# THE ECONOMIC AND SOCIAL DYNAMICS OF MARRIAGE AND BEHAVIOUR

## WITH A FOCUS ON YOUNG WOMEN IN EGYPT

Dina Abdel Fattah*

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*Assistant Professor, Department of Economics, the American University in Cairo.

**Abstract**

This paper examines the factors determining young married women's marital happiness. It explores economic, institutional and non-economic aspects and finds that economic and institutional variables, namely the labour market outcomes highly impact their marital happiness, while non-economic variables such as the number of children and the female's religiosity tend to be the main drive of marital happiness for young wives. The basis of the analysis is dependent on married females aged 15-29 years selected from the Survey of Young People for the year 2009. The dependent variable consists of the ordinal responses to a question on self-reported happiness at marriage. The model used is an ordered probit given the categorical nature of this variable. Main findings highlight the fact that the female's education and financial security in the household translated into asset ownership increase her happiness in marriage, while her employment, long hours of domestic chores and the husband's annual earnings lower this rate. In that sense, women economic empowerment policies need to give more attention to social policies with respect to the institution of marriage in order to provide a more enabling infrastructure for women.

**ملخص**

تبحث هذه الدراسة في العوامل التي تحدد السعادة الزوجية للشابات المتزوجات، وتستكشف الجوانب الاقتصادية والمؤسسية وغير الاقتصادية في هذا الصدد. ووجدت الدراسة أن المتغيرات الاقتصادية والمؤسسية، وتحديدا نتائج سوق العمل، تؤثر بشكل كبير على سعادتهن الزوجية، في حين أن المتغيرات غير الاقتصادية، مثل عدد الأطفال ودرجة تديُّن الإناث، تميل إلى أن تكون المحرك الرئيسي للسعادة الزوجية للزوجات الشابات. ويعتمد أساس التحليل على الإناث المتزوجات اللائي تتراوح أعمارهن بين ١٥ و ٢٩ عاما والمختارين من استطلاع الشباب لعام ٢٠٠٩. ويتألف المتغير التابع من الإجابات الترتيبية (ordinal responses) عن سؤال حول السعادة في الزواج. والنموذج المستخدم هو الوحدة الاحتمالية التراتبية (ordered probit) بالنظر إلى الطبيعة القاطعة لهذا المتغير. وتشير النتائج الرئيسية إلى أن تعليم المرأة وأمنها المالي في الأسرة المعيشية المترجمان إلى ملكية أصول يزيدان من سعادتها في الزواج، في حين أن عملها والساعات الطويلة من الأعمال المنزلية والدخل السنوي للزوج تخفض هذا المعدل. وعليه، تحتاج سياسات التمكين الاقتصادي للمرأة إلى إيلاء المزيد من الاهتمام للسياسات الاجتماعية المتعلقة بمؤسسة الزواج وذلك من أجل توفير بنية أساسية أكثر تمكينا للمرأة.

# I. INTRODUCTION

Existing literature on the economics of marriage is highly concerned with marriage as an end in itself. This focus, however, has not led to a consequential concern for the welfare of women after marriage. Therefore, beyond the economics of selection and marriage this paper looks into post-marriage quality.

The female's decision to join the marriage market in larger numbers when compared to the labour market has its own social implications. The social impact of this decision is measured through the impact this marriage has on the wife's welfare. A wife is an active member of society, so whatever impacts the wife will therefore have an impact on the husband as well as the children. Therefore, in a time of demographic bulge and with an echo of the bulge (a new baby boom), the environment where children are raised will affect their choices and therefore their subsequent social value.

Happiness research in general is an under-researched topic in the Arab world. Due to the dearth of empirical and economic analysis of wives' welfare and happiness in marriage, the marginal benefits from any empirical research on the topic is very high. Being informed about the economic and non-economic determinants of wives' welfare, with the consequences this has on the society at large, highly adds to the scarce literature on the topic.

The current analysis empirically investigates a number of questions on the impact of economic (wealth and time use) and institutional (labour markets, religions and social networks) determinants, pertaining to both the husband and the wife, on the marital happiness of young wives. Non-economic variables and inter-marital relationships reflecting on the quality of marital relationships are added to provide an analysis of the role of marriage institutions in understanding the marital happiness of young wives.

The paper makes use of a sample of married females aged 15-29 years selected from the Survey of Young People in Egypt (SYPE09). The main dependent variable is provided by ordinal responses to a question on self-reported happiness at marriage. Given this ordinal nature of the dependant variable, self-reported marital happiness is estimated in an ordered probit model.

The paper contributes two main findings on the economics of wives' marital happiness in Egypt. On the one hand, economic and institutional variables significantly impact marital

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[1] Cummings and Davies (2010) show the impact of marital happiness, especially of wives, on children's development, well-being, academic performance, social skills and inter- personal relationships.

happiness for wives. More specifically, education and labour market outcome and the time use of wives play significant roles in influencing the marital happiness of young wives. On the other hand, non-economic variables appear to play a more significant role in determining the marital happiness of young wives. These findings reveal that economic variables register as strong explanatory variables. However, marital institutions appear to be the main driver of happiness for young wives.

The paper proceeds as follows: Section 2 provides a literature review comprising a theoretical and empirical review of the topic. Section 3 provides the sample selected for analysis. Sections 4 and 5 provide the empirical methodology and the variables selection and summary statistics. Section 6 presents the empirical results. Finally, Sections 6 and 7 summarize the main findings and conclude.

## II. LITERATURE REVIEW

It has been well documented in the happiness literature that the marital status of individuals is found to be one of the most significant determinants of general happiness, resulting in a strong correlation between happiness and marriage (see, for example, Stutzer and Frey 2006; Stack and Eshleman 1998; MacKerron 2012; Conceição and Bandura 2008).

Marital happiness is a component of overall life satisfaction, affecting the physical and mental health of spouses. Marital happiness was used as a tool for analysing different psychological and sociological issues. Self-reported responses of individuals have been the main tool for measuring marital happiness.

Campbell, Converse, and Rodgers (1976) show that even though marital satisfaction and marital happiness are closely related and highly correlated, they are not synonymous. Accordingly, emotional evaluation of marriage is closely related to marital happiness as opposed to marital satisfaction.[2] Lewis and Spanier (1979) further show that marital quality is inclusive of both terms. Therefore, marital happiness is the personal evaluation component of overall marital quality.

Elmslie and Tebaldi (2014) note that empirical work on marital happiness is very scarce due to the very limited data availability in addition to the potential endogeneity[3] of the variable

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[2] Marital satisfaction measures the marriage circumstances against a standard benchmark.
[3] Endogeneity is presenting itself in the first place in the general relationship between marriage and general happiness. On the one hand, married people report being happier as compared to unmarried and single ones. On the other hand, a generally happier female is more prone to marriage as opposed to another female who is generally not happy in her life.

used. Therefore, when marital happiness, measured through self-reporting of the happiness status at a certain point in time is the main focus, more conclusive results are drawn when determinants are measured at that same point in time.

The empirical work studying the determinants of marital happiness for wives is scarce, with an even thinner literature that studies the combined impact of wives as well as husbands' characteristics (both economic and non-economic) on shaping the self-reported marital happiness of wives. A weak link has appeared in the literature between the allocation of husbands' time in the labour market and the happiness of wives. This link was only studied in relation to the returns to husbands' time spent in the labour market, i.e., their earnings. However, the relationship between earnings and marital happiness has not been expanded on, and the few available studies on this issue look mainly at the reasons behind the female employment in the developing countries.

Given the dearth of empirical work on marital happiness, even fewer studies, mainly psychological and/or behavioural ones, have been conducted for Egypt. Al-Attar and El-Gibaly (2014) report that the social environment in which couples live has tremendous effects on the marital life of the husband and the wife, with a particular focus on the role of co-residence with in-laws.

Mansour (2015) shows that multiple roles of wives, as parents, care providers, and employees, might result in accumulated stress affecting overall wellbeing. Moreover, on time allocation, Abdelfatah, Mohamed, and Moawad (2013) divided leisure activities into passive, social and active activities.[4] Time spent on the different activities defines the suffering of young people from psychological problems, or not.

Atta, Keller and Daly (2011) concluded that for a proper evaluation of the impact of wife's characteristics on her own marital happiness, they have to be studied within the context of the features relevant to the husband. In this context, Hendy (2011) has shown that attempting to study the labour force participation of wives involves the study of time allocation between market employment and household chores, not only for the wives but also for the husbands. Moreover, Hendy identified the lack of any literature (international, regional or Egyptian) relating husbands' characteristics to wives' general happiness, this being particularly the case for marital happiness.

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[4] The active activities encompassing physical activities, reading and internet use. Passive activities, on the other hand, involve relaxing, watching TV, listening to music, playing video games. Finally, social activities comprise spending time with family, relative and friends, chatting on the phone and dating.

The Egyptian literature has focused—in its very limited work on the economics of marriage—on the marital powers and the division of labour within and outside the household. However, this focus was not in the context of evaluating marriages nor the impact they have on the happiness of either spouse. It was mainly conducted for their labour market implications (Hendy 2015; Assaad and El Hamidi 2009).

The main contribution of the paper at the international level is providing insights through the use of economic and non-economic and time use variables and their contribution to marital happiness of the wives. On the local Egyptian level, this topic creates a first stream of literature on the marital happiness of young wives. Given the role of women in the household compared to that in the labour market and the pre-assumed role of marital happiness in the overall life satisfaction, it becomes more relevant to study the marital happiness of women along with other aspects of their labour market participation.
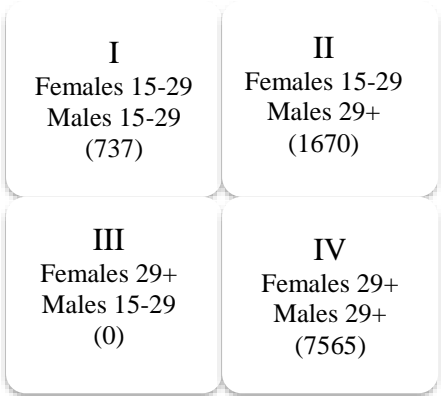
In light of the identified research gaps, the analysis of this chapter fills the gap in the literature through focusing on four main research questions on the role of institutions, the time use of women, residing with in-laws, and finally non-economic variables. The current analysis further adds to the existing literature and provides some insights that fill the literature gap on the role of husbands in shaping the marital happiness of the wives.

### III.    DATA AND SAMPLE SELECTION

The data used for the empirical investigation is drawn from a sample of young married females aged 15 to 29 collected from the Population Council's Survey of Young People in Egypt (SYPE09). Engaged females are excluded as well as females who are below the age of 15 due to the lack of experience on what defines happiness within marriage.

The second part of the analysis focuses on both wives and their respective husbands. Accordingly, married wives between the ages of 15 and 29 are only selected if their husbands are available in the surveyed sample as well. Therefore, 2407 couples, with wives aged 15 to 29 along with their husbands are selected for the preliminary analysis. Using the unique person, household IDs and the spouse code, 30 percent of the selected couples have both the husband and the wife within the same age range of 15 to 29. Figure 1 below shows the distribution of ages of married couples as per the general household survey.

**Figure 1. Defining Four Groups of Married Females**

| | |
|---|---|
| **I**<br>Females 15-29<br>Males 15-29<br>(737) | **II**<br>Females 15-29<br>Males 29+<br>(1670) |
| **III**<br>Females 29+<br>Males 15-29<br>(0) | **IV**<br>Females 29+<br>Males 29+<br>(7565) |

The survey is inclusive of a household questionnaire with general household information for all individuals regardless of their age. The individual questionnaire is directed to individuals only below the age of 29 (the definition of young people). Therefore, given research interest, groups III and IV are excluded due to the loss of information on the wives. Accordingly, groups I and II together provide the pooled sample.

Out of this pooled sample, 70 percent of wives are married to older husbands forming one early constraint for the current analysis. This category includes either females in their late 20s married to males in their early 30s, or females of any age between 15 and 29 married to males who are many years older. Three groups have been identified (the pooled and the two separate samples I and II) and are initially tested for structural differences, necessary to ensure representativeness of the selected sample.

## IV.    VARIABLES DEFINITION

### A.  *Dependent variable*

Amato and Hohmann-Marriott (2007) referred to the ordinal measure of marital happiness through the survey question "Taking things altogether, how would you describe your marriage?" In addition to the use of the person's own evaluation of his status, a number of other tools have been used in the literature to reflect on marital happiness. As an example, multiple scale questions were used to reflect both marital satisfaction and happiness.

Other measures exist in the literature but are mostly related to marital quality and marital satisfaction. the interest in this paper, however, is in the self-reported marital happiness at a particular point in time. Out of 7,021 females between the ages of 15 and 29, 2,879 (41 percent) report themselves as being currently married, and 2,704 (94 percent) report on their current

level of marital happiness through the answer to the question

"How would you describe your marriage? Would you say it is: 'Very happy', 'Happy', 'Neutral', 'Unhappy' or 'Very unhappy'?5

In addition, some observations have been dropped due to missing values reported on the key variables used in model estimation. Therefore, a final sample of 2,692 married females between the ages of 15 and 29 is used in the empirical analysis.

The key question on marital happiness was asked during an interview administered by a female interviewer to the female interviewee at a place of her choice inside the household, without the close presence of the husband. Other variables relating to marriage were administered during the same interview by the same person at the same place and point in time. This ensures the suitability of the data for the purpose of the analysis. All the questions used for the sake of this estimation are, therefore, reflective of the current status of the female at the same circumstances and point in time when the answer to the main dependent variable was provided.

The original dependent variable at hand is a 5-point scale variable. Table 1 below reveals the frequency distribution of the original 5-point scale marital happiness variable. Due to the low variation in responses at different categories, responses have been conflated into three main categories. The frequency distribution of the conflated dependent variable depicting marital happiness for young Egyptian females is represented in Table 1 below as well.

**Table 1. Frequency Distribution of the 5-point (left) and 3-point (right) Marital Happiness**

| Marital happiness | Frequency | Percent | Cum. | Marital happiness | Frequency | Percent | Cum. |
|---|---|---|---|---|---|---|---|
| Very unhappy | 27 | 1.0 | 1.0 | Not very happy (very unhappy, unhappy, neutral) | 465 | 17.27 | 17.27 |
| Unhappy | 53 | 1.97 | 2.97 | Happy | 1985 | 73.74 | 91.01 |
| Neutral | 385 | 14.3 | 17.27 | Very happy | 242 | 8.99 | 100 |
| Happy | 1985 | 73.74 | 91.01 | | | | |
| Very happy | 242 | 8.99 | 100 | | | | |
| | 2692 | 100 | | | 2692 | 100 | |

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5 The non-response rate is 6 percent. However, there is no systematic pattern observed between the females reporting on their marital happiness and those with missing observations.

## B. *Independent variables*

Waite, Luo and Lewin (2009) show that available models on marital satisfaction include, as controls, a set of demographic variables associated with marital status and psychological wellbeing, such as measures of race, sex, education in years, children, employment status and household income. However, factors affecting happiness may differ across cultures and are based on the exact question being under test.

Furthermore, Vanlaningham, Johnson, and Amato (2000) show that most cross-sectional studies[6] suggest a U-shaped relationship between marital happiness and years of marriage (for example, see Hamilton (1929); Rollins and Feldman (1970); Spanier and Lewis (1980); and Glenn (1990)).

Education, children, social capital, household division of labour, religiosity and interpersonal relationships are the main determinants of marital quality. In addition, household wealth[7] has proved to be significant in the marital satisfaction of couples.

Orthner and Mancini (1990) have further identified three types of leisure activities: individual, parallel and joint, based on the level of interaction between the spouses.[8] Positive association with marital happiness was only achieved with the joint leisure activities, a negative with the individual and an ambiguous with the parallel activities.

Accordingly, and given the lack of sufficient studies on marital happiness, the independent variables commonly used to measure marital satisfaction are employed in this model to address their use for explaining marital happiness as well.

## V. METHODOLOGY

Given the ordinal nature of the dependent variable, an ordered probit model is put to use (see, for example, McKelvey and Zavoina (1975)). The model is estimated once using only the

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[6] Longitudinal studies, on the other hand, involve following a group of couples or individuals throughout their lifetime. These types of studies are scarce in the literature due to the difficulty and the expenses involved in following the same individuals overtime.

[7] A physical assets index is commonly used by researchers as a proxy for household wealth (See, for example, Howe, Hargreaves, and Huttly (2008); and Alkire and Santos (2010)).

[8] The individual mainly refers to each spouse spending his leisure time totally independent of the other and not necessarily at the same time. In this extreme case, one spouse could be staying home or is at work, while the other is out with friends. Parallel, on the other hand, refers to the involvement of each spouse in a separate activity but within the same defined conditions. More specifically, parallel activities could refer to both spouses being out of the house but each is with his or her own friends, or both are in the house, with each one engaged in a different leisure activity. Finally, the joint is the involvement of the two spouses in the same activity together at the same place and point in time.

wives' characteristics. The model is then re-estimated with wives along with husbands' characteristics. However, prior to estimating the model with the characteristics of the husbands, the representativeness of the sample selected for analysis and the existence/lack of structural differences between the samples is examined and results are presented in Appendix A.

The observed dependent variable is Yi, i=1,...,n where n is the number of observations. The values of Yi are determined by a latent or unobservable variable Y*. The observable dependent variable is the married female's answers to the question: How would you describe your marriage? Would you say it is 0 ('not happy'), 1 ('happy') and 2 ('very happy')? A higher value means that the female is happier in marriage.

The outcome equation can be expressed as a function of a vector of explanatory variables (Xi) weighted by a vector of unknown parameters (ß) using the following relationship:

$$Y_i^* = X'_i\beta + U_i$$

where Ui is a normally distributed variable, with a variance normalised to 1. In this case, the observed Y is related to the unobserved Y* using θj as thresholds partitioning the real line into a series of regions corresponding to the various ordinal categories. The observable Y can take 3 distinct values, 0 ('very unhappy', unhappy and neutral),1 (happy) or 2 (very happy). Therefore, we have:

$$Y_i = 0 \ if -\infty < Y_i^* \leq \theta_0 = X'_i\beta + u_i \leq \theta_0$$
$$Y_i = 1 \ if \ \theta_0 < Y_i^* \leq \theta_1 = \theta_0 < X'_i\beta + u_i \leq \theta_1$$
$$Y_i = 2 \ if \ \theta_1 < Y_i^* \leq +\infty = X'_i\beta + u_i \leq \theta_1$$

where $U_i \sim N(0, \sigma^2)$

Now the probabilities of observing Y=0, 1 or 2 can be defined as follows, where $\Phi$ (.) refers to the cumulative distribution function operator for the standard normal:

$$Pr(Y = j) = \Phi(\theta_{j-1} - X'_i\beta) \qquad\qquad \text{for j=0,1,2}$$

Maximum likelihood estimation (MLE) is then used to estimate the above model, and the log-likelihood function is given as

$$L = \sum_{i=1}^{n} \sum_{j=0}^{2} \delta_{ij} Ln[\Phi(\theta_j - X'_i\beta) - \Phi(\theta_{j-1} - X'_i\beta)]$$

where $\delta_{ij}$ is an indicator variable=1 if the ith individual's response falls within the jth category, and =0 otherwise.

## VI. INDEPENDENT VARIABLES AND SUMMARY STATISTICS

### A. Independent variables

The variables selected for the analysis have been motivated by their use in the existing literature on this theme. General categories of variables are identified and adjustments, taking Egyptian culture into consideration, are addressed.

The following is a brief discussion of the variables used in the model, with a clear definition and summary statistics to follow.

- Education: reflects on the highest level of education attained at the time of the survey.

- Children: reflects on whether children exist for this wife or not. This variable avoids the commonly used number of children, and is motivated by the age of wives (15-29), the average length of marriage (5 years), and the prevalence of two children, if exists. This will not show much variation with respect to the number, therefore, a binary variable is used instead.

- Religiosity: represented using a variable reflecting whether the woman wears a veil (covering the hair only, the hair and face, or covering neither) in addition to the frequency of visiting worship place (a mosque or a church). The two variables together attempt to minimize any bias in the results possibly driven by endogeneity.

- Time allocation: a labour market job, household production/consumption and leisure/non-market activities. The wife's time spent on chores inside and outside the household are taken to represent the time allocated to the household. Furthermore, the time allocated to leisure activities represent the non-market time. However, due to the low employment rate of the sampled females (8 percent), it has not proven feasible to account for the labour market activity using a continuous time variable, so a binary variable reflecting the employment status of the female is used as a proxy for time spent in the labour market.

- Interpersonal relationships: A proxy for inter-marital relationship used in the current model is the ordinal response to the question: "Do you discuss your marital sexual relations with your husband? Do you say you 'Never', 'Often' or 'Daily' discuss them?"

- Wealth: a constructed asset index of the household the wife currently lives in at the time of the survey is used as a proxy of the wealth available to the wife. Details of the asset index construction are presented in Appendix B.

- Husband's labour market: Annual earnings[9] of the husband, in thousands of Egyptian pounds, the employment sector, commute time between the workplace and home, and the number of working hours per day are used to reflect on the labour market status of the husband.

- Husband's social networks: the number of friends the husband has reflects on the husband's social network.

- Husband's time use: the number of hours the husband spends on the same activities as the wives, labour market, household chores and leisure.

## B. *Summary statistics*

The independent variables chosen for this analysis have been highly motivated in the available literature on general happiness, satisfaction, quality of life or marriage. However, an additional list of economic and interpersonal variables is used to capture the uniqueness of the Arab context. Appendix Tables C.1 and C.2 provide the description and summary of the explanatory variables used in the current analysis as they pertain to the wife and the husband separately.

Demographic variables give early insights into the happiness of females in their marriages. With only 38 percent of the sample being urban residents, approximately 84 percent of them have reported being happy in their marriage. This proportion is very similar to the responses from rural areas. A similar proportion exists across governorates (Greater Cairo governorates and the rest of the governorates).

The percentage of married women reporting being happy in marriage is higher among wives with no children (92 percent) as compared to wives with children (82 percent). Moreover, an inverse relationship between the number of hours allocated to chores outside the house and marital happiness exists for the sampled wives.

The great dispersion in the time allocation between wives and husbands exists in the data. Husbands spend an average 0.08 and 0.07 hours on household chores inside and outside the house, respectively. However, an average of 5 hours is spent on leisure activities. Breaking down leisure activities into active, passive and social activities, it can be seen that the bulk of the time is spent on social activities.

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[9] As previously discussed, Egyptian society is known for being secretive when it comes to money, whether paid or received. Accordingly, annual earnings are considered a private matter and not easily shared with strangers. Therefore, a significant number of missing values exist for this variable, and this is the main reason behind the drop in the number of observations reaching 539 observations.

**Table 2. Pairwise Correlations: Marital Happiness and Main Covariates of Wife (left) and Husband (right)**

| Variables | Happy | Variables | Happy |
|---|---|---|---|
| Time since marriage | -0.16*** | Age | -0.02 |
| Children | -0.11*** | Age difference | 0.04 |
| Asset index | 0.14*** | Employment | 0.02 |
| Education | 0.17*** | Commute time | -0.01 |
| Veil | -0.02 | Working hours | 0.006 |
| Religious frequency | 0.07*** | Annual earnings | 0.02 |
| Trust | 0.01 | Time spent with friends | -0.01 |
| Discuss sexual life | 0.15*** | Trust | -0.01 |
| Employment | -0.02 | Leisure time | -0.01 |
| Leisure time | 0.05** | Chores inside the household | -0.03 |
| Chores inside the house | -0.06*** | Chores outside the household | -0.04 |
| Chores outside the house | -0.08*** | | |
| Financial autonomy | 0.06*** | | |

Notes: ***, **, * denote statistical significance at the 0.01, 0.05 and 0.10 level, respectively.

The correlation between the dependent and the independent variables provides a prelude to the econometric modelling and confirms the potential for an empirical relationship. Spearman's pairwise correlation between the three-point conflated marital happiness variable and the main covariates are presented in Table 2 above.[10]

Marital happiness of wives is significantly correlated with the main covariates used in the model. It is positively correlated with the household's asset index, the education of the wife, the frequency of visits to places of worship, inter-marital discussions, leisure time and financial autonomy. It is negatively correlated with having children and time allocation activities whether in terms of domestic chores or chores outside the house.

Wives' marital happiness, however, is not significantly correlated with any of the husbands' characteristics.

The correlations and the summary statistics lay the foundation for an analysis of the wives' own characteristics as well as the husbands' economic, institutional and time allocation variables on their own self-reported marital happiness. Econometric analysis, in the next section, provides a further detailed analysis of such relationships using the ordered probit model and a sub-sample of young wives selected for analysis.

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[1]  In addition to the correlations reported above, pairwise correlations between the independent variables (results are not reported here) show no significant strong correlations between the independent variables. Additionally, further test of multicollinearity, including spearman's ranking and PCA, was employed to confirm the absence of relationships between independent variables.

# VII.    RESULTS

The empirical results, based on estimating an ordered probit model, are reported in Table 4 below. The results of the conventional variables used in this type of modelling are in agreement with similar results found in the literature. However, a novel contribution of this paper is the use of variables not used in the literature to date. This adds a new dimension to this type of analysis.

## A. Wives Characteristics

The empirical work reported here confirms the relative importance of these variables in a regression model that already controls for the economic status and indicators. In particular, the impact of the quality of inter-marital relationships of marital happiness are more potent than the economic and demographic variables.

The estimated effects for the economic and institutional variables are found to be statistically significant. Specifically, household wealth, measured by the asset index, the wife's financial autonomy, and time use. The findings also suggest religion and social networks are determinants of happiness in marriage.

Other interesting social determinants of self-reported marital happiness is the place of residence and the time taken to marriage. This analysis goes beyond the empirical finding of delayed marriage among young women in Egypt, and actually focuses on the impact this delay, when exists, has on wives' welfare upon marriage. In addition, the nature of living arrangements on marriage (i.e., alone or with in-laws) also impacts happiness.

A further contribution of this paper is the use of non-economic indicators in determining marital happiness. Interpersonal and inter-marital relationships between the husband and the wife, controlling for economic and institutional variables, are found to significantly impact the self-reported marital happiness of people. This finding is in comport with the psychological and sociological literature (Bernard 1972) that concludes that debriefing, marital discussions and sexual relations enhance marital quality and is of more value to the wife.

**Table 4. Determinants of Marital Happiness: Standard Ordered Probit[1]**                                                       [1]

| Variable | Model 1 Coefficient (Std. errors) | Model 2 Coefficient (Std. errors) | Model 3 Coefficient (Std. errors) | Model 4 Coefficient (Std. errors) |
|---|---|---|---|---|
| Urban | -0.13** | -0.16*** | -0.16*** | -0.16*** |
| | (0.06) | (0.06) | (0.06) | (0.06) |
| Greater Cairo | -0.17** | -0.17** | -0.19*** | -0.19** |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| 20-24 years | -0.09 | -0.09 | -0.08 | -0.07 |
| | (0.11) | (0.11) | (0.11) | (0.11) |
| 25-29 years | -0.19 | -0.2* | -0.16 | -0.16 |
| | (0.12) | (0.12) | (0.12) | (0.12) |
| Years since marriage | -0.03*** | -0.03*** | -0.03*** | -0.03*** |
| | (0.01) | (0.01) | (0.01) | (0.01) |
| Children | -0.27*** | -0.27*** | -0.27*** | -0.03 |
| | (0.08) | (0.08) | (0.09) | (0.16) |
| **Living arrangements** | | | | |
| Living with wife's parents | -0.28* | -0.29* | -0.29* | -0.29* |
| | (0.16) | (0.16) | (0.17) | (0.17) |
| Living with husband's parents (in-laws) | -0.12** | -0.14** | -0.12** | -0.13** |
| | (0.06) | (0.06) | (0.06) | (0.06) |
| **Nature of kinship** | | | | |
| First cousin | 0.1* | 0.08 | 0.06 | 0.07 |
| | (0.06) | (0.06) | (0.06) | (0.06) |
| Distant relative | -0.04 | -0.06 | -0.07 | -0.07 |
| | (0.07) | (0.07) | (0.071) | (0.07) |
| Household asset index | 0.12*** | 0.12*** | 0.12*** | 0.12*** |
| | (0.03) | (0.03) | (0.03) | (0.03) |
| **Human capital** | | | | |
| Less than secondary | 0.01 | -0.01 | -0.02 | -0.02 |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| Secondary | 0.22*** | 0.2*** | 0.18** | 0.19** |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| Post-secondary | 0.42*** | 0.39*** | 0.38*** | 0.39*** |
| | (0.11) | (0.11) | (0.11) | (0.11) |
| **Time from engagement to marriage** | | | | |
| Less than 6 months | 0.09 | 0.08 | 0.06 | 0.06 |
| | (0.08) | (0.08) | (0.08) | (0.08) |
| 6 months to 1 year | 0.16** | 0.16** | 0.14* | 0.14* |
| | (0.08) | (0.08) | (0.08) | 0.08 |
| 1-2 years | 0.15** | 0.15** | 0.14* | 0.14* |
| | (0.08) | (0.08) | (0.08) | (0.08) |
| **Veil** | | | | |
| Niqab | 0.04 | 0.06 | 0.05 | 0.05 |
| | (0.09) | (0.09) | (0.09) | (0.09) |
| Neither hijab nor niqab (whether Muslim or not) | 0.25* | 0.24* | 0.25* | 0.24* |
| | (0.14) | (0.15) | (0.15) | (0.15) |
| Frequency of visit to mosque/church | 0.13* | 0.13* | 0.14** | 0.14** |
| | (0.07) | (0.07) | (0.07) | (0.07) |
| Female friends | -0.03** | -0.03** | -0.03** | -0.03** |
| | (0.01) | (0.01) | (0.01) | (0.01) |

[1] LR test and the link test of the model specification confirm the goodness of model specification.

| | | | | |
|---|---|---|---|---|
| Male friends | 0.05 | 0.07 | 0.07 | 0.08 |
| | (0.06) | (0.06) | (0.06) | (0.06) |
| Trust people | 0.1 | 0.15* | 0.14* | 0.15* |
| | (0.08) | (0.08) | (0.08) | (0.08) |
| **Wife discussing sexual relation with husband** | | | | |
| Often discusses | | 0.29*** | 0.32*** | 0.32*** |
| | | (0.05) | (0.05) | (0.06) |
| Discusses daily | | 0.56*** | 0.57*** | 0.57*** |
| | | (0.08) | (0.08) | (0.08) |
| **Household work, and leisure** | | | | |
| Chores inside the house | | | -0.04** | 0.04 |
| | | | (0.02) | (0.05) |
| Chores outside the house | | | -0.12*** | -0.12*** |
| | | | (0.03) | (0.03) |
| Leisure time | | | 0.003 | 0.003 |
| | | | (0.008) | (0.01) |
| Currently employed | | | -0.25*** | 0.14 |
| | | | (0.09) | (0.2) |
| Financial autonomy | | | 0.13** | 0.13** |
| | | | (0.06) | (0.06) |
| (Children) x (chores inside the house) | | | | -0.09* |
| | | | | (0.05) |
| (Currently employed) x (chores inside the house) | | | | -0.15** |
| | | | | (0.07) |
| N | 2692 | 2692 | 2692 | 2692 |
| R-squared | 0.04 | 0.06 | 0.07 | 0.073 |
| LR chi2 | Chi2(23)=185.8*** | Chi2(25)=242.3*** | Chi2(30)=283.2*** | Chi2(32)=290.9*** |
| $\theta_0$ | -1.31*** | -1.1*** | -1.18*** | -0.96*** |
| | (0.16) | (0.16) | (0.18) | (0.2) |
| $\theta_1$ | 1.09*** | 1.34*** | 1.29*** | 1.52*** |
| | (0.16) | (0.16) | (0.18) | (0.21) |

Notes: (a) Standard error in parentheses. (b) ***, **, * denote statistical significance at the 0.01, 0.05 and 0.10 level, respectively.

### B. *General economic and demographic findings*

The demographic variables captured by the age of the wife and having children yield contrasting results. The current age of the wife plays no significant role in impacting her self-reported happiness. On the other hand, having children, which is believed to add to the burdens of a married wife, has a significant negative impact on marital happiness.[1]  Given the age range of the selected sample, a young wife who is below the age of 29 years, having children could add to her responsibilities and consume larger amounts of energy having a significant downward push on her self-reported marital happiness.

The number of years since marriage plays a role in explaining the variation in the self-reported marital happiness of wives. Previous empirical studies on marriage have specifically focused on the variation in marital happiness through the marriage life. A U-shaped relationship is the common finding. Given the selected cohort of young females for the purpose of the study,

[1]  Having children further affects, negatively, marital quality and satisfaction (see, for example, Glenn et al. (1982)) Not listed in references or listed as Glenn 1990.

the relationship may not be easily identified. However, a negative and significant impact, consistent across all specifications is found here. This may reflect the fact that the individuals in this sample are still experiencing the downward sloping of the U-shaped curve.

A common feature of marriages in Egypt and the Arab world is the extended time taken between engagement and the wedding (formal or religious marriage). In this context, time between engagement and the official wedding is of importance for both young couples and their parents. The estimated impact of waiting time on marital happiness is found to be statistically significant. The faster the marriage and the shorter the wait time between the engagement and the official wedding, the happier is the female at marriage. This is consistent with the positive and significant estimated impact of a shorter wait period on self-reported marital happiness.

Human capital accumulation, measured through attained levels of education, and especially for the higher levels of education, positively impacts self-reported marital happiness. Stevenson and Wolfers (2008) (not listed in references, please list or delete) show that one of the paths education impacts general happiness is that mediated through financial benefits. However, controlling for household income and given a low participation of females in the labour market, education appears to impact marital happiness for its own good. Powdthavee, Lekfuangfu, and Wooden (2013) report that education correlates with unobserved characteristics of the females, which could be the driving force for the increased self-reported marital happiness.

The above result is further emphasised through the impact of employment of females in the labour market. A binary variable reflecting on whether the female is employed in the labour market, at the time of the survey, is used in this model rather than the sector of employment, due to the very low female participation in the labour market. Employment, therefore, has a negative and significant impact on self-reported marital happiness of young Egyptian wives. This is in comport with the findings of Al-Attar and El-Gibaly (2014), which reports that young Egyptian wives, who are employed in the labour market, experience lower happiness in marriage when compared to young wives who are not active in the labour force. Employment is considered one of the few control variables that have been addressed in literature in relation to marital quality (For example, see Amato et al. 2003).

Controlling for having children and the number of hours the wife spends on the chores inside and outside the house, employment in the labour market significantly reduces the self-reported marital happiness of young wives. Combining the employment in the labour market with the chores inside the household, employment is no longer found to be statistically

significant. In both cases where an employed wife does not participate in household chores or a wife participates in household chores but is not employed, there is no significant relationship with marital happiness. However, for an employed wife, as the number of hours devoted to household chores inside the house increase, the negative impact on wives' welfare is elevated. This reveals that the impact of the employment in the labour market is mediated through its impact on the pressure on the wife with respect to the number of hours spent daily in the labour market.

The household asset index, in a continuous form, positively and significantly impacts marital happiness. The marginal effects, reported in Appendix Table C.3, show that one standard deviation increase in the asset index decreases the probability of reporting a non-happy marriage by 3.4 percentage points and increases the probability of reporting a very happy marriage by 2 percentage points. It can be concluded, therefore, that the financial security provided by the household asset ownership, acting as a proxy for household wealth, plays a key role in the happiness of wives in their marriage.

In addition to the financial security, achieved through the household asset ownership, the financial autonomy of the wife enhances her marital happiness. Therefore, not only does the financial security of the entire household improve marital happiness, but the wife's own financial security plays an important role as well. Financial autonomy in the context of this analysis is reflected through the ability of the wife to decide herself how to use her own money earned upon employment outside the house and inside the labour market, pre- marital savings, as well as allowance received from parents or the husband.

Therefore, the findings on financial autonomy for young wives show a positive significant relationship with marital happiness through the direct impact on the wives' own perception of happiness in marriage. This result agrees with Al-Attar and El-Gibaly (2014), where marital satisfaction increases most when wives feel that their opinion is valued and where some equality in the decision-making process is achieved.

## C. *Time use*

The time allocation of wives between leisure activities and domestic chores, both inside and outside the house, has received minimal or no attention in the literature on happiness. The impact of this division on the marital happiness of either or both spouses has not been investigated in a systematic fashion to date.

The data allow a close look at the number of hours per day a female spends on leisure

activities, domestic chores inside the house, and outside the house. No significant impact of time allocated to leisure activities on marital happiness is detected. Further dissection of the time allocated to leisure activities, between active, passive and social activities, the impact on marital happiness, details of which are not reported here, are robust and no significant impact is observed for the three categories of leisure activities.

Domestic chores inside and outside the house, however, both have a significant negative impact on self-reported marital happiness. As the number of hours spent on household chores increases, the marital happiness of young females drops significantly. It is further noted that the negative impact on self-reported marital happiness mediated through domestic chores is more severe than that of chores outside the house. Based on the model estimates, a reduction of 1.51 hours (significant at the 5 percent level) of domestic chores inside the house are required to compensate for one extra hour of domestic chores outside the house to ensure that the wife remains at the same level of happiness. This reveals that wives place a higher value on domestic work given that it is worth more in terms of happiness in her marriage than chores outside the house.

Given the role of the chores inside the house, further decomposition of it is required to understand more of it. The impact of the time allocated to chores inside the house is indirectly mediated through its interaction with the employment of the wife or with having children. Therefore, interaction variables between having children and being employed in the labour market, separately, with the number of hours spent on the chores inside the house are added to the model. The interaction variables both have a significant negative impacts on wives' marital happiness, as previously discussed.

The interaction variables show that the number of hours devoted to domestic chores inside the house, when the wife has no job or children, does not significantly affect her marital happiness. However, for a wife with children, or with a job, the impact of longer hours spent on chores inside the house are more severe on her marital happiness.

### D. Living arrangements of the couples

The current place of residence of the wife show a significant impact on marital happiness. More specifically, living in the urban areas and the Greater Cairo governorates, with the over-crowdedness and stressful living conditions, negatively affects marital happiness of females. This is a result that is anticipated. As people move away from the overcrowded urban areas and into rural areas, the self-reported marital happiness of young Egyptian wives significantly

improves.

In addition to the area of residence, the place of residence plays a significant role in the marital happiness of wives. Al Attar and El Gibaly (2014), being the only Egyptian literature tackling the relationship between living with in-laws and marital satisfaction, but from a social perspective, concludes that the impact of living with the mother-in-law improves the life satisfaction of the Egyptian wives. This has been further explained through the contribution of the mother-in-law to reducing the work load of the wife and sharing the responsibility of the kids.

Given the age range of the sampled wives and controlling for the length of marriage in years (with an average of 5.7 years of marriage) the self-reported marital happiness of young Egyptian wives significantly decreases if the couple lives with either parents as opposed to living alone. With marriage marking the main transition to adulthood in the Arab region and Egypt in specific, continuing to live with parents or in-laws upon marriage delays this transition and therefore reduces the wives' welfare.

### E. Institutional variables: Religiosity and social trust

Religiosity is measured in two ways in the current analysis, the frequency of visits to worship places, and the religious attire worn by women. Given the prevalence of Muslim females in the data, covering up (face and/or hair) in addition to the frequency of attending worship venues (whether mosques or churches) at least once a week are the key variables capturing religiosity.

As a first measure of religiosity, not covering both the hair and the face, whether being a Muslim or not, significantly increases the marital happiness as compared to a veiled Muslim female. The veil could be acting as a social constraint in the Egyptian society. The veil and the niqab are becoming more of a social attire attempting to protect women against any form of harassments on the street. The mix-up between the religious and the social implications of the veil and the niqab is a reason behind the lack of relationship with marital happiness. For the women wearing neither a hijab nor a niqab, this form of social pressure is slightly relieved and religiosity could be expressed differently for her. This relief of the social pressure is what is driving the positive association with a happier marriage.

The positive impact of veil/niqab absence is further motivated by the existence of the non-Muslim females within the category. The non-Muslim female reflected in this category could possibly inflate the significance of the impact of this variable on the self-reported marital happiness. Given the constraints on suspending a marriage among other religions in Egypt, the

wives manage to look for happiness within the marriage, where unhappiness in marriage exists, it is not taken as a valid reason for divorce by the Coptic Church. Therefore, the two previously mentioned reasons, highly driven by social pressures, are driving the positive relationship with wives' welfare.

On another note, frequency of visits to worship places is referred to as an alternative religiosity measure. For Muslims, women's attendance to the mosque is considered an additional effort not a compulsory one, where Islam allowed women to pray at their comfort at home. Therefore, visits to the mosques is considered a sign of either extra religiosity or social activities. For Christian women, although church visits are more compulsory, the motive could still be spiritual or social. However, unable to differentiate between the motives for the worship-place visits, findings still show a positive and significant association with the marital happiness of young wives.

Other social variables of interest are those reflecting on social capital. Social capital is defined in the literature (e.g., see Lewis and Spanier (1979); Roizblatt et al (1999)) as the social network as well as the social trust. Social trust is almost always associated with higher general happiness and consequently marital happiness. A low percentage of young married women experience trust in the surrounding environment. This is a finding dictated by the Egyptian culture, where girls are actually being raised not to place trust in the surrounding network of people. The general belief is that more harm could come with more trust, so being cautious is always better. However, this creates a tense environment for a female to grow up in. Therefore, when a married woman has trust in her surrounding environment, this releases the social tension and would therefore have a positive impact on her marital happiness.

### F. Non-economic determinants

A novelty of our empirical approach is combining variables that capture the quality of inter-personal relationships and economic variables to determine their relative power in influencing marital happiness. The sociology literature on general happiness and marital quality emphasises the importance of debriefing and conversations between spouses, in particular on issues around their sexual relationship. Given the taboo placed on direct sexual discussions in the Arab world, direct questions on sexual activities have been replaced in SYPE09 with a question on spousal discussions on sexual relationship and the frequency of these discussions. This is considered a direct proxy for the sexual activity between the couple where Blanchflower and Oswald (2004) concluded has a strong positive impact on happiness. The frequency of discussions between spouses regarding their intimate sexual relationships is expected to impact the marital happiness

of the wives, and in our application it does.

The inter-personal variables make a bigger contribution to the explanatory power of the model than the economic and demographic variables. The R-squared values of models 1 and 2 for calculating the impact of the inter-marital relationship, and models 2 and 3 for the impact of the economic variables, show a 30 percent increase in the goodness of fit of the model, as opposed to a 17 percent increase due to economic variables. This result shows the limited role of economics in defining the determinants of marital happiness. Economists highly focus on demographic, labour market, monetary and institutional variables in attempting to explain general and marital happiness. The estimated results and the previous analysis, however, show the relatively higher relevance of the inter-marital covariates to the self-reported happiness of young Egyptian wives as opposed to the economic variables.

## G. Couples analysis

The second modelling estimates the impact of husbands' characteristics, controlling for the wives' characteristics, on the wives' self-reported marital happiness. The sample used for analysis, is a subsample of wives within couples, where both the husbands and wives are within the age range of 15 to 29 years. Therefore, before estimating the impact of the husband characteristics, the basic model of females (Model 4, Table 4) is re-estimated on the smaller sub-sample of observations to monitor the differences in the impact of the wives' characteristics first before moving to the analysis of the husband's impact. Appendix 1 shows the results of the structural differences analysis between the different samples.

Given the robustness of the main covariates of interest to the changes in the sample in use, husbands characteristics are now added to the model, and the impact of these variables, controlling for the wives' characteristics, on the self-reported marital happiness of wives is analysed.

The impact of three main categories of husbands' characteristics, namely labour market characteristics, social networks and time allocation, on the wives are modelled and results are reported in Table 5 below. It can be concluded that generally, with very minor exceptions, none of the husbands' characteristics appear to matter for the marital happiness of wives. The correlation analysis of the variables provided in Table 1 has already signalled the weak relationship between the husband's characteristics and the respective wife's marital happiness. Empirical results are confirming this lack of relationship.

Table 5 below presents the final model showing the husbands' characteristics, together

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with an interaction variable capturing the rural/urban impact of husbands' annual earnings. The empirical results reveal that none of the husbands' characteristics show any significant change in the wives' marital happiness. An exception is the heterogeneous impact of husbands' annual earnings across urban and rural areas. Additionally, the estimated effects for wives' variables are robust throughout the addition of the husbands' characteristics. This result has been confirmed by a Chi-squared value of 12.86, which fails to reject the null hypothesis that the husbands' characteristics are jointly statistically insignificant.

**Table 5. Ordered Probit Models**

| Variable | Model 1 | Model 2 |
|---|---|---|
| Not employed | 0.1 (0.363) | 0.16 (0.366) |
| Public sector | 0.13 (0.15) | 0.16 (0.15) |
| Commute time | -0.05 (0.06) | -0.04 (0.06) |
| Working hours | 0.005 (0.03) | 0.002 (0.03) |
| Annual earnings | 0.006 (0.01) | 0.03* (0.01) |
| Time husband spends with friends | -0.08 (0.06) | -0.08 (0.06) |
| Husband trusting people | 0.05 (0.26) | 0.03 (0.26) |
| Husband time spent on domestic chores | -0.19 (0.13) | -0.2* (0.13) |
| Husband time spent on chores outside the house | 0.15 (0.2) | 0.15 (0.2) |
| Husband time spent on active leisure activities | -0.21 (0.15) | -0.21 (0.15) |
| Husband time spent on passive leisure activities | -0.004 (0.03) | -0.005 (0.03) |
| Husband time spent on social leisure activities | 0.05* (0.03) | 0.05* (0.03) |
| (Urban) x (Husband earning) | | -0.03* (0.019) |
| $\theta_0$ | -0.67 (0.48) | -0.47 (0.5) |
| $\theta_1$ | 2.13 (0.49) | 2.35 (0.51) |
| N | 539 | 539 |
| R-squared | 0.13 | 0.14 |

Note: SE in parentheses and below their relevant coefficients. Statistical significance level 10% *, 5% ** and 1%**

## H. *The husband's labour market outcomes*

The earnings of the husband are expected to improve the living standards of the household, and therefore to positively impact marital happiness of the wife. Financial security is considered a positive factor, especially for the wife, and therefore is expected to make her happier at marriage. However, the estimated effects for the husband's labour market variables (individually and collectively), as well as the husbands' annual earnings both have an insignificant impact on their wives' marital happiness. However, only in rural areas do the husbands' annual earnings have a positive significant impact on the wives' happiness in marriage.

Given the mean annual earnings of the husband, and the continuous nature of the variable, a unit increase above the mean of 7.5 thousand Egyptian pounds has a significant impact on the wife's self-reported marital happiness. A one seventh increase in the annual earnings of a husband in the rural areas increases the probability of a wife being in the 'very happy' category by 0.4 percentage points.

## I. *The husband's social network*

The impact of the number of husbands' friends on the wife's marital happiness show no meaningful conclusions. This is further emphasised through the insignificant impact of the the time the husband spends with friends.

## J. *The husband's time allocation*

Given the patriarchal nature of the Egyptian society, the husbands' participation in the chores inside and outside the house is very low. Household chores are believed to be part of the job description of a wife. Therefore, the average number of hours per day spent by husbands on chores inside and outside the house is negligible (0.09 hours for domestic chores and 0.07 hours for out of the house chores). Looking beyond the average number of hours per day, 94.4 percent and 93.5 percent of husbands spend zero hours per day on domestic chores and out of the house chores, respectively.

However, controlling for the area of residency, as soon as the husband starts spending time on domestic chores, the marital happiness of the wives is negatively affected. A one-hour increase in the husband's domestic chores reduces the probability of a wife being in the 'very happy' category by 2.2 percentage point.

The couples, with husbands' participation in the domestic chores, have children and live alone. The wife mostly has a secondary education, not employed and spends 1-10 hours daily

on domestic chores. Moreover, 83 percent of those wives make their own decision regarding the use of their own money. The husbands, on the other hand, are mostly employed in the private sector, however, 50 percent of them spend zero hours on commuting (and the other 50 percent spend 1-2 hours). This shows that those husbands either work from home or work very close to where they live. About 87 percent of them spend zero hours with friends, even though they have between 1-10 friends. Moreover, 97 percent of these husbands have no trust in the surrounding community.

The further insignificant impact of time spent on leisure activities in determining wives' happiness at marriage is explained by the breakdown of leisure time. Leisure time comprises active, passive and social activities, which are done individually, in parallel or together. Due to the broadness and collectiveness of the term, it appears to be insignificant. Active and passive leisure activities are forms of both individual and/or parallel activities; however, as previously discussed, social activities involve joint activities as well. Social activities appear to positively and significantly impact wife's marital happiness. This result is expected, since the individual and the parallel activities, characterizing the active and passive leisure, involve each spouse spending their leisure time on their own, either totally individual or each one spending the time separately while being present in the same place. This emphasizes the fact the wives are more concerned with mutual relationships with the husband and this is what matters most for their marital happiness.

## *K.* *Robustness checks*

Other variables have been used in the model estimation, results of which have not been reported, to ensure the robustness of the reported results. Husbands' education, education level difference between the husband and the wife, husbands' level of hygiene and husbands' religiosity were added to the model, separately and collectively. The included variables were neither significant in determining the level of self-reported marital happiness for wives, nor did they contribute to the overall significance or explanatory power of the different models reported above.

Therefore, it can be concluded that economics play a significant role in identifying determinants of self-reported marital happiness of young Egyptian wives. However, the role of economics is limited and inadequate in solely explaining these determinants. The quality of inter-marital relationships and discussions between spouses appear to be the more important determinant of wives' welfare. The happiness of a wife in her marriage comes from within. The wife's own view on things is what makes her happy in her marriage.

## VIII. MAIN FINDINGS

The objective of this paper is to explain the main determinants of a specific type of happiness (marital happiness) and within a specific context (the Arab context) for young Egyptian wives (aged 15-29) using self-reported information on happiness.

This paper investigates the marital happiness through the answer of the wife to the question: "How would you describe your marriage? With three categories of responses, the marital happiness of wives is investigated using an ordered probit model. Investigating the wife's marital happiness is more conclusive when variables reflecting on the husband's characteristics are added to the model.

From this research, it can be found that economic variables, specifically labour market outcomes, play a significant role in wives' wellbeing at marriage. It can therefore be established that education, which correlates with unobserved characteristics of the females, increase self-reported marital happiness of young wives. Employment of the wife, on the other hand, has a negative and significant impact on self-reported marital happiness of young Egyptian wives, with an insignificant impact of the labour market outcomes of the husband. Controlling for having children and the number of hours the wife spends on the chores inside and outside the house, employment in the labour market significantly reduces the self-reported marital happiness of young wives.

The financial security provided by the household asset ownership, acting as a proxy for household wealth, together with the wife's own financial autonomy plays a significant role in improving young wives' marital happiness. Controlling for the household asset index, the annual earnings of the husband is an insignificant determinant of marital happiness of young wives. This means that annual earnings do not provide security as much as how these earnings are translated into assets, explained through the purchasing power of the household.

No significant impact of time allocated to leisure activities on marital happiness is detected, domestic chores inside and outside the house, however, both have a significant negative impact on self-reported marital happiness. The number of hours devoted to domestic chores inside the house, when the wife has no job or children, does not significantly affect her marital happiness. However, for a wife with children, or with a job, the impact of longer hours spent on chores inside the house are more severe on her marital happiness. Moreover, husbands' minimal participation in the domestic chores negatively affects the wives' marital happiness.

The significance of the economic variables on the marital happiness of young wives has

been outweighed by the role of the non-economic variables related to the institution of marriage. The inter-personal variables, acting as a proxy for the marriage institution, make a bigger contribution to the explanatory power of the model than the economic and demographic variables. This shows the limited role of economics in defining the determinants of marital happiness. Economists highly focus on demographic, labour market, monetary and institutional variables in attempting to explain general and marital happiness. The estimated results and the previous analysis, however, show the relatively higher relevance of the marriage institution to the self-reported happiness of young Egyptian wives.

## IX.    CONCLUSIONS AND POLICY RECOMMENDATIONS

This paper uses data from the 2009 Survey of Young People in Egypt (SYPE) despite the availability of a 2014 round of the survey with data collected in the year 2012. The use of the 2009 data aims to study the relationship in the absence of the external shock of the 2011 events and its consequences. Therefore, this paper provides an understanding of a pattern with respect to the relationships explored in this analysis that is expected to continue unless a major cultural or policy shift exists that would translate into different explanations of the relationships. Therefore, understanding how do relationships change in the events of the political unrests and whether significance of relationships change will drive the future of this research drawing on the 2014 survey.

Taking women economic empowerment and economic, social and political inclusion into consideration, it can be concluded from this analysis that with the prevalence of marriage in the Egyptian society, there is a missing link between female participation and empowerment and her own personal happiness in marriage. This missing link has been demonstrated in this analysis by highlighting the interaction between the household chores of the wife with having children and having a job. Furthermore, with the activity level of the husband with respect to household chores, this link is further demonstrated.

Reservation wages for women is different than that of men, taking into consideration the cost of hiring help to complement/substitute for the role of the wife in the household, while she actively participates in the economy. Moreover, the existence of labour laws that aim to protect women in the labour market while actually providing more reasons for discrimination and segregation. These are few of the main explanations for the limited economic activity of women in Egypt.

Policies aiming to economically empower women and increase their economic

participation therefore need to devote attention to social policies regarding the institution of marriage in order to provide a more enabling infrastructure for women. The missing coordination between the institutional policy framework represented in family laws and labour market laws highlight the dichotomy of the role of women in the society between the labour market and satisfying the role at home. The institutional framework has not created an enabling environment, through labour laws and family laws, that would allow women to participate in the labour market while having a balanced relationship at home leading to the overall happiness of women. This further highlights the discrepancy between the level of education attainment of women and the level of participation of women in the labour market.

As previously noted, the couples sample in the survey comprises 2407 couples, 722 of them have both the husband and the wife within the same age range of 15-29 and 539 of them have responses to the main dependent variable used.

This sample is selected for use due to the rich availability of variables pertaining to both the husbands and the wives being within the age range of concern for the survey. Moreover, couples with the husbands and the wives within the age range of 15-29 are generally defined as young couples. If either or both spouses are outside the age group of 15-29, the couples are not classified as young couples. Therefore, data availability, and given the samples used throughout this thesis to date, it is more suitable to use the 539 couples between the ages of 15-29 years old for analysis.

However, this is not sufficient reason by itself to support the use of this sample. Empirically, it needs more support to ensure that the selected sample at hand is a representative sample of female wives thus allowing any conclusions drawn to be generalised to the female population represented within this survey.

The final regression model from the wives is estimated for three different sub-samples: once for the pooled sample of wives with husbands aged 15 years and over; using the sub-sample of wives whose husbands are within the age range of 15-29; and finally using the remaining sub-sample of wives whose husbands are older than 29 years old. The results, sign and significance, are compared across the three models. Additionally, a Chow test of structural difference is used to offer conclusions regarding the three models.

Given the ordinal nature of the dependant variable, the self-reported marital happiness of young Egyptian wives, an ordered probit model is again used for the estimation of the basic model across the different groups. However, prior to model estimation, t-tests are conducted to determine if there are differences in the mean self-reported marital happiness levels across the groups of females married to either young or older husbands. The missing observations on a number of variables reduced the sample size to 2248, 688 and 1566 respectively for the three respective sub-samples described above.

Table A.1 below shows the frequency distribution of the dependent variable for the three groups of females. An independent t-test was run on a sample of 2248 married females between the ages of 15 and 29 to determine if there were differences in the self-reported marital happiness based on the age group of the husband (15-29 or above 29). The first group of females

are married to males within the age group of 15 to 29 consisted of 682 observations. The second group of females are married to males older than the age of 29, with the sub-sample consisting of 1566 observations. The results reveal that both groups of females exhibit relatively similar self-reported marital happiness levels, where $t(2246) =$ -2.058 and p=0.039. Therefore, at the 5 percent level of significance, it can be concluded that the average self-reported marital happiness is statistically different across the groups. Table E.2 further shows the distribution of mean marital happiness across the different groups and within the groups across the different variables. It is concluded that the mean self-reported marital happiness differs within the groups of wives, however no significant difference between the groups has been detected.

**Table A.1. Summary Statistics for the Distribution of Wives by Marital Happiness among the three Groups**

|  | Pooled | Husbands <=29 | Husbands >29 |
|---|---|---|---|
| Mean | 0.92 | 0.95 | 0.90 |
| Standard deviation | 0.51 | 0.50 | 0.51 |
| N | 2248 | 682 | 1566 |

Table A.1 below reports the results of the ordered probit model for the three sub-samples (the pooled sample and the sub-samples of younger vs older husbands). Based on the model coefficients, a Likelihood Ratio Chow test is computed to determine if there are any statistical differences in estimated effects across the sub-samples. The Chow test with a value of 0.65 does not reject the null hypothesis of equality between the three models, and therefore no statistical evidence of structural difference is found.

Despite the results of the t-tests of the similarity in the mean values of the dependant variables, the Chow test results show that the estimated effects of the explanatory variables on the wives' marital happiness is similar across the three samples. Given this lack of a systematic process governing the separation of the samples, one sample could be used to represent the overall sample of wives. In this context, the sub-sample of both husbands and wives within the age range of 15 and 29 will be selected for the forthcoming analysis. Therefore, given data availability and the representativeness of the subsample, and robustness to different age groups, sub-group I is selected for the empirical analysis.

An ordered probit approach will be applied, given the ordinal nature of the dependent variable. The modelling of the wives' 3-point self-reported marital happiness follows the same

approach as section 5 of this paper. However, the explanatory variables used in the current model involves the previously agreed upon final list of wives' characteristics in addition to economic and institutional variables pertaining to the husbands. It can be seen that the main covariates of interest still exhibit the same sign and significance as the full model.

**Table A.2. Basic Ordered Probit Model (Three Groups)**

| Variable | Pooled sample | Husband below 29 | Husband above 29 |
|---|---|---|---|
| Urban | -0.18*** | -0.24** | -0.17** |
| | (0.06) | (0.11) | (0.07) |
| Greater Cairo | -0.15** | -0.3** | -0.09 |
| | (0.07) | (0.14) | (0.09) |
| Wives 20-24 years | 0.12 | 0.19 | 0.1 |
| | (0.13) | (0.16) | (0.23) |
| Wives 25-29 years | -0.02 | 0.01 | -0.01 |
| | (0.14) | (0.19) | (0.23) |
| Years since marriage | -0.02** | -0.03 | -0.02 |
| | (0.01) | (0.03) | (0.01) |
| Children | -0.006 | 0.12 | -0.04 |
| | (0.17) | (0.26) | (0.25) |
| **Living arrangements** | | | |
| *Living with in-laws* | -0.16*** | -0.2* | -0.16** |
| | (0.06) | (0.12) | (0.08) |
| **Nature of kinship** | | | |
| *First cousin* | 0.04 | 0.15 | -0.01 |
| | (0.07) | (0.13) | (0.08) |
| *Distant relative* | -0.05 | -0.26* | 0.02 |
| | (0.08) | (0.15) | (0.09) |
| Wife asset index | 0.15*** | 0.23*** | 0.12*** |
| | (0.04) | (0.08) | (0.04) |
| **Wife education** | | | |
| *Less than secondary* | 0.03 | 0.01 | 0.04 |
| | (0.08) | (0.15) | (0.09) |
| *Secondary* | 0.25*** | 0.15 | 0.29*** |
| | (0.08) | (0.15) | (0.09) |
| *Post-secondary* | 0.39*** | 0.14 | 0.49*** |
| | (0.12) | (0.22) | (0.14) |
| **Time from engagement to marriage** | | | |
| *Less than 6 months* | -0.01 | -0.15 | 0.043 |
| | (0.08) | (0.15) | (0.09) |

| | | | |
|---|---|---|---|
| *6 months to 1 year* | -0.02 (0.08) | -0.1 (0.16) | -0.004 (0.1) |
| *1-2 years* | 0.08 (0.07) | 0.13 (0.13) | 0.04 (0.08) |
| **Wife Veil** | | | |
| *Niqab* | 0.09 (0.09) | 0.19 (0.18) | 0.05 (0.11) |
| *Neither hijab nor niqab (whether Muslim or not)* | 0.3** (0.16) | 0.68** (0.31) | 0.17 (0.19) |
| Frequency of visits to mosque/church | 0.12* (0.08) | 0.16 (0.13) | 0.12 (0.09) |
| Wife female friends | -0.04** (0.02) | -0.03 (0.03) | -0.04** (0.02) |
| Wife male friends | 0.09 (0.09) | 0.16 (0.18) | 0.06 (0.1) |
| Wife trusting people | 0.18** (0.09) | 0.25 (0.17) | 0.16 (0.1) |
| **Wife discussing sexual relations with husband** | | | |
| *Often discusses* | 0.33*** (0.06) | 0.45*** (0.12) | 0.29*** (0.07) |
| *Discusses daily* | 0.49*** (0.09) | 0.4** (0.17) | 0.55*** (0.1) |
| **Household work and leisure** | | | |
| Chores in the house | 0.05 (0.05) | 0.11 (0.07) | -0.01 (0.07) |
| Chores outside the house | -0.13*** (0.03) | -0.2*** (0.05) | -0.1*** (0.03) |
| Wife leisure time | 0.008 (0.009) | 0.01 (0.01) | 0.001 (0.01) |
| Wife currently employed | -0.13 (0.1) | -0.39* (0.23) | -0.07 (0.11) |
| Wife financial autonomy | 0.12* (0.07) | 0.24** (0.12) | 0.09 (0.08) |
| (Children) x (chores inside the house) | -0.07* (0.05) | -0.15** (0.06) | -0.02 (0.07) |
| (Employed) x (chores inside the house) | 0.02 (0.02) | 0.02 (0.03) | 0.03 (0.03) |
| N | 2248 | 682 | 1566 |
| Log likelihood | -1548.18 | -438.56 | -1095.38 |
| LR chi2(33) | 239.44 | 111.13 | 152.26 |

| | | | |
|---|---|---|---|
| R-squared | 0.0718 | 0.1125 | 0.065 |
| $\theta_0$ | -0.78 (0.23) | -0.76 (0.36) | -0.76 (0.36) |
| $\theta_1$ | 1.69 (0.24) | 1.88 (0.37) | 1.69 (0.36) |

*Note: SE in parentheses and below their relevant coefficients. Statistical significance level 10% *, 5% ** and 1%****

A variable reflecting the wealth or the income level of the household the wife currently lives in is required in an attempt to capture the impact of economic welfare on marital happiness. However, variables reflecting on the overall income, earnings or financial transfers suffer from missing values and therefore will not be suitable for use in the analysis.

Many demographic surveys, however, do not ask direct questions on income or wealth, an example of which is the Demographic and Health Surveys (DHS). Direct questions on wealth and monetary income could lead to great biases in responses. Therefore, personal and household ownership of assets are used to proxy for household income and wealth. Following the common pattern in the economic modelling and analysis, an index that can be used as a proxy for the household wealth can be used for this purpose.

It can be seen that a number of variables vary greatly with wealth and are highly correlated with other economic and non-economic determinants of the young wives' marital happiness. Therefore, the index is generated to be used as an independent variable in the models estimating young wives' marital happiness. One common way is to simply develop a household asset index using Principal Component Analysis (PCA) on the number of physical assets owned by the household in which the wife currently lives.

Almost a quarter of the sampled wives in this analysis live either with parents or in-laws. Therefore, the assets index constructed cannot get referred to as the wife's asset index as for the quarter of the females, these assets belong to the entire household, including other members and are available for the use of the wife. Therefore, the constructed index is referred to as the household wealth index and is relevant to the household the wife currently lives in and are therefore available for the use of the wives.

Filmer and Prichett (2001) argue that "the first principal component of the household's ownership of household physical assets is highly correlated with household expenditure and can be used as a reasonable proxy." Po et al. (2012) further argue that this method is very common in single cross-sectional surveys carried out in one country, which SYPE09 is an example of.

Different studies (for example, see Gwatkin et al. 2000; Filmer and Pritchett 2001; McKenzie 2003) use PCA to derive what is commonly known as the socio- economic status index. PCA creates uncorrelated indices or components, where each component is a linear

weighted combination of the initial variables. Houweling, Kunst, and Mackenbach (2003) further argue that it is assumed that the first principal component is a measure of economic status. McKenzie (2003) has further considered the use of additional principal components, investigating their use, and concluded again that only the first principal component was necessary for measuring wealth.

Accordingly, PCA is used along with SYPE data for the derivation of an asset index acting as a proxy for household wealth. Given the interest in the thesis is on married females aged 15-29, a choice between personal assets as opposed to household assets is first made. With approximately 34 percent of the 15-29 married females residing with someone (parents or in-laws), then focusing on the entire household assets will be more relevant given the purpose of the index. Therefore, the index is constructed based on household assets of all members of the household including the wife. The constructed continuous wealth asset index is then used to act as a proxy for household wealth and is deployed as an explanatory variable.

Initially, and before constructing the index, the correlation coefficient of the variables used to construct the index is computed. However, given the binary nature of the assets (as opposed to continuous variables) capturing whether the household owns this asset or not, a weak correlation coefficient between the selected assets is anticipated. Table B.1. below provides the descriptive statistics (i.e., mean and standard deviations) of the selected assets together with the factor scores of the first factor with an Eigen value of 3.93.

Table B.1. shows that, as expected, the black and white TV, the manual washing machine and the tuktuk all load negatively into the asset index, revealing a negative effect on the overall household asset index. This is because these assets are considered of lower quality, and signal a lower social class. The index has been estimated separately for urban and rural areas. However, no differences in the factor scores were recorded. This allows us to revert back to the collective household asset index in our subsequent analysis.

**Table B.1. Descriptive statistics and Factor Scores**

| Variable | Mean | Standard deviation | Factor Scores |
|---|---|---|---|
| Rooms | 3.28 | 1.05 | 0.05 |
| Wall | 0.91 | 0.29 | 0.07 |
| Floor | 0.88 | 0.32 | 0.07 |
| Roof | 0.79 | 0.41 | 0.1 |
| Telephone | 0.34 | 0.47 | 0.07 |
| Mobile | 0.73 | 0.44 | 0.05 |
| Computer | 0.1 | 0.3 | 0.09 |
| Laptop | 0.02 | 0.13 | 0.06 |
| Ipod | 0.007 | 0.08 | 0.03 |

| | | | |
|---|---|---|---|
| Radio | 0.59 | 0.49 | 0.04 |
| Fridge | 0.84 | 0.37 | 0.06 |
| Dish washer | 0.003 | 0.06 | 0.04 |
| Color TV | 0.79 | 0.4 | 0.12 |
| Black & white TV | 0.09 | 0.29 | -0.04 |
| Video (VCR) | 0.05 | 0.22 | 0.06 |
| Air conditioning | 0.03 | 0.17 | 0.1 |
| Microwave | 0.01 | 0.11 | 0.06 |
| Water heater | 0.33 | 0.47 | 0.14 |
| Sewing machine | 0.01 | 0.12 | 0.01 |
| Manual washing machine | 0.77 | 0.42 | -0.05 |
| Automatic washing machine | 0.19 | 0.39 | 0.27 |
| Vacuum cleaner | 0.16 | 0.36 | 0.11 |
| Scooter | 0.05 | 0.21 | 0.01 |
| Car | 0.04 | 0.19 | 0.11 |
| Satellite dish | 0.49 | 0.5 | 0.07 |

Notes: (a) the variables used are all binary variables reflecting on the ownership of the asset, except for the number of rooms, which is a continuous variable reflecting the number of rooms in the house for the use of the female/couple; (b) standard deviations are only used to reflect on the variations between households in the ownership of the asset.

**Table C.1. Variables Definition and Summary Statistics of Wife Characteristics**

| Variable | Definition | Mean |
|---|---|---|
| **Demographic Variables** | | |
| Urban | =1 if the female lives in urban areas, =0 otherwise | 0.39 |
| Greater Cairo | =1 if living in one of the Greater Cairo governorates (Cairo, Giza, Helwan, 6 October), =0 otherwise | 0.15 |
| **Age dummy** | | |
| 15-19 years | =1 if the age is between 15 and 19, =0 otherwise | 0.06 |
| 20-24 years | =1 if the age is between 20 and 24, =0 otherwise | 0.37 |
| 25-29 years | =1 if the age is between 25 and 29, =0 otherwise | 0.57 |
| Years since marriage | Time from marriage till the time of the survey in years. | 5.72 (3.42) |
| Children | =1 if the female has no children, =0 otherwise. | 0.89 |
| **Living arrangements[1]** | [3] | |
| Living with wife parents | =1 if currently living with wife's parents, =0 otherwise | 0.02 |
| Living with in-laws | =1 if currently living with wife's in-laws, =0 otherwise | 0.22 |
| Living alone* | =1 if currently living alone, =0 otherwise | 0.66 |
| **Nature of kinship** | | |
| Not related | =1 if married to a non-kin, =0 otherwise | 0.66 |
| First cousin | =1 if married to a first cousin, =0 otherwise | 0.2 |
| Distant relative | =1 married to a distant relative, =0 otherwise | 0.14 |
| Household Asset index | The household's assets ownership (for more details on how it is formed, see p. 98) | 0.015 (0.93) |
| **Human Capital** | | |
| **Education** | | |
| No education* | = 1 if the female has no education, =0 otherwise. | 0.2 |
| Less than secondary | =1 if the female has less than secondary degree, =0 otherwise. | 0.24 |
| Secondary | =1 if the female has a secondary degree[1] , =0 otherwise. | 0.41 |
| Post-secondary | =1 if the female has post-secondary[1] , =0 otherwise. | 0.14 |
| **Marriage and relationships** | | |
| **Time from engagement to wedding** | | |
| Less than 6 months | =1 if overall marriage procedure[1] takes place in less than 6 months, =0 otherwise. | 0.28 |
| 6 months to 1 year | =1 if overall marriage procedure takes from 6 months to 1 year, =0 otherwise. | 0.29 |
| 1-2 years | =1 if overall marriage procedure takes from 1 to 2 years, =0 otherwise. | 0.28 |
| 2+ years | =1 if overall marriage procedure takes longer than 2 years, =0 otherwise. | 0.15 |
| **Religious[1]** | [7] | |
| **Veil** | | |
| Hijab/veil* | =1 if a female is covering her hair, =0 otherwise. | 0.89 |
| Niqab | =1 if a female covers her hair and face, =0 otherwise. | 0.08 |

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[1] Being a subset of the sample used in the wives only model, the use of one of the variables has changed. The living arrangements upon marriage has previously included the categories of wife's parents, husband parents and alone. However, the proportion in the category of wife's parents is negligible and therefore has been combined with the category husbands' parents. The new variable then captures living with any in-laws versus living alone.

[1] Secondary degree involves General secondary, Azhar secondary, International secondary or Vocational secondary

[1] A post-secondary degree is university, or post-graduate degree.

[1] Marriage procedures involve engagement, katb ketab and wedding.

[1] The Friday prayers for Muslim and the equivalent for Coptic Christians is a once-a-week compulsory meeting or visit to worship places, and therefore is used to explain the significance of once-a-week as a threshold for the religiosity levels.

| | | |
|---|---|---|
| Neither hijab nor niqab | =1 if wearing neither, a Muslim or not, =0 otherwise. | 0.03 |
| Frequency of visit to mosque/church | =1 if visits the mosque/church more than once a week, =0 otherwise | 0.85 |
| **Institutions and networks** | | |
| Female friends | The number of female friends | 1.99 (1.7) |
| Male friends | The number of male friends | 0.03 (0.38) |
| Trust people | =1 if the female generally trusts people, =0 otherwise | 0.09 |
| **Personal relationships** | | |
| **Discussing sexual relation with husband** | | |
| Never discusses | =1 if they never discuss sexual relations, =0 otherwise. | 0.31 |
| Often discusses | =1 if they often discuss sexual relations, =0 otherwise. | 0.55 |
| Discusses daily | =1 if they discuss sexual relations daily, =0 otherwise. | 0.14 |
| **Economic variables** | | |
| **Household work and leisure** | | |
| Chores inside the house | The time spent on household chores inside the house in hours per day[1] | 3.07 (1.55) |
| Chores outside the house | The time spent on chores outside the house in hours per day[1] | 0.62 (0.93) |
| Leisure time | The time spent on leisure activities[2] in hours per day | 5.68 (3.01) |
| Currently employed | =1 if the female is currently employed, =0 otherwise. | 0.08 |
| Financial autonomy | =1 if the female decides herself on how to spend her money/savings, =0 otherwise. | 0.79 |
| (Children) x (chores inside the house) | An interaction variable between having children and the time spent on domestic chores in hours per day | 2.75 (1.75) |
| (currently employed) x (chores inside the house) | An interaction variable between having a job and the time spent on domestic chores in hours per day | 0.212 (0.8) |
| N | | 2692 |

Notes: (a) The mean column reports the sample proportion for binary variables and means for the continuous ones. (b) The standard deviations are only reported for the non-binary variables in the dataset and are reported in parentheses.

## Table C.2. Variables Definition and Summary Statistics of Husband

| Variable | Definition | Mean (st. deviation) |
|---|---|---|
| **Living arrangement** | | |
| *Living with in laws* | =1 if the couple are currently living with either the wife's or the husband's parents, and =0 otherwise | 0.23 |
| Husband age | The age in years. | 26.58 (2.00) |
| Age difference | The age difference between the husband and wife in years. | 3.493 (2.58) |
| **HUSBANDS' WORKING CONDITIONS** | | |
| **Husband's employment sector** | | |

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[1] Household chores inside the house involve washing clothes, dish washing, cleaning, cooking, mending, etc.

[1] Household chores outside the house involve washing clothes, bringing goods, fetching water, etc.

[2] Leisure activities involve time with family, resting/napping/relaxing, visiting relatives, hanging out with friends, dating, chatting on phone with friends, internet use, reading, listening to music, watching TV, video games and exercising/physical activities, etc.

| | | | |
|---|---|---|---|
| *Private sector* | =1 if currently employed in the private sector, and =0 otherwise. | 0.72 | |
| *Not employed* | =1 if currently not employed (unemployed or out of labour force), and =0 otherwise. | 0.07 | |
| *Public sector* | =1 if currently employed in the public sector, and =0 otherwise. | 0.31 | |
| Commute time | The average time in hours /day on the commute to and from work. | 0.64 (1.03) | |
| Working hours | The daily working hours. | 8.44 (3.07) | |
| Husband's earnings | Annual earnings in 1000 Egyptian pounds | 7.55 (8.0) | |

**HUSBANDS' SOCIAL NETWORKS**

| | | | |
|---|---|---|---|
| Time spent with friends | The number of daily hours spent with friends. | 0.32 (1.23) | |
| Trusting people | =1 if the husband trusts people, and =0 otherwise. | 0.06 | |

**HUSBANDS' TIME ALLOCATION**

| | | | |
|---|---|---|---|
| Chores inside the house | The number of daily hours spent on domestic chores. | 0.09 (0.45) | |
| Chores outside the house | The number of daily hours spent on chores outside the house. | 0.07 (0.29) | |
| Leisure time | The number of daily hours spent on leisure activities. | 5.83 (3.69) | |
| Active leisure activities | The number of daily hours. | 0.076 (0.41) | |
| Passive leisure activities | The number of daily hours. | 2.45 (1.95) | |
| Social leisure activities | The number of daily hours. | 3.31 (2.75) | |
| N | | 539 | |

Notes: (a) The mean column reports the sample proportion for binary variables and means for the continuous ones. (b) The standard deviations are only reported for the non-binary variables in the dataset and are reported in parentheses.

**Table C.3. Marginal and Impact Effects of selected Variables for Model 2 of Ordered Probit (wives)**

| Variable | Happiness | | |
|---|---|---|---|
| | 0 | 1 | 2 |
| **Demographic Variables** | | | |
| Urban | 0.03955 | -0.0173 | -0.0222 |
| Great Cairo | 0.04644 | -0.0231 | -0.0233 |
| *20-24 years* | 0.0165 | -0.007 | -0.0095 |
| *25-29 years* | 0.0373 | -0.0148 | -0.0225 |
| Years since marriage | 0.0063 | -0.0026 | -0.0037 |
| Children | 0.0057 | -0.0023 | -0.0035 |
| *Living with wife parents* | 0.0786 | -0.0457 | -0.0329 |
| *Living with husband parents (in-laws)* | 0.0308 | -0.0142 | -0.0166 |
| *First cousin* | -0.0154 | 0.0059 | 0.0095 |
| *Distant relative* | 0.0166 | -0.0074 | -0.00918 |

| | | | |
|---|---|---|---|
| Asset index | -0.03356 | 0.0138 | 0.0197 |
| **Human capital** | | | |
| *Less than secondary* | 0.006 | -0.0025 | -0.0035 |
| *Secondary* | -0.0431 | 0.0167 | 0.0264 |
| *Post-secondary* | -0.0784 | 0.0131 | 0.0652 |
| **Marriage** | | | |
| *Less than 6 months* | -0.0139 | 0.0055 | 0.0085 |
| *6 months to 1 year* | -0.0316 | 0.0116 | 0.0199 |
| *1-2 years* | -0.0309 | 0.0114 | 0.0196 |
| **Religious variables** | | | |
| *Niqab* | -0.0125 | 0.0047 | 0.0078 |
| *Neither nor (Muslim or not)* | -0.0496 | 0.0112 | 0.0384 |
| Frequency of visits to mosque/church | -0.0344 | 0.0165 | 0.0179 |
| **Institutions and social networks** | | | |
| Female friends | 0.0069 | -0.0029 | -0.0041 |
| Male friends | -0.0189 | 0.0078 | 0.0111 |
| Trust people | -0.0331 | 0.0105 | 0.0227 |
| **Personal relationships** | | | |
| **Discussing sexual relation with husband** | | | |
| *Often discusses* | -0.0768 | **0.0333** | 0.0435 |
| *Discusses daily* | -0.1073 | 0.0021 | 0.1052 |
| **Economic variables** | | | |
| Currently employed | -0.0318 | 0.0101 | 0.0217 |
| **Household work, and leisure** | | | |
| Chores in the house | -0.0103 | 0.0042 | 0.006 |
| Chores outside the house | 0.0284 | -0.0117 | -0.0167 |
| Leisure time | -0.00061 | 0.00025 | 0.0003 |
| Financial autonomy | -0.0328 | 0.0153 | 0.01746 |
| (Children) x (chores inside the house) | 0.0202 | -0.0083 | -0.01188 |
| (Employed) x (chores inside the house) | 0.0349 | -0.0144 | -0.0205 |

**Table C.4. Marginal and Impact Effects of Selected Variables for Model 2 of Ordered Probit (Husbands)**

| Variable | Happiness | | |
|---|---|---|---|
| | Not happy | Happy | Very happy |
| Urban | -0.017 (0.036) | 0.007 (0.014) | 0.01 (0.021) |
| Greater Cairo | 0.083** (0.038) | -0.047* (0.027) | -0.036*** (0.013) |
| 20-24 years | -0.081** (0.041) | 0.036* (0.022) | 0.045** (0.022) |
| 25-29 years | -0.031 (0.041) | 0.011 (0.013) | 0.019 (0.029) |
| Years since marriage | 0.006 (0.006) | -0.002 (0.002) | -0.003 (0.003) |
| Children | 0.035 (0.032) | -0.011 (0.007) | -0.025 (0.027) |
| **Living arrangements** | | | |

| | | | |
|---|---|---|---|
| *Living with in laws* | 0.083** | -0.047* | -0.037*** |
| | (0.036) | (0.025) | (0.012) |

**Nature of kinship**

| | | | |
|---|---|---|---|
| *First cousin* | -0.031 | 0.01 | 0.021 |
| | (0.025) | (0.007) | (0.02) |
| *Distant relative* | 0.041 | -0.021 | -0.019 |
| | (0.041) | (0.025) | (0.016) |
| Wife asset index | -0.045*** | 0.18** | 0.026*** |
| | (0.017) | (0.009) | (0.01) |

**Wife education**

| | | | |
|---|---|---|---|
| *Less than secondary* | 0.005 | -0.002 | -0.003 |
| | (0.036) | (0.015) | (0.02) |
| *Secondary* | -0.013 | 0.005 | 0.008 |
| | (0.035) | (0.014) | (0.21) |
| *Post-secondary* | -0.024 | 0.008 | 0.016 |
| | (0.045) | (0.011) | (0.034) |

**Time from engagement to marriage**

| | | | |
|---|---|---|---|
| Less than 6 months | 0.001 | -0.0007 | -0.001 |
| | (0.034) | (0.014) | (0.019) |
| 6 months to 1 year | 0.005 | -0.002 | -0.003 |
| | (0.036) | (0.016) | (0.02) |
| 1-2 years | -0.048* | 0.017* | 0.031 |
| | (0.028) | (0.01) | (0.02) |

**Wife veil**

| | | | |
|---|---|---|---|
| Niqab | -0.017 | 0.006 | 0.011 |
| | (0.036) | (0.01) | (0.026) |
| Neither hijab nor niqab (whether Muslim or not) | -0.11*** | -0.194*** | 0.304** |
| | (0.015) | (0.127) | (0.134) |
| Frequency of visits to mosque/church | -0.039 | 0.019 | 0.019 |
| | (0.035) | (0.021) | (0.015) |
| Wife female friends | 0.006 | -0.002 | -0.004 |
| | (0.007) | (0.003) | (0.004) |
| Wife male friends | -0.031 | 0.013 | 0.018 |
| | (0.035) | (0.015) | (0.021) |
| Wife trusting people | -0.051* | 0.008 | 0.043 |
| | (0.027) | (0.009) | (0.033) |

**Wife discussing sexual relations with husband**

| | | | |
|---|---|---|---|
| Often discusses | -0.08*** | 0.037** | 0.043*** |
| | (0.029) | (0.017) | (0.015) |
| Discusses daily | -0.07*** | 0.003** | 0.071** |
| | (0.023) | (0.017) | (0.035) |

| **Household work and leisure** | | | |
|---|---|---|---|
| *Chores inside the house* | 0.003 | -0.001 | -0.001 |
| | (0.004) | (0.002) | (0.002) |
| *Chores outside the house* | 0.046*** | -0.02** | -0.03*** |
| | (0.012) | (0.076) | (0.008) |
| Wife leisure time | -0.001 | 0.0006 | 0.0008 |
| | (0.003) | (0.001) | (0.002) |
| Wife currently employed | 0.11 | -0.07** | -0.04*** |
| | (0.07) | (0.057) | (0.014) |
| Wife financial autonomy | -0.065** | 0.034** | 0.029** |
| | (0.033) | (0.022) | (0.013) |
| Not employed | -0.027 | 0.008 | 0.019 |
| | (0.058) | (0.008) | (0.05) |
| Public sector | -0.029 | 0.009 | 0.019 |
| | (0.026) | (0.007) | (0.019) |
| Commute time | 0.007 | -0.003 | -0.004 |
| | (0.011) | (0.005) | (0.006) |
| Working hours | -0.0004 | 0.0002 | 0.0002 |
| | (0.006) | (0.002) | (0.0033) |
| Annual earnings | -0.006* | 0.003* | 0.004* |
| | (0.003) | (0.002) | (0.002) |
| Time husband spends with friends | 0.015 | -0.006 | -0.008 |
| | (0.011) | (0.005) | (0.006) |
| Husband trusting people | -0.006 | 0.002 | 0.003 |
| | (0.047) | (0.017) | (0.029) |
| Husband time spent on domestic chores | 0.037 | -0.015 | -0.022 |
| | (0.024) | (0.011) | (0.014) |
| Husband time spent on chores outside the house | -0.028 | 0.011 | 0.016 |
| | (0.038) | (0.016) | (0.022) |
| Husband time spent on active leisure activities | 0.039 | -0.016 | -0.023 |
| | (0.028) | (0.013) | (0.017) |
| Husband time spent on passive leisure activities | 0.001 | -0.0004 | -0.0006 |
| | (0.006) | (0.002) | (0.003) |
| Husband time spent on social leisure activities | -0.009* | 0.004* | 0.0056* |
| | (0.005) | (0.002) | (0.003) |
| (Urban) x (Husband earning) | 0.006* | -0.0026 | -0.003 |
| | (0.004) | (0.0016) | (0.002) |

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