

COMPENSATING A SPOUSE FOR INVESTMENT IN A PARTNER'S HUMAN CAPITAL

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ABSTRACT

This paper analyzes various ways a spouse can be compensated for an investment in a marriage partner's professional degree when the marriage ends in divorce. Six rules are evaluated with respect to efficiency, equity, and ease of computation. Three of the rules compensate the non-degree spouse based on his/her sacrifice. Three other rules grant the non-degree spouse a property right in the professional degree and grant compensation based on his/her contribution to the investment in that degree. A case study based on actual data is used to determine compensation under each of the rules. Of the various rules, the marginal interest rate rule, which compensates the non-degree spouse based on an estimate of degree spouse's marginal borrowing rate, has two major advantages: it is Pareto efficient and, in contrast to other rules, it is relatively simple to calculate. Its major disadvantage is its perceived inequity in that the non-degree spouse receives the same amount regardless of the earnings of the degreed spouse.

INTRODUCTION

Courts increasingly face difficult decisions involving the equitable distribution of marital property. This is particularly the case where one of the parties supports the other in his (her) pursuit of education and because of the divorce is unable to share in the returns to that joint investment. The most typical cases usually involve a husband whose medical degree is in part supported by income earned by his wife. Nearly everyone agrees that the wife should receive some compensation for her contribution to the husband's enhanced earning capacity, but the amount of compensation and way it should be computed remain unsettled. A minority of courts (O'Brien v. O'Brien [1985]; Woodward v. Woodward [1987]) view the enhanced future earnings as a marital asset with a value equal to the difference in the present value of the husband's income before and after the degree. The wife's claim to this asset then depends on her contribution to the husband's investment (e.g. a contribution of 50% would allow her one-half of this present value). The majority of courts, however, have rejected this view arguing that the degree itself cannot be

considered property, that valuing such a degree involves speculation, and that giving one party the right to another's earning power constitutes a form of indentured servitude. Courts following this philosophy have opted for measures of the wife's actual sacrifice as her just compensation (Inman v. Inman [1979]; Postema v. Postema [1991]). Needless to say, no single measure of opportunity cost has surfaced. Some courts have opted for the wife's financial contribution minus her consumption plus a return equal to the passbook savings rate. Other courts have suggested that the sacrifice should consist of the foregone earnings of the husband, plus any loss in the wife's earning capacity, plus the costs of tuition, books, etc. funded by the household, and plus the comfort and pleasures the family foregoes because the husband is pursuing an advanced degree. Still other analysts have argued that the returns on W's investment should be calculated at H's marginal borrowing rate (Borenstein and Courant [1989]).

The purpose of this paper is to evaluate the various compensation schemes in the context of the traditional human capital model. An actual case is used to show how compensation would be calculated under several of the more common proposals. Each proposal is evaluated with respect to three criteria: 1) economic efficiency; 2) equity or fairness; and 3) ease of computation. The analysis also demonstrates that although the marginal interest rate rule overcomes objections to the marital asset present value approach, the objections to this approach do not hold much weight. Indeed, if one looks at the marriage as, in part, an economic enterprise with two partners making investments and sharing in the rewards, it is inconceivable that had the parties struck some formal agreement they would not both share in the future rewards (e.g., the present value of the partnership assets) if the partnership were unexpectedly terminated.

The paper is organized as follows. In the next section, the individual's optimum educational investment is determined and the impact of intra-household borrowing analyzed. This section provides the basic framework for both the marital asset and opportunity cost approaches. The following section briefly describes a case which provides the data used to calculate compensation under the various rules. That section is followed by an analysis of the various sacrifice rules and

the marital property rule. A final section draws conclusions and suggests future research.

THE INDIVIDUAL'S OPTIMAL EDUCATIONAL INVESTMENT

Becker (1967, 1981) considers an individual making consumption and investment decisions over two periods. In period one, the individual foregoes consumption and borrows to finance education. In period two, the borrowing is paid back and the returns from the education enjoyed. Figure 1 displays graphically the marginal returns to education and the marginal cost of financing education. The optimal expenditures on education for the individual are at E^* with the shaded area representing the individual's net economic rents.

Now assume that the individual investor marries and the non-investing spouse (usually the wife (W)) brings additional financial support. This support may consist of her savings and reduced period 1 consumption. For the marriage to have an effect on the investment decision, the source of funding brought by W must have a lower marginal cost to the husband than borrowing externally. If this is the case as most evidence would seem to suggest (see B-C, p 995), it makes economic sense for H to use this internal source of investment funds before going into external markets.

Figure 2 depicts the new situation where W's reduced consumption and/or savings allow H to finance his degree at a lower average borrowing rate. This induces H to undertake more education. In figure 2, $R'(B)$ represents H's borrowing function in the absence of W's funds while $R'_2(B)$ represents the combined internal and external borrowing.¹ At the common MC of borrowing, $1+r^*$, the husband will have supplied E_H and the wife $E^*_{HW} - E_H$ of the optimal educational expenditure E^*_{HW} .

¹ More formally, the individual investor maximizes

$$U(c_1, c_2,)$$

subject to the constraints

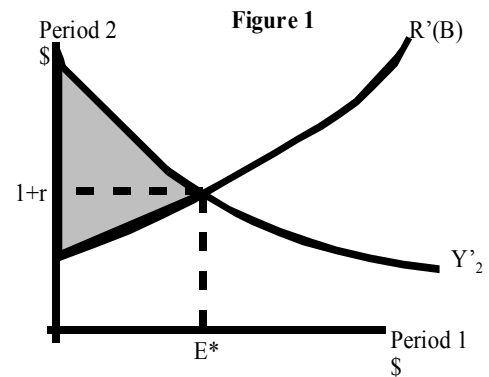
$$c_1 = Y_1 + B - E; c_2 = Y_2(E) - R(B)$$

The resulting first order conditions then are:

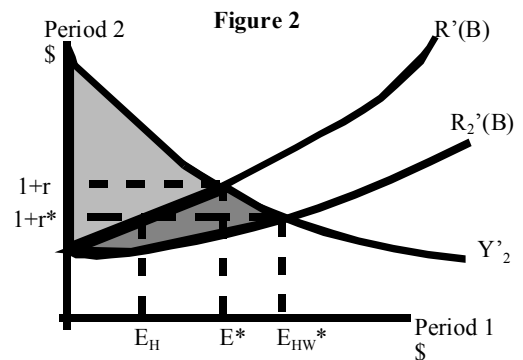
$$U_1 / U_2 = R_B; Y_{2,E} = R_B$$

The first order conditions underlying the optimal expenditure shown in figure 2, E^*_{HW} , rests on the principle that borrowing from external and internal sources must be such that the marginal cost of borrowing from each source is equal and that the level of expenditures on education be equal to this common borrowing cost (i.e., $Y'_2 = R'_2(B)$).

The rewards to the household from this financial partnership are the economic rents from the additional education, the hatched shaded area of figure 2. These rents measure the total rents from an educational expenditures of E^*_{HW} less the rents that H would have in the absence of W's support. If the marriage stays in tact both H and W enjoy these future rents. Three issues arise with respect to these rents. First, the expected future division of the rents from the financial partnership must be such that the decision is Pareto efficient from the perspective of both partners.



That is to say, both partners must expect to be better off from the joint undertaking than without it. Second, if the marriage should terminate, some rule must be found



that will compensate the non-investing spouse (usually W) for her support and at the same time preserve the incentive for other similar marriages to maintain the efficient level of educational expenditures, E^*_{HW} . Third, the compensation rule must allow reasonably easy and objective quantification. For example, if some portion of the economic rents shown in figure 2 is to be given to

W, then both the rents attributable to $E^*_{HW} - E_H$ and the proportion of W's contribution to these rents must be estimated. As shall be discussed in more detail below, objections by courts and commentators to various compensation schemes have often resulted from the speculative nature of the estimates of these marriage induced economic rents or from the necessity to make assumptions about unobservable behavior.

A CASE STUDY TO ANALYZE VARIOUS COMPENSATION RULES

As noted above, the rules used in divorces to compensate a W who has supported H's attainment of an advanced degree fall into two broad categories. One set of rules views W's loss as her uncompensated sacrifices during the marriage. The other set of rules considers W's loss as her inability to share in the marital assets resulting from the enhanced earnings of H which she, in part, made possible. To better understand these sacrifice and asset based rules consider the following set of facts:

Case facts: Prior to the marriage H has earned a pre-med related undergraduate degree in chemical engineering. Shortly after entering medical school, H marries W who has a nursing degree. In order to help support the household over the next eight years, W works as a nurse. During this period the household spends between \$15,000 to \$20,000 per year for tuition, books, and other educational expenses. Upon H's completion of the medical degree, with a specialization in anesthesiology, the family moves from a relative large metropolitan area to a much smaller one so that H can pursue his specialization. Due to the move, W is forced to give up her nursing job as well as the seniority she has acquired. Moreover, labor market conditions in the new location make it impossible for W to find a job at her previous salary and she is forced to take a cut in pay. Two years after the move, the couple faces irreconcilable differences and they divorce. 2

THE SACRIFICE COMPENSATION RULES

The sacrifice rules attempt to make the wife A "whole" with respect to her opportunity costs from investing in H's degree. Two of the rules, the passbook rate rule (Inman v. Inman [1979]) and the marginal interest rate rule proposed by Borenstein and Courant [1989] differ only in the return W receives with respect to her investment. The third rule Postema v. Postema [1991] proposes a broader view of "sacrifice" based on the

2 The facts are based on an actual situation. They have been disguised somewhat to avoid confidentiality problems.

family's foregone income from H's pursuit of the medical degree, any diminution in W's future earnings capacity, as well as some compensation for loss of companionship.

Inman v. Inman - In Inman [1979], the court found that the wife had an interest in the husband's degree as measured by her monetary investment. The court awarded the wife her monetary investment plus interest equal to the passbook savings rate. To calculate this compensation, W's support minus her consumption is used as the base upon which the passbook rate is applied. Using figures in Table 1, the total contribution of W to H's degree is calculated as:

$$\sum C(Inman)_1 = \sum [C_{t-1} + (S_t + W_t - 0.5HC_t)] * (1 + r_{p.b.})_t$$

where C_t = an estimate of the compensation due W in year t, $C_0 = 0$, S_t = W's savings used to support the household, W_t = W's take home income, HC = total household consumption, and $r_{p.b.}$ = the real passbook savings rate. The estimates used in equation (1) are described in Table A1 of the appendix. Based on those estimates, W's compensation under Inman would equal \$125,369 (1996 dollars).

The advantages of the Inman rule are its relative simplicity of calculating W's contribution and the availability of concrete information of the rate of return she will receive. Inman may be faulted on both efficiency and equity grounds. Inefficiency stems from both its pre- and post- divorce impacts. In the post-divorce situation such as the actual Inman case, W makes consumption and investment decision that presumably turn out to be inefficient ex-post. Indeed, the real passbook rate in some of the years covered by the case was negative, leaving W with a negative return on her contribution. More importantly, Inman, if universally adopted as a compensation scheme, would make future W's rethink whether foregoing consumption and savings to help H acquire more education was a rational decision. To the extent that such future W's respond by lowering their contribution to H's education, the rents due to intra-household financing of education would be lost and the level of household investment in education below the level of E^*_{HW} in figure 2. Finally, Inman is not only inefficient but potentially leads to unfair outcomes since it gives H an incentives to strategically use marriage and subsequent divorce as a cheap way of financing his education.

The Marginal Interest Rate Rule - the simplest ways to overcome the deficiencies of Inman is to give W a return on her net contribution that is sufficiently high so that ex-post W upon divorce perceives her contribution as

Pareto improving. This is the approach favored by Borenstein and Courant. More specifically, B-C suggest that W be given a return on her contribution equal to H's marginal borrowing rate. W's compensation would then be determined as

$$\sum C(MIR)_t = \sum [C_{t-1} + (S_t + W_t - 0.5HC_t)] * (1 + r_{m.b.r.})_t$$

where all of the variables are defined as in equation (1) and where $r_{m.b.r.}$ is the marginal borrowing rate. This marginal borrowing rates is estimated as the average credit card rate (i.e., the prime rate plus seven percentage points). *Again based on the estimates in Table A1 of the appendix, W now receives \$249,168 (1996 dollars), about double that under the Inman rule.*

In addition to the advantages that W's compensation is relatively straightforward and easy to compute, and that it avoids the issue of whether a degree is marital property, B-C favor the MIR rule for several reasons. First, MIR is Pareto efficient. Both W and H are better-off because of the decision to invest in H's education. H gains from his increased earning power net of his payment to W which, as B-C demonstrate, will always be positive. W benefits by receiving a return on her contribution that in all likelihood is greater than would be available to her in the marketplace. Moreover, since E^*_{HW} in Figure 2 maximizes the returns going to W and H, both W and H are better-off at E^*_{HW} than at any other level of education. MIR is also attractive in that it explicitly divides the rents attributable to the marriage without actually determining those rents. This is important if the economic rents attributable to the marriage cannot be easily separated from the rents linked to H's abilities. B-C argue that a rule that does not require the computation of such rents has great advantage over one that does.

Though the MIR rule is superior to the Inman passbook rule, it does have some drawbacks. Estimating H's marginal borrowing rate may be difficult and speculative since H never engages in the market transaction that would actually require him to borrow at this rate. B-C argue further that because of monopoly and monopsony effects, MIR may be sub-optimal but, nonetheless, still preferable to other rules which would even be more sub optimal. Finally, MIR may appear to some as unfair and inequitable in that W receives exactly the same amount regardless of H's change in earnings. Thus, it may appear unfair that as economic rents resulting from the joint marital investment increase, W's portion of those rents declines.

The Family Sacrifice Approach - King and Bossenbrook (1991) broaden the sacrifice approaches given by Inman and the MIR rules to include sacrifices to the family unit. K-B suggest four types of family sacrifices: 1) sacrifice of a career by W. This might involve leaving a career or taking lesser employment to support the family; 2) sacrifice of earnings and consumption the family would have enjoyed had H not quit employment to pursue an advanced degree; 3) sacrifice of consumption related to the cost of education in terms of actual out-of-pocket expenses involved in obtaining a degree; and 4) sacrifice related to lost companionship the family suffers from H pursuing the degree. Compensation under the K-B approach is given as

$$C(K - B) = \sum \frac{\Delta EW_t}{(1 + r_t)^t} + \sum (EH_t + EX_t) * 0.5 + \sum CN_t$$

where ΔEW_t = W's earnings loss because of H's degree, r = the discount rate, EH = H's foregone income from pursuing the degree, EX = degree related expenditures, and CN = the loss of companionship. Discussion of the estimates required to compute equation (3) with the exception of CN , which appears unmeasurable is presented in Table A1. Based on these estimates, W's future earnings loss from moving from a large metropolitan area to a smaller one is \$131,490. In addition, the family sacrifices \$267,853 of income H would have earned had he not pursued his degree. *In total K-B scheme arrives at family investment in H's degree of \$399,343 plus the non-quantifiable foregone companionship. Assuming that this sacrifice is divided equally between W and H, W would receive at least \$199,672 (1996 dollars).*

The approach has the advantage that it explicitly takes into account the diminution of W's earning capacity caused by H's pursuit of a degree. Since the family's sacrifice from H's foregone earnings is probably larger than any earnings W might contribute to H, W receives more under this scheme, perhaps making it appear fairer given the large increase in H's income. In spite of its seeming merits, the K-B approach has several shortcomings in contrast to the MIR scheme. The number of estimates and underlying assumptions necessary to compute the compensation W receives are decided disadvantages when compared to the relative simplicity of the MIR method. Estimates and assumptions have to be made with respect to the appropriate discount rate, the length of period W will suffer diminution in her earnings, the future amount of that diminution, the income H would have earned had he not pursued the advanced degree, the value of lost companionship, and the portion of the sacrifice suffered

by W. In addition to these computational problems, the K-B approach does not appear to distinguish between W's and H's contribution to H's degree. Most would agree that W should be compensated for sacrifice of a career and diminution of earnings capacity. However, H's foregone earnings represent the value of his time in pursuing the degree irrespective of whether he is single or married. It is unclear why these earnings should count as W's or the family's sacrifice. Equally problematic, there is no way to assess whether the K-B method promotes Pareto efficient decisions that move the household towards E^*_{HW} in Figure 2. The nature of the opportunity costs in this rule makes it difficult to determine whether the economic rents the marriage creates are divided in such a way to make both parties better-off because of their joint venture.

THE MARITAL ASSET APPROACH

The alternative to compensating W based on her sacrifices is to consider the marriage as a business partnership with both parties basing their investment decision on sharing in the future earnings of the partnership. Krasukopf (1980) was one of the first to articulate this view. She argues that :

The modern couple that invests in one partner's education expects during the years of marriage to share a return far greater than the costs incurred. When dissolution prevents sharing through the marriage, the spouse who has benefited by acquiring an increased earning capacity that can be presently valued in dollars should pay to the investor the value of the return that both expected the investor to enjoy (p. 416).

The New York court of appeals in 1985 agreed with the Krasukopf's view. The court of appeals held in *O'Brien v. O'Brien* (1985) that a medical license is marital property and that a non-licensed spouse may be entitled to a distributional share of the increased lifetime earnings potential of the licensed spouse.³ Numerous other New York cases followed upon *O'Brien* all taking the same general approach namely awarding the non-licensed spouse a part of the licensed spouse's increased lifetime earnings.

Conceptually, the computation of W's award under *O'Brien* is straightforward. H's enhanced earnings is simply the present value of the difference in earnings streams before and after his medical degree. W's claim

³ The facts in *O'Brien* indicated that as soon as the husband received his medical degree he abandoned his wife who had supported him during medical school. The court ultimately awarded the wife a part of the husband's enhanced lifetime earnings.

on this present value is based on some estimate of her contribution. Algebraically,

$$C(O'Brien) = \sum \frac{HE_{a,t} - HE_{b,t}}{(1+r_t)^t} (\alpha)$$

where $HE_{a,t}$ is H's earnings after his medical degree, $HE_{b,t}$ is H's earnings potential earnings before the degree, r is a discount rate, and α represents the proportion of W's contribution to H's advanced degree. Estimates described in Table A1 are used to estimate W's compensation under *O'Brien*. Based on those data,, the difference in the present value of H's earnings as a chemical engineer and as an anesthesiologist is \$3,547,459 (1996 dollars), which when multiplied by W's contribution of between 25 and 30 percent results in compensation to W of between \$886,865 and \$1,064,238 (1996 dollars). It is obvious that in most situations, particularly those involving medical degrees, *O'Brien* will award W considerably more than even the most generous sacrifice based rules.

The major advantage of *O'Brien* is its explicit recognition that the gains made possible by the marriage partnership should be shared, even if the partnership is dissolved. In *Woodward v Woodward* (1983), a Michigan case, the court renounced the sacrifice approaches used in other cases. The court stated: A the cost approach utilized in *Inman and Hortman* would provide [the non-degree-holding spouse] no realization of [his or] her expectation of the economic benefits from the career for which the education laid foundation. Yet, few states have been willing to accept *O'Brien*. Several states have left open the possibility for *O'Brien* type awards, but only Iowa, New York, and New Jersey have adopted the principle.

Many courts and legal commentators raise objections to *O'Brien*. Some courts have argued that a professional degree or license lacks some customary attributes of property C such as transferability and objective market value C and it would be inappropriate and unreasonable for a divorce court to consider such intangible and personal possessions to be a form of property. Others have held that the value of a professional degree or license is too speculative for it to be capable of evaluation and division. Still others feel that to treat a professional degree as marital property subject to division or compensation unduly restricts the personal freedom of the husband because it compels the husband to pursue the career envisioned by the court which evaluated the degree.

Economists have also found fault with *O'Brien* on efficiency grounds. Borenstein and Courant object to *O'Brien* on efficiency grounds in that that *O'Brien*

allows W to capture economic rents resulting in part from H's abilities, motivations, and hard work. They argue: As the investing spouse brings certain abilities or other resources (for example, a high grade point average or the ability to bear tedious memorization of the names of bones) into the marriage that would produce rents even without spousal support. In Figure 2, these rents are illustrated as the hatched area. B-C contend that there is no way to separate out these rents from those attributable to the marriage (the hatched area). Notice in figure 2 that the area which represents H's earnings because of W's contribution, $E_{HW}^* - E_H$, combines marital and non-marital rents. This could be corrected if it were possible to determine H's borrowing in the absence of W's contribution. But this non-marriage borrowing level according to B-C is unobservable. Since O'Brien assigns too much of H's change in lifetime earnings to W's contribution, it potentially distorts H's incentive to invest in his education.

Not everyone accepts as valid the arguments against O'Brien. Those supporting O'Brien point out that supreme court Justice Marshall wrote: "The decisions of the courts have given constitutional recognition to the fact that in our complex society, wealth and property take many forms... well beyond actual ownership of real estate, chattels, or money." Perhaps one could argue that an advanced degree represents one of these newer forms of property. Moreover, courts constantly accept estimates of lost earnings in wrongful injury and death cases. Why should these estimates prove any more or less speculative than estimates of the future earnings from an advanced degree? A counter to the B-C argument is the obvious fact that upon marriage to W, H voluntarily agrees to allow W to share in rents attributable to his abilities as she allows H to share in the rents attributable to hers. Assets such as real estate, stocks and bonds acquired during the marriage, and perhaps due to H's abilities as an investor, may also partially go to W upon divorce. If H is willing to take the risk brought on by possible divorce when acquiring these assets, it might appear reasonable to assume that he would be willing to take the same risk in making investment decisions related to his education. Any H that was so concerned that some of the gains due to his talents might go to W upon divorce probably would insist on some form of pre-nuptial agreement that would nullify any O'Brien type outcome.

In addition, two other valid criticisms exist with respect to O'Brien type awards. First, under the marital asset approach which bases W's award on some average growth rate, this ex-ante risk that a given individual's earnings turn out to fall appreciably below the average

falls entirely on the degreed spouse. Polsby and Zelder (1994) argue that if the degree is marital property, then these risks belong to it part and parcel; W should not be awarded an equitable stake in that property without having to take a proportional share of the risk as well. The implication is that the award to W under the marital asset approach over-compensates her because it fails to recognize these risks. If it is assumed that the uncertainty of H's future earnings stream makes his degree poor collateral in the borrowing market, then H's borrowing options might involve relatively high interest bearing loans. Suppose that the interest rate on a risky undiversified future income stream, such as H's, is 15 percent. Assuming a long-term inflation of rate of 4 to 5 percent this would imply a real discount rate of approximately 10 to 11 percent or about 6 percent above the risk free rate. Splitting this risk premium equally between H and W yields a present value of H's medical degree of \$1,737,964. W's compensation based on her contribution to H's degree of 25 to 30 percent would amount to between \$434,401 and \$521,389 1996 dollars, again far below the amount of compensation given by the O'Brien rule. Second, O'Brien type awards are theoretically equity claims but in actuality are structured as a debt venture. The O'Brien award gave W 40% of the average surgeon's earnings, in effect structuring an equity claim as a debt. Meighan (1995) argues that basic principles of corporate finance suggest that whether W's claims against H are equity or debt have important incentive and agency implications. If W's contribution to H is viewed by courts as a structured debt that upon divorce is repaid in fixed payments, then the potential debt overhand discourages H from investing in his medical degree. Moreover covenants to control H's behavior after divorce are generally unsuitable because they hamper a clean break and may even induce more negative relations between the spouses as monitoring progresses. W's incentive to invest in H may also be lessened to some extent by a totally debt structured compensation in that she expects to reap the returns of an increased standard of living. If she knows this will be totally denied upon divorce, she will find investing in H's medical degree a less attractive venture. A reasonable approach is to have the debt component of the hybrid equal to W's contributions and an interest rate a few points lower than that of a similar investment. The lowered interest rate on the debt component is discounted a few points in exchange for giving W an equity interest in addition to the debt return. *Assuming that W's lending to someone undertaking a similar medical degree investment is equal to the marginal interest rate of H's borrowing in the open market calculated previously as a real rate of 11 percent, and that W is willing to discount this by 3 percentage*

points to have a 10 percent stake in H's future earnings, W's compensation under this hybrid instrument totals \$388,997 (1996 dollars). The debt payment amounts to \$141,580 and W's share of H's enhanced earnings comes to \$247,417.

CONCLUSIONS

This paper analyzes various ways a spouse can be compensated for an investment in a marriage partner's professional degree when the marriage ends in divorce. Six rules are evaluated with respect to efficiency, equity, and ease of computation. Three of the rules compensate the non-degree spouse based on his/her sacrifice. Three other rules grant the non-degree spouse a property right in the professional degree and grant compensation based on his/her contribution to the investment in that degree. A case study based on actual data is used to determine compensation under each of the four rules. The results of the case study reveal differences in compensation ranging from as low as \$125,369 to as high as \$1,064,238.

Table 1 summarizes the efficiency, equity, and computational aspects of the six rules. Of the various rules, the marginal interest rate rule, which compensates

the non-degree spouse based on an estimate of degree spouse's marginal borrowing rate, has two major advantages. C it is Pareto efficient and it is relatively simple to calculate. Under this rule, it is possible to demonstrate ex-post that both parties are better off by making the educational investment than by not making it. The degree spouse maintains property rights to the degree and the income thereof. The investing non-degree spouse obtains a rate of return on his/her investment greater than he/she would have obtained, otherwise. Both consequently are better off. Moreover, determining the marginal interest rate takes some guess work but less so than any of the other compensation methods. The downside of the MIR rules is its explicit treatment of the non-degree spouse as a high cost creditor with no rights to any of the returns on the investment. The MIR rule consequently ignores the realistic possibility that people who marry and undertake a joint venture each have expectations about sharing the costs and rewards from that joint endeavor. Thus, while the MIR rule is Pareto efficient and reasonably easy to calculate, its awards may appear to be unjust, unfair, and inequitable.

Table A1: Information Used to Calculate W's Compensation

Rule	Basis for Calculation of W' Compensation
Inman	W's contribution to H's degree was calculated as her investment in H's degree after eliminating her consumption (approximately \$66,000). The passbook savings rate was applied to W's investment for the years 1976-1986 ranged from 5.5% - 5.5%).
MIR	W's contribution same as in Inman. H's marginal interest rate was estimated as the prime plus 7 percentage points (comparable to a credit card rate).
Postema	Estimates were obtained of the differences in W's earnings as a nurse in a large versus smaller city (approximately a 20% loss after adjusting for cost of living). Household income sacrifice was obtained under the assumption that had H not gone to medical school he would have pursued a career as a chemical engineer (approximately \$70,000 per year in 1996 dollars).
Marital Asset Rule	The present value of the difference in H's income as an anesthesiologist and that as a chemical engineer was calculated (approximately \$250,000 per year in 1996 dollars). The discount rate used was the average real rate on 10 year government securities W's contribution to H's degree is estimated between 24.8% and 30.5%
Risk Adjusted marital asset rule	The computations are the same as in the marital asset rule except that the real discount rate as adjusted upward by 6 percentage points to reflect the interest rate on a risky undiversified future income stream such as H's. One-half of this risk premium was assigned to each party.
Hybrid Equity Bond rule	Repayment of W's loan is the necessary annual payment required to amortize a present value of \$95,006 (W's actual investment in H after consumption) at a real interest rate of 8 percent. This return is lower than W would obtain under the MIR calculation. W offsets this lower return with an equity interest in H's earnings that represents 10 percent of the difference in earnings between H's chemical engineering and anesthesiologist degrees.

TABLE 1 : W'S COMPENSATION UNDER DIFFERENT RULES

Compensation Rule	Award Based On Case	Efficient	Equitable	Ease of Computation	Data Requirements
Passbook rate (Inman v. Inman)	\$125,369	No	No	Very Easy	Passbook rate on Savings
Marginal Borrowing Rate (Borenstein and Courant)	\$249,168	Yes	Some disagreement in that W does not share in H's earnings	Requires estimates of H's marginal rate	Prime interest rate plus estimate of borrowing rate for non-collateralized investments
Family Sacrifice Rule- Postema (King and Bossenbrook)	\$199,672	Probably not efficient; efficiency difficult to ascertain	Considered fairer than Inman since W is compensated for more of her opportunity costs	Many pieces of information are needed as well as many assumptions about both W's and H's alternative options	H's earnings in next best alternative; impact of W's investment in H on her career; lost family consumption because of H's schooling
Marital Asset Rule (O'brien v. O'brien)	\$886,885 - \$1,064,238	Inefficiencies may arise from the difficulty of separating H's rents from those attributed to marriage (see figures 1 and 2)	Considered by many to be fairer than opportunity cost based rules	Computations relatively straightforward; similar to those made in wrongful death and injury cases	H's future earnings as a doctor compared to H's earnings in next best alternative; W's contribution to H's education; discount rate
Risk Adjusted Marital Asset Rule (Posby and Zelner)	\$434,401 - \$648,775	Attempts to make O'brien more efficient by allocating H's income risk to both w and H	Considered fairer than O'Brien in that both H and W share risk	Computations are similar to those in O'Brien	In addition to data needs for O'Brien some estimate is needed discount rate risk premium
Hybrid Equity Bond Rule (Meighan)	\$388,997	Attempts to make O'Brien more efficient by eliminating inefficiencies related to how H compensates W	Fairness is essentially the same as O'Brien; W shares in H's future earnings	Information for Inman is used for the debt part and information from O'brien is used for the equity part	Same as O'Brien with additional information on tradeoff between return on W's contribution and W's sharing in H's earnings

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