Is Divorce Indebting Our Children?
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The rise in the divorce rate over the past 40 years has created a fundamental change in American society. As depicted by Figure 1 below, the divorce rate has been steadily increasing since 1960, reaching its peak in the early 1980s. Since then, the rate has begun to level off, but still remains at remarkably high levels. With more and more Americans being swallowed by the abyss of debt and an increasing number of marriages ending in divorce, it is time researchers look at the economic impact of broken homes on our children's financial futures. A non-intact family is a type of nontraditional family structure in which the children live with only one parent, as opposed to an intact family, in which the children live with both parents. Children from these non-intact families are known to earn lower or similar incomes compared to children from traditional families, while demonstrating higher compulsive consumption tendencies. Does this mean they are spending themselves further into debt than their traditional family counterparts? This study examines the financial behavior of young adults, focusing primarily on debt accumulation. If the children of divorced families are spending more money while making the same or even less income, then they should be digging themselves into a much deeper hole of debt than young Americans from intact families.

Figure 1: U.S. Divorce Rate per 1,000 Population, 1960-2003

Year   Clarke (1995)
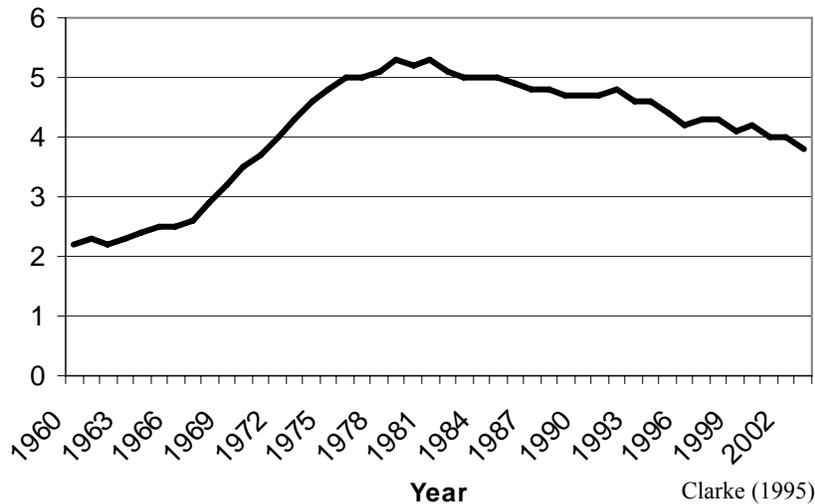
I. Literature Review

It is well known that there are adverse long-term consequences of parental divorce on the children involved. For example, Amato and Keith (1991) found that divorce typically leads to a decline in the standard of living of mother-custody families. Women typically have lower incomes than men; therefore, they cannot afford to reside within the wealthier neighborhoods with better school systems. This can lead to a reduction in educational quality, which is associated with future consequences such as low occupational attainment, unemployment, poverty and welfare dependence. There are also disadvantages of living in any type of one-parent household versus a two-parent household. A one-parent household implies a decrease in

the quantity and quality of parental contact. A single, custodial parent is usually forced to work more hours, leaving him exhausted and with little time to spend with his children. The non-custodial parent no longer has daily interaction with the child and is many times unaware of the daily events of the child's life, creating a more distant relationship. Such deprivations can initially lead to an inadequate learning of social skills. These skills are vital in both the working world and in personal relationships. If one lacks the ability to socialize and work well with others, finding a successful job and developing a family can be quite difficult.

One must also take into account that divorce is a stressful experience, not only for the parents, but for the children as well. Typically, a period of inter-parental conflict precedes and follows divorce. In addition, there is the issue of moving frequently, changing schools and remarriage, all of which can disrupt educational attainment, social relationships and personality development. Although each divorce is unique, they all lead to a common outcome. The children are placed in a disadvantageous situation, which leads to instability in their lives and to the lack of interpersonal relationships. Rindfleisch et al. (1997) points out that in order to fill this void, many children tend to compensate for such losses by engaging in compulsive activities such as drugs and alcohol.

Family disruption also influences the employment, achievement motivation and income of children. Fronstin et al. (2001) found that parental disruption leads to moderately less employment among sons and considerable lower wage rates among daughters, while controlling for pre-disruption characteristics. Similarly, Phelps (1998) identified gender differences in the long-term impact of parental divorce on the children's achievement motivation and achievement behaviors. The principal findings were that parental divorce raises the achievement motivation of daughters but does not lower it for sons, and it lowers the earnings of daughters who work, but has no effect on the earnings of sons. Unfortunately, this study only included Caucasians, which means that it may not generalize the U.S. as a whole.

In contrast to both Phelps (1998) and Fronstin et al. (2001), Corak (2001) found that divorce leads to lower incomes for males in his study of the effects of parental divorce on the adult labor market and the marital and fertility outcomes of adolescents. While controlling for parental labor market behavior and income in the years prior to the divorce, Corak found that parental divorce lowers adult incomes and earnings of sons compared to those in intact families by only 3 percent on average, and the daughters' incomes and earnings are not influenced. Unfortunately, this study's sample was obtained in Canada, which is not the targeted population of this research. While there is no consensus on the magnitude of divorce's effect on the income of the children involved, it is noteworthy that none of these studies mentioned that divorce results in higher income for those children.

Many other studies, such as Cherlin et al. (1995) identified that parental income and time input losses that result from divorce have a greater long-term effect on girls than boys. Amato and Keith (1991) found that boys in divorced families experience more problems than do girls. Gender differences in the long-term impact of parental divorce were the focus of each of these studies. Although these researchers disagreed on whether the consequences are stronger for males or females, they all agreed that gender differences do exist.

One aspect of the effects of divorce that researchers often neglect is the relationship between family structure and the consumption behavior of children. In a study of whether parents and their children can be taught to apply economic reasoning to everyday family decisions, Kourilsky and Murray (1981) found that single-parent families exhibit higher levels of satisfaction and higher levels of economic reasoning than two-parent families prior to instruction

of the use of economic reasoning. From this, the researchers inferred that children in a single-parent family may be more likely to be consulted about family expenditures and be treated more like adults.

In another study, Rindfleisch et al. (1997) analyzed the consumption behavior of children from non-intact families, focusing specifically on compulsive consumption tendencies and materialistic behavior. O'Guinn and Faber define compulsive consumption as "a response to an uncontrollable drive or desire to obtain, use or experience a feeling, substance, or activity that leads the individual to repetitively engage in a behavior that will ultimately cause harm to the individual and/or others" (1989, 147). Rindfleisch et al. found that children from disrupted families tend to develop materialistic attitudes and compulsive consumption tendencies, further illustrating that family structure indeed has an effect on the consumption behavior of children.

How then do such young adults finance their compulsive consumption and materialistic values? A consumer cannot consume compulsively without the means to do so; therefore, there must be some other factor that plays a role. Dissaving is defined as income less consumption when consumption is greater than income, and debt is the accumulation of dissaving over time. It seems logical that children from divorced families may dissave throughout their adulthood in order to satisfy their expensive habits; therefore, accumulating debt over time. This study will seek to analyze how young adults from disrupted families finance their compulsive consumption tendencies by analyzing their accumulated debt.

II. Theoretical Analysis

According to Modigliani's Intertemporal Consumer Choice Model, consumers are assumed to make decisions in order to maximize utility (they are essentially self-interested) and they are also assumed to be rational (they weigh costs and benefits). This model, which Figure 2 illustrates below, explains how consumers make choices over time rather than at a specific point in time. One typically uses this model to talk about saving behavior and about planning for the future. Assuming there are perfect capital markets, the intertemporal budget constraint represents all combinations of current and future consumption that exhaust a given income endowment at a given rate of interest. The intertemporal indifference curve represents all combinations of current and future consumption that provide the consumer with equal levels of utility. The slope of the budget constraint, which is determined by the interest rate, represents the relative price ratio of current and future consumption, and the slope of the indifference curve represents the marginal rate of time preference, which is how much future consumption one is willing to give up in order to get one more unit of current consumption. Steeper indifference curves represent impatience with respect to time preference, which implies that consumption today is very satisfying. Rational consumers will spend their income over time, specifically where their personal indifference curve is tangent to their budget constraint, as shown by point A in Figure 2 below. As illustrated by this model, consumption depends on one's income (Y), wealth (W), rate of time preference (T), and the interest rate (R).

(1) C = f (Y, W, T, R)

Figure 2: Intertemporal Consumer Choice Model
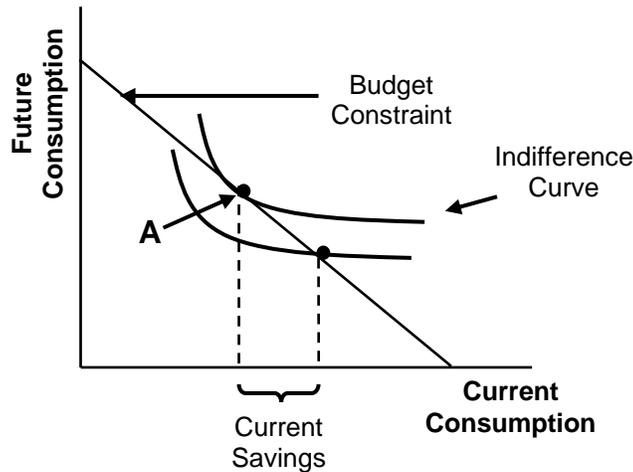
An inference based on the study of Rindfleisch et. al is that young adults from divorced families receive more utility from spending their incomes now than from saving them for future use. This implies that children from divorced families have steeper indifference curves, because they have a higher marginal rate of time preference. Since children from divorced families have either lower or equal incomes compared to children from intact families, it seems logical that they would borrow against their future income in order to satisfy their need to consume. In short, young adults from divorced families should have lower saving, or higher dissaving, and higher accumulated debt than young adults from intact families, and Figure 3 below illustrates this point.

Figure 3: Intertemporal Consumer Choice Model:
Children from Intact Families vs. Children from Divorced Families
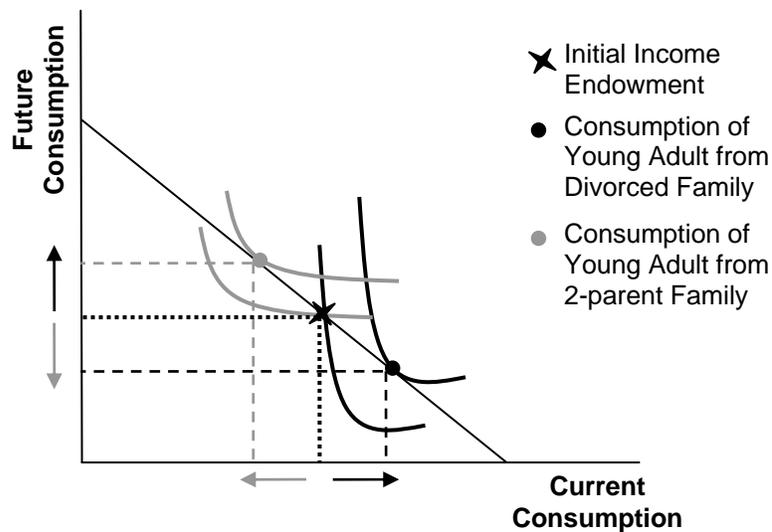
From the Theory of Consumption, one can derive some hypotheses about the borrowing behavior of young adults from divorced families. The dependent variable in the equation, debt, will depend on individual income (Y), individual wealth (W), the occurrence of divorce (D), the interest rate (R), and gender (G).

(2) Debt = f (Y, W, D, R, G)

(3) C = f (Y, W, T, R)

An implication from this model is that young adults from divorced families will have higher accumulated debt than those from intact, two-parent families because of their higher marginal rate of time preference, which corresponds to the divorce variable in the debt equation. While controlling for each of these independent variables, if the hypothesis is correct, then the higher spending of young adults from divorced families, unmatched by higher income, will lead to a decrease in saving and an increase in debt accumulation.

III. Empirical Testing

The data sample was collected from the Panel Study of Income Dynamics (PSID) and Appendix A contains a description of this data source. The sample was restricted to individuals who were born between 1969 and 1972. By 2001, each individual in the sample had reached young adulthood and was between the ages of 28 and 32. In order to be included in this sample, the son, daughter, stepson, or stepdaughter had to be born to married parents. For each individual, the data indicates any relevant family composition change (a parental divorce or the death of a parent) from 1974 through 1990. Since the data source only provided family-level data for the debt and wealth variables, it was necessary to select an age in which the young adults would be old enough to be independent and possibly have their own families. In addition, all individuals who, for any variable, had no response were eliminated from the sample, as were those who were still living with their parents in 2001.

Information on this sample's family debt (DEBT), family wealth (WEALTH), family income (INCOME) and gender (GENDER) in 2001 was obtained. Individuals in the sample faced the same interest rate because their financial data was obtained in the same year(s). Although interest rates do play a significant role in debt accumulation, the interest rate should affect both individuals from intact families and those from non-intact families in the same way. This allows one to eliminate the interest rate variable from the debt equation. The purchase of a home typically results in one taking out a mortgage, which is then matched by home equity. This, however, is not the typical debt that is generated by conspicuous consumption; therefore, this model uses each individual's family wealth excluding home equity. Below is the resulting equation:

(4) Family Debt = f (family income, family wealth, divorce, gender)

(5) DEBT = f (INCOME, WEALTH, DIVORCE, GENDER)

Table 1 below illustrates the descriptive statistics for the sample collected. On average, the individuals in the sample had an accumulated family debt of about $13,200, an annual family income of $57,500 and family wealth of about $23,700. About 53 percent of the sample

consisted of males; therefore, there was definitely a good representation of both sexes. In addition, about 24 percent of the sample experienced a parental divorce or the death of a parent during the observed time period.

Table 1: Summary Statistics

	DEBT	INCOME	WEALTH	GENDER	DIVORCE
Mean	13233.310	57470.110	23719.290	0.535	0.243
Median	7000.000	49494.000	5662.500	1.000	0.000
Maximum	100000.000	190500.000	331000.000	1.000	1.000
Minimum	300.000	40.000	-95440.000	0.000	0.000
Std. Dev.	17457.000	36026.990	65538.760	0.501	0.430
Observations	144	144	144	144	144

Tables 2 and 3 display the results of an ordinary least squares regression, which determined the correlation between the dependent variable (DEBT) and each independent variable. Appendix B displays a description of each variable used in the regression. The GENDER variable is a dummy variable; males received a value of one and females received a value of zero. Though one would expect to find gender differences, it is unclear whether the consequences will be stronger for males or females. It seems rational that an increase in one's income will lead to lower debt accumulation, resulting in a negative coefficient for the INCOME variable. Debt causes a reduction in one's wealth; therefore, an increase in wealth implies a reduction in debt accumulation. In addition, an increase in one's wealth may also lead to a greater accumulation of debt, due to one's ability to pay off that debt in the future. Based on these observations, it is unclear whether the WEALTH variable will have a negative or a positive coefficient. The actual sign of the coefficient will depend on the net effect of this simultaneous relationship. If the individual experienced a parental divorce or the death of a parent during his or her childhood, then they received a value of one, and if they did not, they received a value of zero. If the hypothesis is correct, individuals from the sample who experienced a relevant change in family composition will have higher debt than those whose parents remained married throughout their childhood. This implies a positive coefficient for the DIVORCE variable.

Table 2: Regression Results
Dependent Variable: **DEBT**
Method: **Least Squares**
Sample: 1 144
Included observations: 144

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8197.142	3334.644	2.458	0.015
INCOME	0.127	0.040	3.146	0.002
WEALTH	-0.070	0.022	-3.159	0.002
GENDER	-1539.174	2859.557	-0.538	0.591
DIVORCE	892.354	3352.486	0.266	0.791

R-squared	0.113	F-statistic		4.416
Adjusted R-squared	0.087	Prob(F-statistic)		0.002
Durbin-Watson stat	1.959			

Table 3: Regression Results with Consistent Errors
Dependent Variable: **DEBT**
Method: **Least Squares**
Sample: 1 144
Included observations: 144
White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	8197.142	2882.599	2.844	0.005
INCOME	0.127	0.050	2.549	0.012
WEALTH	-0.070	0.029	-2.438	0.016
GENDER	-1539.174	2642.799	-0.582	0.561
DIVORCE	892.354	3473.551	0.257	0.798
R-squared	0.113	F-statistic		4.416
Adjusted R-squared	0.087	Prob(F-statistic)		0.002
Durbin-Watson stat	1.959			

Table 2 displays the results of the initial ordinary least squares regression. The White Heteroskedasticity Test with cross terms indicated that the variation among the residuals was not constant and that the standard error terms varied too much. Therefore, a second ordinary least squares regression, corrected for heteroskedasticity, was run. Table 3 displays the results obtained from the new, corrected regression.

These results demonstrate that if an individual experienced a parental divorce or the death of a parent during the observed time period, then their accumulated debt is higher, as indicated by the positive coefficient. However, the t-statistic of 0.26 does not achieve standard level of statistical significance. As shown by the negative coefficient of the GENDER variable, males have lower debt than females, but the t-statistic of -0.58 indicates that this variable is not statistically significant.

According to these results, young adults with higher income have higher debt, as indicated by the positive coefficient. The t-statistic of 2.55 indicates that this variable is indeed statistically significant. This seems logical because individuals who have higher income will expect higher income in the future. This leads them to take on more debt, because they are aware of their ability to pay it off in the future. Wealth is typically defined as assets less liabilities. If an individual takes on more debt with higher income, they are in turn increasing their liabilities, reducing their wealth, which is shown by the negative coefficient of the WEALTH variable. This negative coefficient indicates that individuals with higher wealth have lower debt, and this variable is also statistically significant with a t-statistic of -2.44. This illustrates that the effect of increased debt reducing one's wealth outweighs the effect of increased wealth leading to one taking on more debt.

This study uses a level of significance of .05, and the critical F-statistic is approximately 2.41. Therefore, the F-statistic of 4.42 indicates that there is validity to the model and that the model is statistically significant from zero. The R^2 of 0.11 shows that the model has not captured much of the variation in the dependent variable. The variance inflation factors of the auxiliary regressions indicate that multi-collinearity is not an issue with these variables, and the Durbin-Watson of 1.96 indicates that autocorrelation is also not a problem. According to the

Ramsey Reset, there are missing variables in this equation, which the following section discusses in detail.

IV. Conclusion

Although there is a positive coefficient on the DIVORCE variable, indicating that disrupted family structure leads to higher accumulation of debt, the results are not statistically significant. This weakens the validity of the hypothesis that young adults from divorced families will have higher debt due to their compulsive consumption and materialistic behavior. The statistically insignificant GENDER variable indicates that gender also does not affect an individual's accumulated debt. This result conflicts with the research mentioned previously, which found that gender differences in the long-term effects of divorce do exist. One can infer from these results that income and wealth ultimately determine the amount of debt that an individual accumulates over time. When holding both INCOME and WEALTH constant, the other independent variables (GENDER and DIVORCE) are insignificant. This lack of statistical significance may be due to misrepresented variables and missing significant variables in the equation used in this research.

It is important to note that the family composition change of each individual was obtained from 1974 through 1990. In an ideal study, the age of each individual would be the same in the sampling year(s) to allow for more consistency across the data sample. In this study, however, multiple age cohorts were studied in order to obtain a larger sample size, making such consistency difficult to achieve. For example, the family composition changes of individuals born in 1972 were obtained approximately between the ages of 2 and 18, while the family composition changes of those born in 1969 were obtained approximately between the ages of 5 and 21. This illustrates an inconsistency in the data collection used in this research, but with the structure of this PSID database, this problem is practically inevitable.

It is also uncertain as to whether the cause of the individual's family composition change was the result of a divorce or the death of a parent. One of the options for the question regarding family composition change indicates that the head of the household has remained the same, but the wife has left or died and/or the head of the household has a new wife. The option incorporates both death and divorce, making it impossible to completely isolate the effects of divorce from those of a parent's death. Fortunately, the loss of a parent in childhood is a relatively infrequent occurrence compared to the incidence of divorce, reducing the significance of this issue. In addition, the impacts of both parental divorce and the death of a parent may be quite similar, as both events result in a disrupted family structure and may be equally traumatic.

Controlling for pre-disruption characteristics is also important when conducting research concerning family structure. As noted by Kiernan (1997), divorce is more likely to occur among couples with personal, social and economic problems. Divorce is often caused by excessive arguing between couples, which implies that a child's family situation could be difficult before a divorce actually occurs. This non-random nature of the divorcing population implies that the effects of factors that existed prior to the divorce could be confused with its consequences. It is important to isolate which outcomes are actually due to the divorce itself and not to the situation prior to the divorce. In addition, the effects of divorce on the children involved could also depend on the length of time spent in a lone-parent family and the length of time spent in stepfamilies. Unfortunately, the structure of the PSID database makes it quite difficult to control for these circumstances; therefore, the results in this study may misrepresent the actual effects of divorce.

Although this study showed no relationship between family structure and accumulated debt, the conflict between the studies mentioned in the introduction is extremely interesting. Further research on this topic, or even in this subject area, would be very beneficial. It is important to understand the behavior of individuals from all different types of family backgrounds, especially with the growing number of divorced families in the U.S. In addition, studying abnormal consumer behavior may even further augment our knowledge of more typical consumer behavior.

V. References

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VI. Appendix A Data Source Description

The Panel Study of Income Dynamics began in 1968. It is a longitudinal study and is a representative sample of U.S. individuals and the family units in which they reside. The data were initially collected through face-to-face interviews using paper and pencil questionnaires, but since then it has advanced to computer-assisted telephone interviewing, allowing for a much larger sample. The sample size has also increased due to low attrition rates and the success in following young adults as they form their own families. The PSID contains economic and demographic data with an emphasis on income sources and amounts, employment, family composition changes and residential location. This study was first developed to study poverty and the effect of the War on Poverty on family economic well-being, and it was discovered that the effects of family structure changes are just as important as the effects of unemployment. Given these characteristics of PSID data, it is evident that this data source will be very useful in conducting this research.

Data Sources:

Source:	Variable:
Panel Study of Income Dynamics. All years. Individual Data. <http://simba.isr.umich.edu/>.	Gender
Panel Study of Income Dynamics. 2001. PSID Individual. <http://simba.isr.umich.edu/>.	Age of Individual
Panel Study of Income Dynamics. 2001. PSID Family Wealth. <http://simba.isr.umich.edu/>.	Family Wealth not including home equity (2001) Value of Family Debt (2001)
Panel Study of Income Dynamics. 2001. Income Plus. <http://simba.isr.umich.edu/>.	Total Family Income (2000) based on 2001 weights

VII. Appendix B Variable Descriptions

● **Family Debt** – nominal value of family debts in 2001 other than mortgages, such as
   credit cards, student loans, medical or legal bills, personal loans in 2001 dollars
● **Family income** – annual family income in nominal terms for the year 2000 for each
   individual's family in 2000 dollars, but based on family weights for 2001; this variable may
   contain negative values, which indicate a net loss
● **Wealth** – total wealth of family in 2001 not including home equity in nominal terms and in
   2001 dollars
● **Divorce** (dummy variable) – whether individual experienced a parental divorce or the death of
   a parent; yes = 1, no = 0
● **Age** – age in years of each individual in the data set in 2001
● **Gender** (dummy variable) – sex of individual; male = 1, female = 0