

Associations between different households' arrangements for couples and satisfaction with life

Abstract

This paper investigates the relationship between marital arrangements and well-being in Brazil using the Social Dimensions of Inequalities Survey. Initially, household arrangements with couples in Brazil were classified in seven different types: one for those married or in relationships indistinguishable from married; and six for consensual marriage. By doing so, the paper could empirically address the natural heterogeneity of marriage and cohabitation and well-being levels. The empirical strategy was the following. First, I estimated multinomial logistic models and a probit model with continuous endogenous regressors to analyze correlations between well-being and household arrangements. Then, I estimated standard linear models, multilevel models and IV models to address the reverse link. Finally, I estimated both models interactively, taking into account the circular causality between well-being and household arrangements. The results suggest that the link between well-being and some types of household arrangements was significant, whereas that between household arrangements and well-being was weaker, mostly non-significant. That is, it seems that married people are more satisfied with their life than those in some specific household arrangements because individuals more satisfied with their life in some arrangements show a greater propensity to marry. However, those in an informal union for less than 10 years in a 1^a union without children significantly showed lower levels of well-being than married individuals due to two factors: individuals with higher well-being levels tend to marry in greater proportion; and those in this type of union show lower levels of well-being because of the idiosyncrasies of the union.

Keywords: marriage; cohabitation; well-being levels; Brazil.

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1 – INTRODUCTION

Many factors are commonly considered amongst the determinants of well-being, including civil status, household arrangements and fertility. This paper analyzes associations between different household arrangements for couples and satisfaction with life. In this vein, most studies compare married individuals with those who cohabit, and/or compare those with or without children. However, marriage does present some variability and cohabitation tends to be an even more heterogeneous relationship (Smock, 2000); hence researchers should pay closer attention to household arrangements' diversity (Manning & Smock, 2005).

This study follows this suggestion and takes into account the natural heterogeneity of both institutions. Initially it classified household arrangements of couples in seven different types based on Heuveline and Timberlake (2004) and on Surkyn and Lesthaeghe (2004), as well as on idiosyncrasies of the Brazilian reality. Thus, the paper could not only propose a new classification for couples' household arrangements, but also empirically address the natural heterogeneity of both marriage and cohabitation and how variables within both institutions correlate with satisfaction with life.

The data used in the paper, Social Dimensions of Inequalities Survey, is cross-sectional and has as its main objective to evaluate life conditions in Brazil. In order to overcome some of the limitations imposed by endogeneity the following empirical strategy was used: First, a multinomial logistic model and instrumental models were estimated to analyze correlations between well-being and household arrangements. Then, standard linear models, multilevel models and instrumental models were applied to address the reverse link. These two studies were the benchmark for comparisons with a third analysis, where both models were estimated

interactively with instruments taking into account the circular causality between well-being and household arrangements.

The main results are the following: Married individuals did show higher levels of well-being than individuals in informal couples. However, when the natural heterogeneity of informal unions was taken into account, only some types of informal relationships showed this significant difference, while others showed non-significant differences. Moreover, the results suggest that the link between well-being and some types of household arrangements was significant, whereas that between household arrangements and well-being was weaker, mostly non-significant.

Besides this brief introduction, the paper is divided in six sections. Section two presents the background of the paper. Section three presents the main hypotheses guiding the empirical analysis. Section four describes the methodology. The fifth section presents descriptive statistics, and the sixth shows the results of the econometric models. The last section presents the discussion and concludes the paper.

It should be emphasized that the topic is not new, as it has been discussed at least since Diener (1984); however, it is still being addressed in distinct settings with different approaches, such as the one proposed here.

2 – BACKGROUND

This section presents the background of the paper, which describes some of the factors that are commonly considered amongst the determinants of well-being and that are related to household arrangements for couples. First it compares married and non-married individuals, then it describes the effects of relationship duration on well-being of couples; after this it introduces the heterogeneity verified between married individuals and those who cohabit, and finally it describes the influence of parenthood on well-being. For a general discussion of the determinants of well-being see Blanchflower & Oswald (2004), Diener (1984), Dolan et al. (2008) and Helliwell (2006).

Marital status is one of the main factors associated with well-being differentials. In general, married people tend to be happier than others (Blanchflower & Oswald, 2004; Diener, 1984; Dolan et al., 2008; Gerdtham & Johannesson, 2001;

Graham, 2008; Haller & Hadler, 2006; Helliwell, 2003, 2006; Helliwell & Putnam, 2004; Slutzer & Frey, 2006), and this was also observed with Brazilian data (Corbi & Menezes-Filho, 2006; Ribeiro, 2015). Why are married people happier than others? Some explanations are readily available. Married people tend to be wealthier, healthier and less prone to risky behavior. They also have a “natural” protective net for adverse events in life and a more effective network of help and support. Moreover, marriage is a long term contract, and therefore enables the selectivity of personal investments, specialization and gains of economy of scale (Frey, 2008; Waite, 1995). Another explanation is due to reverse causality: married people are happier because happier people get married in greater proportion and are less prone to divorce (Slutzer & Frey, 2006).

Nonetheless, many factors may affect marital happiness. Amato et al (2003), Umberson et al (2005) and VanLaningham et al (2001) observed that marital duration was negatively correlated with marital quality. However, these last authors emphasized that most studies observed a U-shaped pattern of marital happiness over the life course. The most widely applied conceptual model for explaining this result focuses on changes in family roles and structures, highlighting the apparent effect of having children in the household. Marital happiness decline as children are added, decline even further as children move into adolescence, and improve as the nest is emptied. Nevertheless, these results may be an artifact of the limitations of cross-sectional data, as period and/or cohort effects may partially explain these results (VanLaningham et al, 2001).

For instance, concerning period effects, the increase in female labor-force participation creates conflicting demands of work and family, specifically among those with small children, potentially decreasing marital happiness. Besides, the apparent improvement of marital quality in the later years may reflect cohort effects, as older cohort marriages occurred in a more traditional context, with more social support for marriage, widespread agreements about gender roles within marriage, a greater commitment to a lifelong marriage norm, and less individualistic attitudes toward family life.

These changes described above are commonly associated with the second demographic transition (SDT), which transformed the main features of household formation patterns (Smock, 2000; Surkyn & Lesthaeghe, 2004). The age at first marriage increased, with a postponement of fertility. Cohabitation and divorce rates,

and procreation in informal household arrangements, increased. Individual autonomy and expressive values connected to self-actualization became more widespread. As a consequence, there was a decline in the prevalence of a traditional family formation sequence in which adults first get married, then live together, and finally have children (Heuveline & Timberlake, 2004).

This cultural evolution diminished the earlier disapproval and stigma associated with cohabitation, and cohabitation was free to become widespread (Amato et al, 2003; Smock, 2000; Waite, 1995). Cohabitation is nowadays a common part of the life course of young individuals, and the majority of marriages and remarriages begin with cohabitation (Manning & Smock, 2005; Smock, 2000).

According to Manning and Smock (2005), cohabitation is normally a short experience of a few years, which finishes with the end of the relationship or with marriage. Individuals that cohabit tend to consider themselves as having a status between singles in a romantic relationship and married individuals. Cohabitors, when compared to married individuals, are less governed by consensual norms and/or formal laws; cohabiters are less integrated into social support networks, and tend to be more individualistic. However, as cohabitation is a heterogeneous institution and reasons to cohabit vary across settings (Philips & Sweeney, 2005), cohabitation might also be viewed as an alternative to marriage. That is, a long and stable relationship outside the legal confines of marriage.

Besides, individuals that cohabit tend to be different in some aspects than those who marry. The former tend to have lower socioeconomic status and health levels, and tend to be more liberal, less religious, and more supportive of egalitarian gender roles and nontraditional values. Married individuals show greater family orientation and commitment to their relationships, have more traditional views regarding family roles, and are less prone to divorce. In addition, married couples tend to be more homogamous in age, religion and race/ethnicity than those who cohabit. Moreover, children of divorced parents are more likely than others to cohabit (Dush et al, 2003; Musick & Bumpass, 2012; Smock, 2000).

Probably due to these above-mentioned characteristics, in general, cohabitation does not have the same enhancing effect on well-being as getting married (Frey, 2008; Smock, 2000). However, non-married couples tend to be as happy as married ones if they perceive that they have a stable relationship (Dolan et al, 2008) and intend to marry (Smock, 2000). Thus, given the heterogeneity verified

in marriages and cohabitations, Smock (2000) points out that researchers should pay closer attention to diversity when analyzing civil status, and alternative methods measuring the heterogeneity of cohabitation (and, if possible, marriage) should be implemented (Manning & Smock, 2005).

Dealing with this complexity, Heuveline and Timberlake (2004) proposed six hypothetical types of cohabitation. In places or population groups where cohabitation continues to be culturally not acceptable, it will attract very few people. This type of cohabitation was classified as “marginal (1).” Cohabitation could be a test for the relationship, that is, a “prelude to marriage (2),” or it could be viewed as a “stage in the marriage process (3).” Cohabitation could also be an “alternative to singlehood (4)” or an “alternative to marriage (5).” Finally, cohabitation could be “indistinguishable from marriage (6).”

According to these authors, these six types differ in some respects. First, they differ in the frequency of incidence in a society: low for the first and higher for the other five. Another feature that distinguishes these types is the proportion of cohabitations ending in marriage: high for the first three and low for the last three. The duration of the cohabitation spell, short for the first four and longer for the last two, is another aspect that differs between types. Besides, they contrast regarding the exposure of children to cohabiting parents. For the prelude to marriage and alternative to singlehood types, couples would avoid having children. Thus, for these two types and also for the marginal type, few children would live with cohabiters, whereas for the other types exposure would be higher.

Parenthood changes the individual's life in both positive and negative ways (Kohler et al., 2005; Margolis and Myrskylä, 2011). Thus, the relationship Partner + Children = Happiness (Kohler et al., 2005) is not a straightforward one, as having children in the household may increase or decrease well-being levels. Some authors empirically addressed the relationship between parenthood and happiness, and results differ depending on the context and methodology. Some observed positive correlations (Aassve et al., 2012; Slutzer & Frey, 2006), while others verified negative associations (Brown, 2003; Margolis & Myrskylä, 2011; Slutzer & Frey, 2006), or non-significant relationships (Aassve et al., 2012; Peiró, 2007).

Regarding marriage, cohabitation and parenthood, Surkyn and Lesthaeghe (2004) classified eight types of household arrangements according to non-conformist

or conformist values. Married individuals, especially those who had never cohabitated, tended to have a more conventional set of values. Married individuals without children and those who had previously cohabited were a little less conformist. Conversely, those who were single, those who cohabitated without children, and those who had been formerly in union but at the moment did not have a partner had a more non-conventional set of values. In between were those who cohabited and had children, and those who still lived in their parent's household.

Some authors discussed certain particularities of the Brazilian reality concerning these topics. According to Verona et al (2015), there are two main characteristics of union patterns in Brazil. First unions are earlier than expected. The strong role of family ties in promoting economic and social stability is one of the main reasons for this trend. Second, the proportion of informal unions in the country has recently grown substantially, in part because informal unions are less expensive than formal marriage. In this vein, Couvre-Sussai (2016) observed that consensual unions in Brazil had a different meaning than in developed countries. They had increased from 6.4% in 1960 to 36.4% of all unions in 2010, and they were particularly common among lower-income and less-educated couples. Moreover, she also described the striking increase in divorce rates, 500% from 1960 to 2010. Besides, fertility is below replacement level, and rates are still decreasing (Potter et al, 2010).

3 – THE HYPOTHESES OF THE STUDY

This paper investigates the relationship between marital arrangements and well-being for couples in Brazil. Other authors addressed similar topics (Corbi & Menezes-Filho 2006; Gori-Maia, 2013; Islam et al., 2009; Ribeiro, 2015); however, the objectives, database and methodology of this paper differ from all the above-mentioned studies. For instance, these studies compared married individuals with those who cohabit, like most analyses described in the previous section, but did not take into account the natural heterogeneity of both institutions.

Based on Heuveline and Timberlake (2004) and on Surkyn and Lesthaeghe (2004), as well as on idiosyncrasies of the Brazilian reality, specific classifications for household arrangements with couples were proposed, one for marriage and six for cohabitation. By proposing this classification, this paper could overcome some of the

limitations of studies that dealt with the dichotomy between marriage and cohabitation.

A first hypothesis of this paper is that, although in general married individuals might show higher well-being levels than those who cohabit, different types of cohabitation may influence well-being differently. Hence some types of consensual unions might enhance well-being as much as formal marriage, while others might not have this effect.

Moreover, taking into account the circular causality between well-being and household arrangements, a second hypothesis is proposed. Well-being differentials between household arrangements for couples might be small or nonexistent due to reverse causality when it is taken into account that happier individuals may be more likely to marry and stay married.

4 - METHODS

This section presents the methodology applied in the paper in five subsections. The first describes the database. The next presents how household arrangements were classified. The third presents how well-being is measured. The fourth introduces the explanatory variables. The last describes the empirical strategy of the paper.

4.1 - Data

The Social Dimensions of Inequalities Survey (henceforth SDIS) has as its main objective to evaluate life conditions in Brazil. The database contains information associated with demographics, moral values and habits, socioeconomic status, labor market participation, health and well-being. This database was previously used in studies addressing health issues, class mobility and education in Brazil (Flor et al, 2014; Laguardia et al, 2011, 2013; Ribeiro, 2014), all with different objectives and approaches than the one applied in this paper.

The survey interviewed 12,423 men and women aged 18 and over, household heads and (when present) spouses, in urban and rural areas of all five Brazilian macroregions, with the exception of rural areas of the North region. For this study, only individuals who were married or who lived informally with a significant other were selected. Those who declared they were single, separated/divorced or widowed were dropped from the analysis. Moreover, the sample was restricted to those

couples who provided information about both individuals. One couple was a homosexual one and it was dropped from the analysis in order to have a more homogeneous sample.

Amato et al (2003) and Dush et al (2008) analyzed couples where both spouses were no more than 55 years old. This paper uses a wider range of age. 111 couples had at least one member aged 80 and above, and these couples were dropped from the sample. The final sample size was 8,288 observations for 4,144 couples, all with a household head and a spouse in a heterosexual relationship. The information whether a person was classified as household head or spouse was not used in the empirical analysis.

Moreover, most studies address the determinants of well-being using individual and contextual variables. Perry-Jenkins and Claxton (2011) emphasized that the effect of parenthood on well-being is better understood if the analysis includes data from both individuals in the couples conjointly. This database enables the use of this information of the couple in order to evaluate the well-being of each partner.

4.2 – Household classifications for couples

The SDIS database contains information about individuals who considered themselves as living together or married, irrespective of being legally married. Another variable indicates the nature of the union: if they were united by a civil document and made a religious celebration; if they were united only by a civil document; if they were united only by a religious celebration; or if their union was consensual. In addition, the database records whether the union was the first one or not. A fourth variable used to define household arrangements was the time spent in the current union.

Finally, the database records whether the women had children, but does not indicate in which union the women had them. Thus, some assumptions were made. Women in higher order relationships possibly had some of their children in their previous relationships. Thus, the information for children is not considered for higher order unions. For women in a first relationship, even though the child might have been born in a previous fortuitous relationship, he/she possibly lived with the mother in her current relationship, especially when the relationship was short and the

children possibly young. The database has no information about men's children. For men the assumption is that for those in their first union, most children of the partner lived in the same household as the husband if the relationship was shorter than ten years.

Considering these variables, the individuals were initially classified in five categories. The married individuals are those united by a civil document with or without a religious celebration. Those who had only a religious celebration, but who considered themselves married, were classified as in a union indistinguishable from marriage (previous empirical analysis showed that this type of relationship was similar to marriage in many relevant aspects). Those who were united only by a consensual union, but considered themselves married, were classified as in a consensual marriage. Other individuals were classified as living together, as they did not have a civil document nor considered themselves married.

Based on the discussions presented in Heuveline and Timberlake (2004) and in Surkyn and Lesthaeghe (2004), already described in the previous section, and on idiosyncrasies of the Brazilian reality, which are presented in section 5, a classification for household arrangements for couples in Brazil was proposed: (1) Married/Indistinguishable from married; (2) Alternative to marriage I – Informal marriage/Living together during at least 10 years in a higher order union; (3) Alternative to marriage II – Consensual marriage/Living together during at least 10 years in a 1st union; (4) Alternative to marriage III – Consensual marriage/Living together for less than 10 years in a higher order union; (5) Stage to marriage I - Consensual marriage for less than 10 years in a 1st union with children; (6) Stage to marriage II - Living together for less than 10 years in a 1st union with children; (7) Alternative to singlehood or a prelude to marriage - Consensual marriage/Living together for less than 10 years in a 1st union without children.

Notice that the duration of the relationship, in addition to being used as a control in the econometric models, was also used to define household arrangement types. Thus, the link between household arrangements and well-being is also based on the relationship's duration, even when not taking explicitly into account the union's duration.

4.3 - Well-being variable

The SDIS directly addresses well-being with two variables: one associated with happiness and another with satisfaction with life, as in many other databases (Jorm & Ryan, 2014). In general, the determinants of both are quite similar (Helliwell, Layard & Sachs, 2016) and hence the most common procedure is to use only one of these variables. The use of both normally implicates in large and repetitive papers. Besides, the methodology would vary, as the happiness variable has fewer categories than the variable satisfaction with life. Thus, for the sake of brevity and clarity, the variable for satisfaction with life was the chosen one, initially with ten categories. Some categories were not numerous and after some aggregations, answers ranged from 1, *for totally unsatisfied with life*, to 8, *for totally satisfied*. Ordered logistic models with the same set of explanatory variables showed very similar results to OLS models. Thus, it was considered that the variable could be treated as continuous.

4.4 - Explanatory variables

Many factors are commonly considered amongst the determinants of well-being (Blanchflower & Oswald 2004; Dolan et al. 2008; Frey 2008; Graham 2008; Graham et al. 2011; Graham & Chattopadhyay, 2013; Graham & Crown 2014; Haller & Hadler 2006; Helliwell, 2003, 2006; Helliwell & Putnam, 2004; Kahneman et al. 2006; Yang, 2008). Among the individual attributes, the econometric models commonly include as controls age (continuous), aged squared (continuous), race (dummy) and sex (dummy). Among the socially developed characteristics, those included in many studies as well as in this paper were educational attainment (categorical), SES level (continuous), working load (categorical), health levels (categorical), and unemployment status (dummy). Features associated with attitudes and beliefs towards self/others/life were also included, such as specific religious affiliation, Catholic (dummy) or Pentecostal (dummy), and frequency of attending worship services (continuous). Besides, a dummy variable showing whether the individual had close friends or not was also incorporated into the models.

The partner's attributes might also impact on the person's well-being level (Townsend et al, 2001). The models included the following variables for the partner: health levels, unemployment status, working load, and the existence of close friendships. Differences between partners might also influence well-being levels. The

models included as controls the differences in age, religion, union order, educational level and race. Finally, the models included controls for urbanity and macroregion of residence. Most of these variables are commonly used in models addressing the determinants of well-being. In this paper they are used as controls and no further commentaries are made.

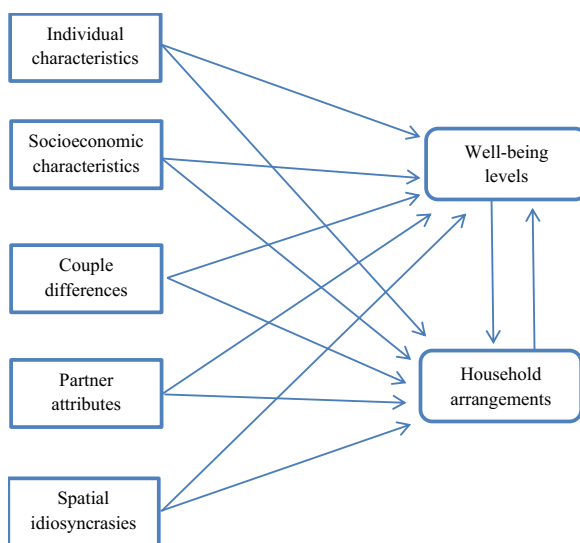
4.5 - Empirical strategy

The main objective of this paper is to analyze associations between well-being levels and different types of household arrangements for couples. However, household arrangements may influence well-being levels, and well-being levels may impact on household arrangements.

When possible, it is advisable to use longitudinal data in order to deal with questions related to endogeneity and causality. However, this type of data is not available in many settings, and when it is available normally sample sizes are rather small. Unfortunately, the data used in this paper is cross-sectional, as mentioned in the introduction; however, on the positive side, it has a quite large sample size.

In order to overcome some of the limitations imposed by endogeneity and the use of cross-sectional data, the following approach exemplified by figure 1 was used as a second-best solution. Individual and socioeconomic characteristics, differences between household head and spouse, partner attributes and spatial idiosyncrasies, mostly exogenous variables, influence household arrangements and well-being level. These last two, both endogenous, impact on each other: household arrangements influence well-being levels, and well-being levels impact household arrangements.

Figure 1 – Empirical model of the paper



This model relates well-being to household arrangements, both endogenous variables, and a set of exogenous variables. The following expressions exemplify this association:

- (1) $y_1 = f(y_2, x_1, \dots, x_n)$, where y_1 is household arrangements, y_2 is well-being level, and x_i are the n exogenous variables
- (2) $y_2 = h(y_1, z_1, \dots, z_k)$, where z_j are the k exogenous variables

Following Baum (2006), there are different reasons why endogeneity occurs and simultaneity, as described above, is one of them. Thus, an OLS estimator of either equation (1) or (2) would be biased. In similar settings, Angrist and Pischke (2009) believe that correlations can sometimes provide a good evidence of causal relation with the use of instruments. A basic procedure for instrumental variable modeling is the two-stage least square (2SLS); however, the usual 2SLS first stage should be a linear regression (Angrist and Pischke, 2009). If the dependent variable in the first stage is a binary variable and the conditional expectation function is non-linear, as suggested by these authors and used in Adams et al (2009), a probit model can be estimated, the fitted probabilities computed, and these probabilities used as

instrument in the second stage. This was the approach used in this paper in some of the econometric models.

Another point that should be emphasized is that the data used in this paper is for couples and observations are not independent (Hilpert et al, 2016; Kenny and Cook, 1999). Thus, econometric models that ignore the data's clustering in couples may produce misleading results (Guo, 2005). There are different methods that can be used to overcome this characteristic of dyadic data. Hilpert et al (2016) used multi-group latent change score modelling when analyzing longitudinal data for couples. Kenny and Cook (1999) presented a review of concepts and proposed different methods. When individuals in the couple are distinguishable, for instance in heterosexual relationships as in this paper, they suggested the use of multilevel modeling.

In this approach, individuals are the first level of the model and couples are the second. (For instance, see the studies of McMahon et al (2006), Raudenbush et al (1995) and Townsend et al (2001)). Given that there are only two individuals in a couple, it is often not feasible to estimate random effects for intercepts and slopes simultaneously. Moreover, random slopes may lead to severe convergence problems. Thus, random intercepts may be the best option for multilevel modelling with dyads. Besides, dyads in which both members have identical responses, as in general for household arrangements, do not contribute information for estimation (Kenny and Cook, 1999; McMahon et al, 2006). Thus, multilevel models were used while treating well-being as an outcome, as in equation (2), but not when treating household arrangement as the outcome, as in equation (1).

Based on this framework, the following three-step procedure was proposed for the empirical analysis: The use of different steps was an empirical strategy to test the robustness of the results. In the first step, equation (1) was estimated using multinomial logistic models. Then, a simplification of this equation having as dependent a dummy variable (0 – married/indistinguishable from married, 1 – Other informal unions) was estimated with instruments for well-being using the above mentioned procedure suggested by Angrist and Pischke (2009) and Adams et al (2009).

Step two addresses the reverse link described in equation (2), initially, applying standard linear models, then using multilevel models, and finally using instruments with the same simplification as in step one. Stata was used to perform both steps.

These first two steps are the benchmark for comparisons with step three, where both models were estimated interactively using R in two stages per round. In the first stage, multinomial logistic models associated with equation (1) were estimated as instruments. The predicted probabilities for each household arrangement were obtained and, based on these probabilities, households were randomly assigned in a specific household arrangement. Then a multilevel model representing equation (2) was estimated with these predicted values for household arrangements and the predicted values for well-being were obtained. Notice that by doing this procedure equation (1) was used as instrument for equation (2). This was the first round of estimates. A second round of analysis was done following the same procedure, but using the predicted values of well-being obtained in the first round as explanatory variable of the multinomial logistic model again representing equation (1).

This procedure was done 250 times and the first 50 were discarded. This process was inspired by the Bayesian approach (Lynch, 2006), and by discarding the first 50 rounds, the possible initial instability of the estimates is dwarfed by the posterior stability of the last 200 hundred estimates, indicating the robustness of the procedure. This is how the distributions and significance of the coefficients for equation (2) were obtained.

Then, in a second stage, the reverse link was estimated with a similar methodology, using equation (2) as instrument for equation (1), and the distribution and significance of the coefficients for equation (1) were obtained.

5 - DESCRIPTIVE ANALYSIS

This section presents descriptive statistics of the two variables of main interest of the paper, which are the variable for satisfaction with life and the categorization of household arrangements for couples. Table 1 presents the mean values and the standard errors for satisfaction with life for different groups in the population. The

statistical significances of the comparisons are included in the table. **M** stands for the larger value and **m** for the smaller. The use of these letters is not necessary when two samples are compared, as in the majority of the comparisons presented in this table. However, when multiple samples are compared, it is useful to use this procedure. In order to follow the same procedure of comparisons for both types of tests, the **M** and **m** letters were used for all comparisons.

Different tests were used when comparing two samples, always using 5% as p value: t-test, and effect size tests, such as Cohen's d, Hedges's g and other measures with and without bootstrap replications when normality is not assumed. All of them present as default in Stata. Results did not differ much between them, and only the differences that were statistically significant in all of them are showed in the tables as such. Comparisons of three or more groups were done with a one way ANOVA with a Bonferroni ad-hoc test.

The mean value for satisfaction with life (variable that ranges from 1 to 8) for all individuals in the sample was 5.48. Married individuals were systematically more satisfied with life than individuals living together, respectively with mean values of 5.56 and 5.30. Those in their first union tended to be more satisfied with their life than those in higher order unions; however, differences were small (5.49 and 5.43, respectively) although statistically significant.

Nonetheless, differences regarding first and higher order unions might be different for married couples than for couples living together. The following lines in the table show the results for the four possibilities of comparisons concerning married couples/couples living together and 1st union/higher order unions. Married individuals in a first union were more satisfied with life than those living together in a first union (comparison 1). However, the same comparison for higher order unions did not show any statistically significant difference (comparison 2). Married individuals in their first union tend to report satisfaction with life equal to that reported by those married in higher order unions (comparison 3). Similarly, those living together in higher order unions report satisfaction with life equal to that reported by those living together in their first union (comparison 4). These results indicate different dynamics for married couples and couples living together for the first and for higher order unions. In general, married individuals tend to be more satisfied with life. Conversely, individuals living together in their first union tend to be the least satisfied. For those in

higher order unions, differences between cohabitation and marriage are non-significant.

Concerning the duration of the union, it was observed for all of them that those in longer unions were more satisfied with life than those in a union with duration between 10 and 20 years. A U-shaped pattern is slightly suggested. The same analysis was done only for the first union and only for higher order unions. For the first union, a slight U-shaped tendency, is observed, but the differences are non-significant. For the higher order union, the results suggest a decline in satisfaction with life for relationships longer than 10 years, indicating that novelty plays a larger role in defining well-being.

For comparisons between those with and without children for different types of arrangements, all differences were statistically insignificant, and for the sake of brevity, the results are not shown.

These results indicate that married individuals tend to be more satisfied than those in informal arrangements in general. When different types of cohabitation are analyzed, only some of them show this reduced satisfaction, as some others show non-significant differences with married couples.

Table 1 – Mean values for satisfaction with life for different groups in the population

Population group	Mean satisfaction with life (with weights)	Standard error (without weights)
All	5.48	.021
Living together	5.30 ^m	.042
Married	5.56 ^M	.024
Higher order unions	5.43 ^{m1}	.055
First union	5.49 ^{M1}	.023
Living together (first union)	5.25 ^m	.051
Married (first union)	5.56 ^M	.025
Living together (higher order unions)	5.39	.072
Married (higher order unions)	5.51	.085
Time in union		
All unions		
0 to 9	5.64	.042
10 to 19	5.39 ^m	.042
20 +	5.57 ^M	.034
First union		
0 to 9	5.59	.048
10 to 19	5.41	.070
20 +	5.58	.035
Higher order unions		
0 to 9	5.76 ^M	.082
10 to 19	5.28 ^m	.107
20 +	5.34	.132
Proposed categorization		
Married/Indistinguishable from married	5.56 ^{M1}	.025
Alternative to marriage I – Informal marriage/Living together during at least 10 years in a higher order union	5.13 ^{m1 m2}	.095
Alternative to marriage II – Informal marriage/ Living together during at least 10 years in a 1 st union	5.24 ^{m1}	.060
Alternative to marriage III – Informal marriage/Living together for less than 10 years in a higher order union	5.64 ^{M2}	.093
Stage to marriage I - Informal marriage for less than 10 years in a 1 st union with children	5.33 ^{m1}	.096
Stage to marriage II - Living together for less than 10 years in a 1 st union with children	5.60	.171
Alternative to singlehood or a prelude to marriage - Consensual marriage/Living together for less than 10 years in a 1 st union without children	5.40	.143

Note: The standard errors were obtained in t-tests.

These results so far presented were used conjointly with the discussions in Heuveline and Timberlake (2004) and in Surkyn and Lesthaeghe (2004) to propose the categorization of household arrangements for couples used in this paper into

seven different types, as already detailed in the previous section. Table 1 also shows the mean values for satisfaction with life for each group. Notice in comparison 1 that married/indistinguishable from married (henceforth married) couples were more satisfied with life than couples whose living arrangements were described as alternative to marriage I – Consensual marriage/Living together during at least 10 years in a higher order union, or alternative to marriage II – Informal marriage/ Living together during at least 10 years in a 1st union, ,or stage to marriage I - Consensual marriage for less than 10 years in a 1st union with children. Couples whose unions were described as alternative to marriage III – Informal marriage/Living together for less than 10 years in a higher order union, stage to marriage II - Living together for less than 10 years in a 1st union with children, and alternative to singlehood or prelude to marriage - Informal marriage/Living together for less than 10 years in a 1st union without children, showed non-significant differences when compared to married couples. A second comparison showed that couples whose unions were classified as alternative to marriage III had higher values for satisfaction with life than couples in the model called alternative to marriage I, and that differences between the former and the other types of arrangements were non-significant.

The seven types of household arrangements for couples in Brazil differ in well-being level as well as in many other aspects. Table 2 sets out different characteristics of the proposed categories. Married individuals were the most numerous group among the six types, representing more than 50% of the total. (Notice that some numbers are odd, which may seem strange, as the data is for couples. However, household heads and spouses may answer the questions used to classify household arrangements for couples differently). Married individuals tended to be in longer-term relationships and were older. A greater proportion of them were white, and they tended to have lower unemployment rates and higher socioeconomic status. Moreover, they attended religious meetings more often, and a greater proportion of them were Pentecostals and had lived with a father and a mother when they were adolescents. Possibly they had more conformist views. Health and schooling levels showed intermediate figures, and not higher values as initially expected; this is to a great extent because of age, as they are older. Notice that married individuals were most likely to report having a close friend, suggesting a more effective social network for those individuals.

Those in a relationship classified as alternative to marriage I or II, informal unions during at least 10 years in first or higher order relationships, (2) and (3), had relationships with similar duration to married couples, mostly due to how these groups were defined. That is, they were truly in a relationship alternative to marriage, not in a short-term relationship ending in breakup or marriage. Those in relationships classified as alternative to marriage I had a similar age to those who were married, while those in alternative to marriage II relationships were slightly younger. Both showed smaller proportions of whites and had lower levels of education, lower wages, and higher unemployment rates. That is, those in alternative to marriage I and II relationships had a lower socioeconomic status than those who were married. Moreover, the proportions of Catholics were greater, the proportions of Pentecostals were smaller, the frequency of religious attendance was lower and the proportions who had lived with their fathers and mothers in adolescence were smaller, suggesting that they were less conservative. In addition, the proportion who had close friendships was smaller, indicating a less effective network. Finally, health levels seemed slightly lower when age effects are taken into account.

Those in a relationship classified as alternative to marriage III - Informal marriage/Living together for less than 10 years in a higher order union (4), when compared to alternative to marriage I - Informal marriage/Living together during at least 10 years in a higher order union (3), by construction, were in a shorter relationship, and as a consequence were younger. To a great extent, this difference in mean age explains the differences in health, unemployment and schooling levels. These groups were quite similar in other aspects, such as ethnicity, proportion who had lived with both father and a mother as adolescents, and religious affiliation. However, they differed remarkably in income, and the existence of a close friend, those in unions described as alternative to marriage III having much higher values. This suggests that a greater proportion of those in a higher order short spell informal union with higher income will end up marrying.

Table 2 – Mean values for different variables for different household arrangements

Variables	Household arrangement							Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	
Sample	5431	505	1121	486	441	114	190	8288
Expanded sample	5587	468	1079	452	413	109	180	8288
Duration	22.9	20.5	20.3	7.6	7.9	8.2	6.5	20.1
Age	48.9	48.9	39.8	38.3	28.3	28.8	27.5	45.4
White	52.6	41.8	35.7	43.6	37.1	47.6	45.3	48.3
Health	2.89	2.60	2.92	2.92	3.24	3.36	3.60	2.92
Unemployment	2.29	4.08	5.34	5.11	8.67	9.42	12.51	3.57
Income	1711	992	996	1801	876	1066	1158	1519
Schooling	7.9	6.2	7.1	7.4	8.9	9.1	10.9	7.8
Father/mother	78.9	66.8	70.2	63.5	61.3	63.8	67.4	74.9
Close friendship	62.0	50.8	51.0	59.2	55.1	49.4	59.1	59.2
Catholic	62.5	66.1	67.5	63.9	64.5	72.4	68.5	63.8
Pentecostal	17.9	14.4	11.0	15.1	9.6	15.1	12.7	16.1
Frequency	3.07	2.72	2.60	2.48	2.61	2.55	2.39	2.92

Note: (1) Married/Indistinguishable from married; (2) Alternative to marriage I – Informal marriage/Living together during at least 10 years in a higher order union; (3) Alternative to marriage II – Informal marriage/ Living together during at least 10 years in a 1st union; (4) Alternative to marriage III – Informal marriage/Living together for less than 10 years - higher order union; (5) Stage to marriage I - Informal marriage for less than 10 years in a 1st union with children; (6) Stage to marriage II - Living together for less than 10 years in a 1st union with children; (7) Alternative to singlehood or a prelude to marriage - Informal marriage/Living together for less than 10 years in a 1st union without children.

The types stage to marriage I and II, (5) and (6), are short spell informal unions with children. They differ because the first considered themselves to be married and the others believed that they lived together with the significant other. At first, it was expected that the first would show a greater resemblance to legally married couples, but differences are not great between these groups in most variables; however, they differ quite remarkably in three variables. The second type of relationship shows greater proportions of whites, Catholics and Pentecostals. These results suggest that these three groups consider that a formal marriage differs greatly from cohabitation. That is, if they are not formally married they do not consider they are married.

The comparison between alternative to singlehood/a prelude to marriage (7) and the types stage to marriage I and II, (5) and (6), although all relationships are of short duration and individuals have similar ages, show some differences besides the existence or absence of children in the household. The first were healthier, had larger incomes, were more educated, were more likely to have lived with father and mother as adolescents, had close friendships in greater proportions and attended religious services less frequently. These results suggest that the group whose living arrangements were described as alternative to singlehood/a prelude to marriage has

a higher socioeconomic status and its members will migrate to other types of relationship, selectively choosing formal marriage, to a greater extent than those with living arrangements described as stage to marriage I and II.

This section presented some descriptive statistics, including a presentation of well-being levels for different household arrangements and a discussion on distinctions between these arrangements regarding different characteristics. The next section presents the results of the econometric models with a controlled analysis.

5 – ECONOMETRIC MODELS

This section is divided in three subsections. The first present the results for equation (1) with a multinomial model and a probit model with continuous endogenous regressors. The second shows the results for equation (2) with standard linear models, a multilevel model and an instrumental variable model. These sections are the benchmark for the discussion of the third subsection, which presents the two equations estimated interactively with instruments.

5.1 - Multinomial logistic models and Probit model with continuous endogenous regressors

This subsection shows the results of a multinomial logistic model and and probit model with continuous endogenous regressors addressing equation (1). Table 3 shows the coefficients for both models comparing the propensity for belonging to each type of household arrangement when compared to married individuals. Controls for age, race and place of residence, and for differences between spouses in age, race, religion and schooling level were included in the models. However, as they are not the focus of this study, results are not shown.

Some general trends are noticed in both models. All coefficients for the Catholic dummy were non-significant. Catholics are the main group in the Brazilian population and they tend to resemble the whole population in the country (Coutinho and Golgher, 2014). Those with higher level of SES, who attended religious services more often, who had lived as adolescents in a household with father and mother, and who had a spouse who had lived as adolescent in a household with father and mother, showed a greater propensity for being married, as coefficients were mostly negative and significant.

These results indicate, as previously mentioned, that cohabitation is particularly popular in Brazil among the lower-income strata of the population. Besides, those who go to religious services with a greater frequency tend to be more conservative. In addition, the experience of adolescent life in the household seems to matter.

More specific results were also noticed. Those with some tertiary education showed a lower propensity for being in alternative to marriage cohabitations for long spells, (1) and (2), than for being married. Regarding schooling levels, even controlling for age, those with higher levels of formal education had greater propensity for being in unions as stage to marriage or alternative to singlehood/a prelude to marriage, and a lesser propensity for being in the types labeled as alternative to marriage. These results suggests that some people in relationships classed as a stage to marriage or alternative to singlehood/a prelude to marriage with higher levels of formal education may be more likely to marry than those with lower levels of schooling, who might continue in cohabitation as an alternative to marriage.

Pentecostals showed a smaller propensity for being in an alternative to marriage II – Informal union during at least 10 years in a 1st union or in a stage to marriage I with Informal marriage in a first union with children, indicating a greater conservativeness when in a first union. Moreover, Pentecostals show smaller propensities for being in an informal first order long-term union, probably because they formally marry. Besides, they show lower propensity to be in a short-term informal union with children and consider themselves married.

Table 3 – Multinomial logistic model analyzing equation (1)

Variables	Model 1 – Multinomial logistic model						Model 2 – Probit model with IV
	Alternative to marriage I - Informal union during at least 10 years in a higher order union	Alternative to marriage II - Informal union during at least 10 years in a 1 st union	Alternative to marriage II - Informal union during less than 10 years in a higher order union	Stage to marriage I - Informal marriage for less than 10 years in a 1 st union with children	Stage to marriage II - Living together for less than 10 years in a 1 st union with children	Alternative to singlehood or a prelude to marriage - Informal union for less than 10 years in a 1 st union without children	Informal union
Satisfaction with life	-0.0708** (0.0199)	-0.0533 (0.0274)	-0.0212 (0.0431)	-0.123** (0.0308)	-0.0603 (0.0625)	-0.145* (0.0607)	-0.293** (0.0398)
SES	-0.0500** (0.0191)	-0.0542** (0.0140)	-0.0778** (0.0100)	-0.0869** (0.0170)	-0.0881* (0.0388)	-0.0330 (0.0287)	-0.0119* (0.00538)
No education	Reference	Reference	Reference	Reference	Reference	Reference	Reference
Less than fund.	-0.169 (0.108)	-0.330* (0.155)	-0.310* (0.151)	0.194 (0.316)	0.101 (0.524)	-0.133 (0.507)	-0.176** (0.0542)
Elementary	-0.123 (0.176)	-0.230 (0.144)	-0.167 (0.216)	0.917* (0.374)	0.311 (0.520)	0.807 (0.452)	-0.102 (0.0657)
High school	-0.753 (0.814)	-0.622** (0.236)	-0.0337 (0.236)	0.153 (0.328)	-0.503 (1.117)	1.067** (0.390)	-0.270* (0.108)
Some tertiary	-0.354** (0.137)	-0.652** (0.176)	-0.321 (0.197)	0.617 (0.321)	0.127 (0.518)	1.075* (0.420)	-0.242** (0.0639)
Catholic	0.0391 (0.133)	0.198 (0.186)	-0.0268 (0.205)	0.0668 (0.189)	0.675 (0.488)	0.441 (0.427)	0.0644 (0.0580)
Pentecostal	-0.149 (0.200)	-0.436* (0.178)	-0.0745 (0.223)	-0.974** (0.225)	-0.0315 (0.582)	-0.0628 (0.314)	-0.118 (0.0675)
Frequency of religious attendance	-0.303** (0.0550)	-0.246** (0.0492)	-0.438** (0.0806)	-0.369** (0.0669)	-0.327** (0.0879)	-0.497** (0.0885)	-0.143** (0.0204)
Lived w. f/m	-0.380** (0.0855)	-0.173 (0.0926)	-0.454** (0.0818)	-0.425** (0.152)	-0.418* (0.187)	-0.252 (0.198)	-0.209** (0.0386)
Partner lived w. f/m	-0.480** (0.103)	-0.302** (0.0721)	-0.498** (0.113)	-0.446** (0.128)	-0.318 (0.189)	-0.225 (0.162)	-0.234** (0.0387)
Constant	-3.855** (1.031)	0.946 (0.582)	1.254 (0.836)	7.357** (0.886)	1.976 (1.461)	8.619** (1.465)	3.800** (0.225)
Observations	7,430						6,323
Pseudo R ²	0.1862						
Log likelihood							-16069.867

Controls for age, race and place of residence.

Controls for differences between spouses in age, race, religion, and schooling level.

** p<0.01, * p<0.05

For IV model: Wald test of exogeneity, prob = 0.0000

These results for controls indicate that married individuals differ in some aspects from those in informal unions, as discussed in the theoretical section. However, the paper focuses on the coefficients for satisfaction with life. For the probit model it was negative and significant, indicating that more satisfied individuals showed greater propensity of being married. However, as shown in the multinomial model, the coefficients were negative and significant for three categories and non-significant for the other three. Those less satisfied with life were more likely to be in a

cohabitation of longer than 10 years in a higher order union, in a short spell Informal marriage in a first union with children, or in a relationship described as alternative to singlehood/a prelude to marriage. Those in informal unions during at least 10 years in a first union, in informal unions for less than ten years in a higher order union, and those living together for less than ten years with children showed the non-significant coefficients.

The results in this subsection showed that individuals in different household arrangements differ in many aspects, even in a more controlled analysis. Satisfaction with life may influence how individuals choose their household arrangement. Comparing alternative to marriage I and II, the results suggest that those in their first union might be a positive selection of those who were initially in a short spell first order informal union. A comparison between alternative to marriage I and alternative to marriage III suggest that novelty plays a decisive role in higher order unions. The results of stage to marriage I and II indicate that those who consider themselves married and are not formally married are negatively selected in terms of satisfaction with life: a second best solution. Finally, the results for people whose unions were classed as alternative to singlehood/ a prelude to marriage indicate that they are also negatively selected when compared to married individuals, as those who are more satisfied with life are more likely to marry.

5.2 - Standard linear models, hierarchical models and IV models

This subsection addresses equation (2) with five models. The first three models were estimated by OLS, and vary according to the set of explanatory variables (models 1 – 3). Given that the data contain couples and observations violate the assumption of independence, a multilevel model (model 4) was estimated with the same set of explanatory variables as model 3. In the hierarchical model couples are the second level. Moreover, given that household arrangements are endogenous, an IV model was estimated (model 5), also with the same set of covariates. Again controls were included in the models, as described in bottom of the table, and results are shown only for selected variables: besides those which are the focus of this study, those with data for individuals and partners.

Some general trends were observed when comparing the five models. Healthy and employed individuals and those who had close friends were more satisfied with life. These findings are not new, and were observed in previously mentioned studies.

The individual's workload showed mostly non-significant coefficient, suggesting that this is not a main determinant for life satisfaction.

As mentioned, one of the advantages of this study was the possibility of analyzing both individuals in the couple. The model incorporated some variables pertaining to the partner. Individuals whose partners were employed and had higher levels of health were more satisfied with life, suggesting a better interaction between spouses. The coefficients for the dummy indicating whether the partner had close friends and for the categorical variable for the partner's work load were non-significant. That is, health levels and employment status of both individuals in the couple were correlated with well-being, whereas for close friendship only the individual's status seems to matter.

Focusing on variables for union type in models 1 and 2, four coefficients were negative and significant. Model 3 includes more controls and only two coefficients were negative and significant: for alternative to marriage I - Informal union during at least 10 years in a higher order union in a 1st union and for stage to marriage I - Informal marriage for less than 10 years in a 1st union with children, showing that individuals in these types of unions, even including a greater set of controls, were less satisfied with life than married individuals. However, notice that after controlling for the dependence of the data for couples in model 4 all coefficients were non-significant. Model 5 showed that when the probability of being in an informal union was instrumentalized, the coefficient was positive and significant.

The results in table 3 indicate that married individuals show higher levels of well-being in poorly controlled models. In models with more controls which take into account the non-independence of the data for couples, differences were non-significant. Finally, if the propensity of being in an informal relationship is instrumentalized, the coefficient was even positive and significant.

Table 4 – Standard linear and multilevel models analyzing Equation 2

Variables	Model 1 – OLS	Model 2– OLS	Model 3– OLS	Model 4 – Multilevel	Model 5 – IV
Married/Indistinguishable from married	Reference	Reference	Reference	Reference	Reference
Alternative to marriage I - Informal union during at least 10 years in a higher order union	-0.374** (0.102)	-0.317** (0.0968)	-0.237** (0.0757)	-0.199 (0.107)	-
Alternative to marriage II - Informal union during at least 10 years in a 1 st union	-0.320** (0.0769)	-0.265** (0.0829)	-0.144 (0.0756)	-0.139 (0.0814)	-
Alternative to marriage II - Informal union during less than 10 years in a higher order union	-0.0236 (0.130)	0.0449 (0.137)	0.0141 (0.151)	0.00551 (0.113)	-
Stage to marriage I - Informal marriage for less than 10 years in a 1 st union with children	-0.412** (0.120)	-0.337** (0.117)	-0.289* (0.125)	-0.230 (0.125)	-
Stage to marriage II -Living together for less than 10 years in a 1 st union with children	-0.248 (0.190)	-0.186 (0.194)	-0.0782 (0.238)	-0.0821 (0.203)	-
Alternative to singlehood or a prelude to marriage - Informal union for less than 10 years in a 1 st union without children	-0.433* (0.172)	-0.408* (0.159)	-0.243 (0.195)	-0.234 (0.184)	-
Informal union	-	-	-	-	0.803* (0.404)
Very poor health	Reference	Reference	Reference	Reference	Reference
Poor health	0.623** (0.104)	0.600** (0.0917)	0.665** (0.125)	0.668** (0.0994)	0.676** (0.102)
Regular health	0.849** (0.120)	0.787** (0.107)	0.832** (0.132)	0.836** (0.100)	0.855** (0.104)
Good health	1.020** (0.142)	0.912** (0.117)	1.050*** (0.114)	1.050*** (0.115)	1.087*** (0.120)
Very good health	1.239*** (0.128)	1.144*** (0.115)	1.290*** (0.112)	1.303*** (0.120)	1.331*** (0.125)
Partner with very poor health	Reference	Reference	Reference	Reference	Reference
Partner with poor health	0.184 (0.126)	0.156 (0.117)	0.101 (0.146)	0.0935 (0.0973)	0.107 (0.0995)
Partner with regular health	0.262 (0.139)	0.194 (0.115)	0.233 (0.143)	0.228* (0.0978)	0.242* (0.101)
Partner with good health	0.268 (0.175)	0.159 (0.145)	0.294 (0.142)	0.291** (0.113)	0.311** (0.117)
Partner with very good health	0.410** (0.141)	0.311* (0.116)	0.403** (0.134)	0.381** (0.117)	0.423** (0.121)
Unemployed			-0.377* (0.141)	-0.413** (0.122)	-0.482** (0.132)
Partner is unemployed			-0.509** (0.178)	-0.489** (0.121)	-0.653** (0.138)
Daily workload less than 4 hours			0.117 (0.0917)	0.111 (0.0654)	0.130 (0.0676)
Daily workload between 4 and 7 hours			0.0852 (0.0749)	0.100 (0.0827)	0.0903 (0.0844)
Daily workload 8 hours			Reference	Reference	Reference
Daily workload more than 8 hours			0.0123 (0.0556)	0.0162 (0.0720)	-0.00573 (0.0739)
Partner's daily workload less than 4 hours			-0.000912 (0.0652)	0.0140 (0.0634)	-0.00110 (0.0654)
Partner's daily workload between 4 and 7 hours			0.00532 (0.0865)	0.00262 (0.0835)	0.00236 (0.0852)
Partner's daily workload 8 hours			Reference	Reference	Reference
Partner's daily workload more than 8 hours			-0.0258 (0.0943)	-0.0267 (0.0723)	-0.0327 (0.0740)
Close friendship			0.152* (0.0700)	0.162** (0.0481)	0.161** (0.0515)
Partner with close friendship			0.0409 (0.0624)	0.0457 (0.0480)	0.0745 (0.0532)
Constant	4.904** (0.219)	5.001** (0.298)	4.905** (0.591)	4.951** (0.413)	3.666** (0.619)
Controls for age, race and sex, place of residence	Yes	Yes	Yes	Yes	Yes

Controls for SES and schooling attainment	No	Yes	Yes	Yes	Yes
Controls for religious affiliation and frequency of religious observance	No	No	Yes	Yes	Yes
Controls for differences between spouses in age, race, religion and schooling level	No	No	Yes	Yes	Yes
Observations	8,286	8,251	6,323	6,323	6,323
R-squared	0.034	0.044	0.071		0.069
Log likelihood				-12609	

For OLS models: Robust standard errors in parentheses
 For multilevel model: LR test vs. linear regression, prob = 0.0000.
 ** p<0.01, * p<0.05

The results in tables 3 and 4 suggest that the causal relationship between well-being and household arrangements is stronger for equation (1) than for equation (2). That is, apparently individuals with higher levels of well-being are more likely to marry or stay married, while the reverse link is weaker or non-significant.

5.3 – Multinomial logistic models and multilevel models estimated interactively

Subsection 5.1 showed the results for equation (1), while subsection 5.2 showed the results for equation (2). These results are the benchmark for comparisons with this third subsection. Table 5 shows the results for equation (1) and should be compared with table 3, while table 4 should be compared with table 6.

Table 5 shows the mean value for the distribution of the 200 last estimated coefficients for satisfaction with life in the multinomial logistic model. The table also shows the proportion of coefficients that were significant at 1% and at 5%.

Notice that all coefficients in table 3 for the multinomial model were negative, but only three were significant. In table 5, four of them were negative and significant in 100% of the rounds: the coefficients for long-term alternatives to marriage I and II, for stage to marriage I, and for alternative to singlehood/ a prelude to marriage. The other two were non-significant. That is, the estimates in tables 3 and 5 are quite similar, suggesting a causal link between the level of well-being and the propensity to belong to certain types of household arrangement.

Table 5 – Multinomial logistic models – Results for the coefficients for satisfaction with life

Household arrangement	Mean	% significant	
		p < 0.01	p < 0.05
Alternative to marriage I - Informal union during at least 10 years in a higher order union	-0.21	100	100
Alternative to marriage II - Informal union during at least 10 years in a 1 st union	-0.14	100	100
Alternative to marriage II - Informal union during less than 10 years in a higher order union	-0.09	0	0
Stage to marriage I - Informal marriage for less than 10 years in a 1 st union with children	-0.30	100	100
Stage to marriage II -Living together for less than 10 years in a 1 st union with children	-0.11	0	0
Alternative to singlehood or a prelude to marriage - Informal union for less than 10 years in a 1 st union without children	-0.30	100	100

Controls individual's features, partner's characteristics, for place of residence.

In the hierarchical model (model 4) in table 4, all coefficients for household arrangement were non-significant. Table 6 shows the results for these same coefficients for similar multilevel models estimated interactively. Notice that most coefficients were non-significant at 5% (For instance, 44% of the coefficients for alternative to marriage I were significant, that is, for 88 rounds), suggesting a weak link between household arrangements and well-being when endogeneity is taken into account. One exception was the alternative to singlehood/a prelude to marriage, with 100% negative and significant coefficients. That is, there is some evidence of causal links between unstable relationships like those in this type of household and lower levels of well-being.

Table 6 – Multilevel models – Coefficients for household arrangement

Household arrangement	Mean	% significant	
		p < 0.01	p < 0.05
Alternative to marriage I - Informal union during at least 10 years in a higher order union	-0.17	23	44
Alternative to marriage II - Informal union during at least 10 years in a 1 st union	-0.10	13	29
Alternative to marriage II - Informal union during less than 10 years in a higher order union	0.01	1	2
Stage to marriage I - Informal marriage for less than 10 years in a 1 st union with children	-0.16	10	28
Stage to marriage II -Living together for less than 10 years in a 1 st union with children	-0.10	1	10
Alternative to singlehood or a prelude to marriage - Informal union for less than 10 years in a 1 st union without children	-0.15	100	100

Controls individual's features, partner's characteristics, for place of residence, for differences between spouses in age, race, religion and schooling level.

6 – CONCLUSION

This paper investigated the associations between marital arrangements and well-being in Brazil, using the Social Dimensions of Inequalities Survey as a database. This database has some features that allowed specific analysis regarding this association. It has information about both individuals in a couple, hence this data could be used in order to evaluate the well-being of household heads and spouses. Besides, specific classifications for household arrangements of couples in Brazil were proposed, one for marriage and six for cohabitation, and hence the paper could empirically address the natural heterogeneity of both institutions in this study.

However, the database used in the paper is cross-sectional, and in order to overcome some of the limitations imposed by endogeneity, the following approach was used. First, a multinomial logistic model and a probit model with continuous endogenous regressors were estimated to analyze correlations between well-being and household arrangements. Then, standard linear models, a multilevel model and an IV model were estimated to address the reverse link. Finally, both links were estimated interactively, taking into account the circular causality between well-being and household arrangements.

A first hypothesis of the paper was that although in general married individuals might show higher well-being levels than those who cohabit, different types of cohabitation may influence well-being differently and some types of informal unions might be fully as well-being enhancing as formal marriage.

The empirical results corroborate this hypothesis. Married individuals did show higher levels of well-being than individuals in informal couples. However, when the natural heterogeneity of informal unions was taken into account, only some types of relationships showed this significant difference, while other types showed non-significant differences.

Moreover, taking into account the circular causality between well-being and household arrangements, a second hypothesis was proposed: well-being differentials between household arrangements for couples might be small or nonexistent when it is taken into account that happier individuals may be more likely to marry and to stay married.

The empirical results suggest that the link between well-being and some types of household arrangements was significant, whereas that between household arrangements and well-being was weaker, mostly non-significant. That is, it seems

that married people are more satisfied with their life than those in some specific household arrangements because individuals who are more satisfied with their life in some arrangements show a greater propensity to marry or stay married.

Different types of “alternative to marriage” were proposed: informal unions during at least 10 years in a higher order union, informal unions lasting at least 10 years in a 1st union, and informal unions lasting less than 10 years in a higher order union. However, the empirical results suggest that they are second best solutions for long-term formal relationships, mostly because individuals with higher level of well-being who were previously in these types of unions marry in greater proportion. Individuals whose unions were classified as ‘alternative to marriage III - informal union during less than 10 years in a higher order union’ did not show any significant difference when compared to married individuals. These results discussed so far for “alternatives to marriage” suggest that higher order informal unions are brighter in the beginning, and/or individuals with higher well-being level in higher order short-term relationships may marry in greater proportion after some time together.

Some other types of cohabitation were classified as a “stage to marriage”: a Informal marriage for less than 10 years in a 1st union with children, and living together for less than 10 years in a 1st union with children. The only difference between these types is that individuals in the first type, although in an informal union, considered themselves married, while those in the second group considered they lived together informally. The first group showed lower levels of well-being when compared to married individuals, while for the second group, differences were non-significant when compared to married individuals. An explanation for this finding is that more satisfied individuals who already considered themselves married tend to formally marry in greater proportion. This comparison suggests a difference in perspective between those who considered themselves married and those who considered they were living together. For the first, an informal union is a second-best solution, negatively selective regarding well-being.

Those in a relationship classified as alternative to singlehood/a prelude to marriage, that is, in an informal union for less than 10 years in a 1st union without children, showed significantly lower levels of well-being than married individuals, probably due to two factors: individuals with higher well-being levels tend to marry in greater proportion; and those in the alternative to singlehood type of union show lower levels of well-being because of the idiosyncrasies of the union, a less stable

short-term relationship with lower level of commitment and a less traditional view regarding family roles.

Finally, what are the implications of this study for future research? The empirical results showed that marriage presents some variability and cohabitation tends to be an even more heterogeneous relationship, and hence researchers should pay closer attention to diversity when analyzing civil status and its relation to well-being. Moreover, it is advisable to use longitudinal data in order to deal with questions related to causality. However, longitudinal data are not available in many settings. A longitudinal database could be built based on the findings of this paper, taking into account the natural heterogeneity of romantic relationships in Brazil that might resemble other developing countries. Besides, the empirical strategy applied here could be viewed as a second-best solution when longitudinal data is not available and could be applied in other settings. In additions, well-being levels are influenced by both individuals in a couple for some specific variables. Thus, an integrated perspective is advisable while implementing public policies.

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