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AN ECONOMIC ANALYSIS OF CHILD CUSTODY DECISIONS

BY

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1. The Changing Economics of Divorce and Child Custody

There has been a significant movement away from mother sole custody outcomes following the dissolution of marriages over the last few decades. The 2000 Census reveals that there has been a continued increase in alternative child custody outcomes. This is significant given the continued increase in one-parent families among the 105 million households in the Census (Table 1). The alternative outcomes to mother sole custody, none of which were very viable before the 1970s, are father sole custody, joint custody, and split custody. With the high incidence of divorce in the United States (Table 2), it is critical to study the various impacts of the changes in child custody.

Much of the literature on this subject indicates a sociological point of view. Researchers have documented the negative consequences on a child's development of growing up in a mother only family (Seltzer 1991).

The problem is to explain how society can be better off in the context of economic theory. Many factors have driven the changes in custody, and it is important to develop a systematic study that provides a quantitative focus. The purpose of my research is to examine the shift from mother sole custody from both an economic and a legal point of view and to develop a theoretical model that explains how child custody decisions can maximize the utility of society, the utility of the parents, and the utility of children.

Economic theory would suggest that cooperative equilibrium is preferable to non-cooperation, and when bargaining breaks down between divorcing parents, a court decision on child custody should be the same as a Nash-based cooperative solution. My model will be supported by empirical tests that will help to identify those variables that

are most likely to predict the probability of child custody outcomes. Because there is no longer an explicit preference for mother sole custody from a legal perspective, analysis of the changes in child custody patterns subsequent to a separation or divorce can increase our understanding for the changes in the division of labor and responsibility within married couple families (Cancian and Meyer 1998). Moreover, the research can have valuable implications from a policy context.

Table 1

Households by Type: Percentage Distribution for Selected Years, 1970-2000

	1970	1980	1990	2000
Family Households				
Married Couples with Children	40.3	30.9	26.3	24.1
Married Couples without Children	30.3	29.9	29.8	28.7
One-Parent Families	10.6	12.9	14.8	16.0
Subtotal: Family Households	81.2	73.7	70.9	68.8
Non-Family Households				
Men Living Alone	5.6	8.6	9.7	10.7
Women Living Alone	11.5	14.0	14.9	14.8
Householders Living with Nonrelatives	1.7	3.6	4.6	5.7
Subtotal: Non-Family Households	18.8	26.2	29.2	31.2
Total Households	100.0	100.0	100.0	100.0

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

Table 2

Marital Status of the Population 15 Years and Over for Selected Years, 1970-2000

(Percentage Distribution)

	1970	1980	1990	2000
Men				
Married	65.4	61.4	58.7	56.1
Never Married	28.1	29.6	30.0	31.3
Separated/Divorced	3.5	6.6	8.8	10.1
Widowed	2.9	2.4	2.5	2.5
Women				
Married	59.7	56.1	54.0	52.3
Never Married	22.1	22.5	22.8	25.1
Separated/Divorced	5.7	9.4	11.7	12.6
Widowed	12.5	12.0	11.5	10.0

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

Labor Market Participation By Women, Fertility Rates, and the Gains from Divorce

Much of the seminal work on the economics of the family deals with the gains from marriage and the gains from divorce. The traditional gains from marriage were much greater in earlier generations due to a lower level of participation by women in the labor market and higher fertility. Couples that divorced essentially were either very badly mismatched or very poorly suited for marriage (Becker, Landes, and Michael 1977). More recently, the growth in the earning power of women has raised the labor force participation of married women. The evolution of women's rights precipitated much of the increase in women's labor force participation (Geddes and Lueck 2000). By raising the opportunity cost of time spent at nonmarket activities and child rearing, the sexual division of labor in marriage and the demand for children has declined. Consequently, the gain from divorce is more attractive when the gain from marriage is reduced (Becker 1991). In the year 2000, of the 54 million married couple families in the United States, the labor force included 31 million wives (Table 3).

Simultaneous to the trend in women's increased participation in the labor force has been a decline in fertility rates. With fewer children per family (Table 4), there is a greater investment of time, money, and energy in each child. There has clearly been an increased emphasis placed on quality over quantity, and, as a result, the nuclear family has taken on greater importance. Mokyr (2000) asserts that the decline in the birth rate has not affected the level of altruism that is needed to raise children, mainly due to an offsetting increase in quality standards for child care, nutrition, and education.

The decline in fertility can be related to the probability of divorce. The financial responsibility associated with raising a family continues to increase, and many couples have elected to marry later in life in recent decades (Table 5).

Table 3

Labor Force Participation by Family Type, 2000 Census

(In Thousands)

	N	%
Family Households	72,458	
Married Couple Families	54,393	75.1%
Husband in Labor Force	41,139	56.8%
Wife in Labor Force	27,870	38.5%
Husband Not in Labor Force	13,254	18.3%
Wife in Labor Force	3,562	4.9%
One-Parent Families	18,065	24.9%
Male Householders in Labor Force	3,629	5.0%
Female Householders in Labor Force	9,322	12.9%

Source: Data from U.S. Census Bureau, Census 2000 Supplementary Survey.

Table 4

Households by Size: Percentage Distribution for Selected Years, 1970-2000

	1970	1980	1990	2000
One Person	17.1	22.7	24.6	25.5
Two People	28.9	31.4	32.3	33.1
Three People	17.3	17.5	17.3	16.4
Four People	15.8	15.7	15.5	14.6
Five or more People	20.9	12.8	10.4	10.4
Total Households	100.0	100.0	100.0	100.0

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

In terms of the economics of the family, there are some interesting repercussions of people marrying later. Delaying marriage may result in more children continuing to live with their parents into young adulthood, which would cause an increase in the size of households. Conversely, delaying marriage (particularly when combined with the effect of improvements in the life expectancy of the elderly) may result in more single men and women living alone, which would cause a decrease in the size of households.

Table 5

Median Age at First Marriage: Selected Years, 1970-2000

	Men	Women
1970	23.2	20.8
1980	24.7	22.0
1990	26.1	23.9
2000	26.8	25.1

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

Specifically with regard to the incentive for postponing marriage (assuming that it is voluntary), one could argue that it is driven, at least to some extent, by the threat of divorce and the concomitant problems related to child custody. In other words, these men and women are being more selective in choosing their partners. However, delaying marriage can result in unfavorable outcomes. Much like marrying young, the more that couples delay will actually *increase* the chance of marital dissolution, because the pool of potential partners becomes more heterogeneous, which yields more unstable marriages (Bitter 1986). Nonmarital births have been on the rise, and there has been an ongoing shift from two-parent to one-parent families (Table 6).

Table 6

Single Parents: Selected Characteristics, 2000 Census (in Thousands)

	Single Fathers		Single Mothers	
Presence of Children				
With Children Under 18	2,044	100.0%	9,681	100.0%
With Children Under 12	1,441	70.5%	7,337	75.8%
With Children Under 6	819	40.1%	4,115	42.5%
Marital Status				
Never Married	693	33.9%	4,181	43.2%
Married; Spouse Absent	350	17.1%	1,716	17.7%
Divorced	913	44.7%	3,392	35.0%
Widowed	88	4.3%	391	4.0%
Poverty Status				
Below Poverty Level	326	15.9%	3,305	34.1%
At or Above Poverty Level	1,718	84.1%	6,376	65.9%

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

When the probability of divorce is greater, couples realize that the existence of young children will raise the cost of searching for another mate (Weitzman and Dixon 1979). Moreover, this relationship can explain the lower number of children in interfaith or interracial marriages. The belief that same sex unions are more likely to end in a breakup has traditionally been a reason behind the laws that are currently being challenged that prohibit adoption to homosexual couples.

When a marriage is intact, parents complement each other. The ideal situation is to have interdependent utility functions, so what makes one spouse happy makes the other spouse happy. This is illustrated in the case of the wife who foregoes a career to raise a family. Specialization exists in the marriage, and each of the parents derives a comparative advantage.

A 50-50 split of the marital responsibilities provides an explanation for why divorce is likely when realizations deviate from expectations (Allen 1992a). Husbands and wives jointly allocate resources according to the solution of a two-person, Nash cooperative game, where the threat to each player is the opportunity cost of being married (McElroy 1996). Husbands and wives prefer not to think about the work involved in running a household, in part because it has become so easy to replace their mate (Grossbard-Shechtman 1985). With the dissolution of families, the economies of scale that a marriage creates are similarly dissolved (Brinig 2000).

Since married couples must reduce their consumption, including their leisure time, to devote the necessary time and resources to raising their children, even altruistic parents must consider the tradeoff between their own consumption and the human capital of their children (Becker 1991). Parents who are relatively more selfish, therefore, will

substitute their own consumption for that of the children. With the incentive to divorce being greater today, the level of altruism that a married couple has toward their children can severely challenge a deteriorating marriage. Clearly, the level of altruism toward children can change after a divorce, and unfortunately, studies have shown that it tends to decrease as the amount of contact with children decreases.

The relatively smaller gains from remaining married today encourage couples with modest mismatches to divorce. While factors such as education, race, religion, family background, and physical appearance are routinely evaluated by potential mates in marriage markets (Qian 1998; Lewis and Oppenheimer 2000), there is little stigma for couples to revise their assessments of their mates during the marriage, as information concerning emotional traits become known with greater certainty. The disproportionate number of divorces occurring within the first few years of marriage has been romanticized in films such as *The Seven Year Itch*; it also indicates, however, that marital dissolution becomes more problematic when the couple has children.

The existence of children may protect quasi rents, which represent returns to one party in a marriage contract above what that party could receive if the contract could be dissolved at will (Cohen 1987). These rents are necessary because women tend to fall in value relative to men as they age. At the time of formation, the marriage contract promises gains to both the parties who enter into it, but the period of time over which the gains is realized is not symmetrical. Men obtain gains early in the marriage, when their own contributions to the marriage are relatively low; women gain more later in the marriage. If the marriage contract is breached, the rents would be lost. If there are children, however, the husband may not be as willing to terminate the marriage.

The Liberalization of Divorce Laws

Notwithstanding any deterrents to divorce that either directly or indirectly protect children, there has been another trend aside from the higher labor force participation of women and the drop in fertility that has further increased the gains from divorce. That trend is the liberalization of divorce laws.

The first laws governing divorce in the United States stipulated that a marriage could be terminated if one of the parties either (a) committed adultery, (b) abandoned their spouse, or (c) was seriously "at fault." Divorce laws then evolved where marriages could be terminated by mutual consent, particularly if there were no children in the marriage. Mutual consent in divorce was similar to mutual consent in marriage, and a husband and wife would agree to divorce if they both expected to be better off. When California became the first state to grant "no fault" divorces in the 1970s, one party could now divorce at will without proving fault or getting consent, so the incentive for husbands to get their wives to agree with generous settlements was dramatically reduced. Other states soon followed California, and the divorce rate rose dramatically through the 1970s and 1980s; despite a leveling off in the rate over the last decade, the prevalence of divorce in our society continues to have a huge impact on the economy.

There has been considerable debate in the literature in connection with the impact of no fault divorce laws. Peters (1986) tested the effects of no fault versus mutual consent divorce laws on the probability of divorce and found that the divorce rate will be the same regardless of the constraints imposed by law. This was an application of the theorem (Coase 1960) that states that in a world of minimal transaction costs, parties will bargain to an efficient result no matter what the legal rule. Others have disputed this

(Allen 1992b; Parkman 1992; Friedberg 1998), arguing that divorce levels are not independent of the legal regime. This is because under fault law, the spouse most wanting to leave the relationship must purchase the right to leave. In other words, when the legal regime requires that both parties must agree to the divorce, there can be substantial transaction costs, namely legal fees, that might prevent a husband to attempt to dissolve a marriage.

Under fault divorce, because the spouse seeking the divorce had to prove that the other spouse was guilty of a prohibited activity, fabricated testimony was common (Parkman 1992). If the wife did not want a divorce, for example, the husband would have to provide compensation to induce her to be the plaintiff and to provide the required testimony to establish fault. Therefore, fault grounds for divorce provided the spouse who wanted to continue the marriage with considerable negotiating power. Much of the motivation for no fault was to shift the financial arrangements at divorce to legal standards.

Under no fault, or unilateral, divorce, however, the wife would have to provide compensation to the husband to remain married. This compensation takes the form of the transfer of nonmonetary resources within the marriage, such as the renegotiation of the marriage contract where, for example, the wife may agree to not criticize the husband in order to remain married (Zelder 1993).

The economic problem with no fault divorce is that it encourages divorce when the financial and psychological benefits to *all* persons involved, including children, may not equal the costs. The idea of fault as a breach, and of alimony as damages, had always been central to the stability of the marriage contract, since the threat of damages would

discourage spouses from breaching the contract; alimony provided a "clean break" financially from the marriage (Brinig and Crafton 1994).

After a long marriage, however, a clean break may not be possible because there has been so much invested (Scott 1990). The largest investment is likely to be in children. With no fault, the division of marital property has replaced alimony as the primary remedy. This is critical, since the central component of many divorce settlements is the division of assets, or marital property (Gray 1996). An unintended consequence has been an insufficient amount of property accumulation and the need for the wife to sell the marital residence to start over. In fact, regardless of regime, on average wives receive approximately 50% of the marital assets and 75% of the custody share (Brinig 2000). A related consequence for women is that they may decide to re-enter the marriage market because of the importance that they place on socioeconomic prospects (Sweeney 1997).

No fault divorce is closely related with the rise in married women seeking work outside the home as a means of financial protection. Unfortunately, the cost involved is often the dysfunction that is created for the family unit. No fault, in the context of the overall welfare of children, is inefficient.

Before no fault, the law retained for itself much of the responsibility for the *moral* choice whether to divorce; after no fault, most of that responsibility was transferred to the husband and wife (Schneider 1985). Marriage is less of a sacred contract whose enforceability was previously easier. Transaction costs and the penalties (i.e., alimony) have been reduced, making divorce a more appealing option for the party seeking it. While the weakening of the social sanctions against divorce may be considered to be

beneficial, the fact that broader exit options will cause couples to marry less wisely and to invest less heavily in marriage may not.

There have been many proposed alternatives to no fault divorce. Brinig and Buckley (1998b) have argued that a strengthening of barriers to divorce clearly is imperative. Rowthorn (1999) has argued that a return to fault regimes is necessary to improve the economic position of women. Another proposal, while perhaps not taking the radical measure of eliminating unilateral divorce completely, would permit it only after a prolonged waiting period of four years or more for families with children, or only after a two year waiting period for families without children. If one of the spouses is guilty of statutory fault or if consent is given, however, mandatory waiting periods could be waived (Gordon 1998). Brinig (1998) has argued that covenant marriages, which could result in a return to specialization (i.e., the domesticity of wives) but would make divorces more difficult to obtain, can increase stability in marriages. Despite objections from feminists, who believe that women will lose their economic power, the social gains from increasing marital stability may outweigh the social costs.

Prenuptial agreements and cohabitation represent two nontraditional practices that have become more prevalent in recent decades. While prenuptial agreements may ease decisions concerning the division of marital assets and child custody (Johnson, Bolling, and Greenstein 1992), they also render the prospect of divorce easier. Cohabitation has had the opposite effect. Its increase may have siphoned off some of the couples likely to divorce (Goldstein 1999), but it could pose more of a problem in terms of the social acceptability of the raising of children in unmarried couples. This is especially important since roughly 40% of unmarried partner households include children under 18 (Table 7).

Table 7

Presence of Children in Married and Unmarried Couples, 2000 Census

(In Thousands)

	Total	Total With Children	
		N	%
Married Spouses	56,497	25,771	45.6%
Unmarried Partners	3,822	1,563	40.9%

Source: Data from U.S. Census Bureau, Current Population Reports, June 2001.

Since the advent of no fault, increased attention has been given to the consequences of divorce. With estimates that one in every two first marriages initiated in recent years will be voluntarily dissolved, the most dramatic and most far-reaching change in family life in the 20th century may have been the increase in the rate of divorce (Amato 2000). The costs of marital disruption are quite high. Measurement of the change in well-being is difficult, since many of these costs are not financial. Clearly, the data on the financial costs borne by single mothers is well documented. There are other costs of divorce, though, including poverty, crime, substance abuse, declining academic standards, and so on. The dysfunction caused by divorce is perhaps most troubling when its costs for children are taken into account.

The Effects of Divorce on Children

A significant number of research studies (Greif 1985; Weitzman and Maclean 1992; Johnson, Levine, and Doolittle 1999; Weiss 2000) have examined the effects of divorce on families, especially on children, since this is clearly a key consideration in child custody decisions. The proportion of children who spend time in a single family home while growing up has been determined to be about 50% (Bumpass and Raley 1995). From a psychological perspective, divorce can be more traumatic to children than the death of a parent (Adams, Milner, and Schrepf 1984). Only with the exception of the most conflicted marriages, children of divorce fare worse than children of marriage (Brinig 1998). Writers have long debated whether children whose parents divorce suffer long-term harm (Wallerstein and Blakeslee 1989; Whitehead 1993; Harris 1998).

For the effects of divorce on children from a financial perspective, Ermisch (1991) states that the primary social problem associated with one-parent families is their low incomes. As a result, writers such as Mercier, Garasky, and Shelley II (2000) have focused on various policy implications. Lino (1998) called for stricter child support enforcement plus child support awards that better reflect the cost of raising children. Although child support laws may make it more difficult for nonresident parents to shirk their child support obligations, the support required is generally quite low when compared to what would have been provided if the marriage were not dissolved (Bianchi, Subaiya, and Kahn 1999). Bartfeld (2000) maintains that even after paying child support, noncustodial fathers are considerably better off financially than their ex-wives and children.

Again, measurement of the financial impacts on children is difficult, particularly given the existence of "hidden costs" in divorce. One of these hidden costs centers around findings by Gerner and Lillard (1996) that children of divorced parents are less likely to apply to, be accepted by, and matriculate into the fifty most selective colleges listed in *U.S. News and World Report* (Table 8). Among the reasons that the authors cite for this problem are the disruption to financial resources and the disruption to the time spent with children that are the by-products of divorce.

Table 8

How Parents' Marital Status Affects the College Decisions of Their Children

	All Children	Children Living With 2 Parents	Children Living With 1 Parent
Applied To College	66.2%	69.1%	60.1%
Admitted To College	60.4%	63.8%	53.5%
Attended College	46.2%	50.5%	37.3%
Applied To Selective College	3.3%	3.7%	2.3%
Admitted To Selective College	2.0%	2.3%	1.2%
Attended Selective College	2.0%	2.3%	1.2%

Source: Data from "The Hidden Costs of Divorce," Human Ecology 25 (1997).

Given all the literature concerning the well-being of the children of divorce, the key issue becomes "What are the best interests of the child?" The overwhelming majority of custody decisions are settled by divorcing couples before their cases ever get to court. The court's responsibility is merely to approve what the parents have already agreed to. In their noted article, Mnookin and Kornhauser (1979) questioned the extent to which the law should allow divorcing couples to privately resolve distributional matters concerning marital property, alimony, child support, and custody without bringing any contested issue to court for adjudication. When the interests of children are in jeopardy, the intervention of a third party in family matters on behalf of the children is considered efficient, since children lack both the maturity and the funds to contract (Becker and Murphy 1988; Allen 1990).

When a family is intact, parents view the upbringing of their children as a joint enterprise, and expenditures on children are treated as public, or collective, goods; in this scheme, the consumption of the husband and wife are private goods (Weiss and Willis 1985). After a divorce, the noncustodial parent is unable to determine whether the custodian uses child support payments for the benefit of the children. With mother sole or father sole custody arrangements, this problem can cause the noncustodial parent to lose interest in the welfare of the children (Seltzer, McLanahan, and Hanson 1998). When this occurs, it can exacerbate the gap that exists among families in the level of altruism toward children, which results in disparate rates of return to individual children's efforts to develop their capabilities (Folbre 1994). A separate problem can arise when the noncustodian finds a new mate and begins to feel more responsible for the children in the new relationship (Seltzer 1991). Both parents' post-divorce responsibilities are crucial to

the well-being of children, particularly in the case when there is less visitation by a fit noncustodial parent, since both the parent and the child will lose (Brinig 2000).

Despite the intuition that wealth must be relevant to the children's best interests, Frantz (2000) recommends following recent statutory developments and eliminating the reliance on financial factors in child custody determinations, except when one parent cannot, even with child support payments, provide for the children in a minimally acceptable manner. While parental wealth may be the easiest factor affecting children's interests to measure, there are doubtless other factors that are at least as important.

Based on the system of fiduciary arrangements that protects the best interests of children, Lupu (1994) builds a strong argument in favor of joint custody arrangements following marital dissolution. He compares the interests of children to the American democracy, which, due to its system of divided authority and separation of powers, guards against the threat to individual liberties associated with the imperfection and corruptibility of individuals who hold power. When a two-parent family, where both adults are equals, breaks down, joint custody most closely approximates the optimal solution for rearing children.

There may be valid reasons why joint custody could fail in certain situations. Among these are (1) children could be shared by a parent that is unfit or disinterested in sharing them; (2) there may be a wealth transfer from women for trading off economic gains for increased access to their children; and (3) joint custody may have no effect if the parties bargain around the legal rule (Brinig and Buckley 1998a).

In the final analysis concerning the changing fabric of the culture of divorce, one point should be very clear: While in the past the only way to rebut the maternal

preference rule on the grounds of the best interests of the children was to prove that the mother was unfit, the current legal standard governing custody disputes is indeterminate (Elster 1987). The key principles that are followed today in connection with the allocation of custodial and decisionmaking responsibility for children are contained in Appendix 1.

Child Custody

Due to the increased attention given to the children of divorce, there has been some valuable prior research done on custody outcomes. The number of empirical studies, however, has been small, again reflecting the fact that most divorce settlements are contracted privately, and as a consequence, the amount of data available on child custody outcomes is extremely limited. Despite the high incidence of private contracting, the high divorce rate has created a burden for the courts, and many states have encouraged the use of mediation as an alternative to court judgment (Farmer and Tiefenthaler 2001).

One study of privately contracted custody arrangements was done for two California counties in the 1980s (Maccoby and Mnookin 1992), where the interviewers found that physical custody was awarded to mothers in 67% of the cases, to fathers in 9% of the cases, jointly in 20% of the cases, and the remaining 4% of the cases provided for some other arrangement.

It is important to draw the distinction between physical custody and legal custody here. Physical custody represents where the children live; legal custody represents who has the decisionmaking responsibility for the welfare of the children. While the latest

Census indicates that most children still live with their mothers, various manifestations of shared physical custody have clearly become more popular over the last two decades. In addition, father sole physical custody has become more prevalent. This demographic trend can be explained in large part by the increase in marital instability, but it is important to note that the rise in the proportion of father only families between 1960 and 1990 was much more significant than the rise in the proportion of mother only families (Garasky and Meyer 1996). From the 1990 Census to the 2000 Census, single fathers with primary physical custody increased by roughly 50% (Goldberg 2001).

While custody battles are still more likely to result in the court awarding children to the mother, the children are often released to the father subsequent to the court decision. From a sociological perspective, fathers have demonstrated that they have wanted to become more involved and mothers have loosened their ties (Goldberg 2001).

The courts are not required to identify the reasons behind a particular custody award. Consequently, for the small percentage of cases that are not contracted privately and do make it to court, there is a dearth of information concerning the factors associated with custody outcomes.

There is no source of data on child custody orders on a national level. The Centers for Disease Control and Prevention's National Center for Health Statistics used to collect detailed data on divorce and custody for participating states as part of its Vital Statistics Cooperative Program. This program was discontinued, however, as a result of budgetary considerations in addition to limitations in the information collected by the states. The final report was issued in 1995 and provided data through 1990. The report does confirm the shift toward father sole custody and joint custody that had begun in the

1970s and 1980s (Table 9), although the distribution of these awards among races had already begun to exhibit considerable inequality (Table 10).

Table 9

Custody Awards for Selected Reporting States, 1990

	N	Wife (%)	Husband (%)	Joint (%)	Split (%)	Other (%)
Pennsylvania	19,060	75.8%	8.2%	10.8%	2.3%	2.9%
Michigan	18,640	72.7%	9.4%	13.9%	3.3%	0.6%
Tennessee	14,080	78.6%	10.2%	8.7%	1.3%	1.3%
Missouri	13,565	72.0%	9.3%	15.5%	2.2%	1.0%
Illinois	10,750	75.1%	7.4%	14.3%	3.0%	0.2%
Alabama	8,760	80.8%	9.0%	8.6%	1.2%	0.5%
Oregon	7,425	69.7%	10.5%	14.5%	3.4%	1.9%
Kansas	6,434	47.3%	5.3%	43.7%	1.7%	2.0%
Virginia	5,420	69.9%	9.7%	14.3%	2.7%	3.4%
Connecticut	4,584	57.8%	5.3%	36.6%	0.1%	0.2%

Source: Data from Final Report on Divorce Statistics, Centers for Disease Control and Prevention, March 1995.

Note: 19 States reported custody awards.

Table 10

Custody Awards by Race, 1990

	N	To Wife (%)	To Husband (%)	Joint (%)	Other (%)
Husband					
White	157,449	70.6%	10.5%	17.3%	1.6%
Black	15,895	86.8%	6.1%	5.5%	1.6%
Other	1,758	67.2%	18.1%	13.1%	1.6%
Race not stated	8,934	73.5%	10.4%	15.6%	0.5%
Total	184,036	72.1%	10.2%	16.2%	1.5%
Wife					
White	157,392	70.8%	10.3%	17.3%	1.6%
Black	15,102	87.5%	5.9%	5.1%	1.5%
Other	2,193	59.6%	25.4%	13.6%	1.4%
Race not stated	9,349	72.0%	11.2%	16.0%	0.8%
Total	184,036	72.1%	10.2%	16.2%	1.5%

Source: Data from Final Report on Divorce Statistics, Centers for Disease Control and Prevention, March 1995.

Note: 17 States reported custody awards and race of husband and wife.

One of the largest state-level studies that have been undertaken compiled data from in excess of 13,000 court cases in Wisconsin over a period of twelve years. (The timeline for this study coincides with the period covered in the National Center for Health Statistics report.) Collected by the Institute for Research on Poverty at the University of Wisconsin as a means of evaluating the State of Wisconsin's 1983 reforms to its child support system and named the Court Record Demonstration Project, the data has been empirically tested by Cancian and Meyer (1998), who confirmed the growing trend toward joint physical custody.

The contribution that my research will add to the literature utilizes the cases from the Wisconsin Court Record Data (CRD), but where the earlier study examined physical custody, my interest is to shift the focus to legal custody outcomes. Prior studies of physical custody have encountered some issues. Physical custody is not always divided evenly between parents. Cancian and Meyer (1998) combined equal shared custody and unequal shared custody and noted that the higher rate of joint physical custody in certain states may represent more liberal definitions of shared custody. In addition, statistics on physical custody arrangements may be somewhat distorted as a consequence of the rise in cohabiting couples. The determinants of legal custody outcomes, therefore, provide an opportunity to increase the level of understanding on the economics of the family.

The process that I will follow will first be to develop a utility model that depicts child custody decisions (Chapter 2). I will then relate to the model my hypothesis that certain variables explain the shift away from mother sole custody. The identification of those variables will be discussed in the context of the methodology for the empirical analysis (Chapter 3). The regression results are presented next (Chapter 4). Finally, my

conclusion will summarize the theoretical model and review whether each variable proves or disproves the hypothesis (Chapter 5).

2. A Theoretical Model for Child Custody Decisions

The strategic interactions that take place between spouses during marital dissolution take on many of the aspects of game theory. In deciding upon the division of assets, including children, the objective of the husband and wife is to devise optimal strategies to maximize their payoffs, given the risks involved in judging the response of the other player. The conclusion of the game here is the divorce settlement, which represents a unique solution where the optimal strategy of each adversary is possible and not inconsistent.

The Decision Process Involving Two Parties

In conflicts between two rivals, the decisions that are made by one player will typically seek to induce a material reaction from the other player. Cournot (1838) produced some of the early seminal work into duopoly behavior with his research in connection with the actions and reactions of two competitors of homogeneous products. In applying duopoly behavior to the decisions made between divorcing spouses, however, utility may not be easily measurable in terms of cardinal value.

In his *Treatise on General Sociology*, originally published in 1916, Vilfredo Pareto maintained that when ordinal utility drives decisions, behavior and exchange between competitors is based on the ratio of the marginal utilities of the goods traded being equal to the ratio of their prices. The optimal point of exchange, therefore, can be identified without comparing one's total utility relative to the other's; instead, an increase in total welfare will occur where one party is made better off as a result of the decision and the other party is not worse off.

Kaldor (1939) and Hicks (1939) both examined what they felt was an inherent problem in the Pareto optimality rule; this problem was related to the difficulty in making any kind of decision without making one party at least slightly worse off. Their work led to the Kaldor-Hicks criterion for efficiency. This criterion states that total welfare will increase when the individual who gains from a transaction can compensate the other party and still be better off, although the compensation does not require a money transfer. This criterion can also be explained by the principle of compensation.

The compensation principle can be found in a diversity of sources ranging from the nineteenth century essayist Ralph Waldo Emerson* to the *I Ching*** of ancient China and Confucious. This principle maintains that the natural order keeps a set of books and this is its accounting.

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*Emerson had the following to say about compensation: "A wise man will extend this lesson to all parts of life, and know that it is always the part of prudence to face every claimant and pay every just demand on your time, your talents, or your heart. Always pay; for first or last you must pay your entire debt. Persons and events may stand for a time between you and justice, but it is only a postponement...If you are wise you will dread a prosperity which only loads you with more...Beware of too much good staying in your hand. It will fast corrupt and worm worms. Pay it away quickly in some sort." (The 2000 Warner Brothers film, *Pay It Forward*, espoused this philosophy and generated a new-found awareness of goodwill.)

**Of the *I Ching*'s 64 hexagrams, each of which describes a state of nature capable of undergoing change, the sixth deals with conflict, where the following behavior is prescribed: "If a man is entangled in a conflict, his only salvation lies in being so clear-headed and inwardly strong that he is always ready to come to terms by meeting the opponent halfway. To carry on the conflict to the bitter end has evil effects even when one is in the right, because the enmity is then perpetuated. It is important to see the great man, that is, an impartial man whose authority is great enough to terminate the conflict amicably or assure a just decision."

In the context of a child custody decision, compensation implies that in order to gain something, something else must be lost. Accordingly, if a husband or wife decides that it is beneficial to terminate a marriage, he or she must be willing to pay fully in order to receive that benefit. The charge to one's integrity for undeserved gains will be far greater than the incremental benefit received by avoiding full payment, since there are no free rides in nature.

Moral value judgments are the foundation for the principle of compensation. For our purposes, then, a moral individual would be someone who conforms to a standard of right behavior, and in a marital dispute, this type of behavior will lead to a fair and equitable resolution. Because the bargaining that takes place between divorcing spouses can often break down to considerable deception due to the parties' self-interests, Emerson would respond that "the thief steals from himself." In other words, wealth is only *a sign* of virtue, and while wealth can be stolen, virtue cannot.

The Kaldor-Hicks criterion assumes that all gains and losses can be measured and identified.* This presents a problem for any transactions where the decisions involved are based on ordinal utility, and as stated previously, child custody decisions fit the category of ordination. Because decisions concerning custody can be based on utility or happiness rather than the dollar valuations that define Kaldor-Hicks efficiency, utilitarianism is an alternative criterion.

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*The Kaldor-Hicks criterion has been disputed when a greater number of parties are impacted by a decision, most notably in environmental economics, where an accurate assessment of which individuals have economic standing to have their values counted is critical to the cost-benefit analysis and the ultimate determination whether the sum of the willingness-to-pay exceeds the sum of the willingness-to-accept payment, in which case the decision would be Kaldor-Hicks efficient.

Economists typically do not realize their moral acceptance of utilitarianism, which is an approach to maximizing happiness or pleasure, since it requires interpersonal utility comparisons. The question of how one adds happiness is difficult to answer, but utilitarianism is often used to justify redistribution. The classical school of utilitarians is found in the works of John Stuart Mill and others, who discarded religious traditions and social conventions in favor of well being as the touchstone for all moral evaluation.

Although originally viewed as a hedonistic doctrine with its straightforward emphasis on pleasure over pain, today this criterion may be applicable to child custody decisions, given utilitarians' acceptance of outcome utilitarianism. There are two types of outcome utilitarianism: act consequentialism and rule consequentialism. The former states that an act is morally right if it produces as great a balance of pleasure over pain as any alternative action available to the individual. The latter, on the other hand, states that the rightness of an action depends on the consequences not of the action itself, but of various sets of rules. The principles that I am interested in deal with interpersonal utility, and either of the types of outcome utilitarianism seems reasonable as a starting point to developing a theoretical model.

The economist Francis Edgeworth revisited Cournot's duopoly model and rejected it for obtaining deterministic solutions. Edgeworth argued that the equilibrium solution should always be indeterminate, and his development of indifference analysis, together with Pareto's work in utility theory, helped to form much of the foundation upon which modern welfare economics is based.

The model that Edgeworth developed to study the decision behavior of two individuals is called the Edgeworth box. This tool looks at the efficiency of competitive exchange between the two individuals, A and B, for two goods, 1 and 2. Individual A is endowed with w1A units of good 1 and w2A units of good 2; individual B is endowed with w1B units of good 1 and w2B units of good 2.

Figure 1 shows an indifference map for individual A can be drawn to reflect A's utility preferences and endowment point (at point E).*

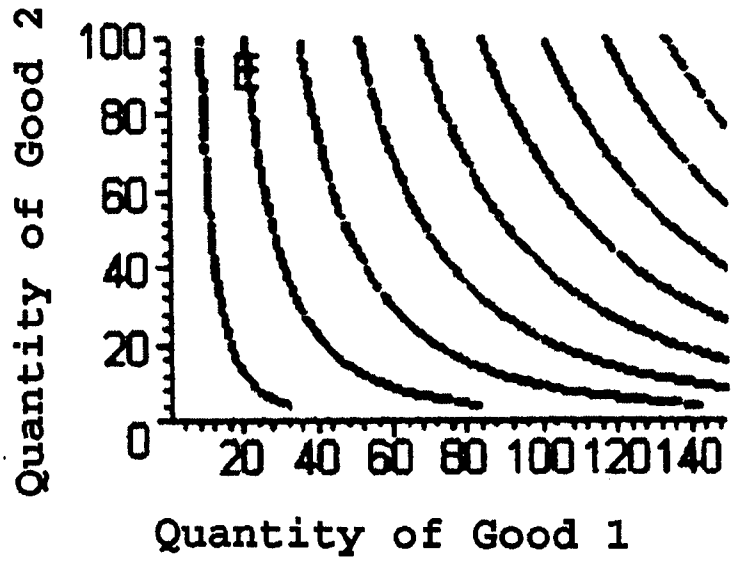

Figure 1. Indifference map for Individual A

An indifference map for individual B is drawn from the same origin (Figure 2), and then turned upside down so that B's utility preferences are measured from the top right hand corner of the box (Figure 3).

*The example for the Edgeworth box used for Figures 1 through 6 was extrapolated from an Economics website from the University of York (U.K.).

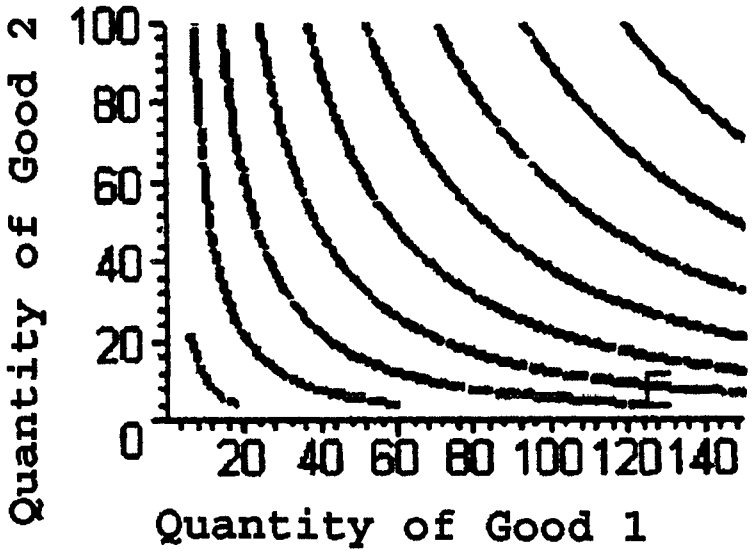

Figure 2. Indifference Map for Individual B

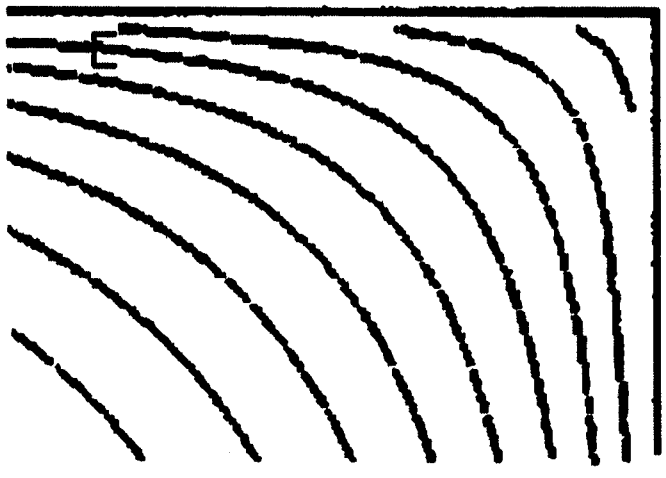

Figure 3. Modified Indifference Map for Individual B

The Edgeworth box puts A's and B's indifference maps together, and the locus of tangency points is called the contract curve, which represents the locus of all the points that would be Pareto efficient (Figure 4). Along this curve of exchange, the marginal rates of substitution are the same for individuals A and B in relation to the commodities traded. Therefore, any bargain that is concluded at a rate of exchange other than one on the contract curve can be improved (i.e., making at least one of the parties better off without making the other worse off) by moving to the contract curve. In other words, moving *to* the contract curve is efficient; moving *along* the contract curve is a matter of the relative bargaining power of the two parties involved in the transaction.

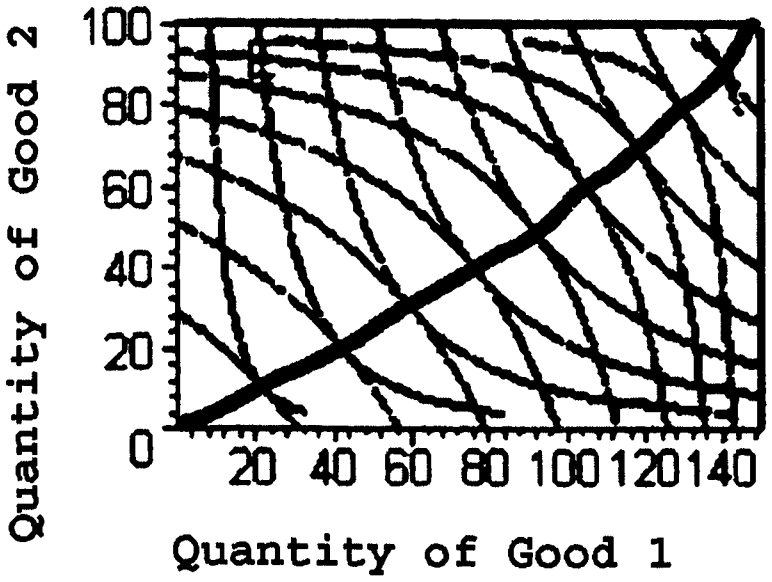

Figure 4. Indifference Maps for Individual A and Individual B: The Edgeworth Box

To prove that an infinity of Pareto optima exist within the Edgeworth box, we fix the utility level of one of the individuals, say B, and we impose feasibility on the final

allocation (to prevent the situation where individual A consumes an infinity of both goods).

Thus, the utility level of A can be shown as:

$$\max_{(x_{1A},\, x_{2A},\, x_{1B},\, x_{2B})} \quad u_A(x_{1A}, x_{1A}) \tag{1}$$

such that

$$u_B(x_{1B}, x_{2B}) = \bar{u}, \quad x_{1A} + x_{1B} = w_{1A} + w_{1B}, \quad x_{2A} + x_{2B} = w_{2A} + w_{2B}. \tag{2}$$

Let λ, μ_1, and μ_2 be the Lagrange multipliers for the constraint on B's utility, the feasibility of the allocation of good 1, and the feasibility of the allocation of good 2, respectively. The Lagrangian for this problem can be written as follows:

$$L = u_A(x_{1A}, x_{2A}) + \lambda\,(u_B(x_{1B}, x_{2B}) - \bar{u}) + \mu_1\,(w_{1A} + w_{1B} - x_{1A} - x_{1B}) + \mu_2\,(w_{2A} + w_{2B} - x_{2A} - x_{2B}). \tag{3}$$

The first order conditions are

$$x_{1A}: \frac{\partial u_A(x_{1A}^*, x_{2A}^*)}{\partial x_{1A}} - \mu_1 = 0 \tag{4}$$

$$x_{2A}: \frac{\partial u_A(x_{1A}^*, x_{2A}^*)}{\partial x_{2A}} - \mu_2 = 0 \tag{5}$$

$$x_{1B}: \frac{\lambda \partial u_B(x_1^* B, x_2^* B)}{\partial x_{1B}} - \mu_1 = 0 \tag{6}$$

$$x_{2B}: \frac{\lambda \partial u_B(x_1^* B, x_2^* B)}{\partial x_{2B}} - \mu_2 = 0 \tag{7}$$

Therefore, for any allocation to be Pareto efficient, we must have

$$MRS_A = \frac{\partial u_A(x_{1A}, x_{2A})/\partial x_{1A}}{\partial u_A(x_{1A}, x_{2A})/\partial x_{2A}} = \frac{\partial u_B(x_{1B}, x_{2B})/\partial x_{1B}}{\partial u_B(x_{1B}, x_{2B})/\partial x_{2B}} = MRS_B \quad (8)$$

where MRS is the marginal rate of substitution. This means that for any utility level of A and B, a feasible allocation is a Pareto optimum only if $MRS_A = MRS_B$. All the possible allocations where this condition holds is the contract curve.*

Use of the Edgeworth box as a tool has been expanded to examine the manifestations of social choice theory. Consumers who are motivated by selfish interests will maximize their utility at one corner of the Edgeworth box. Social choice theory is concerned with the reallocation of goods within the box, regardless of the total endowments of different goods.

In order to apply the negotiation that takes place between a husband and wife during a divorce to the Edgeworth box, the child custody decision will doubtless be Pareto optimal if the outcome falls on the contract curve. In other words, the further the custody outcome is from the contract curve, the more one of the spouses is dominated as a result of the decision. If the utility of *both* of the spouses is not maximized, then similarly the utility of society is not maximized, and social choice is inefficient.

*The theoretical discussion on the derivation of the contract curve is on an Economics website from the University of Western Ontario.

It is important to note that the exchange that the Edgeworth box models is between two goods. Therefore, to ensure that the exchange between divorcing spouses is applicable to Edgeworth's model, I suggest that the goods are (a) self-interest and (b) altruism. If we were to treat these two behaviors as goods, we could assign relative utilities to each and construct an Edgeworth box for the husband and wife that could reflect the child custody decision. The bargaining that couples engage in during a marital breakup will tradeoff the utility from selfishness against the utility from altruism, and ultimately, based on variables such as their bargaining power, we can determine if the decision benefits both the husband and wife. Figure 5 illustrates an Edgeworth box for a child custody decision where Pareto optimality is not attained (i.e., where "x" is not on the contract curve), while Figure 6 illustrates an Edgeworth box for a child custody decision where Pareto optimality is attained.

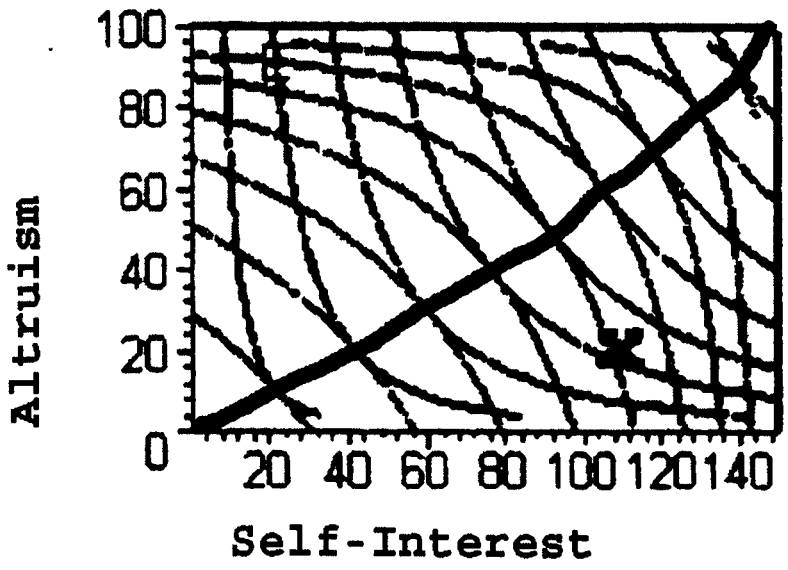

Figure 5. A child custody decision that is not Pareto optimal for the husband and wife

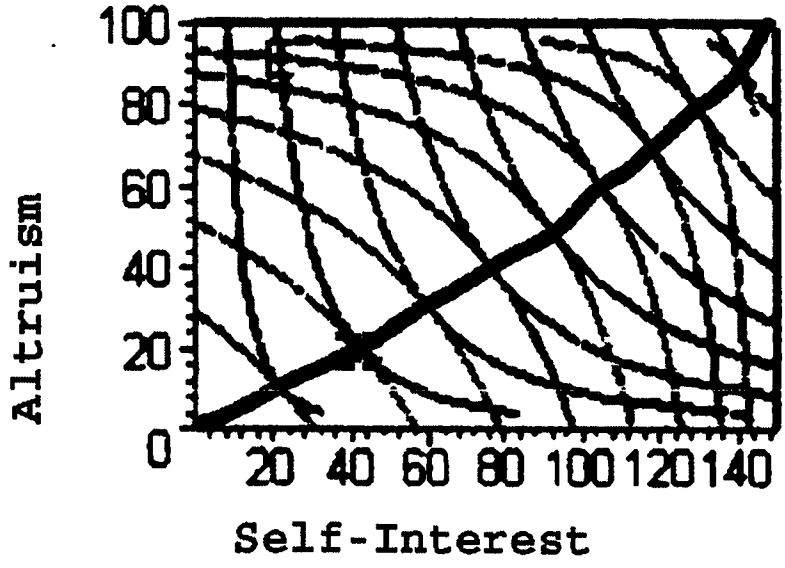

Figure 6. A child custody decision that is Pareto optimal for the husband and wife

It should be noted from this diagram that even though a decision is Pareto optimal, it does not necessarily reflect an even distribution of altruism and self-interest for the two spouses.

It should also be noted that altruism and self-interest in general are not mutually exclusive. In our context, however, self-interest should be interpreted to represent self-interest exclusive of altruism. One might suggest replacing self-interest with *selfishness*; while this might help to get around the question of mutual exclusivity relative to altruism, we are not concerned here with the property of selfishness, which is essentially a state of mind, as opposed to a behavioral trait.

The Decision Process Involving Three Parties

The Edgeworth box allows us to model the behavior that takes place between a husband and wife during a divorce as it relates to child custody decisions. Clearly, if both of the spouses exhibit behavior that is based on fairness, the outcome of the process is more likely to be Pareto optimal, and in recent years a number of economists and other social scientists have commented on the role of moral behavior in influencing cooperation (Dennett 1995; Camerer 1997; Mongin and d'Aspremont 1999). The theory of fairness has been explored by economists in a variety of topics, including the concept of lotteries, which are intended to be a means to attain impartiality in situations involving the allocation of indivisible goods among equally deserving individuals (Berliant, Dunz, and Thomson 2000). This is closely related the problem of deciding upon child custody, assuming that the preferences of the husband and wife are in conflict.

Harsanyi (1977) indicated that when a set of social alternatives exists for a fixed set of individuals, each individual can be characterized by two preference relations on the set of social alternative lotteries: one relation representing the individual's moral preferences and one relation representing the individual's personal preferences (i.e., self-interest), the latter of which governs the actual choice behavior. Karni and Safra (2002) fused together personal preferences and moral preferences; their model is noteworthy because it depicts the choice behavior for *three* "self-interest seeking moral individuals." This represents a significant departure from the familiar rectangle of the Edgeworth box, which, albeit a useful tool for modeling the behavior that takes place between two spouses in a child custody decision, one critical element is missing: the child. Neglecting the interests of the child in the decision process would be inaccurate from

both a practical and a moral perspective. Karni and Safra's model utilizes a triangle, which permits us to consider the interests of all three of the relevant parties involved in the decision. While it may be possible to model the relationships among three parties with the Edgeworth box by drawing it in three dimensions, a triangular representation seems to be a natural extension of the two-person model.

This model divides individual preferences between a self-interest component and a moral value judgment component. The preference relation depicting the choice behavior is modeled by a real-valued function defined on the components' utilities. The model is a departure from traditional economic theory, which would state that individual behavior is motivated by rational self-interest. This is because the equilibrium outcome of self-interest seeking individuals is non-cooperative behavior, whereas the equilibrium outcome of moralistic individuals is cooperative behavior. In decisions where the allocation procedures can be considered random (child custody decisions fits into this category), an individual's choice is influenced by subjective moral value judgments. As a result, the willingness to act upon a sense of fairness requires, by definition, that individuals be willing to make material sacrifices to promote justice.

Karni and Safra, who indicate that an individual's sense of justice has its roots in parental love, use an example involving three individuals who are each in need of a kidney transplant (Figure 7). The horizontal line that is shown in the figure represents a subset of allocation procedures that assign individual 2 the probability of winning. (Since the figure is symmetric, the individuals are interchangeable without altering the properties of the model.) The line represents the binary relationship that exists between actual choice behavior and the notion of fairness. Assuming individual 2 is impartial

toward the other two individuals, he considers p and p′ to be equally fair. The indifference curve $I \sim I$ that slopes downward through p′ and upward through p reflects individual 2's preference relation of conceivable choice behavior; the circle is a level curve of the fairness relation, where any point on it represents the same level of fairness. The allocation p″ is regarded as being more fair than both p and p′ because it is closer to giving the other two individuals equal opportunity of winning. The midpoint on the horizontal line, then, is perceived by individual 2 to be the fairest point when restricted to allocation procedures on that line. Since each of the individuals is entitled to "win", allocations in which one of the individuals is deprived of this right are considered inferior, from the viewpoint of fairness.

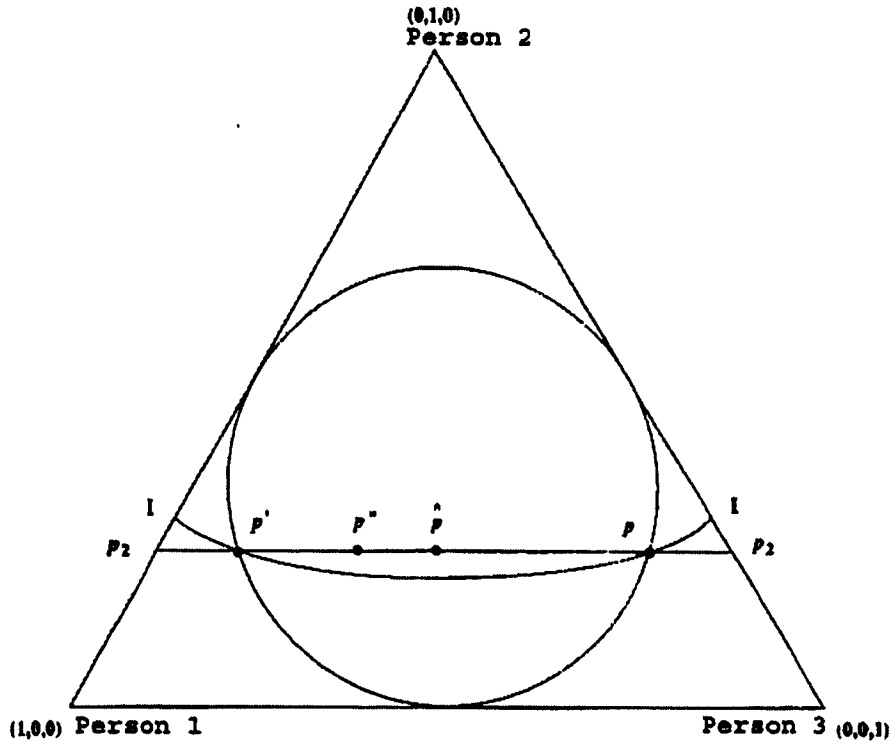

Figure 7. A utility representation for three individuals

The implication for social choice theory is that if the moral value judgments of all individuals are essentially the same (since they are governed by a consequentialism not unlike that followed by utilitarians, which subjects them to critical evaluation), then social policy may be shaped by the moral value judgment, since opposing individual self-interests (which involve idiosyncratic biases that are less amenable to direct observation) tend to cancel each other out in the aggregate.

For our purposes, Person 1, Person 2, and Person 3 would be replaced by each of the parties involved in a child custody decision, namely, the Mother, the Father, and the Child. When the custody decision is being privately contracted between the husband and wife, there exists a greater risk that *all* three parties *will not* have their utility maximized, because the child generally will have no input in the decision-making process. The outcome of the process in these cases, therefore, is dependent on (a) the preference relation of the divorcing parents, (b) their relative bargaining power, and (c) their sense of justice. If the mother and father consider the interests of the child in their decision, per our previous discussion on the Edgeworth box, then the custody outcome will satisfy a Pareto criterion, and the decision will likely fall on the center of the line. When this occurs, the utility of society at large is also maximized.

When custody is decided by the court, the assumption is that self-interest plays no role in the outcome and the court will seek to maximize the utilities of all parties. Clearly, since the court's decision is no longer constrained by the maternal preference rule, the best interests of the child are more likely to be addressed. Similarly, given the negative socioeconomic impacts of raising a child in a single parent household that have

been documented in the literature, this suggests why there has been such a strong push toward joint custody over the last ten to fifteen years.

To explain child custody decisions from a theoretical perspective, then, I present the model that depicts the choice behavior of the three parties involved as being composed of a self-interest element and a moral value judgment element, which I will call altruism (Figure 8).

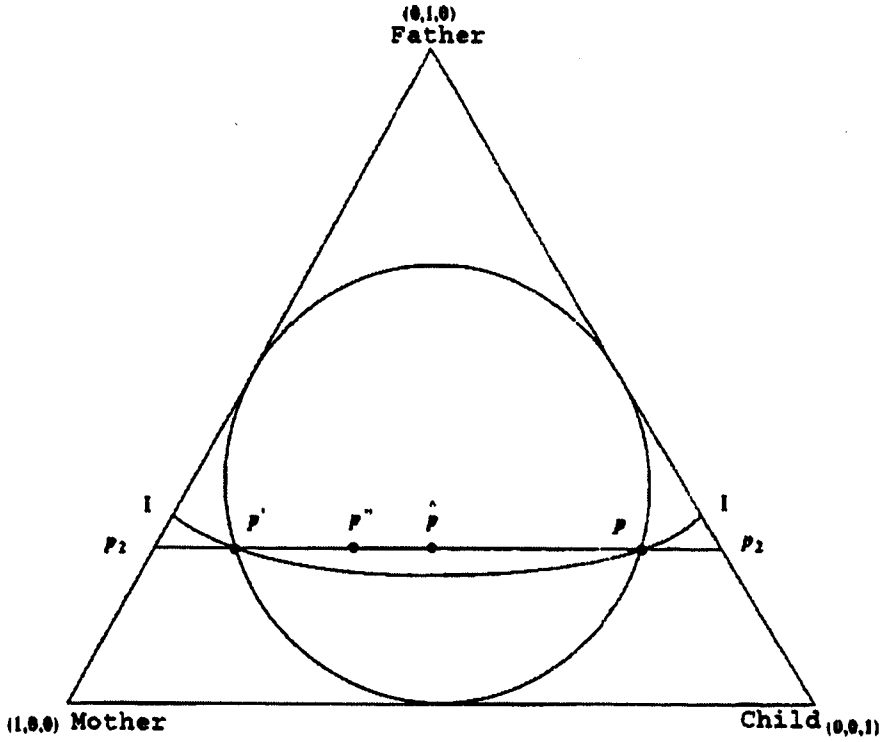

Figure 8. A theoretical model for child custody decisions involving three parties

As in the example of the decision process of the three individuals in search of a kidney transplant, the midpoint on the horizontal line inside the triangle indicates the fairest allocation, where the interests of one or two of the parties do not dominate the interests of the others. Therefore, we can determine that child custody decisions are directly applicable to Karni and Safra's Existence Theorem, which is based on the following assumptions:

- P represents a set of allocation procedures in vector space **R** of real numbers.
- Each individual is represented by two continuous binary relations on P.
  - The relation $\geq$ is the individual's actual choice behavior.
  - The relation $\geq_F$ is the individual's notion of fairness.
- For any pair of allocation procedures p and q in P, $p \geq q$ means that an individual will either choose p over q or be indifferent between the two.

These assumptions lead us to three axioms:

Axiom 1 (Compromise Fairness)

- Since all three individuals have an equal chance of maximizing their utility as a result of the decision, then greater equality of treatment represents a higher level of fairness. Letting intP denote the interior of P, we generate the first axiom:

  $$For\ all\ p, q \in intP,\ p \neq q\ and\ p \sim_F q \Rightarrow \tfrac{1}{2}p + \tfrac{1}{2}q >_F p.$$

  The implication here is that p and q are equally fair distinct allocation procedures and that one individual may strictly prefer p over q while another may strictly prefer q over p. Hence, splitting the difference between opposing claims of equal merit results in a fairer allocation.

Axiom 2 (Fairness Independence)

- Letting r be an allocation procedure and $\alpha \in (0, 1)$ such that the mixed allocation procedures $\alpha p + (1 - \alpha)r$ and $\alpha q + (1 - \alpha)r$ are equally fair, an individual will base their choice solely on self-interest, and, if the event has a probability $(1 - \alpha)$, the procedure r is employed regardless of their choice. This is the second axiom:

  For all $p, q, r \in P$, *and* $\alpha \in (0, 1)$, *if* $p \sim_F q$ *and* $\alpha p + (1 - \alpha)r \sim_F \alpha q + (1 - \alpha)r$, *then* $p \geq q \Leftrightarrow \alpha p + (1 - \alpha)r \geq \alpha q + (1 - \alpha)r$.

  The implication here is, using the example of the Father (i.e., Person 2), he is indifferent toward the preferences of the Mother and the Child (i.e., Person 1 and Person 3), which allows for the symmetry of the triangle. (If this assumption were relaxed, the model would take on a different shape.)

Axiom 3 (Preference for Fairness)

- Recalling from the first axiom that $\frac{1}{2} p + \frac{1}{2} q$ is strictly fairer than either p or q, if an individual is indifferent between p and q, then the greater fairness represented by their mixture will be reflected by their preferences. This is the third axiom:

  For all $p, q \in intP$ *such that* $p \neq q$, *if* $p \sim q$ *and* $p \sim_F q$, *then* $\frac{1}{2} p + \frac{1}{2} q > q$.

The result of these axioms is the Karni-Safra Existence Theorem.

The Existence Theorem

- The theorem proves the existence of a quasi-concave function α representing the fairness relation $\geq_F$, an affine (i.e., linear) function $_K$ representing $\geq_S$, the self-interest component of the preference relation $\geq$ which, for every allocation procedure q is a function of α (q) and $_K$ (q). Letting $\geq$ and $\geq_F$ be transitive, complete, and continuous binary relationships on P and assuming $n \geq 3$ and the following equivalent statements:

- The relations $\geq_F$ and $\geq$ satisfy the three axioms.
- There exists an affine function $_K$: $P \rightarrow \mathbf{R}$, and a function α: $P \rightarrow \mathbf{R}$ that is strictly quasi-concave on intP and represents $\geq_F$, and a function V: $\{(_K(p), \alpha(p)) | p \in P\} \rightarrow \mathbf{R}$, increasing in both arguments, such that,

  For all $p, q \in P, p \geq q \Leftrightarrow V(_K(p), \alpha(p)) \geq V(_K(q), \alpha(q))$.

This model indicates that child custody decisions, when driven by altruistic behavior, can lead to outcomes where the utility of all three parties who are directly impacted by the decision--- the father, the mother, *and* the child--- can be maximized. From the above discussion, it is apparent that these outcomes are superior to any other outcomes.

It is important to note that the point on the triangle for the child in court cases can be thought of as the judge's revealed preference representing the child's interests. The role of the revealed preference approach is to assist whenever difficult judgments must be made. The judge's revealed choice is not necessarily the correct choice, but it is based on experience that helps to shape decisions about what represents the correct choice. In an environment of random utility, where the decision-maker possesses a perfect discrimination capability but where uncertainty exists, our assumption is that the choice that will be made will be the one that produces the greatest utility. In this context, then, the behavior of judge becomes a key element to focus on. Understanding the judge's decision process in granting child custody awards, as revealed in regression coefficients, is another area for future studies, possibly in comparison to the results in privately contracted decisions.

It is also important to note that the triangle need not be symmetrical for child custody decisions, since symmetry implies that all three parties are exactly equal. Given the way that the model has been set up, however, a symmetrical depiction of the relationships has been assumed.

The model further implies that any one of the three parties has altruism towards the other two parties. A critical assumption is that the mother, the father, and the child all originally love each other; this represents the joint utility function of the family. This joint utility, which can be shown as U (M, F, C), is the goal of the social planner, whose task is to maximize joint utility. The difference is that in the child custody decision ordinal utility may be valid due to the fact that our assumption is that all three parties loved each other prior to the divorce. The judge, in this context, represents the social planner. With the dissolution of the marriage, if the three parties no longer love each other and their utilities are univariate, then theoretically maximizing the utility functions of all three will not be possible. This problem notwithstanding, with complete altruism, maximizing the utility of all three parties may be possible through a joint utility function. Analysis of this utility for policy purposes can be problematic since it is not cardinal; what is critical, though, is that the results can be meaningful even if policy implications may be difficult to ascertain.

The value of applying Karni and Safra's Existence Theorem, therefore, is that we have proven that a Pareto-optimal outcome exists. However, it is not known exactly the extent to which real world fathers and mothers, as well as the courts, actually reach the optimum. The extent to which they *may* reach it has been formulated here as an empirical question. The objective of my research is to convert the theory into an empirically testable model. My argument is that even though the concept of altruism is difficult to quantify precisely, it is quite possible to come up with a consensus on what actions might be considered altruistic and what characteristics might lead to altruism. My research proposes only a first step toward quantifying altruism and its empirical counterparts. There is doubtless much more room for further development of this topic and I do not claim to have a definitive model. The formulation is a flexible one, focused only on one aspect of human behavior as it relates to divorce. Certainly, if a consensus can be developed, it is my contention that we can successfully quantify and assess altruism specifically in the context of child custody decisions.

With this in mind, I will identify in the next chapter those variables in my database that I feel are the best explanatory variables for the shift from mother sole custody. Any variable that I also believe can represent a proxy for the level of altruism in the child custody decision process will receive a weight. Among the weighted variables, those that reflect altruism will be assigned a relatively higher value; those that reflect self-interest will be assigned a relatively lower value. Zero weights will be given to the remaining variables, where the relative influence of altruism vs. self-interest is less certain.

Ultimately, I will run two regressions. The first one will be a baseline regression of my independent variables; the second one will take the variables with zero weights and add to them a new independent variable, which will be created from the variables with nonzero weights, that will serve as a proxy for the level of altruism. By quantifying the level of altruism in this way, we can determine if it has a direct effect on custody outcomes.

3. Methodology for Empirical Testing

The Database

The CRD consists of court record and child support payment information from a sample of 4,236 paternity cases and 9,753 divorce cases involving minor children from twenty-one counties in Wisconsin. The sample cases were collected for twelve cohorts, dated July 1, 1980 through June 30, 1992. A case would be assigned to a particular cohort based on the date of the initial petition to court. The history of court appearances and child support payments were collected from the beginning of each case.

The database continues to be managed by the Institute for Research on Poverty and it is considered semi-public. I went through a formal proposal process to obtain access to the data, where I explained the objectives of my research. Because the database contains highly sensitive information, direct identifiers such as name, address, social security number, and case number were deleted to mask the data and protect the anonymity of the individuals involved. Moreover, a confidentiality agreement and approval from Fordham University's Institutional Review Board were required, since the research deals with human subjects.

The data structure for the CRD is divided into three files: one for demographic data, one for court action data, and one for payment history data. Unique identifiers had been assigned to each case after data collection that allows the user to match-merge the three files.

The divorce cases were isolated from the paternity cases. This was done because about 95% of the paternity cases in the CRD resulted in mother-only custody. These paternity cases were essentially welfare mothers who came to court to receive support. It

was determined that if the paternity cases were included, my results would have been distorted.

I set up a file that combined many of the variables from the demographic data file and the court action data file. None of the variables from the payment history data file were included in this combined working file, since the focus of the research was child custody decisions. I isolated the value for one of the variables from the court action data file—court action hearing type—to only show final divorce judgments, since these hearings guaranteed a custody decision as an outcome. By eliminating other types of court actions, the number of observations that I would have for testing would be 8,925. I then selected one other variable from the court action data file—legal custody of the children in the current action—as my dependent variable.

The other variables that were selected for my combined file were all potential explanatory variables (i.e., determinants of the child custody outcome). Variables extracted from the demographic data file included the county where the hearing took place, the race of the parents, the age of the parents, the level of education of the parents, the length of the marriage, and the age and gender of the children involved in the case. Variables extracted from the court action data file included which party was the petitioner, whether the parties had legal representation for the hearing, the parents' annual gross income, and the source of the parents' income. The tables in Appendix 2 provide a review of some of the key summary statistics available in my working file. Particular care was given to omit certain variables for potential regression analysis, such as the disposition of the family residence, which might involve a simultaneous decision to the court's decision concerning child custody.

The custody award cases revealed one of the following outcomes: (1) custody to the mother; (2) custody to the father; (3) joint custody; (4) custody to a third party (e.g., to a relative or foster care); (5) split custody (i.e., some children to the mother and some children to the father; or (6) multiple custody (e.g., mother-only or father-only custody for some children and joint custody for others). Because my interest is in explaining those factors that have brought about the reduction in legal custody awards to mothers, I decided to modify the outcomes in my dependent variable to indicate that legal custody has either been awarded to the mother or it has not. For my analysis, then, I estimated a binary logistic model, testing those independent variables available in the database that I believed could be incorporated into the theoretical model to predict child custody decisions.

There are clearly additional opportunities for extending this research in future work beyond a binary model; inclusion of the alternative custody outcomes can make use of a multinomial logistic model.

Variables Selected to Test the Hypothesis

The literature on the economics of divorce and child custody discusses several reasons for the shift from mother sole custody. Among the most compelling factors are whether the mother is in the labor force; the education level of the mother; the age of the mother; the length of the marriage; and whether the mother was previously married. There exists a corresponding variable in the database for each of these. In addition, I identified potential explanatory variables to test whether the number of children covered in the custody award; the status of the father's legal representation; or the year of the

custody hearing had a significant bearing on the custody decision. Together, these eight factors comprise the list of variables that I have identified for my hypothesis to explain the shift from mother sole custody outcomes.

Table 11 shows the list of variables to be tested in the empirical analysis and their respective descriptive statistics.

Table 11

Independent Variables: Baseline Regression

Variable	Var. Name	N	Min	Max	Mean	Std Dev
Mother Employed at Hearing Date	EMPLM	8,485	1	2	1.26	0.439
Yrs of Education for the Mother	EDUCMOTH	1,709	7	21	12.39	1.672
Age of the Mother	AGEMOTH	8,900	17	57	32.37	6.906
Length of the Marriage	LENGMARR	8,844	0	40	10.80	6.362
No. of Prev. Marriages- Mother	PREVMARM	8,821	0	3	0.14	0.374
No. of Children In the Court Order	NUMBKIDS	8,924	0	6	1.80	0.860
Lawyer for the Father	LAWYERF	8,874	1	2	1.38	0.484
Year of the Hearing	YR	8,925	1	15	7.73	3.406

Although there are 8,925 final divorce judgments in the database, the table indicates that the number of observations that was available for testing certain variables (e.g., years of education for the mother) was considerably lower. Therefore, a comment on selection bias would be useful.

The database was developed by way of a survey, and as a consequence, certain variables contain a number of missing data. These variables with missing data are largely due to the fact that the husband or wife in the case did not respond to all of the survey questions.

There are two important reasons why a respondent may have omitted a particular question. One reason may be that a question simply was not applicable to the case. Another reason for missing data may be due to the sensitive nature of some of the survey questions. Although a variable dealing with years of education shows a relatively large number of missing data due to the fact that the respondent may not have been comfortable revealing this information, I feel that this can be a valuable explanatory variable in developing economic reasons why custody may or may not be awarded to the mother. The data limitation is acceptable for my analysis, and thus it is not excluded from the regression. Moreover, although larger sample sizes tend to reduce variance, economists recognize that it is critical not to neglect certain biased estimators that can be more precise (Greene, 2000). It is important for future studies to provide additional information in order to strengthen these parameter estimates.

Table 12 identifies those independent variables that I feel are closely aligned with altruism and self-interest, and the respective weights that I have assigned for each.

Table 12

Independent Variables With Weighted Values

Variable	Weight
Mother Employed at Hearing Date	0.3
Yrs of Education for the Mother	0.9
Age of the Mother	0.8
Length of the Marriage	0.8
No. of Prev. Marriages for the Mother	0.1

Notes: Perfect altruism would be 1.0 on this scale. As the weight approaches zero, self-interest becomes more dominant.

The following variables have zero weights: Number of Children in the Court Order, Lawyer for the Father, and Year of the Hearing.

My rationale for the various weights follows below:

- Mother Employed at Time of Hearing (0.3). I have weighted this variable relatively low, since although working mothers might be in the labor force to better provide for their children, in our society most would argue that these women are motivated more by self-interest. (Moreover, the literature cited in Chapter 1 tends to support this perception.)

- Years of Education for the Mother (0.9). I believe that the strongest indicator for altruism among the independent variables is the level of one's education. In other words, more educated people will tend to be more altruistic toward their children. As it applies to child custody, this means that educated parents, more often than not, will be more amenable to different alternatives when it comes to deciding on the welfare of their children. Moreover, the general intuition is that greater educational attainment is linked with higher income levels; while indications are that higher income is similarly correlated to altruistic behavior, but here too an opportunity exists for further research into the relationship between income composition and altruism.

- Age of the Mother (0.8). The role of maturity in the decision process should have a material impact on the level of altruism. Although older mothers can begin to think more of their own needs as their children grow

older, generally when faced with an important decision, younger mothers will tend to exhibit less wisdom and, consequently, less altruism.

- Length of the Marriage (0.8). The behavior that is indicative of this variable should resemble the behavior related to the mother's age. The intuition here, then, is that parents in longer marriages will have invested more significantly into the welfare of their children.

- Number of Previous Marriages for the Mother (0.1). If the mother has been married in the past, particularly multiple times, popular belief would identify her as being more interested in herself than in her children, and therefore, this variable becomes the strongest indicator for self-interest.

I have assigned zero weights to the three remaining variables--- Number of Children Covered by the Order; Lawyer for the Father; Year of the Hearing--- because a powerful argument cannot be made whether they are shaped more by altruism or by self-interest, if they shape them at all.

I do not feel confident assigning a weight related to the level of altruism to the first of these variables, despite the fact that one might argue that a larger number of children could reflect altruistic behavior. However, one might also argue that this variable could be a sign of circumstance as opposed to behavior.

With regard to the father's legal representation, while it is likely to have a bearing on the custody decision, I feel that this variable really has little to do with altruism.

Finally, as for the year of the judgment, the data shows that the percentage of alternative custody awards--- primarily joint custody and custody to the father--- have increased over the time period covered in this study. (This is illustrated in Figure 9.) Here, again, it is inappropriate to assign a weight to the variable to represent a specific attitude or behavior. Despite its merits and society's wishes, I do not feel that altruism has become a more significant incentive over time; if it has, it has become so more as a spillover from the confluence of the other motivating factors.

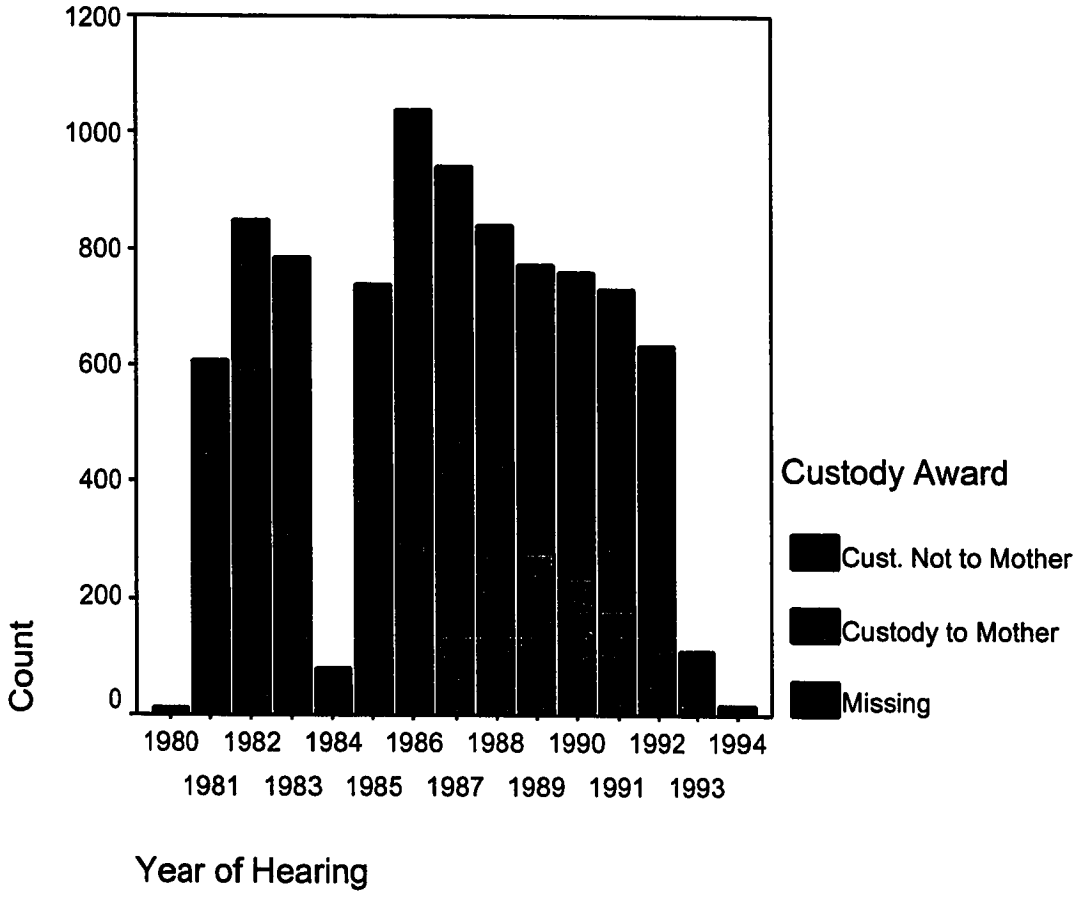

Figure 9. Bar Chart of Child Custody Outcomes in the Database

Note: Custody Not to Mother includes: Custody to Father, Joint Custody, Split Custody, and other alternative custody options.

Note that the year of the hearing is a useful regressor because it can serve as a control variable, which allows us to focus on the true contribution of the regressors unaffected by the time trend.

As a result of the weighting, I have developed a new variable, ALTRUISM, by adding together revised values for each of the nonzero variables. The five weighted variables, X1 through X5, were derived by subtracting the mean for each from the individual values for that variable's observations, then dividing the difference by the variable's standard deviation, and finally multiplying by the assigned weight for the variable. (The mean and standard deviations are exhibited in Table 13.) The equations that show the weighting of the nonzero independent variables and the resulting new variable are indicated below:

$$\frac{(X_1 - \bar{X}_1)}{\sigma} * W = \frac{(EMPLM - 1.26)}{.439} * 0.3 = EMPLM' \tag{9}$$

$$\frac{(X_2 - \bar{X}_2)}{\sigma} * W = \frac{(EDUCMOTH - 12.39)}{1.672} * 0.9 = EDUCMOTH' \tag{10}$$

$$\frac{(X_3 - \bar{X}_3)}{\sigma} * W = \frac{(AGEMOTH - 32.27)}{6.906} * 0.8 = AGEMOTH' \tag{11}$$

$$\frac{(X_4 - \bar{X}_4)}{\sigma} * W = \frac{(LENGMARR - 10.80)}{6.362} * 0.8 = LENGMARR' \tag{12}$$

$$\frac{(X_5 - \bar{X}_5)}{\sigma} * W = \frac{(PREVMARM - .14)}{.374} * 0.1 = PREVMARM' \tag{13}$$

$$EMPLM' + EDUCMOTH' + AGEMOTH' + LENGMARR' + PREVMARM' = ALTRUISM \quad (14)$$

An important caveat that must be noted is that a certain degree of subjectivity is unavoidable in the assignment of the weights. As a result, there could be a modicum of debate concerning this new variable that we are creating. One may argue that the weights assigned for the independent variables in order to develop a proxy for altruism were based on a personal belief system, as opposed to truly measurable parameters. Clearly, the weights reflect the social beliefs that have been shaped by the cultural landscape of the United States (e.g., more educated people tend to be more altruistic). In other societies, particularly in developing countries, some of the weights that have been assigned may not be applicable. For instance, poor women may want to choose education (which of course we have related to altruism), but this simply may not be a viable option for them. Moreover, in some societies, women in the labor force may be rare or even forbidden; using this variable to develop a proxy for altruistic behavior would be rendered meaningless.

The bottom line, though, is that the methodology that has been utilized to quantify altruism for the empirical testing is not restricted to the choice of weights that have been identified, thus creating an opportunity for further analysis.

If the reader accepts the above proviso, we can move forward to determine whether our baseline regression results can take on a greater richness in the second regression. By interpreting the results in the context of the theoretical model in Chapter

2, not only will we understand *what* drives custody decisions, but we also may be able to better understand *why*, thereby providing policymakers with valuable information for improving the welfare of men, women, and children.

The next chapter begins with a discussion of the results of the baseline regression (i.e., without altruism). This is then followed by the results of the second regression, which incorporates the variables having zero weights with the new control variable that will serve as our proxy for altruism. We will refer back to the theory developed in the last chapter concerning its predictions about altruism in order to make a determination if our new variable helps to answer them.

4. Regression Results and Analysis

The results for a binary logistic regression can be written as:

$$\Pr ob(event) = \frac{1}{1+e^{-z}} \tag{15}$$

where the event is defined as "custody not to the mother" and z is the linear combination

$$z = \beta_o + \beta_1 x_1 + \beta_1 x_1 + \ldots \beta_p x_p \tag{16}$$

and p is the number of independent variables.

The probability of the event *not* occurring is estimated as

$$\text{Prob (custody to the mother)} = 1 - \text{Prob(event)}. \tag{17}$$

The relationship between the independent variable and the probability is nonlinear. The probability estimates will be between 0 and 1 regardless of the value of z.

In linear regression, the parameters of the model are estimated using the least squares method, where regression coefficients are selected that result in the smallest sums of the squared distances between the observed and predicted values of the dependent variable. In logistic regression, the parameters of the model are estimated using the maximum likelihood method, where the coefficients that make the observed results most likely are selected.

For the binary regression, therefore, there are two alternatives for the dependent variable legal custody--- custody to the mother and custody not to the mother--- and the tests that yielded both the baseline results and the results including the effect of altruism are discussed on the following pages.

Baseline Results

Table 13 reveals the results of the test that predicts legal custody not being awarded to the mother from a constant and the eight independent variables.

Table 13

Binary Logistic Model for Baseline Regression of Legal Custody Outcomes, Selected Independent Variables: Wisconsin Divorces from 1980-1994

	Custody Not to Mother		
Variable	Coefficient		Std. Error
Mother Employed at Time of Hearing	-0.454	**	0.137
Years of Education for the Mother	0.066	*	0.036
Age of the Mother	-0.039	**	0.019
Length of the Marriage	0.073	**	0.021
Number of Previous Marriages for the Mother	0.206		0.183
Number of Children Covered by the Order	0.181	**	0.067
Lawyer for the Father	-0.857	**	0.121
Year of the Hearing	0.205	**	0.017
Constant	-0.598		0.602

Notes: The analysis includes 1,581 cases.
*p < .10, **p< .05

Given the coefficients in the regression results, the probability of the legal custody award not being awarded to the mother for any of the cases in the database can be found by utilizing Equation (16) above, or, z = -0.598 - 0.454 (Mother Employed at Time of Hearing) + 0.066 (Years of Education for the Mother) - 0.039 (Age of the Mother) + 0.073 (Length of the Marriage) + 0.206 (Number of Previous Marriages for the Mother) + 0.181 (Number of Children Covered by the Order) – 0.857 (Lawyer for the Father) + 0.205 (Year of the Hearing). If the estimated probability for a given case is greater than 0.5, we predict that the event (i.e., custody not being awarded to the mother) will occur.

The regression output shows that six of the eight independent variables have a Wald statistic (the square of the coefficient to its standard error) with a p-value that is less than .05 and an additional variable with a p-value that is less than .10, indicating that these parameters are significant to the model. The final variable in our hypothesis (number of previous marriages for the mother) is only marginally significant on its own in explaining the shift from mother sole custody.

In interpreting binary regression coefficients, the odds of an event occurring represent the ratio of the probability that it will occur to the probability that it will not. The logistic coefficient can be interpreted as the change in the log odds associated with a one-unit change in the independent variable; the logit model, then, is written in terms of the log of the odds:

$$\log\left(\frac{\Pr ob(event)}{\Pr ob(no\ event)}\right) = \beta_o + \beta_1 x_1 + \beta_1 x_1 + \ldots \beta_p x_p \qquad (18)$$

As an example, utilizing the results from Table 13, the log of the odds would be interpreted for the first variable--- Mother Employed at Time of Hearing--- as follows: With a coefficient of –0.454, if the value of the parameter were to change from 1 to 2 (i.e., if the mother changed from being employed to being unemployed), and the values of the other independent variables remain the same, the odds of legal custody not being awarded to the mother decrease by 45.4%. (Said another way, if the mother is at home, the chances of her gaining custody of the children will go up substantially.)

Because the implications are identical, it is generally more straightforward to think of *odds* rather than *log odds*, and therefore the logistic equation can be rewritten as:

$$\left(\frac{\Pr ob(event)}{\Pr ob(no\ event)}\right) = \exp\left[\ \beta_o + \beta_1 x_1 + \beta_1 x_1 + \ldots \beta_p x_p\ \right] \qquad (19)$$

In Equation (19), λ raised to the power βi is the factor by which the odds change when the independent variable increases by one unit. If the value of a coefficient in Table 13 (i.e., βi) is positive, this factor will be greater than 1, which means that the odds are increased; if βi is negative, this factor will be less than 1, which means that the odds are decreased. (When βi is 0, the factor equals 1, which leaves the odds unchanged.) The odds ratios for our independent variables are presented in Table 14.

Table 14

Odds Ratios for Selected Independent Variables: Baseline Regression

Variable	Exp(β)	95% C.I. For Exp (β) Lower	Upper
Mother Employed at Time of Hearing	0.635	0.486	0.830
Years of Education for the Mother	1.068	0.995	1.147
Age of the Mother	0.961	0.926	0.998
Length of the Marriage	1.076	1.034	1.120
Number of Previous Marriages for the Mother	1.229	0.859	1.760
Number of Children Covered by the Order	1.198	1.050	1.367
Lawyer for the Father	0.425	0.335	0.538
Year of the Hearing	1.228	1.189	1.269

From Table 14, the independent variables for which $Exp(\beta) > 1$ indicates that the odds of the custody award being something other than sole custody to the mother will *increase* when the observation for the variable increases by 1 unit; the independent variables for which $Exp(\beta) < 1$ indicates that the odds of the custody award being something other than sole custody to the mother will *decrease* when the observation for the variable increases by 1 unit.

The following represents a practical discussion of each of the variables.

- Mother Employed at Hearing Date (0.635). When the value of the parameter changes from 1 to 2 (i.e., if the mother changes from being employed to being unemployed), and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will decrease significantly. (Once again, if the mother is at home, the chances of her gaining custody of the children goes up.) From the 95% confidence interval, values anywhere from 0.486 to 0.830 are plausible for the population value of the odds ratio for the mother's labor force participation.

- Years of Education for the Mother (1.068). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will increase to some extent. In other words, the more educated a woman is, the less likely it is that she will have sole custody.

- Age of the Mother (0.961). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody

to the mother will decrease marginally. This implies that an older mother has a slightly greater chance of obtaining sole custody.

- Length of the Marriage (1.076). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will increase to some extent. The interpretation here is that following a long marriage, an arrangement other than mother sole custody is likely.

- Number of Previous Marriages for the Mother (1.229). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will increase by a rather sizable amount. This seems to make a lot of sense, since with each marriage there may be other children involved, and a simple resolution concerning child custody becomes problematic.

- Number of Children in the Court Order (1.198). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will show an increase. Similar to the number of previous marriages, as the number of children involved in the custody decision increases, it becomes less likely that they will all go to one parent.

- Lawyer for the Father (0.425). When the value of the parameter changes from 1 to 2 (i.e., if the father in the case loses legal representation), and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will decrease dramatically. In other words, if the father does not have an attorney it is fairly certain that the mother will receive sole custody (assuming that she wants it).

- Year of the Hearing (1.228). When the value of the parameter increases by 1, and the values of the other independent variables remain the same, the odds of the legal custody award being something other than sole custody to the mother will increase. As previously indicated (Figure 9), the trend that we have seen in the last several years has been toward alternative custody outcomes.

The correlation matrix for this regression in Table 15 shows that none of the variables have perfect correlation (i.e., a correlation of 1.0) in their off-diagonals. Although a review of the eigenvalues indicates that only two of the independent variables--- age of the mother and length of the marriage--- will tend to move together, clearly there is no combination of variables used in this regression that indicates a problem related to high collinearity.

In point of fact, I ran a number of tests, incorporating different combinations of independent variables before finalizing the eight variables for the baseline regression. There was a certain degree of trial and error that was employed, since some tests included two variables that were ostensibly measuring the same thing. Needless to say, even if the prediction rates of the model were higher, such tests were unusable, and one of the variables was ultimately dropped.

Table 15

Correlation Matrix for Baseline Regression of Legal Custody Outcomes

	A	B	C	D	E	F	G	H	I
A (Constant)	1.00	-.40	-.59	-.41	.29	.18	-.19	-.29	-.11
B (EMPLM)	-.40	1.00	.15	-.03	.10	.00	-.11	.01	.10
C (EDUCMOTH)	-.59	.15	1.00	-.32	.26	.16	.05	.02	.05
D (AGEMOTH)	-.41	-.03	-.32	1.00	-.89	-.54	.03	.03	-.19
E (LENGMARR)	.29	.10	.26	-.89	1.00	.53	-.16	-.01	.20
F (PREVMARM)	.18	.00	.16	-.54	.53	1.00	.04	-.01	.08
G (NUMBKIDS)	-.19	-.11	.05	.03	-.16	.04	1.00	-.01	.03
H (LAWYERF)	-.29	.01	.02	.03	-.01	-.01	-.01	1.00	-.07
I (YR)	-.11	.10	.05	-.19	.20	.08	.03	-.07	1.00

The comparison of the model's predictions to its observed outcomes is revealed in a classification table. This information, which is shown in Table 16, assesses the goodness of fit of the model. From the table, it can be seen that 740 custody awards to the mother were correctly predicted by the model and that 365 custody awards not to the mother were correctly predicted. The off-diagonal entries of the table tell how many awards were incorrectly classified. Of the custody awards to the mother, about eight out of ten were correctly classified; of the custody awards not to the mother, a little more than half were correctly classified. The overall percentage of roughly 70% demonstrates that, as a group, the independent variables selected for this analysis do a good job in explaining the probability of child custody awards.

Table 16

Classification Table: Baseline Regression

	Predicted Custody Award		
Observed Custody Award	Custody to Mother	Custody Not to Mother	Percentage Correct
Custody to Mother	740	173	81.1
Custody Not to Mother	303	365	54.6
Overall Percentage			69.9

Figure 10 shows the histogram of estimated probabilities for custody awards in this analysis. The symbol for those cases where custody is awarded to the mother is indicated as a 1 and the symbol for those cases where custody is not awarded to the mother is indicated as a 2. The more that the 1's are clustered to the left of .5 and the 2's to the right of .5, the better the model distinguishes between the two groups. Because the model did a better job of predicting those cases where custody was awarded to the mother, there are fewer 1's to the right of .5 than there are 2's to the left of .5.

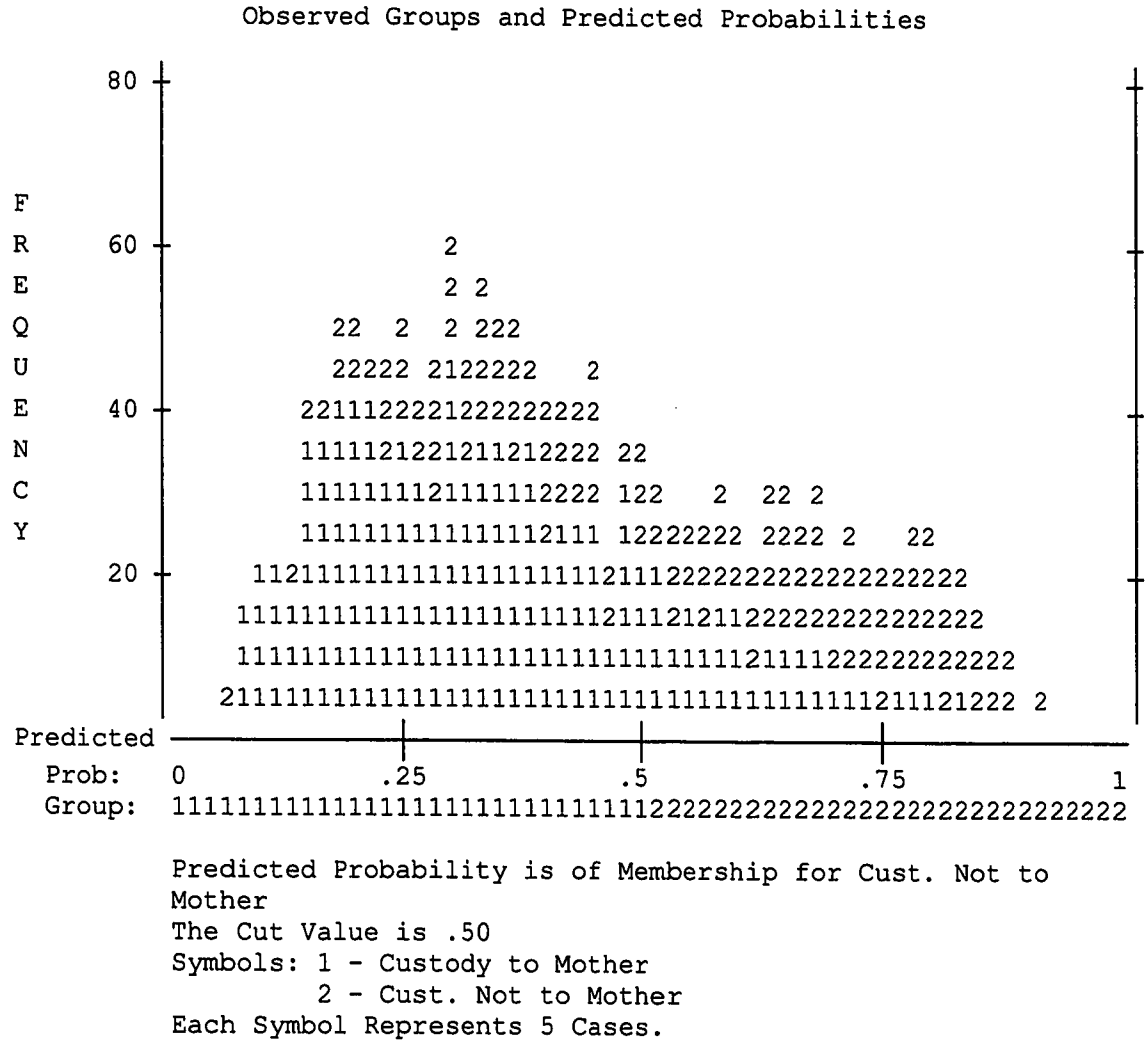

Figure 10. Histogram for the Baseline Regression Model

The various results of this analysis strongly demonstrate that, as a group, the independent variables selected have a meaningful relationship with the dependent variable, legal custody. The regression results seem to clearly reflect the changing economics of divorce and child custody. Key explanatory factors such as the labor force participation and the number of years of education have been proven to have a significant impact on the shift away from mother sole custody. The increased labor force participation of women--- and of mothers in particular--- dovetails neatly with their level of educational attainment (as well as their decrease in fertility) that was documented in Chapter 1. The fact that the variable in this database that tested the impact of whether the mother was employed had a p-value of 0.001 and the variable that represented the number of years of education for the mother had a p-value of 0.070 support our hypothesis. Given the changes to the legal regime concerning divorce, it is rather straightforward to understand the increased importance of the alternative outcomes for child custody that have become so prevalent in our society.

The other test to undertake now is to determine if the level of altruism of the divorcing parents can be a significant explanatory variable in the legal custody decision and if it can strengthen our result in terms of the number of cases correctly predicted in the binary model. Hence, we turn our attention to our second regression, which includes the new variable for altruism that we have created as a proxy for the five weighted independent variables.

Results Including Altruism

The model that was developed in Chapter 2 sheds new light on the nature of decision-making processes. The theory that the model espouses clearly has implications concerning the level of altruism, since the utility of each of the individuals involved in a decision can be enhanced when the selfish interests of one of the parties does not interfere with the outcome. By extending this model to portray the decision process in child custody disputes, we can test to see if the concepts related to moral value judgments and altruism already described have a measurable effect on custody outcomes. Clearly, our baseline regression helped to prove our hypothesis that the shift from mother sole custody can be explained by a number of economic variables. The inclusion of a variable for altruism adds another layer to the analysis, because we are now testing the hypothesis in part with a behavioral variable.

A considerable amount of time went into developing an appropriate methodology for quantifying altruism. Table 17 reveals the results of the test that predicts legal custody not being awarded to the mother from a constant, the three variables from the baseline regression with zero weights, and the new variable, ALTRUISM, that was created in Equation (9) through Equation (14) by summing the five weighted variables from the baseline regression.

Table 17

Binary Logistic Model for Regression of Legal Custody Outcomes,
Selected Independent Variables (Including Altruism): Wisconsin Divorces from 1980-1994

	Custody Not to Mother		
Variable	Coefficient		Std. Error
Number of Children Covered by the Order	0.160	**	0.066
Lawyer for the Father	-0.858	**	0.120
Year of the Hearing	0.207	**	0.016
Altruism	0.038	**	0.008
Constant	-1.175		0.238

Notes: The analysis includes 1,581 cases.

The variable for altruism is the weighted sum of the variables EMPLM, EDUCMOTH, AGEMOTH, LENGMARR, and PREVMARM from the baseline regression.

*p < .10, **p< .05

The table clearly indicates that not only does each of the zero-weighted variables from the baseline regression continue to have a p-value of less than 0.05, but our new proxy variable that quantifies altruism does as well. It is useful to note that this variable can be interpreted as being highly significant in explaining child custody outcomes even though it includes the variable for the mother's educational attainment, which had a p-

value between 0.05 and 0.10 in the baseline regression, and the variable for the mother's previous marriages, which had a p-value greater than 0.10 in the baseline regression. The results of our second test enable us to make the important finding, therefore, that this behavioral indicator can help to explain child custody decisions. The corresponding classification table is shown in Table 18.

Table 18

Classification Table (for Regression Including Altruism)

	Predicted Custody Award		
Observed Custody Award	Custody to Mother	Custody Not to Mother	Percentage Correct
Custody to Mother	744	169	81.5
Custody Not to Mother	313	355	53.1
Overall Percentage			69.5

It is interesting to note that with a mix of variables associated primarily with measuring the mother's behavior (mother employed at time of hearing; years of education for the mother; age of the mother; number of previous marriages for the mother), there was an increase of four in the number of correct predictions in those cases where custody was awarded to the mother. However, there was a decrease of ten correct predictions in

cases where custody was not awarded to the mother, and as a consequence, the overall percentage of cases correctly predicted falls from 69.9% in the baseline regression to 69.5% in the second regression. Fewer independent variables will generally yield a poorer fit, thus the slight decrease can be explained due to the fact that the number of variables decreased from eight in the baseline regression to four in the second regression.

Figure 11 reflects the minor changes between the two tests in the revised histogram.

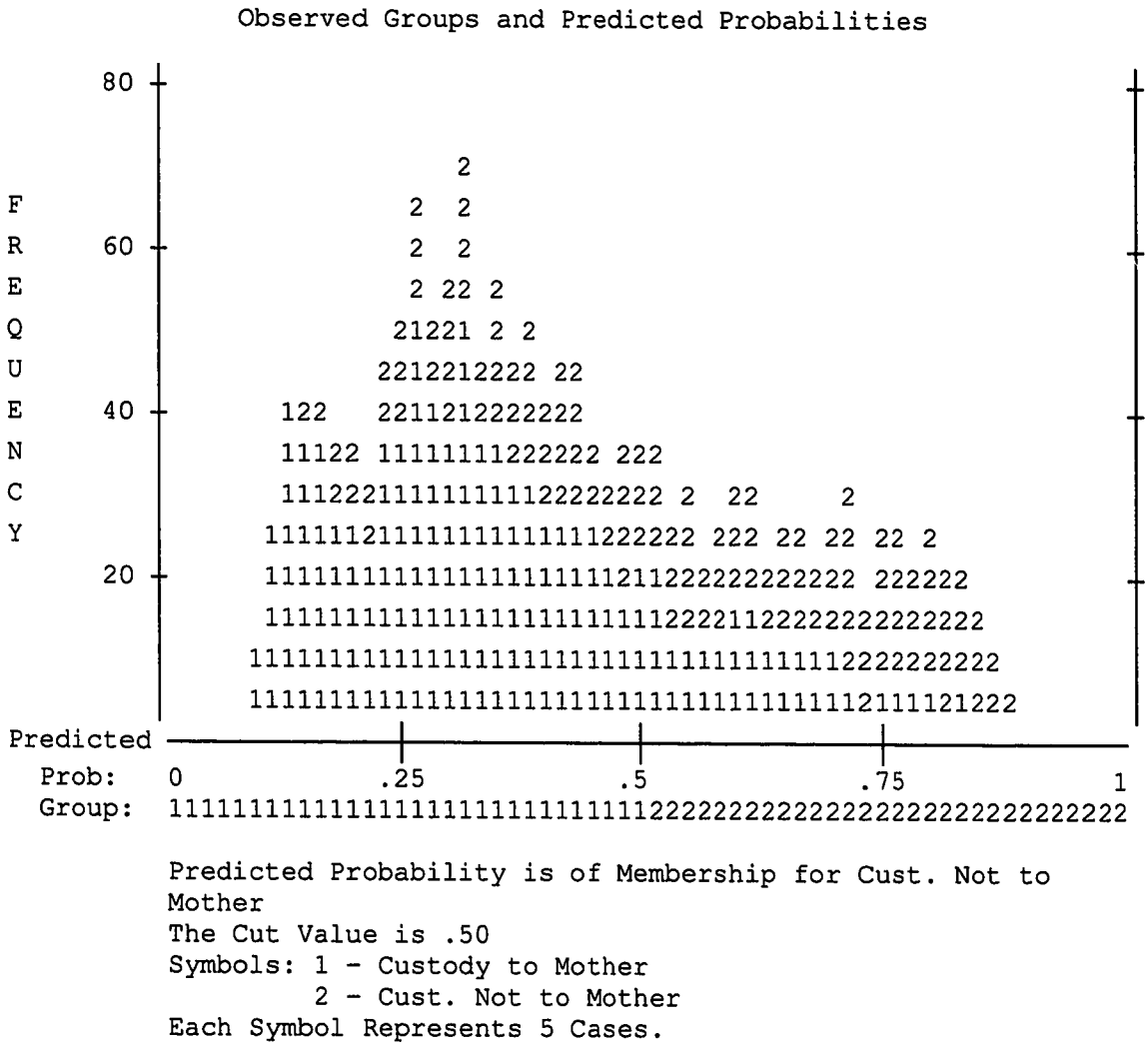

Figure 11. Histogram of Regression Model Including Altruism

As previously mentioned in connection with the correlation matrix (Table 15), there was a degree of trial and error undertaken in the mix of independent variables. The overall percentage of cases correctly predicted for some combinations of variables showed material improvement (i.e., up to five percent) from the baseline regression, but if high correlation existed between any of the variables, then the offending regressors were omitted. The following statements therefore can be made to summarize the two regressions that were ultimately used:

A. Each of the individual variables in the baseline regression was deemed to be a meaningful factor to test the shift from mother sole custody.
B. The overall results of the baseline regression proved to be significant in terms of explaining child custody outcomes.
C. Utilizing the baseline variables to create a second regression with the proxy variable for altruism also proved to be significant in terms of explaining child custody outcomes.*

As a result of running a number of tests, I observed that while changing the weights assigned to the baseline variables could doubtless affect the significance level of the coefficients and the classification table percentages, in virtually all of the tests the impact

*In a few tests, the p-value for the variable ALTRUISM was less significant due to the existence of other problems (e.g., a lower R^2).

of the changed weights was minimal. Therefore, we can conclude that a small change in a variable's weight generally did not change the analysis; directionally the results were consistent.

The various manifestations of gamesmanship discussed earlier that can occur during the dissolution of a marriage can surely impact the outcome of a child custody dispute. The value of the second regression is that it tests whether a behavioral characteristic, such as the level of altruism, can be as meaningful a variable as an economic characteristic, such as labor force participation or the level of educational attainment, in understanding custody decisions. With the discovery that altruism is a significant explanatory variable, it is imperative that we are able to quantify it in an appropriate manner, particularly in connection with divorce, where the payoff is high and the bargaining can swing from rational to emotional. It is this writer's opinion that in such an environment, it is the child whose utility is least likely to be maximized.

Since the maternal preference rule is no longer a guiding principle to follow in child custody decisions, the expectation is that when the court awards custody cases, they will be handled fairly and with a sense of justice. The objective of the court is to maximize the utility of each of the parties affected by the decision. The theoretical model developed in this dissertation shows that when child custody decisions are privately contracted, the outcome should be no different than a court award and the utility of each of the parties should be maximized, provided that the divorcing parents likewise handle the matter fairly and with a sense of justice.

There was no single variable in the database that could be used to directly reflect altruistic behavior. As an example, there was no variable that would suggest that one party may have had an advantage but chose not to use it. Future studies on child custody decisions should seek to identify such a dependent variable, which could then be regressed on the independent variables to yield regression coefficients of standardized regressors that would indicate the appropriate weights for altruism.

Similarly, there was no variable in the database that indicates viciousness, which also could be beneficial for future studies, since the absence of viciousness empirically shows altruistic behavior, and if we regress viciousness on other variables such as the education level of the mother, then the regression coefficient may indicate the opposite of altruism and the reciprocal of the regression coefficient can indicate altruism.

Joint custody, too, can be interpreted to be a positive indication of altruism, and a separate binary logistic regression was run with the same independent variables, but with the dependent variable recoded to reflect whether the legal custody award was now either (a) joint custody or (b) not joint custody. The results of this regression are shown in Table 19.

Table 19

Binary Logistic Model for Baseline Regression of Legal Custody Outcomes, Selected Independent Variables: Wisconsin Divorces from 1980-1994

	Not Joint Custody		
Variable	Coefficient		Std. Error
Mother Employed at Time of Hearing	0.628	**	0.153
Years of Education for the Mother	-0.138	**	0.039
Age of the Mother	0.033		0.021
Length of the Marriage	-0.039	*	0.022
Number of Previous Marriages for the Mother	0.212		0.204
Number of Children Covered by the Order	-0.068		0.073
Lawyer for the Father	0.725	**	0.131
Year of the Hearing	-.261	**	0.017
Constant	1.800		0.641

Notes: The analysis includes 1,581 cases.
*p < .10, **p< .05

This regression yields some important results. By focusing the dependent variable on whether the child custody award is joint custody or not, it is clear that our independent variables, particularly the mother's level of educational attainment and employment status, can be highly significant in explaining the outcome. Similar to the odds ratios that were shown in Table 14, the odds associated with this regression are all quite logical in understanding the relationship between the variables and the outcome:

- The odds of the custody award being *something other than joint custody* increase when the observation for the variable increases by one unit for

  Age of the Mother (1.033)
  Lawyer for the Father (2.066)
  Mother Employed at Time of Hearing- i.e., if she leaves her job (1.874)
  Number of Previous Marriages for the Mother (1.236)

- The odds of the custody award being *something other than joint custody* decrease when the observation for the variable increases by one unit for

  Length of the Marriage (0.961)
  Number of Children Covered by the Order (0.934)
  Years of Education for the Mother (0.871)
  Year of the Hearing (0.771)

Moreover, whereas the classification table correctly predicted 69.9% of the cases in the baseline regression, the prediction rate improves to 75.3% with this regression.

Due to the fact that joint custody can be positively linked with altruistic behavior, the results of this separate regression can be developed further. Although the focus of my dissertation has been to shed new light on the shift away from mother sole custody, additional testing of joint custody decisions can certainly provide critical new information about the possible linkage between child custody decisions and altruism.

Because we have empirically shown that the level of altruism is a significant factor in explaining child custody outcomes, one final piece of analysis is to determine whether altruism has actually changed over time. If it can be demonstrated that parents are in fact more altruistic toward their children, then the maximized utility that is the goal of our theoretical model can become a reality in custody disputes. To illustrate altruism over time, then, we present a trend line for each of the five independent variables from the baseline regression that was used to create the proxy variable for altruism over the fifteen years for which there is data on custody hearings. These trends are exhibited in Figures 12 through 16.

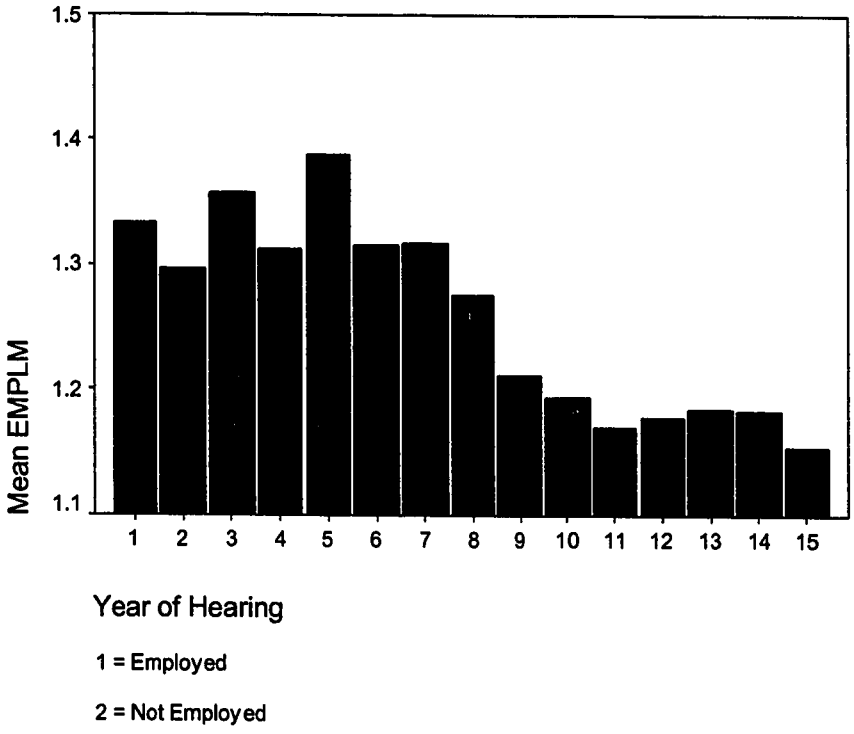

Figure 12. Labor Force Participation of Mothers in the Study over Time

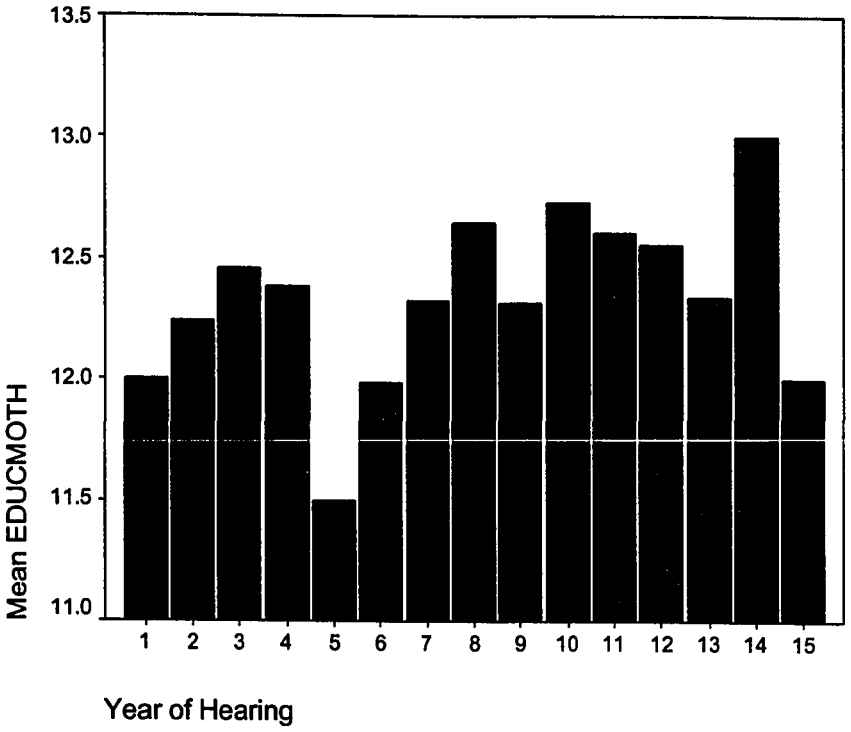

Figure 13. Years of Education of Mothers in the Study over Time

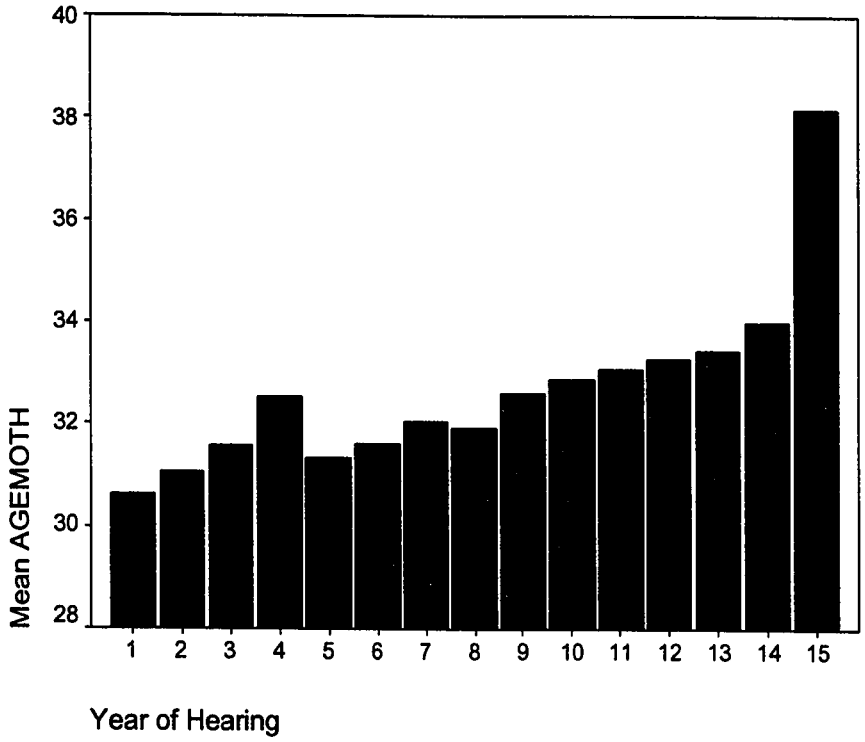

Figure 14. Ages of the Mothers in the Study over Time

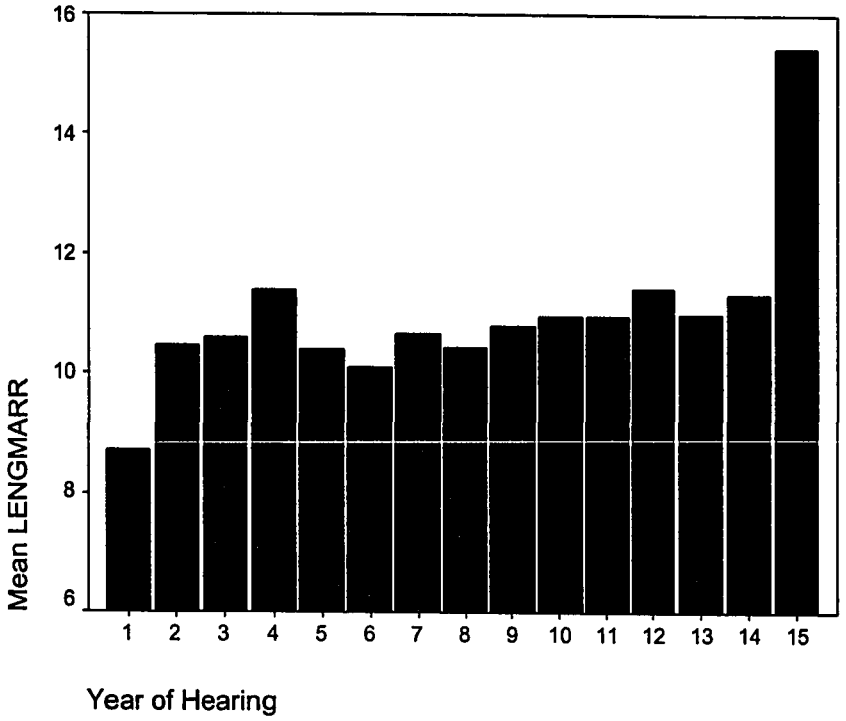

Figure 15. Length of the Marriages in the Study over Time

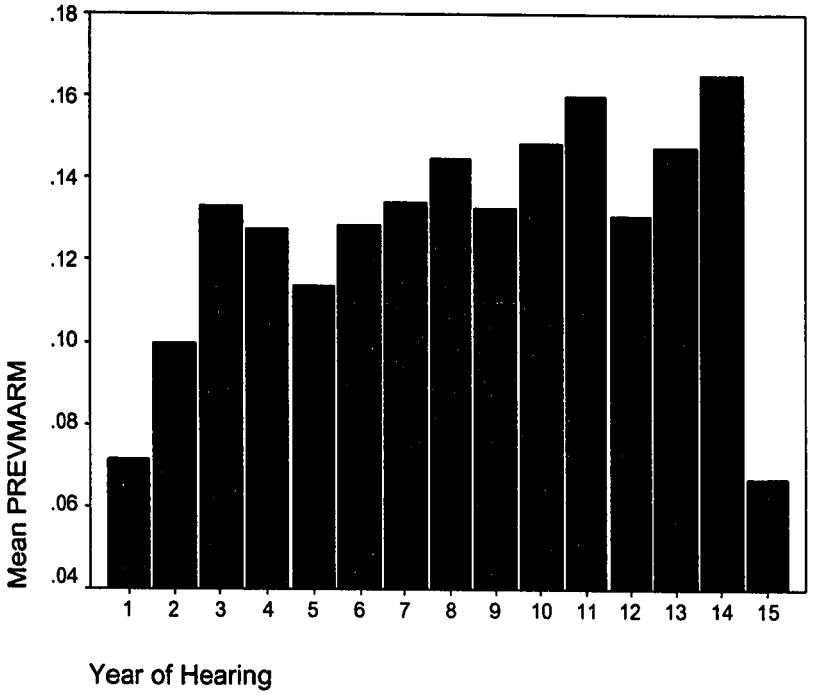

Figure 16. Number of Previous Marriages for Mothers in the Study over Time

In interpreting the trend lines, it is important to recall that we have associated greater educational attainment, age, and length of marriage with greater altruism; we associated greater labor force participation and number of previous marriages with lesser altruism. In addition, it is important to note from Appendix 2.1 and Appendix 2.2 that the custody hearings in this study took place over a period of fifteen years, although there were only twelve cohorts. Note also that Figure 9 illustrated that the three years with the lowest number of cases were 1980, 1984, and 1994 (1993 had relatively few cases as well); consequently, the means that are indicated on Figure 12 through Figure 16 for Year 1, Year 4, Year 14, and Year 15 should be interpreted with this in mind.

The data shows that the average educational attainment, age, and length of marriage are all trending upward for the time period of the study, which would lead us to conclude that parents may be becoming more altruistic over time; the data also shows, though, that more mothers are employed and the number of previous marriages has increased, which are both more indicative of self-interest. Looking a little closer inside the numbers for arguably the two most telling variables--- Years of Education for the Mother and Mother Employed at Date of Hearing--- one finds that the percentage of mothers in the study with greater than a twelfth grade education reaches 30% by Year 10; however, the trend for mothers' labor force participation is even more defined, with the percentage climbing from the high-60's range in the early years of the study to the low-80's range in the later years of the study. What all this says about altruism over time is that the trend is somewhat inconclusive: clearly, additional empirical studies are needed to study the behavior of parents in child custody decisions. We have succeeded in proving our hypothesis concerning the shift from mother sole custody with a set of

economic variables, but further research on parents' behavior during divorce can help to broaden our understanding of child custody decisions.

Summary and Conclusion

The American family has experienced a major transformation in its composition over the past generation. The incidence of divorce, which has been driven to higher levels as a result of demographic, legal, and economic change, has permanently altered the landscape of society. The consequences of this rampant marital dissolution frequently cause the greatest potential threat to the ongoing welfare of children. Coincidental with the higher divorce rate has been a shift in child custody outcomes away from the traditional arrangement of deciding to place the children in the exclusive domain of the mother. I set out to examine this shift in child custody and to develop a theoretical model that I could incorporate into empirical tests in order to better understand the decision process that takes place in a custody dispute.

The custody decision is often influenced by the degree of strategic interaction that is undertaken by the divorcing spouses. In the aftermath of the give-and-take that has transpired, if one of the spouses has gained more than the other, then the outcome of the proceeding cannot be considered as efficient. We applied this decision process to an Edgeworth box to illustrate that outcomes that fall on the contract curve and are Pareto optimal have been impacted favorably by the level of altruism in the negotiation. Ultimately, however, it is most prudent to model the decision process in a child custody dispute in the context of a three-person diagram, since the utility of the child, as well as both of the parents, must be addressed. Although the overwhelming majority of custody cases are contracted privately between the divorcing parents, it is imperative that the decisions of the parents consider the utility of the child, just as a court would, especially today where no constraint of a maternal preference rule exists. The theory prescribes that

the utility of all parties is more likely to be maximized when altruism is the predominant behavior in the decision process.

To quantify those factors that have brought about the reduction in legal custody awards to mothers, I utilized a large database of custody cases from the State of Wisconsin's Court Record Demonstration Project. I estimated a binary logistic model where the dependent variable was the custody award (i.e., to the mother or not to the mother), and I identified a number of independent variables that were representative of the demographic and economic changes that have taken place in society. I decided to run two regressions--- first, with the explanatory variables that I had selected that I hypothesized could explain the shift in child custody outcomes; and second, with a proxy variable called ALTRUISM, which was created by assigning weights to the variables in the baseline regression for their level of altruism, in order to determine if this behavior can be shown to be significant in explaining custody outcomes.

The regression results clearly indicated that variables that deal with the labor force participation, educational attainment, and age of the mother, in addition to the length of the marriage, were all significant in predicting the probability of the child custody award. These variables were each weighted for the second regression and, when combined with the unweighted variables from the baseline regression, we found that the coefficient for our proxy variable, ALTRUISM, was likewise significant. Knowing that this behavioral variable can be utilized to understand the decision process in the negotiation of custody, this discovery is certainly encouraging, since we can now begin to better explain what is truly in the best interests of the child.

This behavior entails moral value judgments, and in moralistic decision-making, reason will supersede desire, and therefore it is rational to choose altruism over self-interest. Notwithstanding the promise that goodwill, kindness, and charity may hold for child custody disputes, however, ego can thwart the decision. Egoism is the polar opposite of altruism; its main tenet is that self-interest is a proper end for human actions. This is can lead to a less than optimal outcome, which is unfortunate given the many factors cited in this dissertation that support the theory that altruism should be a strong influence in shaping child custody decisions and child welfare in general. Some of the most notable of these factors that have been discussed herein are as follows:

- The declining birth rate has not affected the level of altruism in the United States. Rather, the level of altruism required in today's society for the well-being of children has increased, due to the heightened need for quality of life (e.g., investment in education and leisure time activities).

- With the incentive to divorce much greater today, it is critical for parents to try not to let their level of altruism degenerate. (We have indicated the disruption to financial resources that occurs in a divorce.)

- The stricter child support legislation that exists today is a testament to the importance of child welfare and altruistic behavior.

- Although we have indicated that father sole custody has increased during the period of this study, the one alternative to mother sole custody that has clearly flourished has been joint custody. In the context of altruism this is certainly significant, because of all the prior research that pointed out the negative behavior of noncustodial parents.

- The principle of compensation can be used as a moral compass in conflict resolution. When actions are consistent with this principle, the level of altruism will take on a relatively greater role in helping achieve an optimal outcome.

- The equilibrium outcome in either a two-person or three-person decision model will likely be different based on the level of altruism that is involved in the bargaining. If it is based on self-interest, non-cooperative behavior will dictate the outcome; if it is based on moral value judgments, cooperative behavior will dictate.

- Social policy, as indicated by our theoretical model, can be shaped by moral value judgments. This will take place when altruism is the dominant behavior in the decision process over self-interest.

- Court decisions today are no longer restricted by the maternal preference rule. Accordingly, the best interests of the child are more likely to be addressed. It is critical that privately contracted decisions, because they constitute such a substantial percentage of cases, be

dedicated to a sense of justice. When this prevails, so too will the child prevail.

Increasing the level of altruism that is demonstrated by both parents, then, during custody decisions, can be a bellwether for ensuring the maximization of utility for each of the parties involved in the proceeding. The significance of the proxy variable for this behavior in our second regression supports this argument. When altruism is used as a predictor of child custody, just as labor force participation, educational attainment, and the other explanatory variables are in our baseline regression, we will be able to strengthen our understanding of child custody decisions and we will be able to establish more meaningful social policy with respect to child welfare.

As indicated earlier, one way that we can come closer to understanding child custody decisions is if additional research studies are done. Information is simply too limited, and despite the difficulties involved in data gathering due to the nature of private contracting, the benefits of implementing additional studies, possibly where certain behaviors can be obtained by means of survey techniques, will enhance our level of understanding.

Based on our prevailing culture and our legal regime, the phenomenon of divorce in the United States is not likely to go away. From this perspective, it is somewhat foreboding to note that Edward Wilson, the American sociobiologist and Pulitzer Prize winner, has argued that all human behavior, including altruism, is genetically based. Here, too, further research, possibly on the characteristic behaviors of different races, could help to strengthen our social policies. Whether we choose to agree with Wilson's

argument or not, it does serve to heighten our focus on the issue at hand. Clearly, in a society where for so many of us divorce and child custody decisions have such a profound effect on the fabric of our everyday lives, this can be a call to move toward a greater morality, which can lead us to greater welfare.

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Appendices

Appendix 1. Principles Governing the Allocation of Custodial and Decisionmaking Responsibility for Children

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(Sections 2.07, 2.09, and 2.10 of the American Law Institute's Principles of the Law of Family Dissolution)

§ 2.07 Parental Agreements

(1) The court should order any provision of a parenting plan agreed to by the parents, unless the agreement

(a) is not knowing or voluntary, or

(b) would be harmful to the child.

(2) The court, on any basis it deems sufficient, should have discretion to conduct an evidentiary hearing to determine whether there is a factual basis under Paragraph (1) to find that the court is not bound by an agreement. If credible information is presented to the court that child abuse as defined by state law or domestic violence as defined by § 2.03(7) has occurred, the court should be required to hold a hearing, and if the court determines that child abuse or domestic violence has occurred, it should be required to order appropriate protective measures under § 2.13.

(3) If the court rejects an agreement, in whole or in part, under the standards set forth in Paragraph (1), it should be required to allow the parents the opportunity to negotiate another agreement.

§2.09 Allocation of Custodial Responsibility

(1) Unless otherwise resolved by agreement of the parents under § 2.07, the court should be required to allocate custodial responsibility so that the proportion of custodial time the child spends with each parent approximates the proportion of time each parent spent performing caretaking functions for the child prior to the parents' separation or, if the parents never lived together, before the filing of the action, except to the extent required under § 2.13 or necessary to achieve one or more of the following objectives:

a. to permit the child to have a relationship with each parent which, in the case of a legal parent or a parent by estoppel who has performed a reasonable share of parenting functions, should be not less than a presumptive amount of custodial time determined through a uniform rule of statewide application;

b. to accommodate the firm and reasonable preferences of a child who has reached a specific age, as set forth in a uniform rule of statewide application;

c. to keep siblings together when the court finds that doing so is necessary to their welfare;

d. to protect the child's welfare when the presumptive allocation under this section would harm the child because of a gross disparity in the quality of the emotional attachment between each

parent and the child or in each parent's demonstrated ability or availability to meet the child's needs;

e. to take into account any prior agreement, other than one agreed to in § 2.07, that would be appropriate to consider in light of the circumstances as a whole, including the reasonable expectations of the parties, the extent to which they could have reasonably anticipated the events that occurred and their significance, and the interests of the child;

f. to avoid an allocation of custodial responsibility that would be extremely impractical or that would interfere substantially with the child's need for stability in light of economic, physical, or other circumstances, including the distance between the parents' residences, the cost and difficulty of transporting the child, each parent's and the child's daily schedules, and the ability of the parents to cooperate in the arrangement;

g. to apply the principles set forth in § 2.20(4) if one parent relocates or proposes to relocate at a distance that will impair the ability of a parent to exercise the presumptive amount of custodial responsibility under this section; and

h. to avoid substantial and almost certain harm to the child.

(2) In determining the proportion of caretaking functions each parent previously performed for the child under Paragraph (1), the court should

not be allowed to consider the division of functions arising from temporary arrangements after separation, whether those arrangements are consensual or by court order. The court should be allowed to take into account information relating to the temporary arrangements in determining other issues under this section.

(3) If the court is unable to allocate custodial responsibility under Paragraph (1) because there is no history of past performance of caretaking functions, as in the case of a newborn, or because the history does not establish a sufficiently clear pattern of caretaking, the court should be required to allocate custodial responsibility based on the child's best interests, taking into account the factors and considerations that are set forth in this section and in § 2.13 and in § 2.20(4), preserving to the extent possible this section's priority on the share of past caretaking functions each parent performed.

(4) In determining how to schedule the custodial time allocated to each parent, the court should be required to take account of economic, physical, and other practical circumstances, such as those listed in Paragraph (1)(f).

§ 2.10 Allocation of Significant Decisionmaking Responsibility

(1) Unless otherwise resolved by the agreement of the parents under § 2.07, the court should be required to allocate responsibility for making significant life decisions on behalf of the child, including decisions regarding the child's education and health care, to one parent or to two parents jointly, in accordance with the child's best interests, in light of

(a) the allocation of custodial responsibility under § 2.09;

(b) the level of each parent's participation in past decisionmaking on behalf of the child;

(c) the wishes of the parents;

(d) the level of ability and cooperation the parents have demonstrated in past decisionmaking on behalf of the child;

(e) a prior agreement, other than one agreed to in § 2.07 that, under the circumstances as a whole, including the reasonable expectations of the parents and the interests of the child, would be appropriate to consider; and

(f) the existence of any limiting factors, as set forth in § 2.13.

(2) The court should be required to presume that an allocation of decisionmaking responsibility to each legal parent or parent by estoppel who has been exercising a reasonable share of parenting functions for the child, jointly, is in the child's best interests. The presumption is overcome if there is a history of domestic violence or child abuse, or if it

is shown that joint allocation of decisionmaking responsibility is not in the child's best interests.

(3) Unless otherwise provided or agreed by the parents, a parent should have sole responsibility for day-to-day decisions for the child while the child is in that parent's custodial care and control, including emergency decisions affecting the health and safety of the child.

(4) Even if not allocated decisionmaking responsibility under this section, any legal parent and any parent by estoppel should have access to the child's school and health care records to which legal parents have access by other law, except insofar as access is not in the best interests of the child or where the provision of such information might endanger an individual who has been the victim of child abuse or domestic violence.

Appendix 2.1

Selected Summary Statistics in Working File

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Year of Hearing					
1980	14	8	57.1%	6	42.9%
1981	606	449	74.1%	157	25.9%
1982	849	593	69.8%	256	30.2%
1983	786	533	67.8%	253	32.2%
1984	81	53	65.4%	28	34.6%
1985	739	431	58.3%	308	41.7%
1986	1,035	615	59.4%	420	40.6%
1987	938	554	59.1%	384	40.9%
1988	835	428	51.3%	407	48.7%
1989	763	270	35.4%	493	64.6%
1990	749	224	29.9%	525	70.1%
1991	717	168	23.4%	549	76.6%
1992	621	119	19.2%	502	80.8%
1993	105	25	23.8%	80	76.2%
1994	15	1	6.7%	14	93.3%
Total	8,853	4,471	50.5%	4,382	49.5%

Note: Minor differences may exist in the number of cases as compared to the numbers shown earlier in the descriptive statistics. This is due to the software that was used to compile the data.

Appendix 2.2

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Cohort (based on 1st year of case)					
1: 1980-81	864	625	72.3%	239	27.7%
2: 1981-82	840	591	70.4%	249	29.6%
3: 1982-83	582	384	66.0%	198	34.0%
4: 1983-84	99	65	65.7%	34	34.3%
5: 1984-85	918	527	57.4%	391	42.6%
6: 1985-86	1,077	650	60.4%	427	39.6%
7: 1986-87	880	510	58.0%	370	42.0%
8: 1987-88	808	381	47.2%	427	52.8%
9: 1988-89	727	237	32.6%	490	67.4%
10: 1989-90	718	213	29.7%	505	70.3%
11: 1990-91	671	167	24.9%	504	75.1%
12: 1991-92	669	121	18.1%	548	81.9%
Total	8,853	4,471	50.5%	4,382	49.5%
County of Hearing					
Milwaukee	1,975	1,009	51.1%	966	48.9%
Not Milwaukee	6,878	3,462	50.3%	3,416	49.7%
Total	8,853	4,471	50.5%	4,382	49.5%

Appendix 2.3

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Did the Father Have a Lawyer?					
Yes	5,501	2,263	41.1%	3,238	58.9%
No	3,307	2,177	65.8%	1,130	34.2%
Total	8,808	4,440	50.4%	4,368	49.6%
Did the Mother Have a Lawyer?					
Yes	5,453	2,229	40.9%	3,224	59.1%
No	36	23	63.9%	13	36.1%
Total	5,489	2,252	41.0%	3,237	59.0%
Number of Children Covered by the Order					
1	3,702	2,032	54.9%	1,670	45.1%
2	3,617	1,730	47.8%	1,887	52.2%
3	1,168	542	46.4%	626	53.6%
4	289	135	46.7%	154	53.3%
5	55	22	40.0%	33	60.0%
6 or more	22	10	45.5%	12	54.5%
Total	8,853	4,471	50.5%	4,382	49.5%

Appendix 2.4

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
No. of Children Living With the Mother at Time of Hearing					
0	1,278	8	0.6%	1,270	99.4%
1	3,375	2,030	60.1%	1,345	39.9%
2	2,984	1,725	57.8%	1,259	42.2%
3	933	538	57.7%	395	42.3%
4	218	135	61.9%	83	38.1%
5	31	22	71.0%	9	29.0%
6 or more	14	10	71.4%	4	28.6%
Total	8,833	4,468	50.6%	4,365	49.4%
No. of Children Living With the Father at Time of Hearing					
0	7,614	4,461	58.6%	3,153	41.4%
1	630	4	0.6%	626	99.4%
2	404	0	0.0%	404	100.0%
3	134	2	1.5%	132	98.5%
4	37	0	0.0%	37	100.0%
5	10	0	0.0%	10	100.0%
6 or more	4	0	0.0%	4	100.0%
Total	8,833	4,467	50.6%	4,366	49.4%

Appendix 2.5

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Who is Ordered to Pay Child Support					
No Payer	928	238	25.6%	690	74.4%
Father	7,310	4,189	57.3%	3,121	42.7%
Mother	405	2	0.5%	403	99.5%
Other	48	3	6.3%	45	93.8%
Total	8,691	4,432	51.0%	4,259	49.0%
Annual Adjusted Gross Income of Father					
Under $10,000	1,225	851	69.5%	374	30.5%
$10,000-$19,999	2,459	1,197	48.7%	1,262	51.3%
$20,000-$29,999	1,973	762	38.6%	1,211	61.4%
$30,000-$39,999	902	305	33.8%	597	66.2%
$40,000-$49,999	309	81	26.2%	228	73.8%
$50,000 and above	308	73	23.7%	235	76.3%
Total	7,176	3,269	45.6%	3,907	54.4%

Appendix 2.6

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Annual Adjusted Gross Income of Mother					
Under $10,000	3,773	2,141	56.7%	1,632	43.3%
$10,000-$19,999	2,903	1,392	48.0%	1,511	52.0%
$20,000-$29,999	777	315	40.5%	462	59.5%
$30,000-$39,999	200	66	33.0%	134	67.0%
$40,000-$49,999	45	12	26.7%	33	73.3%
$50,000 and above	32	10	31.3%	22	68.8%
Total	7,730	3,936	50.9%	3,794	49.1%
Father Employed at Time of Hearing					
Yes	7,235	3,269	45.2%	3,966	54.8%
No	1,167	834	71.5%	333	28.5%
Total	8,402	4,103	48.8%	4,299	51.2%
Mother Employed at Time of Hearing					
Yes	6,241	2,888	46.3%	3,353	53.7%
No	2,191	1,386	63.3%	805	36.7%
Total	8,432	4,274	50.7%	4,158	49.3%

Appendix 2.7

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Disposition of the House					
No House	4,239	2,517	59.4%	1,722	40.6%
To Father	1,456	395	27.1%	1,061	72.9%
To Mother	1,694	874	51.6%	820	48.4%
Sold (Proceeds Split)	1,075	524	48.7%	551	51.3%
To Custodial Parent	242	128	52.9%	114	47.1%
To Father Until Sold	30	2	6.7%	28	93.3%
To Mother Until Sold	73	14	19.2%	59	80.8%
Total	8,809	4,454	50.6%	4,355	49.4%
Race of Father					
Black	102	77	75.5%	25	24.5%
White	2,710	1,478	54.5%	1,232	45.5%
Other	75	54	72.0%	21	28.0%
Total	2,887	1,609	55.7%	1,278	44.3%
Race of Mother					
Black	115	78	67.8%	37	32.2%
White	2,834	1,510	53.3%	1,324	46.7%
Other	88	58	65.9%	30	34.1%
Total	3,037	1,646	54.2%	1,391	45.8%

Appendix 2.8

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Age of Father					
25 and Under	831	562	67.6%	269	32.4%
26-35	4,190	2,201	52.5%	1,989	47.5%
36-45	3,041	1,314	43.2%	1,727	56.8%
46 and Older	767	373	48.6%	394	51.4%
Total	8,829	4,450	50.4%	4,379	49.6%
Age of Mother					
25 and Under	1,547	963	62.2%	584	37.8%
26-35	4,451	2,258	50.7%	2,193	49.3%
36-45	2,514	1,077	42.8%	1,437	57.2%
46 and Older	317	156	49.2%	161	50.8%
Total	8,829	4,454	50.4%	4,375	49.6%
Years of Education- Father					
0-8	37	24	64.9%	13	35.1%
9-12	1,204	728	60.5%	476	39.5%
13-16	363	187	51.5%	176	48.5%
Over 16	73	22	30.1%	51	69.9%
Total	1,677	961	57.3%	716	42.7%

Appendix 2.9

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Years of Education- Mother					
0-8	19	8	42.1%	11	57.9%
9-12	1,256	741	59.0%	515	41.0%
13-16	383	219	57.2%	164	42.8%
Over 16	42	17	40.5%	25	59.5%
Total	1,700	985	57.9%	715	42.1%
Length of Marriage					
0-5 Years	2,078	1,292	62.2%	786	37.8%
6-10 Years	2,743	1,440	52.5%	1,303	47.5%
11-15 Years	1,914	856	44.7%	1,058	55.3%
16-20 Years	1,288	501	38.9%	787	61.1%
21 Or More Years	749	344	45.9%	405	54.1%
Total	8,772	4,433	50.5%	4,339	49.5%

Appendix 2.10

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Number of Previous Marriages for the Father					
0	7,548	3,719	49.3%	3,829	50.7%
1	1,103	620	56.2%	483	43.8%
2	87	63	72.4%	24	27.6%
3 or more	16	12	75.0%	4	25.0%
Total	8,754	4,414	50.4%	4,340	49.6%
Number of Previous Marriages for the Mother					
0	7,653	3,837	50.1%	3,816	49.9%
1	1,028	541	52.6%	487	47.4%
2	59	28	47.5%	31	52.5%
3 or more	12	8	66.7%	4	33.3%
Total	8,752	4,414	50.4%	4,338	49.6%

Appendix 2.11

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 1 (Born to Both Parents)	8,853	4,471	50.5%	4,382	49.5%
Age- Child 1					
2 And Under	1,539	975	63.4%	564	36.6%
3-5	2,899	1,476	50.9%	1,423	49.1%
6-10	2,494	1,153	46.2%	1,341	53.8%
11 And Older	1,898	854	45.0%	1,044	55.0%
Total	8,830	4,458	50.5%	4,372	49.5%
Gender- Child 1					
Male	2,039	692	33.9%	1,347	66.1%
Female	1,962	695	35.4%	1,267	64.6%
Total	4,001	1,387	34.7%	2,614	65.3%

Appendix 2.12

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 2					
Child of Both Parents	5,630	2,673	47.5%	2,957	52.5%
Child of Mother Only	303	159	52.5%	144	47.5%
Child of Father Only	117	68	58.1%	49	41.9%
Total	6,050	2,900	47.9%	3,150	52.1%
Age- Child 2					
2 And Under	131	76	58.0%	55	42.0%
3-5	1,081	614	56.8%	467	43.2%
6-10	2,120	978	46.1%	1,142	53.9%
11 And Older	2,436	1,083	44.5%	1,353	55.5%
Total	5,768	2,751	47.7%	3,017	52.3%
Gender- Child 2					
Male	1,299	408	31.4%	891	68.6%
Female	1,163	378	32.5%	785	67.5%
Total	2,462	786	31.9%	1,676	68.1%

Appendix 2.13

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 3					
Child of Both Parents	2,012	944	46.9%	1,068	53.1%
Child of Mother Only	266	134	50.4%	132	49.6%
Child of Father Only	146	78	53.4%	68	46.6%
Total	2,424	1,156	47.7%	1,268	52.3%
Age- Child 3					
2 And Under	63	31	49.2%	32	50.8%
3-5	117	75	64.1%	42	35.9%
6-10	623	304	48.8%	319	51.2%
11 And Older	1,321	598	45.3%	723	54.7%
Total	2,124	1,008	47.5%	1,116	52.5%
Gender- Child 3					
Male	425	146	34.4%	279	65.6%
Female	358	112	31.3%	246	68.7%
Total	783	258	33.0%	525	67.0%

Appendix 2.14

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 4					
Child of Both Parents	626	300	47.9%	326	52.1%
Child of Mother Only	95	56	58.9%	39	41.1%
Child of Father Only	94	54	57.4%	40	42.6%
Total	815	410	50.3%	405	49.7%
Age- Child 4					
2 And Under	15	8	53.3%	7	46.7%
3-5	4	3	75.0%	1	25.0%
6-10	120	71	59.2%	49	40.8%
11 And Older	510	237	46.5%	273	53.5%
Total	649	319	49.2%	330	50.8%
Gender- Child 4					
Male	97	26	26.8%	71	73.2%
Female	94	39	41.5%	55	58.5%
Total	191	65	34.0%	126	66.0%

Appendix 2.15

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 5					
Child of Both Parents	193	90	46.6%	103	53.4%
Child of Mother Only	32	16	50.0%	16	50.0%
Child of Father Only	39	23	59.0%	16	41.0%
Total	264	129	48.9%	135	51.1%
Age- Child 5					
Under 12	43	25	58.1%	18	41.9%
13-18	62	22	35.5%	40	64.5%
19 and Older	56	36	64.3%	40	71.4%
Total	161	83	51.6%	98	60.9%
Gender- Child 5					
Male	13	3	23.1%	10	76.9%
Female	14	3	21.4%	11	78.6%
Total	27	6	22.2%	21	77.8%

Appendix 2.16

Selected Summary Statistics in Working File (cont'd)

Variable	Cases	Custody to Mother		Custody Not to Mother	
		N	Percent	N	Percent
Child 6					
Child of Both Parents	82	40	48.8%	42	51.2%
Child of Mother Only	11	7	63.6%	4	36.4%
Child of Father Only	17	12	70.6%	5	29.4%
Total	110	59	53.6%	51	46.4%
Age- Child 6					
Under 12	12	8	66.7%	4	33.3%
13-18	19	7	36.8%	12	63.2%
19 and Older	32	17	53.1%	15	46.9%
Total	63	32	50.8%	31	49.2%
Gender- Child 6					
Male	6	1	16.7%	5	83.3%
Female	2	0	0.0%	2	100.0%
Total	8	1	12.5%	7	87.5%

Abstract

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An Economic Analysis of Child Custody Decisions

Dissertation directed by H. D. Vinod, Ph.D.

This study develops a model of the decision process that takes place during marital dissolution with regard to child custody. The model is based on the relative level of altruism and self-interest in the bargaining between the divorcing spouses. This is a three-person model because it analyzes the utility of each of the parents and also the children involved in the decision. Inclusion of the children in the model is critical to the analysis, because the assumption when courts decide custody is that self-interest plays no role in the decision, and as a result, the outcome is intended to maximize the utility of all three parties. With the vast majority of divorce settlements being privately contracted between the spouses before ever getting to court, there exists a greater risk that all three parties will not have their utility maximized, since children generally have no input in the decision process. If the parents are altruistic in their negotiations and the child custody

outcome is the same as what the court would have reached, then the decision is Pareto optimal.

The model was empirically tested using a database of cases from the State of Wisconsin. This was accomplished in a two-step process. First, the legal custody outcomes in the cases were regressed on a number of independent variables in a binary logistic regression that identified whether custody was awarded to the mother or not to the mother. The results indicated that variables that deal with the labor force participation, educational attainment, and age of the mother, in addition to the length of the marriage, were all significant in predicting the probability of the child custody award. Second, a proxy variable was created by assigning weights to these variables for their relative levels of altruism and, when this was combined with the unweighted variables from the baseline regression, it was also found to be significant. We may conclude, therefore, that behavioral variables can be utilized similar to economic variables to increase our level of understanding in connection with child custody decisions.

Vita

Stuart Rosenberg, son of Mattie Rosenberg and the late Martin Rosenberg, was born in Hartford, Connecticut. After graduating from River Dell Regional High School in Oradell, New Jersey, he went on to receive a B.A. in Political Science and History from Marquette University, an M.A. in Public Policy from the University of Wisconsin, an M.B.A. with a concentration in Finance from Fordham University, and an A.P.C. in Corporate Strategy from New York University.

He worked for the Division of Budget for the City of Newark, New Jersey for a year before moving on to a twenty-two year career in the Banking sector. He spent five years at Manufacturers Hanover Trust Company, in New York City. He then spent seventeen years at the New York office of First Card Services, the credit card subsidiary of First Chicago Corporation, serving the last several years as Vice President and Head of Financial Planning.

While at First Card, he joined the adjunct faculty of Dowling College, in Oakdale, New York. In 2000, he became a member of the full-time faculty at Dowling, in the School of Business, where his courses include Managerial Economics, Operations Research, Strategic Management, and the Economics of Rock and Roll in America.

He is a member of the American Economics Association and the Academy of Management. He has presented articles at conferences of the New York State Economics Association, the Institute of Ethics and Economic Policy, the Northeast Business and Economics Association, and the Asia-Pacific Conference on Tradition and Change in Higher Education. He is a referee for the Journal of Business and Economic Studies.

His long-standing interest in the welfare of children can be seen in his five-year membership on the Board of Trustees of Variety Pre-Schooler's Workshop, in Syosset, New York.