

Cohabitation vs. Marriage: the Effects on Children's Well-being

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Abstract

In this paper we evaluate whether there are differences in adult and child outcomes between cohabiting and married households, once differences in observed characteristics are controlled for and possible endogeneity biases due to selection issues are taken into account by using an instrumental variables estimator. We use a variety of Colombian data sources that contain a wealth of data on children's outcome measures. We find that cohabiting households are worse-off in various dimensions including ownership of durable goods and child outcomes. In addition, we attempt to understand the reasons why these differences arise and find evidence that cohabiting households exhibit less stable and forward looking behaviors, are characterized by less risk sharing and specialization, and exhibit less healthy behaviors and different childrearing practices.

Key words: Family structure, marriage, child well-being

JEL codes: J10, J12, J13

1. Introduction

The distribution of the Colombian population by marital status has changed significantly over the past two decades. Consistent with what has happened in most parts of the world, the fraction of married individuals has declined from 62% in 1982 to 35% in 2006, while the fraction of divorced has increased from 8% to 17% during the same time period. In addition, while marriage has been declining, the fraction of cohabiting couples has been increasing dramatically going from 12% in 1982 to 25% in 2006. Perhaps more interesting are the differences in these trends across the income distribution and by education level.

The decline in marriage rates has been more noticeable among the poorest. Marriage rates declined 54% among households in the lowest income quintile from 1982 to 2006, while this decline was around 32% among households in the highest quintile. This difference is stronger among households with children younger than 18: the fraction of married households with children declined 58% among the poorest while it fell only about 20% among the richest.

Notably, households in the middle portion of the distribution (third and fourth quintile) have moved from looking like the top quintile to looking more like the bottom quintile, in terms of significantly lower fractions of married households, and significantly higher proportions of cohabiting and divorced households. In 2006, most households with children in the lowest income quintile were cohabiting (33%), followed by married (28%) and divorced (20%). Something similar happens in the second and third income quintiles of the distribution. On the other hand, most households with children in the highest income quintile are married (44%), while 13% are cohabiting and about 16% divorced. It is clear then that there is a widening gap between how the poorest and richest approach marriage and childrearing.

This matters to the extent that marital status is correlated with measures of well-being of households and/or their children. This is clear if we compare, for example, two-parent

households with one-parent households. It is well documented that individuals and children are significantly better off living in two-parent households than in one-parent households simply because two-parent households are composed by two potential wage earners as opposed to only one. Evidence suggests that children born and raised in two-parent households do better in school, get better jobs and have higher probabilities of creating intact families of their own.

On the other hand, it is less clear whether the relative increase in the number of cohabiting households should be a matter of concern. In principle, one might think that the advantages associated with the presence of two-wage earners in married households would also characterize other two-parent family structures such as cohabitation. That would imply that the economic benefits of marriage could be modest relative to cohabitation. However, some empirical evidence¹ suggests that there are important differences in economic well-being and children's outcomes in favor of married families.

In this paper, we assess whether there is a legal marriage effect compared with cohabitation on adult and child outcomes by using several Colombian datasets, including one that contains a wide array of children's outcomes. Previous literature has largely ignored the issue of self-selection into marriage by simply presenting correlations or conditional differences.² Clearly, cohabiting individuals might be different from married individuals in ways that we cannot measure or observe such as attitudes, abilities or circumstances. We contribute to this literature by: (1) directly addressing the issue of causality and self-selection by using an instrumental variable estimator, in particular, we use local demand conditions and variables that measure potential monetary and time costs of legal marriage such as per capita churches and per capita public notaries in the place of residence, (2) studying a wide array of children's outcomes that

¹ See details in the literature review section.

² A notable exception being Björklund et al (2010) which we discuss in Section 2.

range from nutrition and health to cognitive and non-cognitive development, and (3) attempting to empirically understand the reasons why this marriage effect might arise.

The results indicate that there are important differences between married households and cohabiting households in detriment of the latter in household outcomes such as durable goods ownership, and children's outcomes such as schooling and cognitive and non-cognitive development. Some other differences, such as children's health and nutrition, can be totally accounted for by observed differences such as household income and education of the head of the household between cohabiting households and married households. Interestingly, a large part of the difference is explained by duration of the relationship, which suggests that higher instability associated with cohabitation is an important part of the story.

In exercises that explore the reasons why these differences might emerge we find that it is plausible to think that cohabiting relationships are less stable than marriages and thus entail a more uncertain environment in which participants have lower incentives to invest in their partner and their children. We provide evidence that men and women in cohabiting households exhibit less stable and forward looking behaviors and that income sharing and specialization within the household are less likely in cohabiting relationships than within marriage.

This paper is organized as follows. In Section 2 we present a theoretical discussion of the reasons why marriage could be associated with better outcomes than cohabitation. In addition, we present a brief review of the empirical literature. In Section 3 we show some descriptive evidence that cohabiting households are worse-off than married households in various dimensions. In Section 4 we estimate the marriage effect by using instrumental variables to correct for possible endogeneity bias. In Section 5 we explore empirically some of the potential explanations why cohabitation exhibits a negative effect compared to marriage. Finally, in Section 6 we conclude.

2. Literature Review

There is a growing literature spanning several disciplines that analyzes the effects of family structure on children's psychological, cognitive, social and other economic outcomes. Most of this literature focuses on the effects of divorce, single-parenthood, blended families and family structure transitions on children.³ The study of the impact of marriage vs. cohabitation on children is more recent. Most of this literature fails to account for potential selection into marriage vs. cohabitation due to unobserved characteristics of individuals, although some of these studies point out that there is, in fact, selection in this sense.⁴

The initial emphasis of this literature was on explaining differences between children in two-parent households compared to children in one-parent households (due to either divorce or single-parenthood). A vast line of literature has emphasized (among others) the following theoretical reasons why the former might be better-off than the latter: (1) obvious economies of scale in two-parent households vs. one-parent households, i.e., two adults can live more cheaply than if they lived in two separate households, (2) marriage encourages saving and investment since each partner provides the other partner with a form of insurance against contingencies such as losing a job, unexpected changes in wages, falling sick, etc. (Waite, 1995 and Oppenheimer, 2000), and (3) marriage encourages the division of labor and when each household member specializes in the activity in which they have a comparative advantage, there might be gains from trade and specialization (Becker, 1981).

³ E.g., McLanahan and Sandefur (1994) study single-parenthood effects, Sigle-Rushton, Hobcroft and Kiernan (2005) study divorce impacts, Aughinbaugh, Pierret and Rothstein (2005) estimate the effects of family structure transitions and Ginther and Pollak (2004) and Gennetian (2005) assess the effects of blended families.

⁴ E.g., Kenney and McLanahan (2006) point out that selection is the main reason for the consistent finding that there is a higher rate of domestic violence among cohabiting couples as compared with married couples. In particular, they show that there is selection into marriage of the least violent-cohabiting couples and selection out of marriage (and into divorce) in the most-violent married couples.

Given this, one might think that the advantages of marriage associated to economies of scale in household production, with the division of labor and risk sharing among adults should, in principle, also characterize other two-parent family structures such as cohabitation. That would imply that the economic benefits of marriage could be modest relative to cohabitation.

However, some empirical evidence suggests a robust positive effect of marriage with respect to cohabitation on household and child outcomes such as children schooling and the level and stability of living standards of women and children. Theoretically, there are several reasons why this might be the case. First, if marriage is a more stable living arrangement than cohabitation then planning over the long-term can be more difficult in cohabiting arrangements. Cohabitation might usually entail a sense of transition towards a next stage, indicative in some cases of an exploratory period in response to uncertainties about the desirability of a particular match. In general, one might say that cohabitation is characterized by incomplete institutionalization which hurts its stability. A potential symptom of instability might be the fact that married individuals report higher relationship satisfaction than cohabitators (Brown and Booth, 1996). Reduced stability and increased uncertainty can induce couples to invest less⁵ in the long term, in each other and in household production (including children).⁶

Second, less stability and more uncertainty about the quality of the match might induce less specialization and lower risk sharing with respect to marriage. For example, it might be more likely that married couples adjust to income shocks to one partner with adjustments by the other partner relative to cohabiting couples. This would, in turn, imply that cohabiting couples benefit less from economies of scale and risk sharing. Bauman (1999) examined how the experience of material hardship would respond to income received by cohabiting partners vs.

⁵ Or investments of lower quality such as worse parenting practices.

⁶ Manning, Smock and Majumdar (2004) report that children born to cohabiting parents experience greater levels of instability than children born to married parents in the U.S.

income received by married heads of household. The results indicate that, in fact, income linked to cohabitators did significantly less than income linked to married spouses to reduce hardship after controlling for a wide array of observed characteristics

Third, if not only the couple itself perceives the relationship within cohabitation as less stable but also the market, then formal and informal forms of insurance (including transfers from family) and credit might be less accessible for cohabiting couples than married couples.

Fourth, a more stable environment within marriage might also induce more stable behaviors in other dimensions. For example, stable routines and what can be perceived as a more persistent emotional support in the household might translate into more committed behaviors.⁷ Waite and Gallagher (2000) report that there is an apparent marriage advantage in emotional health for men and women, which might carry over into jobs and earnings capacity. Marcussen (2005) reports differences in depression and alcohol use between married and cohabiting individuals. Finally, it is simply possible that people who choose to marry might be systematically different from those who decide to live together in unobserved ways that are also correlated with outcomes such as earnings, parental practices, stability and healthier behaviors.

A comprehensive review of the empirical literature on the differences in household and child outcomes between married and cohabiting households can be found in Lerman (2002a). The author reports in this paper that married couples in the U.S. have incomes nearly four times their basic needs, a ratio that is about 30 percent higher than what cohabiting couples report (and 63% higher than what single parents experience). In addition, Lerman (2002b) finds a positive effect of marriage vs. cohabitation on the level and stability of living standards

⁷ Brown (2000), for example, reports that depression is especially high among cohabiting mothers compared to married women with children, generally linked to higher levels of relationship instability. Kenney and McLanahan (2006) report higher rates of domestic violence among cohabiting couples than among married couples.

experienced by mothers and their children measured by the propensity to experience economic hardship (ratio of income to needs) by using a variety of methods including propensity score matching, fixed effects models, and comparing women who married and women who did not marry after an unexpected childbearing event.

Lichter, Graefe and Brown (2001) report that marriage significantly reduces the likelihood of poverty compared to unwed parenting, holding constant family background characteristics. Hao (1996) reports a positive effect of marriage relative to cohabitation on the net worth of families. The author also documents that married couple families generally received more in the form of private transfers from both, friends and family, relative to cohabiting couples.

Manning and Lichter (1996) estimated the effect of family type on the income-to-needs ratios (income divided by the household's poverty threshold) of children controlling for other observed characteristics. The conditional effects indicate that cohabiting couples have income-to-needs ratios that are 0.43 points lower than those of married couples.

Brown (2004) uses the National Survey of America's Families (NSAF) to assess the effect of cohabitation vs. marriage on a parent-reported behavioral and emotional problems scale of children and a parent-reported children school engagement index. The results indicate that after conditioning on parental income, education, psychological well-being and parental effectiveness, cohabitation has a negative effect on children's outcomes. The author does not attempt to correct for selection bias.

In a recent more related paper, Björklund et al (2010) estimate the effects of legal marriage with respect to cohabitation on children's grade point average at age 16 using Swedish data. To correct for potential selection bias, the authors use a natural experiment generated by a reform in the widow's pension system which arguably generated exogenous variation in marriage

rates. Their results indicate that differences between children of cohabiting households and children of married households largely disappear once they condition for observed characteristics of households and compare children of couples that got legally married as a result of the reform with children of couples that remained unmarried.

3. Preliminary Evidence of the Effects of Marriage

In this section we present evidence that married couples seem to have better outcomes than cohabiting couples. The data used in this paper come from various sources including the Colombian Continuous National Household Survey (CHS, 2006), the *Hogares Comunitarios* Survey (HCB, 2007) and the Demography and Health Survey (DHS, 2005).⁸ The CHS is a repeated cross-sectional dataset representative at the national level collected every month. Its main objective is to measure labor market variables. We use the December 2006 cross-section which contains information on a total 80.133 adults and 41.559 children under 18, to measure durable goods ownership, labor and non-labor income, and children's schooling.

The *Hogares Comunitarios* survey was collected in 2007 with the objective of evaluating the national early childcare program "hogares comunitarios". Information on 28.000 beneficiary and eligible but non-participant children and their families was collected. The program is only available for children in the poorest income strata and information was collected for a choice-based sample, i.e., we started from a representative sample of "hogares comunitarios" at the national level and then sampled eligible but non-participant children in these same neighborhoods. This dataset contains a wealth of data on children's outcomes including cognitive and non-cognitive development.

Finally, we use some health and nutrition measures from the Demography and Health Survey (DHS, 2005) which is representative of females in reproductive age at the national level. The

⁸ Details about each dataset are described in Appendix 1.

maximum sample size is 13,489 children in this case. This dataset contains information on mother's and children's health and nutrition, prenatal practices, and parental practices. In all cases, we only know current marital status as none of these datasets is longitudinal. CHS (2006) contains some information about the duration of cohabitation that we exploit.

Before describing the data, we briefly characterize the legal differences between cohabiting and married couples in Colombia. After 1990, cohabiting couples in Colombia that can prove at least two years of cohabitation have most legal rights of married couples. Most importantly, rights on common property by equal parts after dissolution of the union. Since then, the number of rights and obligations has been practically made equal to that of legal marriages including custody rights, alimony support, and pension rights for surviving partners. Cohabiting couples just need to register their permanent and singular union in a public notary in order to be eligible for these rights. In cases in which this registration does not take place, it is possible for one of the parties to claim the rights if cohabitation for at least two years can be proven in court. This requires a legal process that includes in most cases, witnesses and other proof of co-residence (such as common property, children, joint banking accounts, etc.) and the ruling can take years.

These changes roughly coincide with the period in which cohabitation rates have significantly increased. However, it is also clear that a significant fraction of individuals don't know or don't understand these laws and thus, still perceives marriage and cohabitation as very different states. In Table 1 we show the distribution of households by marital status and income using our three sources of data. Only ECH data is nationally representative. The numbers show that marriage rates increase with household income while the opposite occurs with cohabitation. By 2006, 35% of households were married while 25% were cohabiting. The other two datasets represent different populations, which is why the distribution looks different. DHS is

representative of women between the ages of 15 and 45, and HCB contains information only on the poorest households. In both samples, cohabiting is more prevalent than marriage.

In Table 2 we compare characteristics of married households and cohabiting households. The statistical significance of the difference between the two is reported in the fourth column. The descriptive statistics reported indicate that when a statistical difference exists between married and cohabiting households, it is always in favor of the former. In particular, we report that married households are more likely to own durable goods and services. In all cases, the differences are statistically significant and quantitatively important. For example, 21.7% of married households have internet while only 6% of cohabiting households do. Similarly, 61% of married couples own a home while only about 30% of cohabiting couples do.

Total household income per capita is significantly higher in married households than in cohabiting households. In particular, the later is almost half of the former. Male's average monthly non-labor income is significantly higher among married men than cohabiting men, and education of the head of the household is higher among married households by close to a year and a half. Married households are bigger but have less children younger than 10. Finally, marriages seem to be longer than cohabiting relationships as proxied by the age of oldest child.

In Table 3 we show differences in various children outcomes by marital status of parents. We report educational, health and nutritional outcomes in the first three panels, and cognitive and non-cognitive test results in the last two panels in the table. These descriptive statistics show that when there are statistical differences between married and cohabiting households, they are in favor of children that live in the former.

The first panel reports differences in children's educational attainment measured by either average attainment for children under age 18 or the probability of being lagged at school

conditional on age. The results presented indicate that children's average years of schooling are lower in cohabiting households than in married households. Similarly, children of cohabiting couples have a 33% likelihood of being lagged at school conditional on their age, while children of married couples have, on average, 13% chance of being lagged at school.

The next panel in Table 3 shows health and nutrition measures of children by parents' marital status using DHS (2005). The incidence of acute respiratory infection (ARI), acute diarrheic disease (ADD) and fever is higher among children residing in cohabiting households than among children in married households. The difference is statistically significant only in the case of ADD and ARI. The incidence rate of ADD is 14.1% among cohabiting households and 11.2% among married households. We then show differences in children's anthropometric measures. Both, acute and chronic malnutrition are less prevalent among children residing in married households than cohabiting households. Only the latter is statistically significant.

Finally, we report differences in a set of cognitive and non-cognitive child outcomes by marital status of the head of household using HCB (2007). The first part shows differences in cognitive development measured by: (1) the Peabody Picture Vocabulary Test, (2) the Woodcock-Muñoz (WM) subscales at ages 3 through 6 and (3) the parent-reported cognitive early development instrument (EDI). The Peabody is a vocabulary test for standard Spanish and provides a quick estimate of verbal ability and scholastic aptitude. The Woodcock-Muñoz is the Spanish version for the Woodcock-Johnson battery of cognitive tests. This is a standardized battery used for assessment of the child's intellectual ability and learning capacity. We focus on five of its subscales: intellectual ability, verbal skills, mathematical reasoning, academic knowledge and verbal comprehension. Finally, the EDI is a cognitive index based on maternal perception about the child's cognitive progress. It is an index from 0 to 1 with 1 being the best perception.

The results indicate that average cognitive scores are consistently higher for children in married households than for children in cohabiting households. The differences are statistically significant and quantitatively important (around a third of a standard deviation). Differences are particularly striking in the case of WM's verbal skills and academic knowledge subscales, being both close to 7 standardized points (almost half a standard deviation).

Finally, we report in Table 3 differences in children's socio-emotional development. First, we show the parent reported psychosocial early development instrument (EDI). This is an index from 1 to 3 with 1 being the best because it indicates lower socio-emotional problems. Second, we present the Penn Interactive Peer Play Scale (PIPPS)⁹ subscales: (1) aggressiveness, (2) isolation and (3) adequate interaction. All three scales go from 1 to 4; ideally, the first two should be low (lower aggressiveness and isolation) and the latter should be high. The EDI is significantly better for children residing in married households than children who live in cohabiting households. Also, children in cohabiting households appear to have more aggressiveness and isolation issues than children in married households, although only the latter is statistically significant. Finally, children in married households have a significantly better index of adequate interactions than children in cohabiting households.

4. Conditional Effects of Marriage and the Possibility of Endogeneity

As we have mentioned, individuals who marry might be systematically different from individuals who choose to cohabit in observed characteristics such as education and income. In fact, we reported in the introduction that there were important differences in household formation across the income distribution, with cohabitation being more common among the poorest. In addition, it is also possible that these two groups are different in ways that we

⁹ This is an instrument that evaluates children's interactions during playtime differentiating positive social conducts (e.g., cooperative behavior) from negative conducts or socio-emotional problems (e.g., aggressiveness and isolation) based on 32 items that indicate frequency of behaviors during playtime.

cannot measure or observe such as attitudes, abilities or circumstances. In other words, the impact of marriage on outcomes might be biased due to the selection issue. For this reason, in this section we explore conditional differences in outcomes and also attempt to estimate a causal effect by using instrumental variables for marital status.

4.1. Description of the instrumental variables

We use as instrumental variables a set of local labor and marriage market variables. The first group includes mean wages for men and women, unemployment rate, female participation rate and percentage of employed in the services sector in the city (or state¹⁰) of residence. The second group includes city size and the sex ratio in the place of residence. In addition to these, we include the number of public notaries per 100,000 inhabitants and the number of churches per million inhabitants in the city of residence. Catholic weddings are legally binding in Colombia and non-religious legal marriages take place in public notaries.

The first set of instrumental variables (labor and marriage market variables) is viewed as a proxy for the value of marriage or the value of the outside option of marriage. For example, a poor local labor market might imply that it is difficult for women to find a job, thus increasing the value of marriage with respect to singlehood or cohabitation. On the other hand, it is plausible to argue that these local conditions are not correlated with unobserved individual characteristics that could determine children's outcome variables.

For local demand conditions to be valid exclusion restrictions we require that: (1) local conditions are merely demand indicators, and cannot vary across regions due to changes in supply conditions. Specifically, we have to assume that a common shock to women cannot change variables such as the local unemployment rate; (2) there is no systematic variation in women's unobserved heterogeneity across localities or if these differences exist, they are

¹⁰ In the case of HCB (2007) we use state instead of city as the area of residence.

not big enough to influence local supply conditions to the extent that they would move the local demand measures.

The second group of instrumental variables, public notaries and churches in the city of residence, affects the probability of marriage as it captures time and monetary costs of legal marriage. Also, residing in a highly religious area could be correlated with lower probabilities of pre-marital cohabitation.¹¹ In addition, we include interactions of the instrumental variables with education of the head of the household.¹²

In Tables 4 and 5 we report the predictive power of these instruments and first stage results. We report results for the different samples used depending on the source of the data. In Table 4 we show measures of the correlation between the endogenous variable (i.e., 1 if marital status is cohabitation and 0 if married) and the instruments. We show the Shea partial R^2 , the incremental R^2 (i.e., the difference between the unrestricted first-stage R^2 and the restricted R^2) and the F-statistic along with its p-value. The Shea partial R^2 's range from 0.01 to 0.025, incremental R^2 's are high, around 0.015 depending on the sample, and F-statistics exceed 10 in most cases¹³. In sum, these instruments are quite powerful predictors of marital status.

The first-stage results reported in Table 5 show that local labor markets that are more favorable for women tend to increase the probability of cohabitation vs. marriage.¹⁴ For example, if female labor participation and the fraction of the work force in the services sector (typically female-oriented) are high then the value of marriage decreases in favor of cohabitation. These

¹¹ In Colombia, about 90% of the population is catholic, and catholic marriages are legally binding.

¹² A recent paper by Heckman and Vytlacil (2005) showed that IV estimates can be seriously biased if the instruments have different effects for different people, so we feel it is important to control for the fact that more educated might people might plausibly respond differently to the instruments. Just as in the examples in Heckman and Vytlacil, ignoring these heterogeneous effects has an important effect on the IV estimate, increase magnitudes by a factor of 2 to 3.

¹³ They are always jointly significant at 1%.

¹⁴ Similar results are obtained with the other two datasets. Results are not shown in the interest of space.

results would, in turn, suggest that marriage acts as a better form of insurance than cohabitation because when the local labor market is poor then marriage increases while the opposite occurs with cohabitation. In addition, the educational attainment of the head of the household partially offsets these effects (results not shown). Both, a reduction in the number of public notaries and churches, would increase the likelihood of cohabitation with respect to marriage.

Our approach might be problematic if there is a correlation between the instruments and other local determinants of children's outcomes such as early childhood program supply. It is possible that cities with less favorable labor markets also have lower coverage of government supplied childhood programs. We directly look at this issue by comparing the supply of the biggest government provided childhood programs by groups of cities, where cities are grouped according to their labor market characteristics (more favorable vs. less favorable). These results are presented in Table 6. The first two columns correspond to childcare programs, *Hogares Comunitarios* and *Hogares Infantiles*¹⁵ and the last column is a nutritional program. The number reported in the table corresponds to child-quotas per program in the city divided by city population. Bolded numbers indicate that differences are statistically significant. Most of the differences between groups of cities are not statistically significant with a couple of exceptions.

4.2. Conditional differences and Instrumental Variables (IV) estimates

In this section we report conditional differences in household and children's outcomes between married and cohabiting households and IV estimates using the instrumental variables described earlier. The control variables in the outcome equation include: per capita household income quintile, schooling attainment, age, gender and employment status of the head of the household,

¹⁵ Our outcome measures relate mostly to children between the ages of 0 to 5 years of age (including nutrition, health, cognitive and non-cognitive outcomes). For this reason, only supply of early childhood programs would be a matter of concern here.

maternal employment status and hours of work, age of the oldest child in the household and household. In the case of children's outcomes we also include child's age and gender.

Cohabitation tends to be less stable than marriage. Bumpass and Lu (2000) document that over 50% of cohabiting unions in the U.S. end within five years compared to roughly 20% in the case of legal marriages. If the duration of cohabitation is, on average, shorter than the duration of marriage, then some differences between the two types of arrangements might be due to the fact that the former have had less time to invest than the latter, rather than to differences in marital status. However, none of the datasets used in this study have information on the exact duration of current marital status nor do we have longitudinal data to construct it. Thus, we proxy for duration of the union by using the age of the couple's oldest child.

In addition, we include maternal employment status and hours of work. As we show in section 5.2 there seems to be less specialization within cohabiting couples than married couples. That means that cohabiting women tend to work more than married women. If maternal time is important for children's development¹⁶ then one needs to control for these differences to correctly infer the part of differences in outcomes that is due exclusively to marital status.

In Table 7 we present results for household ownership of durable goods and services. The numbers reported in the table correspond to the marginal effect of cohabiting with respect to marriage on the probability of owning the durable goods reported by row, both by OLS and IV. The estimates confirm the results reported in the previous section. In particular, the probability of durable goods ownership is lower for cohabiting households with respect to married households in every case. The OLS effects are as low as 1.3 percentage points in the case of TV ownership and as high as 15 percentage points for home ownership.

¹⁶ See, for example, Bernal (2008).

The effects in favor of marriage are accentuated once we instrument, and are significant with a couple of exceptions. For example, the negative effect of cohabitation on TV ownership increases from 1.3 percentage points to 8 percentage points. These results indicate that the effect of marriage estimated by OLS is downwardly biased, which implies that people who choose to live together before marriage or instead of marriage are characterized by unobserved or unmeasured attitudes or circumstances that are associated with higher outcomes. Or that there are various effects, some which tend to overestimate the effect and some which tend to underestimate the effect, and the positive effects predominate (e.g., less risk-taking, less impulsiveness, more career-oriented than family-oriented, more self-centered, etc.). For example, it could be that cohabiting individuals are less risk-taking and they perceive marriage as too risky. However, risk-taking can be good or can be bad for adult and child outcomes.

In Table 8 we present OLS and IV estimates of the effect of cohabitation on children's outcomes. The first three columns correspond to estimates that control for duration of the relationship while the last two exclude the duration of the relationship from the list of controls. Note that comparing the later with the former, we find that most differences (both, OLS and IV) between cohabiting and married households do not persist after controlling for duration. This implies that a large part of these differences are explained by the fact that cohabitation is less stable and thus, duration is shorter than in marriage.

The results indicate that there are significant differences in favor of marriage in terms of children's educational attainment, of nearly 0.4 years. In addition, there are marginally significant differences in favor of marriage in cognitive development (EDI index) of about 20% of the raw difference, WM math scores and socio-emotional behavior (EDI index) with a difference of close to half a standard deviation. We report in the fourth column of Table 8 p-

values for the Hansen J statistic test for overidentification. In most cases we do not reject the hypothesis that errors are correlated with the instruments, with p-values way over 0.1.

In sum, we have documented that there are important differences in household, adult and child outcomes between cohabiting households and married households. Most of the differences in durable goods ownership persist after controlling for observed and unobserved characteristics of households. However, differences in children's outcomes disappear in most cases once one conditions on observed differences between the two types of households, and most crucially after controlling for duration of the relationship. Yet, part of effect on years of schooling, WM-math and parental perceived non-cognitive development is still explained by marital status.

Our results differ somewhat from Björklund et al (2010) but are, in a sense, complimentary. They compare children of women who got married as a result of an expected change in the widow's pension rule with children of women who did not marry prior to the change in the law but would have been eligible for pension before the change. They too find that most of the observed difference in children's GPA score by 16 is explained by differences in observed and unobserved characteristics of households. Sweden has the highest rates of cohabitation and still cohabiting couples face very different rights than legally married ones. However, because cohabiting is very predominant there is no longer a perceived social difference between the two. This is clearly not the case in Colombia where most two-parent households are legally married. As we discuss in the next section, one potential reason for a marriage effect might be the differential treatment by third parties who perceive marriage as more stable than cohabitation (e.g., less access to formal credit and insurance for cohabiting couples).

5. Exploring the Reasons for the Existence of a Marriage Premium

In Section 4 we documented that there are important differences in household, adult and child outcomes between cohabiting households and married households. Some of these differences

persist even after controlling for observed and unobserved characteristics of the household. In this section, we explore some of the reasons why these persistent differences might arise.

First, it is simply possible that people who choose to marry might be systematically different from those who decide to live together in unobserved ways that are also correlated with outcomes. We have explored this hypothesis by estimating the effect of cohabitation by instrumental variables. These results suggest that, in fact, there are systematic unobserved differences between the two types of households.

Second, it is possible that marriage is a more stable living arrangement than cohabitation and hence planning over the long-term can be more difficult in the latter than in the former. Cohabitation usually entails a sense of transition towards a next stage, indicative in some cases of an exploratory period in response to uncertainties about the desirability of a particular match. Reduced stability and increased uncertainty can induce couples to invest less in the long term, in each other and in household production. A symptom of this could be that there is actually less specialization and lower risk sharing (or less income pooling) in cohabiting households.

Third, if not only the couple itself perceives the relationship within cohabitation as less stable but also third parties, then there might be an intended differential treatment for the two types of households which might impose additional constraints on cohabiting households. For example, it can be more difficult to have access to formal and informal forms of insurance and credit might be less accessible for cohabiting couples than for legally married couples.

Finally, a more stable environment within marriage might also induce more stable behaviors in other dimensions. For example, stable routines and what can be perceived as a more persistent emotional support in the household might translate into more committed behaviors at work.

5.1. Cohabitation and stability

It is possible that cohabitation is less stable and thus, duration of cohabitation is shorter than duration of marriage. This implies that couples have less time to invest and differences in duration rather than differences in investments explain differences in outcomes. In Table 8 we showed that OLS and IV estimates of the effects of cohabitation are significantly higher if one excludes duration of the union from list of controls. This implies that, in fact, most of the difference can be explained by differences in the duration of the relationship.

In addition, we present in Table 9 regressions in which we estimate differential marital status effects depending on actual duration of cohabitation. Using the CHS (2006) we can tell whether a cohabiting relationship is shorter or longer than 2 years, but not about legal marriages. The results indicate that the negative effect of cohabitation is higher, the lower the duration of the cohabiting relationship. This result would be consistent with the hypothesis that part of the difference between cohabiting and married couples is due to a shorter average duration of the former. For example, the probability of owning a refrigerator is 16 percentage points lower for short-lived cohabiting couples with respect to married ones, while this difference is 5 percentage points for cohabiting couples that have been together for more than 2 years.

5.2. Specialization and risk-sharing within the couple

In regards to our second hypothesis, specialization and risk-sharing are lower among cohabiting households due to a more uncertain investment environment. Empirical evidence suggests that among two-parent households, men work more than women and women participate more actively in household production than men. The results presented in Table 10 suggest that this is less clear among cohabiting couples than married couples.

In panel A, we show a regression of weekly hours worked on marital status and an array of observed household characteristics. The results confirm that, in fact, cohabiting men work

fewer hours than married men while cohabiting women work more than married women. In other words, less specialization takes place among cohabiting couples. Similarly, in panel B we show a regression of the woman's share of total hours worked by the couple on marital status and other controls. Results indicate that after conditioning for each individual's labor income, females' share of total hours is higher among cohabiting households than married households.

Finally, note that our instruments (local demand conditions) significantly differentiate between cohabiting and married households. In particular, when local conditions are less favorable, the probability of marriage increases with respect to cohabitation. This evidence suggests that marriage might be a better form of insurance than cohabitation. Indirectly, this means that there could be more risk-sharing within married couples than cohabiting couples. In sum, there is some evidence in favor of the hypothesis according to which cohabiting couples take less advantage of economies of scale present in two-parent households.

5.3. Stable environment and behavior within the couple

Finally, we speculate that a more stable environment within marriage might also induce more stable and healthy behaviors in other dimensions. For example, stable routines and what can be perceived as a more persistent emotional support in the household might translate into healthier behaviors. In Table 11 we report differences in what we refer to as healthy habits. The first two panels show measures of health-related habits while the last presents differences in incidence of domestic violence. Panel A shows the frequency of preventive medical appointments (medical, dental or both). The results indicate that married individuals seem to attend preventive appointments more often than their cohabiting counterparts. In particular, the conditional probability of attending preventive medical and dental appointments is 5.5 percentage points lower for cohabiting adults than married adults.

In panel B we present differences in females' healthy habits during pregnancy. The conditional differences indicate that married pregnant women have significantly better habits during pregnancy than cohabiting women, with the exception of smoking and total number of prenatal control, differences not statistically significant. The probability of having planned the pregnancy is nearly 10 percentage points lower among cohabiting couples than married couples. This evidence also suggests much less planning within cohabiting couples. Finally, in panel C we report the conditional difference in the risk of domestic violence against women. The results indicate that domestic violence is significantly more prevalent among cohabiting households than married households by around 5 percentage points.

Finally, in Table 12 we present some measures of parental investments in children. In particular, we report the weekly amount of time devoted to the child, and the types of discipline usually used by parents. We discriminate between two types of discipline: 'punitive' and 'constructive' discipline. The former takes the value of 1 if the parent indicates that he/she usually prefers a physical punishment as the main form of discipline and 0 otherwise. The later takes a value of 1 if the parent indicates that his most preferred form of discipline is talking to the child about the reasons why his/her act was inappropriate and how it should done. The results indicate that cohabiting couples spend less time with their children every week even after conditioning on households' characteristics. In addition, it is less likely that they use constructive discipline than their married counterparts.¹⁷

7. Conclusions

In this paper, we assess whether there exist significant differences in adult and child outcomes between married and cohabiting households in Colombia. There is some evidence that in spite

¹⁷ Interestingly, these effects are still in the same direction and statistically significant after instrumenting for cohabitation.

of the fact that both types of households are composed by two potential wage earners there are differences in economic well-being and children's outcomes in favor of married families. We then attempt to understand the reasons why this is the case.

Some descriptive evidence suggests important differences between married households and cohabiting households in detriment of the latter along various dimensions. These correspond to outcomes at the household level such as durable good ownership, and child outcomes, such as schooling and children's health, nutritional status and cognitive development. These descriptive statistics might be biased in the sense that individuals who marry might be systematically different from individuals who choose to cohabit in observed characteristics and unobserved. In other words, the impact of marriage on outcomes might be biased due to the selection issue. For this reason, we explore conditional differences in outcomes and also attempt to estimate a causal effect by using instrumental variables for marital status.

We use as instrumental variables a set of local labor and marriage market variables, as well as the number of churches and the number of public notaries in the city (or state) of residence. The first-stage results indicate that local labor markets that are more favorable for women tend to increase the probability of cohabitation vs. marriage, and more availability of churches and public notaries increase the probability of marriage.

The results indicate that some of the unconditional differences between married and cohabiting households persist even after controlling for observed and unobserved characteristics of the household by using instrumental variables. In particular, there are important differences in durable goods ownership and children's schooling, and marginally significant differences in children's cognitive development and socio-emotional development. Differences in children's health and nutrition are accounted for by differences in observed characteristics.

Finally, we explore some of the reasons why a marriage premium might arise. The findings indicate that part of these differences arise due to more instability within cohabitation, i.e., a big part of the difference in outcomes between the two types of households disappears once one controls for duration. In addition, there is evidence of less specialization among cohabiting couples than among married couples, and less risk sharing among cohabiting households. Both these facts point to the possibility of a more uncertain environment within cohabiting couples which leads to lower and worse investments in household production. In addition, we show that married households are characterized by healthier behaviors, and more and better quality of time invested by parents in children▪

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Table 1. Household distribution by marital status and income

CHS, 2006						
	Income Quintile					
Marital Status	1	2	3	4	5	Total
Married	28.3%	32.8%	38.4%	37.4%	44.2%	35.3%
Cohabiting	32.9%	33.4%	28.5%	21.5%	13.1%	25.0%
Separated/ Divorced	19.8%	16.5%	14.6%	16.5%	16.5%	17.3%
Widowed	10.2%	8.7%	8.9%	10.8%	8.8%	9.9%
Single	8.8%	8.5%	9.5%	13.7%	17.4%	12.5%
DHS, 2005						
	Income Quintile					
Marital Status	1	2	3	4	5	Total
Married	9.3%	13.0%	15.3%	19.0%	23.1%	15.2%
Cohabiting	57.6%	49.5%	43.0%	35.7%	29.7%	45.2%
Separated/ Divorced	14.2%	12.0%	12.4%	13.3%	11.5%	12.7%
Widowed	0.4%	0.8%	0.4%	0.9%	0.4%	0.6%
Single	18.5%	24.7%	28.8%	31.0%	35.3%	26.4%
HCB, 2007						
	Income Quintile					
Marital Status	1	2	3	4	5	Total
Married	11.7%	15.6%	19.9%	27.3%	37.3%	22.4%
Cohabiting	60.0%	59.7%	57.2%	51.3%	43.6%	54.4%
Separated/ Divorced	18.1%	15.7%	13.2%	12.8%	10.9%	14.1%
Widowed	3.6%	3.6%	5.0%	4.6%	5.2%	4.4%
Single	6.6%	5.4%	4.6%	4.0%	3.0%	4.7%

Table 2. Mean household characteristics by marital status in two-parent households

Outcome	Married	Cohabiting	t-test	Obs.
Marital Status	58%	42%		
Male's mean hourly wages (COL\$)	6,019	3,258	**	19,836
Female's mean hourly wages (COL\$)	4,506	3,437		12,079
Per capita household income (COL\$)	725,294	387,349	**	12,289
Male's mean monthly non-labor income (COL\$)	259,296	49,534	**	26,327
Schooling head of household	9.7	8.3	**	24,522
Household size	4.12	4.05	**	24,637
Children under 10	0.7	1.0	**	24,637
Age of oldest child	12.0	9.9	**	24,637
Durable goods ownership and services (%)				24,073
Telephone	85.1%	60.4%	**	
Internet	21.7%	6.1%	**	
Refrigerator	92.9%	76.5%	**	
Water heater	36.1%	16.0%	**	
Sound system	68.7%	52.2%	**	
PC	40.0%	15.1%	**	
Car	26.8%	10.3%	**	
TV	98.2%	94.5%	**	
Home	61.1%	29.9%	**	

Source CHS 2006

** column difference significant at 5%, * column difference significant at 10%.

Table 3. Mean children's outcomes by marital status in two-parent households

Outcome	Married	Cohabiting	t-test	Obs.	Source
Schooling					CHS 2006
Average schooling (children under 18)	5.21	4.23	**	27,263	
Lagged at school ¹	13.15%	33.26%	**	9,121	
Children's health				10,660	DHS 2005
Acute Respiratory Infection (ARI)	36.24%	38.91%	**		
Acute Diarrheic Disease (ADD)	11.22%	14.10%	**		
Fever (last two weeks)	22.42%	24.22%			
Nutrition				10,222	DHS 2005
Acute Malnutrition ²	0.86%	1.32%			
Chronic Malnutrition ³	10.58%	13.38%	**		
Cognitive development					HCB 2007
Peabody - Verbal ability	93.91	89.28	**	3,834	
Woodcock Muñoz (WM)				3,851	
Brief Intellectual Ability	87.88	85.34	**		
Verbal skills	85.55	78.63	**		
Mathematical reasoning	85.54	80.47	**		
Academic knowledge	85.65	78.68	**		
Verbal comprehension	81.20	77.21	**		
Cognitive Early Development Instrument (EDI) ⁴	0.322	0.265	**	11,005	
Psicosocial development					HCB 2007
Emotional Early Development Instrument (EDI) ⁵	1.48	1.58	**	11,007	
Penn Interactive Peer Play Scale (PIPPS)				3,885	
Agressiveness index ⁶	1.82	1.86			
Isolation index ⁶	1.35	1.40	**		
Adequate interaction index ⁷	3.05	2.93	**		

** column difference significant at 5%, * column difference significant at 10%.

¹ If schooling attainment is less than median schooling for age/gender group minus 1 (see Dahan and Gaviria, 2001).

² Acute malnutrition is measured as Z-score of weight for age below -2.

³ Chronic malnutrition is measured as Z-score of weight for height below -2.

⁴ Scale from 0 to 1, with 1 being the best.

⁵ Scale from 1 to 3, with 1 being the best.

⁶ Aggressiveness and Isolation Index (1 to 4, 1 being less aggressive/isolated)

⁷ Adequate interaction Index (1 to 4, 4 being more adequate interaction)

Table 4

Power of instruments							
Dependant variable: 1 if individual or head of household is cohabiting,0 if married.							
Sample	Number of obs.	Shea Partial R ²	Restricted R ²	Unrestricted R ²	Incremental R ²	F - Statistic	P-value
Children under 18*	23938	0.0250	0.1431	0.1557	0.0126	22.090	0.0000
Households*	14851	0.0242	0.1614	0.1811	0.0197	12.620	0.0000
Children (HCB) [◊]	5307	0.0091	0.1106	0.1167	0.0061	3.440	0.0000

Source: Colombian CHS (2006) and HCB (2007).

Dependant variable is 1 if individual or head of household is cohabiting and 0 if he/she is married.

Instruments are [local] mean wages for men and women, unemployment rate, female participation rate, percentage of employed in the services sector, sex ratio, city size, all in the city of residence of the head of the household, and number of notaries per 100,000 inhabitants and number of churches per million inhabitants in the city of residence of the head of the household and interactions of each one of these variables with years of education of the head Children (HCB) includes all the set of intruments except for sex ratio and city size, and included instruments are at the state level instead of city level.

* Exogenous variables are income quintile, schooling attainment, age, gender and employment status of head of household, wife's employment status and hours of work, age of the oldest child and household size.

[△] Exogenous variables are years of education, college and highshool premium, experience and experience squared, employment status, age of oldest child and city fixed effects.

[◊] Exogenous variables are maternal schooling attainment, age, employment status and hours of work, household income quintile, household size, age of oldest child in household, urban dummy, child's age and gender and state fixed effects.

Table 5

First-stage Regression		
Dependant variable: 1 if individual or head of household is cohabiting and 0 if married.		
Instrument	Sample	
	Children under 18*	Households*
Female participation rate	1.562*** [0.307]	1.532*** [0.402]
% Occupied in service sector	1.559*** [0.235]	1.207*** [0.313]
Unemployment rate	-0.909*** [0.279]	-0.554 [0.374]
Mean hourly wage for women	-0.000 [0.000]	-0.000 [0.000]
Mean hourly wage for men	0.000 [0.000]	-0.000 [0.000]
Notaries per 100,000 Habitants	-0.121*** [0.041]	-0.109** [0.054]
Churches per Million Habitants	-0.003*** [0.000]	-0.002*** [0.000]
Sex ratio	-1.801*** [0.243]	-1.767*** [0.312]
City size	0.000*** [0.000]	0.000** [0.000]
Number of observations	23938	14851

Robust standard errors in brackets

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

Source: Colombian CHS (2006).

Dependant variable is 1 if individual or head of household is cohabiting and 0 if he/she is married.

Interactions of instruments with education not shown.

* Exogenous variables are income quintile, schooling attainment, age, gender and employment status of head of household, wife's employment status and hours of work, age of the oldest child in household and household size.

[◊] Exogenous variables are maternal schooling attainment, age, employment status and hours of work, household income quintile, household size, age of oldest child in household, urban dummy, child's age and gender.

Table 6

Early Childhood Program Supply by Type of City &			
Coverage by early childhood program in 2007	Hogares Comunitarios	Hogares Infantiles	Children's Breakfast
High local female wages	2.3	1.38	0.32
Low local female wages	3.39	3.58	0.26
High local male wages	2.16	1.38	0.3
Low local male wages	3.48	3.58	0.26
High local unemployment rate	3.22	2.95	0.29
Low local unemployment rate	2.76	2.55	0.28
High local female participation rate	2.97	2.92	0.26
Low local female participation rate	2.98	2.51	0.3
More churches than average	3.27	3.03	0.29
Less churches than average	2.71	2.47	0.27
More public notaries than average	2.41	2.16	0.28
Less public notaries than average	3.46	3.22	0.28
Higher than average sex ratio	3.22	3.26	0.24
Lower than average sex ratio	2.76	2.28	0.31

Bold= difference is statistically different from 0 at the 5% level

[^] Number reported is total number of child-quotas available in the program divided by city population.

Table 7

Effect of cohabitation on durable goods and services ownership		
Dependent Variable	Indep. Variable: 1 if cohabiting and 0 if married *	
	Conditional difference ¹	IV ²
TV	-0.012 *** [0.003]	-0.052 * [0.032]
Refrigerator	-0.053 *** [0.008]	-0.450 *** [0.045]
Sound System	-0.090 *** [0.015]	-0.262 *** [0.069]
Telephone	-0.114 *** [0.012]	-0.624 *** [0.019]
Water Heating	-0.062 *** [0.012]	0.083 [0.074]
Internet Connection	-0.051 *** [0.007]	-0.088 ** [0.045]
PC	-0.135 *** [0.014]	-0.156 ** [0.073]
Car	-0.043 *** [0.010]	-0.015 [0.055]
Home	-0.127 *** [0.015]	-0.418 *** [0.053]

Number of observations in all regressions is 14570.

Robust standard errors in brackets

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

Source:Colombian CHS (2006). Sample: if head of household is either married or cohabiting.

Instrument set listed in footnote in Table 4.

1: Probit marginal effects estimates

2: Instrument is the probability of cohabiting, predicted by a probit of cohabiting dummy on IVs and exogenous variables. Thus, the models presented are exactly identified.

* Other covariates include per capita household income quintile, schooling attainment, age, gender and employment status of the head of the household, wife's employment status and hours of work, age of oldest child in household, and household size.

Table 8

Effect of cohabitation on children's outcomes							
Independent variable reported: 1 if cohabiting and 0 if married [#]							
Dependent variable	Controlling for duration of relationship ⁵				Not controlling for duration of relationship		
	Number of observations	Conditional difference	IV ¹	Hansen J (p-value)	Number of observation	Conditional difference	IV ¹
Years of schooling	23938	-0.207*** [0.028]	-0.367** [0.162]	0.0341	24288	-0.192*** [0.027]	-0.355** [0.159]
Cognitive EDI ²	5306	-0.008 [0.006]	-0.115* [0.069]	0.2044	11582	-0.012*** [0.005]	-0.200*** [0.067]
Peabody score	1976	-1.363 [0.856]	-9.897 [6.575]	0.6834	4323	-1.503** [0.586]	-11.717* [7.037]
WM brief intellectual ability	1982	-0.417 [0.710]	-5.473 [5.901]	0.5763	4359	-0.437 [0.526]	-13.567** [6.793]
WM math	1977	-0.993 [0.818]	-13.901* [7.416]	0.5776	4327	-1.4806** [0.596]	-2.141 [-7.503]
WM academic knowledge	1998	-0.464 [0.721]	-3.909 [5.261]	0.4701	4372	-0.764 [0.506]	6.331 [6.117]
Emotional EDI ³	5307	0.018*** [0.008]	0.142* [0.083]	0.1449	11585	0.027*** [0.005]	0.208*** [0.079]
PIPPS- aggressiveness index ⁴	1999	0.035 [0.024]	-0.252 [0.204]	0.6499	4385	0.034** [0.016]	-0.220 [0.222]
PIPPS- isolation index ⁴	1998	0.033** [0.017]	0.816 [0.148]	0.3404	4384	0.032*** [0.011]	0.292* [0.164]
Acute respiratory infection	8449	-0.001 [0.016]	0.109 [0.107]	0.0620	8920	0.003 [0.016]	0.176* [0.101]
Chronic malnutrition	6326	-0.000 [0.011]	-0.135 [0.112]	0.0493	6668	0.001 [0.011]	-0.094 [0.108]

Robust standard errors in brackets

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

Source: Colombian CHS (2006), Colombian DHS (2005) and HCB (2007).

Other covariates include per capita household income quintile, schooling attainment, age, gender and employment status of the head of the household, maternal employment status and hours of work, age of oldest child in the household, and household size.

¹ Instrument set listed in footnote in Table 4. Similar results if probability of participation is used as instrument as in Table 7.

We present this version so that we can show Hansen-J statistics.

² 0 to 1 index, where a higher number is better

³ 0 to 1 index, where a lower number is better

⁴ 1 to 3 index, where a lower number is better

⁵ Duration is proxied by age of oldest child

For HCB (2007) outcomes, instruments are at state level instead of metropolitan area.

Table 9

Effects of Marriage by Duration of Cohabiting Relationship									
Marginal effects									
Covariate	Outcome	Durable Goods Ownership						Schooling Children <18 yrs	
		Telephone	Internet	Refrigerator	Sound System	PC	Car	TV	
Cohabiting (less than 2 years)		-0.155*** [0.038]	-0.038*** [0.009]	-0.166*** [0.034]	-0.216*** [0.041]	-0.134*** [0.027]	-0.070*** [0.015]	-0.055*** [0.014]	-1.145*** [0.339]
Cohabiting (more than 2 years)		-0.114*** [0.013]	-0.049*** [0.007]	-0.048*** [0.009]	-0.082*** [0.015]	-0.131*** [0.013]	-0.039*** [0.010]	-0.010 [0.003]	-1.695*** [0.395]
X ² / F statisitc of the difference		0.6	0.04	15.56***	10.63***	0.59	3.61*	18.45***	1.28
Estimation Method		Probit	Probit	Probit	Probit	Probit	Probit	Probit	OLS
Observations		14570	14570	14570	14570	14570	14570	14570	16477
Adjusted/ Pseudo R2		0.2809	0.3515	0.2137	0.1130	0.3363	0.295	0.1481	0.7007

Robust standard errors in brackets

* Significant at the 10% level ; ** Significant at the 5% level ; *** Significant at the 1% level

Other controls include schooling, age, employment status and occupation of the head of the household, per capita household income quintile, wife's employment status and hours of work, age of oldest child in the household and city fixed effects.

Source: CHS (2006)

Table 10

A. Weekly hours worked		
	Men	Women
Cohabiting	-1.734*** [0.51]	1.201** [0.59]
Observations	26478	27609

Source: CHS (2006). Robust standard errors in brackets.

Other controls include age and educational attainment, log hourly labor income, city and occupation fixed effects, household size, household composition, female head of household and age of oldest child in household.

Estimated by MLE (for selection bias correction).

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

B. Woman's share of total hours worked by couple	
Covariate	
Cohabiting	0.014** [0.006]
Log hourly labor income	-0.012*** [0.002]
Husband/partner's log hourly labor income	0.004* [0.002]
Observations	5519
R squared	0.1166

Estimated by OLS. Robust standard errors in brackets

* Significant at the 10% level; ** Significant at the 5% level; *** Significant at the 1% level

Other controls include age and educational attainment, log hourly labor income, city and occupation fixed effects, household size, household composition, female head of household and age of oldest child in household.

Table 11

A. Preventive Medical Appointments			
Marginal Effects			
	Any medical or dental	Any medical	Both medical and dental
Cohabiting	-0.055*** [0.017]	-0.029* [0.017]	-0.028** [0.014]
Observations	12051	12051	12048
Pseudo R-squared	0.1115	0.0906	0.1455

Robust standard errors in brackets

* Significant at the 10% level ; ** Significant at the 5% level ; *** Significant at the 1% level

Source: Probit estimates based on Living Standards Survey (2003) ; Sample: people 25 years of age and older.

Other controls include per capital household income quintile, educational attainment, gender, age of head of household, maternal employment status and hours of work, household size, age of oldest child, urban dummy, ethnicity and region fixed effects.

B. Mother's behavior during last pregnancy					
Marginal effects					
	Outcome				
	Pregnancy was not planned	Drank alcohol during pregnancy	Smoked during pregnancy	# of pre-natal controls	Newborn was not registered
<i>Marital status of the mother</i>					
Cohabiting	0.098*** [0.024]	0.048*** [0.017]	0.002 [0.008]	-0.313 [0.170]	0.006*** [0.002]
Observations	3921	2670	2670	2559	3921
Adjusted/Pseudo R squared	0.045	0.033	0.121	0.099	0.256

Robust standard errors in brackets.

* Significant at the 10% level ; ** Significant at the 5% level ; *** Significant at the 1% level

Source: Probit and OLS estimates based Colombian DHS (2005)

Other controls include per capital household income quintile, educational attainment, gender, age of head of household, maternal employment status and hours of work, household size, age of oldest child, urban dummy, ethnicity and region fixed effects.

C. Female risk of having been victim of domestic violence[□]	
Marginal effects	
<i>Marital status of the mother</i>	
Cohabiting	0.053*** [0.009]
Observations	24206
Pseudo R squared	0.038

Robust standard errors in brackets.

* Significant at the 10% level ; ** Significant at the 5% level ; *** Significant at the 1% level

Source: Probit estimates based DHS (2005)

□ Husband/partner has pushed, dragged, hit, bit, kicked, hit with an object, threatened with a knife or gun, wounded with a knife or gun, attempted to burn or strangle, or raped her.

Other controls include per capital household income quintile, educational attainment, gender, age of head of household, maternal (wife's) employment status, household size, age of oldest child, urban dummy, ethnicity and region fixed effects.

Table 12

Mother's routines			
	Outcome		
	Weekly Hours spend with child	Uses punitive discipline	Uses constructive discipline
	OLS	Probit	Probit
<i>Marital status of the mother</i>			
Cohabiting	-0.987*** [0.368]	0.008 [0.008]	-0.028** [0.014]
Observations	8138	8138	8138
Adjusted/Pseudo R squared	0.1736	0.044	0.0325

Robust standard errors in brackets.

* Significant at the 10% level ; ** Significant at the 5% level ; *** Significant at the 1% level

Source: Probit and OLS estimates based on HCB (2007).

Other controls include per capital household income quintile, mother's age, educational attainment, employn and hours of work, household size, age of oldest child, urban dummy, maternal age at childbirth, child's gen and state fixed effects.

Appendix 1

Description of Sources of Data

Database	Outcomes	Observations
Continuous Household Survey (CHS, 2006)	Children's schooling Durable goods and services Adult wages Adult working hours Adult income	80,133 adults, 22,428 households and 41,559 children under 18.
Hogares Comunitarios Data HCB (2007)	Children's psychosocial development Children's cognitive development	15,210 children (5,300 for some)
Demography and Health Survey (DHS, 2005)	Children's health status Children's nutritional status	13,489 children