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Evidence of shifts in intra-household allocation under exogenous changes in family policy and administrative procedures: The case of school enrollment in Chile

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Evidence of shifts in intra-household allocation under exogenous changes in family policy and administrative procedures: The case of school enrollment in Chile

Misty L. Heggeness[1]

Abstract: In recent times, economists have argued the unitary model of household utility, which assumes households maximize a single utility function over one household budget constraint, does not accurately describe the economic behavior of households (Chiappori et al. 1993, Alderman et al. 1995, Rosenzweig & Stark 1997, Gray 1998). Some have found empirical evidence rejecting this model (Fortin & Lacroix 1997, Browing & Chiappori 1998, Rangel 2006). Instead, they argue, models should acknowledge the bargaining power of individuals to determine a household's utility or preferences. This study examines the effects of exogenous changes in family policy and administrative processes on one household consumption variable, children's education. Specifically, the legalization of divorce and family court wait times for divorce are analyzed. Using panel data and a difference-in-difference approach, I show that implementing pro-female divorce legislation shifts the bargaining power within married couple households, as does the speed with which family courts process divorce cases. Both pro-female divorce legislation and quick turn-around times for processing a divorce lead to an increase in school enrollment for children of married couples.

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Introduction

In recent times, economists have argued the unitary model of household utility, which assumes households maximize a single utility function over one household budget constraint, does not accurately describe the economic behavior of households (Chiappori et al. 1993, Alderman et al. 1995, Rosenzweig & Stark 1997, Gray 1998). Some have found empirical evidence rejecting this model (Fortin & Lacroix 1997, Browing & Chiappori 1998, Rangel 2006). Instead, they argue, models should acknowledge the bargaining power of individuals to determine a household's utility or preferences. This study examines the effects of exogenous changes in family policy and administrative processes on one household consumption variable, children's education.

Until November 2004, divorce did not exist in Chile. Instead, married couples wishing to dissolve their relationship had two options: separation (while remaining legally married) or annulment. While separation could happen with just one party deciding to leave the household (regardless of the preference of their partner to maintain or end the relationship), there is no formal or required reallocation of resources from one spouse to the other unless the separation is declared a legal separation by the court system (which rarely happens). In order to annul the marriage in civil court, both partners must cooperate because they have to agree to lie about facts given to the judge at the time of marriage.[2] Generally, since the couple is cooperating in the case of annulment, a transfer of payment from one spouse to the other (usually the husband to the wife), is written into a contract or agreed upon before the annulment is finalized. In addition to cooperation, the couple must also have financial resources to annul, as it can be a costly process involving lawyers.

[2] Any discrepancies about name, address or other standard information given by the couple to the courts at the time of marriage, is justification to claim the marrying judge "incompetent," which provides a case for annulling the marriage.

While in most cases, it is virtually impossible to study the effects of divorce on children and families because of sample selection issues; this study takes advantage of panel data following the same individuals over three time periods (2002, 2004, and 2006) to tease out the effect of the legalization of divorce in 2004 on children's education. Additionally, capturing the effect using a difference-in-difference methodology challenges the traditional unitary household model. If, via an increased bargaining power of married women through the legalization of divorce, there are significantly more investments in children's education, then this study provides additional evidence that collective bargaining household models are a more accurate depiction of household behavior.

I also analyze the effect of the administrative wait time to process a divorce on children's education. Shorter wait times provide a stronger credible threat of divorce when bargaining for resources within the household and, therefore, have a greater impact on children's education. Overall, this paper contains evidence that public and family policies have multiple, complex overreaching effects on households. Policies created for dissolving marriages additionally effect intact marriage households, and administrative processes related to marital dissolution will influence consumption decisions and bargaining power in married couple households that remain together.

Literature review

There is limited research on the effects of family policies related to marital instability on household consumption, and even less discuss on the implications in developing countries. Before discussing the literature on the household models and the effects of policy on consumption, I provide a brief overview of marital instability in Latin America as discussed by Goode (1993).

William Goode, while he does not analyze the effects of divorce policies on household consumption, provides an overview of global divorce patterns, including regional trends. He asserts that not only are divorce patterns changing around the world, the way in which they are defined and reported varies by region and country. In Latin America, Goode identifies a reporting problem stratified by class, where the underclass tends to not formally marry but identify as married in census and household survey reporting. Women have a higher tendency to claim they are married when in a consensual union whereas men do not, especially when the consensual union has existed for many years. According to Goode, survey data on marital status, therefore, is more accurate for middle and upper class individuals. In addition, if a portion of the population is in informal marriages leading to informal divorces, then this entire subpopulation is excluded from the probability of getting a formal divorce, separation, or annulment.

The case of Chile is particularly interesting regarding married couples' decisions to dissolve their marital relationship. Goode explains its uniqueness prior to the legalization of divorce in a few paragraphs.

> As an interesting exceptional case, Chile has evolved a widely understood body of procedures for *annulment*, remarkably akin in their ingeniousness to the elaborate grounds for annulment in Church courts in Europe over the several centuries after the indissolubility of marriage was finally imposed (in 1563). They were then, as they are now [1993] in Chile, most easily utilized by families with adequate means to pursue their goals with the aid of lawyers.
>
> Since a legal marriage in Chile can go forward only after a number of official facts are filed, it follows that any proof that the official record contains errors could become the grounds for annulment. This can be as trivial as the claim that the addresses of the prospective spouses were not correct. Needless to say, this possibility is not written explicitly into the law. On the other hand, it can only be done with the collusion of the couples as well as the court judges. Because an annulment does permit remarriage, it is, then, the Chilean "substitute" for a real divorce. (Annulment does not apply to consensual unions, which legally are not marriages.) (p. 189)

Economic models of household behavior

Common practice in economics, until the past few decades, is to model a household as maximizing a single household utility over a household budget constraint, typically called the unitary household model. Many have criticized this model (Chiappori et al. 1993, Alderman et al. 1995, Rosenzweig & Stark 1997, Gray 1998, Ermisch 2003, Martinez 2007), and others have found empirical evidence that rejects the unitary model and income pooling (Schultz 1990, Thomas 1990, Fortin & Lacroix 1997, Browning & Chiappori 1998). New cooperative and non-cooperative game theory models have been created in which household members bargain over decisions related to household consumption based on the bargaining power they hold within the household or based on the separate spheres they occupy within the household (Manser and Brown 1980, McElroy and Horney 1981, Lundberg & Pollak 1993, Lundberg & Pollak 1994, Lundberg & Pollak 1996).

Many assume the unitary household model competes with newer bargaining models. According to Haddad, Hoddinott, and Alderman (1997), the claim that the unitary household model does not account for intra-household allocation is wrong. And, arguing that a bargaining model should be used in place of the unitary model "neglects the important fact that there are…variants of these models (broadly termed "collective" models) (2)." The unitary model is a special case of collective models (Chiappori et al. 1993, Haddad et al.).

Two categories of collective models exist: cooperative solutions among individuals and non-cooperative game theory models. Models under this collective model format include Becker's (1973, 1974, 1981) altruism model where an altruistic parent or partner cares about the preferences of their child or spouse/partner and therefore transfers income to their beneficiary, Chiappori's (1988) income-sharing rule model where sharing rules are developed based on

individual incomes, and the Manser and Brown (1980) and McElroy and Horney (1981) models of a specific bargaining process using game theory. McElroy (1990) defines their model as a Nash bargaining model that allows non-wage income and external factors called "extra-household environmental parameters" (EEPs), such as policy changes to marriage or divorce law, to influence bargaining power within the household. EEPs shift the opportunity cost of being married, and, therefore, have the potential to increase or decrease the gains to being married for men and women. Non-cooperative game theory models include Lundberg and Pollak's separate spheres bargaining model (1993), where a non-cooperative equilibrium becomes a threat point within marriage and cash payments to a mother or father can imply different equilibrium distributions.

A difficulty in analyzing household bargaining models is problems of endogeneity. While it might seem straight forward to analyze shares of income into the household per individual as a proxy for bargaining power within the household, it's unclear whether income, for example, creates more bargaining power within the household for that individual or whether ones individual characteristics (including ability to persuade and other favorable characteristics associated with both increased income and household bargaining power) is increasing ones income as well as ones bargaining power. Current methods search for an exogenous shock, usually in the form of changes to family laws and policies, to serve as a proxy for analyzing shifts in household bargaining structures (Chiappori et al. 2002, Rangel 2006, Martinez 2007).

Family policy and the household

Family policies influence marital instability in many ways. In the United States, these policies include the income tax code, Social Security spousal and survivor benefits, the Earned

Income Tax Credit (EITC), child support enforcement, and public assistance programs such as Temporary Assistance to Needy Families (TANF), food stamps, and Medicaid, to name a few (Burstein 2007). However, less is known about how these types of policies influence consumption patterns of stable marriages. Wolfers (2006) finds that a policy shock of the implementation of unilateral divorce laws led to a temporary spike in the divorce rate in the U.S. that declined overtime; however, he argues that very little of the rise can be explained by the policy shock.

Burstein (2007), in discussing the economic rationale for marital union and dissolution, discusses how child support enforcement policies influence decisions to marry and divorce.

> "If child support is enforced more stringently on divorced than on never-married fathers, then marrying the mother of his children imposes a financial constraint on a man relative to the single state that is not eliminated by his later divorcing her. Men who wish to avoid making a long-term financial commitment to their children may therefore decline to formalize the union (395)."

Upon dissolution of an informal union under these circumstances, a child's economic wellbeing decreases if child support is not provided. If child support enforcement policies are enforced regardless of marital status, then more men may be willing to marry the mother of their children or be required to pay child support for their children, increasing the economic security of the child's wellbeing.

Becker (1981) describes how the Coase Theorem applies in divorce situations so that the type of divorce law is irrelevant to an efficient outcome. Applying this to unilateral divorce, the partner who does not want the divorce can bargain to remain together by giving away some of their bargaining power. In this way, the partner wanting to stay together has a lower utility, but it’s still higher than their utility if a divorce took place, and their partner’s utility in marriage is raised by the bargained transfer to a higher level than their utility from divorce. However, Becker

acknowledges that empirical data does not support the Coase Theorem in divorce because changes in divorce frequencies have been empirically shown to exist with changes in divorce law from mutual agreement to no-fault, unilateral divorce.

Studies have examined the effects of changes in divorce law and alimony rights on families and intra-household allocation (Wright & Stetson 1978, Gray 1998, Chiappori et al. 2002, Rangel 2006). Gray writes about divorce-law changes, household bargaining, and married women's labor supply in the U.S., emphasizing that the current, dominant model of household decision-making is the cooperative bargaining model. Using this bargaining model, he takes advantage of an exogenous change in divorce law to analyze women's labor supply and their response to changes in the divorce law. He finds evidence to reject the neoclassical model assumption of income pooling and accept the bargaining model of household behavior as a consistent and unbiased interpretation of household time allocation and decision-making.

Chiappori, Fortin, and Lacroix (2002) also analyze marriage markets, divorce legislation, and household labor supply. They find that "…sex ratio and divorce laws deemed favorable to women are found to affect labor supply behavior and the decision process in the directions predicted by the [efficiency hypothesis] theory and to have sizeable effects (37)." Passing divorce laws that are favorable to women increases the amount of money transferred from the husband to the wife after divorce, thereby increases the income into the wife's household. In addition, an increase in the proportion of males in the population increases the transfer of money to their wives.

While the above studies analyze the effect of changes to the divorce law in the United States, family policies towards alimony and child support have also been shown to effect household allocation decisions in Latin American countries (Rangel 2006, Martínez 2007).

Rangel finds that an exogenous policy change extending alimony rights and obligations to cohabitating couples in Brazil increases the bargaining power of cohabitating women, as shown by a decrease in their total hours worked (in formal labor as well as household labor) and an increase in investments in the education of their children. Martínez finds that extending child support enforcement laws to out-of-wedlock children in Chile decreases the probability that men work, while increasing the probability that children attend school. While these types of studies clearly show an influence in household arrangements and bargained agreements on how to allocate resources, more research is needed to understand how changes in divorce laws in Latin American countries affect household allocation decisions.

Gender differences in household consumption decisions

Recent literature argues that women are more likely than men to invest resources back into the household (Quisumbing & Maluccio 1999, Rubalcava et al. 2004, Schady & Rosero 2007). Child education and health are future household investments in the form of informal social security for the parent in old age. Investments in child education have been shown to increase when women gain more bargaining power within the household.

Using cross-sectional data from nationally representative household surveys, both Rangel (2006) and Martínez (2007) analyze investments in education under an exogenous policy change. As stated previously, Rangel finds that investments in children's education increased with an extension of alimony rights and obligations to cohabitating couples in Brazil. Martínez finds an increase of two percentage points in school attendance of children between the ages of 14 and 18 when child support enforcement laws in Chile are extended to children born out-of-wedlock. Both of these studies use an exogenous policy shock to analyze changes in women's bargaining

power within the household, and both find that when mothers have more resources after union dissolution, improvements are made to investments in their children's education.

Background

Prior to November 2004, no formal mechanism existed in Chile with which to divorce. Disputing spouses either separated but remained legally married, meaning they were unable to marry anyone else, or legally annulled their marriage. Separation left the custodial parent vulnerable because limited formal mechanism transferring resources from the noncustodial parent to the custodial parent existed. While the custodial parent could request child support via the court system, this rarely occurred. Legal annulment in Chile requires both spouses to cooperate with each other because they must agree to report inaccuracies in their marriage license application (such as an inaccurate living address) to the judge who married them in order to annul their marriage. In addition, legal annulment usually requires financial resources to pay legal and other fees. Therefore, spouses can only annul if 1) they agree to cooperate with each other and 2) they have the necessary financial resources. Before divorce became legal, spouses wanting to separate but choosing not to cooperate with each other or not having the necessary finances remained legally married.

In November 2004, divorce because part of the Chilean family law. Now, disputing spouses had an option of formally divorcing their partner with a right to remarry, economic compensation (described below), child custody, and child support. According to Chilean law, upon divorce, the partner who set aside their career to take care of the family home and children, was entitled to a payment from their partner, called an “economic compensation.” The payment was a lump sum of money to be paid all at once or in monthly installments until the entire

amount was paid off. Judges calculated the payment based on the assumed lost wages of the homemaker spouse. An average wage per year was calculated based on the homemaker's education, family background, and other factors. This wage was then multiplied by the number of years married where the homemaker was staying at home taking care of the family. Overtime, the technique used to calculate the economic compensation has changed.

Today, the goal of the economic compensation is to give the homemaker spouse enough money after divorce so that she does not become impoverished, but instead maintains a more or less equal status as she had during marriage, at least for the first few years after the divorce. It is assumed by the courts that providing this resource the first couple of years will allow the homemaker spouse enough time to be able to be independent after she has used up all of the economic compensation money.

In addition to economic compensation, child support and child custody are also decided at the time of the divorce. Child support provides additional financial support to custodial parents upon marital dissolution.

Data

This paper used data from the Encuesta de Protección Social (EPS),[3] a survey administered by the University of Chile and the Chilean Ministry of Work and Social Prevention, in partnership with the University of Pennsylvania and the University of Michigan. The EPS currently consists of three waves or panels (2002, 2004, and 2006), following the same individuals over time. Since the purpose of the survey originally was to collect labor and social security pension fund data, the first wave (2002) is nationally representative of all individuals who contribute to a public pension fund. The 2004 and 2006 waves, however, are nationally

[3] "Social Protection Survey" [translation by author].

representative samples of the entire population.[4] The survey includes detailed information on complete marital, fertility, and labor histories, as well as detailed information on the family in which the interviewee was raised.

For the purposes of this study, I analyze school attendance data of the interviewee's children. A sample of school age children (ages 4 to 21) whose parents were married or cohabitating with the same person over the entire sample time period (2002 to 2006) is constructed. The sample includes approximately 900 children from cohabiting parents and approximately 4,200 children from married parent families (Table 1). Table 2 shows children of married parent and cohabiting families by their school attendance status over the entire panel. While the percent of school age children in cohabiting families is decreasing, the percent of school age children in married parent families decreased from 202 to 2004, but then increased from 2004 to 2006 (Chart 1).

Constructing the sample this way implies that children from parents whose legal marital status changed over time are excluded. Excluding this group is beneficial because it eliminates any confusion regarding whether or not those who change marital status are somehow confounding the results. However, approximately five percent of the interviewee sample (and, hence, their children) is lost by limiting the sample to stable relationships. Since complete marital histories exist for the interviewees, I use actual marital history, instead of the marital status or civil status variable, to identify the children of cohabiting and married parents. This improved definition of marriage and cohabitation eliminates any doubts about the measurement error associated with the marital (civil) status variable. I know whether someone who identified

[4] Therefore, a new sample of individuals was added to the 2004 wave to make the panel representative of the entire population.

themselves as married in 2002 and 2006 is, in fact, married to the same person in both years or not.

Methodology

Nash-bargained household decision model

The household bargaining model I use originates from Manser and Brown (1980) and McElroy and Horney (1981).[5] It is a Nash-bargaining model for intrahousehold allocation and allows for the identification of a "threat point" at which a husband or wife would choose to dissolve their relationship rather than remain together. In addition, it allows for extrahousehold environmental parameters (EEPs) to influence the threat points of each individual. EEPs are external environmental factors that influence bargaining power via changes in the opportunity cost to being married and, therefore, intrahousehold allocation decisions. They include non-wage income and changes to marriage or divorce law, as well as child custody or child support laws. The EEPs shift the threat points in the Nash bargaining model and are, therefore, parametric to the bargaining outcome.

The models developed by Manser and Brown and McElroy and Horney are based on the Nash (1953) two-person cooperative game model. The main idea behind Nash's model is that there exist two individuals who have the capacity to talk with each other and agree on some rational plan of action. The plan of action must be credible and enforceable. The household utility function is $U=[U_1 - A_1][U_2 - A_2]$, where U_i is the utility of person i of playing the game and A_i is the utility they receive from not playing the game, or their threat point.

The model starts with some basic assumptions. There are two individuals, *m* and *f*, in a married household, and they jointly allocate resources via a solution to a two-person, Nash,

[5] Also see McElroy (1990) and McElroy (1997).

cooperative game.[6] Each player in this game has a threat point, or a point at which some alternative situation becomes preferred to playing the game. Adapting the model for this paper, the threat point is the utility received from dissolving the marriage. If the utility from remaining married falls below the threat point, an individual will leave the marriage.

Each individual has the following utility function: $U^i(\mathbf{x_0}, \mathbf{x_i}, \ell_i)$ for i = *m*, *f*, where $\mathbf{x_0}$ are household public goods including children's education, $\mathbf{x_i}$ are private goods consumed by i, and ℓ_i is the leisure consumed by i. U^i is assumed nonnegative. In addition, assume $\mathbf{x} = (\mathbf{x_0}, \mathbf{x_i}, \ell_i)$ can be purchased at $\mathbf{p} = (\mathbf{p_0}, \mathbf{p_{xi}}, w_i)$. Let T be the total time endowment for both *m* and *f* and I_i be the nonwage income for i = *m*, *f*. If not married, each person would maximize their own utility subject to a full income constraint, $\mathbf{p_0x_0} + \mathbf{p_{xi}x_i} + w_i\ell_i = I_i + w_iT$ for i = *m*, *f*, leading to their respective indirect utility curves $V^i(\mathbf{p_0}, \mathbf{p_{xi}}, w_i; \boldsymbol{\alpha_i})$ for i = m, f where $\boldsymbol{\alpha_i}$ is a vector of extrahousehold environmental parameters (EEPs). If *m* and *f* are married, V^i is the threat point for leaving the marriage for i = *m*, *f* in a Nash bargaining model.

An individual considering marriage dissolution has multiple threat points. For the case of Chile, there are two threat points: V^i_d = the threat point under divorce and V^i_s = the threat point under separation. Whichever threat point is the highest is the true threat point used by the individual in considering whether to stay in the marriage or dissolve it. If $V^i_d > V^i_s$, the legalization of divorce will increase the opportunity cost of staying married for custodial mothers and decrease the opportunity cost for non-custodial fathers. Primarily because of alimony and child support enforcement policies tied to the divorce law.

If married, a Nash-bargained solution to the joint maximization of the product of their gains from marriage is:

$$\text{Max}_{\{\mathbf{x}\}}\ N = [U^m(\mathbf{x}) - V^m(\mathbf{p_0}, \mathbf{p_{xm}}, w_m; \boldsymbol{\alpha_m})][\ U^f(\mathbf{x}) - V^f(\mathbf{p_0}, \mathbf{p_{xf}}, w_f; \boldsymbol{\alpha_f})]$$

[6] In this model, *m* and *f* can be thought of as *male* and *female* or *mother* and *father*, etc.

subject to: $\mathbf{p'x} = (w_m + w_f)T + I_m + I_f \equiv$ full income constraint

Under this problem, *m* and *f* will choose to dissolve the marriage if the gains to dissolving (g_i^d) outweigh the gains to remaining married (g_i^m). In other words, for this household maximization problem to be solved, $g_i^m > 0$, where $g_i^m = U_i - V_i$ for i = *m*, *f*. The maximization problem solves for a system of demand equations $x_j^* = h_j(\mathbf{p}; \boldsymbol{\alpha_m}, \boldsymbol{\alpha_f})$ for j = o, x_m, x_f, ℓ_m, ℓ_f. Notice here that the demand for each good is a function of a price vector and EEPs, including nonwage incomes of both *m* and *f*.

Using the Manser and Brown (1980) and McElroy and Horney (1981) models, we can empirically analyze the effects of shifts in opportunity costs from an exogenous shock, such as a policy change related to marriage, divorce, child custody, or child support enforcement. Their model allows one to analyze the effect of the legalization of divorce on changes in children's education. I use this model, which constructs a household utility function as a product of the utility of the husband minus his utility from marital dissolution times the utility of the wife minus her utility from marital dissolution: $U_{HH} = (U_M^H - U_D^H)*(U_M^W - U_D^W)$ where U_{HH} is the utility of the household, U_M^H is the utility of being married for the husband, U_D^H is the utility of dissolving the marriage for the husband, U_M^W is the utility of being married for the wife, and U_D^W is the utility of dissolving the marriage for the wife. For simplicity, I make the following <u>two assumptions</u> for this model:

1) The mother has primary control of the children and would take custody of the children upon marital dissolution.
2) The mother's preferences imply that she will invest more in child education than the father (based on previous literature).

In addition, I identify two hypotheses, the last of which is tested in this paper. If hypothesis 2 is found to be true, then hypothesis 1 must also be true.

I. Hypothesis 1: The legalization of divorce, which includes requirements for child support and alimony, will cause the following changes on the opportunity cost of staying married:
    a. The opportunity cost to staying married for men decreases (because of the implied transfer of money from fathers to mothers via child support and alimony).
    b. The opportunity cost to staying married for women increases.

II. Hypothesis 2: Hypothesis 1 implies that married women's bargaining power must have increased, so:
    a. Investments in children's education of those families who stay married will increase.

With the legalization of divorce in Chile in 2004 comes a potential shift in the opportunity cost of staying married. Before divorce, the opportunity cost of staying married was equal to the utility of the individual of being separated from their spouse. This utility included the standard of living of the person if he/she were to separate. After the legalization of divorce, the opportunity cost of staying married is equal to the utility of being separated or divorced from their spouse, however, now that utility includes any additional resources the individual would acquire upon divorce. This shift in the utility gained from separating or divorcing influences the bargaining power of married couples because, for women, it will tend to increase their cost of being married, and, for men, it tends to decrease the cost of being married. Does an increased threat point because of divorce, which is accompanied by alimony and child support requirements, shift more intra-household bargaining power into the hands of mothers in those

families that stay married? If so, and given that prior research shows women invest more in household goods and resources, I expect to see an increase in investments to child education in those families that remain married. Therefore, an increase in the bargaining power of married women in Chile, via the threat of divorce, alimony, and child support payments, should increase investments in children's education in married couple households.

Difference-in-difference approach to estimation

A difference-in-difference (DID) approach will be used to identify the effects of the legalization of divorce on child education. Using a DID approach with panel data estimates the impact of a program evaluation or policy change on a variable by differencing out other environmental changes that take place over time and over groups of individuals. A standard equation is: $\delta = [((x_t^2 | \mathbf{x}) - (x_t^1 | \mathbf{x})) - ((x_c^2 | \mathbf{x}) - (x_c^1 | \mathbf{x}))]$, where δ is the estimated effect of the treatment on a particular variable, x_t^2 is the sample average of the variable for the treatment group in time period 2, x_t^1 is the sample average of the variable for the treatment group in time period 1, x_c^2 is the sample average of the variable for the control group, x_c^1 is the sample average of the variable for the control group in period 1, and $\mathbf{x}$ is a vector controlling for individual characteristics.

When estimating the demand equation for children's education, I estimate the value of the coefficient δ, looking for its magnitude and size for the overall effect of the treatment on the demanded good. I estimate the coefficient for the EEP parameter of the legalization of divorce on child education. I use children from cohabiting parent families as a control group because their households are not influenced by the legalization of divorce, since their parents are not married.

Children from married parent families are my treatment group because they are influenced by the treatment. In this case, the treatment is the legalization of divorce.

The difference-in-difference (DID) technique assumes that the variable of interest for the treatment and control groups, in this case children's education, is affected similarly by any other environmental changes overtime. One way to test this assumption is to observe the variable for each group before the actual treatment. While the means or percent of individuals effected do not need to have similar results, the direction of change from one time period to the next must be parallel. If the parallel assumption holds prior to the treatment, then the two groups can be compared using DID. Chart 1 shows the rates of school attendance for children from married parent families compared to children from cohabiting parent families. The rate of school enrollment is more or less parallel for both groups pre-treatment. However, after treatment (the legalization of divorce), cohabiting parent family children continue to experience a decrease in school enrollment while children from married parent families experience an increase.

Discussion

While the descriptive statistics appear to give evidence that something changed for school age children of married parent families after the legalization of divorce that did not affect their cohabiting parent cohort, more analysis is needed to verify that the change we see in the descriptive statistics is not cofounded by changes in other characteristics or variables or general changes overtime. The difference-in-difference (DID) estimation will provide accurate results in this case.

Table 3 shows the results from three DID estimations using fixed effects. Fixed effects controls for any household specific characteristics that are similar for all children in one

household but vary across households. *Regression One* is a standard DID using time dummy variables and interaction terms for time and marital status of the parent. We expect the married parents in 2006 variable (which is an interaction term of a marital status dummy variable with the dummy variable for 2006 and, essentially, the "effect of the legalization of divorce") to have a positive coefficient and be significant. While the coefficient is positive, this variable is insignificant in the regression. The dummy variable for 2006 is negative and statistically significant at the 5 percent level.

This regression, however, does not control for changes in age of the children analyzed. DID differences out any time invariant differences in characteristics between the two groups, but it does not difference out time variant characteristics. Since age is time variant, I add a categorical variable for age into the regression (see *Regression Two*). Once age is accurately controlled for, the married parents in 2006 variable has a positive coefficient and is weakly significant, as we would expect. Additionally, all age groups are strongly significant ($p<0.01$).

Finally, in order to accurately capture the reality of the Chilean context for divorce, an additional component is added. With the legalization of divorce came the creation of family courts. Each family court is composed of a group of counties. Individuals are required to process their divorce in the family court corresponding to the county they live in. Each family court in 2006 had very different administrative wait times between when a divorce case was submitted to the court and when the court actually finalized the divorce. I argue that this exogenous difference in administrative wait times has an influence on bargaining power within the household. If divorce as an option shifts the opportunity cost of remaining married, it only does so in the sense that the threat of divorce is truly credible. Specifically, the shorter the wait time, the more of a credible threat the divorce becomes. If true, by adding a variable for the wait time for married

couples to divorce in 2006, we would expect to see a negative and significant coefficient. In other words, the longer the wait time, the less credible threat the divorce threat is, and the less bargaining power the woman will have in married couple households.

In fact, when this variable is added into the equation (see *Regression Three*), it is negative and weakly significant ($p<0.10$). The coefficient on variable measuring the effect of the legalization of divorce becomes larger and strongly significant ($p<0.01$). Additionally, the age group categories remain significant factors in whether or not children attend school, as we would expect. Finally, the coefficient on the dummy for 2006 again appears negative and significant. Possibly indicating that even after controlling for everything else, there was some change between 2004 and 2006 that had a weakly significant negative effect on all children's school enrollment, possibly an educational policy change or shifts in macroeconomic trends driving a need for younger adults to work, or at least not be in school. However, more analysis needs to be completed to understand what changed between 2004 and 2006 that effected the entire sample population's school enrollment in a negative way.

Conclusion

Studies regarding the effects of divorce on child and family wellbeing perpetually face selection bias issues because individuals who divorce can have systemically different characteristics than those who remain married. This study takes advantage of national household survey panel data from 1996 to 2006 and a 2004 external shock to households in Chile in the form of family policy, the legalization of divorce, to analyze the effects of divorce on child education using a difference-in-difference (DID) approach and, thereby, eliminating selection bias issues. Using panel data pre- and post- the legalization of divorce and a difference-in-difference methodological approach, I tease out the effect of the legalization of divorce on child education. Specifically, child education is analyzed in cohabitating parent

families who are not affected by the legalization of divorce and married parent families who are affected by the new law pre- and post-the legalization of divorce.

More generally, this paper analyzes the effect of divorce on household consumption decisions, specifically children's education. I assume that the legalization of divorce gives more bargaining power to women in the household and that women tend to invest in children at higher rates than men. Using the cooperative Nash bargaining household model framework developed by Manser and Brown (1980) and McElroy and Horney (1981), I provide evidence showing that the legalization of divorce, via an increase in the opportunity cost for remaining married for women, actually increased consumption of education for children within married couple households in Chile. Additionally, I show that exogenous administrative processes to obtaining a divorce also influence household bargaining power and consumption by altering the credible threat of divorce.

This study shows that family policies created for one group can have unintended or unexpected effects on other groups. In this case, divorce legislation was created for unstable families, but I have shown that it also influences consumption decisions in stable family households. Additionally, I have shown that family policies that provide more bargaining power to women, have the potential to increase investments in household goods that women value. Although this study analyzes the effect of legalizing divorce, it can also be argued that changes to divorce laws and family policies that empower women by increasing their bargaining power within the marriage could have similar effects. In this sense, my results are not just specific to Chile but have implications for many countries.

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Table 1. Sample of school age children (4 to 21) by legal civil status, 2002 to 2006

Children from:	2002	2004	2006
Cohabiting parents	897	894	907
Married parents	4,203	4,274	4,182

Table 2. Sample of chldren by legal civil status of parent and educational attainment, 2002 to 2006

	2002		2004		2006	
	Not in school	In school	Not in school	In school	Not in school	In school
Children from:						
Cohabiting parents	92	805	108	786	140	767
Married parents	435	3,768	524	3,750	516	3,666

Table 3. Logit regression of school attendance, 2002 to 2006

	Regression One		Regression Two		Regression Three	
	β	s.e.	β	s.e.	β	s.e.
Year dummies						
2002	reference		reference		reference	
2004	-0.2489	(0.0160)	-0.0116	(0.1959)	0.1796	(0.2338)
2006	-0.3306 **	(0.1503)	-0.2882	(0.1855)	-0.5132 **	(0.2208)
Interaction terms						
Married parents in 2002	reference		reference		reference	
Married parents in 2004	-0.0616	(0.1770)	0.0408	(0.2158)	-0.2404	(0.2548)
Married parents in 2006	0.2466	(0.1666)	0.3986 *	(0.2065)	1.4067 ***	(0.4626)
Age groups						
Ages 4 to 10			reference		reference	
Ages 11 to 17			0.5064 ***	(0.0928)	0.5601 ***	(0.1067)
Ages 18 to 21			-3.1428 ***	(0.1207)	-3.1087 ***	(0.1358)
Administrative changes						
Average wait time for married couples in 2006					-0.0579 *	(0.0294)
Log likelihood		-2569.53		-1630.38		-1259.59
N observations		7359		7359		5612
N groups		1052		1052		807

* = significant at p<0.10, ** = significant at p<0.05, and *** = significant at p<0.01

Chart 1. Percent of school age children attending school by parental legal civil status and year, 2002 to 2006