ESSAYS ON FEMALE EMPOWERMENT AND WOMEN'S STATUS

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A thesis submitted to the Department of Economics in fulfilment of the requirements for the degree of

Doctor of Philosophy (PhD)

University College London (UCL)

London
January 2016

DECLARATION

I, Ahmed Jalaluddin Amanalla Al-Khaja, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Abstract

This thesis explores different dimensions of female empowerment in Egypt. In Chapter 2, "Could having more children encourage mothers to work? Evidence from Egypt", the relationship between fertility and female empowerment is explored. A smaller family size reduces the conflict between childrearing and labour force participation, potentially encouraging female employment. On the other hand, due to the lower costs of childrearing, a smaller family size reduces the financial motive for labour force participation. The overall effect of family size on female employment is examined in the context of the Arab region; a region characterised with falling fertility and yet stagnating and low female employment. Evidence is found for a significant positive relationship between family size and employment, particularly amongst couples with lower education and lower income. In Chapter 3, "Decision-making in Egyptian Households", a measure is constructed for female bargaining power, based on the proportion of decisions in the household in which women report having a say. The determinants of the measure are explored at an individual level, and the effect of a change in legislation which is predicted to increase women's bargaining power is explored. The association between a woman's bargaining power and school enrolment of her children is estimated, with suggestive evidence that girls', but not boys', education is influenced by their mother's bargaining power. In Chapter 4 "Dower and Divorce in Egypt", the Islamic institution of "mahar" is studied. The trends and levels of prompt and deferred marital transfers are examined, with evidence of a decline in the former and rise of the latter. A framework is presented to understand how "mahar" can affect marital stability, although evidence suggests that it may provide a more social function than an economic one.

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Acknowledgements

I have completed this thesis at UCL under the supervision of Stephen Machin, as my principal advisor, and V. Bhaskar, as my secondary advisor. I am grateful for their advice, guidance, and comments throughout my PhD years.

I have benefited from discussions with the participants of the 27th Annual Conference of the European Association of Labour Economists, the 7th COSME-FEDEA Workshop on Gender Economics, and the Workshop on Analysis of Panel & Retrospective Household Surveys, held by the Economic Research Forum, Egypt. In particular, I acknowledge productive discussions and correspondence with Stephan Litschig, Marco Alfano, Jamie Millan-Quijano, and Rana Hendy.

I would like to thank my examiners, Marcos Vera Hernandez and Dan Anderberg for their thorough reading of this thesis, and constructive comments and advice, which have helped it crystallise to its current form.

Undertaking my PhD would not have been possible without the love and support of my family in Bahrain, and in particular the inspiration of my father, and the compassion and prayers of my mother. I am grateful to my in-laws, the Al-Yassins, for providing a home away from home, and their support in helping me balance my responsibilities, in particular during my write-up. The meticulous proof-reading of Aliya Al-Yassin, will hopefully make this thesis an easier read.

Last, but not least, I am eternally indebted to my wife, Amina, for her love, patience, and persistence in following up on my progress. I have benefited both from discussing ideas with her, and from having a living example of an inspirational woman in my life.

Funding Acknowledgements

I was funded to undertake my PhD by the Crown Prince International Scholarship Programme (CPISP), Bahrain. I am grateful for both the funding provided by the CPISP, and the constant support provided by its team, and in particular by Ava Garbutt.

Chapter 1: Introduction

Over the last few decades, the goal of empowering women has featured highly in the agendas of developing countries. Female empowerment is an aim in itself; providing women with their full rights in society, enabling them to achieve their potential, and overcoming discrimination against them in different spheres of public life. Empowering women also enables society as a whole to progress further, as the full human capital of the population is utilised, and outcomes for children are improved, both in their childhood and in their later adulthood.

Economists have therefore also dedicated their set of skills and knowledge to measuring female empowerment, determining its causes, both at an individual level and an institutional level, and understanding the range of outcomes it could affect. Disentangling female empowerment from its determinants and consequences is empirically challenging, due to the simultaneous nature of decisions made in households, and unobserved heterogeneity. The quest is therefore to find exogenous changes and shocks to different measures of female empowerment or its determinants that enable identification.

This thesis set out to explore issues surrounding female empowerment and women's status in the Arab region. Due to the limited availability of data in the region, this thesis focuses on Egypt, as census and household surveys are widely available. Although the findings therefore can only be attributed to Egypt, similar institutions, traditions, and socioeconomic indicators in other Arab countries, make the following discussion relevant for other countries in the region.

In Chapter 2, female empowerment outside of the household is explored, through looking at the effect of fertility on female employment. A standard assumption often made in the literature is that employment is a reliable measure of female empowerment, and a desirable outcome in itself. This assumption is challenged in this chapter, through reconsidering the reasons for female employment. This chapter also examines son-

preferences in Egypt, and exploits the sex-composition of children to identify the effect of fertility on female employment.

In Chapter 3, female empowerment within the household is discussed, through examining bargaining power in Egyptian households. The panel structure of one of the surveys is exploited to examine the importance of unobserved heterogeneity in explaining bargaining power. The effect of determinants frequently used in the literature to proxy for bargaining power is brought into question, whilst evidence is presented that bargaining power responded to a change in legislation enabling conditions to be stipulated in marital contracts. This finding provides ground for future research exploiting this change in legislation in order to estimate the consequences of bargaining power. This chapter also explores whether the bargaining power of mothers might have a differential impact on educational outcomes of their daughters, as compared to their sons.

In Chapter 4, the institution of Islamic dower, or *mahar*, is examined in the context of Egypt. Evidence is presented for the structure of *mahar* in Egypt, and its division between a prompt part, transferred at the time of marriage, and a deferred part, transferred only in the case of divorce. The trend over time in the structure and level of *mahar* is reported. The chapter also looks at the effect of *mahar* on women's ability to seek unilateral divorce, and its role as an insurance mechanism against husband-initiated unilateral divorce.

The overall evidence from the three aspects of female empowerment discussed in this thesis suggests an improvement in the status of women over time, although obstacles to achieving their preferences remain in place. The thesis also highlights the importance of country-specific institutions and traditions in understanding the relevance of measures of female empowerment, and the extent of their effect on other outcomes. Further research is needed in issues surrounding female empowerment, in the Arab region in particular. Investment into carrying out censuses and surveys in other Arab countries would be a welcome first step.

Chapter 2: Could having more children encourage mothers to work? Evidence from Egypt

2.1 Introduction

The effect of family size on female labour supply decisions plays a central role in many economic models of household time allocation (Gronau, 1977), and in understanding the nature of the conflict between a woman's reproductive and productive roles. Higher fertility is often seen as an obstacle to female employment, with smaller family size as a prerequisite for female participation in the labour market. However the direction of the effect of fertility on a woman's employment is theoretically ambiguous. On the one hand, a woman faces a time constraint which leads to a conflict between childrearing and labour force participation. Higher fertility could limit a woman's physical ability to participate in the labour market, or reduce the number of hours she works, as she devotes more time to childrearing. On the other hand, couples face an income constraint, which could mean that higher fertility induces women to increase their labour market participation in order to afford the costs of childrearing. The weight given to these constraints could change with the stages of economic development. In the earlier stages, there are limited opportunities for female employment, and strong social preferences for confining women to roles within the household. Female employment is thus seen as a financial necessity to support the family financially. At later stages of development there are more equal opportunities, and higher educational attainment for women. Female employment thus grows into means of self-fulfilment and contributing to society, which is encouraged by smaller family sizes.

The paper studies specifically the interaction between fertility and female employment in Egypt, a country within the Arab region; a region which has not received much attention in the empirical literature. The region has historically been characterised by high fertility levels and low female labour force participation rates. Average female labour force participation in Arab countries, as a percentage of the total female population aged 15+, was at 23.8% in 1980, and only rose to 26.2% by 2009. Indicators of women's well-being such as fertility, education and female life-expectancy have

generally improved favourably over the last couple of decades compared to other regions. The total fertility rate in particular has fallen from an average of 6.3 in 1980 to 3.2 in 2013.[1] The fall in fertility has been attributed to increasing living standards (Amin and Lloyd 2002) and increased education and national population planning programmes (World Bank 2004; Roudi-Fahmi and Ashford 2008).

The fact that fertility rates have fallen while female labour force participation rates have stagnated questions the effect of fertility on female labour outcomes. Macro level statistics however could mask heterogeneity at the household level. Furthermore, any positive effect of lower fertility on female employment (arising from the relaxation of the time constraint) could have been averaged out by the reduced need for female employment due to increasing living standards. Household level data is therefore used in order to understand better the relationship between fertility and female employment in Egypt.

Egypt is a labour abundant, resource poor country. The total fertility rate is slightly lower than the Arab average, falling from 5.4 in 1980 to 2.8 in 2013. Female labour force participation, as a percentage of the total female population aged 15+, actually fell from 29.1% in 1980 to 22.4% in 2009. Survey data however shows that the participation rate for married women has remained relatively constant despite the overall trend. In a region where childbearing outside of marriage is rare, married women are the sample of interest.

In addition to testing prediction of economic models, this chapter could also help guide policy in the region. The 2004 MENA Development Report argues that "lack of adequate women's involvement in the economy has reduced the potential welfare of families." Understanding the reasons for this lack of involvement is essential to policy-making. In particular, it would help assess whether population planning programmes which have been in place since 1984 in Egypt (Amin and Lloyd, 2002), have effects that go beyond reducing fertility; for example translating into increased female labour force participation. Alternatively, whether perhaps such programmes have, through reducing fertility, actually reduced the need for female employment, should also be examined.

[1] Figures for female labour force participation and total fertility rates retrieved from the World Bank's DataBank on 1/6/2011, and updated on 13 /9/2015

Section 2.2 reviews the literature on son preference in Egypt, the relationship between fertility and female employment, and existing attempts of identification. Section 2.3 discusses briefly theoretical predictions of the effect of fertility on female employment. Section 2.4 explains the datasets used in this study. Section 2.5 examines fertility preferences in Egypt based on the datasets, and Section 2.6 examines female employment patterns. The sample restrictions are explained in Section 2.7, in addition to summarising descriptive statistics. Section 2.8 presents estimates of the effect of the sex composition of children on cumulative fertility, and section 2.9 presents estimates of the effect of sex composition on desired fertility. Section 2.10 then presents the main results, on the effect of fertility on female employment. Section 2.11 stratifies the results by region, wealth, education and cohort. Section 2.12 looks at the validity of the exclusion restriction assumed to justify the use of the instruments. Section 2.13 concludes and discusses the results. The appendices look in more detail at contraceptive knowledge and use in Egypt, and the likelihood of sex-selection undermining the results.

2.2 Existing Literature and Contributions

A. Son Preference in Egypt

Strong son preference is characteristic of many regions in the developing world, including the Arab region. In the words of Ali (2002, p. 128): "A house without a son is thought to be orphaned of its ritual obligations and importance." In Egypt, the son preference has been documented in various studies (such as Williamson 1976; Arnold 1991; Gadalla et al. 1985; El-Zeini 2008; Yount et al. 2000; Basu and De Jong 2010.) Referring to Jordan, which shares a similar culture to Egypt, a prominent Jordanian activist, Rehab Qaddoumi, argues that "the psychological pressure to produce a male heir drives infertile women to risk their health to produce children" (Sawalha, 1999). Son preferences could be driven by cultural attitudes, or by old age security considerations.

In some regions, particularly in South-Asia, son preference is often coupled with "daughter aversion", arising particularly due to a culture of dowries. Such a culture does

not exist in the Arab world[2], hence son preference is not necessarily coupled with daughter-aversion. Borooah and Iyer (2004) find that even within India, daughter aversion is lower among Muslims than Hindus. Yount et al. (2000) find in a rural area in Egypt that woman have a desire to have at least one daughter, although the absence of a daughter does not influence fertility behaviour significantly.

At the population level, strong sex composition preferences could lead to high fertility levels. El-Zeini (2008) argues for example that son preference is a major obstacle in the acceptance of the two-child ideal in Egypt. Simpson and Carson (1999) argue that while the average size of a balanced family in Jordan is about four, the number might reach a dozen if couples are forced to 'keep trying' to obtain their desired sex composition.

B. The Relationship between Fertility and Female Labour Supply

Angrist and Evans (1998) argue that "the vast majority of studies find a negative correlation between fertility and female labour supply". However, several studies have found negligible or insignificant correlation between the two (Sathar et al., 1988). Studies specific to the Arab world are heavily inclined towards a demographers' approach in which employment is the independent variable thought to be an important socioeconomic determinant of fertility. Al-Qudsi (1998) finds that a woman's wage in Jordan is significantly negatively associated with her cumulative fertility, and Akin (2005) finds that female labour force participation is significantly and negatively associated with fertility in 14 Middle Eastern countries. On the other hand, Shah et al. (1998) find that a woman's employment status in Kuwait is not significantly associated with her desired fertility. Khraif (2001) also finds no significant correlation between a woman's employment and her cumulative fertility in Saudi Arabia.

Shakhatreb (1995) looks at the determinants of female labour force participation, using the 1982-1983 Jordan Manpower Survey. He finds that the presence of pre-school children aged 2-5 has a significant negative association with women's labour force participation, while the presence of females aged 15 and above has a strong positive

[2] As discussed in Chapter 4, an opposite transfer of "dower" from the groom's side to the bride exists in Muslim countries.

relation. He argues that there may be a nonlinear relationship between fertility and labour force participation. In larger families, older children take care of younger children, making it easier for the mother to leave the home.

C. Identification

Understanding the effect of fertility on female employment is complicated by an endogeneity problem. Simultaneity bias may be induced by joint determination of fertility and labour supply decisions. As noted, demographers have typically considered female employment an important socioeconomic determinant of fertility, especially in developing countries. According to the security or female autonomy hypothesis (Dixon-Mueller, 1989), working outside the household could give women more independence, reduce their desired fertility and give them more bargaining power in the fertility decision-making process. On the other hand, having an extra source of income could potentially encourage higher fertility. Omitted variable bias may also be induced by cultural or religious attitudes that link a preference for high fertility with an attitude of confining women to reproductive roles.

Some of the early studies that have attempted to overcome the endogeneity problem have looked at (unplanned) multiple births as an exogenous source of variation in family size (Rosenzweig and Wolpin, 1980). Multiple births are by their nature rare however, and also due to the joint timing of multiple children impose extra constraints on the parents' resources. The relevance of the local treatment effects identified is therefore questionable. Studies considering infertility shocks as the exogenous source of variation in family size (Rondinelli and Zizza, 2010) also face the same problem.

Angrist and Evans (1998) provide one of the main contributions to the literature on identifying the effect of fertility on female employment. They explore the effect of fertility on measures of female labour supply in the USA. Their identification strategy is based on the observation that families have a preference for a mixed sex composition in the USA – families with two boys or two girls are more likely to have a third child than families with one boy and one girl. In a regression framework, they instrument for a dummy variable for having more than two children, using dummy variables for having same-sex first and second children.

They find that while OLS estimates of the effect of fertility on labour supply are greater than the IV estimates in absolute value, the latter still show a significant negative effect of having a larger family size on the labour supply of the mother. The same does not hold for the labour supply of the father. They also find that there seems to be little or no effect of children on their mother's labour supply among college-educated women or women whose husbands have high wages. This seems to contradict the basic predictions of theories of household time allocation.

Cruces and Galiani (2007) use the same identification strategy for Argentina and Mexico, and find similar results. Iacovou (2001) also uses this identification strategy for UK data. She finds that after accounting for endogeneity, there is a positive association between employment and fertility. Although the estimates she finds are not significantly different to zero, they are significantly different to the OLS estimates. She argues that the different finding compared to Angrist and Evan's (1998) finding for the USA may be due to differences between the welfare system, provisions for maternity leave, or relative availability of part-time work in the two countries. Such factors may reduce the conflict between reproductive and productive roles in the UK.

Chun and OH (2002) estimate the effect in South Korea of family size on female labour supply participation. They use the first child's sex as an instrument, based on the idea that there is a strong son preference in South Korea. They use a two-stage probit framework, and find that the IV estimates of the negative effect of fertility on female labour force participation is larger than that of the simple-probit framework. Lee (2004) use the same IV to estimate the effect in South Korea of family size on child quality, measured as monetary investment in children's education.

Wong (2010), looking at Hong Kong, combines both types of identification strategies. She uses the sex of the first child as an IV when estimating the effect of having more than one child on female labour supply. On the other hand, she uses dummy variables for the sex of the first two children as IVs in estimating the effect of having more than two children on female labour supply. In both cases, she finds stronger evidence for son preference rather than variety in the first stage. In general, she finds that IV estimates are greater in magnitude than OLS estimates. She argues that this might be

explained by noting that the women who are likely to exhibit son preference are those with traditional values, and so their labour supply would respond more strongly to the presence of children. She also finds that women's labour supply appears to be insensitive to additional fertility when they already have three children.

Finally, Angrist, Lavy and Schlosser (2006), look at the effect of family size on outcomes of the first two children in Israeli families (completed schooling, adult earning, marital status, and fertility). They use the sex composition of the first two children to instrument for fertility measures when considering a sample of women with at least two children, but also the sex composition of the first three children when considering a sample of women with at least three children.

D. Contributions

This chapter follows the same general identification method, extending the results to a country in the Arab region. This would help a better understanding of both the effects of fertility on female employment, and the effect of sex composition on fertility decisions, in a region characterised by high but falling fertility levels and low female labour force participation rates. This chapter can also shed light on the nature of household decision making in a region which has received limited attention in the empirical literature.

The use of rich survey data enables us to provide new evidence on the effect of the sex composition of existing children on the desire for another child, and hence justifying the relevance assumption needed for the use of the sex composition as an instrument in studying the effect of fertility on female employment. Reasons for the exclusion restriction not holding are discussed.

2.3 Theoretical Effect of Fertility on Female Employment

Angrist and Evans (1998) develop a theoretical framework in which the effect of an exogenous shock to fertility on female employment could be analysed. In this

framework, parents' time is allocated between work in the market (market production), child care (home production), and leisure.

Time spent in home production is determined by real wages (with child care costs as numeraire), marginal productivity at home, and the number of children. In general, the direct effect of an increase in the number of children is to increase home production, unless there are no scale economies in home production. The higher the real wage, the lower the time spent in home production. The effect of the number of children on home production is also magnified with an increase in real wages.

Hence on one hand, an increase in the number of children could have a negative effect on female employment, through its effect on increasing home production, at the expense of market production.

However there are financial costs to childrearing which increase with the number of children. If the increase in costs due to an increase in the number of children is high enough, then in essence a woman may be forced to forgo time spent in home production in order to enter the labour market. Hence an increase in the number of children could have a positive effect on female employment, and the overall effect of fertility on female employment therefore is theoretically ambiguous, and could be heterogenous between different groups of women.

2.4 Data

The analysis makes use of the Demographic Health Surveys (DHS) for Egypt; which are part of the MEASURE DHS project, funded by the United States Agency for International Aid. The DHS are national representative household surveys, containing detailed fertility, health and demographic information for ever-married women between the ages of 15 and 49. The surveys have been carried out by MEASURE DHS in 91 developing countries, enabling future cross-country comparisons.

The surveys carried out in Egypt in years 1995, 2000, 2003, 2005, and 2008 are pooled for the analysis. In the same order, the full sample sizes are 14,779 women, 15,573 women 9,159 women, 19,474 women and 16,527 women. In regressions, standards errors are clustered at the level of the primary sampling unit. Section 2.7 provides more information on the sample restrictions applied to carry out the analysis.

2.5 Fertility Preferences

The DHS surveys enable us to study reported fertility preferences in Egypt. Two aspects of fertility preferences are important; a woman's ideal number of children, and the ideal sex composition of those children. The former is important because at high levels of desired fertility, i.e. with little incentive to limit fertility, sex preferences may have limited effect on fertility outcomes.

Reported fertility preferences are captured by the questions on "the ideal number of children that the respondent would have liked to have in her whole life, irrespective of the number she already has," and the ideal sex composition of these children. Such questions are of course not flawless, particularly the question on "ideal number of children" when taken to measure "desired fertility". D'Addio and Mira d'Ercole (2005) argue that respondents may adapt their fertility intentions to their actual experience, and that responses to such questions may change over time. Furthermore, it may be difficult for the respondent to distinguish between what society perceives to be 'ideal' and what the respondent desires for themselves. The degree to which answers to the questions correspond to fertility outcomes may also differ from country to country. Basu (2009) argues however that information on ideal children might be more reliable than information on ideal sex composition, as couples may be less willing to reveal their true son preference.

Table 2.1 summarises the responses to the question on "ideal number of children". Several patterns emerge. Firstly, the mean number of ideal children (for those reporting a numerical answer) has remained fairly constant over the time period despite the fall in total fertility rates. Of those reporting numerical answers, the proportions

reporting each answer are also fairly constant over the time period. The mean number of ideal children is generally lower than the total fertility rate in Egypt.

Secondly, a significant proportion of women report a fatalistic or non-numerical response to the question. The proportion ranges from 7-22%. The mean number of ideal children should therefore be interpreted with this in mind.

Thirdly, the proportion who report having no children or one child as their ideal is low, never exceeding 4%.

Fourthly, the majority (70-75%) of numerical preferences are in the range of two to three children. This could perhaps be partially explained by noting that population messages in Egypt have typically portrayed three children as an acceptable "small family size" (El-Zeini, 2008).

It is important to note, that these are the wife's reported ideal number of children of the wife. The husband's ideal number of children could difer. If the husband has greater bargaining power than the wife in the fertility decision-making process, then the husband's ideal number of children would be more important in driving fertility outcomes. In some of the surveys, a question was asked about who the main decision-maker is for using contraception. 82-87% of respondents reported that it was a joint decision, while only 0.02-0.05% reported that it was mainly the husband's decision. Nonetheless, even within a joint decision-making process, the bargaining power of the husband could still have more weight, especially as men are typically seen as the main decision-maker in Arab families.

Table 2.1: Ideal Number of Children

	Proportion reporting each answer					
	1995	**2000**	**2003**	**2005**	**2008**	**Pooled**
Up to God / As Allah wills	0.048	0.082	0.080	0.065	0.049	0.064
Other non-numerical answer	0.108	0.141	0.107	0.013	0.020	0.071
Numerical answers	0.845	0.777	0.813	0.922	0.931	0.866
Of which:						
0	0.001	0.000	0.000	0.004	0.002	0.002
1	0.038	0.026	0.027	0.025	0.024	0.028
2	0.459	0.422	0.455	0.439	0.421	0.437
3	0.290	0.299	0.302	0.296	0.289	0.294
4	0.144	0.179	0.165	0.173	0.189	0.171
5	0.034	0.040	0.026	0.032	0.045	0.036
6+	0.036	0.035	0.024	0.030	0.030	0.031
Mean Ideal Number of Children (Standard Deviation)	2.85 (1.42)	2.94 (1.35)	2.83 (1.25)	2.88 (1.33)	2.93 (1.27)	2.89 (1.33)
Total Fertility Rate	3.6	3.5	3.2	3.1	3.0	

Proportions based on full DHS samples. Base for numerical answers is all women reporting numerical answers. Mean of "Ideal Number of Children" based on numerical responses only. Estimates are weighted.

Table 2.2 reports answers to a question on whether the respondent believed their husbands wanted greater, fewer or the same number of children as they wanted. At all levels of reported ideal children for the respondent, the majority of women believe their husbands want the same number of children as themselves. Nonetheless, 20.5% of respondents on average report that their husband wants more children than themselves. These proportions are higher when the respondent's ideal number of children is one or more than four. The former may suggest the lower prevalence of husbands wanting a single child, while the latter may suggest that men with very high desired fertility influence their wife's desired fertility upwards, albeit not to their same level

Table 2.2: Husbands' Fertility Preferences

Pooled	Proportion reporting each answer						
Ideal Number of Children:	**1**	**2**	**3**	**4**	**5**	**6+**	**Total**
Both Want the Same	0.566	0.717	0.706	0.628	0.525	0.464	0.647
Husband Wants More	0.302	0.197	0.188	0.232	0.284	0.329	0.205
Husband Wants Fewer	0.042	0.033	0.047	0.0621	0.078	0.121	0.046

Proportions based on full DHS samples. "Don't Know" answers not reported.. Estimates are weighted.

Table 2.3 reports the preferred sex composition of children, where a numerical answer of one to four is given for the ideal number of children. It is notable that a significant proportion of women report having no preference over the ideal sex composition of their children.

The majority of women who report an ideal number of children of two would ideally want one boy and one girl (53-67%). Similarly, the majority of women who report an ideal number of children of four would ideally want two boys and two girls (59-69%).

The majority of women who report an ideal number of children of three express no sex composition preference for their children (50-57%, with an anomaly of 34% 2000). The next highest preference however is for two boys and one girl (26-33%).

At all levels of ideal children (except one), the proportions who would ideally want only one of the two sexes is very low, and even lower for wanting only girls. Whenever there is an uneven sex preference, the balance is in favour of boys.

Table 2.4 looks at ideal sex compositions for the whole sample for all levels of ideal number of children reported. Again, the result show that a significant percentage of women report no explicit sex composition preference. Out of those reporting an explicit preference, the majority report wanting an equal number of boys and girls, and amongst those expressing a preference for more of one sex, the balance is significantly in favour of more boys.

Table 2.3: Ideal Sex Composition by Number of Ideal Children

	Proportion reporting each preferred sex composition					
	1995	**2000**	**2003**	**2005**	**2008**	**Pooled**
Base: Ideal Number of Children = 1						
One Boy	0.209	0.315	0.222	0.175	0.213	0.221
One Girl	0.141	0.120	0.237	0.175	0.138	0.156
No Sex Preference	0.647	0.518	0.541	0.650	0.649	0.614
Base: Ideal Number of Children = 2						
Two Boys	0.019	0.033	0.020	0.0146	0.0148	0.0194
Two Girls	0.008	0.009	0.013	0.014	0.007	0.010
One Boy and One Girl	0.539	0.697	0.633	0.595	0.671	0.624
No Sex Preference	0.432	0.229	0.329	0.373	0.304	0.338
Base: Ideal Number of Children = 3						
Three Boys	0.009	0.019	0.018	0.018	0.011	0.015
Three Girls	0.009	0.007	0.011	0.009	0.007	0.008
Two Boys and One Girl	0.295	0.334	0.275	0.261	0.310	0.294
Two Girls and One Boy	0.111	0.106	0.098	0.127	0.117	0.114
One Boy, One Girl, and One of Either Sex		0.152	0.074	0.014	0.037	0.050
No Sex Preference	0.571	0.336	0.511	0.564	0.513	0.505
Base: Ideal Number of Children =4						
Four Boys	0.009	0.012	0.007	0.012	0.009	0.01
Four Girls	0.005	0.001	0.005	0.001	0.003	0.003
Two Boys and Two Girls	0.594	0.693	0.652	0.661	0.689	0.663
Three Boys and One Girl	0.069	0.060	0.034	0.034	0.037	0.046
One Boy and Three Girls	0.017	0.017	0.011	0.011	0.005	0.011
No Sex Preference	0.306	0.169	0.273	0.276	0.250	0.253

Proportions based on full DHS samples. Non-numerical responses to sex preferences, and other combinations of expressing a sex preference for only a certain number of children not reported.

Table 2.4: Ideal Sex Composition

	Proportion reporting each answer					
	1995	**2000**	**2003**	**2005**	**2008**	**Pooled**
No Children	0.0004		0.0002	0.0041	0.002	0.002
No Sex Composition Preference	0.465	0.267	0.389	0.4218	0.373	0.387
Ideal Children > 0 + State a Preference	0.535	0.733	0.611	0.574	0.625	0.612
Of Which:						
Only Sons	0.042	0.042	0.037	0.0371	0.029	0.037
Only Daughters	0.023	0.013	0.027	0.0240	0.015	0.020
More Sons than Daughters	0.217	0.204	0.171	0.1763	0.184	0.191
More Daughters than Sons	0.077	0.062	0.062	0.0779	0.071	0.071
Equal Daughters and Sons	0.640	0.679	0.704	0.6847	0.701	0.682

Proportions based on full DHS samples. Base: Women reporting numerical answers to the number of ideal children and to the number of ideal children of each sex. "More Sons than Daughters" excludes preference for only sons. "More Daughters than Sons" excludes preference for only daughters. Estimates are weighted.

These reported preferences seem to imply that there is a strong preference for children of a mixed sex composition amongst a large proportion of women, rather than a pure son preference. Son preference at the aggregate level is still manifested by a larger proportion of women who report wanting more sons than daughters compared to women who report wanting more daughters than sons.

These preferences however mask another important element of son preference; they do not capture the extent of the desire to have at least one (or more) of a certain sex relative to the other. Even when the respondent reports a preference for a mixed sex composition, they could still have a stronger preference for ensuring that they have a certain number of male children, and hence be more willing to continue childbearing if they have not achieved their desired number of sons than if they have not achieved their desired number of daughters.

As noted, there is also a significant proportion of women who report non-numerical answers or report having no sex composition preferences. It is plausible that women with stronger son preferences tend to report such answers.

Finally, it should be noted again that this is the preferred sex composition of the wife, not the husband who may have different sex composition preferences. The impact of the sex of existing children on the decision to have a future child clearly depends also on the sex composition preference of the husband.

So while these reported preferences are indicative of how we may expect the composition of existing children to affect the decision to have more children, we need to consider "revealed preferences". Such preferences may be implied by observing how the proportion of women who progress to a given birth order differs according to the sex composition of their earlier children.

2.6 Female Employment Patterns

Table 2.5 looks at female employment patterns in the pooled DHS datasets for all ever-married women, aged 15-49. The average employment rate is 19%. Breaking the figures down by year of survey shows no clear trend over time. The vast majority of working women receive cash for their employment, work away from home and work for somebody other than themselves and other than family members.

Table 2.5: Employment Patterns

Means (Standard Deviations)

	Employed	Employed in Last Year	Paid Cash	Worked Away	Worked For Somebody Else
Mean	0.190	0.197	0.825	0.926	0.687
	(0.392)	(0.398)	(0.380)	(0.262)	(0.464)
Observations	75,463	75,505	14,699	12,602	14,131

Proportions based on full DHS samples. Paid for cash includes being paid both cash and kind.
Estimates are weighted.
Employed (=1 if employed at time of survey)
Employed in Last Year (= 1 if employed in last 12 months)
Paid Cash (= 1 if received cash for employment in last 12 months)
Worked Away (= 1 if employment in last 12 months was away from home)
Worked For Somebody Else (= 1 if employer of current employment is not own self or family)

Table 2.6 looks at the jobs that married women are engaged in, and also tabulates them by urban status and by region. The single largest category of occupation is

technical/professional/managerial jobs followed by agricultural jobs. Agriculture is most important in rural area while it employs less than 2% of working women in urban areas. The differences between Lower Egypt (considered more modern) and Upper Egypt are small in comparison to the urban/rural divide.

Table 2.6: Occupations of Working Women in Egypt

	Proportions					
	All Areas	**Urban Areas**	**Rural Areas**	**Lower Egypt**	**Upper Egypt**	**Other Regions**
Technical/Professional/Managerial	0.382	0.517	0.242	0.343	0.368	0.489
Agriculture	0.224	0.018	0.438	0.307	0.245	0.012
Clerical	0.164	0.230	0.096	0.145	0.143	0.232
Sales	0.070	0.050	0.090	0.072	0.082	0.049
Services	0.077	0.098	0.055	0.061	0.077	0.114
Manual	0.077	0.078	0.076	0.068	0.081	0.093
Household and Domestic	0.006	0.008	0.004	0.004	0.004	0.011

Proportions based on full DHS samples. Base: Working Women.

2.7 Sample Restrictions and Descriptive Statistics

The main regressions consider the effect of the number of living children on female employment variables. Four samples of women are considered: women who have at least one, two, three or four children.[3]

The sample restrictions for a sample of women with at least k children, where $k \in \{1,2,3,4\}$ are thus as follows.

1) The respondent must be currently married and in her first marriage.
2) The respondent must have at least k children, and not be pregnant with her $(k+1)^{th}$ child.
3) The respondent must have wanted her $(k+1)^{th}$ child if she has only (k+1) children.
4) The respondent's k^{th} child must be at least two years old.

[3] Looking at the effect of having more than k children, where $k \in \{2,3,4\}$, shows a similar pattern of results.

The sex composition of existing children could affect not only the decision to have another child, but also the timing of that child. Therefore the four condition controls for the physical ability to have another child, but also reduces any bias caused by the differential timing decision.

Table 2.7 reports the descriptive statistics for the main variables used, given the sample restrictions. Breaking the results down by year of survey shows that the average number of living children a woman has, has fallen over time by around 0.5 between 1995 and 2008 in all samples. Employment follows no clear pattern over time, but falls with the increase in the minimum number of children needed to be included in the sample. Depending on the sample, the average age at first marriage ranges from 17 to 19 years. The mean interval between first marriage and first birth is fairly constant, averaging at just less than 24 months.

Table 2.7: Descriptive Statistics

Means and (Standard Deviations)

Sample: Women with K+ Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Children Alive	3.546	3.927	4.513	5.291
	(1.699)	(1.628)	(1.529)	(1.409)
Number of Sons in 1st K Children	0.514	1.020	1.518	1.995
	(0.500)	(0.708)	(0.869)	(1.008)
Zero Sons in 1st K Children		0.241	0.121	0.064
(= 1 if first k children are female)		(0.428)	(0.326)	(0.246)
Zero Daughters in 1st K Children		0.261	0.132	0.066
(= 1 if first k children are male)		(0.439)	(0.339)	(0.249)
Age	34.821	36.403	38.298	39.914
	(7.725)	(7.156)	(6.454)	(5.871)
Age at First Marriage	18.998	18.716	18.123	17.316
	(4.001)	(3.932)	(3.700)	(3.325)
Age at First Birth	20.739	20.463	19.920	19.190
	(4.022)	(3.915)	(3.682)	(3.374)
Employed	0.199	0.207	0.197	0.162
	(0.399)	(0.405)	(0.398)	(0.369)
Observations	53,156	43,594	31,432	19,911

Samples are as defined in section 2.7. Estimates are weighted.

2.8 The Effect of Sex Composition on Fertility

The validity of the identification strategy rests on the assumption that fertility behaviour is influenced by sex composition preferences. As discussed, and in line with other countries in the Arab region, and indeed in the developing world, a strong son preference has been documented in Egypt, in many studies.

In the presence of strong sex preferences, we would expect progression to more births to depend on the sex composition of existing children.[4] Progressions to second, third, fourth and fifth births are considered. Table 2.8 shows the how the proportion of women who go on to have more children differs according the sex composition of earlier children.

Table 2.8: Progression to Higher Birth Orders

	Pooled Sample
Sex of First Child	**Proportion that have a second child (standard error)**
One Girl	0.952 (0.214)
One Boy	0.943 (0.232)
Sex of First Two Children	**Proportion that have a third child (standard error)**
Two Girls	0.873 (0.333)
One Boy and One Girl	0.795 (0.404)
Two Boys	0.803 (0.397)
Sex of First Three Children	**Proportion that have a fourth child (standard error)**
Three Girls	0.794 (0.404)
One Boy and Two Girls	0.702 (0.458)
Two Boys and One Girl	0.629 (0.483)
Three Boys	0.662 (0.473)
Sex of First Four Children	**Proportion that have a fifth child (standard error)**
Four Girls	0.747 (0.435)
One Boy and Three Girls	0.663 (0.473)
Two Boys and Two Girls	0.583 (0.493)
Three Boys and One Girl	0.577 (0.494)
Four Boys	0.598 (0.49)

Samples are as defined in section 2.7. Estimates are weighted.

[4] In the presence of daughter aversion or son aversion, the exact preferences may not be deduced from progression rates. However such attitudes are not suspected to be strong in Egypt.

The general picture emerging suggests that for a given number of existing children, the proportion of women who proceed to having an additional child is decreasing in the number of sons they already have. However women with no daughters are also more likely to proceed to having another child, compared to woman with children of a mixed sex composition, and especially women who have at least two boys.

The effect of the sex composition of existing children on the probability of further births is tested in an OLS framework, along the lines of Angrist and Evans (1998).

To enable comparison across samples, fertility is measured by the number of living children. In the presence of sex composition preferences, the effect of the sex of earlier children would continue to affect fertility decisions at higher orders. In each sample of women with at least k children, two specifications are tested. In the first specification sex composition is captured by the two variables "zero sons in the first k children" and "zero daughters in the first k children" (Equation 2.1). This allows for both son and daughter preferences. In the second specification, sex composition is captured by the variable "number of sons in the first k children" (Equation 2.2). This would be more relevant in the presence of stronger son preferences.

$$x_i = \alpha w_i + \delta_1(zero\ sons\ in\ first\ k)_i + \delta_2(zero\ daughters\ in\ first\ k)_i + \eta_i \quad (2.1)$$

$$x_i = \alpha w_i + \delta_3(number\ of\ sons\ in\ first\ k)_i + \eta_i \quad (2.2)$$

- x: fertility variable
  - Main variable: number of children alive
  - Additional Variable: dummy for wanting another child
- w: controls
  - Baseline controls: age, age at first birth, survey dummies
  - Further controls: education of wife, education of husband, number of children dead, and region[5].

[5] Regional variables are themselves divided also along urban/rural lines, so no further control for urban status is needed.

For the sample of women with at least one child, equations (2.1) and (2.2) coincide, as "zero sons in first k" and "zero daughters in first k" are perfectly collinear.

Table 2.9 reports the results of the first stage regressions. Regressions run for equation (2.1) show that for each sample of women with at least k children, having no sons in the first k children significantly increases cumulative fertility. The effect increases in magnitude with progression to higher parities, starting from 0.2 for women with at least one child to 0.6 for women with at least four children. On the other hand ,having no daughters in the first k children, actually slightly decreases cumulative fertility for women with at least 2 or 3 children, by 0.04-0.06. There is no significant effect of having no daughters on the fertility of women with at least 4 children.

As this suggests that fertility outcomes are more influenced by son preferences, equation (2.2) is of more relevance. The results suggest that throughout all samples, each additional son significantly reduces cumulative fertility by 0.15 to 0.2 children.

The results are robust to further controls. There is a significant negative relationship between the education of both partners and fertility at all educational levels. As expected the number of children dead is negatively associated with fertility, since women with children who have died have less time to reach higher parities.

Table 2.9: OLS Estimation of Effect of Sex Composition on Fertility

Sample: Women with K+ Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Without Further Controls				
	(1)	**(2)**	**(3)**	**(4)**
Number of Sons in First K Children	-0.212***	-0.204***	-0.186***	-0.150***
	[0.011]	[0.009]	[0.009]	[0.009]
	(5)	**(6)**	**(7)**	**(8)**
Zero Sons in First K Children		0.351***	0.502***	0.559***
		[0.016]	[0.024]	[0.040]
Zero Daughters in First K Children		-0.062***	-0.041*	-0.046
		[0.015]	[0.022]	[0.037]
With Further Controls				
	(1)	**(2)**	**(3)**	**(4)**
Number of Sons in First K Children	-0.208***	-0.202***	-0.193***	-0.166***
	[0.011]	[0.008]	[0.008]	[0.009]
	(5)	**(6)**	**(7)**	**(8)**
Zero Sons in First K Children		0.343***	0.506***	0.601***
		[0.015]	[0.022]	[0.037]
Zero Daughters in First K Children		-0.066***	-0.052**	-0.060*
		[0.014]	[0.021]	[0.035]

Dependent variable: "Number of Living Children". Samples are as defined in section 2.7. Robust standard errors, clustered at the level of the primary sampling unit, reported in parentheses. Regressions (1)-(4) correspond to equation (2.2). Regressions (5)- (8) correspond to equation (2.1)
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

2.9 The Effect of Sex Composition on the Desire for another Child

The effect of the sex composition of existing children on fertility could also be tested by running the previous regressions with the dependent variable "wants another child". This variable equals 1 if the respondent reports wanting another child, and 0 if she is either undecided or does not want another child.[6]

Women who are declared infecund or who are sterilised are excluded. The analysis is restricted to women with have one, t wo, three or four children when

[6] Women who are undecided are generally less than 3.5% in all samples

considering the effect of the sex composition of those children on the desire to have a second, third, fourth or fifth child respectively.

Table 2.10 reports the results of these regressions. For women with only one child, the sex of that child has no significant impact on the desire to have another child; this would be expected if the majority of couples desire more than one child. For women with two, three, and four children, the desire to have another child is significantly decreasing in the number of sons, although the effect decreases in magnitude as the number of existing children increases. The effect is thus largest in magnitude for women with two children only, for whom each son reduces the probability of desiring a further child by 4.8%.

The regressions on equation (2.1) suggest that having no daughters is also a significant predictor of desiring another child. For women with two children only, having no daughters increases the probability of desiring another child by 3.65%. Although significant, this is much smaller in magnitude than the effect of having no sons, which increases the probability of desiring another child by 16.2%.

The results therefore provide evidence for the effect of sex composition on the desire for children. The finding that having no daughters has a more significant effect on the desire to have another child than it has on actual fertility outcomes, could perhaps be explained by different sex composition preferences between husbands and wives, and the husband's stronger bargaining power in the fertility decision-making process.

Table 2.10: Effect of Sex Composition on Desire for Further Child

	(1)	(2)	(3)	(4)
Sample: Women with K Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Further Controls	No	No	No	No
Number of Sons	-0.003	-0.048***	-0.019***	-0.014***
	[0.013]	[0.008]	[0.004]	[0.003]
Observations	2,558	7,206	8,886	6,732
Sample: Women with K Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Further Controls	Yes	Yes	Yes	Yes
Number of Sons	-0.001	-0.049***	-0.021***	-0.017***
	[0.013]	[0.008]	[0.004]	[0.003]
Observations	2,557	7,201	7,201	6,727

	(5)	(6)	(7)	(8)
Sample: Women with K Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Further Controls	No	No	No	No
Zero Sons	0.003	0.162***	0.102***	0.080***
	[0.013]	[0.015]	[0.015]	[0.018]
Zero Daughters		0.037***	0.019**	0.009
		[0.012]	[0.009]	[0.009]
Observations	2,558	2,557	7,206	7,201
Sample: Women with K Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Further Controls	Yes	Yes	Yes	Yes
Zero Sons	0.001	0.157***	0.103***	0.085***
	[0.013]	[0.014]	[0.014]	[0.018]
Zero Daughters		0.033***	0.016*	0.007
		[0.012]	[0.009]	[0.009]
Observations	2,557	7,206	7,201	8,886

Dependent variable: "Wants another child". Samples are as defined in section 2.7,. Women who are declared infecund or sterilised are excluded. Robust standard errors, clustered at the primary sampling unit level, reported in parentheses. Regressions (1)- (4) correspond to equation (2.2). Regressions (5)-(8) correspond to equation (2.1).

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

2.10 The Effect of Fertility on Female Employment

The effect of fertility on female employment is tested with the regression of interest:

$$y_i = \alpha w_i + \beta x_i + \eta_i \quad (2.3)$$

- y: employment variable
  - Main variable: "employed"
  - Additional variables: "employed in last year" – "paid cash" – "worked away" – "worked for somebody else"
- x: fertility variable; "number of children alive"
- w: controls

Controlling for the mother's education is important, given that a positive relationship between female education and (non-agricultural) employment is marked throughout the Arab world (Moghadam, 1995). Education is also seen as a major factor in explaining the decline in fertility in the region, as it increases the age of marriage and the probability of using contraception (World Bank 2004; Roudi-Fahmi and Ashford 2008). Education could also be associated with different sex composition preferences.

Controlling for regions takes account of different opportunities for employment but also different attitudes towards fertility, contraceptive use, and sex composition preferences. It is argued that in Upper Egypt, for example, both institutional and cultural forces work against the idea of birth control (El-Zanaty et al. 1999; Ali 2002), and also that the ideology of female seclusion (Toth 1991) means women do less agricultural field work and are less active in marketing and trading (Hoodfar 1988; Larson 1991).

Given the first stage regressions suggest that son preference is more relevant in predicting fertility outcomes, the instrument used is "number of sons in the first k children" for each sample of women with at least k children.

Table 2.11 reports the OLS and 2SLS estimates of β in equation (2.3).

Table 2.11: OLS and 2SLS of Employment Models
Parameter Estimates [Robust Clustered Standard Errors]

	(1)	(2)	(3)	(4)
Sample: Women with 1+ children				
Estimation Method	OLS	2SLS	OLS	2SLS
Further Controls	No	No	Yes	Yes
Children Alive	-0.018***	0.027	-0.009***	0.032**
	[0.001]	[0.016]	[0.001]	[0.016]
R^2	0.071	0.051	0.151	0.136
Sample: Women with 2+ children				
Estimation Method	OLS	2SLS	OLS	2SLS
Further Controls	No	No	Yes	Yes
Children Alive	-0.023***	0.035***	-0.012***	0.036***
	[0.002]	[0.013]	[0.001]	[0.013]
R^2	0.079	0.044	0.160	0.139
Sample: Women with 3+ children				
Estimation Method	OLS	2SLS	OLS	2SLS
Further Controls	No	No	Yes	Yes
Children Alive	-0.021***	0.044***	-0.010***	0.036***
	[0.002]	[0.014]	[0.002]	[0.013]
R^2	0.072	0.024	0.153	0.131
Sample: Women with 4+ children				
Estimation Method	OLS	2SLS	OLS	2SLS
Further Controls	No	No	Yes	Yes
Children Alive	-0.013***	0.074***	-0.005***	0.054***
	[0.002]	[0.018]	[0.002]	[0.015]
R^2	0.047	-0.052	0.118	0.078

Dependent variable: "Employed". Samples are as defined in section 2.7. Robust standard errors, clustered at the primary sampling unit level, reported in parentheses. Regressions (1)- (4) correspond to equation (2.3).
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

OLS regressions show a consistent significantly negative relationship between fertility and employment. In the baseline model, each extra child decreases the probability of employment by between 1.3 to 2.3 percentage points depending on the

sample. This compares to 15.5 percentage points in Angrist and Evan's (1998) study of the USA. The effects are robust to the additional controls, although the magnitude of the effects decreases to 0.5 to 1.2 percentage points.

2SLS regressions however show a consistent significant positive relationship between fertility and employment. The effects increases in magnitude with the minimum number of children a woman must have to be in the sample. In the baseline model, each extra child increases the probability of employment by 2.6 percentage points amongst women with at least one child, up to 7.4 percentage points amongst women with at least four children. Again, the effects are robust to the additional controls, with some loss of magnitude at the higher parities.

Regional effects are generally significant, with a negative relationship between employment and being in an urban area. Employment is generally increasing in the wife's education, with the exception that non-educated women are more likely to be employed than women with primary education. Having higher education has the most significant positive effect on employment. This is in line with studies that find that most women in the region who work outside the agricultural sector are college-educated professionals (Roudi-Fahimi and Moghadam, 2003), while the informal sector also attracts women with low education who are forced to work by their economic conditions (Nassar 2003; Zafiris and Kaur 2003).

Husband's education has a non-linear relationship with employment, with employment more likely either if the husband is not educated or if he has higher education. Taken as a proxy for household income, this could imply that being in the former group induces women to work to support the household. At the highest level of education, there could be a sorting mechanism that induces higher educated men to marry those women who are more educated and hence more likely to be employed. Indeed 52% of higher educated men in Egypt have wives who are themselves higher educated and a further 41% have wives who are secondary educated.

In order to shed light on the underlying mechanism causing a the difference between the OLS and 2SLS estimates, Table 2.12 reports the parameter estimates of the instrument, in reduced form regressions of employment on the instrument:

$$y_i = \alpha w_i + \beta x(number\ of\ sons\ in\ first\ k)_i + \eta_i \quad (2.4)$$

- y: employment variable ("employed")
  - Main variable: "employed"
- w: controls

Table 2.12: Reduced Form Regression of Employment on Sex Composition

Parameter Estimates of the Sex Composition Variable (Robust Clustered Standard Errors)

Sample: Women with K+ Children	**K = 1**	**K = 2**	**K = 3**	**K = 4**
Without Further Controls				
	(1)	**(2)**	**(3)**	**(4)**
Number of Sons in First K Children	-0.006	-0.007***	-0.008***	-0.011***
	[0.003]	[0.003]	[0.003]	[0.003]
With Further Controls				
	(1)	**(2)**	**(3)**	**(4)**
Number of Sons in First K Children	-0.007**	-0.007***	-0.007***	-0.009***
	[0.003]	[0.003]	[0.002]	[0.002]

Dependent variable: "Employed". Samples are as defined in section 2.7. Robust standard errors, clustered at the level of the primary sampling unit, reported in parentheses.
Regressions (1)-(4) correspond to equation (2.4)
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

As expected, the probability of employment is reducing in the number of sons the respondent has in the first K children, for each sample of women with at least K children. The assumption here is that the reason for the decline is that an increasing number of sons reduces the need for further childbearing, hence reduces the total number of children, and affects employment through that channel.

Table 2.13 reports the results of using different definitions of employment as the dependent variable. In particular, the following variables are compared:

- The variable "employed" equals 1 if the respondent reports working at the time of the survey, and 0 otherwise.
- The variable "employed in last year" equals 1 if the respondent reports working over the last 12 months and 0 otherwise.

- The variable "paid cash" equals 1 if the respondent reports receiving cash or cash and kind for her employment in the last year, and 0 if she received only kind or if she reports not working over the last 12 months.
- The variable "work away" equals 1 if the respondent reports working away from home in her employment over the last year, and 0 if she worked at home or if she reports not working over the last 12 months.
- The variable "worked for other" equals 1 if the respondent reports working for somebody else, and 0 if she worked for herself or for a family member or if she reports not working.

Information on the number of hours worked is only available for the 1995 survey. As will be discussed later however, part-time jobs are not widely available in Egypt and hence the effect of fertility on the employment decision is of more interest than its effect on the number of hours worked.

The estimates are fairly consistent across definitions of employment for OLS estimates in all samples, and 2SLS samples with women with at least three children and women with at least four children. However there is less evidence of a positive effect of fertility on employment, when considering 2SLS regressions in samples of women with at least one child and at least two children, and where employment is paid for by cash or is for somebody other than the woman herself or a family member. This could perhaps be due to any positive effect of fertility arising from the income constraint, initially leading women to work for kind or for family members, and only resorting to working for others at higher parities where more income is needed.

Table 2.13: Different Employment Dependent Variables
Parameter Estimates of Fertility Variable (Robust Clustered Standard Errors)

	(1)	(2)	(3)	(4)
	Sample: Women with 1+ kids		**Sample: Women with 2+ kids**	
Estimation Method	OLS	2SLS	OLS	2SLS
"Employed"	-0.018***	0.026	-0.023***	0.035***
	[0.001]	[0.016]	[0.002]	[0.013]
"Employed in last year"	-0.018***	0.024	-0.024***	0.032**
	[0.001]	[0.016]	[0.002]	[0.013]
"Paid Cash"	-0.026***	0.016	-0.031***	0.019
	[0.001]	[0.015]	[0.001]	[0.012]
"Worked away"	-0.017***	0.028*	-0.022***	0.030**
	[0.001]	[0.016]	[0.001]	[0.012]
"Worked for other"	-0.027***	-0.001	-0.032***	0.004
	[0.001]	[0.014]	[0.001]	[0.011]
	(5)	**(6)**	**(7)**	**(8)**
	Sample: Women with 3+ kids		**Sample: Women with 4+ kids**	
Estimation Method	OLS	2SLS	OLS	2SLS
"Employed"	-0.021***	0.044***	-0.013***	0.074***
	[0.002]	[0.014]	[0.002]	[0.018]
"Employed in last year"	-0.021***	0.045***	-0.013***	0.073***
	[0.002]	[0.014]	[0.002]	[0.018]
"Paid Cash"	-0.029***	0.031**	-0.019***	0.054***
	[0.001]	[0.012]	[0.002]	[0.015]
"Worked away"	-0.020***	0.040***	-0.011***	0.061***
	[0.001]	[0.013]	[0.002]	[0.016]
"Worked for other"	-0.030***	0.016	-0.019***	0.033**
	[0.001]	[0.011]	[0.001]	[0.013]

Samples are as defined in section 2.7. Parameter estimates correspond to β in equation (2.3)
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

As a further robustness check, given the count nature of the dependent variable, equations (2.1) and (2.2) are also run in a Poisson regression framework, and a GMM estimator that allows instrumenting in a Poisson framework (due to Mullahy, 1997). Table 2.14 reports the results, and shows that the findings hold in this framework.

Table 2.14: Poisson and GMM of Employment Models
Parameter Estimates [Robust Clustered Standard Errors]

	(1)	(2)	(3)	(4)
Sample: Women with 1+ children				
Estimation Method	Poisson	GMM	Poisson	GMM
Further Controls	No	No	Yes	Yes
Children Alive	-0.096***	0.138	-0.036***	0.273*
	[0.008]	[0.099]	[0.008]	[0.144]
Sample: Women with 2+ children				
Estimation Method	Poisson	GMM	Poisson	GMM
Further Controls	No	No	Yes	Yes
Children Alive	-0.134***	0.258***	-0.064***	0.288***
	[0.009]	[0.090]	[0.009]	[0.101]
Sample: Women with 3+ children				
Estimation Method	Poisson	GMM	Poisson	GMM
Further Controls	No	No	Yes	Yes
Children Alive	-0.140***	0.291***	-0.071***	0.270***
	[0.011]	[0.095]	[0.011]	[0.090]
Sample: Women with 4+ children				
Estimation Method	Poisson	GMM	Poisson	GMM
Further Controls	No	No	Yes	Yes
Children Alive	-0.102***	0.730***	-0.050***	0.567***
	[0.015]	[0.282]	[0.015]	(0.188)

Dependent variable: "Employed". Samples are as defined in section 2.7. Robust standard errors, clustered at the primary sampling unit level, reported in parentheses. Regressions (1)- (4) correspond to equation (2.3). Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

2.11 Stratification of Results

The effect of fertility on employment could differ depending on region, on wealth category, on the wife's education and on the husband's education. To check for this, separate regressions are run for each category, with the baseline controls. Table 2.15 reports the results for the samples of women with at least one, two, or three children.

In terms of the urban/rural divide, the evidence from the 2SLS regressions is generally suggestive of a larger positive effect of fertility on employment in urban areas, although there remains a significant positive effect in rural areas.

The evidence is also suggestive of a more significant positive effect of fertility on employment amongst women with lower education or whose husbands have lower education, and amongst women of poorer households. There remains limited evidence however of a negative relationship between employment and fertility even amongst more educated women or richer households.

Table 2.16 shows the mean number of living children and mean employment according to the same stratifications used. The estimates confirm that fertility levels are lower in urban areas, and that they are decreasing in levels of education of both wife and husband, and in wealth. The results also confirm that employment has a U-shaped relationship with wealth; with employment initially decreasing with wealth, and then increasing. Furthermore, as discussed earlier employment is generally increasing in the wife's education, with the exception that non-educated women are more likely to be employed than women who have primary education. Husband's education also has a non-linear relationship with employment, with employment more likely either if the husband is not educated or if he has higher education.

Another important dimension of stratification is to consider differences between cohorts. Table 2.17 reports the results of running separate regressions for women of different ages at the time of the surveys, for the samples of women with at least one, two, or three children. Women aged 15 to 19 are excluded due to insufficient sample sizes, and women aged 19-24 are also excluded for the sample of women with at least three children for the same reason. The results show that the negative relationship between fertility and employment in the OLS regressions holds across cohorts. However the positive relationship found in the 2SLS regressions only becomes significant amongst older cohorts. One explanation for this could be that the hypothesised positive effect of fertility on employment due to financial pressures only materialises at high levels of fertility, which will only be achieved at older ages, whilst at younger ages the conflict between childrearing and working is more dominant.

Table 2.15: Stratification of Effects of Fertility on Employment

Sample	Women with 1+ Children		Women with 2+ Children		Women with 3+ Children	
	OLS	IV	OLS	IV	OLS	IV
Urban Status						
Urban	-0.029***	0.028	-0.037***	0.062**	-0.034***	0.062**
	[0.002]	[0.034]	[0.002]	[0.029]	[0.003]	[0.030]
Rural	-0.009***	0.028	-0.013***	0.025*	-0.014***	0.034**
	[0.002]	[0.018]	[0.002]	[0.014]	[0.002]	[0.014]
Wealth						
Poorest Group	-0.002	0.021	-0.007	0.035	-0.009*	0.023
	[0.004]	[0.039]	[0.004]	[0.034]	[0.005]	[0.031]
Poorer Group	0.000	0.152***	-0.001	0.070**	-0.003	0.090**
	[0.004]	[0.048]	[0.005]	[0.035]	[0.005]	[0.036]
Middle Group	-0.012***	0.085	-0.017***	0.023	-0.017***	0.074*
	[0.005]	[0.056]	[0.005]	[0.032]	[0.006]	[0.038]
Richer Group	-0.010*	0.025	-0.019***	0.034	-0.021***	-0.084
	[0.006]	[0.072]	[0.006]	[0.058]	[0.007]	[0.084]
Richest Group	-0.029***	0.034	-0.040***	0.162	-0.050***	0.189*
	[0.006]	[0.116]	[0.007]	[0.105]	[0.009]	[0.101]
Wife's Education						
No Education	-0.001	0.051***	-0.002	0.051***	-0.003*	0.047***
	[0.002]	[0.018]	[0.002]	[0.015]	[0.002]	[0.015]
Primary Education	0.002	0.045*	0.001	0.050***	0.002	0.047**
	[0.002]	[0.025]	[0.002]	[0.019]	[0.003]	[0.019]
Secondary Education	-0.022***	-0.040	-0.027***	-0.036	-0.035***	-0.037
	[0.004]	[0.037]	[0.004]	[0.031]	[0.005]	[0.037]
Higher Education	0.000	0.218	-0.019*	0.122	-0.029*	0.116
	[0.009]	[0.174]	[0.010]	[0.098]	[0.016]	[0.146]
Husband's Education						
No Education	-0.002	0.055**	-0.004**	0.063***	-0.005**	0.081***
	[0.002]	[0.023]	[0.002]	[0.019]	[0.002]	[0.021]
Primary Education	0.001	0.033	-0.001	0.032	-0.002	0.022
	[0.002]	[0.025]	[0.002]	[0.022]	[0.003]	[0.020]
Secondary Education	-0.027***	0.040	-0.035***	0.008	-0.037***	-0.006
	[0.003]	[0.031]	[0.003]	[0.025]	[0.003]	[0.027]
Higher Education	-0.031***	-0.078	-0.044***	0.012	-0.050***	0.071
	[0.005]	[0.078]	[0.006]	[0.055]	[0.008]	[0.073]

Dependent variable: "Employed". Samples are as defined in section 2.7. Robust standard errors, clustered at the primary sampling unit level, reported in parentheses. Parameter estimates correspond to β in equation (2.3)
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

Table 2.16: Stratification of Number of Living Children and Employment

Means and (Standard Deviations)

	Number of Living Children	Employment
Urban Status		
Urban	2.674	0.217
	(1.709)	(0.413)
Rural	3.116	0.157
	(2.096)	(0.364)
Wealth		
Poorest Group	3.381	0.163
	(2.184)	(0.369)
Poorer Group	3.001	0.129
	(1.993)	(0.335)
Middle Group	2.728	0.143
	(1.768)	(0.35)
Richer Group	2.463	0.18
	(1.568)	(0.384)
Richest Group	2.326	0.299
	(1.369)	(0.458)
Wife's Education		
No Education	3.725	0.125
	(2.164)	(0.331)
Primary Education	3.419	0.089
	(1.979)	(0.284)
Secondary Education	2.173	0.201
	(1.398)	(0.401)
Higher Education	1.965	0.49
	(1.245)	(0.5)
Husband's Education		
No Education	3.873	0.141
	(2.225)	(0.348)
Primary Education	3.327	0.113
	(1.998)	(0.316)
Secondary Education	2.387	0.17
	(1.633)	(0.376)
Higher Education	2.306	0.385
	(1.414)	(0.487)

Samples restricted to women who are married at the time of the surveys, in their first marriage and in a monogamous relationship. Estimates are weighted.

Table 2.17: Cohort Differences in Effect of Fertility on Employment

Sample	Women with 1+ Children		Women with 2+ Children		Women with 3+ Children	
	OLS	IV	OLS	IV	OLS	IV
Age Group						
20-24	-0.011	-0.094	-0.013	-0.064		
	[0.007]	[0.069]	[0.0105]	[0.070]		
25-29	-0.018***	-0.018	-0.021***	-0.018	-0.011	-0.050
	[0.004]	[0.043]	[0.005]	[0.035]	[0.007]	[0.050]
30-34	-0.014***	0.049	-0.017***	0.043	-0.017***	0.055*
	[0.004]	[0.040]	[0.004]	[0.030]	[0.005]	[0.031]
35-39	-0.024***	0.030	-0.028***	0.050*	-0.022***	0.021
	[0.003]	[0.034]	[0.003]	[0.026]	[0.003]	[0.024]
40-44	-0.026***	0.023	-0.029***	0.008	-0.026***	0.042
	[0.003]	[0.030]	[0.003]	[0.025]	[0.003]	[0.027]
45-49	-0.020***	0.097**	-0.024***	0.108***	-0.020***	0.122***
	[0.002]	[0.042]	[0.003]	[0.038]	[0.003]	[0.038]

Dependent variable: "Employed". Samples are as defined in section 2.7. Robust standard errors, clustered at the primary sampling unit level, reported in parentheses. Parameter estimates correspond to β in equation (2.3)
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

2.12 Validity of the Exclusion Restriction

Any direct effects of the sex of children on the probability of their mother's employment would violate the exclusion restriction required for the validity of the instrument used. In particular, the 2SLS estimates would be upward biased if the number of sons a woman has in her first K children has a direct negative effect on her employment. Equivalently, this would be the case if the number of daughters a woman has in her first k children has a direct positive effect on her employment.

Such a direct effect, causing an upward bias, could exist for various reasons. There is scientific evidence suggesting that male children are more likely to be disabled and hence could be more in need of their mother to look after them. Male children may also be more likely to enter the labour market and hence reduce the financial need for their mother to work. El-Zeini (2008) notes that economic stress could lead couples to increase their childbearing, as children could be a source of economic strength,

especially given the prevalence of child labour in Egypt. Furthermore, older daughters may help with childrearing of younger children and hence increase the probability of their mother's employment. Shami and Taminian (1990) note that older daughters in Jordan may often be pulled out of school at the age of fourteen to help their mothers at home. Shakhatreb (1995) finds using the 1982-1983 Jordan Manpower Survey that the presence of women aged fifteen in the household has a strong positive relation with women's labour force participation. The possibility of children of the same sex sharing resources has also previously been discussed in the literature (Rosenzweig and Wolpin, 2000).

As it is not possible to directly test the exclusion restriction, the results should be treated with this caveat in mind.

2.13 Conclusions and Discussion

Evidence is found from a country with a relatively high fertility level, that the sex composition of children is a significant predictor of both the desire to have another child and observed cumulative fertility. While there is some evidence that the desire for another child is strengthened by the absence of daughters, the overall picture emerging suggests that the absence of sons is a stronger predictor of fertility behaviour. The implied preference for sons is exploited in instrumenting for fertility, in estimating the effect of fertility on female employment.

Simple OLS regressions show a significant negative relationship between fertility and female employment. Two stage regressions however suggest a positive effect of fertility on female employment.

A possible explanation for these results is that there is limited conflict between reproductive and productive roles. Labour laws are in place that provide for generous maternity leaves, give work breaks for breastfeeding, and require institutions to provide day-care centres close to their workplace if employing a certain minimum number of women. In practice however, it has often been argued that this has the adverse effect of

employers discriminating against women in their hiring decisions or wages offered. Laws regarding day-care centres are also more frequently ignored than adhered to. This forces working women to find alternative child-care facilities, often increasing their dependence on their in-laws or own families, a dependence women in the region tend to dislike (Hijab 1988; Shami and Taminian 1990; El-Zanaty et al. 1996; Nassar 2003; Word Bank 2004). Furthermore, part-time jobs are not widely available for women in the region, increasing the conflict between productive and reproductive roles (Sawalha 1999; World Bank 2004).

It has also been argued that there could also be less of a conflict between reproductive roles and work in rural areas where agricultural labour may involve the children (Courbage, 1994). We find however that there is a more significant positive relationship between fertility and employment in urban areas where agriculture is not prevalent.

Isvan (1991) argues that if women lack the authority to make time-use adjustments, then one would not see the expected inverse relationship between work and fertility, even if there is a conflict between productive and reproductive roles. In Jordan, Shami and Taminian (1990) note that working women are typically not expected to have less children than non-working women. Sawalha (1999) notes that working women in Jordan are "expected to handle all the domestic affairs flawlessly as if they never stepped foot in the paid labour force". Similar considerations are also likely to apply in Egypt. If this was indeed the case, and if women were forced to work out of necessity and to afford the costs of childrearing, then one may expect the number of children not to have a significant negative impact on a woman's labour supply.

Most interesting however is the finding of a significant positive effect of fertility on employment. This implies that the positive effect of fertility on employment arising from the income constraint is much more important than the negative effect arising from the time constraint. The positive effect arising from the income constraint is particularly relevant in the Arab world where female work is often driven by the need to support their families (World Bank 2004), and where female employment is more based on need rather than choice and hence not necessarily considered a liberating force (Govindasamy and Malhotra, 1996). In a 1993 Egyptian Survey, 87% of women who reported

"currently working for cash, in kind payment, or no return" said they do so for financial reasons and 81% to "help their families" (multiple responses possible – Donahoe, 1999). In rural areas in particular, women typically see work as a burden rather than a means of self-fulfilment, and being confined to reproductive roles is seen as a mark of status and prestige (Morsy, 1990). Furthermore, jobs in the informal sector are often considered the last resort for women with low education who are forced to work by their economic conditions (Nassar, 2003). This corresponds to the finding that the positive effect is more significant for women with low levels of education. This argument is also consistent with the finding that the effect is most significant for women in poorer households.

Given the nature of the instruments used, the results capture the local average treatment effects for women who have strong son preferences, or, depending on the nature of the fertility decision making process, whose husbands have strong son preferences. Such families are more affected by the sex composition of existing children, in making the decision to have more children. If in such families, there is also a higher preference against women entering the labour market, unless there is financial need to do so, then this would further explain the stronger position relationship found in such families between the number of children a woman has, and the probability of her employment.

Comparing Egypt to other countries in the region and in the developing world could help shed more light on the effect of fertility on employment. It could also help assess whether perhaps at lower levels of development the positive effect of fertility on employment arising from income constraints is more important, while at later stages of development the negative effect arising from time constraints is more important. Thus in some contexts, smaller family sizes could reduce the perceived need for female employment and therefore discourage it.

2.14 Appendix A: Contraceptive Knowledge and Use

A necessary condition for fertility preferences to translate to fertility outcomes is knowledge of contraceptive methods, access to such methods, and willingness to use them. Effects of sex preferences on fertility behaviour may not be observable when there is limited access to contraceptive methods (Yount et al., 2000) or barriers to its use. With high levels of unmet need for contraception, the desire to stop having children after achieving a certain sex composition of children may not be realised. Of particular concern here is unmet need for limiting, rather than spacing births. This includes pregnant women whose pregnancy was unwanted, postpartum amenorrheic women whose last birth was unwanted and fecund women who are neither pregnant nor postpartum amenorrheic and who are not using any contraceptive method

Table 2.18 shows the proportion of women with unmet need for contraception in the DHS surveys. The unmet need for limiting births in Egypt was at 10% in 1995, and fell to 5.5% in 2008. While higher than the USA (2.7% in 1988), the unmet need for limiting births is comparable to other European and developed countries (11.2% in Japan in 1992, 5.2% in France in 1994 and 7.4% in Italy in 1994 - The Alan Guttmacher Institute, 1995; Klijzing, 2000). The unmet need is also generally lower than other regions of the developing world, although the differences are much more manifested in the unmet need for spacing rather than limiting births (Westoff, 2006).

Table 2.18: Unmet needs for family planning

	1995	2000	2003	2005	2008	Pooled
Proportion with unmet need for limiting births	0.101	0.071	0.057	0.064	0.055	0.070
Proportion with unmet need for spacing births	0.057	0.033	0.033	0.034	0.031	0.037
Husband has same fertility preference						
Proportion with unmet need for limiting births	0.097	0.065	-	0.058	0.050	0.067
Proportion with unmet need for spacing births	0.056	0.031	-	0.033	0.029	0.037

Proportions based on full DHS samples. No information on husband fertility preferences in Egypt 2003. Estimates are weighted.

These figures do not account for the possibility that the husband may have both a higher demand for children and greater bargaining power in the fertility decision-making process. If this was the case, then although the wife may have an unmet need for limiting births, her husband's preferences for sex composition may still translate to fertility outcomes. Restricting the proportions to women who report that their husband desire the same number of children as themselves, only reduces the unmet need for limiting births by a further maximum of 0.8%.

Looking more closely at contraceptive knowledge and use, Table 2.19 reveals that knowledge of modern contraceptives is close to universal. At the time of all surveys, more than 75% of respondents had "ever used" a contraceptive method. Only 6-13% of respondents had neither used a method nor intended to use one in the future.

Table 2.19: Contraceptive knowledge and use

	1995	2000	2003	2005	2008	Pooled
Proportion who know a modern method	0.998	0.999	1.000	0.999	0.999	0.999
Proportion who have ever used a method	0.684	0.752	0.789	0.796	0.806	0.766
Proportion who have never used a method nor intend to use one	0.122	0.128	0.106	0.090	0.060	0.099

Proportions based on full DHS samples. Methods ever used include modern methods, traditional methods and folkloric methods. Estimates are weighted.

Of the never-users who did not intend to use a method in the future, only 4 respondents in Egypt attributed that to lack of access. As seen in Table 2.20, only around 20% of such respondents attributed the reason to concerns about health effects or opposition to use.

The general picture portrayed therefore is that unmet need for contraception is not a major concern, and that only 1% to 2.8% of the surveyed samples can be suspected not to use contraception to achieve their fertility preferences.

Table 2.20: Reasons for not intending to use a contraceptive method in the future

Egypt	1995	2000	2003	2005	2008	Pooled
Not married	0.000	0.307	0.000	0.312	0.000	0.154
Fertility reasons	0.315	0.266	0.270	0.368	0.468	0.329
Wants more children	0.271	0.158	0.608	0.109	0.289	0.249
Opposition to use	0.084	0.081	0.042	0.094	0.094	0.081
Lack of knowledge	0.005	0.002	0.000	0.007	0.003	0.004
Health concerns	0.148	0.067	0.054	0.089	0.092	0.093
Other reasons	0.176	0.120	0.025	0.022	0.054	0.090

Proportions based on full DHS samples. Base: all women who have never used a contraceptive method and are not intending to use a method in the future. Fertility reasons include not having sex, infrequent sex, being menopausal and infecundity. Opposition to use includes opposition from the respondent, their husband, others, and reported religious opposition. Health concerns also include fear of side effects. Estimates are weighted.

2.15 Appendix B: Sex-Selection Abortion and Female Negligence

Given strong son preferences in Egypt, there is a concern that the analysis would be contaminated by sex-selective abortion, or a higher probability of death amongst female infants due to negligence. If this was the case, then a child's sex would not be randomly assigned by nature. When using sex composition as an instrument for fertility this could be problematic if preference for sex-selective abortion or negligence of female infants is correlated with unobservable factors affecting the dependent variable. At the population level, census data suggests that the sex ratio is balanced at its natural rate in Egypt. Nonetheless, the possibility of human intervention in the sex of their children is examined in more detail.

Abortion is illegal in Egypt, except to save the woman's life. Small scale studies however show that "abortion is just as common in Egypt as in countries where abortion is legal, but it is more clandestine and unsafe" (Dabash and Roudi-Fahmi, 2008.) The 1995 DHS survey in Egypt contained a question on whether the respondent had ever had an abortion: 2.5% reported an abortion.

What matters here is whether sex-selective abortion takes place. Table 2.21 looks at the proportion of males by birth order, up to the fifth child. This takes into account all born children, as reported by the respondent, and not only living children. The natural proportion of males at birth is believed to be around 51.4%. The estimates show that the proportions are slightly higher than the natural proportion at first birth, and then tend to decline. Park and Cho (1995) argue that in countries with sex-selective abortion, one would generally expect the opposite: that proportions increase with birth order, as couples resort to sex-selective abortion after the birth of a few daughters to limit family size. Basu (2009) notes however that although son preference coupled with human intervention would case the probability of male birth to vary significantly across parities, one cannot know a priori the exact pattern of this variation. The pattern will depend on the exact form of human intervention and on the intensity of son preference.

Theoretically, the findings could be indicative of some sex-selective abortion at first birth, given the societal preference for a male child at first birth (Kilani and Hassan, 2001). However evidence from countries with free abortions, suggests that sex-selective abortion is more likely at higher order births than first births. Given the sample sizes, the proportions are generally not significantly different to the natural proportions. There is also a concern that women are more likely to report a dead child if he was male, biasing the proportion of males upwards. However, looking at the proportion of males at each parity ignoring dead children shows similar results.

Table 2.21: Sex of Children Born

	Proportion of children who are male (standard error)				
	1995	**2000**	**2003**	**2005**	**2008**
First Child	0.527 (-0.005)	0.505 (-0.005)	0.526 (-0.006)	0.521 (-0.004)	0.522 (-0.004)
Second Child	0.511 (-0.006)	0.520 (-0.005)	0.522 (-0.007)	0.506 (-0.005)	0.513 (-0.005)
Third Child	0.520 (-0.006)	0.515 (-0.006)	0.528 (-0.008)	0.507 (-0.006)	0.509 (-0.006)
Fourth Child	0.526 (-0.007)	0.521 (-0.007)	0.524 (-0.01)	0.515 (-0.007)	0.514 (-0.007)
Fifth Child	0.518 (-0.008)	0.500 (-0.008)	0.503 (-0.012)	0.510 (-0.009)	0.506 (-0.01)

Proportions based on full DHS samples. Estimates are weighted.

Table 2.22 looks at the proportion of dead children who are male, by birth order. At lower parities, the proportions are generally greater than 50%, as expected scientifically, giving little evidence for female negligence leading to higher deaths of female infants. At parities above 4, there seems to be some evidence for higher proportions of female deaths. While worrying, female negligence at higher parities would not affect the validity of using sex composition to instrument for fertility.

Table 2.22: Sex of Dead Children

	Proportion of dead children who are male (standard error)				
	1995	**2000**	**2003**	**2005**	**2008**
First Child	0.542 (-0.014)	0.573 (-0.013)	0.558 (-0.021)	0.555 (-0.015)	0.593 (-0.018)
Second Child	0.512 (-0.015)	0.528 (-0.015)	0.545 (-0.023)	0.543 (-0.017)	0.564 (-0.02)
Third Child	0.486 (-0.017)	0.509 (-0.017)	0.531 (-0.027)	0.524 (-0.02)	0.526 (-0.025)
Fourth Child	0.533 (-0.019)	0.490 (-0.019)	0.532 (-0.031)	0.531 (-0.022)	0.558 (-0.029)
Fifth Child	0.517 (-0.023)	0.506 (-0.022)	0.444 (-0.036)	0.489 (-0.028)	0.510 (-0.036)

Proportions based on full DHS samples. Estimates are weighted.

In Table 2.23 the probability of having a male child at given parities conditional on the sex composition of previous children is examined. In the presence of human intervention driven by son preference, one may suspect that the probability of observing a male child is decreasing in the number of sons a couple already has. The estimates do not suggest such a pattern. While some of the estimates are higher than the natural rate of 51.4%, none of them are statistically significantly different to it.

The general evidence therefore does not point to the existence of sex-selection in Egypt, and that if it does, then its magnitude is of negligible value, hence unlikely to affect the results presented.

Table 2.23: Probability of Male Birth Given Previous Sex Composition

	1995	2000	2003	2005	2008
Sex of 1st Alive Child	**Proportion whose Second Living Child is Male (standard error)**				
Boy	0.507	0.520	0.516	0.500	0.513
	(0.008)	(0.007)	(0.010)	(0.007)	(0.007)
Girl	0.513	0.518	0.528	0500	0.507
	(0.008)	(0.007)	(0.010)	(0.007)	(0.007)
Sex of 1st 2 Alive Children	**Proportion whose Third Living Child is Male (standard error)**				
Two Boys	0.521	0.514	0.537	0.506	0.515
	(0.013)	(0.011)	(0.016)	(0.012)	(0.012)
One Boy and One Girl	0.516	0.515	0.520	0.505	0.506
	(0.009)	(0.008)	(0.012)	(0.008)	(0.008)
Two Girls	0.535	0.518	0.522	0.532	0.5057
	(0.013)	(0.011)	(0.016)	(0.011)	(0.012)
Sex of 1st 3 Alive Children	**Proportion whose Fourth Living Child is Male (standard error)**				
Three Boys	0.557	0.502	0.507	0.459	0.492
	(0.021)	(0.020)	(0.027)	(0.021)	(0.022)
Two Boys and One Girl	0.520	0.531	0.511	0.496	0.503
	(0.013)	(0.012)	(0.018)	(0.013)	(0.013)
Two Girls and One Boy	0.537	0.524	0.531	0.512	0.537
	(0.013)	(0.011)	(0.017)	(0.012)	(0.013)
Three Girls	0.513	0.528	0.508	0.543	0.507
	(0.022)	(0.019)	(0.028)	(0.020)	(0.020)

Proportions based on full DHS samples. Estimates are weighted.

Chapter 3: Decision-Making in Egyptian Households

3.1 Introduction

It is widely accepted that a unitary model falls short of explaining the process of decision-making in the household. Couples bargain over a wide range of decisions, relating not only to financial purchases but also to fertility decisions, engagement in public life, and to the health and education of their children. The outcome of the decision-making process therefore depends on the preferences of the husband and wife, their relative bargaining power, and arguably their willingness to exercise their bargaining power.

Understanding the nature of decision-making in the household is crucial, not only to the extent that it sheds light on the empowerment of women, but also due to its potential implications for the outcomes of children. In particular, if women attach higher value to the outcomes of their children than men, then children, and especially daughters, could feature more strongly in the utility function of their mothers, compared to their fathers. Therefore higher bargaining power for the wife, in relation to decisions relating to her children, could help better shape their future.

In this chapter, the bargaining power of wives in Egyptian households is examined, to help better understand the nature of decision making in Egyptian households.

Section 3.2 reviews the existing literature on measuring bargaining power, its determinants and the range of outcomes it affects. Section 3.3 presents the data used for the analysis. Two datasets are studied, to enable comparison, and due to the different nature of some of the variables included in the datasets.

Constructing a measure of bargaining power is not straight forward, due to the simultaneous nature of decisions in the household on one hand, and the reliance on self-reported measures on the other hand. In section 3.3, a measure of the wife's bargaining

power in Egyptian households is constructed, exploiting questions on the decision-makers of various decisions in the household.

The determinants of bargaining power are examined in more detail in section 3.5, to shed light on the various factors that influence it. Determinants at the individual level are explored, in addition to the effect of assets brought into marriage. In section 3.6, the effect of a change in legislation that would, theoretically, increase the bargaining power of the wife, is also studied. The panel structure of one of the surveys is exploited in section 3.7 to run fixed effect estimation of the determinants of bargaining power, controlling for unobserved heterogeneity at the household level.

Section 3.8 then considers how a woman's bargaining power may affect educational outcomes for her children, comparing the results for daughters with the results for sons. The evidence is to be treated as exploratory given the lack of evidence for exogenous effects on bargaining power, beyond determinants that are arguably endogenous in the decision making process. Section 3.9 concludes.

3.2 Existing Literature

A. Measuring Bargaining Power

Providing an accurate measure of bargaining power is challenging, as bargaining occurs over a range of decisions, and the nature of the bargaining process and relative bargaining power could differ according to the decision being made. Furthermore, we typically only observe final outcomes of the bargaining process, and only rely on self-reported answers to questions of what the actual preferences of the couple are.

Many determinants of bargaining power have been used in the literature as a proxy for bargaining power. This includes using non-wage income (Klawon and Tiefenthaler, 2001; Emerson and Souza, 2002), the relative education of the parents (Beegle et al., 2001; Emerson and Souza, 2002), ownership of assets (Doss, 1996; Beegle et al., 2001), family backgrounds (education of father vs. father in law, social status of wife's family) (Beegle et al., 2001), and the value of livestock each spouse would take in the event of divorce (Lim et al., 2007).

Such measures are subject to potential endogeneity when used to estimate the impact of bargaining power on other outcomes. Other determinants which proxy for bargaining power, but which may suffer less endogeneity include, having a first-born son in China, where there is strong son preference (Li and Wu, 2011), sex ratios at marriage ages, the relative availability of suitable educated women in the spouse's potential marriage market, and hence the chances of remarrying (Bercea and Oreffice, 2006), and a comparison of the wife's characteristics to the average characteristics in the area.

An alternative measure to bargaining power is to compare reported preferences of the couple, with actual outcomes. Rasul (2008) for example compares reported fertility preferences to actual fertility outcomes. A stronger alignment between preferred and actual outcomes implies stronger bargaining power.

This chapter follows the stream of literature looking at reported measures of bargaining power; namely who is reported to make certain decisions in the household. Decisions studied in the literature include purchasing household durable goods (Wu, 2010; Li and Wu, 2011), decisions relating to purchases, health and visits (Mabsout and Staveren, 2010), and decisions relating to age of retirement, where to live, or how much money to spend on a major purchase (Friedberg and Webb, 2006)

Such measures are arguably more reliable, in the sense that they are a direct measure of the wife and husband's role in the decision making process. Nonetheless, they remain subjective measures of reported rather than actual bargaining power. As discussed earlier, such measures could also only be capturing the decision-making power when it comes to the particular decision in question, and may not spill over to other decisions. The discussion in this chapter should therefore be interpreted with this caveat.

B. Determinants of Bargaining Power

There is substantial existing literature on various determinants of bargaining power. These determinants could be categorised into determinants at the individual level, determinants at the societal level, and determinants at the institutional level.

Many of these determinants relate to the fall-back option in case the conflict in the decision-making process leads to a breakdown in marriage. This "threat-point" or "exit-point" is the situation the wife or husband would find themselves in, in the case of divorce. Of course, divorce is not always the end-result in the case of conflict over decision-making. Instead, the couple could remain in the marriage, but "withdraw into separate spheres" (Lundberg and Pollak, 1993). This "separate spheres" threat-point would therefore be less affected by the factors mentioned below.

At the individual level, the wife's bargaining power could be affected by her age and education, in addition to her age and education relative to that of her husband's. It could also be affected by her employment, wage income, and wage relative to her husband's. Friedberg and Webb (2006) find that current and lifetime earnings have a significant but only moderate positive influence on bargaining power. Hossain (1998) actually finds a negative impact of female employment on bargaining power in Bangladesh. Bargaining power could be affected by the assets each partner brings into the marriage. For example Osmani (2007) examines the effect of the amount of land the wife owns and the value of non-land assets she owns. Bargaining power could also be affected by the number of children in the household, controlling for the age of the couple (Mabsout and Staveren, 2010). Friedberg and Webb (2006) find that having kids reduces a husband's reported bargaining power considerably, while it has much less influence on wives' reports of bargaining power.

As discussed earlier, many of these determinants have been used as proxies for bargaining power in the literature. Some of these determinants could however be outcomes of the decision-making process. Consider for example whether or not a wife continues her education after getting married, or whether she enters the labour market, or more obviously, the number of children she has.

At the societal level, religious, social and cultural norms play a crucial role in determining the nature of bargaining power between a couple and hence the decision-making process. There are various levels through which social norms could affect bargaining power: by influencing the individual level determinants generally, by restricting opportunities for women outside of the house, by enforcing the "right" of the husband to be the final decision-maker, by defining who has more of a say in the

decision-making, and by influencing the probability of remarriage through attitudes towards divorcees.

Such norms are more difficult to model and quantify. Furthermore, when these norms are widespread, there is limited variation that enables identification of their true effect on bargaining power. When there is some variation, one could look at reported attitudes towards various social norms as a proxy for their implementation. Mabosut and Staveren (2010) for example look at the effect of support or rejection of social norms such as female genital mutilation and violence towards women on bargaining power.

At the institutional level, the effects of various policies and institutional structures on bargaining power in the household have been studied. This includes targeted micro-credit for women (Osmani, 2007; Ligon, 2002), legalising abortion (Oreffice, 2007), allowing unilateral divorce (Stevenson and Wolfers, 2006; Stevenson, 2007), equal opportunities in the labour market (Rainer, 2008), access to information about contraception (Ashraf et al., 2014), the structure of the marriage market (McElroy, 1990), opportunities for women to earn a living wage outside of marriage, the prevalent wage rate for women (Pollack, 2005), state and social support systems for divorced women (Agarwal, 2007), and the sex ratio, and hence the marriage market situation couples would face if their marriage dissolved (Park, 2007).

C. Outcomes of Bargaining Power

The bargaining process between husband and wife affects a range of different outcomes. The literature commonly focuses on the effect of relative bargaining power on financial decisions, such as household expenditure decisions (Doss, 1996), the share of income spent on food (Rubalcava and Thomas, 2000), stock market investment and total wealth accumulation (Friedberg and Webb, 2006)

However, outcomes of the bargaining process extend to more than just financial decisions. Various papers show that increasing a wife's bargaining power, measured differently in different papers, is associated with:

a. A reduction in the number of children (Klawon and Tiefenthaler, 2001).
b. An increase in household productivity (Seebens and Sauer, 2007)

c. A decline in female suicide, domestic violence, and females murdered by their partners (Stevenson and Wolfers, 2006)
d. A change in female employment measures, positively (Stevenson, 2007) or negatively (Rubalcava and Thomas, 2000; Bercea and Oreffice, 2006)
e. An improvement in the nutrition of the wife (Li and Wu, 2011)
f. An improvement in the use of prenatal and delivery care (Beegle et al.,2001)
g. An increase in the production of staple crops (Lim et al., 2007).

The bargaining process also has an important effect on outcomes for children. This is particularly because several studies show that, relative to men, women tend to favour children in their resource allocation behaviour (Dwyer and Bruce, 1988; Handa, 1994; Hoddinott and Haddad, 1991; Miller, 1981; Thomas, 1992).

Several studies show that the bargaining power of the wife affects outcomes for children, including health, measured by Body Mass Index (preliminary work) and height-for-age (Thomas, 1994), education (Handa, 1996; Emerson and Souza, 2002), and child labour (Emerson and Souza, 2002)

There is also much discussion in the literature about possible gender-bias in the bargaining process, with wives favouring their daughters, and husbands favouring their sons. In some cases, strong son preference could leads both parents to favour their sons (Thomas, 1994; Sen 1984; Behrman 1988)

Emerson and Souza (2002) show that the labour status of sons is more influenced by proxies of the father's bargaining power, while the labour status of daughters is more influenced by proxies of the mother's bargaining power. Interestingly, they find that the both proxies of the husband's and wife's bargaining power influence the education of sons more than the daughters'.

Many of the outcomes of the bargaining process are however endogenous in the determination of the relative bargaining power between the couple, making identification difficult. Several papers attempt to find exogenous shocks to bargaining power. For example, changes in the way child benefit is paid, the state aid paid to single mothers, and hence the aid a woman could receive if she separated from her partner (Rubalcava

and Thomas, 2000), and changes in divorce law that allow unilateral divorce (Gray, 1998; Stevenson and Wolfers, 2006; Stevenson, 2007).

3.3 Data

The analysis makes use of two datasets. The first dataset is the Demographic Health Surveys (DHS) for Egypt; explained and used in Chapter 2. The DHS datasets are pooled for the years 2000, 2005 and 2008. For some analysis, the surveys for 2005 and 2008 only are pooled, due to the relevant variables being unavailable in the 2000 survey.

The second dataset is the Egypt Labour Market Panel Survey (ELMPS), which is carried out by the Economic Research Forum (ERF) in cooperation with Egypt's Central Agency for Public Mobilization and Statistics (CAPMAS). The ELMPS is a nationally representative longitudinal household survey, covering the years 1998, 2006 and 2012. However the variables relating to bargaining power are only available for the years 2006 and 2012.

While the focus of the dataset is on labour market topics, it also contains information on marriage patterns and costs, fertility, and women's decision making and empowerment. The questions on decision making are restricted to women aged 15 and above in the 2006 survey and aged 15 to 49 in the 2012 survey.

For the DHS datasets, the sample is restricted to couples who live together with all their children, have at least one child where no child is older than 17, the wife is in her first marriage and where the husband is the head of the household. These restrictions are in place to ensure accurate matching of women to their children.

For the ELMPS datasets, the analysis is less restrictive due to the smaller sample sizes. The sample is restricted to couples who are living together, and who have at least one child. The age of women in the 2006 sample is also restricted to 15 to 49 in order to enable comparison with the 2012 sample and with the DHS sample.

3.4 Measuring Bargaining Power

In this chapter, bargaining power is defined as "the power the party has in the decision-making process to enforce the decision that reflects their preference." The process of decision-making could be explicit negotiation, or could be an implicit agreement, reflecting the perceived bargaining power. Unless otherwise noted, the term "bargaining power", in this chapter, refers to the bargaining power of the wife, in the decision-making process in the household.

As discussed earlier, this chapter follows the stream of literature looking at reported measures of bargaining power; namely who is reported to make certain decisions in the household.

Both surveys contain questions with regards to who has the final say on certain decisions made in the household. The DHS surveys ask the question on who has the final say on the following six decisions:

1) Large household purchases
2) Visits to family and friends
3) Respondent's healthcare
4) Daily household purchases
5) How to spend the husband's money
6) What food to cook

The measures of bargaining power are constructed here using the first three decisions only. The question on spending the husband's money is unavailable in the 2000 and 2005 surveys. It is unlikely that the questions on daily household purchases and what food to cook would capture female empowerment, as such decisions could be conceived in many households to be the responsibility of a (house)wife.

The ELMPS surveys ask who has the final say on the following decisions:

1) Large household purchases
2) Visits to family and friends

3) Respondent's healthcare
4) Taking the child to the doctor
5) Child's Education (1): Sending children to school (2006) or Dealing with children's school and teachers (2012)
6) Child's Education (2): Sending children to school on a daily basis
7) Daily household purchases
8) What food to cook
9) Buying clothes for the respondent
10) Buying clothes for children

Two measures of bargaining power are constructed from the ELMPS samples; one based on the first three decisions, and another on the first six decisions. The exclusion of the other four decisions is for the same reasons as above. The measure based on six decisions is only available for women with children of school age, due to the nature of the fifth and sixth decisions.

A dummy variable *"somesay_decision"* is constructed for each decision. The variable is equal to 1 if the respondent reports that she alone, jointly with her husband, or jointly with somebody else has the final say in that decision, and zero if her husband alone or somebody else has the final say.

The variable *"bargaining"* is then constructed which is the proportion of decisions in which the respondent reports having some say.

$$bargaining = \frac{\sum_{i=1}^{n} somesay\_decision^{i}}{n} \quad (3.1)$$

n: number of decisions

The variables "husband", "wife", "joint", and "other", are also constructed. These measure the proportion of decisions reported to be made by the husband alone, the wife alone (or with someone else other than her husband), jointly between the husband and wife, and by someone else other than the couple, respectively.

Table 3.1 reports the mean and standard deviation of the bargaining power variables for the DHS sample, and Tables 3.2 and 3.3 reports the same for the ELMPS sample. On

average only 51% of women in the pooled DHS sample, and 56% of women in the 2012 ELMPS sample report having some say on large household purchases. In contrast more than 70% in all samples report having some say on visits and their own healthcare.

Table 3.1: Measures of Bargaining Power
DHS Datasets

Means and (Standard Deviations)

	2000	2005	2008	Pooled
Has a final say on large household purchases (=1 if wife is one of the decision-makers)	0.392 (0.488)	0.541 (0.498)	0.556 (0.497)	0.51 (0.5)
Has a final say on visits (=1 if wife is one of the decision-makers)	0.727 (0.445)	0.723 (0.448)	0.83 (0.375)	0.764 (0.424)
Has a final say on own healthcare (=1 if wife is one of the decision-makers)	0.588 (0.492)	0.792 (0.406)	0.883 (0.322)	0.777 (0.416)
Bargaining (= proportion of decisions the wife has some say in)	0.569 (0.359)	0.685 (0.343)	0.756 (0.312)	0.684 (0.343)
Wife (= proportion of decisions made by the wife alone)	0.169 (0.237)	0.14 (0.247)	0.123 (0.216)	0.141 (0.234)
Joint (= proportion of decisions made by the couple jointly)	0.4 (0.358)	0.545 (0.394)	0.633 (0.379)	0.543 (0.391)
Husband (= proportion of decisions made by the husband alone)	0.409 (0.354)	0.284 (0.335)	0.217 (0.302)	0.289 (0.336)
Other (= proportion of decisions made by someone else)	0.022 (0.109)	0.031 (0.127)	0.026 (0.12)	0.027 (0.121)
Number of Observations	5,290	8,127	8,164	21,581

Estimates are weighted

With regards to decisions relating to children, the ELMPS samples shows that on average 77% of women have some say on taking their children to the doctor, around 62-

64% have some say on taking their children to school on a daily basis, but only 52% and 54% have a say on enrolling their children in school, or dealing with school and teachers, respectively.

The figures show that the wife's bargaining power, measured by having a final say on the relevant decisions, has increased over time. In the DHS Sample, the variable *"bargaining"* shows an increase in the proportion of decisions that the woman has a say in from 57% in 2000 to 76% in 2008. Similarly there was an increase in the ELMPS sample from 64-65% in 2006 to 67-68% in 2012. The measures between the DHS and ELMPS samples are broadly comparable, with the DHS samples reflecting slightly higher bargaining power for women.

Interestingly, there has been an increase over time in joint decision making between the husband and wife. This has been accompanied by a decrease in decisions made by the wife alone, but, more importantly, a decrease in decisions made by the husband alone. In the DHS sample, the average proportion of decisions taken by husbands alone has almost halved from 41% in 2000 to 22% in 2008, while the proportion of decisions made jointly has increased from 40% to 63% over the same period. The average proportion of decisions made by wives alone is around 12-16% for measures based on three decisions, increasing to 22-23% for measured based on six decisions.

In the ELMPS samples, the bargaining power measure based on three decisions is statistically similar to the measure based on six decisions. This suggests that decision-making over non-children outcomes could be a good proxy for decision-making over children outcomes. The main difference is that amongst decisions that the wife has a say in, there is a higher proportion of decisions that the wife has a say alone in, as oppose to jointly with her husband, when the outcomes are related to children than when they are not.

Table 3.2: Measures of Bargaining Power (Individual Decisions)
ELMPS

	Means and (Standard Deviations)			
	2006 (3 Decisions)	**2006 (6 Decisions)**	**2012 (3 Decisions)**	**2012 (6 Decisions)**
Has a final say on large household purchases (=1 if wife is one of the decision-makers)	0.455 (0.498)	0.461 (0.498)	0.559 (0.496)	0.564 (0.496)
Has a final say on visits (=1 if wife is one of the decision-makers)	0.716 (0.451)	0.713 (0.452)	0.718 (0.45)	0.729 (0.444)
Has a final say on own healthcare (=1 if wife is one of the decision-makers)	0.774 (0.418)	0.76 (0.427)	0.776 (0.417)	0.78 (0.415)
Has a final say on taking the child to the doctor (=1 if wife is one of the decision-makers)		0.767 (0.423)		0.77 (0.421)
Has a final say on child's education (1) (=1 if wife is one of the decision-makers)		0.517 (0.5)		0.542 (0.498)
Has a final say on child's education (2) (=1 if wife is one of the decision-makers)		0.642 (0.479)		0.616 (0.486)
Number of Observations	4,829	2,745	6,763	3,894

Estimates are weighted

Table 3.3: Measures of Bargaining Power (Constructed Measures)
ELMPS

Means and (Standard Deviations)

	2006 (3 Decisions)	2006 (6 Decisions)	2012 (3 Decisions)	2012 (6 Decisions)
Bargaining (= proportion of decisions the wife has some say in)	0.649 (0.346)	0.643 (0.31)	0.684 (0.361)	0.667 (0.322)
Wife (= proportion of decisions made by the wife alone)	0.16 (0.245)	0.224 (0.257)	0.145 (0.24)	0.228 (0.268)
Joint (= proportion of decisions made by the couple jointly)	0.489 (0.364)	0.419 (0.317)	0.539 (0.379)	0.438 (0.329)
Husband (= proportion of decisions made by the husband alone)	0.32 (0.337)	0.329 (0.306)	0.297 (0.354)	0.316 (0.319)
Other (= proportion of decisions made by someone else)	0.031 (0.123)	0.027 (0.09)	0.019 (0.096)	0.017 (0.073)
Number of Observations	4,829	2,745	6,763	3,894

Estimates are weighted

3.5 Determinants of Bargaining Power

The richness of the data is exploited to examine the determinants of bargaining power at the individual level by estimating the following regression for woman i, who lives in governorate r, including fixed effects for living in governorate r to control for unobserved heterogeneity.

$$y_{ir} = \alpha_r + \beta X_{ir} + \varepsilon_{ir} \qquad (3.2)$$

- y: measure of "bargaining power"
- X: vector of determinants

The following sets of determinants are considered. Many of these determinants are arguably endogenous, hence the results should be treated with caution.

Background characteristics: age and education of both spouses, urban status, employment status, religion and number of children.

Proportion of male children: As discussed in Chapter 2, there is strong son preference in Egypt, with pressure on women to provide a "male heir". On one hand, this could mean that male children strengthen the bargaining position of a woman in a household, as the woman is given more respect and authority as the caretaker of the male heir. The opposite could be the case however, if not having a son means a woman is given more attention and care, as she could be the future mother of a male heir. Given the exogeneity of the sex composition of children, as discussed in detail in Chapter 2, evidence for an effect for the proportion of male children on a woman's bargaining power could therefore help identify the effect of bargaining power on other outcomes.

Attitude towards beating wives: a dummy variable for agreeing that the beating of a wife is justified for any reason. This is taken as a proxy for traditional attitudes towards the role of women, which may also be associated with lower bargaining power in the household.

Marriage costs: the percentage of marriage costs contributed by the bride or her family. In Chapter 4 the effect of marital transfers, dower, on the bargaining position of women is explored in more detail. The ELMPS contains information on the total costs of marriage, in addition to the percentages of the costs covered by the bride, the groom, the bride's family and the groom's family. The percentage of marriage costs contributed by the bride or her family could affect bargaining power through its association with the relative wealth of the families, or as a measure of assets brought into marriage.

Backup support: whether the respondent has a family member she can rely on if she had any problem, to provide her with a place to stay for the night, or for financial help. The presence of such backup support would be predicted to strengthen the wife's bargaining power.

Further controls: duration of marriage, structure of the household and regional dummies

Tables 3.4 and 3.5 report the descriptive statistics for the regressors, and Tables 3.6 and 3.7 report the results of the regressions of equation (3.2)

Table 3.4: Descriptive Statistics of Determinants of Bargaining Power – DHS Sample

	Means and (Standard Deviations)				
Survey	2000	2005	2008	2005-2008	Pooled
Age (Wife)	28.511	29.795	29.875	29.834	29.515
	(5.712)	(6.375)	(6.457)	(6.416)	(6.279)
Age Difference (Husband – Wife)	6.797	6.695	6.637	6.666	6.698
	(4.974)	(5.021)	(4.989)	(5.005)	(4.998)
Years of Education (Wife)	6.613	7.495	8.18	7.835	7.54
	(6.031)	(5.79)	(5.581)	(5.698)	(5.804)
Education Difference (Husband – Wife)	1.665	1.526	1.187	1.358	1.433
	(4.254)	(4.538)	(4.372)	(4.46)	(4.413)
Number of Children	2.525	2.551	2.448	2.5	2.506
	(1.241)	(1.263)	(1.172)	(1.22)	(1.225)
Urban	0.432	0.397	0.425	0.411	0.416
	(0.495)	(0.489)	(0.494)	(0.492)	(0.493)
Wife Employed	0.172	0.203	0.158	0.181	0.179
	(0.377)	(0.403)	(0.365)	(0.385)	(0.383)
Single Household	0.662	0.603	0.651	0.627	0.635
	(0.473)	(0.489)	(0.477)	(0.484)	(0.481)
Duration of Marriage	8.439	9.325	9.141	9.234	9.042
	(4.943)	(5.655)	(5.523)	(5.591)	(5.452)
Proportion of children who are male	0.515	0.517	0.524	0.52	0.519
	(0.358)	(0.353)	(0.359)	(0.356)	(0.357)
Beating Justified		0.48	0.374	0.427	
		(0.5)	(0.484)	(0.495)	
Muslim		0.943	0.952	0.948	
		(0.231)	(0.213)	(0.222)	
Observations	5,290	8,127	8,164	16,291	21,581

Samples defined in section 3.3. Estimates are weighted

In the DHS sample, the average age of the woman is around 29.6 in the pooled sample, and the age difference between the spouses is around seven years. The average number of years of schooling for women in the pooled sample is 7.5 years, and husbands have on average one and a half more years of schooling than their wives. The average number of children in the sample is around 2.5, and under 42% live in urban areas. Only around 17.9% of wives are employed. The average woman in the sample has been

married for around eight years. The proportion of male children doesn't differ significantly from the natural rate of 51.4%. In the 2005-2008 samples, more than 40% of women agree that beating of the wife is justified for at least one reason. 95% of women in the sample are Muslim, the rest being predominantly Christian.

Table 3.5: Descriptive Statistics of Determinants of Bargaining Power – ELMPS Sample

	Means and (Standard Deviations)			
Survey	2006	2006	2012	2012
Number of Decisions	3	6	3	6
Age (Wife)	32.967	34.555	32.506	34.861
	(8.122)	(7.035)	(7.581)	(6.708)
Age Difference (Husband – Wife)	6.844	6.953	6.375	6.625
	(4.919)	(4.906)	(5.001)	(4.912)
Years of Education (Wife)	7.088	6.947	8.415	7.995
	(5.79)	(5.851)	(5.449)	(5.549)
Education Difference (Husband – Wife)	1.48	1.546	1.012	1.255
	(4.334)	(4.346)	(4.381)	(4.369)
Number of Children	2.973	3.375	2.769	3.232
	(1.634)	(1.569)	(1.391)	(1.316)
Urban	0.401	0.393	0.41	0.416
	(0.49)	(0.488)	(0.492)	(0.493)
Wife Employed	0.256	0.302	0.181	0.202
	(0.437)	(0.459)	(0.385)	(0.401)
Duration of Marriage	13.618	15.365	12.269	14.894
	(8.373)	(7.161)	(7.73)	(6.719)
Proportion of children who are male	0.524	0.522	0.525	0.515
	(0.337)	(0.298)	(0.339)	(0.299)
Bride's Side Contribution to Costs	30.595	29.466	34.635	33.813
	(15.599)	(15.523)	(16.512)	(16.544)
Backup (Stay)			0.795	0.783
			(0.403)	(0.412)
Backup (Finance)			0.779	0.765
			(0.415)	(0.424)
Observations	4,829	2,745	6,763	3,894

Samples defined in section 3.3. Estimates are weighted

The ELMPS samples are broadly similar in characteristics, although the average age of the wife is higher at around 33 years when children related decisions are excluded, and 35 years when they are included The average contribution of the bride's side to the costs of marriage is around 30-35%. Around 20% of women report having nobody to rely on in the case of problems in the form of offering them a place to stay for the night, and around 22% report the same in the form of offering them financial assistance.

In terms of the regression, and focusing on the DHS sample first, the baseline regression (Column (1)) controls for age of the wife, her education, and her urban status. Column (2) then controls further for the age and education difference between the spouses, the wife's number of children, her employment, the structure of the household, the duration of marriage, and the proportion of children who are male. Column (3) is restricted to the samples of 2005 and 2008, and further includes a dummy variable which captures whether the wife believes that wife-beating is justified for any reason, and a dummy variable for being Muslim.

As predicted, the proportion of decisions a woman reports having a say in increases with her age, although the magnitude of the effect is small. The age of the wife relative to that of her husband does not appear to affect her bargaining power. Every extra year of education significantly increases the proportion of decisions in which the wife has a say by around 1%, and interestingly a larger educational difference between the husband and the wife positively impacts the wife's bargaining power. This could be explained by more educated males believing in more joint responsibility in decision-making, although the magnitude of the effect is small.

Being employed is associated with a 4-5% increase in the proportion of decisions in which the wife has a say, while living in an urban area is associated with an increase of 13.4% in the baseline model, with the increase never falling below 7.3%. The bargaining power of the wife is higher amongst women who live in single-household structures, as predicted, due to the absence of external influences, and also increases with the duration of the marriage, although to a small level.

There is limited evidence that the number of children or the sex composition of the children affect the wife's bargaining power, controlling for other characteristics.

Columns (2) and (3) include a variable measuring the proportion of male children a woman has. A change in the composition of children from all-female to all-male is only associated with an increase of 1% in the proportion of decisions in which the wife reports having a say. Controlling for religion however, this effect is insignificant. Estimating the same regressions for women of a given family size also shows no significant effect of the sex composition of children on the wife's bargaining power. Including a dummy variable for having no male children also shows no significant effect. Therefore despite strong son preference in Egypt, their presence in the household does not seem to impact the wife's bargaining power.

Being Muslim is associated with a reduction in the proportion of decisions in which the wife reports having a say by around 2%. Believing that beating of the wife is justified, for any reason, is associated with a reduction of around 10.5% in the proportion of decisions in which a wife reports having a say. This is likely to reflect cultural attitudes towards the role of women and their rights.

Coming to the ELMPS samples, results are reported for the bargaining variable constructed from three decisions, in addition to the bargaining variable constructed from six decisions, as discussed earlier. The baseline regression controls for age of the wife, her education, and her urban status. Further regressions control for her age and educational difference with her husband, her number of children, her employment, the duration of her marriage, the proportion of her children who are male, the percentage of marriage costs contributed by her and her family, and backup options. Information on religion is not universally recorded in the ELMPS surveys.

The findings from the ELMPS samples are broadly the same as that from the DHS sample, with comparable magnitudes. Furthermore, there are no significant differences between the regressions based on three decisions and the regressions based on six decisions. The percentage of costs contributed by the bride's side has no significant impact on the bargaining power of the wife. Having a family member that the wife can rely on in the case of problems in terms of offering her a place to stay for the night has no impact on her bargaining power. On the other hand, having a family member to rely on for financial support significantly impacts her bargaining power, increasing the proportion of decisions she is reported to have a say in by around 3%.

Table 3.6: OLS Estimation of Determinants of Bargaining Power – DHS Sample

	(1)	(2)	(3)	(4)	(5)
Age (Wife)	0.004***	0.002***	0.002**	0.002**	0.0010
	[0.0004]	[0.0007]	[0.0007]	[0.0008]	[0.001]
Age Difference (Husband – Wife)		-0.0006	-0.001**	-0.0007	-0.0004
		[0.0005]	[0.0005]	[0.0006]	[0.0007]
Years of Education (Wife)	0.012***	0.012***	0.008***	0.008***	0.008***
	[0.0004]	[0.0005]	[0.0006]	[0.0006]	[0.0008]
Education Difference (Husband – Wife)		0.02***	0.001*	0.001*	0.0004
		[0.0006]	[0.0006]	[0.0007]	[0.0009]
Number of Children		-0.008***	-0.004	-0.001	0.002
		[0.003]	[0.003]	[0.003]	[0.005]
Urban	0.140***	0.128***	0.092***	0.081***	0.073**
	[0.0221]	[0.022]	[0.026]	[0.028]	[0.037]
Wife Employed		0.053***	0.041***	0.042***	0.036***
		[0.006]	[0.006]	[0.006]	[0.009]
Single Household		0.049***	0.052***	0.053***	0.071***
		[0.005]	[0.005]	[0.006]	[0.008]
Duration of Marriage		0.003***	0.003***	0.003	0.003
		[0.0009]	[0.001]	[0.003]	[0.004]
Proportion of children who are male		0.011*	0.011	0.011	0.010
		[0.006]	[0.079]	[0.007]	[0.008]
Beating Justified (2005 and 2008 only)			-0.105***	-0.108***	-0.111***
			[0.006]	[0.006]	[0.008]
Muslim (2005 and 2008 only)			-0.022**	-0.025**	-0.048***
			[0.011]	[0.013]	[0.015]
New Contract (2005 and 2008 only)				0.022*	0.024*
				[0.011]	[0.013]
Region and Year Dummies	Yes	Yes	Yes	Yes	Yes
Observations	21,581	21,581	16,266	15,098	9,158
R^2	0.138	0.146	0.141	0.141	0.154

Dependent variable: "Bargaining". Sample defined in section 3.3. Robust standard errors reported in parentheses. Regressions (1)-(5) correspond to equation (3.2)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

Table 3.7: OLS Estimation of Determinants of Bargaining Power – ELMPS Sample

	(1) 2006 3 Decisions	(2) 2006 6 Decisions	(3) 2006 6 Decisions	(4) 2012 3 Decisions	(5) 2012 6 Decisions	(6) 2012 6 Decisions
Age (Wife)	0.003*** [0.0006]	0.002** [0.001]	0.0039** [0.002]	0.003*** [0.001]	0.002** [0.001]	0.007*** [0.002]
Age Difference (Husband – Wife)			9.79e-05 [0.001]			0.002* [0.001]
Years of Education (Wife)	0.009*** [0.001]	0.008*** [0.001]	0.006*** [0.001]	0.007*** [0.001]	0.006*** [0.001]	0.004*** [0.001]
Education Difference (Husband – Wife)			-0.001 [0.001]			0.0009 [0.001]
Number of Children			-0.006 [0.005]			0.006 [0.007]
Urban	0.042*** [0.011]	0.051*** [0.014]	0.049*** [0.014]	0.046*** [0.010]	0.028** [0.012]	0.027* [0.014]
Wife Employed			0.034** [0.014]			0.023 [0.015]
Duration of Marriage			-0.002 [0.002]			-0.004* [0.002]
Proportion of children who are male			0.024 [0.018]			0.004 [0.018]
Bride's Side Contribution to Costs			0.06 [0.0004]			0.0001 [0.0003]
Backup (Stay)						0.037 [0.031]
Backup (Finance)						0.032** [0.015]
Region Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4,8299	2,745	2,742	6,763	3,894	2,801
R^2	0.166	0.163	0.168	0.102	0.168	0.1922

Dependent variable: "Bargaining". Sample defined in section 3.3. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (3.2)

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

3.6 Change in Legislation in Year 2000

There were two significant changes in family law in Egypt in the year 2000. Islamic laws dictate that under normal circumstances only the husband can file for divorce. In January 2000 a wife gained the right to file for divorce unilaterally without having to prove injury or incompatibility by returning the dower given to her and affirming that there is no way for her to continue married life with her husband (Jansen, 2007). Theoretically, this could lead to an increase in bargaining power for wives, as their ability to obtain divorce is strengthened. However given the law applied universally, and would be effective for all marriages regardless of their dates, it is difficult to isolate the effect of this policy. This is particularly the case as all the surveys were carried out after the change in legislation.

In September 2000, the law changed allowing for a clause in the marital contract where both partners could stipulate conditions. Exercising the right to stipulate conditions is likely to have a positive impact on the wife's bargaining power, as she could set conditions relating to continuing her education or entering the workforce, both of which would positively influence her bargaining power. Such conditions are widespread in other Arab countries, such as Bahrain. A condition restricting polygyny could also have a positive impact on the wife's bargaining power. This however would depend on the right to stipulate conditions being exercised. No data is available on the conditions that wives place in their marital contracts, if any.

As this policy change would only affect women who got married after the change in law, its effect on bargaining power is estimated using the DHS dataset, through creating a variable "new contract" which is equal to 1 if the year of marriage is later than 2000, and 0 if it is before 2000. As there is no information on month of marriage, observations where the year of marriage is 2000 are omitted. The variable "years away" is also constructed to measure the distance of year of the first marriage from 2000, and control for a quadratic function of it. The analysis is restricted to the surveys of years 2005 and 2008.

Columns (4) and (5) in Table 3.6 above show the results of the regression of Bargaining on New Contract, controlling for distance of year of the first marriage from 2000. Column (4) includes the full sample, while column (5) restricts to marriages after the year 1995. The evidence is suggestive that there is a significant positive effect of the new contract on bargaining power, but only increasing the proportion of decisions the wife reports having a say in by around 2%.

The change in bargaining power around the year of marriage 2000 is further estimated in a regression discontinuity (RD) design framework. Although the law had been debated in parliament for a while, it is unlikely that it would have affected the timing of marriages, due to the uncertainty of its implementation. Therefore sharp RD is implemented, on the assumption that one would predict a sharp change in bargaining power around the year of marriage 2000.

Table 3.8 reports the results of the RD estimates of the effect of the change in legislation on bargaining power. The cut-off point is set at the year 2000. Three types of procedures are used for bandwidth selection. Firstly, the bandwidth selector proposed by Calonico, Cattaneo and Titiunik (2014), CCT. Secondly, the bandwidth selector proposed by Imbens and Kalyanaraman (2012), IK. Thirdly, the cross-validation method proposed by Ludwig and Miller (2007), CV.

Furthermore, for each bandwidth selection, the estimates for three procedures are reported. Firstly, conventional RD estimates with conventional variance estimator. Secondly, bias-corrected RD estimates with conventional variance estimator. Thirdly, bias-corrected RD estimates with robust variance estimator, as proposed by Calonico et. al. (2014).

The evidence is again supportive of an increase in bargaining power for marriages around the time of the new contract, across bandwidth type and procedures. The effect is relatively small in magnitude ranging from 2 to 8% increase in bargaining power associated with the change. Graphically, Figure 3.1 presents less evidence of discontinuity howeve, and therefore the results should be treated with caution.

For robustness, Table 3.9 reports results for any discontinuity in education of the wife, around year of marriage 2000. There is no evidence of a significant change there.

Table 3.8: RD Estimates of Effect of New Contract on Bargaining Power

	(1)	(2)	(3)
Conventional	0.061**	0.048**	0.025*
	[0.027]	[0.021]	[0.014]
Bias-corrected	0.046*	0.082***	0.053***
	[0.027]	[0.021]	[0.014]
Robust	0.046**	0.082	0.053**
	[0.019]	[0.050]	[0.024]
Observations	4,735	6,325	9,906
Obs. left of c	1934	2862	5286
Obs. right of c	2801	3463	4620
Kernel Type	Triangular	Triangular	Triangular
BW Type	CCT	IK	CV
BW Loc. Poly. (h)	2.143	3.513	6.650

Dependent variable: "Bargaining". Running Variable: "Years Away"
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

Figure 3.1: Discontinuity in Bargaining around Year of Marriage 2000

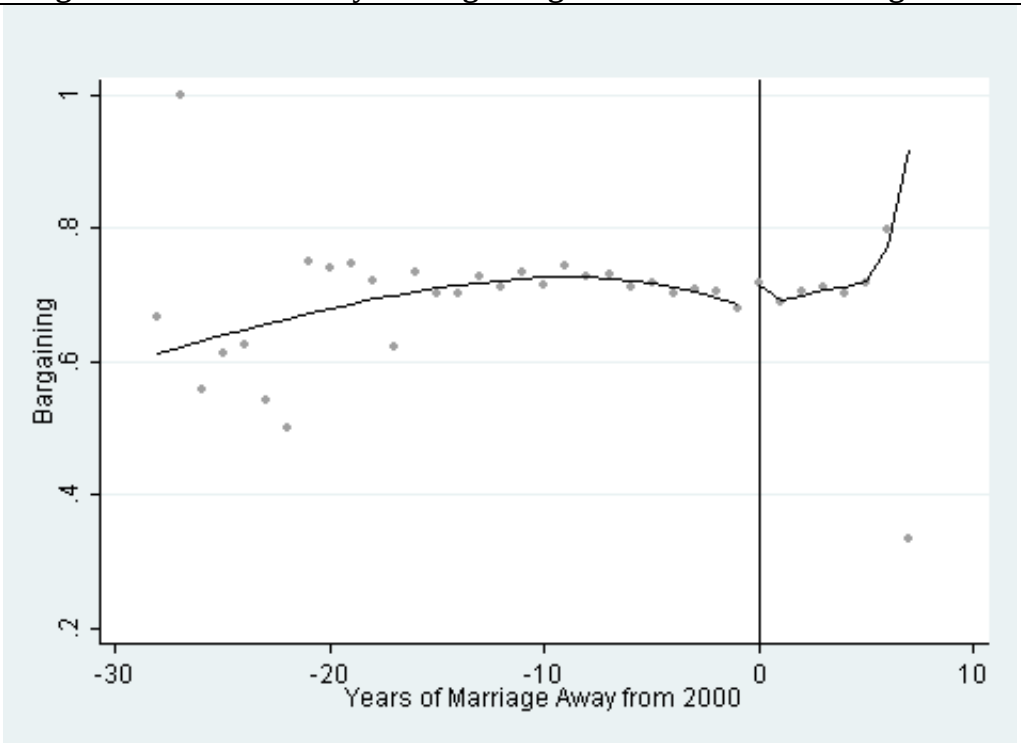


Table 3.9: RD Estimates of Effect of New Contract on Wife's Education

	(1)	(2)	(3)
Conventional	-0.180	0.0193	0.0675
	[0.424]	[0.268]	[0.222]
Bias-corrected	0.0481	-0.330	-0.139
	[0.424]	[0.268]	[0.222]
Robust	0.0481	-0.330	-0.139
	[0.297]	[0.471]	[0.374]
Observations	4,735	9,026	9,906
Obs. left of c	1934	4550	5286
Obs. right of c	2801	4476	4620
Kernel Type	Triangular	Triangular	Triangular
BW Type	CCT	IK	CV
BW Loc. Poly. (h)	2.18	5.025	7

Dependent variable: "Wife's Years of Education". Running Variable: "Years Away"
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

3.7 Fixed Effects Analysis

The panel nature of the ELMPS data is exploited to further study changes in a woman's bargaining power over time. Table 3.10 reports the change in bargaining power over time for women who were married in 2006 with at least one child, and remained married in 2012. Although the mean change in the proportion of decisions in which a woman reports having a say between the two surveys is small, 28.4% of woman reported a decrease in the number of decisions in which they have a say, based on three decisions, and 36.8% reported a decrease, based on the six decisions variable.

Table 3.10: Changes in Bargaining Power Over Time

	Percentage	
	3 Decisions	**6 Decisions**
Decrease	28.4%	36.8%
Same	33.2%	19.4%
Increase	38.4%	43.8%
Mean Change	0.05	0.03

Sample includes women who were married in 2006 with at least one child, and remained married in 2012. Estimates are weighted

Fixed effects estimation is carried out to analyse the determinants of bargaining power, by considering these changes in a married woman's bargaining power between 2006 and 2012. This allows us to control for unobserved heterogeneity at the household level. There are limited time invariant variables that could be exploited. The regressions therefore only include number of children, the proportion of children who are male, and employment. Egyptian women typically finish their education before marriage, and most other background characteristics are constant. Table 3.11 reports the results. The analysis is based on the three decisions variable only, in order to maintain a sufficient sample size. There is evidence that the proportion of decisions in which a woman reports having a say, increases by 3% with each additional child. Given that no evidence was found at the cross-sectional level for an effect of the number of children on bargaining power, this could perhaps be explained by a decrease in bargaining power for women who are unable to continue childbearing. In line with the cross sectional results, there is no evidence that a change in the proportion of male children a woman has impacts her bargaining power. However the evidence also suggests that a change in employment has no impact on bargaining power.

Unobserved heterogeneity could also be due to characteristics of the wife or husband's household before marriage, their parental backgrounds, or their upbringing. The ELMPS data enables us to track siblings who were unmarried in either the 1998 or 2006 survey, but married in the 2012 survey. Estimation is therefore also carried out controlling for parental household fixed effects, for sisters observed in the 2012 survey,

and also for brothers observed in the 2012 survey. The results are shown also in Table 3.11. Controlling for parental household fixed effects renders almost all the variables insignificant, suggesting a high degree of unobserved heterogeneity explaining the cross-sectional findings of an association between bargaining power and various determinants. The only exception is that controlling for other characteristics, employed women have more bargaining power than their unemployed sisters.

Table 3.11: Fixed Effects Estimation of Determinants of Bargaining Power – ELMPS

	(1)	(2)	(3)
Group	Individual Over Time	Sisters	Brothers
Age (Wife)		0.001	-0.0007
		[0.005]	[0.003]
Age Difference (Husband – Wife)		0.001	-0.003
		[0.003]	[0.003]
Years of Education (Wife)		0.0007	0.002
		[0.006]	[0.003]
Education Difference (Husband – Wife)		-0.003	-0.001
		[0.004]	[0.003]
Number of Children	0.033***	0.019	0.009
	[0.008]	[0.021]	[0.013]
Wife Employed	0.003	0.115**	-0.00415
	[0.022]	[0.0493]	[0.0321]
Proportion of children who are male	0.053	-0.015	0.011
	[0.039]	[0.039]	[0.024]
Bride's Side Contribution to Costs		0.0009	2.55e-07
		[0.0009]	[0.0008]
Backup (Stay)		0.070	0.071
		[0.094]	[0.073]
Backup (Finance)		0.040	0.024
		[0.044]	[0.035]
Number of Groups	2,951	1,727	1,456

Dependent variable: "Bargaining". Robust standard errors reported in parentheses.
Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

3.8 Bargaining Power and Children's Education

Estimating the effect of the mother's bargaining power on her children's educational outcomes is subject to endogeneity. In particular, unobserved characteristics, such as intelligence, strength of character, or traditional attitudes, could affect both the mother's bargaining power and the education of the children, leading to omitted variable bias.

An exogenous shock to bargaining power with no direct effect on children's education would help identify the true effect of bargaining power on children's education. As discussed earlier, the change in legislation in the year 2000, allowing for conditions to be stipulated in the marital contract, could arguably be considered an exogenous shock to bargaining power. However this cannot be exploited in this chapter, due to an insufficient gap, between the timing of the change and that of the latest survey (2008), for children to be enrolled in school.

As such, the results presented below are purely explorative, in order to help firstly understand the correlation between a woman's bargaining power and the education of her children. Secondly, the results help highlight differences in the correlation of a woman's bargaining power with the education of her daughters versus the education of her sons.

The effect of a woman's bargaining power on her children's education is examined, by estimating the following regression for woman i, living in governorate r, controlling for governorate fixed effects.

$$z_{ir} = \alpha_r + \alpha_j + \beta y_{ir} + X_{ir} + \varepsilon_{ir} \quad (3.3)$$

- z: outcome variable
  - Children's Education (Explained below)
- y: bargaining power variable
  - "Bargaining"
  - Dummies for "Wife", "Husband", "Joint", "Other"
- X: vector of controls, which includes in the baseline regressions only the age of the relevant child, as other potential controls have been identified previously as being determinants of bargaining power directly

School attendance is compulsory in Egypt up to the age of 14. Since the 2000 survey does not contain information about children over the age of 14, the DHS sample is restricted to the 2005 and 2008 surveys.

A variable "Attending School" is constructed which is equal to 1 if the child is currently attending school, or attended school at some time during the current academic year at the time of the survey, and 0 if they did not attend school during the current academic year. In order to standardise the analysis, two variables are then constructed; "Attend_Daughter" which captures the school attendance status of a woman's oldest daughter, and "Attend_Son" which captures the school attendance status of a woman's oldest son. The sample restrictions are the same as above, with the requirement that the daughter regressions are restricted to women who have at least one daughter older than the age of six, and that the son regressions are restricted to women who have at least one son older than the age of six. The regressions are also estimated on a sample restricting the age of the oldest relevant child to be more than 14, to focus on school attendance beyond the age of compulsory school attendance..

Tables 3.12 reports the means and standard deviation of the school attendance variables, while Tables 3.13 and 3.14 report the results of the regressions.

The average school attendance of the oldest eligible daughter is 94% in the pooled DHS sample, falling to 84.3% when restricting to secondary school age daughters. The comparable figures are 95% and 85.4% for sons, around 1% higher. The figures are comparable in the 2012 ELMPS sample.

Table 3.12: School Attendance

Means and (Standard Deviations)

	DHS 2005	DHS 2008	DHS Pooled	ELMPS 2012
Oldest Daughter Attendance (age >6)	0.930 (0.256)	0.951 (0.217)	0.94 (0.238)	0.935 (0.246)
Oldest Daughter Attendance (age >14)	0.821 (0.383)	0.87 (0.337)	0.843 (0.364)	0.862 (0.345)
Oldest Son Attendance (age >6)	0.946 (0.226)	0.951 (0.216)	0.949 (0.221)	0.941 (0.236)
Oldest Son Attendance (age >14)	0.858 (0.349)	0.85 (0.357)	0.854 (0.353)	0.855 (0.353)

Estimates are weighted

There is a striking difference between the association of the bargaining power of a woman with the education of her daughters, versus its association with the education of her sons. The former is significant and of sizeable magnitude, while the latter is less significant and less than half the size in magnitude. The effect is more important when considering women whose oldest daughter is older than 14, i.e. after the age of compulsory education. In the DHS sample for example, having a say in all decisions, compared to no decisions, is associated with a significant 19.1% increase in the probability of school enrolment of the oldest daughter, compared to 6.1% for the oldest son. In the 2012 ELMPS sample, having a say in six decisions compared to no decisions is associated with a significant increase of 14.5% in the probability of school attendance of the oldest daughter. This is in contrast to Emerson and Souza's (2002) finding that the education of sons is more influenced than the education of daughters by both proxies of the husband's and wife's bargaining power.

Furthermore, Columns (3) and (6) in Tables 3.13 and 3.14 estimate the impact of the various decision-makers on school attendance of children. The evidence suggests that both joint decision-making between husband and wife, and decision making by the wife alone, is associated with higher school attendance for daughters, compared to when the husband alone makes the decision. However, there is limited statistically significant difference between decisions being made by the wife alone or jointly with the husband.

Hence once the wife is part of the decision making process, the husband's role is negligible.

Table 3.13: OLS Estimation of Effect of Bargaining Power on School Attendance DHS Surveys

	(1) Oldest Girl Age > 6	(2) Oldest Girl Age > 14	(3) Oldest Girl Age > 14	(4) Oldest Boy Age > 6	(5) Oldest Boy Age > 14	(6) Oldest Boy Age > 14
Bargaining Power	0.062***	0.191***		0.0204**	0.0691**	
	[0.011]	[0.040]		[0.009]	[0.033]	
Decisions_Wife Alone			0.203***			0.065
			[0.055]			[0.048]
Decisions_Joint			0.182**			0.065*
			[0.040]			[0.034]
Decisions_Others			-0.294			-0.157
			[0.212]			[0.233]
Age / Region/Year Controls	Yes	Yes	Yes	Yes	Yes	Yes
Observations	6,088	1,156	1,156	6,473	1,281	1,28
R^2	0.084	0.116	0.10	0.047	0.055	0.026

Dependent variable: "Attendance_Son" / "Attendance_Daughter" variable. Sample defined in section 3.3. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (3.3). Dependent Base Category for Decisions: Husband Alone. Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

Table 3.14: OLS Estimation of Effect of Bargaining Power on School Attendance ELMPS Survey – 2012

	(1) Oldest Girl Age > 6	(2) Oldest Girl Age > 14	(3) Oldest Girl Age > 14	(4) Oldest Boy Age > 6	(5) Oldest Boy Age > 14	(6) Oldest Boy Age > 14
Three Decisions						
Bargaining Power	0.033**	0.095**		0.021	-0.036	
	[0.015]	[0.040]		[0.020]	[0.052]	
Decisions_Wife Alone			0.081			-0.026
			[0.063]			[0.086]
Decisions_Joint			0.097**			-0.034
			[0.041]			[0.054]
Decisions_Others			-0.050			0.260
			[0.215]			[0.405]
Observations	2,444	691	691	1,509	404	404
R^2	0.130	0.171	0.171	0.103	0.191	0.192
Six Decisions						
Bargaining Power	0.050***	0.145***		0.015	-0.003	
	[0.017]	[0.048]		[0.024]	[0.065]	
Decisions_Wife Alone			0.133**			0.022
			[0.062]			[0.094]
Decisions_Joint			0.153***			-0.012
			[0.049]			[0.066]
Decisions_Others			0.135			0.827***
			[0.178]			[0.237]
Observations	2,195	579	579	1,363	354	354
R^2	0.129	0.185	0.186	0.093	0.181	0.192

Dependent variable: "Attendance_Son" / "Attendance_Daughter" variable: Sample defined in section 3.3. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (3.3). Dependent Base Category for Decisions: Husband Alone. Age, region , education, urban status, number of children, employment of wife, and proportion of male children controlled for.

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

The ELMP sample contains direct questions on the decision makers in regards to the children's education. In particular,

EDUCATION DECISION 1: Dealing with children's school and teachers
EDUCATION DECISION 2: Sending children to school on a daily basis.

Hence, while the results show that that decision-making over spheres other than children is associated with higher school attendance for daughters, it is possible to directly assess the impact of the wife having some final say in relation to her children's education on their school attendance. Table 3.15 reports the results. The wife having a say in dealing with children's school and teachers is associated with an increase in probability of 5.4% of school attendance for secondary school daughters, and having a say in sending children to school on a daily basis is associated with a 7% increase. There is no significant association with sons' school attendance. Hence a woman's decision-making over her daughters' education and their actual school attendance are strongly correlated.

3.9 Conclusions

A measure of the bargaining power of the wife is constructed, based on the proportion of decisions in which she reports having some final say. On average, wives in the sample have a say in around 65% of the decisions examined. The results show an increase over time in bargaining power, and in particular an increase in joint decision-making between the husband and the wife, at the expense of the husband making decisions alone.

At the cross-sectional level, education, especially of the wife, is an important determinant of bargaining power, as is her employment. On the other hand, there is little evidence that the number of children a woman has, or the sex composition of those children has a significant correlation with bargaining power. In particular, the notion that having male children may improve the bargaining position of the wife does not seem to be borne by the evidence. The relative contribution of the bride and her family to the

overall costs of marriage also has no impact on bargaining power, despite the possibility that it could be taken as a measure for assets brought into marriage, which could affect the bargaining position of the wife. Women who report having a family member they could rely on for financial support in the case of problems also have higher bargaining power.

Fixed effects estimation suggests that the bargaining position of women who stop childbearing may deteriorate compared to those who continue childbearing. Employed women also appear to have higher bargaining power in their households than their unemployed sisters. The overwhelming evidence however suggests that unobserved heterogeneity may account for most of the significant associations found between bargaining power and various determinant at the cross sectional level.

Future research could attempt to compare the relative importance of determinants at the individual level, to determinants at the village or town level. In particular characteristics at the village/town level may be more important in shaping social norms which dictate the bargaining power of the wife.

A change in legislation in 2000 which allowed women to stipulate conditions in the marital contract was found to have some significant impact on bargaining power, although the graphical analysis questions the finding. Exploiting this change in legislation as an exogenous shock to bargaining power is left to future research, and in particular when surveys capturing children outcomes for women married in that period become available.

The effect of bargaining power on the education of children is explored, with the limitation that lack of identification only enables suggestive evidence to be presented. A striking difference is found between the correlation of a mother's bargaining power with the education of her daughters, and that with her sons. In particular, while there is no significant correlation between bargaining power and the education of sons, there is a significant increase in the probability of school attendance of daughters when the mother's bargaining power increases. Although a causal effect cannot be verified, the difference in association in itself suggests differential effects of bargaining power on sons versus daughters. Clearer identification of this effect is left to future research.

Table 3.15: OLS Estimation of Effect Education Decisions on School Attendance ELMPS Survey – 2012

	(1) Oldest Girl Age > 6	(2) Oldest Girl Age > 14	(3) Oldest Girl Age > 14	(4) Oldest Boy Age > 6	(5) Oldest Boy Age > 14	(6) Oldest Boy Age > 14
Education Decision 1						
Wife has some say	0.021**	0.054**		-0.011	0.005	
	[0.009]	[0.025]		[0.013]	[0.037]	
Decisions_Wife Alone			0.066**			0.010
			[0.029]			[0.048]
Decisions_Joint			0.049*			0.005
			[0.029]			[0.041]
Decisions_Others			0.079			0.232***
			[0.101]			[0.080]
Observations	2,344	637	637	1,458	386	386
R^2	0.122	0.162	0.163	0.090	0.179	0.183
Education Decision 2						
Wife has some say	0.024**	0.071**		-0.006	0.012	
	[0.010]	[0.028]		[0.014]	[0.040]	
Decisions_Wife Alone			0.083**			0.043
			[0.034]			[0.045]
Decisions_Joint			0.079**			-0.012
			[0.032]			[0.049]
Decisions_Others			0.102*			0.166**
			[0.053]			[0.070]
Observations	2,199	579	579	1,365	354	354
R^2	0.127	0.176	0.180	0.093	0.181	0.188

Dependent variable: "Attendance_Son" / "Attendance_Daughter" variable: Sample defined in section 3.3. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (3.3). Dependent Base Category for Decisions: Husband Alone. Age, region , education, urban status, number of children, employment of wife, and proportion of male children controlled for.

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%.

Chapter 4: Dower and Divorce in Egypt

4.1 Introduction

Marital transfers between families at the time of marriage are common in many parts of the world, and in particular the developing world. Transfers from the bride's side to the groom's side, known as "dowries" or from the groom's side to the bride's parents, known as "bride-prices", have been studied extensively in the literature. In the mainstream view originating from Becker (1991), such transfers serve to clear marriage markets in the presence of an excess supply of one of the two genders. This mechanism, if true, would explain the prevalence of "bride-prices" in polygynous societies, such as those of Africa, and "dowries" in monogamous societies, such as those of the Indian sub-continent.

In Muslim societies however, another form of marital transfers exists which has received little attention in the theoretical or empirical economic literature; transfers from the groom's side to the bride herself, Islamic dower or *mahar*. *Mahar* is recorded officially as part of the marital contract and typically consists of two parts: a prompt transfer or "*moqaddam*", transferred at the time of marriage, and a deferred transfer or "*moakhar*", transferred only in cases of divorce or death of the husband (Rapoport 2000; Welchman 2000). In some Muslim societies, the wife also reserves the right to demand the *moakhar* at any time during her marriage (Saroukhani, 1979; Korson, 1967).

Another form of marital transfer also exists in some Muslim countries, and in particular Arab ones: the jewellery given to the bride or "*shabka*". Although not typically part of the marital contract, the value of *shabka* could exceed the value of *mahar* itself, making it an important part of marital transfers.

The level of marital transfers could have significant implications on the decision to divorce, in particular where they are due only upon divorce, or where they need to be repaid upon divorce. In Islamic law, the husband typically has a unilateral right to no-fault divorce. The deferred part of *mahar*, the *moakhar*, could therefore serve as a barrier to exiting marriage

This chapter contributes to the literature by exploring the institution of Islamic dower in more detail. Section 4.2 reviews the related existing literature, and Section 4.3 explains the nature of marital transfers in Muslim countries. Section 4.4 discusses the theoretical effect of *mahar* on divorce. Section 4.5 presents the data and samples used for the analysis. Section 4.6 examines the structure of marital transfers in Egypt, and the levels of the three types of marital transfers mentioned, *moqaddam*, *moakhar* and *shabka*. Section 4.7 considers the effect of a change in legislation in Egypt in 2000 which gave women the right to initiate no-fault divorce by repaying the *moqaddam.* Section 4.8 reports the results of estimating the determinants of the structure and levels of the marital transfers. Section 4.9 then discusses the effect of marital transfers on bargaining power and on divorce, while Section 4.10 concludes.

4.2 Existing Literature

Discussion of marital transfers in the economic literature is focused on dowries and bride-prices. The literature on bride-prices is more closely related to this chapter, as it involves transfers from the groom's side to the bride's side, albeit to the bride's parents rather than to the bride herself.

Several explanations for bride-prices have been put forward in the literature. In the mainstream view held by Becker (1991), they serve as a mean to clear the marriage market in the presence of an excess of men, and hence are more likely to be prevalent in polygynous societies. Previous studies have indeed found that bride-prices are more predominant in countries and civilisations where polygyny is prevalent (Hartung, 1982; Bergstrom**,** 1994; Botticini and Siow, 2003). In a quantitative model, Tertilt (2005) finds that enforcing monogamy reduces the direction of marital transfers away from bride-prices towards dowries.

Bishai and Grossbard (2010) argue that bride-prices are the price of women's sexual fidelity to men, explaining a negative correlation found between bride-prices and non-marital sexual relationships for women after marriage. However this correlation could

also be consistent with the argument that bride-prices are the "price of virginity", if pre-marital sexual activity is a predictor of non-marital sexual relationships after marriage.

The literature suggests that the level of bride-price is typically constant in a society, and is independent of the wealth of the families of the groom and bride and even the rank of the wife in polygynous marriages (Tapper, 1981; Mulder 1995; Zhang, 2000; Anderson, 2007). However, there is some evidence to suggest that where close-kin marriages are common, bride-prices are higher the more distant the relative is (Kressel, 1977; Papps, 1983; Bianquis, 1996).

Marital transfers could affect bargaining positions within marriage. Several studies show that the distribution of assets between husband and wife at the time of marriage is a determinant of bargaining power between the couple after marriage (Schultz, 1990; Thomas et al., 1997; Zhang and Chan, 1999; Quisumbing and de la Brie`re, 2000; Brown 2003; Quisumbing and Maluccio, 2003; Suran et al., 2004). This could hold even if the distribution of assets at the time of marriage does not determine their distribution upon divorce (Fafchamps and Quisumbing, 2002).

To overcome possible omitted variable bias in measuring the impact of marital transfers on bargaining power, a couple of papers have used instrumental variable techniques. Zhang and Chan (1999) use parental education as an instrument for dowry when estimating its effect on the probability that husbands do household chores in Taiwan. However, as noted by Brown (2003) "unobservable characteristics of the wife, e.g., intelligence, may be correlated with both parental education and household bargaining outcomes", questioning the validity of the instrument.

Thus Brown (2003) instruments for dowry using grain shocks in the year preceding marriage (which could affect the ability of households to make marital transfers) and sibling sex composition (which could affect the savings available for marital transfers). He finds that dowry positively and robustly impacts a wife's leisure time, household purchases, and decision-making authority.

The effect of marital transfers on the probability of divorce is closely related to social norms related to when they are paid and/or whether they are to be repaid in the case of

divorce. In Colonial India, the entirety of dowers for Muslims was a deferred transfer in the case of divorce or death of the husband. Sharafi (2009) argues that judges, seeking to further the interest of women, therefore encouraged the use of inflated dower to make the husband's power of divorce too expensive to use.

In cases where bride-prices are transferred at the time of marriage, but need to be repaid in the case of divorce, some literature suggests that they have been linked to domestic violence (Ansell, 2001). Women could be trapped in abusive marriages, fearing returning to their natal home without being able to repay the bride-price.

In Senegal, the bride-price has to be paid back by the bride's family to the groom in case of divorce, if the woman is considered responsible for the breakup of the marriage. Social norms are clear on cases where the woman is considered as such. Gaspart and Platteau (2010) thus argue that when setting the bride-price, the bride or the bride's father take into account "the adverse effect of excessive marital transfers on the incidence of conjugal tensions (including ill-treatment of the wife by the husband) and the probability of divorce, which in turn affect the wife's well-being". By accepting lower bride-price, the woman maintains her ability to seek divorce without the financial implications of a high bride-price being repaid. They find that bride-prices are higher in the case of love marriages than arranged marriages, supporting their proposition, assuming that the risk of divorce is higher in arranged marriages. Interestingly, they find that a majority of women in their sample oppose high bride-prices not due to their implications for divorce, but because they see them as a factor in "alienating women," and "transforming them into commodities" or "into slaves of their husband".

In Bangladesh, dowers co-exist with dowries, and the entirety of dower is deferred, only paid upon husband-initiated divorce. Ambrus, et al. (2010) develop a model of marriage contracts in which "dowers serves as a barrier to husbands exiting marriage and a component of dowry as an amount that *ex ante* compensates the groom for the cost of dowers". They argue that because a higher deferred dower imposes expected costs on the husband, by keeping him in a less-than-ideal marriage with some probability, and by him having to pay this increased dower in case of an even worse match realisation, grooms must receive a transfer at the time of marriage that is increasing in the amount of dower

specified in order to agree to the marital contract. Hence the emergence of dowry in Bangladesh

To support their model, they find evidence from Bangladesh that legal changes to marital law which changed men's incentives to divorce simultaneously affected levels of dowers and dowries. In particular, an amendment imposing financial barriers for men who abandon their wives without formal divorce, increased the levels of both dowry and dower. Another amendment strengthening the enforcement of alimony payments (*mata'a*) and therefore the contract-independent costs of divorce, decreased the levels of both dowry and dower.

Esteve-Volart (2003) also examines whether an increase in dowries in Bangladesh post-1974 (when penalties on unregistered marriage rose) are associated with a reduction in the probability of divorce. He assumes that women who register marriages will be refunded their dowries in the event of divorce. As noted by Ambrus, et al. (2010) however, as there is no clear mechanism to recover the dowry, the paper "cannot empirically disentangle dowry as divorce prevention from an increase in women's willingness to marry in response to the legal change".

Marital transfers could also affect a range of other outcomes. Amin and Bajracharya (2011) for example suggest that bride-prices could encourage investment in a girl's education, as her parents are motivated by the prospect of a higher bride-price. Kaufman, et al. (2000) cite bride-price as an important factor in determining marriageability of girls who have had children before marriage.

The economic literature on dowers, marital transfers from the groom's side to the bride herself, common in Islamic countries, is scarce, with the exception of Ambrus, et al. (2010) as discussed above.

In other disciplines, several papers have discussed Islamic dower from a social perspective, but the empirical analysis has been restricted to reporting means for different groups and simple correlations. (e.g., Afzal et al. (1973) for Pakistan, Moors (1994) for Palestine, and Saroukhani (1979) for Iran).

4.3 Marital Transfers in Muslim Countries

Marital transfers are prescribed in the Quran in the following verse: "And give the women (on marriage) their dower as a free gift" (Quran 4:4, translation of Yusuf Ali). This verse makes clear that the marital transfer is to the bride herself, and not her family or parents, distinguishing it from "bride-price". It also proposes the *mahar* as a "free gift", as opposed to a payment.

Mahar, or Islamic dower, is thus a transfer from the groom to the bride, which remains the property of the bride. It is typically agreed upon in the marital contract, although where the contract does not specify *mahar*, it could be agreed upon after the contract. Furthermore, if the contract does not specify *mahar*, the husband remains obliged to transfer a dower to his wife after consummation of marriage, equivalent to the social norm for a *mahar* of a woman of her characteristics (Al-Sistani, 2009)

Islamic law places no restriction or recommendation with regards to the timing of the transfer of *mahar*. In most Muslim societies however, mahar is divided into two parts, a prompt transfer "*moqaddam*", and a deferred transfer "*moakhar*". The *moqaddam* is to be transferred before the consummation of marriage, and traditionally includes a copy of the Quran, in additional to a monetary amount. In case divorce occurs before consummation of marriage, the husband has the right to demand half of the *moqadaam* back. The *moakhar* is typically only transferred in the event of divorce or death of the husband, although the contract could specify that it is paid upon demand by the wife, should the husband be able financially to afford it. However, even in the latter case, studies have found that the wife typically does not demand it, to maintain it as a deterrent for divorce or to avoid marital problems (Sahay & Sahay, 1996; Saroukhani, 1979)

Afzal et al. (1973) notes from Pakistan that social norms have evolved such that the entirety of the *mahar* is now assigned as a deferred transfer. A similar structure holds in Bangladesh (Ambrus et al., 2010)

The amount of *mahar,* and its division between prompt and deferred is typically the outcome of negotiations between the families of the bride and the groom before marriage (Afzal et al, 1973; Saroukhani, 1979, Assaad and Krafft, 2014)

This chapter also explores another form of marital transfers, which is not part of the Islamic *mahar*: the "*shabka*" or jewellery presented from the groom's side to the bride.

Some papers argue that *mahar* is merely a social norm or status symbol, sacralising the marriage (Sahay & Sahay, 1996; Saroukhani, 1979). Moors (1994) argues that since the 1960s, token dowers of negligible value have emerged in Palestine, particularly amongst professional men and women. Such a trend would support the notion that *mahar* serves no economic purpose in itself.

However *mahar* could theoretically have an impact on the marital relationship. Both *moqaddam* and *shabka,* could be considered assets brought into marriage, and hence in line with the literature could have an effect on the bargaining position of the couple.

The deferred transfer of *moakhar* could be a form of insurance for the bride, providing her with a degree of economic security in the case of divorce, in addition to being a deterrent factor to stabilise marriage and protect from divorce (Korson, 1967; Afzal et al., 1973). This is particularly relevant in societies where divorce is considered more harmful for women than for men, both socially and economically (El Feki 2013, Hoodfar 1997). Typically in Muslim countries, the divorce is not registered legally until the husband pays all the money he owes his wife, including any deferred dower.

4.4 Theoretical Effect of *Mahar* on Divorce

The effect of either the presence or amount of *mahar* on divorce depends on the legal regime governing divorce laws. Two possible regimes are considered. In the first regime, the man has the unilateral right to no-fault divorce, provided he pays the deferred dower, *moakhar,* and the woman has no right to unilateral divorce. In the second regime, the man maintains the right to no-fault divorce provided he pays the deferred dower,

moakhar, but the woman also has the right to unilateral divorce, provided she repays the prompt dower, *moqaddam.*

Under the first regime, where only the man can initiate divorce, we would not expect any effect of the prompt dower, *moqaddam*, on divorce, as it plays no role in divorce considerations. On the other hand, a higher deferred dower, *moakhar*, could act as a deterrent to divorce, and its financial implication has to be factored into the divorce decision. Hence a negative effect of the presence/level of *moakhar* on the probability of divorce may be expected. At the same time however, if a marriage is deemed at the outset to have a lower risk of divorce, then a lower level of *moakhar* may be set, or even not required, as the security considerations are less relevant. Similarly a marriage with a high risk of divorce may necessitate a higher level of *moakhar*. Hence in equilibrium, the association between the presence/level of *moakhar* and the probability of divorce is unclear.

Under the second regime, where both the man and woman can initiate divorce, the same considerations apply with regards to the deferred dower, *moakhar*. In this case however, the prompt dower, *moqaddam,* also plays a role in divorce considerations, as the woman is required to pay it back in case she initiates the divorce. Hence a higher level of *moqaddam* could curtail the woman's ability to file for divorce, trapping her in an unhappy marriage, and a negative effect of *moqaddam* on divorce may be expected. This legal arrangement could again affect the level of *moqaddam* set from the outset of marriage, in anticipation of the effect of *moqaddam* on the ability of the woman to file for divorce. Similar to Gaspart and Platteau's (2010) discussion of bride-prices in Senegal, when setting the level of *moqaddam*, the effect on divorce is internalised and the woman may seek a lower *moqaddam* to enable her to file for divorce more easily when it is in her interest to do so. In particular, the woman or her family may therefore settle for a low level of *moqaddam* if the risk of divorce is perceived to be high, in order to maintain the woman's ability to seek divorce. In a marriage with a low risk of divorce, the same consideration may not apply. Hence a negative association observed between divorce and *moqaddam* cannot be interpreted as a causal effect. Furthermore, if the wife

is able to perfectly save her *moqaddam*, then the level of *moqaddam* should not affect her perceived ability to file for divorce in the future.[7]

4.5 Data and Samples

The analysis is conducted using the Egypt Labour Market Panel Survey (ELMPS), discussed in Chapter 3. The ELMPS is a nationally representative longitudinal household survey, covering the years 1998, 2006 and 2012. However the variables relating to marital transfers are only available for the years 2006 and 2012.

The dataset is unique in that it contains information on the three types of marital transfers discussed; *moqaddam, moakhar,* and *shabka*. It further includes information on other costs of marriage and the contributions of the groom, the groom's family, the bride, and the bride's family to these costs. The 2006 survey collects this information on these transfers for ever-married women only between the ages of 16 and 49, while the 2012 survey collects information for ever-married men and women between the ages of 18 and 39.

The recorded values of these transfers in the survey are based on the respondent's self-reported answers, and should be interpreted with the possible caveat of recall bias being present.

The main analysis is restricted to a sample of currently married women, with the further restriction that their husband is living with them when variables related to the husband are included. To enable comparison between the two surveys of 2006 and 2012, the main regressions restrict the age range in the 2006 sample to the same age group as the 2012 sample: 18 to 39 years.

A further sample includes both currently married and divorced women, in order to estimate the impact of marital transfers on divorce. Finally, a sample of currently married men from the 2012 survey is used in some of the analysis.

[7] There is limited evidence on whether women are able to, and do, save their *moqaddam* in Egypt. Hence the discussion should be read with this caveat in mind.

To enable comparison of marital transfers over time, real values of marital transfers are constructed, at 2010 levels, using CPI data obtained from the International Monetary Fund, International Financial Statistics and Data files.

4.6 Structure and Levels of *Mahar*

As discussed earlier *mahar* can be divided into two parts, prompt or *moqaddam*, and deferred or *moakhar*. Table 4.1 reports the structure of marital transfer agreements for all ever-married respondents. The table also reports whether or not *shabka* was given to the bride.

A small percentage of marital transfer arrangements involved only *moqaddam* (2.86% in the 2012 sample of women, and 3.51% in the comparable 2006 sample of women). Around 10% of arrangements involved no *moqaddam* or *moakhar* (although more than 90% of these arrangements still involved *shabka)*. *Shabka* in general is close to universal, with less than 5% of arrangements not including one.

The most significant change is that the proportion of ever-married women aged 18 to 39 who had both a prompt and deferred dower decreased from 37.91% in the 2006 sample, to 24.98% in the 2012 sample, with a comparable increase in the percentage of women who had only a deferred dower from 48.6% to 61.58%. Thus there are an increasing number of marital transfer arrangements involving only a deferred part, *moakhar,* at the expense of arrangements which have both prompt and deferred parts.

Table 4.1: Structure of Marital Transfer Agreements

	Percentage (%)			
Survey	**2006**	**2006**	**2012**	**2012**
Sample	Women Aged 16-49	Women Aged 18-39	Women Aged 18-39	Men Aged 18-39
Moqaddam and *Moakhar*	41.37	37.91	24.98	23.64
Only *Moqaddam*	4.48	3.51	2.86	2.69
Only *Moakhar*	44.12	48.60	61.58	64.02
Neither Transfer	10.03	9.98	10.59	9.64
Bride given *Shabka*	95.31	96.75	96.21	96.43

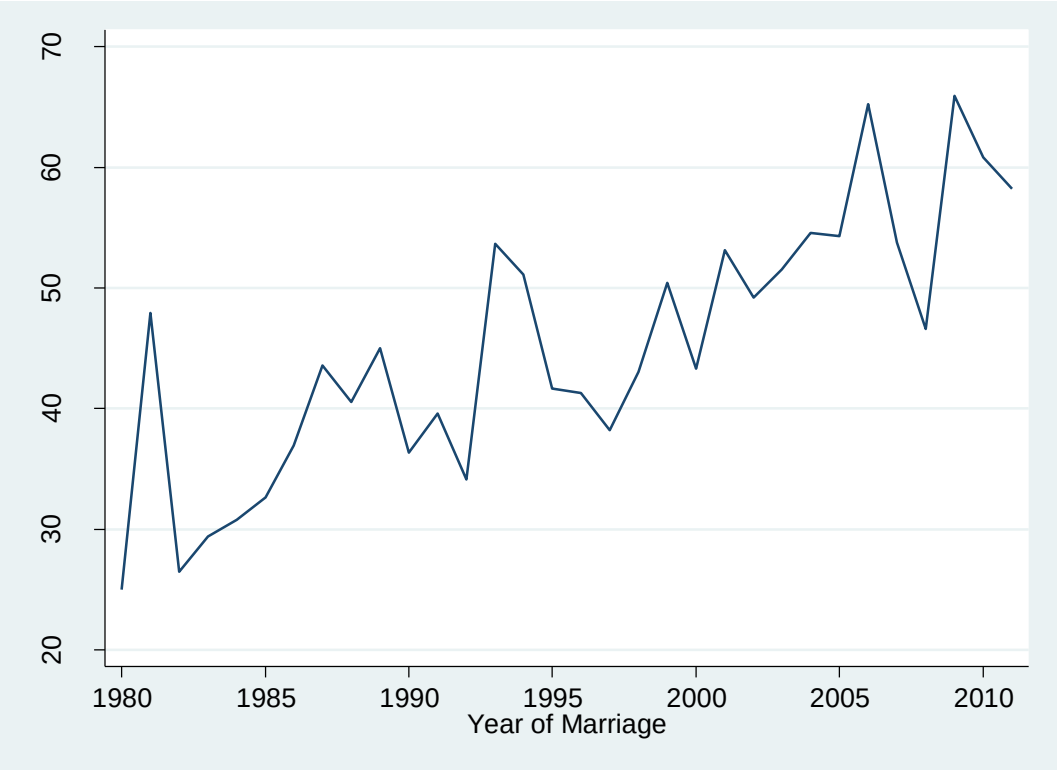
Sample includes ever-married respondents. Estimates are weighted

To shed further light on the decline of *moqaddam* and rise of *moakhar,* Figure 4.1 plots the percentage of women entering marriages which included only *moakhar* by year of marriage, for women who got married between the ages of 18 and 21 in that year. The restriction of age at marriage is to ensure comparability between the marriage year cohorts, although similar results are found without the restriction on age at marriage. In order to minimise recall bias, the 2006 survey is used for years of marriage between 1980 and 2005, and the 2012 survey is used for years of marriage between 2006 and 2011.[8]

As the figure shows, the percentage of women who entered into marriages with only *moakhar* grew steadily from under 30% in the late 1980s (with an anomaly of 48% in 1981) to more than 60% by 2010; this is a statistically significant increase of 0.93% per year of marriage.

[8] The 2006 survey only reports values of payments for women up to the age of 49, we would have turned 21 in 1978, hence the starting point of 1980.

Figure 4.1: Growth of *moakhar* only marriages (1980-2010)



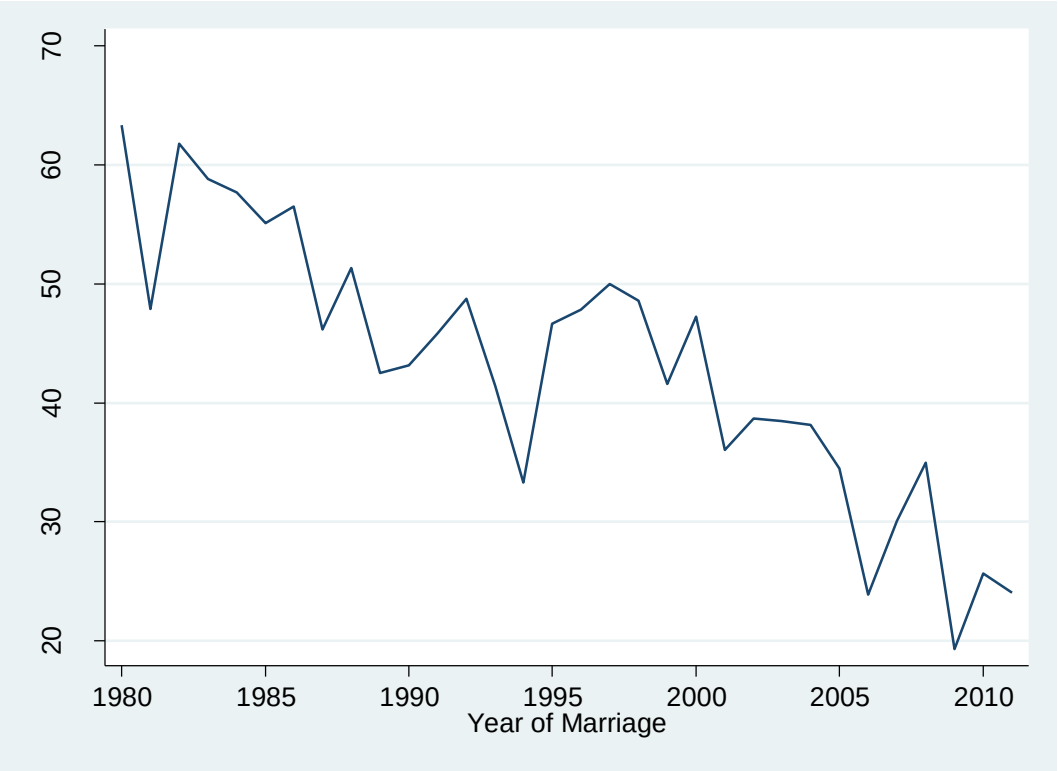
Sample includes all ever-married women who got married between the ages of 18 and 21. Estimates are weighted

Figure 4.2 plots the percentage of women entering marriages that included *moqaddam* (both by itself or with *moakhar* as well) by year of marriage, for women who got married between the ages of 18 and 21 in that year. The same considerations apply in terms of survey usage.

The percentage of women who had *moqaddam* as part of their marital contract declined from around 63% in 1990, to less than 30% since 2009; this constitutes a statistically significant decrease of 1.05% per year of marriage.

Thus there is evidence that the structure of marital transfers has changed over time in Egypt, with a decline in arrangements that include *moqaddam* and an increase in arrangements that include only *moakhar*. This could plausibly be attributed purely to a change in social norms, although more research is needed into possible economic reasons for the change.

Figure 4.2: Decline of *moqaddam* in marital transfer arrangements (1980-2010)



Sample includes all ever-married women who got married between the ages of 18 and 21. Estimates are weighted

Tables 4.2 reports the means and standard deviations of the three types of marital transfers, *moqaddam, moakhar, and shabka,* where they are given (i.e. where their recorded value exceeds 0). To put these figures into context, the average wage for men in the sample is also reported, in Egyptian Pounds (L.E.). The average wage is calculated as the average of the sum of basic wage, supplementary payment and overtime payment for regular workers, and the average monetary monthly wage in their longest main job for irregular workers.

In nominal terms, *moqaddam* was an average of L.E. 3,274 ($595 at the January 2010 exchange rate of 5.5) in the 2006 sample and L.E. 4,398 ($800) in the 2012 sample, for women aged 18 to 39 in the year of survey, suggesting an increase in the level of *moqaddam* in the 2006-2012 period. For comparison, Gaspart and Platteau (2010) calculate an average nominal bride-price in Senegal of $101. Adjusted to 2010 prices however, *moqaddam* averaged L.E. 10,986 ($1,997) in the 2006 sample and L.E. 8,229 ($1,496) in the 2012 sample, suggesting a fall in value of *moqaddam* in real terms. The

average *moqaddam* given by a male in the 2012 sample was L.E. 6,867 ($1,249), in 2010 prices. Given the average wage of a male in the 2012 sample was L.E. 1,001 ($182), the average *moqaddam* is equivalent to the average wage for almost seven months. Thus where *moqaddam* is part of marital transfers arrangements, it constitutes a significant payment, and is not merely a "token transfer".

The average *moakhar* also increased in nominal terms between the two samples from L.E. 2,996 ($544) to L.E. 4,727 ($859), although again in real terms it fell slightly from L.E. 8,768 ($1,594) to L.E. 8010 ($1,456). The average *moakhar* pledged by a male in the 2012 sample was L.E. 7,387 ($1,343), in 2010 prices, which is again equivalent to the average wage for more than seven months.

The value of the average *shabka* also almost doubled between the two samples in nominal terms, from L.E. 2415 ($439) in the 2006 sample to L.E. 4377 ($796) in the 2012 sample. Adjusted to 2010 real prices, it increased only slightly from L.E. 7,045 ($1,281) in the 2006 sample to L.E. 7,199 ($1,308) in the 2012 sample. Given that the value of *shabka* reflects a direct purchase of jewellery, it is predictable that the real value of *shabka* would remain constant over time, provided the real cost of jewellery is also relatively constant over time, and the type of jewellery purchased is also constant.

The average value of *shabka* bought by men in the sample was L.E. 6,995 ($1,272) in 2010 prices, which is again around seven months of average wages. Therefore the upfront marital transfers of *moqaddam* and *shabka* together, are equivalent to 14 months of average wages, a significant amount.

Table 4.2: Average Marital Transfers

Means and (Standard Deviations)

Survey	**2006**	**2006**	**2012**	**2012**
Sample	Women Aged 16-49	Women Aged 18-39	Women Aged 18-39	Men Aged 18-39
Moqaddam (Nominal) (L.E.)	2576.48 (3362.57)	3274.04 (3643.37)	4397.68 (7325.98)	4426.01 (7073.56)
Moqaddam (2010 Prices) (L.E.)	14325.77 (25805.90)	10985.63 (13908.7)	8229.00 (15852.90)	6868.97 (10272.50)
Moakhar (Nominal) (L.E.)	2527.30 (3377.13)	2995.98 (3612.30)	4726.50 (6069.13)	4865.79 (5733.1)
Moakhar (2010 Prices) (L.E.)	11756.60 (21628.1)	8768.37 (11186)	8010.70 (10248.4)	7386.48 (8338.64)
Shabka (Nominal) (L.E.)	2049.31 (2928.23)	2414.90 (2980.58)	4376.81 (5910.91)	4538.96 (5454.67)
Shabka (2010 Prices) (L.E.)	9034.63 (14509.00)	7045.34 (7901.65)	7199.14 (9303.98)	6695.15 (7817.53)
Wage in 2012 (Nominal) (L.E.)				1179.71 (4370.21)
Wage in 2012 (2010 Prices) (L.E.)				1000.71 (3707.10)

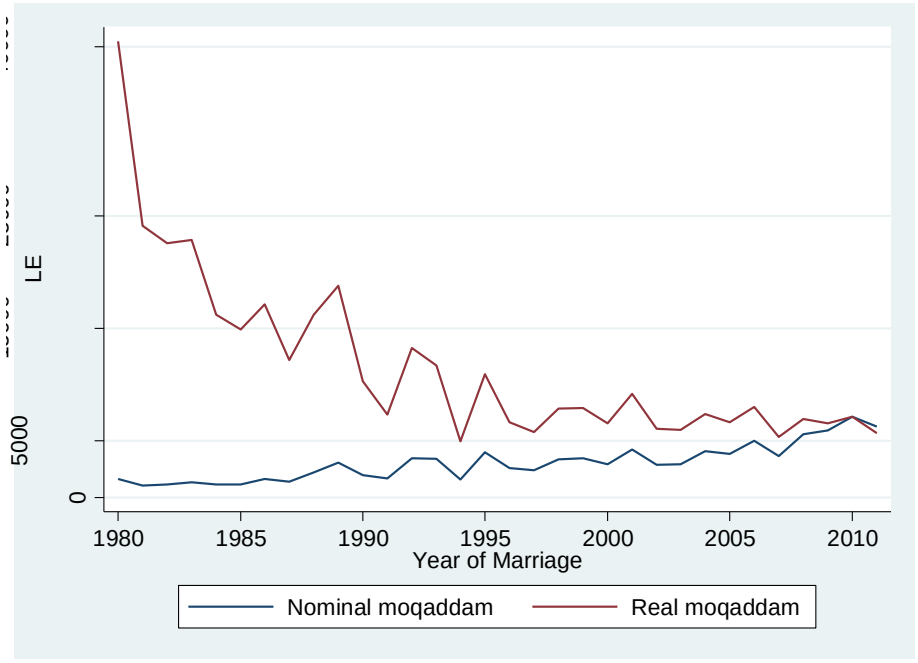
Sample includes currently-married respondents. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

In the analysis from this point onwards, the sample will be restricted to women aged 18 to 39, to make the samples comparable between the 2006 and 2012 surveys.

To examine further the trend over time of marital transfers, the mean value for each type of transfer, where it is made, is calculated by year of marriage, for women who got married between the ages of 18 and 21 in that year. Results without the restriction on age at marriage show a similar trend. Again, the mean values are calculated using the 2006 survey for years of marriage between 1980 and 2005, and using the 2012 survey for years of marriage between 2006 and 2011.

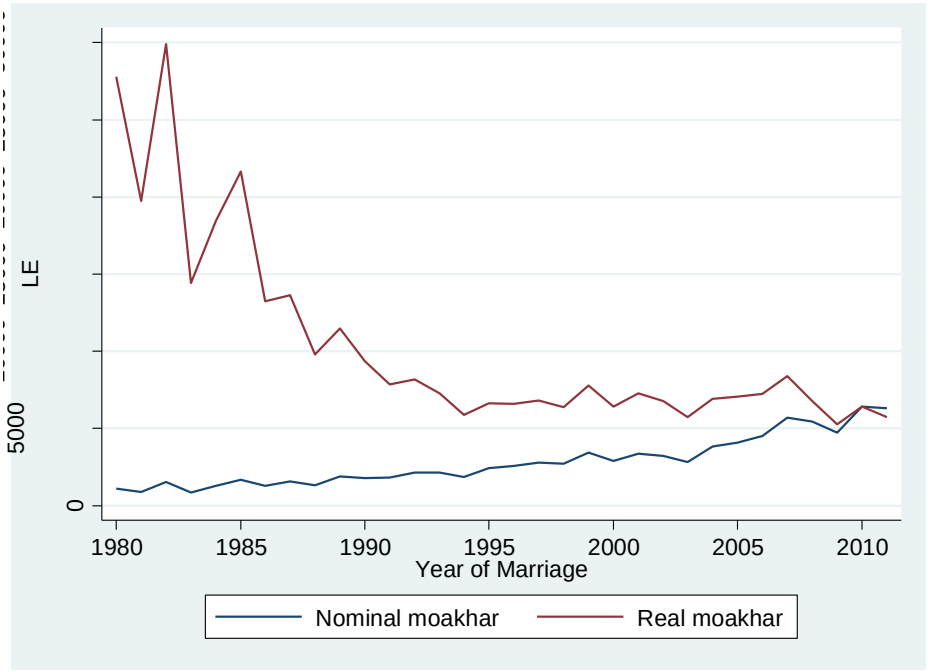
The trends are reported in nominal values, in addition to real values, adjusted to 2010 prices. Figures 4.3, 4.4, and 4.5 report the results.

Figure 4.3: Trend in *Moqaddam* (1980-2010)



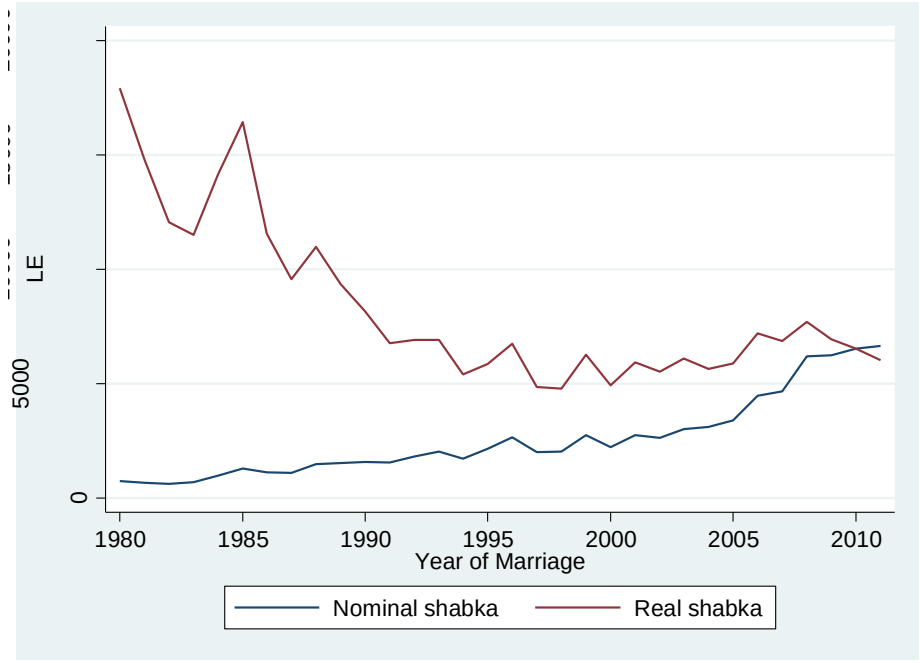
Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted.

Figure 4.4: Trend in *Moakhar* (1980-2010)



Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

Figure 4.5: Trend in *Shabka* (1976-2010)

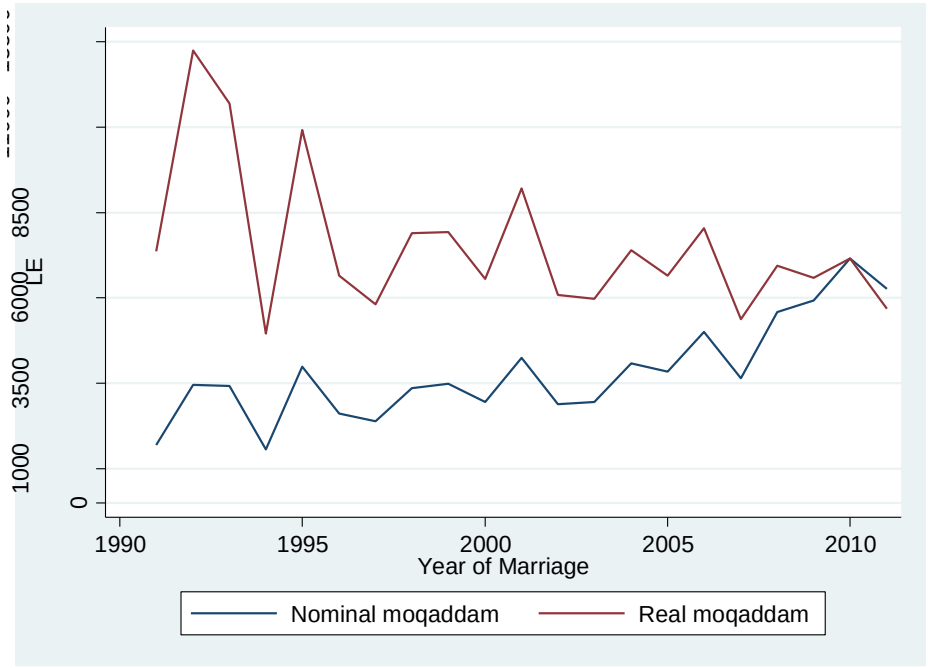


Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

The average *moqaddam*, *moakhar* and *shabka* all increased in nominal terms from under L.E 2,000 in the early 1980s for each type of transfer, to more than L.E. 6,000 in 2010; a statistically significant increase of around L.E. 152 per year of marriage for *moqaddam*, L.E. 157 for *moakhar*, and L.E. 172 for *shabka*.

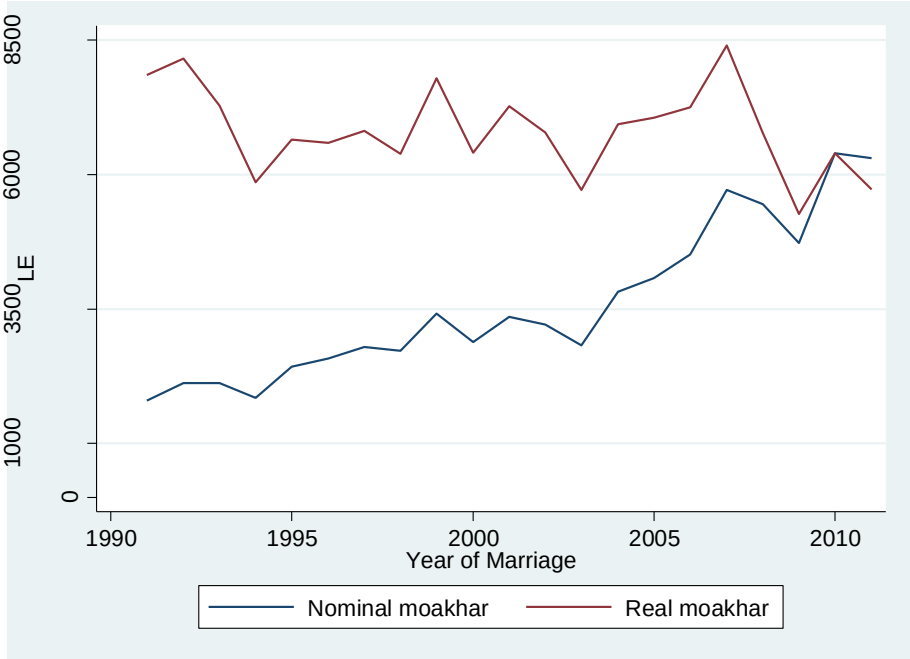
Adjusting to 2010 prices however, while the real value has fallen significantly in the 1980s, they have stabilised since for *moakhar* and *shabka*. Figures 4.6-4.8 report the trends in marital transfers, restricting the time period to 1990 onwards. There is no significant change in the real price of *moakhar* or *shabka* in the period since 1990, and the real price of *moqaddam* fell by a significant L.E. 177 per year of marriage. As noted, the stable real price of *shabka* since the early 1990s is consistent with the value of *shabka* reflecting purchase of jewellery. The adjustment of *moakhar* to real prices could imply that its value is set taking market prices into consideration. The decline in real value of *moqaddam* on the other hand could imply that social norms are more important in setting its value. It should be noted however that for all three types of transfer, their levels are recorded dependent on their presence as part of the marital transfer arrangements. Economic and social considerations could be more relevant in determining the presence or absence of transfers, than their levels.

Figure 4.6: Trend in *Moqaddam* (1990-2010)



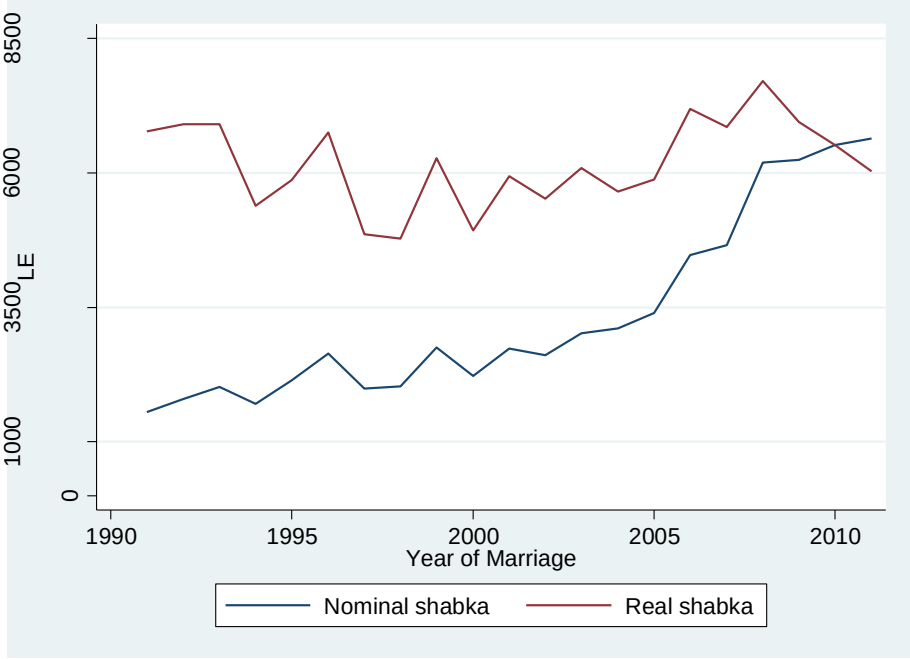
Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

Figure 4.7: Trend in *Moakhar* (1990-2010)



Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

Figure 4.8: Trend in *Shabka* (1990-2010)



Sample includes all ever-married women who got married between the ages of 18 and 21. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

Social and traditional norms could be significant in setting the levels of marital transfers. Considering that such norms could differ by region, Table 4.3 compares average nominal marital transfers by governorate. There is large variation in the average transfers between governorates. The average *moqaddam* in the 2012 sample was a token L.E. 1.6 in Suez, but reached L.E. 9,627 in Behira. The average *moakhar* ranged from L.E. 961 in Luxor to L.E. 8,677 in Asyout. While in general the average transfers increased over time between the two samples, the average *moqaddam* fell significantly between the 2006 and 2012 samples in Port-Said, Suez, Sharkiya, Kaliobiya, and Menofiya.

To conclude the discussion on the levels of marital transfers, the values of transfers in the 2012 sample reported by women are compared to those given by their husbands. Given that the values are self-reported, similar reports would verify their reliability. Secondly, a difference in the perception of the transfers between the couple could have implications for their actual effect on bargaining power and perceived fall back positions. Table 4.4 reports the results. More than 95% of couples report exactly the same transfers, strengthening the robustness of the results presented.

Table 4.3: Average Marital Transfers by Governorate

Survey	Mean (L.E.) 2006	2012	2006	2012
Transfer	*Moqaddam*	*Moqaddam*	*Moakhar*	*Moakhar*
Cairo	3089.75	7404.07	3742.44	5386.91
Alexandria	1576.14	6070.59	1623.23	3503.98
Port-Said	2580.18	309.88	2292.40	6985.42
Suez	433.28	1.60	1682.93	3587.91
Domiyat	1674.56	2385.44	2974.23	4427.84
Dakahliya	1351.96	4029.79	1773.71	4595.25
Sharkiya	2249.10	2077.88	1853.08	5672.34
Kaliobiya	1979.81	1003.38	2786.13	4953.52
Kafr-Elsheikh	1166.34	7357.93	1070.31	4835.49
Gharbiya	1516.95	5745.73	1942.90	4462.24
Menofiya	4622.97	2440.19	2060.60	5595.69
Behira	3429.32	9627.48	2791.62	4036.86
Ismailia	1832.24	3407.38	2382.08	3891.20
Giza	2298.42	3534.29	2988.28	4015.57
Bni-Souef	1907.01	5729.81	2459.09	4456.60
Fayoum	3833.40	8959.42	1766.82	4187.55
Menia	2471.71	4723.03	2727.79	5777.97
Asyout	2405.10	4896.06	3830.15	8677.04
Souhag	2891.84	3452.58	2975.10	5785.62
Quena	1336.54	4135.15	861.92	2247.45
Aswan	480.60	1896.25	992.28	2320.52
Luxor	543.19	1943.28	903.19	961.38

Sample includes currently-married women aged 18 to 39. Observations where the reported value of the transfer is zero are excluded. Estimates are weighted

Table 4.4: Difference between Spouse Reports (2012)

	Percentage		
Transfer	*Moqaddam*	*Moakhar*	*Shabka*
Spouses report same	97.72 %	95.85 %	95.04 %
Husband reports higher	1.06 %	2.28 %	2.83 %
Wife reports higher	1.22 %	1.87 %	2.13 %

Sample includes currently-married respondents living together.

4.7 Change in Unilateral Divorce Right of Women

As discussed in Chapter 3, the law in Egypt changed in January 2000 giving the wife the right to file for divorce unilaterally without having to prove injury or incompatibility by returning the prompt dower given to her and affirming that there is no way for her to continue married life with her husband (Jansen, 2007).

In line with the theoretical discussion of Section 4.4, this change in legislation could be interpreted as a shift from Regime 1, in which women have no right to unilateral divorce, to Regime 2, in which women have the right to unilateral divorce provided they repay the prompt part of the dower. In the first regime, *moqaddam* has no direct impact on divorce. In the second regime, a high level of *moqaddam* could restrict a woman's ability to file for unilateral divorce, and hence be negatively associated with divorce, whether due to an actual causal effect, or due to internalising the ease of divorce when setting the level of dower. The change in legislation would therefore have no direct effect on *moakhar* in the theoretical discussion presented, but may be predicted to cause a decline in the presence and/or level of *moqaddam* for marriages since 2000. This may particular be the case for marriages with a perceived high risk of divorce.

Figures 4.2 and 4.6 show no clear change in the rate of decline of the presence of *moqaddam* or its level around the year 2000. The decline in the level of *moqaddam* in 2010 prices is estimated at 0.94% per year of marriage between 1990 and 2000, and 1.64% after the change. Limited statistical evidence was found however for a significant change in the rate of decline in the average level of *moqaddam* or the rate of decline in

the presence of *moqaddam* after the year 2000 change in legislation. Regressions run at an individual level also show no evidence of a significant change, and are hence not presented here. No evidence was found either for a difference in the rate of decline between consanguineous marriages, whether the risk of divorce may be perceived to be lower, and other types of marriage.

While there is thus far no evidence that the change in legislation had an immediate effect on *moqaddam*, it is also possible that the effects started taking place before the change in legislation, in anticipation of the change which had been discussed in parliament for a long period of time. It is also possible that such a change would take a period of time to be internalised into decisions related to marital transfers, and hence for it to be reflected in the observed levels of *moqaddam.*

4.8 Determinants of *Mahar*

As discussed earlier, there is variation in the types of marital transfer arrangements in the sample. In particular, while *shabka* is part of more than 95% of marital transfer arrangements, up to 64% of arrangements exclude *moqaddam* but include moakhar, and up to 11% of arrangements exclude both *moqaddam* and *moakhar*. The determinants of having *moqaddam* or *moakhar* as part of the marital contract are therefore examined first, before looking at the determinants of the level of marital transfers, when they are included in the marital contract.

The determinants of marital transfers is estimated using the following regression for woman i, who got married in year j, and lives in governorate r. Fixed effects for living in governorate r and having got married in year j are included to control for unobserved heterogeneity.

$$y_{ijr} = \alpha_r + \alpha_j + \beta_1 \bar{y}_j + \beta_2 \bar{y}_r + X_{ijr} + \varepsilon_{iyr} \quad (4.1)$$

- y: marital transfer variable
  - Presence of *moqaddam*
  - Level of *moqaddam*
  - Presence of *moakhar*

    - Level of *moakhar*
    - Level of *shabka*
- X: vector of determinants, which initially includes the woman's age, age at marriage, number of years of education and whether her husband was related to her prior to marriage. In a further regression it includes years of education of the spouse, dummy variables for whether the woman's parents and parents in law are literate, and a dummy variable for having had previous marriages.
- $\bar{y}_j$: mean marital transfer in year of marriage j
- $\bar{y}_r$: mean marital transfer in region r

Table 4.5 reports the means and standard deviations of the dependent variables used in estimating equation 4.1, and Table 4.6 reports the same for the explanatory variables.

The levels of marital transfers, where they exist, were discussed in section 4.6. In the regressions, observations where the levels of marital transfers are zero are included, to avoid selection bias. There are no significant differences between the sample where the woman is living with her spouse and the sample when she is not living with her spouse. 42% of women on average had *moqaddam* as part of their marital contract in 2006, falling to 27% in the 2012 sample. On the other hand, 86-87% of women included *moakhar* in their marital contract in both 2006 and 2012.

The average woman in both the 2006 and 2012 samples is aged 29, and married at the age of 20 in the 2006 sample and 21 in the 2012 sample. The average number of years of schooling for women in the sample is 7 years in the 2006 sample, and 9 years in the 2012 sample. The low figures reflect the fact that around 29% of women in the 2006 sample and 17% in the 2012 sample had no education. Women in the sample have on average one fewer years of schooling than their husbands.

On average, only 45-48% of women in the sample have fathers who are literate, while only 19-23% have mothers who are literate. Similarly, only 42-44% of women in the sample have fathers in law who are literate, and only 17-19% have mothers in law who are literate. The lower literacy rate for parents in law than parents reflects the fact that women typically marry husbands who are older than them. Therefore their parents in

law are also on average older than their own parents, hence more likely to be illiterate given the rise in literacy rates over time. In the 2012 sample only 1.6% of women in the sample are not in their first marriage. Information on previous marriages is not available from the 2006 sample.

The results also show that 32% of women in the 2006 sample are married to husbands who were related to them before marriage, with the percentage falling to 29% in the 2012 sample. Table 4.7 breaks this down by the type of relationship before marriage. As the questions posed were slightly different in the two surveys, the results are not directly comparable. The majority of marriages to a relative were consanguineous marriages, between individuals sharing a common ancestor. Such marriages are common in the region (Assaad and Krafft, 2014). Amongst consanguineous marriages, a higher percentage of marriage is to relatives from the father's side rather than the mother's side.

Table 4.5: Descriptive Statistics of Marital Transfers Variables

	Means and (Standard Deviations)			
Survey	**2006**	**2006**	**2012**	**2012**
Sample	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39
Only if living with spouse?	No	Yes	No	Yes
Has *moqaddam* (=1 if *moqaddam* included)	0.415 (0.493)	0.419 (0.493)	0.275 (0.446)	0.273 (0.446)
Has *moakhar* (=1 if *moakhar* included)	0.864 (0.343)	0.863 (0.344)	0.867 (0.34)	0.872 (0.335)
Moqaddam (L.E.)	1357.567 (2847.069)	1347.039 (2819.516)	1208.576 (4313.226)	1195.100 (4180.089)
Moakhar (L.E.)	2588.140 (3511.119)	2544.481 (3519.535)	4096.081 (5873.976)	4074.859 (5859.083)
Shabka (L.E.)	2322.600 (2959.511)	2290.948 (3008.147)	4213.881 (5858.74)	4056.546 (5524.675)

Sample includes currently-married women. Estimates are weighted

Table 4.6: Descriptive Statistics of Main Determinants

Means and (Standard Deviations)				
Survey	**2006**	**2006**	**2012**	**2012**
Sample	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39
Only if living with spouse?	No	Yes	No	Yes
Age	28.503	28.561	28.729	28.782
	(5.853)	(5.884)	(5.397)	(5.383)
Age at Marriage	20.227	20.24	20.91	20.931
	(3.782)	(3.795)	(3.750)	(3.780)
Years of Schooling	7.280	7.278	8.982	8.963
	(5.721)	(5.724)	(5.148)	(5.154)
Spouse Years of Schooling		8.855		9.761
		(5.455)		(4.849)
Father Educated (=1 if not illiterate)		0.451		0.478
		(0.498)		(0.500)
Mother Educated (=1 if not illiterate)		0.192		0.226
		(0.394)		(0.418)
Father in Law Educated (=1 if not illiterate)		0.419		0.444
		(0.493)		(0.497)
Mother in Law Educated (=1 if not illiterate)		0.169		0.188
		(0.375)		(0.391)
Husband Related (=1 if husband related)	0.323	0.322	0.288	0.286
	(0.468)	(0.467)	(0.453)	(0.452)
Previously Married				0.015
				(0.123)
Number of Observations	3384	3182	5749	5321

Sample includes currently-married women. Estimates are weighted

Table 4.7: Type of Prior Relationship between Spouses

	Percentage (%)		
Survey	2006		2012
Paternal Cousin	40.33	**Father's Side**	59.28
Maternal Cousin	21.08	**Mother's Side**	37.81
Other Blood Relative	34.74	**Relative by Marriage**	2.91
Relative by Marriage	3.85		

Sample includes currently-married women who report being related to their husband prior to marriage

Tables 4.8 and 4.9 report the results of estimating equation 4.1, with the dependent variables "*has moqaddam*" and "*has moakhar*". OLS estimation is carried out, in addition to testing a probit specification for robustness,

The results show that the presence of both transfers is most significantly related to the education variables. In particular, the more educated both the bride and groom are, the less likely it is that the dower consists of a prompt transfer; *moqaddam.* This may suggest that more educated individuals attach less value to a monetary amount being stipulated as a prompt transfer in the marital contract. On the other hand, having an educated mother in law reduces the probability of having *moakhar* as part of the dower. On the assumption that a lower *moakhar* is beneficial to the groom, this may reflect the effect of stronger bargaining power for the groom's mother in the negotiations leading to setting the values of the marital transfers. The education of the parents of the bride herself does not seem to affect the allocation of her dower.

Being previously married reduces the probability o*f* including *moqaddam* in the marital contract by around 8%. The evidence from the 2012 sample suggests that being previously related to the groom reduces the probability of having *moakhar* by around 4%. This finding will be discussed more when looking at the determinants of the level of dower.

It might be expected that the sex composition of the siblings of the groom may impact marital transfers, through affecting the availability of resources for the transfers. However no evidence was found of a significant effect, and therefore the results of including sex composition of the groom's siblings as a regressor are not reported here.

Table 4.8: Estimation of Determinants of Presence of Marital Transfers – 2006

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Has Moqaddam	Has Moqaddam	Has Moqaddam	Has Moakhar	Has Moakhar	Has Moakhar
Estimation Method	OLS	OLS	Probit	OLS	OLS	Probit
Age	-0.015	-0.023	-0.088	-0.026	-0.028	-0.121
	(0.026)	(0.027)	(0.093)	(0.023)	(0.024)	(0.104)
Age at Marriage	0.013	0.020	0.081	0.023	0.025	0.104
	(0.026)	(0.027)	(0.093)	(0.023)	(0.024)	(0.104)
Years of Education	-0.011***	-0.006***	-0.019***	-0.0001	0.001	0.004
	(0.002)	(0.002)	(0.007)	(0.001)	(0.002)	(0.008)
Years of Education (Spouse)		-0.005**	-0.016**		-0.002	-0.013*
		(0.002)	(0.007)		(0.002)	(0.008)
Father Educated		-0.016	-0.052		0.016	0.084
		(0.019)	(0.061)		(0.0140)	(0.072)
Mother Educated		-0.010	-0.051		-0.010	-0.053
		(0.022)	(0.075)		(0.018)	(0.089)
Father in Law Educated		0.010	0.040		0.034**	0.169**
		(0.018)	(0.059)		(0.014)	(0.072)
Mother in Law Educated		-0.019	-0.058		-0.039**	-0.216**
		(0.023)	(0.078)		(0.019)	(0.091)
Husband Related	-0.0007	-0.0002	0.0004	-0.014	-0.014	-0.082
	(0.017)	(0.017)	(0.057)	(0.014)	(0.014)	(0.067)
Observations	3,384	3,179	3,178	3,384	3,179	3,163
R^2	0.267	0.272		0.127	0.129	

Sample includes currently-married women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (4.1). Regressions control for Region and Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10% Sample includes currently-married women

Table 4.9: Estimation of Determinants of Presence of Marital Transfers – 2012

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Has Moqaddam	Has Moqaddam	Has Moqaddam	Has Moakhar	Has Moakhar	Has Moakhar
Estimation Method	OLS	OLS	Probit	OLS	OLS	Probit
Age	0.021*	0.021*	0.070*	0.006	0.007	0.042
	(0.011)	(0.012)	(0.041)	(0.009)	(0.009)	(0.053)
Age at Marriage	-0.019	-0.018	-0.061	-0.005	-0.005	-0.030
	(0.012)	(0.012)	(0.042)	(0.009)	(0.009)	(0.053)
Years of Education	-0.002*	-0.0008	-0.003	0.002**	0.0007	0.007
	(0.001)	(0.002)	(0.005)	(0.0009)	(0.001)	(0.007)
Years of Education (Spouse)		-0.002	-0.006		0.001	0.006
		(0.002)	(0.005)		(0.001)	(0.006)
Father Educated		0.004	0.007		0.008	0.059
		(0.014)	(0.049)		(0.010)	(0.061)
Mother Educated		0.005	0.014		0.031***	0.208***
		(0.017)	(0.059)		(0.011)	(0.077)
Father in Law Educated		-0.006	-0.017		0.005	0.020
		(0.014)	(0.049)		(0.010)	(0.062)
Mother in Law Educated		-0.026	-0.102		-0.035***	-0.231***
		(0.017)	(0.063)		(0.012)	(0.079)
Husband Related	-0.002	-0.006	-0.018	-0.042***	-0.042***	-0.240***
	(0.013)	(0.013)	(0.044)	(0.010)	(0.010)	(0.055)
Previously Married		-0.081*	-0.299*		-0.063	-0.323*
		(0.0436)	(0.166)		(0.042)	(0.194)
Observations	5,749	5,317	5,309	5,749	5,317	5,278
R^2	0.186	0.192		0.242	0.246	

Sample includes currently-married women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (4.1). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

Tables 4.10 and 4.11 report the results of estimating equation 4.1, with the levels of transfers as the dependent variables. The results show no association between the levels of transfers and the age cohort of the woman or her age at marriage, for a given year of marriage.

While the probability of the presence of *moqaddam* reduces with the education of bride and groom, once included, all types of transfers are significantly increasing in the levels of education of the bride, groom, and both mothers. Sahay & Sahay (1996) argues that "parents may increase the dower if their daughter is pretty, well versed and educated". Saroukhani (1979) also finds in Iran that dower is increasing in education, and attributes that to traditions and a desire by higher educated classes to maintain them.

Previous marriages do not appear to affect the level of marital transfers, despite affecting the presence of *moqaddam.* The levels of transfers are strongly associated with the mean value in governorate, suggesting strong social norms at the governorate level. Finally, there is evidence that being related to the husband reduces the level of *moakhar*, in addition to reducing the probability of its inclusion, although only by a small magnitude. Assaad and Krafft (2014) find using the same survey that consanguineous marriages are not associated with lower costs, although they do not look at marital transfers.

In unreported regressions, it was found that the most significant negative effect on both the presence and level of *moakhar* is when the husband is related to the bride's father's side. This could reflect the significant role the father of the bride plays in negotiating the terms of the marital contract.

The lower probability of including *moakhar* in the marital contract when marrying a relative would support the proposition that *moakhar* is a form of insurance for the bride. Where the risk of divorce or mistreatment is lower, due to the groom being a relative known to the bride and the bride's family, *moakhar* therefore is deemed less important.

Table 4.10: Estimation of Determinants of Levels of Marital Transfers – 2006

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Moqaddam	Moqaddam	Moakhar	Moakhar	Shabka	Shabka
Age	-96.23	-114.0	84.24	4.991	150.6	195.4
	(150.2)	(155.3)	(178.7)	(184.8)	(233.4)	(255.0)
Age at Marriage	95.55	99.28	-86.41	-17.34	-162.5	-218.3
	(151.3)	(156.2)	(179.9)	(186.0)	(237.5)	(258.8)
Years of Education	21.57**	-1.602	134.8***	66.00***	124.0***	72.80***
	(9.875)	(11.43)	(12.77)	(15.46)	(10.87)	(14.94)
Years of Education (Spouse)		16.18		39.70***		45.82***
		(11.50)		(14.99)		(16.29)
Father Educated		-8.188		76.29		-70.24
		(104.2)		(160.0)		(128.3)
Mother Educated		296.4*		887.7***		566.3***
		(153.4)		(214.8)		(188.7)
Father in Law Educated		137.7		341.0**		31.59
		(103.4)		(156.3)		(131.2)
Mother in Law Educated		205.9		457.9*		387.4**
		(162.0)		(236.7)		(154.7)
Husband Related	-28.17	-16.24	-320.8**	-282.9*	-178.6*	-171.2
	(102.0)	(102.5)	(143.6)	(148.3)	(107.9)	(113.1)
Observations	3,384	3,179	3,384	3,179	3,384	3,179
R^2	0.147	0.147	0.147	0.166	0.143	0.154

Sample includes currently-married women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (4.1). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

Table 4.11: Estimation of Determinants of Levels of Marital Transfers – 2012

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variable	Moqaddam	Moqaddam	Moakhar	Moakhar	Shabka	Shabka
Age	242.1*	203.0	66.97	167.8	-18.00	64.72
	(131.2)	(133.4)	(166.9)	(173.0)	(164.1)	(165.5)
Age at Marriage	-242.3*	-210.3	-20.85	-130.7	10.26	-71.52
	(133.5)	(135.1)	(168.9)	(176.2)	(160.3)	(163.1)
Years of Education	41.60***	30.79**	160.9***	68.95***	218.0***	130.9***
	(13.08)	(14.67)	(18.78)	(23.05)	(15.68)	(19.88)
Years of Education (Spouse)		9.519		51.73**		66.67***
		(14.53)		(21.26)		(23.63)
Father Educated		57.78		39.95		218.6
		(132.2)		(196.6)		(161.7)
Mother Educated		205.9		1,321***		1,081***
		(182.3)		(272.8)		(234.7)
Father in Law Educated		-141.6		341.3*		-27.32
		(144.6)		(191.0)		(170.3)
Mother in Law Educated		296.7		784.9**		699.6***
		(200.6)		(309.5)		(255.6)
Husband Related	104.7	88.54	-574.6***	-607.7***	-106.4	-54.32
	(136.3)	(139.3)	(179.6)	(184.4)	(165.0)	(164.4)
Previously Married		-700.6**		-559.1		-309.0
		(286.5)		(355.4)		(370.6)
Observations	5,749	5,317	5,749	5,316	5,749	5,317
R^2	0.056	0.056	0.101	0.117	0.112	0.128

Sample includes currently-married women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(6) correspond to equation (4.1). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

4.9 Estimating the Effect of *Mahar* on Divorce and Bargaining Power

Given that limited evidence was found for exogenous effects on marital transfers, and the strong association between the structure and levels of the transfers and between governorate averages, it is difficult to identify the effect of *mahar* on outcomes in the household. In particular, strong social norms could be driving both the structure and levels of marital transfers on one hand and relationships within the household on the other hand.

Nonetheless, exploratory evidence is presented for the impact of marital transfers on two aspects of marital life.

The first aspect explored is the stability of marriage, measured by the probability of divorce at the time of the survey. The sample therefore includes both married women and divorced women, to the exclusion of single and widowed women.

The second aspect explored is the bargaining power of the wife, measured as in Chapter 3 by the proportion of decision in which the wife reports having a say. The decisions included here are the decisions related to large household purchases, visits to family and friends, and the respondent's own healthcare.

The following regression is estimated for woman i, living in governorate r, who got married in year j, controlling for governorate and year of marriage fixed effects.

$$z_{ijr} = \alpha_r + \alpha_j + \beta y_{ijr} + X_{ijr} + \varepsilon_{iyr} \quad (4.2)$$

- z: outcome variable
  - Dummy variable for being divorced
  - Bargaining Power
- y: marital transfer variable
  - Presence of *moqaddam*
  - Level of *moqaddam*
  - Presence of *moakhar*
  - Level of *moakhar*

- X: vector of controls, including the woman's age, age at marriage, number of years of education and whether her husband was related to her prior to marriage

The regressions for divorce are run in a probit framework, and for bargaining power in an OLS framework.

Table 4.12 reports the means and standard deviations of the dependent variables. The proportion of decisions a woman reports having a say in is around 63% in the 2006 sample, and 68% in the 2012 sample. The proportion of divorced women is 2.1% in the 2006 sample, and 2.5% in the 2012 sample. As the sample includes only married and divorced women, the overall percentage of divorced women in Egypt would therefore be significantly lower. This compares for example to 15% of all women in the USA being divorced or separated in 2011 (Cruz, 2013).

Table 4.12: Descriptive Statistics of Outcome Variables

	Means and (Standard Deviations)			
Survey	**2006**	**2006**	**2012**	**2012**
Sample	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39	Women Aged 18-39
Include divorcees?	No	Yes	No	Yes
Bargaining	0.626 (0.358)		0.68 (0.36)	
Divorced (=1 if divorced)		0.021 (0.143)		0.025 (0.155)
Number of Observations	3344	4428	5694	6297

Sample includes currently-married women, in addition to divorcees where mentioned. Estimates are weighted

Tables 4.13 and 4.14 reports the results of estimating equation 4.2 with the dependent variable "divorced". Separate regressions are run for *moakhar* and *moqaddam* as the regressor, given that in some arrangements one is absent and hence its level is set at zero. Regressions including the "presence of moqaddam" and the "presence of moakhar" as two separate regressors show the same results.

As discussed in section 4.7, the law in 2000 changed in Egypt to allow the wife to file for no-fault divorce, provided she repays the *moqaddam*. The husband continues to have the right to unilateral divorced, conditional on repaying the *moakhar,* unless the wife forgoes her right to it. This corresponds to regime 2, discussed in section 4.4

In such a legal regime, one would predict the presence and levels of both *moqaddam* and *moakhar* to be associated with a lower probability of divorce. *Moqaddam* is predicted to be associated with a lower probability of wife-initiated divorce, as it increases the difficulty for women to file for divorce. *Moakhar* on the other hand is predicted to be associated with a lower probability of husband-initiated divorce as it increases the costs of such divorce. As the data does not hold information on who initiated the divorce, we can only look at the effect of the transfers on the overall probability of divorce.

The evidence suggests however that controlling for other variables, neither the presence of a *moqaddam* arrangement nor a *moakhar* arrangement nor their levels have a significant impact on the probability of divorce. While this does not negate its use as a bargaining card in marital conflict, the evidence does not support the notion that marital transfers plays an actual role in stabilising marriages.

In line with Gaspart and Platteau (2010), it is found that a women's education does not appear to influence the risk of divorce. On the other hand, being married to a relative is significantly associated with a lower probability of divorce. This might be explained by easier mediation between the couple, or that couples endure unhappy marriage to maintain family relationships. It also lends support to the notion discussed earlier that the absence and lower levels of *moakhar* in marriages between relatives could be due to the perceived lower risk of divorce.

Table 4.13: Estimation of Effects of *Moqaddam* on Divorce

	(1)	(2)	(3)	(4)
Year of Survey	2006	2006	2012	2012
Estimation Method	Probit	Probit	Probit	Probit
Presence of Moqaddam	0.007		0.017	
	(0.125)		(0.092)	
Level of Moqaddam		-3.49e-05		-1.50e-06
		(2.47e-05)		(1.08e-05)
Age	-0.007	-0.015	0.011	0.011
	(0.195)	(0.196)	(0.082)	(0.082)
Age at Marriage	-0.001	0.007	0.015	0.015
	(0.199)	(0.201)	(0.082)	(0.082)
Years of Education	-0.009	-0.009	-0.0008	-0.0008
	(0.010)	(0.010)	(0.007)	(0.007)
Husband Related	-0.281**	-0.278**	-0.387***	-0.388***
	(0.130)	(0.131)	(0.104)	(0.105)
Number of Observations	2,854	2,854	5,664	5,664

Dependent Variable: Divorced. Sample includes currently-married and divorced women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(4) correspond to equation (4.2). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

Table 4.14: Estimation of Effects of *Moakhar* on Divorce

	(1)	(2)	(3)	(4)
Year of Survey	2006	2006	2012	2012
Estimation Method	Probit	Probit	Probit	Probit
Presence of Moakhar	0.266		-0.101	
	(0.180)		(0.122)	
Level of Moakhar		-1.79e-05		8.02e-06
		(1.68e-05)		(4.91e-06)
Age	0.016	0.011	-0.001	-0.002
	(0.170)	(0.170)	(0.079)	(0.079)
Age at Marriage	-0.017	-0.013	0.027	0.028
	(0.173)	(0.173)	(0.079)	(0.079)
Years of Education	-0.012	-0.010	-0.0003	-0.002
	(0.009)	(0.010)	(0.007)	(0.007)
Husband Related	-0.315***	-0.321***	-0.411***	-0.399***
	(0.116)	(0.114)	(0.102)	(0.102)
Number of Observations	4,251	4,251	6,040	5,191

Dependent Variable: Divorced. Sample includes currently-married and divorced women aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(4) correspond to equation (4.2). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

Tables 4.15 and 4.16 report the results of estimating equation 4.2, with the dependent variable "bargaining power". As other determinants of bargaining power were discussed in Chapter 3, the focus here is on the effect of marital transfers. Marital transfers could be associated with a higher bargaining position for the woman, if they imply the wife brings in more assets into the relationship which are now her property (in the case of *moqaddam)* or if they serve as a protection for women against divorce, or provide a stronger fall-back position, hence strengthening their bargaining power (in the case of *moakhar)*.

There is some evidence from the 2012 survey that the presence of moqaddam is associated with higher bargaining power for the wife, however the overall evidence again suggest that these transfers do not affect the bargaining position of the wife significantly.

Table 4.15: Estimation of Effect of *Moqaddam* on Bargaining Power

	(1)	(2)	(3)	(4)
Year of Survey	2006	2006	2012	2012
Estimation Method	OLS	OLS	OLS	OLS
Presence of Moqaddam	0.006		0.036***	
	(0.014)		(0.011)	
Level of Moqaddam		-1.50e-06		2.22e-06**
		(2.14e-06)		(8.84e-07)
Age	0.027	0.027	0.002	0.002
	(0.021)	(0.021)	(0.010)	(0.010)
Age at Marriage	-0.024	-0.024	0.007	0.006
	(0.021)	(0.021)	(0.010)	(0.010)
Years of Education	0.010***	0.010***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Husband Related	-0.016	-0.016	-0.012	-0.012
	(0.013)	(0.013)	(0.011)	(0.011)
Observations	3,344	3,344	5,694	5,694

Dependent Variable: Bargaining Power. Sample includes currently-married aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(4) correspond to equation (4.2). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

Table 4.16: Estimation of Effect of *Moakhar* on Bargaining Power

	(1)	(2)	(3)	(4)
Year of Survey	2006	2006	2012	2012
Estimation Method	OLS	OLS	OLS	OLS
Presence of Moakhar	-0.014		-0.008	
	(0.019)		(0.015)	
Level of Moakhar		1.74e-06		9.35e-07
		(1.67e-06)		(7.42e-07)
Age	0.027	0.027	0.003	0.003
	(0.021)	(0.021)	(0.01)	(0.01)
Age at Marriage	-0.024	-0.024	0.006	0.006
	(0.021)	(0.021)	(0.01)	(0.01)
Years of Education	0.010***	0.010***	0.005***	0.005***
	(0.001)	(0.001)	(0.001)	(0.001)
Husband Related	-0.016	-0.0155	-0.013	-0.012
	(0.013)	(0.013)	(0.011)	(0.011)
Observations	3,344	3,344	5,694	5,694

Dependent Variable: Bargaining Power. Sample includes currently-married aged 18-39. Robust standard errors reported in parentheses. Regressions (1)-(4) correspond to equation (4.2). Regressions control for Region / Year of Marriage Fixed Effects

Notes: *** denotes significance at 1%, ** at 5%, and * at 10%

4.10 Conclusions

This chapter has examined the institution of Islamic dower or *mahar* in Egypt, one which has not received much attention in the empirical economic literature. *Mahar* as a marital transfer is given by the groom's side to the bride herself and may consist of a prompt part, *moqaddam*, and a deferred part, *moakhar*, which is typically only transferred upon husband-initiated divorce.

Evidence was found that the prompt part of dower, *moqaddam*, is declining, while there is an increase in marital contracts that stipulate the entire amount of dower to be deferred, *moakhar*, only payable upon divorce. A change in legislation in 2000 which could have been predicted to be associated with a decline in *moqaddam* was not found to have had an effect over and above the existing declining trend.

The average value of each type of transfer is around the average wage for seven months, making it a significant transfer. The tradition of *shabka,* or jewellery given to the bride, was also examined, given it is a "transfer" made prior to marriage, with a cost often equivalent to the dower.

It was found that more educated couples are less likely to stipulate *moqaddam* in the dower, but that once *moqaddam* is agreed, its value increases with the levels of education of the couple, and their respective mothers. M*oakhar* is less likely to be stipulated when the marriage is consanguineous, perhaps reflecting a lower perceived risk of divorce.

The change in the structure of dower appears to be in favour of women, with a higher *moakhar* protecting against unilateral divorce initiated by the husband, and a lower *moqaddam* strengthening the woman's ability to initiate divorce under the 2000 legislation.

However, no evidence was found in Egypt to support the notion that marital transfers affect the probability of divorce. In particular, marriages with *moakhar* or *moqaddam* were not found to be more stable than those without one, and the level of the transfers also had no effect on the stability of the marriage. This finding is to be understood in the context of the low level of divorce in Egypt, which was around 2% in the samples. Thus, while *moakhar* could theoretically be perceived as a barrier to divorce when it exists, in its absence other social pressures could be more significant in preventing divorce. Similarly, while the absence of *moqaddam* or a low level of it could enable the woman to initiate divorce, strong social pressures could prevent her from doing so even when it is within her legal right. It was also found that marital transfers do not impact the bargaining power of the woman in marriage.

Marital transfers in Egypt, in particular the deferred component, are increasing in prevalence, and are of significant monetary value. The evidence presented however questions their response to changes in the legal regime, or their effect on marital stability and bargaining power in the household. Thus, while *mahar* may have an important social function, more research is needed to establish whether it plays a significant economic role in affecting behaviour and outcomes within the household.

Chapter 5: Concluding Remarks

This thesis has explored three different dimensions related to female empowerment in Egypt: firstly, empowerment outside of the household, through employment, secondly, empowerment within the household, though influencing household decisions, thirdly, empowerment in the marital relationship, through the structure of marital transfers.

In Chapter 2, the effect of fertility on female employment was explored. High fertility is typically seen as an impediment to female participation in the labour force, and in the public sphere more generally. If employment empowers women, then reducing fertility though encouraging smaller family sizes would therefore be a mean to empowering them. However, the assumption that employment empowers women is not necessarily true in all settings and societies. The evidence presented suggests that higher fertility in Egypt is associated with a higher probability of employment, particularly for women of lower education or in poorer households. An explanation was put forward, in line with findings from interviews carried out by previous studies, that employment for many women in Egypt is seen as a necessity borne out by financial need to support the family. As such, where the woman herself has a preference for removing herself from the labour force, employment may not necessarily be a measure of female empowerment. At the same time, employment, even when not preferred by the woman, could remain a mean to empowering women, through providing them with opportunities of wider interactions in public life, a source of independent income, and access to services they would otherwise be restricted from. Where female employment is considered desirable, policies aiming at empowering women should focus not only on targeting family size, but also on incentivising women to enter the labour force, through the types of employment opportunities provided for them, and particularly for women of lower levels of education.

Future research could examine whether the relationship between fertility and female employment holds in other countries, in particular developing ones. Further research is also needed into the experiences of employed women in settings like Egypt, how their employment relates to their preferences, and how it may empower them in other spheres of marital and public life.

In Chapter 3, the nature of decision-making in Egyptian household was discussed. Households where decisions are made solely by husbands are still common in Egypt, although there is an increasing trend of joint decision making. Some evidence was found that a change in legislation in 2000 that enabled conditions to be stipulated in the marital contract had a positive impact on the wife's bargaining power over decisions made in the household. Limited evidence was found that having male children affects a woman's bargaining position in the household, a hypothesis which if valid would have provided a source of exogenous variation to bargaining power. Unobserved heterogeneity was found to be underlying associations found between bargaining power and various determinants.

Empowering women within the household could be instrumental in ensuring better outcomes both for themselves, and for their children. The evidence put forward suggests a strong association between a woman's bargaining power, and educational outcomes for her daughters, but not her sons. It was also found that household in which husbands are the sole-decision makers have worse educational outcomes for daughters, but that joint decision-making between husband and wife has the same impact as sole decision-making by wives.

In the absence of an identification mechanism, this finding is purely suggestive of the relative importance of a woman's empowerment within the household on her daughters' outcomes, compared to her sons' outcomes.

Future research could explore in more depth the effect of the bargaining power of women on educational outcomes for their children, exploiting the change in legislation in Egypt in 2000 as an exogenous shock to bargaining power. More research is needed into determinants of the bargaining power of women at the societal and institutional level, to explore potential exogenous effects on bargaining power which could help identify the effect of bargaining power on children's outcomes.

In Chapter 4, the institution of *mahar* or Islamic dower in Egypt was examined. Marital transfers from the groom's side to the bride herself have previously received limited attention in the literature, and this chapter aimed to fill part of the gap in that

literature. The evidence presented suggests a shift in the structure of dowers in Egypt, with a decline in prompt transfers, and an increase in arrangements composing only of deferred transfers, payable upon divorce. The value of these transfers is significant, averaging an Egyptian man's average wage for seven months for each type of transfer. The evidence also suggested that deferred payments were less likely and of lower value when the bride and groom are related before marriage.

Marital transfers could potentially have an important impact on the empowerment of women, through affecting bargaining positions in the household, and also affecting the ease of divorce, and the fall-back option in case of marital breakdown. The evidence presented however suggests that in reality the presence and value of these transfers has limited effect on marital stability and bargaining positions. The proposition put forward in other disciplines that *mahar* serves primarily a social role could arguably be true in Egypt.

Future research could shed light on the reasons given by women for their chosen structure and level of dower and whether it is in line with the notion of it providing an insurance mechanism for the woman. The dower system in other Arab and Muslim countries could also be examined, to compare their trends to that of Egypt. In particular, given the low rate of divorce in Egypt, reflecting its social undesirability, it would be interesting to examine whether in societies where divorce is more common, *mahar* has a more significant impact on marital stability and bargaining positions in the household.

Female empowerment, particularly in Arab countries, is a promising area for future research. Perceptions of the role of women have changed significantly over the last two decades, and with the rise of the "Arab Spring", the rights of women have come again to the forefront of discussions. Data availability remains a major obstacle in the region however, with the exception of Egypt. Investment into carrying out household surveys in other Arab countries, in addition to collection of administrative data, is crucial to enable rigorous analysis of issues surrounding female empowerment in the region, including context-specific identification of the concept, measuring different spheres of it, identifying policies which have affected it, and how it impacts outcomes for women, children, and society at large.

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