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**Efficiency and the
Division of Marital Assets**

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Abstract

This paper examines the incentives that property division laws can have for divorce and investment in marital assets. This paper considers an environment in which spouses have multiple inputs, such as time and money, to a marital asset but the choices a spouse makes with regards to one input, say time, are not observable to the courts. In such an environment, it is demonstrated that when spouses specialize, as in a traditional family structure, the common-law rule may be efficiency enhancing. However, when both spouses work and strong consumption complementarities are present, equal division leads to more efficient investment in the marital asset. Further, sufficient conditions are found for which the community rule leads to a lower divorce rate than the common-law rule.

Keywords: divorce, efficiency, marital property

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1 Introduction

For those that subscribe to the law and economics way of thinking, the choice of law is often governed by the nature of transaction costs. In particular, it is generally felt that the laws that survive the test of time are those that are efficiency promoting. With regards to laws concerning the division of matrimonial property, Canada has switched entirely to the adoption of the community rule (equal division) over the common-law rule (division as a function of such factors as contributions made to the assets). Further, as is detailed below in the section on historical background, the reasons for the switch to the community rule seem grounded not in efficiency reasons but in equity concerns. This paper presents a simple environment in which the community rule is efficiency enhancing compared to the common-law rule. In addition, it finds that the timing of the switch to the community rule (around 1985) may not be coincidental. Specifically, it finds the community rule to be less efficient than the common-law rule in a traditional household model with specialization (labour versus household production), but more efficient in a marriage in which consumption complementarities are part of the benefits to marriage. Thus it is perhaps not surprising that provinces first employed a common-law rule but ultimately switched to the community rule.

This paper considers a married couple that jointly invest in a marital asset, such as a home. There exist two types of investment: financial expenditure and household production. After investing, each spouse incurs a shock to their utility of marriage that may lead one or both of them to wish to divorce. If divorce occurs, the marital asset is divided according to the division rule in effect. It is assumed that not each type of investment is observable by the courts. Specifically, the courts are assumed to be able to observe each spouse's financial investment but not their household production. Thus the court may either divide the asset equally between the spouses independent of their contribution (community rule) or as a function of each spouse's

financial contribution (common-law rule). This paper considers the efficiency implications for both rules in two types of households, as suggested by Stevenson and Wolfers (2007). First, in a traditional marriage arrangement, in which there is specialization in production and private consumption as well as consumption of a marital asset, the common-law rule can be efficiency enhancing. However, in a more modern family structure, in which both spouses work and their exist significant consumption complementarities, the community rule provides incentive to invest in the marital asset efficiently while the common-law rule does not. Further, this paper finds that when divorce is inefficiently high, the divorce rate will be lower under the community rule than under the common-law regime for modern families.

This result is reminiscent of Holmstrom and Milgrom (1991) in which a principal employs an agent for multiple tasks but cannot observe the agent's output in some subset of these jobs. In their paper, contracts that specify bonuses for good performance in the observable tasks lead to too much effort being expended on those jobs. A law that specifies that the marital asset be divided according to financial contributions is much like a contract that rewards financial contributions but does not reward household production. The environment here is more complicated than in Holmstrom and Milgrom in that there are two agents that play a non-cooperative game with each other, but the basic intuition still holds.

1.1 Historical Background

In 1968, Canada passed the Divorce Act which introduced separation as a ground for divorce. Previously, the only grounds entailed some form of fault (for example, adultery or abuse). Before the switch to “no-fault”, all Canadian provinces except Quebec used the title rule, with adjustments made for the degree of fault. The title rule specified that upon divorce, each spouse keeps the assets in his/her name.

Quebec, which follows the civil law tradition, used the community rule, which specifies that assets be divided equally between the spouses¹. After the introduction of no-fault, most jurisdictions determined that marriage established an implied trust for each spouse in the other's property. The extent of that trust varied across provinces, although all provinces and territories currently divide marital property equally.

The road by which the community rule came to be established in common law jurisdictions is an interesting one, particularly in Canada. Up until 1979, the title rule prevailed in Canada, even after the advent of the Divorce Act. As such, separate property was a common feature of many marriages. In 1968, however, *Murdoch*² started its journey through the courts and sparked a tremendous amount of controversy and questioning of the title rule. When the Murdochs petitioned for divorce in 1968, they had been married for 25 years. They had been ranchers, working together on a number of properties in Alberta. The titles to all the ranches were held by the husband, Alex. The wife, Irene, contributed a substantial amount of labour. Besides acting as a homemaker, she also drove trucks and tractors, worked in the field, and cared for the livestock. However, she did not contribute to the operation financially. In 1973, it was finally held that her contributions to the marriage did not entitle her to a share of the family property upon divorce.

Many commentators were critical of this decision. Of particular interest to this paper is Justice Laskin's dissent. He argued that "in making the substantial contribution of physical labour, as well as a financial contribution, to the acquisition of successive properties, the wife has, in my view, established a right to an interest which

¹Technically, the community rule in Quebec specifies that there is no separate property *within* the marriage. This implies that all assets are owned jointly, and so, upon divorce, are divided equally. Common law jurisdictions generally do not specify property rights within the marriage, but enforce claims on property upon divorce.

²*Murdoch v. Murdoch* (1975) 1 S.C.R. 423

it would be impossible to deny.” Laskin’s dissent was motivated by recent events in the English courts. Traditionally, English courts ruled that a spouse had no claim on the matrimonial property unless the owner (usually the husband) expressly created a trust, or the nonowning spouse could provide evidence of an intention to create a trust³. However, in 1971, the English Court of Appeal held that if it would be inequitable for one spouse to claim the matrimonial property as his or her own, then the court should impose a trust on the owner on behalf of the nonowning spouse⁴. Laskin felt that the wife’s labour was an important contribution to the value of the properties, and so awarding everything to the husband would unjustly enrich him. As such, a constructive trust should be granted the wife.

Laskin’s dissent provided the basis for the use of trusts in the event of divorce in Canada. In two important cases shortly after, *Rathwell v. Rathwell*⁵ and *Pettkus v. Becker*⁶, the Supreme Court of Canada accepted that an implied trust is created whenever a spouse contributes financially to the matrimonial property (*Rathwell*), and, further, that each spouse’s contribution to the marriage is sufficient to make the awarding of the entire property to a single spouse unjust (*Pettkus*). In other words, each spouse would now have a claim on any matrimonial property in the event of divorce.

The particulars of divorce law, such as the division of property, is left to the provinces in Canada, and so by 1979, each province had amended its family property laws to incorporate this new regime. However, there remained considerable question about the extent of the claim each spouse would have. In the subsequent years, the provincial courts spent considerable time and energy trying to establish a precise

³See especially *Pettit v. Pettit*, [1970] A.C. 777 (H.L.) and *Gissing v. Gissing*, [1971] A.C. 886 (H.L.).

⁴*Heseltine v. Heseltine*, [1971] 1 W.L.R. 342 (C.A.).

⁵(1978) 2 S.C.R. 436.

⁶(1980) 2 S.C.R. 834.

formula for the division of marital assets. In 1985, the British Columbia Court of Appeal pronounced a ruling that has become the standard across the country. In *Bawtinheimer v. Bawtinheimer*⁷, it was held that all marital assets should be divided equally between the spouses under the *presumption* that spouses jointly contribute to the financial well-being of the family and that such contributions are generally equal in value. Since this decision, all provinces use the 50/50 division rule as at least the starting point. For example, British Columbia allows for deviation from equal division only under exceptional circumstances, which are limited to “(a) the duration of the marriage, (b) the duration of the period during which the spouses have lived separate and apart, (c) the date when property was acquired or disposed of, (d) the extent to which property was acquired by one spouse through inheritance or gift, (e) the needs of each spouse to become or remain economically independent or self-sufficient, or (f) any other circumstances relating to the acquisition, preservation, maintenance, improvement or use of property or the capacity or liabilities of a spouse”⁸. It should be noted that no provinces allow for deviations from equal division based on unequal contribution to the marriage.

The above history suggests that the equal division rule was adopted primarily for equity considerations. To an economist, such a presumption as was made in *Bawtinheimer* may seem like an invitation for free-riding and so equity would come at a cost of efficiency. This paper, however, demonstrates that this presumption may indeed be efficiency enhancing.

⁷(1985) 68 B.C.L.R. 234 (C.A.).

⁸British Columbia *Family Relations Act*, section 65.

1.2 The Literature

There exists a large literature in economics, especially empirical, examining divorce law. A major area of research studies the effects of the switch from fault to no-fault rules on divorce rates⁹. Occasionally, it is noted that the property division rule is very important¹⁰. The theoretical literature that examines the effect of property division rules is considerable smaller.

Clark (1999) demonstrates that when divorce is unilateral¹¹ the divorce rate varies across differing property rules even in the absence of bargaining frictions. He finds that the set of marriages for which divorce is efficient is dependent on the property division rule, since the division rule determines the outside option. As such, the divorce rate will vary as the property division rule varies even if there are no transaction costs. It should be noted that Clark takes the couple's history, such as past investment in durable household public goods, as given.

Aura (2007) compares the community rule and the common-law rule when spouses are unable to commit to future consumption allocations within the marriage. He finds that, if we consider a model in which spouses must negotiate each period over savings and consumption and in which divorce does not occur on the equilibrium path, then neither the community rule nor the common-law rule will always implement an efficient outcome. However, under certain assumptions, the common-law rule will achieve full efficiency while the community rule will not (generically). It should be noted that the assumption that preferences are such that divorce never occurs in equilibrium is necessary. In Aura's model, comparisons of the two rules are difficult

⁹See, for example Peters (1986 and 1992), Allen (1992a and 1999), Zelder (1993), Friedberg (1998) and Wolfers (2006).

¹⁰See Allen (1990), Gray (1998), Brinig and Buckley (1998) and Mechoulan (2005 and 2006).

¹¹Actually, Clark considers both unilateral and mutual consent divorce, and his results hold for both cases.

in such a case.

In contrast, Dnes (1999) finds that the community rule, rather than the common-law rule, is welfare enhancing. The argument is as follows. When divorce is unilateral, divorce occurs when one spouse's outside opportunities are more attractive than marriage. The incentive for divorce thus occurs when the property division rule specifies an allocation for a spouse that is greater than the one that would be obtained within the marriage. Whether divorce occurs or not would depend on the outcome of any bargaining. Dnes argues that the problem with the common-law rule is that it is too flexible and does not specify a specific allocation. As such, uncertainty is generated and if spouses do not have identical beliefs about the outcome of litigation (or if there exists some kind of endowment effect), bargaining may fail. In addition, the community rule provides incentive for long and costly litigation in an attempt to garner a greater proportion of the marital assets. The community rule, however, does not suffer from such uncertainty, and so can facilitate bargaining and decrease costly litigation. Further, this has the effect of decreasing the uncertainty surrounding marriage, making marriage a more attractive option (for single people).

Unlike Clark (1999), this paper considers the effect of the property division on the household's investment behavior from the beginning of the marriage. Like Aura (2007), it compares the community and common-law rules in the presence of transaction costs. However, this paper allows for divorce to occur in equilibrium. It finds transaction costs (namely the lack of observability of household production by the courts) that support the community rule as efficiency enhancing. This supports the findings of Dnes (1999), but for different reasons.

The paper proceeds as follows. Section 2 outlines the basic model to be used in analyzing the traditional and modern family structures. Section 3 considers the traditional family, while Section 4 examines the modern family. Section 5 concludes.

All proofs are in the Appendix.

2 The Basic Model

This paper considers a married couple and their decisions about investment in a marital asset and divorce. Denote the husband and wife by 1 and 2, respectively. When married, spouses derive utility from a marital asset. Spouses can contribute to the asset in two ways, either financially or through home production. Let g^i and h^i denote i 's financial and household contributions to the marital asset, respectively. Let $M(g^1, h^1, g^2, h^2)$, denote the level of the marital asset. Spouses also derive utility from a match-specific component when married. Let A^i denote the utility i gets from being married to j . In addition, spouses may have private consumption apart from the marital asset. The form of this consumption depends on the structure of the family. In the traditional model of the family, spouses do not necessarily spend their leisure time together and so consume a private good. Let x^i denote i 's private consumption. In the modern model of the family, consumption complementarities play a larger role. In order to simplify the analysis, it is assumed that the marital asset also represents joint consumption. Let U^i denote i 's utility from being married. In the traditional family, $U^i = M + x^i + A^i$. In the modern family, $U^i = M + A^i$ ¹². Each spouse i begins with wealth ω^i (equal to the wage earnings plus the value of time).

The utility derived simply from being married, A^i , is assumed to be subject to uncertainty at the time of marriage. After investments have been made, this uncertainty is resolved. Spouses then decide whether to stay married. It is assumed

¹²It may appear that people in traditional families are happier than those in modern families. It need not be the case that $M(g^1, g^2, h^1, h^2)$ is the same function, however, since this paper makes no utility or welfare comparisons across family structures.

that spouses bargain over whether to divorce¹³ (i.e. divorce occurs only when it is efficient), although this is relaxed in Section 4.3. It is also assumed that divorce is costless, although this has no impact on the results. Let $A^i \in \mathbb{R}$ be distributed independently and identically with pdf $f^i(\cdot)$ and cdf $F^i(\cdot)$ and let $A^1 + A^2 \in \mathbb{R}$ be distributed according to the pdf $f(\cdot)$ and the cdf $F(\cdot)$. Both the distribution and realization of A^i are assumed to be common knowledge.

In the event of divorce, the marital asset is divided according to the rule in effect. The division rule is determined by the courts. One possibility is to divide the asset equally. Another possibility is to divide the asset according to each spouse's contribution. A key assumption is that the courts can only observe each individual's financial contribution, g^{14} . This means that when the courts divide the marital asset according to each spouse's contribution, spouse 1 receives a proportion of the asset, α , that is increasing in g^1 and decreasing in g^2 . Thus spouse 1 always receives αM in the event of divorce, where α is either constant (and generally equal to $\frac{1}{2}$) if the community rule is in effect or a function of the financial contributions, g^1 and g^2 . It is assumed that spouse i 's utility when divorced, V^i , is equal to his/her level of wealth. In order to simplify the analysis, it is assumed that any private consumption occurs after the divorce decision, so that $V^1 = \alpha M + x^1$ in the traditional family.

3 The Traditional Family

The traditional family structure entails a husband that specializes in labor market production and a wife that specializes in home production. That is, g^1 and h^2 are

¹³This may be possible when institutions exist that make couples discuss the divorce decision before filing, for example.

¹⁴It is also assumed that the courts cannot observe the individual's wealth and does not know the function M , so cannot deduce the contributions.

the only inputs to the marital asset that are used. Less important are consumption complementarities. As such, this paper models the family environment as one in which each spouse contributes to a household public good according to their specialization, and in which there exists private consumption. Since only the husband's contributions are observed by the court, the proportion of the marital asset received by the husband is $\alpha(g^1)$ when the common law rule is in effect. Note that the individual budget constraints are $\omega^1 = g^1 + x^1$ and $\omega^2 = h^2 + x^2$.

3.1 Efficiency

In this environment, divorce is efficient if A^1 and A^2 are such that $U^1 + U^2 < V^1 + V^2$, which occurs when $A^1 + A^2 < -M$. The probability of this is $F(-M)$. Since it is optimal to specialize, the efficient levels of investment are therefore found by solving

$$\max_{g^1, h^2, x^1, x^2} F(-M) [M + x_1 + x_2] + [1 - F(-M)] [2M + x_1 + x_2 + \bar{A}^1 + \bar{A}^2]$$

subject to the constraints $\omega^1 = g^1 + x^1$ and $\omega^2 = h^2 + x^2$ and where \bar{A}^i is the expectation of A^i conditional on staying married. Substituting the constraints into the problem so that the choice variables are g^1 and h^2 , the problem can be rewritten as

$$\max_{g^1, h^2} [2 - F(-M)] M + [1 - F(-M)] [\bar{A}^1 + \bar{A}^2] - g^1 - h^2$$

The first order conditions are

$$\frac{\partial M}{\partial g^1} [2 - F(-M) + f(-M) (M + \bar{A}^1 + \bar{A}^2)] + [1 - F(-M)] \frac{\partial \bar{A}^1 + \bar{A}^2}{\partial g^1} = 1 \quad (3.1)$$

$$\frac{\partial M}{\partial h^2} [2 - F(-M) + f(-M) (M + \bar{A}^1 + \bar{A}^2)] + [1 - F(-M)] \frac{\partial \bar{A}^1 + \bar{A}^2}{\partial h^2} = 1 \quad (3.2)$$

It is assumed that the second order conditions are satisfied so that these conditions are both necessary and sufficient.

3.2 Noncooperative Investment

Now suppose that spouses contribute to the marital asset non-cooperatively. The probability of divorce is still $F(-M)$, although the level of M may be different. Spouses 1 and 2 respectively solve

$$\begin{aligned} \max_{g^1} \quad & F(-M) \alpha M + [1 - F(-M)] [M + \bar{A}^1] + \omega^1 - g^1 \\ \max_{h^2} \quad & F(-M) (1 - \alpha) M + [1 - F(-M)] [M + \bar{A}^2] + \omega^2 - h^2 \end{aligned}$$

where α depends on the rule in effect. The first order conditions are

$$\begin{aligned} \frac{\partial M}{\partial g^1} [1 - F(-M) (1 - \alpha) + f(-M) [(1 - \alpha) M + \bar{A}^1]] \\ + [1 - F(-M)] \frac{\partial \bar{A}^1}{\partial g^1} + MF(-M) \frac{\partial \alpha}{\partial g^1} = 1 \end{aligned} \quad (3.3)$$

$$\frac{\partial M}{\partial h^2} [1 - \alpha F(-M) + f(-M) [\alpha M + \bar{A}^2]] + [1 - F(-M)] \frac{\partial \bar{A}^1}{\partial g^1} M = 1 \quad (3.4)$$

where $\frac{\partial \alpha}{\partial g^1} = 0$ when the marital asset is divided according to the community rule.

Lemma 1: *When the community rule is used, spouses underinvest in the marital asset.*

This is simply the standard result that noncooperative agents undercontribute to a public good. However, when the common law rule is used, the courts are able to increase 1's incentive to contribute by making the share of the asset received when divorced an increasing function of his contribution. If spouse 2's marginal contributions are increasing in spouse 1's contributions ($\frac{\partial^2 M}{\partial g^1 \partial h^2} > 0$), then this will have the effect of increasing the contributions of both spouses in equilibrium, leading to more efficient investment.

Proposition 1: *For traditional families, when $\frac{\partial^2 M}{\partial g^1 \partial h^2} > 0$, both spouses contribute more than under the community rule.*

Note that if $\frac{\partial^2 M}{\partial g^1 \partial h^2} < 0$, then the common law rule will induce 1 to contribute more

and 2 to contribute less. The net result of this (as compared to the community rule) is ambiguous. It should be noted, however, that even when the common-law rule induces *both* spouses to increase their investment, it will generally be not possible to implement the efficient outcome. While the common law division rule gives additional incentive to spouse 1 to increase his contribution, this is not true for spouse 2. This can be seen by comparing equations 3.1 and 3.3. Suppose that both spouses contributed efficiently. If $\frac{\partial \alpha}{\partial g^1}$ took exactly the right value¹⁵, then 1 would have no incentive to deviate. Spouse 2, however, would wish to lower her contribution.

Corollary 1: *There is no common law rule, $\alpha(g^1)$, that implements the efficient levels of contribution.*

If the court could condition the division of the asset on both spouses' contribution, then there would exist a function $\alpha(g^1, h^2)$ such that $\frac{\partial \alpha}{\partial g^1} > 0$ and $\frac{\partial \alpha}{\partial h^2} < 0$ that would implement the efficient outcome. However, since 2's contributions are not observable to the court, this is not possible.

4 The Modern Family

The modern family is one in which complementarities in consumption are more important than those in production, as noted by Stevenson and Wolfers (2007). In addition, both spouses may work. As such, production consists of two spouses that may both contribute financially and engage in home production. Thus the inputs to the marital asset are g^1 , h^1 , g^2 and h^2 . Note that spouse may differ in their ability to produce the household public good or in their earnings capacity. Since household production

¹⁵Specifically, $\frac{\partial M}{\partial g^1} [1 - \alpha F(-M) + f(-M) [\alpha M + \bar{A}^2]] + [1 - F(-M)] \frac{\partial \bar{A}^2}{\partial g^1}$. See the Proof to Lemma 1 in the Appendix for the derivation of this.

comes at the cost of foregone income, let the cost¹⁶ of a unit of household production be r^i . Consumption complementarities are modeled by considering all consumption as non-rivalrous. It is assumed for simplicity that all consumption comes through the marital asset. The individual's budget constraint is therefore $\omega^i = g^i + r^i h^i$. Also, recall that in the event of divorce, spouse 1 receives a proportion of the marital asset, $\alpha(g^1, g^2)$, where $\frac{\partial \alpha}{\partial g^1} > 0$ and $\frac{\partial \alpha}{\partial g^2} < 0$ if the common law rule is used.

4.1 Efficiency

As before, divorce is efficient if $A^1 + A^2 < -M$. Note that since all consumption comes through the form of the household public good, both when married and when divorced, and since divorce only occurs when efficient, the efficient investments in the marital asset are the ones that maximize its value¹⁷. In other words, the efficient levels of g^1, h^1, g^2, h^2 solve

$$\begin{aligned} & \max_{g^1, h^1, g^2, h^2} M(g^1, h^1, g^2, h^2) \\ & \text{subject to } g^1 + r^1 h^1 = \omega^1 \\ & \text{and } g^2 + r^2 h^2 = \omega^2 \end{aligned}$$

which can be rewritten as

$$\max_{h^1, h^2} M(\omega^1 - r^1 h^1, h^1, \omega^2 - r^2 h^2, h^2)$$

It is assumed that the value of the marital asset is maximized when both spouses contribute positive amounts of each investment type¹⁸ (i.e. $g^1, g^2, h^1, h^2 > 0$), and so

¹⁶Note that this cost incorporates both the foregone income as well as any innate ability the individual has at household production.

¹⁷A formal proof of this has been omitted.

¹⁸This is a simplifying assumption only. All results hold if the optimal investments in the marital asset entail a corner solution.

the following first order conditions characterize the optimal investments

$$\frac{\partial M}{\partial h^1} - r^1 \frac{\partial M}{\partial g^1} = 0 \quad (4.1)$$

$$\frac{\partial M}{\partial h^2} - r^2 \frac{\partial M}{\partial g^2} = 0 \quad (4.2)$$

The following section considers the effect of the property division rule assuming efficient divorce.

4.2 Noncooperative Investment

Given that the probability of divorce is $F(-M)$, spouses choose how to invest in the marital asset to solve

$$\begin{aligned} \max_{g^1, h^1} F(-M) \alpha M + [1 - F(-M)] [M + \bar{A}^1] \\ \text{subject to } \omega^1 = g^1 + r^1 h^1 \end{aligned}$$

$$\begin{aligned} \max_{g^2, h^2} F(-M) (1 - \alpha) M + [1 - F(-M)] [M + \bar{A}^2] \\ \text{subject to } \omega^2 = g^2 + r^2 h^2 \end{aligned}$$

Substituting the budget constraints into the maximization problems, as above, yields the following first order conditions.

$$\begin{aligned} \left[\frac{\partial M}{\partial h^1} - r^1 \frac{\partial M}{\partial g^1} \right] [1 - (1 - \alpha) F(-M) + f(-M) [(1 - \alpha) M + \bar{A}^1] \\ + (1 - F(-M)) \frac{\partial \bar{A}^1}{\partial M}] - r^1 \frac{\partial \alpha}{\partial g^1} F(-M) M = 0 \end{aligned} \quad (4.3)$$

$$\begin{aligned} \left[\frac{\partial M}{\partial h^2} - r^2 \frac{\partial M}{\partial g^2} \right] [1 - (1 - \alpha) F(-M) + f(-M) [(1 - \alpha) M + \bar{A}^2] \\ + (1 - F(-M)) \frac{\partial \bar{A}^2}{\partial M}] - r^2 \frac{\partial \alpha}{\partial g^2} F(-M) M = 0 \end{aligned} \quad (4.4)$$

Note that when α is a constant ($\frac{\partial \alpha}{\partial g^i} = 0$ for $i = 1, 2$), then the first order condition is satisfied when $\frac{\partial M}{\partial h^i} - r^i \frac{\partial M}{\partial g^i} = 0$ ¹⁹ for $i = 1, 2$. This proves the following proposition.

¹⁹Note that when $\left[1 - (1 - \alpha) F(-M) + f(-M) [(1 - \alpha) M + \bar{A}^i] + (1 - F(-M)) \frac{\partial \bar{A}^i}{\partial M} \right] = 0$,

Proposition 2: *When the community rule is used, spouses invest efficiently.*

However, if the asset is divided according to some function of each spouse's financial contribution, g^1 and g^2 , then it is possible for a spouse to increase his/her utility when divorced by increasing g^i above the efficient (and value maximizing) level. While this would decrease the value of the asset, it would increase the share of the asset that the spouse receives in the event of divorce. This leads to an incentive to overinvest in the measurable input. Further, the probability of divorce depends on the wealth that each agent receives upon divorce as well. An increase in g^i decreases j 's wealth when divorced, making j less likely to want to divorce. This has the effect of decreasing the likelihood that i does not end up divorced when s/he would prefer to be married. Thus there exists additional incentive to overinvest in g . This result is formalized in the following proposition.

Proposition 3: *When common law rule is used, each spouse overinvests in g and underinvests in h .*

As noted in the introduction, this result is similar to that of Holmstrom and Milgrom (1991). While this environment does not immediately appear to present a principal/agent problem, it does in fact have much of the same flavour. Here the courts play the role of the principal and the spouses the agents. In this case, the amount of the marital property received after divorce acts as the wage, and so the proportion that each agent receives should be fixed. Note that this implies that dividing the asset according to any fixed proportion, such as giving the entire asset to the wife (or spouse 1), would lead to efficient investment. The proportion with which the asset is divided can thus have implications for the individual's decision to marry. Equal division would make marriage equally attractive for both (potential) spouses,

the first order condition is satisfied as well. It can be shown that the second order conditions are not satisfied, however.

and since marriage requires mutual consent, increase the likelihood of a match²⁰.

4.3 Inefficient Divorce

The above analysis assumes that divorce only occurs when efficient. This section considers the effect of the asset division rule assuming that the decision to divorce is done non-cooperatively. For a given level of the marital asset, M , and asset division rule, agent i will prefer divorce to marriage if $\omega_2^i > M + A^i$, or $A^i < \omega_2^i - M$. The probability that this occurs is $\Phi(\omega_2^i - M)$. Since divorce rules are effectively unilateral, divorce occurs whenever at least one of the spouses wishes to divorce. The probability of divorce is therefore $\Phi(-(1 - \alpha)M) + \Phi(-\alpha M) - \Phi(-(1 - \alpha)M) \cdot \Phi(-\alpha M)$. Each spouse thus chooses g^i and h^i to solve

$$\begin{aligned} \max_{g^1, h^1} Pr(\text{divorce}) \alpha M + [1 - Pr(\text{divorce})] [M + \bar{A}^1] \\ \text{subject to } \omega^1 = g^1 + r^1 h^1 \\ \max_{g^2, h^2} Pr(\text{divorce}) (1 - \alpha) M + [1 - Pr(\text{divorce})] [M + \bar{A}^2] \\ \text{subject to } \omega^2 = g^2 + r^2 h^2 \end{aligned}$$

where the probability of divorce is as given above. Solving for the equilibrium investments for both the community rule and the common-law rule yields the following result:

Lemma 2: *The equilibrium value of the marital asset is greater under the community rule than under the common-law rule.*

Note that an increase in M leads to a decrease in the probability of divorce. This would suggest that jurisdictions with the community rule would have a lower divorce

²⁰See Allen (1992b) for an argument as to why a 50/50 split should be expected. While that paper considers a 50/50 division of shared assets within a marriage, the same argument would apply to the division of a marital asset upon divorce.

rate than those with the common-law rule. However, this is not necessarily the case. In particular, spouses may differ in their marginal incentive to divorce. That is, increasing 1's wealth when divorced (holding the total level of the marital asset, M , constant) may have a greater effect on the probability of divorce than increasing 2's wealth. In this case, a redistribution of post-divorce wealth from 1 to 2 would reduce the probability of divorce. Since the common-law rule may entail greater post-divorce wealth for 2 than for 1, this may have the net effect of reducing the probability of divorce over the community rule, even after accounting for the reduced level of M . A sufficient condition to ensure that this does not occur, then, is that spouses are identical with regards to their distributions of marital utility, A^i . The following proposition demonstrates this formally.

Proposition 4: *When $F^1(\cdot) = F^2(\cdot) = \Phi(\cdot)$, the divorce rate is lower under the community rule than under the common-law rule.*

We therefore have conditions such that the community rule not only leads to more efficient investment in marital assets, but also to lower divorce. As a result, this paper finds conditions for the promulgation of the community rule to be based on efficiency considerations and not just equity.

5 Conclusion and Discussion

This paper considers the differing incentives that the common-law and community rules have for investment in the marriage as a function of the family structure. It finds that, in a traditional family with production complementarities, the common-law rule can be efficiency enhancing. However, in a modern family, where complementarities are in consumption, the community rule gives better incentives for investment in marital assets. These findings perhaps give insight as to why Canadian provinces

initially adopted common-law rules in 1968, but began switching to community rules in 1985.

Community rules began within the civil law codes of France and Spain, and so those countries and their colonies (especially in Africa and South and Central America) have employed various forms of community rules for considerable lengths of time²¹. Other countries, such as the Netherlands, Sweden, Denmark, and Turkey²² Also employ community rules. It is interesting to note that while there has been some movement to community rules in the United States, it has in general not been the same. California introduced “no-fault” divorce in 1970, and every other state adopted some form of no-fault divorce in the succeeding 15 years. During this period, the Supreme Court of the United States ruled that laws that entrenched men as estate executors were in violation of the Fourteenth Amendment’s Equal Protection Clause²³. This meant that many states were forced to change their property division rules.

Today, ten US states²⁴ (Alaska, Arizona, California, Idaho, Louisiana, Nevada, New Mexico, Texas, Washington and Wisconsin) and Puerto Rico enforce equal claims on all marital assets²⁵, a form of the community rule. The remainder of the states use a common-law rule that states that property be divided “equitably”. Equitable division allows that one spouse may receive more than half of the assets out of fairness considerations²⁶. In particular, fairness may dictate that marital assets be divided in proportion to the contributions of each spouse. Freed and Walker (1985) note that

²¹Rheinstein and Glendon (1980).

²²Rheinstein and Glendon (1980) and <http://www.international-divorce.com>.

²³*Reed v Reed*, 404 U.S. 71, 1971.

²⁴Taken from the American Bar Association’s *Family Law Quarterly* (2008).

²⁵It should be noted that jurisdictions vary significantly in what constitutes a marital asset.

²⁶It should be noted that some community states and some equitable states allow for adjustments to the property division when fault occurs. See Brinig and Buckley (1998) for a description of division rules used in each state.

“the doctrine of equitable distribution permits the spouse who has made material economic contribution toward the acquisition of property ... to claim an equitable interest in such property”²⁷. While such ‘economic contributions’ are often defined to include household production²⁸.

It is worth mentioning that if all contributions are observable by the courts, then the common law rule, or equitable distribution based on contributions to the marital asset, is the optimal rule as it helps overcome any free rider problem. Note that it may be the case that the 40 US states that employ a common law rule have developed institutions that better allow courts to observe non-financial institutions, or possibly that these states generally divide assets equally even though contributions may not be equal. Allen (1988) suggests that the latter may be true. Indeed, rulings by various states’ courts suggest that the practice is to use equal division. For example, in Oregon, the case in re Marriage of Francis²⁹ decided that there “is a presumption that marital assets are to be divided equally upon dissolution of the marriage” even though marital contributions were not equal. As such, states that technically employ common law rules may be using community rules in practice.

6 Appendix

Proof to Lemma 1:

Subtracting the non-cooperative first order conditions, equation 3.3 and 3.4, (and

²⁷Freed and Walker at p. 357.

²⁸For example, Arkansas’ Code allows for division of marital assets to be influenced by ”contribution of each party in acquisition, preservation, or appreciation of marital property, including services as a homemaker”, Arkansas Code, Title 9, Subtitle 2, Chapter 9-12-315.

²⁹157 P.3d 1202 (Or. Ct. App. 2007).

letting $\frac{\partial \alpha}{\partial g^1} = 0$) from the efficient first order conditions, equations 3.1 and 3.2, yields

$$-\frac{\partial M}{\partial g^1} [1 - \alpha F(-M) + f(-M) [\alpha M + \bar{A}^2]] + [1 - F(-M)] \frac{\partial \bar{A}^2}{\partial g^1} < 0$$

$$-\frac{\partial M}{\partial h^2} [1 - (1 - \alpha) F(-M) + f(-M) [(1 - \alpha) M + \bar{A}^1]] + [1 - F(-M)] \frac{\partial \bar{A}^1}{\partial h^2} < 0$$

Thus each agent would contribute less than the efficient level under the community rule. ■

Proof to Proposition 3:

Suppose each spouse invests at the efficient level, so that $\frac{\partial M}{\partial h^i} - r^i \frac{\partial M}{\partial g^i} = 0$ for $i = 1, 2$. Note that equations 4.3 and 4.4 are equal to $-r^i \frac{\partial \alpha}{\partial g^i} F(-M) M < 0$. Thus, each spouse would prefer to decrease the contributions h^i and increase g^i . ■

Proof to Lemma 2:

Recall that the probability of divorce is given by

$$F^1(-(1 - \alpha)M) + F^2(-\alpha M) - F^1(-(1 - \alpha)M) \cdot F^2(-\alpha M)$$

Taking the derivative with respect to M yields

$$-[1 - F^2(-\alpha M)] f^1(-(1 - \alpha)M) (1 - \alpha) - [1 - F^1(-(1 - \alpha)M)] f^2(-\alpha M) \alpha < 0$$

Thus divorce becomes less likely the greater the level of M . Taking the derivative with respect to α yields

$$[1 - F^2(-\alpha M)] f^1(-(1 - \alpha)M) M - [1 - F^1(-(1 - \alpha)M)] f^2(-\alpha M) M$$

Substituting the budget constraints into the maximization problems so that the

choice variables are h^1 and h^2 yields the following first order conditions

$$\begin{aligned} \left[\frac{\partial M}{\partial h^1} - r^1 \frac{\partial M}{\partial g^1} \right] & \left[1 - (1 - \alpha) Pr(\text{divorce}) + \frac{\partial \bar{A}^1}{\partial M} - \frac{\partial Pr(\text{divorce})}{\partial M} (1 - \alpha) M \right] \\ & + \frac{\partial \alpha}{\partial g^1} \left[Pr(\text{divorce}) M - \frac{\partial Pr(\text{divorce})}{\partial \alpha} (1 - \alpha) M \right] = 0 \\ \left[\frac{\partial M}{\partial h^2} - r^2 \frac{\partial M}{\partial g^2} \right] & \left[1 - \alpha Pr(\text{divorce}) + \frac{\partial \bar{A}^2}{\partial M} - \frac{\partial Pr(\text{divorce})}{\partial M} \alpha M \right] \\ & - \frac{\partial \alpha}{\partial g^2} \left[Pr(\text{divorce}) M - \frac{\partial Pr(\text{divorce})}{\partial \alpha} \alpha M \right] = 0 \end{aligned}$$

Note that when α is a constant function, then the value of the asset is maximized. Further, when the common-law rule is in effect, however, the equilibrium level of the marital asset is less than maximal. ■

Proof to Proposition 4:

This proof considers the behavior of spouse 1. The probability of divorce is given by

$$\Phi(-(1 - \alpha)M) + \Phi(-\alpha M) - \Phi(-(1 - \alpha)M) \cdot \Phi(-\alpha M)$$

As noted in the proof to Lemma 2, $\frac{\partial Pr(\text{divorce})}{\partial M} < 0$. Thus divorce becomes less likely the greater the level of M . Now consider the derivative with respect to α .

$$[1 - \Phi(-\alpha M)] \phi(-(1 - \alpha)M) M - [1 - \Phi(-(1 - \alpha)M)] \phi(-\alpha M) M$$

Note that when $\alpha = \frac{1}{2}$, we have

$$\left[1 - \Phi\left(-\frac{M}{2}\right) \right] \phi\left(-\frac{M}{2}\right) M - \left[1 - \Phi\left(-\frac{M}{2}\right) \right] \phi\left(-\frac{M}{2}\right) M = 0$$

Thus the probability of divorce is minimized³⁰ when $\alpha = \frac{1}{2}$, for a given M .

Since, for any level of M , the probability of divorce is minimized when $\alpha = \frac{1}{2}$, and the community rule leads to a greater level of the asset, we therefore have that the probability of divorce is less under the community rule than under the common-law rule. ■

³⁰The second order conditions are not shown here, but can be shown to be satisfied for a minimum.

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