right) \equiv \hat{m}_i \tag{1}$$

Typically, $\hat{m}_i$ is the maximum amount that $i$ accepts to pay to $j$ in case of divorce (*i.e.* $\hat{m}_i$ is the willingness to pay of $i$). Similarly, parent $j$ is better off divorcing rather than staying in marriage as long as [6]:

$$D_j \geq M_{1j} = M_{0j} \Leftrightarrow m \geq \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right) \equiv \hat{m}_j \tag{2}$$

Now, $\hat{m}_j$ is the minimum amount that $j$ accepts to receive from $i$ to agree to divorce (*i.e.* $\hat{m}_j$ is the willingness to accept by $j$). As a consequence, any rule of damage associated with a $m > 0$ satisfying both (1) and (2) (i.e. satisfying $\hat{m}_j \leq m \leq \hat{m}_i$) reaches what may be termed an *implicit* mutual consent to divorce despite the unilateral divorce law: it guarantees that both the parents have a mutual advantage in divorcing (both partners improve their individual welfare when the divorce occurs), and it is clear that whatever the divorce law (either the "mutual consent" or the unilateral divorce law), the partners will agree to divorce. But it can be verified that there cannot exist such a mutual benefit in divorce unless $\gamma \equiv c - c_i - c_j > 0$, meaning that the second period household' expenditures must display

[4] A pure no-fault divorce regime (no-fault for property division) gives rise to opportunistic behaviors as it does not tie the property settlement in case of divorce to the respective investments of spouses in marriage (thus it lowers the cost of a divorce for the opportunistic spouse). The evolution towards more liberal divorce laws has been gradual for several countries (See Mechoulan (2005) for the timing of the different state legislations passed in the USA, and González and Viitanen (2006) for European countries), and as the shift to no-fault rules for divorce grounds took place (allowing a spouse divorce candidate to initiate the proceedings without any proof of marital misconduct) some countries keep on the consideration of fault in the design of the rules governing the financial part of marriage dissolution. Thus while some countries have adopted a *pure* no-fault divorce legislature (no-fault for divorce grounds, no-fault for property allocation, spouse alimony or child support) others have introduced no-fault for divorce grounds but still consider marital wrongdoing in the setting of alimony or "rehabilitative support" awarded to the other spouse.

[5] This set is delimited by the willingness to accept by one parent and the willingness to pay by the other.

[6] $\hat{m}_j$ corresponds to the "expectation damage rule" in Clark (1999) and Bowles and Garoupa (2003).

*decreasing* returns to scale. On the other hand, when the second period household's expenditures entail *increasing* returns to scale (*i.e.* if $\gamma < 0$), then $\hat{m}_j > \hat{m}_i$ and the unilateral divorce law cannot guarantee a mutual benefit in divorce for each spouse but clearly has redistributive consequences [7].

In the rest of the paper, we will consider these two possible rules of damage $\{\hat{m}_i, \hat{m}_j\}$. Each one reallocates the (second period) returns to scale of the household expenditures $\gamma \equiv c - c_i - c_j$, entailing specific redistributive consequences between the parents in the event of a divorce, as shown in the following table 1:

| | $\hat{m}_i$ | $\hat{m}_j$ |
|---|---|---|
| $D_j =$ | $M_0 + \gamma$ | $M_0$ |
| $D_i =$ | $M_0$ | $M_0 + \gamma$ |

**Table 1:** *Redistributive consequences of* $\hat{m}_i$ *and* $\hat{m}_j$

## 2.4 The occurrence of divorce in equilibrium

Let us characterize the outcomes at equilibrium [8] in terms of the probability of divorce in the second period, and in terms of both the parents' decisions to engage in marriage in the first period. Consider that parent $i$ is endowed with the rights to divorce. The main result is the following:

**Proposition 1** *(parent i is endowed with the rights to divorce) Assume that* $\sigma \equiv c - k_i - k_j < 0$. *A/ Under the rule* $m = \hat{m}_i$, *there exists a SPE where the parents engage in marriage and never divorce in the second period provided that:*

$$\frac{c}{2} - k_j \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} \tag{3}$$

*and if* $\sigma - \frac{\delta}{1+\delta}\gamma < 0$, *there exists a second SPE, where the parents engage in marriage and divorce with probability 1 in the second period provided that:*

$$\frac{c}{2} - k_j - \frac{\delta}{1+\delta}\gamma \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} \tag{4}$$

[7] Under a mutual consent divorce law, spouses would be unable to reach mutual consent, unless we enlarge the set of possible agreements to the case where $m < 0$ is possible. See also Fella, Manzini and Mariotti (2004).

[8] We use the concept of Subgame Perfect Equilibrium (SPE hereafter). Note that it would be more rigorous to characterize the various equilibria in term of parents' strategies and associated pay-offs. However the discussion is easier the way we proceed, w.l.o.g.

*B/ Under the rule* $m = \hat{m}_j$, *if* $\gamma < 0$ *there exists a SPE where the parents engage in marriage and never divorce in the second period provided that (3) holds; but if* $\gamma > 0$ *there exists a SPE where the parents engage in marriage and divorce with probability 1 in the second period provided that:*

$$\frac{c}{2} - k_j \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} + \frac{\delta}{1+\delta}\gamma \tag{5}$$

*holds.*

*C/ When the divorce occurs under the rule* $m = \hat{m}_i$, *it may result (i.e. when* $\gamma < 0$*) in a loss of welfare for parent j as compared to if the parents were married for two periods. In contrast, it is always Pareto improving under the rule* $m = \hat{m}_j$.

**Proof.** See the proof in the appendix for A/ and B/. C/ i) Under the rule $m = \hat{m}_i$ partner $i$ is indifferent between divorcing and staying married. But in case of divorce, we have for parent $j$ that: $D_j = M_{1j} + \gamma \lesseqgtr M_{1j}$ depending on the sign of $\gamma$. Hence, the result. ii) In contrast, under the rule $m = \hat{m}_j$ the divorce cannot occur unless $\gamma > 0$, in which case $D_j = M_{1j}$ and $D_i = M_{1i} + \gamma > M_{1i}$.

Let us begin with the multiplicity of equilibria in part A/; it is based on a simple (equilibrium) argument: two different equilibria may exist, one with a 0 probability of divorce, the second with a probability 1, because the partner having the rights on marriage dissolution is indifferent between both outcomes under the rule $m = \hat{m}_i$. In contrast in part B/, there is a unique equilibrium, since the best decision for parent $i$ depends on $\gamma \gtrless 0$.

Note that it is assumed that $c - k_i - k_j \equiv \sigma < 0$ meaning that there exist *increasing* returns to scale on *first period* household expenditures. The reason is that (see the proof of the proposition) when $\sigma > 0$ the marriage cannot exist at equilibrium in the first period, whatever the choice of the rule $m$. Thus, it is natural to focus on the more sensible case associated with $\sigma < 0$.

Coming to the role of the sign of $\gamma$, note that when $\gamma < 0$ (there exist increasing returns to scale in the marriage in the second period) and parent $i$ holds the rights on marriage dissolution, his best (selfish) decision depends on the setting of the damage rule. The clue to the story is whether the damage rule forces him to internalize the externality (scale economies or diseconomies) of divorce or not. Under the rule $\hat{m}_i$, partner $i$ is perfectly hedged (not penalized), while under the rule $\hat{m}_j$, he is implicitly rewarded for taking the best decision for the household.

Finally let us interpret the conditions (3), (4) and (5) supporting the different equilibria. Notice that they are expressed in a similar way in terms

of both an upper boundary and a lower boundary for $y_i - y_j$ the gap existing between the parents' earnings, as supporting the equilibria involved. Consider more specifically condition (3): it shows that a basic motivation for marriage formation (with a 0 risk of divorce) is existing differences between the partners' personal income $y_i - y_j$ (when $y_i = y_j$ the marriage is contracted only if $\frac{c}{2} < \min(k_j, k_i)$; let us maintain this assumption thereafter). However, this difference between incomes gives adverse incentives to each partner [9]: the larger $y_i - y_j$, the more likely is that parent $j$ enters in marriage, but the less likely is that parent $i$ does so. Thus the main prediction is that as the income inequality between men and women decreases, the easier it is for men to enter into marriage and in contrast the harder it is for women to accept a marriage.

When the divorce occurs in the future, an additional restriction is put on one or the other potential partners according to (4) and (5). In (4) now, the reason why partner $j$ accepts the marriage in the first period despite the certainty of divorcing is given by the LHS: the gap between the parents' incomes must be large enough, *i.e.* larger than a threshold $\left(\frac{c}{2} - k_j\right) - \frac{\delta}{1+\delta}\gamma$ which depends on $\gamma$ the externality created by the divorce as compared to (3); if $\gamma > 0$, then a $\frac{y_i - y_j}{2} > 0$ is sufficient for $j$, while if $\gamma < 0$, $\frac{y_i - y_j}{2}$ must be large enough for $j$ to accept the marriage. Parent $i$ incentives are not changed compared to (3) since in case of divorce, his welfare is not affected.

The case appearing in (5) is not exactly symmetric to the previous one, despite the fact that parent $j$ incentives have not been changed as compared to (3) (in case of divorce, she keeps the same satisfaction level). The difference is that it becomes easier for $i$ to enter into marriage when he expects the divorce to occur compared to the RHS in (3), since he decides to divorce only when $\gamma > 0$ and holds up the external benefit of the divorce.

Before suggesting some more general conclusions, let us have a look at the dual allocation of the rights on divorce. The reader may verify that should the full rights to divorce be held by parent $j$, we obtain [10]:

**Proposition 2** *(parent j is endowed with the rights to divorce) Assume that* $\sigma < 0$. *A/ Under the rule* $m = \hat{m}_j$, *there exists a SPE where the parents engage in marriage and never divorce in the second period if (3) holds, and there also exists a second SPE where the parents engage in marriage and*

[9] Obviously, in our model *i* and *j* are perfectly substitutable. But statistically, it is more likely to be observed that $y_i > y_j$ when *i* is "he" and *j* is "she". We do not claim to explain why. See section 4.

[10] In this case, we also assume that the order of play of parents is reversed in period 2.

*divorce with probability 1 in the second period if* $\sigma - \frac{\delta}{1+\delta}\gamma < 0$ *provided that (5) holds.*

*B/ Under the rule* $m = \hat{m}_i$, *if* $\gamma < 0$ *there exists a SPE where the parents engage in marriage and never divorce in the second period provided that (3) holds; but if* $\gamma > 0$ *there exists a SPE where the parents engage in marriage and divorce with probability 1 in the second period provided that (4) holds.*

*C/ When the divorce occurs under the rule* $m = \hat{m}_j$, *it may result (i.e. when* $\gamma < 0$*) in a loss of welfare for parent i as compared to if the parents were married for two periods. In contrast, it is always Pareto improving under the rule* $m = \hat{m}_i$.

Proposition 2 is obviously the dual of proposition 1.

The first major implication of propositions 1 and 2 is that a unilateral divorce law does not necessarily imply inefficient divorces. It can be seen that the welfare consequences of divorce depend on the way the rights on marriage dissolution are allocated, together with the setting of the damage rule. Specifically, allowing partner $i$ to decide on the divorce and setting the rule $\hat{m}_i$, or alternatively allowing partner $j$ to decide on the divorce and setting the rule $\hat{m}_j$, are the two cases which may result in an inefficient divorce. This is because in each situation, the partner endowed with the rights to divorce is also made indifferent (as a result of the damage rule chosen) between the divorce and the marriage, and thus he/she is not penalized when he/she takes the inefficient decision for the household as a whole (that is, ignoring the existence of returns to scale in the marriage). In contrast, allowing partner $i$ to decide on the divorce and setting the rule $\hat{m}_j$, or symmetrically allowing partner $j$ to decide on the divorce and setting the rule $\hat{m}_i$, lead to situations that will always result in an efficient divorce: this is because the partner receiving the exclusive rights on marriage dissolution is implicitly penalized (rewarded) should he/she take the worst (respectively best) decision for the household. Our results are consistent with those of Clark (1990) and Bowles and Garoupa (2003).

The second major implication of proposition 1 and 2 is that they challenge the prediction of Mechoulan (2005,2006) that unilateral divorce law matters for marriage formation because of the allocation of rights on marriage dissolution. Our findings show the role of property division law more than property rights, for the initial decision to enter into marriage, since property division law provides each partner with different incentives to enter into marriage.

The general predictions are as follows: assume a random technology of matching candidates to a marriage, yielding a random distribution of $y_i - y_j$ ; then:

**Proposition 3** *For a given allocation of the rights on marriage dissolution:*

*1) whenever it is associated with a damage rule guaranteeing full recovery for the other partner, the unilateral divorce law induces only efficient divorces, and may yield more marriages in period 1.*

*2) when it is associated with a damage rule with imperfect recovery for the other partner, too many marriages may be contracted in period 1 which are dissolved in period 2 with probability 1.*

*3) lower costs of proceedings may result in more marriages in period 1 under* $m = \hat{m}_i$*, while it entails fewer marriages under* $m = \hat{m}_j$*.*

1) and 2) come from the previous discussion. 1) is the case where the partner holding the rights internalizes the external benefit of a divorce. 2) is the situation where the external cost of divorce is borne by the partner not having the rights on marriage. 3) is a by-product: since we implicitly assume that the costs of proceedings (legal expenditures and time spent) in case of divorce are comprised in $c_i$, $c_j$, they are included in $\gamma \equiv c - c_i - c_j$. Thus, these costs are reallocated through the compensation rule. Under $m = \hat{m}_i$ as the costs $c_i$, $c_j$ decrease, then also $\gamma$ decreases and, according to the LHS in (4): fewer marriages are contracted when $\gamma > 0$, but more marriages occur when $\gamma < 0$. Under $m = \hat{m}_j$ fewer marriages are contracted according to the RHS in (5) when $\gamma > 0$ decreases.

This section tackled the cases of pure selfish partners even when there are children involved in the divorce. Now let us see the consequences of an explicit regulation in favour of the children.

## 3 Parents' altruism and child well-being

We return to the case where the law on divorce disentangles protective measures in favor of children from those benefiting to the guardian parent. The USA, Canada and some European countries today have explicitly adopted scales of alimony for child support in order to help Courts in their judgment regarding the assessment of the cost of a child. In France, these guidelines are in debate [11]. In this section, we focus on the consequence of such guidelines. Two different monetary transfers are thus considered in the following analysis: one is paid by the leaving parent to the other one, and the second is supposed to be directly paid to the children [12].

[11] See Bourreau-Dubois, Deffains and Jeandidier (2005) for an application to the French case. Jeandidier (2003) shows that *implicite* guidelines are likely to be used by French Courts, since there is a great homogeneity in decisions between judges belonging to the same Courts, in the area of child's supports. See Deffains and Langlais (2005) for an analysis of the influence of guidelines on parents' choice between a conflictual and a consensual divorce.

[12] Bowles and Garoupa (2003) note that despite the fact that this scheme may be complex to implement, for administrative and practical reasons, it may be seen as an "ideal system".

### 3.1 Assumptions

We still consider the timing of decisions corresponding to figure 1, but we introduce the following modifications regarding the payoffs associated with the decisions of the parents. At date 0, when individuals engage in a cooperative marriage, their final utility also depends on the satisfaction level of their children $M_c > 0$ up to their individual specific index of altruism denoted respectively $\alpha_i > 0$ for parent $i$, and $\alpha_j > 0$ for parent $j$. Thus, we have:

$$M_{0i} = \frac{y_i + y_j - c}{2} + \alpha_i M_c \; ; \; M_{0j} = \frac{y_i + y_j - c}{2} + \alpha_j M_c \; ; \; M_{0c} = c + u$$

Basically, this assumption implies that the children's welfare depends both on the consumption level they reach and $u > 0$ a pure psychological consequence representing their feelings of well being and happiness when they live with their two the parents (expressed through its monetary equivalent value).

At date 1 now, we assume as before that the second period utilities of the parents associated to the marriage are respectively defined by:

$$M_{1i} = M_{0i} \; ; \; M_{1j} = M_{0j} \; ; \; M_{1c} = M_{0c}$$

In this context, the unilateral divorce law is associated with a combination of two rules of damages $\{m,m_c\}$ where the payment of the leaving parent to the other one is denoted $m$, and the legal alimony directly paid to the children is $m_c$. Thus, according to our specification, the dissolution of the marriage would imply the following respective individual satisfaction levels for the separating partners and children:

$$D_i = y_i - m - m_c - c_i + \alpha_i D_c; \; D_j = y_j + m - c_j + \alpha_j D_c \; ; \; D_c = m_c + v$$

where $D_c > 0$ is the utility level of children when divorce occurs, with $v \leq u$ the psychological penalty inflicted on children in case of divorce (all else being equal, children are less happy when their parents get divorced than when they all live together). Once more, note that this is a matter of debate, since children may feel better off in case of divorce as compared with if/ when the parents were engaged in a non cooperative marriage. Note however that this has no consequence on our results, *i.e.* for equilibria emerging.

Regarding the protective measures in favour of children, it may be postulated that they have to be fully compensated, because they were not party to the original agreement between the parents when they engaged in marriage, but now, all else being equal, they experience a prejudice when the parents decide to divorce. Thus, the damage rule that may be implemented satisfies:

$$M_c = D_c \Leftrightarrow \overline{m}_c \equiv c + u - v$$

On the other hand, the law (the judge) may be more restrictive (or less protective), and only aims to maintain the consumption level of children which implies:

$$\tilde{m}_c \equiv c \Rightarrow M_c > D_c$$

Clearly, while in the first case the law implies no unfavorable redistributive consequences for children in case of divorce, in contrast, the welfare of children decreases when the parents separate in the second one.

To keep things simple, we introduce a damage rule in favour of the parent who obtains custody of the children such that she receives the same utility level in the second period whatever the decision of parent $i$, hence:

$$D_j = M_{1j} \Leftrightarrow m_j = \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right) + \alpha_j(c + u - v - m_c)$$

which depends on the choice of the other rule $m_c$.

Finally, when the rule of damage in favour of the parent who obtains the custody of children is such that the leaving parent receives the same utility level in second period whatever his decision, we have:

$$D_i = M_{1i} \Leftrightarrow m_i = \frac{y_i - y_j}{2} - \left(c_i - \frac{c}{2}\right) - m_c - \alpha_i(c + u - v - m_c)$$

Thus, we may consider four rules of damage in case of a unilateral divorce law:

- favorable to the guardian parent and children: $\left(\overline{m}_j = \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right), \overline{m}_c = c + u - v\right)$

- favorable only to the guardian parent: $\left(\tilde{m}_j = \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right) + \alpha_j(u - v), \tilde{m}_c = c\right)$

- favorable to the leaving parent and children: $\left(\overline{m}_i = \frac{y_i - y_j}{2} - \left(c_i - \frac{c}{2}\right) - (c + u - v), \overline{m}_c = c + u - v\right)$

- favorable only to the leaving parent: $\left(\tilde{m}_i = \frac{y_i - y_j}{2} - \left(c_i - \frac{c}{2}\right) - c + \alpha_i(v - u), \tilde{m}_c = c\right)$

| | $(\overline{m}_j, \overline{m}_c)$ | $(\tilde{m}_j, \tilde{m}_c)$ |
|---|---|---|
| $D_i$ = | $M_{1i} - (u - v) - (c_i + c_j)$ | $M_{1i} - (\alpha_i + \alpha_j)(u - v) - (c_i + c_j)$ |
| $D_j$ = | $M_{1j}$ | $M_{1j}$ |
| $D_c$ = | $c + u$ | $c + v$ |

**Table 2:** *Consequences of protective measures in favour of children with a damage rule favorable to the guardian parent*

| | $(\overline{m}_i, \overline{m}_c)$ | $(\tilde{m}_i, \tilde{m}_c)$ |
|---|---|---|
| $D_i$ = | $M_{1i}$ | $M_{1i}$ |
| $D_j$ = | $M_{1j} - (u - v) - (c_i + c_j)$ | $M_{1j} - (\alpha_i + \alpha_j)(u - v) - (c_i + c_j)$ |
| $D_c$ = | $c+u$ | $c+v$ |

**Table 3:** *Consequences of protective measures in favour of children with a damage rule favorable to the leaving parent*

In table 2, we consider two rules of damage which are in favour of the parent having the child custody: whatever the decision of the other parent, she keeps a constant utility level. We obtain the opposite result in the case of the rules of table 3.

### 3.2 Equilibrium with children

The next proposition focuses on the case where the parents are altruistic ($\alpha_i > 0$, $\alpha_j > 0$), and assumes that parent $i$ is endowed with the rights to divorce. We have:

**Proposition 4** *(parent i is endowed with the rights to divorce) Assume that* $\sigma^* \equiv \sigma - (\alpha_i + \alpha_j)(u + c) \leq 0$. *A/ Whatever the rule, there exists a SPE such that the parents get married in the first period and do not divorce in the second period, provided that:*

$$\frac{c}{2} - k_j - \alpha_j(u + c) \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} + \alpha_i(u + c) \tag{6}$$

*Under both rules* $(\overline{m}_i, \overline{m}_c)$ and $(\tilde{m}_i, \tilde{m}_c)$, *this is the unique equilibrium.*

*B/ Under the rule* $(\overline{m}_i, \overline{m}_c)$, *if* $\sigma^* \leq -\frac{\delta}{1+\delta}[(u - v) + (c_i + c_j)]$, *there also exists a second SPE such that the parents get married in the first period and divorce with probability 1 in the second period, provided that:*

$$\frac{c}{2} - k_j - \alpha_j(c+u) + \frac{\delta}{1+\delta}[(u - v) + (c_i + c_j)] \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} + \alpha_i(c+u) \tag{7}$$

*C/ Under the rule* $(\tilde{m}_i, \tilde{m}_c)$, *if* $\sigma^* \leq -\frac{\delta}{1+\delta}[(\alpha_i + \alpha_j)(u - v) + (c_i + c_j)]$, *there also exists a second SPE where the parents get married in the first period and divorce with probability 1 in the second period, provided that:*

$$\frac{c}{2} - k_j - \alpha_j(c+u) + \frac{\delta}{1+\delta}[(\alpha_i + \alpha_j)(u - v) + (c_i + c_j)] \leq \frac{y_i - y_j}{2} \leq k_i - \frac{c}{2} + \alpha_i(c+u) \tag{8}$$

*D/ In any equilibrium where the parents divorce in the second period, the welfare of parent j is smaller than if the parents were married for two periods.*

**Proof.** See the proof in the appendix for A/ to C/. In D/ the result is hardly a surprise: table 2 shows that $D_i < M_{1i}$ while table 3 shows that $D_j < M_{1j}$. This means that in the present context, the unilateral divorce law cannot guarantee a mutual benefit in divorce for the parents. More generally, the existence of a mutual benefit would require that either $\overline{m}_j \leq \overline{m}_i$ or $\tilde{m}_j \leq \tilde{m}_i$ depending of the choice of $m_c$ (*i.e.* setting $m_c = c + u - v$ or $c$). The first inequality yields $c + u - v < c - c_i - c_j \Leftrightarrow u - v < -c_i - c_j$, while the second one leads to $c + (\alpha_i + \alpha_j)(u - v) \leq c - c_i - c_j \Leftrightarrow (\alpha_i + \alpha_j)(u - v) \leq -c_i - c_j$: clearly, both inequalities cannot hold since by assumption $u > v$. Thus, the main consequence of the introduction of parents's altruism is that either $\overline{m}_j > \overline{m}_i$ or $\tilde{m}_j > \tilde{m}_i$: thus, the mutual benefit to divorce cannot exist in equilibrium.

The proof in the appendix reveals that assuming now $\sigma > (\alpha_i + \alpha_j)(u + c)$ would imply that whatever the rule, there cannot exist an equilibrium where the parents engage in marriage in the first period. Thus, for our purpose it is natural to focus on the alternative case $\sigma \leq (\alpha_i + \alpha_j)(u + c)$. This means that as a consequence of the parents' altruism, the existence of increasing returns to scale in first period expenditures ($\sigma \leq 0$) gives a sufficient condition for the existence of marriage at equilibrium, but this is not a necessary condition. Conversely, altruism is necessary but not sufficient to engage in marriage, although the more the parents are altruistic, the more likely they are to engage in marriage. Put differently: when scales diseconomies exist in marriage, the parents' altruism must be large enough to convince two individuals to enter into a marriage with children. Note also that regarding this condition, the individual indexes of altruism play a symmetrical role – though, for example, it does not matter that $\alpha_i = 0$ if $\alpha_j > 0$ is large enough.

Regarding the role of $y_i - y_j$ for marriage contracting, the same general comment as made before applies, since the adverse incentives on potential partners exist. Note that condition (6) explicitly introduces the specific role of the parents' altruism in the incentives to enter into marriage at an individual level: the consequence is that altruism enlarges the range of admissible values for $y_i - y_j$ as supporting the marriage in an equilibrium without a divorce. Moreover, the higher both indexes of altruism, the more likely the marriage all else being equal.

However, a first modification appears through the predictions of part A/ as compared to the previous section: now when the exclusive rights to divorce are held by parent $i$ and when this is associated with a transfer

favorable to the other parent (having custody of the children), then the parents are committed to the marriage for two periods (at least as far as $\sigma^* < 0$ holds; otherwise, no equilibrium exist). Put differently, parent $i$'s rights are ineffective with such a combination.

As before, parts B/ and C/ show that when full recovery of parent $j$ is not possible and when the rule is thus favorable to the parent $i$ who has the rights on marriage dissolution, two equilibria may arise: either the divorce never occurs (as in part A/), or the probability of divorce is equal to 1. This second kind of equilibrium is more likely to occur if $\sigma$ reaches a negative values, below a threshold which depends on the compensation rule awarded to the children (and thus, which depends in a complex manner on the various parameters of the model).

A second major modification as compared to the previous section is that the setting of the specific damage rule has no impact on parent $i$'s incentives to enter into marriage here (note that the same RHS holds in (6), (7) and (8)), and all else being equal, these incentives increase with both his index of altruism and the children's first period welfare. But things are different for parent $j$ (note that the LHS of the same conditions is specific). Parent $j$'s participation constraint is adjusted to the risk of divorce: it takes into account the children's loss of welfare and the higher fixed costs borne by the parents (LHS of (7) or (8)) in case of divorce - typically, the term $[(u-v)+(c_i+c_j)]$ corresponds to the external cost of the divorce, which is borne by parent $j$ as soon as divorce occurs. In other words, the LHS in (7) and (8) mean that it must be that the gap between the parents' earnings is large enough to compensate her for the loss of welfare incurred at the time of divorce. Put differently, in order for parent $j$ to accept to enter into a marriage with children only for one period (*i.e.* with a maximal risk of divorce in period 1), the loss of welfare experienced by parent $j$ in case of divorce (*i.e.* external cost of divorce) must be small enough to render the acceptance of a marriage more profitable than the rejection, during her lifetime.

Were the rights to divorce obtained by parent $j$, we would obtain the following results (the proof is left to the reader):

**Proposition 5** *(parent $j$ is endowed with the rights to divorce) Assume that $\sigma^* \equiv \sigma - (\alpha_i + \alpha_j)(u+c) \leq 0$. A/ Whatever the rule, there exists a SPE such that the parents get married in the first period and do not divorce in the second period, provided that (6) holds. Under both rules $(\overline{m}_i, \overline{m}_c)$ and $(\tilde{m}_i, \tilde{m}_c)$, this is the unique equilibrium.*

*B/ Under the rule $(\overline{m}_j, \overline{m}_c)$, if $\sigma^* \leq -\frac{\delta}{1+\delta}[(u-v)+(c_i+c_j)]$, there also exists a second SPE such that the parents get married in the first period and divorce with probability 1 in the second period, provided that:*

$$\frac{c}{2}-k_j-\alpha_j(c+u) \leq \frac{y_i-y_j}{2} \leq k_i-\frac{c}{2}+\alpha_i(c+u)-\frac{\delta}{1+\delta}\left[(u-v)+(c_i+c_j)\right] \quad (9)$$

*C/ Under the rule* $(\tilde{m}_j, \tilde{m}_c)$ *, if* $\sigma^* \leq -\frac{\delta}{1+\delta}[(\alpha_i+\alpha_j)(u-v)+(c_i+c_j)$*, there also exists a second SPE where the parents get married in the first period and divorce with probability 1 in the second period, provided that:*

$$\frac{c}{2}-k_j-\alpha_j(c+u) \leq \frac{y_i-y_j}{2} \leq k_i-\frac{c}{2}+\alpha_i(c+u)-\frac{\delta}{1+\delta}\left[(\alpha_i+\alpha_j)(u-v)+(c_i+c_j)\right] \quad (10)$$

*D/ In any SPE where the divorce occurs, parent i experiences a loss of welfare as compared to if the parents were married for two periods.*

Once more, proposition 5 is the dual of proposition 4, and the same qualitative comments apply, the respective role of both the parents being reversed. Note more specifically that the specific choice of the damage rule has no consequence on the participation constraint of parent *j* (the parent endowed with the rights on marriage dissolution: see the LHS in (9) and (10)), although it does modify the incentives of the other one, in a more demanding sense for parent *i*: it appears that the RHS in (9) or (10) are harsher than in (6). The very reason is that parent *i* bears the external cost of divorce. Finally, the main conclusion also holds in this case, that there is a loss of welfare as soon as the divorce occurs. Children may be not fully compensated for the external cost of divorce they have to incur when they no longer have the opportunity to live with their both parents, but moreover it is not possible that altruistic the parents obtain mutual benefit in divorcing.

Finally as before, let us assume a random technology of matching candidates to a marriage, yielding a random distribution of $y_i$–$y_j$; the general predictions are as follows (straightforward given the previous discussions):

**Proposition 6** *For a given allocation of the rights on marriage dissolution (whether children obtain or not full compensation):*

*1) when it is associated with a damage rule guaranteeing full recovery for the other partner, the unilateral divorce law gives ineffective rights on marriage dissolution. The unilateral law is de facto a no divorce law.*

*2) when perfect recovery of the other partner is not possible, inefficient divorces occur in period 2, and marriages are less likely to be contracted in period 1.*

*3) lower costs of proceedings implies more marriages in period 1.*

1) and 2) come from the previous discussion. Note that 3) is easy to understand: as the costs cicj decrease, so do the LHS in (7) or (8); hence the result.

One of the interesting points is that despite the altruism of the parents towards children (not because of their selfishness), their exists an irreducible conflict of interest between the parents.

## 4 Discussion and conclusion

Note first that our paper is not intended to represent any specific known divorce law. There is a great heterogeneity between national legislations (Mechoulan (2006), Smith (2002)). We also leave for future research the issue of comparing a liberal divorce law *versus* a mutual consent law in a dynamic set up.

We focus on a case with exclusive rights to divorce, and consider that the monetary transfer associated with property division in case of divorce is set by the Courts considering the feasible set of transfers of a mutual consent divorce law. Our main objective was to provide an analysis of the short run effects and feedback consequences of a divorce law based on the disconnection between the allocation of the rights to divorce and the setting of the rule of alimony or damage awards.

The main force driving the analysis is that when household consumption has a large joint component, then the divorce creates an externality which may be positive or negative. The design of the property law will have the major effect of reallocating this externality between the parents. A limitation of our analysis is that we do not provide an endogenous explanation of the source of this externality: it may come from fixed expenditures (housing and complement goods, and so on), taxation or the direct costs of divorce proceedings. We leave these considerations aside for future research. Nevertheless, several interesting findings appear in this set up.

Our simple framework shows that the unilateral law has two kinds of selection effects, one on divorces, and the second on marriages. But we have shown that this is less the result of the allocation of the rights on marriage dissolution, than of the property division rule which allows reallocation of the externality of divorce. Moreover, since the costs of the divorce proceedings may also be reallocated through the rule of compensation, a decrease in such cost does not always yields fewer marriages; on the contrary, when children and parent's altruism are explicitly introduced, a decrease in the costs of divorce proceedings induces more marriages. Introducing the issue of children leads to another conclusion which is that, apart from the litigious issue of child custody (which is not addressed here), the parents' altruism is the source of a irreducible conflict of interest between the parents in the allocation of the divorce surplus. We identify rules of compensation for the custodial the parents which *de facto* make ineffective the rights on marriage dissolution, and rules which allow divorce but yield a loss of welfare for the parent who does not hold the rights on marriage dis-

solution. A conclusion is that given the generalization of guidelines use for the setting of spouses' recovery and child support, it must be remembered that they may have consequences on the rate of divorce, on the allocation of rents between the parents and finally on the rate of marriage contracting.

We believe that this adds to the literature since formal discussions have been more focused on the short run consequences of divorce laws than on long run ones. In the beckerian tradition, Brinig and Crafton (1994) and Grossbard-Shechtman (1996) have argued that although it is not absurd to believe that changes in divorce law may have transitory consequences on the rate of divorce, it is more doubtful that those impacts prove to be persistent in the long run. The rationale is that a liberal legislation on divorce will increase the incentives for opportunistic behaviors, leading to a decrease in the gains from marriage, and finally discouraging marriage. For Mechoulan (2006), the scenario corresponding to the "marriage selection" hypothesis seems to fit well with the specific pattern of behavior of the divorce rate in the United-States and it seems to be a consistent explanation for both i) the apparent convergence in divorce rates between states which have passed no-fault legislation and those which have not over the last two decades, and ii) the observation that the consequences of unilateral divorce laws vanished 20 years after their introduction, with the rate of divorce in the USA by the 2000s rejoining its 1970s level. Our work shows that things are not without ambiguity, since as the cost of divorce decreases, there are different effects on partners' incentives to enter into marriage, thus yielding an ambiguous result on the rate of marriages. The exception is when children are involved: we find that the decrease in the cost of divorce allows an unambiguous increase in the rate of marriage.

The empirical evidence does not afford a clear-cut conclusion on the effects of divorce laws, either [13]. In any case, the long run pattern of divorce rates in Europe does not resemble that of the USA: it has continued to increase for three decades and does not display a tendency to rejoin the 1970s levels (see Smith (2002), and González and Viitanen (2006)). For some countries such as France it could be explained that the transition to a true liberal divorce law is not fully accomplished [14] and thus has not yet

[13] Studies based on cross section data find that the law is neutral (Peters (1982, 1992)), but others considering panel data exhibit a positive correlation between divorce rates and the change from fault to no-fault legislation (Zelder (1993); Friedberg (1997)), while those using time series data conclude that if rules of legal procedure have an impact, taken alone the change from fault to no-fault divorce is not important (Smith (1997), Ellman and Lohr (1998)). More recently for Portugal, Coelho and Garoupa (2004) find that the reform in the 70s has had a significant effect on the divorce rate, but not the changes in the 90s which appear more as a response by the legislator to the growing divorce rates. González and Viitanen (2006) use a panel of 18 European countries, and evaluate at 20% the contribution of legal changes in divorce law to the increase in divorce rates in Europe between 1960 and 2002.

[14] The main consequence of the last reform in 2005 was to shorten the delays of proceedings to obtain a divorce, though there still exist four different legal motives to divorce, ranging from litigious to amicable divorces. In France, the rate of divorce increased at the beginning of 1970s, although a new legislation passed only in 1975 and was fully applied only in 1976. Since this date, it has increased continuously after a stabilization between the middle of 1980s and the middle of 1990s. When the last reform was passed in 2005, the rate of divorces registered a peak, and then returned to its long term trend the year after (see Prioux (2007)).

produced its (mitigating) long run consequences through the selection of marriages. But when looking naïvely at passed experience since the 1970s, one observes that the increase in divorce rates has started *before* the passage of the new legislations on divorce, whatever the country (see the United Sates: Mechoulan (2006)); United Kingdom: Smith (1997,1998), Binner and Dnes (2001)). These observations seem to strengthen the argument of endogenous changes in divorce law (Coelho and Garoupa (2004), Mechoulan (2006)), *i.e.* that the legislation adapts to the evolution of the needs of society. Two kinds of changes in social norms are worth mentioning.

Some authors have advocated that the long-run trend in the rate of divorces and marriages may be better explained by the changes in the labor markets of industrial countries that have appeared at the end of the 20th century, and specifically the increase in female labor supply (Brinig and Nock (2000), Gray (2001), Weiss and Willis (1997)). Such issues have complex ramifications, since for example there is evidence that the rates of female participation on the labor market have also been affected by the anticipation of a change in divorce law (Gray (1998), Parkman (1998)) [15]. Our paper does not consider the influence of social norms and we assume both exogenous and stationary incomes for both spouses. But it could be enriched with imperfect information on future incomes and consideration of envy, self-esteem and/or fairness, which have great empirical appeal: it has been reported that unemployment and professional disappointment (no career promotion) are a good explanation of the occurrence of divorces, not because of the disagreements and conflicts they could induce between spouses, but because of differences existing between women's and men's (dashed) aspirations, and specifically, enforcement of self-esteem through the professional success of their partner (Nock and Brinig (2005), Oswald (2002a,b)). This issue and the consequences of the decrease in incomes inequalities between genders, are not captured by the model.

Other authors note that typically most European countries have also experienced a phenomenon of substitution between the traditional marriage and various forms of quasi-marital life including free cohabitations and civil unions [16], and an increasing number of childbirths outside marriage (Prioux (2006-2007)). Thus, it would be worth incorporating in a strategic model the existence of alternative options to marriage with children, thus apart of

[15] Note that this argument that the improvement in the economic status of women is a major force at work, is consistent with the fact that the great majority of filers in divorces are women (Belmokhtar (2000), Brinig and Allen (2000)). There also exist connections with the fact that major inequalities between genders still exist in the domestic production of households despite the increase in the female labour supply (see Anxo, Flood and Kocoglu (2002) for differences existing between industrial countries).

[16] By and large, this tendency began in the early 1970s for North Europe and in the 1980s in Western Europe, but only recently for Eastern Europe - Ireland, Poland and Southern Europe are specific cases where marriage is dominant and divorce is still rare or illegal. In France, the number of PACS (which are civil unions between partners of the same or opposite sex) has continued to increase since its creation on 15th November 1999; see Prioux (2007).

the option "staying alone", adding opportunities such as forming a household without marrying (or delaying marriage) or without having children, or having a relationship without forming a household (until more information is obtained on the partner). As far as I am aware, little has been done at a theoretical level (see Nordblom (2004)). One difficulty is that the influence of the divorce law should have to be also investigated in conjunction with the incentives provided by other forms of legal arrangements such as the taxation system and fiscal law [17].

Another difficulty is the puzzling evidence showing that on the one hand, the growing number of cohabitations have not been accompanied by a decrease but an increase in divorce rates; and on the other hand, there is also a great instability of all forms of alternative unions (Prioux (2006, 2007)), even when childbirth occurs. Thus, from an economic perspective, there is a shift in the issue which is twofold: why do European people seem to display a short-term horizon regarding their decisions of (quasi) marital life? In which way are legal changes accompanying or constraining these decisions?

That European people seem to wish to experience several unions over their lifetime is a stimulating issue to tackle in the realm of a strategic dynamic framework - and a challenge for public policies.

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## APPENDIX

**Proof of proposition 1:** We give the proof rule by rule.

**1**/ Consider the second period decision of parent $i$ under the rule $m = \hat{m}_j$ ; it is direct that, if $\gamma < 0$, parent $i$ always prefers to stay married in the second period and the probability of divorce is 0. Now, given the certainty to stay married in the second period, parent $i$ engages in marriage in the first one only if: $u_i(M_i) = (1+\delta)\left(\frac{y_i + y_j - c}{2}\right) \geq u_i(NM_i) = (1+\delta)(y_i - k_i)$, while parent $j$ always accepts only if $u_j(A_j) = \left(\frac{y_i + y_j - c}{2}\right)(1+d) \geq (1+\delta)(y_i - k_j)$. As a consequence, the parents agree to engage in marriage now if condition (3) holds, which also requires $\sigma < 0$. On the other hand, if $\gamma > 0$ the best second period decision of parent $i$ is the divorce, and thus given the certainty to divorce in second period, parent $i$ engages in marriage in the first one only if: $u_i(M_i) = (1+\delta)\left(\frac{y_i + y_j - c}{2}\right) + \delta\gamma \geq u_i(NM_i) = (1+\delta)(y_i - k_i)$, while parent $j$ always accepts the marriage only if $u_j(A_j) = \left(\frac{y_i + y_j - c}{2}\right)(1+d)$ $\geq (1+\delta)(y_i - k_j)$. As a consequence, the parents agree to engage in marriage now if condition (5) holds.

**2**/ Now, consider the rule $m = \hat{m}_i$. In this case, whatever the sign of $\gamma$, parent $i$ is indifferent in the second period between staying in marriage or divorcing since he obtains $M_{1i}$ in each case. Thus, there are two cases.

**i**/ When $i$ files for divorce with certainty later on, he prefers to enter into marriage in the first period only if $u_i(M_i) = (1+\delta)\left(\frac{y_i + y_j - c}{2}\right) \geq u_i(NM_i) = (1+\delta)(y_i - k_i)$, while parent $j$ always accepts only if $u_j(A_j) = \left(\frac{y_i + y_j - c}{2}\right)(1+d) + \delta\gamma \geq (1+\delta)(y_i - k_j)$. Thus, there exists an equilibrium under the rule $m = \hat{m}_i$, where the parents engage in marriage and divorce with probability 1 in the second period provided that condition (4) applies.

**ii**/ Conversely, when $i$ does not file in the second period, as it has been previously shown in 1/, the parents engage in marriage in the first period only if (3) is satisfied.

**Proof of proposition 4:** we solve rule by rule:

**1**/ Consider either the rule $\left(\overline{m}_j = \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right),\ \overline{m}_c = c + u - v\right)$, or the rule $\left(\tilde{m}_j = \frac{y_i - y_j}{2} - \left(\frac{c}{2} - c_j\right) + \alpha_j(u - v),\ \tilde{m}_c = c\right)$; then in each case $D_i < M_{1i}$. Thus, parent $i$ never files the divorce. Given the certainty of staying married in the second period, the parents will engage in the first period only if they are both better off this way, that is, if we have simultaneously: $u_i(M_i) \geq u_i(NM_i)$ and $u_j(A_j) \geq u_j(R_j)$ or respectively:

$$(1+\delta)\left(\frac{y_i + y_j - c}{2} + \alpha_i(c+u)\right) \geq (1+\delta)(y_i - k_i)$$

$$(1+\delta)\left(\frac{y_i + y_j - c}{2} + \alpha_j(c+u)\right) \geq (1+\delta)(y_j - k_j)$$

meaning that condition (6) must hold. But (6) requires that:

$$\sigma \leq (\alpha_i + \alpha_j)(u + c) \tag{11}$$

Thus, if (17) is satisfied, the unique SPE is such that the parents enter into marriage for two periods provided that (6) holds.

**2**/ Consider the rule $\left(\overline{m}_i = \frac{y_i - y_j}{2} - \left(c_i - \frac{c}{2}\right) - (c + u - v),\ \overline{m}_c = c + u - v\right)$. By construction, parent $i$ is indifferent between filing the divorce or staying

married. Hence there are two cases. Considering first the case where $i$ does not file, we are back to part **1**/ (thus, the same equilibrium arises under the required conditions). On the other hand, when $i$ files with probability 1 in the second period, the parents will engage in marriage in the first period only if simultaneously: $u_i(M_i) \geq u_i(NM_i)$ and $u_j(A_j) \geq u_j(R_j)$ or respectively:

$$(1+\delta)\left(\frac{y_i+y_j-c}{2}+\alpha_i(c+u)\right) \geq (1+\delta)(y_i-k_i)$$

$$(1+\delta)\left(\frac{y_i+y_j-c}{2}+\alpha_j(c+u)\right)+\delta\,(v-u)-\delta(c_i+c_j) \geq (1+\delta)(y_j-k_j$$

hence the condition (7), which requires that:

$$\sigma \leq (\alpha_i+\alpha_j)(u+c)-\frac{\delta}{1+\delta}\left[(u-v)+(c_i+c_j)\right] \tag{12}$$

Finally, if (18) holds, there exists a SPE such that the parents get married in the first period and divorce with probability 1 in the second period. Note that the RHS in condition (18) is smaller than the RHS in condition (17). In the opposite case where $\sigma > (\alpha_i+\alpha_j)(u+c)-\frac{\delta}{1+\delta}[(u-v)+(c_i+c_j)]$ the unique possible SPE is such that the parents never enter in marriage in the first period.

**3**/ Consider the rule $\left(\tilde{m}_j=\frac{y_i-y_j}{2}-\left(c_i-\frac{c}{2}\right)-c+\alpha_i(v-u),\ \ \tilde{m}_c=c\right)$, there are also two cases. Either parent $i$ never files and we are back to part 1/. Or, $i$ files with probability 1, and now the parents engage in marriage in the first period iff: $u_i(M_i) \geq u_i(NM_i)$ and $u_j(A_j) \geq u_j(R_j)$ or respectively:

$$(1+\delta)\left(\frac{y_i+y_j-c}{2}+\alpha_i(c+u)\right) \geq (1+\delta)(y_i-k_i)$$

$$(1+\delta)\left(\frac{y_i+y_j-c}{2}+\alpha_j(c+u)\right)+\delta(\alpha_i+\alpha_j)(v-u)-\delta(c_i+c_j) \geq (1+\delta)(y_j-k_j)$$

hence the condition (8), which now requires that:

$$\gamma \leq (\alpha_i+\alpha_j)\left[(u+c)-\frac{\delta}{1+\delta}(u-v)\right]-\frac{\delta}{1+\delta}(c_i+c_j) \tag{13}$$

Finally, if (19) holds, there is a SPE where the parents get married in the first period and divorce with probability 1 in the second period. Remark that the RHS in condition (19) is once more smaller than the RHS in condition (18). But if $\sigma > (\alpha_i + \alpha_j)(u + c) - \frac{\delta}{1+\delta}(\alpha_i + \alpha_j)(u - v) - \frac{\delta}{1+\delta}(c_i + c_j)$ the unique SPE is such that the parents never enter in marriage in the first period.

Thus putting the pieces together leads to proposition 4.