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## Marriage and Power:
## Age at first marriage and spousal age gap in Lesser Developed Countries

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# Marriage and Power:
# Age at first marriage and spousal age gap in Lesser Developed Countries

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**Abstract**

This paper examines age at first marriage for women and spousal age gap as an indicator for female agency from 1950 until 2005. Using a dataset of 77 LDCs this paper seeks to explore which variables determine differences at a country level in marriage patterns. We look at the influence of urbanisation, education, percentage population of Muslim faith, and family type. We find that education is key in determining at what age women marry, having as would be expected a positive effect on age at first marriage and depressing spousal age gap. Urbanisation is significant, with a positive effect on age and negative on spousal age gap, although the effect is not very large. The percentage Muslim variable depresses female age at first marriage and increases spousal age gap but only when family type is not controlled for. The initially strong negative effect of percentage population Muslim over the period under consideration on age of first marriage has decreased, which raises some interesting questions about the role of Islam in female empowerment.

**Keywords: Marriage patterns, female agency, age at first marriage, spousal age gap**

**JEL Codes: J120, J160, I240**

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## Section 1: Introduction

***"Forget China, India and the internet: economic growth is driven by women."***

The Economist[1]

Women constitute half of the world's population and as such are an important economic resource, yet throughout time and space the "fairer" sex has found itself on the receiving end of discrimination and has frequently been left without a voice both on the political and domestic front. The counterpart of this is that male dominance has been an almost universal phenomenon, although the degree to which it is practised and the form it takes varies from culture to culture (Todd 1985). What are the consequences of the exclusion of half of the population of a given country? One logical result is that it seems to inhibit economic growth and development (FAO 2011 and McKinsey 2011). Women as an engine for economic development have risen to prominence in development work over the past 20 years. This currently popular theme of a society's treatment of women as an indicator of its level of progress is a topic that has appeared in various guises since the time of Hume, writing in 1742 (Therborn 2004). In 1869 John Stuart Mill even went so far as to argue that the subordination of women to men had become "one of the chief hindrances to human improvement" (Mill 1861/1991). However it is really since Ester Boserup's work on the subject in the 1970s that women have become an established part of the development agenda (Boserup 1989). The increasing realisation that female empowerment is important for development is reflected in the proliferation, since the 1990s, of indices aimed at measuring female empowerment (e.g. the Gender Inequality Index, the Social Institutions and Gender Inequality Index and the Gender Gap Index) and the various development goals of the World Bank and United Nations which incorporate gender equality (i.e. the Millennium Goals and such programmes as Gender Equality as Smart Economics[2]). However, the question of what factors have an influence upon female empowerment remains. Taking a measure of female empowerment to the historical record has not yet been systematically attempted. One such option is offered by the study of marriage patterns.

Marriage represents an observable bond between man and woman.[3] At least for Western Europe, the age at which a woman marries has historically to a large extent determined the level of population growth (van Zanden 2011). In what follows, a more fundamental reason for looking at marriage patterns is proposed, namely that they reflect the degree to which a woman has a say in the union, i.e. that they are illustrative of her agency. Women who are married young, to men many years their senior, are unlikely to have much say in this decision.[4] Therefore the central question addressed here is: How are marriage patterns, as a proxy for female empowerment, influenced by a series of variables for a dataset of Lesser Developed Countries (hereinafter LDCs)?

The relationship between marriage patterns and female empowerment will be elaborated upon below but first a brief discussion of an important concept in the rise of women in the development agenda, that of agency. Agency is an ambiguous term used differently in different

[1] The Economist (2006), April 15.
[2] See http://siteresources.worldbank.org/INTGENDER/Resources/GAPNov2.pdf for further details
[3] This is not to dismiss homosexual marriage but for the purposes of this paper we are interested in the relationship between men and women and to that end only heterosexual marriage is considered. Additionally many of the countries examined do not allow for the marital union of same-sex partners.
[4] As mentioned by other authors in this journal (Puschmann and Engelen 2011 and Olmsted 2011) these two features are two of those which Hajnal describes as setting the European Marriage Pattern apart from that of the rest of the world. Characterised by high age of marriage for women and a small spousal age gap Hajnal identified a marriage pattern that was historically typically European (Hajnal 1965).

academic disciplines. Here, it is taken to mean the degree of control that people have over their own lives or in other words their capacity for autonomous decision making. This "slippery concept", to cite a phrase used by Steven Hitlin and Glen Elder (Hitlin and Elder 2007), has increasingly become a byword in the development sector. Amartya Sen's writings on agency are pivotal to the rising popularity of this concept. Sen argues that development should be seen as a process of increasing the capacity of people for autonomous decision making, and that this capacity, or rather the degree of agency in turn determines the level of development a region may experience (Sen 2000). Running in parallel to this is the idea that "development" should not be measured in terms of GDP but rather in terms of increased "freedom" or agency. Sen was implemental in developing the Human Development Index which sees the concept of measuring development as a process of increasing agency put into practise by the United Nations Development Programme.

What then of the relationship between agency, women and development? In the context of agency and economic development, women are important for a number of reasons, both intrinsic and instrumental. On the intrinsic side there is the Senian perspective of agency being important for wellbeing and if we are interested in the wellbeing of women then any disadvantage women experience is an important topic of study. Additionally gender equality may be a development goal in its own right. This motive can be observed in the widespread ratification of the Convention for the Elimination of All Forms of Discrimination against Women (CEDAW). On the instrumental side gender inequality may have an instrumental effect on other development goals and economic growth. Gender inequality in terms of women receiving less education than men has an impact on child mortality, on the fertility of women and (possibly most importantly) on the human capital formation of the next generation. As gender inequality disadvantages half of all potentially economically active workers, substantial inequalities between men and women are likely to lower the growth potential of a country. In as far as economic growth promotes well-being it is in the development community's interests to pursue economic growth policies which take into consideration effects on gender inequality. This is a well-recognised fact. Recently, the UN's Food and Agriculture Organisation, in a report released on the 7th of March 2011, argued that increasing gender equality in access to agricultural resources could reduce world hunger by as much as 17 percent (FAO 2011).[5] Similarly, US based consultancy McKinsey attributes 25% of current US GDP to the increased role of women in the world of formal work but goes on to argue that women are still an underutilised resource (McKinsey 2011).

There is then a general consensus that female empowerment is important for development, but how to test this hypothesis over long periods of time and what factors determine how empowered women are? The measurement of female empowerment in a historical context is complicated. Nowadays, the World Bank and the United Nations use such indicators as the Gender Empowerment Measure and the Gender-related Development Index. These are composite variables, none of which predate 1995, based on various inequalities between men and women. Such measures, due to the fact they have only existed since 1995, obviously do not allow researchers to examine the development of female agency over a long period of time. This paper takes a different approach, exploring age at first marriage for women and the difference in ages between spouses as a proxy for female agency, and attempting to establish which of a selection of variables play a role in determining this dependent variable for 77 LDCs, from 1950 to the present day. [6] Marriage

[5] For a summary see: http://www.fao.org/news/story/en/item/52011/icode/

[6] In other, as yet unpublished, work by Carmichael, De Moor and van Zanden the correlation between age at first marriage and the various indices of female empowerment has been explored, indicating a high level of correlation between the two. This correlation is improved when the empowerment indices are graphed against the "Girl Power Index (age at marriage minus spousal age gap).

ages differ widely across the world as will be demonstrated later, and as mentioned above, can reflect larger trends within a society. However remarkably little recent work has been done to analyse what factors determine world-wide differences in marriage patterns. In fact this dearth of work was observed by Ruth Dixon as early as 1971 (Dixon 1971). This void is a phenomenon this paper hopes to address.

In the next section the theoretical framework of the relationship between female agency and marriage will be elaborated upon. Section 3 covers data and methods while section 4 provides the conclusions of the paper.

## Section 2: Theoretical Framework - Female Agency and Marriage

Marriage is an institution which has developed in many different cultures, in many different guises. The ceremonial tying together of a mated pair in a socially recognisable way has been an intrinsic part of life throughout history.[7] But what does marriage mean for the economy, the partners involved and particularly for the women involved? Marriage for women often meant their removal from the labour market as they found themselves obliged to stay at home, sometimes as much due to the pressures of social convention as those of child-bearing/rearing and housekeeping. The disappearance of married women, or conversely the presence of a large group of single women, can have a fundamental impact on the labour market and on the powers and rights that women have available to them. Here we are interested in what marriage can bring to light about empowerment of women.

The power relationship between men and women as it relates to marriage can be analysed in different ways. One can take anecdotal evidence of the power dimension of males versus females, or look at legal institutions, i.e. the laws of inheritance and divorce. Another way of analysing marriage is to compare age of first marriage for men versus women. These ages can be informative in two ways. The first is that a large age gap between men and women at time of marriage would generally indicate that the younger partner has less power and less say in the relationship, in Sen's words less agency. The general pattern is that one finds the average age of men at first marriage is higher than the average age of women at first marriage. The larger this gap the more safely one can say that the female probably had little power over deciding the terms of the union, and the more likely it is that an older generation (her parents or grandparents) were heavily involved in the decision. However, this is not the only factor influencing agency. The second way that age at marriage can be informative is in looking at the actual average age at which people marry. If women marry in their mid- to late twenties (even if their spouses are considerably older) then they have time, between puberty and married life, to mature and build up their knowledge base and human capital investments. This is as opposed to girls who marry and enter their spouses' households in their early teens. It seems reasonable to assume that where very young girls marry men much older than themselves they have little say in the union, which is rather determined and negotiated by their parents.

Presuming that illegitimacy is not rife, waiting until an older age to get married restricts the number of children a woman can expect to have.[8] This basic fact was clearly acknowledged by such early economic thinkers as Thomas Malthus. His theory on the relationship between wages and population growth relies heavily on the postponement of marriage as a preventative check on fertility. Economists including Gary Becker have argued

[7] Marriage is not, however, universally practised and the line between married and unmarried can be indistinct.
[8] Having fewer children may well in itself be indicative of greater female agency. There is a counterpoint to this perspective in that women who marry late (generally in Western societies) may not be able to have the number of children they desire, which could be argued to be an occurrence of decreased agency.

that the possibility of constraining fertility means that parents face a trade-off between the quantity of children they choose to produce and the quality of said children (i.e. how much they invest in their education and development) (Becker 1992). The opportunity cost of having more children is a lower investment in their "quality". Therefore another aspect of later marriage limiting fertility is that it should lead to greater human capital in the population: lower fertility (quantity) leads to improvements in education as the lower number of children are on the receiving end of higher investments in their "quality". Improved human capital is of key importance to endogenous growth theories which purport that the driving factor behind economic growth is technological progress based on the foundations of increased human and physical capital within a population. Enhancements to the education of children will likely prove beneficial to society at large as they increase the chance of innovation and technical progress. However this relationship between fertility and education is reciprocal. Paul Schultz in an article entitled "Demand for Children" found that the most important factor in explaining decreased fertility in LDCs was increased education of women; more educated women have fewer children and the cost of educating children to a higher level leads to having fewer children (Schultz, 1997). This indicates that there is an element of reverse causality in this relationship – higher education leads to fewer children but fewer children also leads to higher education.

The economic analysis of marriage in this paper stems from these observations of the importance of age at first marriage but looks at them not from a fertility perspective but from the perspective of what they say about the power-position of women. Using regression analysis, this paper explores what the determinants of female age at first marriage and the spousal age gap are, using a number of variables inspired by different disciplines.

At least one important caveat must be mentioned at this point. It may be that there is a tipping point, as far as increased age of marriage is concerned, beyond which women experience no great increase in empowerment as a result of the postponement of marriage. As mentioned in footnote 8 above, women who marry late may find they are unable to fulfil ambitions of preferred family size. Similarly, women who marry late may find themselves having to settle for less suitable partners. Youth is a premium in the marriage market and aging beyond a certain point may leave one with fewer options when it comes to finding a mate. This problem should not overtly affect the analysis below as the dataset uses average country figures.

### *Islamic Marriage*

Europe, particularly Western Europe, has been held up as an example of an exceptional marriage pattern. John Hajnal first succinctly identified a marriage pattern specific to Western Europe, west of the St Petersburg-Trieste line. The distinctive features of this marriage pattern were high ages at first marriage (above 25), a small gap between male and female age at first marriage, and a high percentage of women who never married, between 10 to 15 percent. This is in strong contrast to, say, the Chinese marriage pattern where practically 100 percent of girls married at very young ages (Maynes and Walter 2001). Similarly, in some Islamic countries the practice of taking child-brides remained prevalent until the 1950s and marriage was a near universal phenomenon (Prothro and Diab 1974).

The issue of child-brides links to another aspect of this research, that of the role of Islam in the determination of marriage patterns and therefore female agency. In this same journal edition Jennifer Olmsted calls for more research to be conducted into marriage patterns in the Islamic societies (Olmsted 2011). This paper attempts to address the gap in research she identifies. Principally because the dataset lends itself to investigating the effect of percentage population practising Islam.

The Muslim faith dominates large swathes of territory included in the dataset and is often linked with biting rhetoric to arguments about the repression of women and patriarchal values. In a 2004 report the World Bank expressed concern for the Middle Eastern and North African region if the system of patriarchal values and women's limited labour force participation is not addressed (World Bank 2004). However, how female agency has evolved over the past fifty years has not been addressed in other research except through anthropological or legal system reform studies. Therefore, an analysis of the effect of Islamic faith is included in the results presented in the next section. The role of marriage in Islam is discussed below.

The position of women in Islam is a sticky subject, which evokes many varied responses, many more emotional than rational. From the people who declare Islam to be a woman hating religion, to Muslim women defending their right to wear a headscarf, it is a multi-faceted problem around which much heated debate takes place. The issue of the role of women has proved to be one of the most difficult to address in the modern transformation of Muslim societies. All in all the women in Islam debate provokes strong feelings causing studies on the subject to be highly biased as a result (Roded 1999) . In a simplified vision of the world, Islamic societies are noted for their marked private/public dichotomy, when it comes to the authority of the women, and for the creation of distinct social spaces for the different sexes. This entails that women have a degree of power and freedom of movement within their own homes but when it comes to the outside world this power and freedom is diminished (Weinreb 2008). This view of Islamic societies is an oversimplification; one which must be nuanced by noting that agency of women is affected by their generational standing (e.g, if they are mothers or mothers-in laws), their education and their social class.

Compared to pre-Islamic society, Arabian and Qur'anic ethics both assigned a higher value to the position of women within society (Lapidus 2002). The role of the mother in raising good Muslim sons was stressed and women were entitled to inherit from their husbands and fathers, and had a right to their full dowries upon divorce. The Qur'an as a source of law made fundamental changes to the status of women and served to strengthen the role of the family as a unit of Muslim society. The three main areas in which the Qur'an sought to strengthen the position of women and the family were those of marriage, divorce and inheritance. The pre-Islamic era saw a situation in which only men could inherit and dowries were paid directly by the groom to the bride's father, a bride's price. The Qur'an explicitly altered this in favour of the brides: "And give the women [on marriage] their dower as a free gift" (Anon 2006, IV:4), mandating that brides be granted their *mahr* (dower) as a way to safeguard their economic position during and after marriage (Esposito 2002). Women also had a right to their maintenance from their husband (*nafaqah*), which was the husband's obligation regardless of his wife's private funds and gave the wife first preference before the maintenance of her children (Esposito 2002).

The Islamic system of dowry was fundamentally different in Western Europe. For a start in the Islamic syystem the transfer was from the bride's family to the new couple, either as a fund to be held separate for the bride or as a contribution to the establishment of a conjugal fund. In their paper "Girlpower: the European marriage pattern and labour markets in the North Sea region in the late medieval and early modern period" Tine de Moor and Jan Luiten van Zanden have argued that such a conjugal fund increases the incentives of the wife to add to the resources of the household as she stands to inherit a share of the eventual total wealth of her household, as opposed to a system where the dowry is held separate and fixed so that the woman does not benefit from any contributions she makes to the household (De Moor and van Zanden 2010). The first type of arrangement was more typical of Western Europe whereas as the second was more commonly practised in the South of Europe. In the Islamic legal system, women could inherit exactly half of the share that a male with the same

level of relationship to the deceased would be entitled to. On the death of their husband they would receive their mahr, which was fixed at the start of their marriage. This partly resembles the Southern European system. However, as a result of the expectation that it is the man's sole responsibility to provide for the household, any wealth the woman generated by working would in theory be entirely hers. In practise, this did not often occur. Due to the strong patriarchal values of the society many women would transfer their mahr to their fathers or brothers upon the death of their husband, depending on the traditional arrangement of such relationships for support. This patriarchal contract has long existed and was strengthened by the oil economies of the Arab region and the economic downturn of the 1980s, but is now undergoing a transformation, the full extent of which has yet to be realised (Olmsted 2005).

Another unusual feature of the European marriage pattern, which Hajnal, and De Moor and van Zanden discuss, involves the nature of this cohabitation. The Western European Marriage Patterns is marked by its creation of a separate family unit that occurred when a couple wed; the formation of the neolocal household. In the Middle East and North Africa it was historically tradition for the married couple to co-reside with the parents of one of the partners, most often those of the groom. This aspect of family formation is explored in the analysis below through the inclusion of variables which reflect hypotheses about the underlying family form dominant in an area.

***Hypotheses***

When it comes to choosing variables to explain female agency there are many options. This section will explain why specific variables were chosen, framed as hypotheses about what the suggested impact will be on marriage patterns (female SMAM and spousal age gap).[9] Many variables may influence female agency. This paper chooses to focus explicitly on four such variables. Firstly, urbanisation will be examined. Secondly, a measurement of female education will be considered. Thirdly, a family type classification system. Lastly, the hypothesised effects of a percentage population of Islamic faith variable will be explored. The sections below discuss each variable in turn, providing a brief rationale for their inclusion and explaining the hypothesised effect on both female SMAM and spousal age gap.

***Hypothesis 1: Urbanisation will have an ambiguous effect on female age at marriage but will likely decrease spousal age gap***

Urbanisation is a phenomenon that is intrinsically bound up with modernisation and societies undergoing a process of development. As societies shift from agricultural, nomadic etc. to non-agricultural pursuits, agglomeration in cities becomes economically efficient. The 2009 World Development Report highlights the process of urbanisation as a source of

[9] Where census data only includes tables dividing the population into age bands and marital status Hajnal proposed a method of measurement known as Singulate Mean Age at Marriage (from here on in referred to as SMAM). The method works as follows: Using the never married category, percentages single can be calculated for every age band, and by weighting these by the number of years in each age band the mean age of the transition between single and married can be calculated. One subtracts the number of years spent single by those who never marry and arrives at the average number of years those who eventually marry spend in an unwedded state. Two issues with this calculation arise. Firstly the SMAM takes a single point in time and calculates the age at marriage by looking at the whole range of marital experiences of the population aged between 15 and 50. This can be very different from the true mean age of marriage which can be a cohort specific measure. The second issue arises due to the retrospective nature of the calculation that SMAM represents. This means the SMAM results are influenced by age and marriage specific mortality and by any in or out migration. It is important to keep these issues in mind, yet SMAMs remain a way to provide a useful index of marriage patterns where there is an absence of alternative data.

growth, integration and specialisation (The World Bank 2009). The basic premise of the report is that economic density is attractive. This stems from the fact that agglomeration allows for greater scale economies. The generation and presence of scale economies in the mode of production is also a reason for the increasing importance of urban settlements. This is observed by one of the heavyweights in the study of political history, Charles Tilly, when he defines urbanisation as "a collective term for a set of changes which generally occur with the appearance and expansion of large-scale co-ordination activities in a society" (Tilly 1964).

Although one should not overemphasise the link between urbanisation and modernisation, as cities have been around since a very early stage in history, there has obviously been a massive increase in the percentage of population living in urban conurbations in the last three centuries (de Vries 1990). This process is most advanced in developed countries while it is still in an intermediate phase in many other parts of the world. The link between urbanisation and economic productivity can also be empirically demonstrated (Malanima 20005). As such, the inclusion of the variable urbanisation in the model specification is justified as a proxy for the larger process of "modernisation".

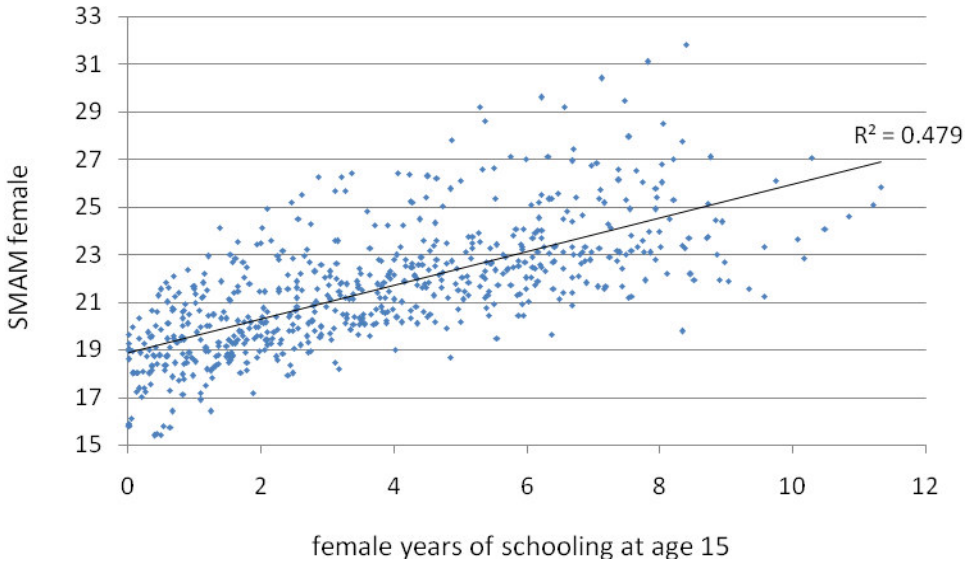
What does theory suggest the effect of urbanisation and age at first marriage will be? This question has two possible answers. Firstly, it is possible that the increase in urban population (particularly the younger population groups migrate) creates a larger marriage market. This larger marriage market in turn increases the opportunity young people have to meet a suitable partner thereby resulting in lower ages at first marriage. A further lowering of the marital age of women may stem from the fact that urbanisation can significantly alter the sex ratio of cities. Most migrants are young males, swinging the ratio of marriageable males to marriageable females to a situation where men outnumber women thereby depressing the age at which women in cities get married (de Vries 1990). The second possible effect is that young people moving to the cities break from the traditions of their original homes and/or the sphere of parental influence. This increases their opportunities both in terms of more casual relationships and in terms of labour force participation. This effect would logically result in delaying marriage and therefore higher SMAM. Overall it is hard to predict which effect will be strongest.[10] As to the difference in age between spouses, one would expect that both the larger marriage market and the break with parental authority would result in a lower age gap between spouses.

***Hypothesis 2: Increased Female Education will have a strong positive effect on female age at marriage and a negative effect on spousal age gap***

In Gary Becker's analysis of marriage couples wed young and universally if they can offer each other complementary inputs. This complementary nature of the union means that utility is generated by forming a household. If the position of women within a society improves in such a way that their wage rates relative to that of their male counterparts increase, then the gains from marriage for women are eroded (Becker 1973/1974). One way in which women can gain a more equal footing in the job market is through increased education. This set of observations entails that increased education is likely to lead women to marry later and less universally as their benefits from marriage diminish (or rather the opportunity cost of marriage and child-bearing increases). The graph below confirms this point:

[10] An increased age in marriage may also be explained by the problems migrants face with finding social connections in a new environment (see Engelen, T. and Kok, J. 2003)

**Figure 1: Education and Female SMAM**




Source: Data on education from Barro and Lee

Figure 1 above presents female SMAM graphed against average years of schooling for females at the age of 15 as presented in the Barro and Lee dataset (which will also be used in the regressions below). One can observe a clearly positive relationship between the two variables. Female education is widely seen as a means to empower women. In evaluating its third millenium goal, that of the promotion of gender equality, the UN uses ratios of girls to boys enrollment rates in education. These ratios constitute not only the measure of gender equality but also the tool that they recommend using in order to achieve gender equality. It is rather logical that, if the tool being used to foster gender equality is the increase of the ratio of girls to boys in education then as this policy is put into action the measure of gender equality also improves. This is why it is important to look at other measures of female agency. The UN does consider other variables but the ratio of girls to boys enrolled in education is straightforward to examine and more easily controlled than other measures of female empowerment. These observations lead to the more general point that when looking at this variable there is a problem of reciprocity. It is likely that more educated women do indeed have more agency and can therefore influence their marriage to a greater extent. However it is also the case that marrying later (and the possible greater agency this reflects) gives women time to build up their human capital. The two effects likely interact in a feedback loop so any correlation found in the regression analysis must be interpreted keeping this in mind.

***Hypothesis 3: Family type as defined using the Todd framework will have an effect on female age at first marriage and spousal age gap. Subhyptothesis 1) Community families will demonstrate lower female age at marriage and possibly higher spousal age gap. For a complete overview of the hypothesised effects see the table below.***

The family is the basic unit of all societies. How this family unit operates and has altered over the course of history is a multi-faceted topic, which has important impacts on economic growth and development. The institutional arrangements which regulate family life are of

great importance to societal development as a whole. One author who has developed this idea in his writings is Emmanuel Todd. In his book, *The Explanation of Ideology*, he expounds upon the idea that on a global scale the appearance of different political systems can be explained by the development of different ideals of equality and liberty within the family sphere, projected on to the governmental level. The family unit is where children first learn about authority and liberty, rights and obligations (and therefore also where values associated with women are transmitted). Throughout the history of political thought there runs a thread which has touched the works of many theorists: family relations (between parents and children and between husband and wife) form the model for political systems, and serve to define the relationship between the individual and authority (Todd 1985). This paper will not explore the ideological systems of each country but will use the typology put forward by Todd as an explanatory variable, as his framework for analysis also draws heavily on the relationship between generations and to some extent upon the freedom of women.

Families around the world differ in their approach to marital relations, intergenerational power relations, inheritance laws and co-habitation. One of the important impacts of a family system is the way in which it influences the power balance between men and women, parents and their offspring. Todd used these differences in intergenerational power (determined by how the choice of marriage partner is made), inheritance law and cohabitation to divide the countries of the world into regions dominated by certain practices. These practices are cohabitation of parents with either one or a select group of their adult children versus neolocal household formation, division by inheritance on an egalitarian, non-egalitarian or indifferent basis, and the frequency and degree to which marriage within the family is practiced (endogamy). Related to this last category he also looks at whether the decision as to who an individual will marry is left up to the individual, to an older generation or to customary practise. He divides the world into 8 family types (however the 8$^{th}$ family type, the African family system is left as an anomaly, not classifiable using the same system as used for the other 7). Todd's typology has been examined for the European case by a group of sociologists who found that the structure has lasting impacts on a series of demographic, educational, social and economic indicators (Duranton et al. 2007). Although this does not prove that Todd's typology still holds for the global set it strongly indicates that it may still be relevant in determining social phenomena. Even if the practises of the particular family type have dwindled in frequency, the argument would be that the values they represent may live on in the institutional arrangements of the society.

Table 1 presents stylised facts about each family type and its defining characteristics; An extra column has been added to indicate the hypothesised influence on marriage patterns which are a combination of suggestions put forward in Todd's writing and hypothesised effects based on his description of the role of women in each family type. The community families presented above should be understood as families where the male offspring of the patriarch remain under the parental roof, bringing their wives and children into one large extended household. This family type is found in the Arab world as well as in Russia, China and Mongolia. Nuclear families in contrast are those where children must establish a neolocal residence upon their marriage. This family type is observed in parts of Western Europe but more relevant for the dataset used in this analysis throughout South America. In the authoritarian family the heir remains resident in the parental home while all siblings must fly the nest if they marry. In the dataset used, this type of family is represented by only one country, Korea. Finally, where the anomic family is the category of family form frequently a youngest daughter remains at home to care for her elderly parents and will then inherit the house. This family form is ascribed by Todd to South East Asia.

**Table 1: Todd's typology**

| Family Type | Liberty | Symmetry | Endogamy | Marriage Patterns |
|---|---|---|---|---|
| **Endogamous Community Family** | Marriage defined by custom | Symmetry | Permitted | Low age at marriage |
| **Exogamous Community Family** | Marriage determined by parents | Symmetry | No marriage between the children of two brothers | Low age at marriage |
| **Asymmetrical Community Family** | Marriage defined by custom | Asymmetry | Permitted | Low age at marriage |
| **Egalitarian Nuclear Family** | Free choice | Symmetry | Obligatory exogamy | High age at marriage Low spousal age gap |
| **Absolute Nuclear Family** | Free choice | Indifference | Obligatory exogamy | High age at marriage Low spousal age gap |
| **Authoritarian Family** | Marriage determined by parents | Asymmetry | Little or no marriage between the children of two brothers | Higher number of permanent celibates |
| **Anomic Family** | Free choice | Indifference | No obligatory exogamy | High age at marriage Low spousal age gap |
| **African Family** | | | Generally strong prohibitions of consanguinity | Marriage as a more fluid institution – frequently changing partners |

Source: Todd 1985 with additional column by author

In Todd's framework, liberty refers to how the decision as to who one's spouse will be is taken. This can either be defined by custom, determined by parents, or be a matter of free choice. It is likely that systems involving free choice will be characterised by higher ages at marriage of both men and women and lower spousal age gaps. This is due to the fact that under free choice systems men and women are given the chance to explore the "marriage market" and are not married off at the earlier opportunity to the most suitable partner. Free choice is often associated with family types in which the neo-local household is the norm.

Symmetry is related to the inheritance system which prevails in a given family structure. Here the different options are symmetry, asymmetry, and indifference. Symmetry implies that all heirs of the previous generation are treated equally. This is often a system used purely to favour male offspring, creating equality between brothers. Asymmetry is when one preferred heir is singled out to receive the worldly goods of his or her parents, this last system embodies inequality. Lastly indifference means that the parents can do as they please, leaving certain children out of their will as they see fit. This system implies that all children have to set up their own households as they are not guaranteed of an inheritance.

The last variable in the framework is endogamy which is a measure of the degree to which people who are blood relatives are allowed to marry. The incest taboo is well nigh universal but the degree to which it is enforced differs across the world. In Europe the taboo on consanguinity is a strong one but in other parts of the world marriage between first cousins is permitted and even encouraged. In Todd's framework there are four different endogamy categories; obligatory exogamy, permitted endogamy, no obligatory exogamy, and little or no

marriage between the children of two brothers.[11] Todd puts preferential marriage between first cousins, in systems where there is permitted endogamy, down to an overdeveloped fraternal bond, which in turn results in a close-knit community family. In Todd's framework, this is a characteristic ascribed to the regions dominated by the Islamic faith under the label of the endogamous community family. The Indian family system Todd described also fosters close ties between siblings but here it is between the children of a brother and a sister that marriage is encouraged, in what is known as cross-cousin marriage.

In the endogamous community family and the asymmetrical community family, marriage is determined by custom, neither parents nor children have a say in the choice of marriage partner. This is as opposed to the authoritarian family and the exogamous community family where the parents are the ones to decide who their children shall marry. Within the egalitarian nuclear family and the absolute nuclear family, Todd suggests children are left with free choice as to whom they marry, the only restriction being the exclusion of (blood) relatives. Lastly, the anomic family offers the most freedom; children may marry as they wish and may even choose to marry blood relatives. A more elaborate presentation of Todd's typology is presented in the appendix along with a list of countries where he mentions each type as being present.

The dataset employed in this analysis is not even in its coverage of family types. Certain family types are represented by only one country.[12] At this point these regions are left in the dataset, however when looking at the results of the regressions this must be kept in mind. Running the regressions without the categories for which this is true does not change the significance levels of the other results. The methods to be used will be described in Section 3.

Lastly the following table shows Todd's own hypotheses regarding age at first marriage under the three general categories of family type:

**Table 2: Todd's predictions of age at first marriage**

| Family Type | Marriage age |
|---|---|
| Nuclear family | 19-24+ |
| Community family | Less than 19-24 |
| Authoritarian family | Less than 19 – 24+ |

Source: Todd 1985

The authoritarian family is likely, in Todd's view, to exhibit the widest range of ages at first marriage from below the age of 19 to above the age of 24. The nuclear family is not likely to exhibit ages of marriage below 19 but will likely mean women are also marrying above the age of 24, while the community family will see women marrying at ages younger than 19 and no older than 24. These categories were based on marriage ages in the 1980s. As will be shown below, some of these predictions have been invalidated in recent years.
The endogamous community family is used as the base category in Section 3. This will then be used to test whether the hypothesised effects in the two figures above hold true.

[11] Africa is classified as having a system of "generally strong prohibitions of consanguinity" once again falling outside Todd's general framework

[12]The authoritarian family only occurs in Korea, India is the only representative of the asymmetrical community family and South Africa is the only country which at least partially represents absolute nuclear families.

***Hypothesis 4: The percentage Islamic population will likely depress the age at which women marry and increase the spousal age gap***

The position of women in Islam is a difficult subject, one which evokes much debate around the world, mostly revolving around arguments, to do with veiling and women's rights, that lack nuance. The variable of the percentage of the population practicing the Islamic faith in each country is included here, to see what the effect of a higher percentage of Muslims in a country is on the average age of marriage and spousal age gaps. Initially this variable is just used as given. However, an alternative approach is adopted in later regressions where an interaction variable between time period and percentage Muslim is examined. This interaction variable gives the effect of the presence of Muslims within a population as it changes over time on the dependent variable. The hypothesis is that, based on ideas of the suppression of women's rights in Islam, this variable will depress age at first marriage for women and result in a larger spousal age gap. As to the interaction variable of time and percentage Muslim it is hard to predict the outcome. On the one hand, recent years have seen a spike in Muslim fundamentalism, which may depress female age at first marriage and increase the influence of Islam on female age at marriage and spousal age gaps (Shehadeh 2003). On the other hand, processes of globalisation, education and new found oil wealth in many Islamic countries may well erode the influence of the Muslim faith and put upward pressure on female age at first marriage and downward pressure on the spousal age gap (Bahramitash 2003). Others, however, have argued that oil wealth reinforced the patriarchal values of Arab societies but that this was undermined by a slump in the oil price in the 1980s (Olmsted 2005). This undermining was further reinforced by the fact that Gulf countries chose to start replacing Arab workers with migrants from non-Arab countries (e.g. the Bangladeshis working in Dubai) entailing that whereas formerly young Arabs from non oil producing countries had been able to find work and money in their oil producing neighbours, now their employment opportunities were constricted (Olmsted 2005). These two effects led to a downturn in wealth in the Middle Eastern region, a rise in youth unemployment (exacerbated by a massive bulge in population hitting working age) and a subsequent need for women to also enter the labour force. It remains to be seen which mechanism will prove more influential. This variable is coded as a decimal number taking values 0 to 1 in order to make interpretation of the coefficient easier.

The inclusion of this variable begs the question why not look at other religions. This paper limits the perspective to solely the Muslim religion category due to the prominent position of Islam in the debate on global women's rights. Additional reasons for this focus are outlined above in section 2.1. Future research could include the data on Catholicism and Protestantism but for the analysis below this data will be excluded.

## Section 3: Data and Methods

The data was collected from United Nations, World Bank, Demographic Healthy Surveys, and national censuses. This implies that measurement differences may exist. In general however, the data points gleaned from the various sources seem to match well in terms of trends. It is therefore not considered a significant problem for this analysis, although of course it should be kept in mind. The dataset covers a set of 77 LDCs from the earliest possible point for which there is data available (going back no further than 1950). This means the dataset is unbalanced, as for many countries data is only available from 1970 onwards. The methods used are ordinary least squares regression and panel data regression techniques using clustered standard errors.

In the dataset the average age of first marriage for women, as measured by SMAM, is 21.35, ranging from 13.88 in Pakistan in 1935 to 31.8 in Barbados in 1990. The summary statistics for the variables employed in this analysis are presented in Table 3 below:

**Table 3: Summary Statistics**

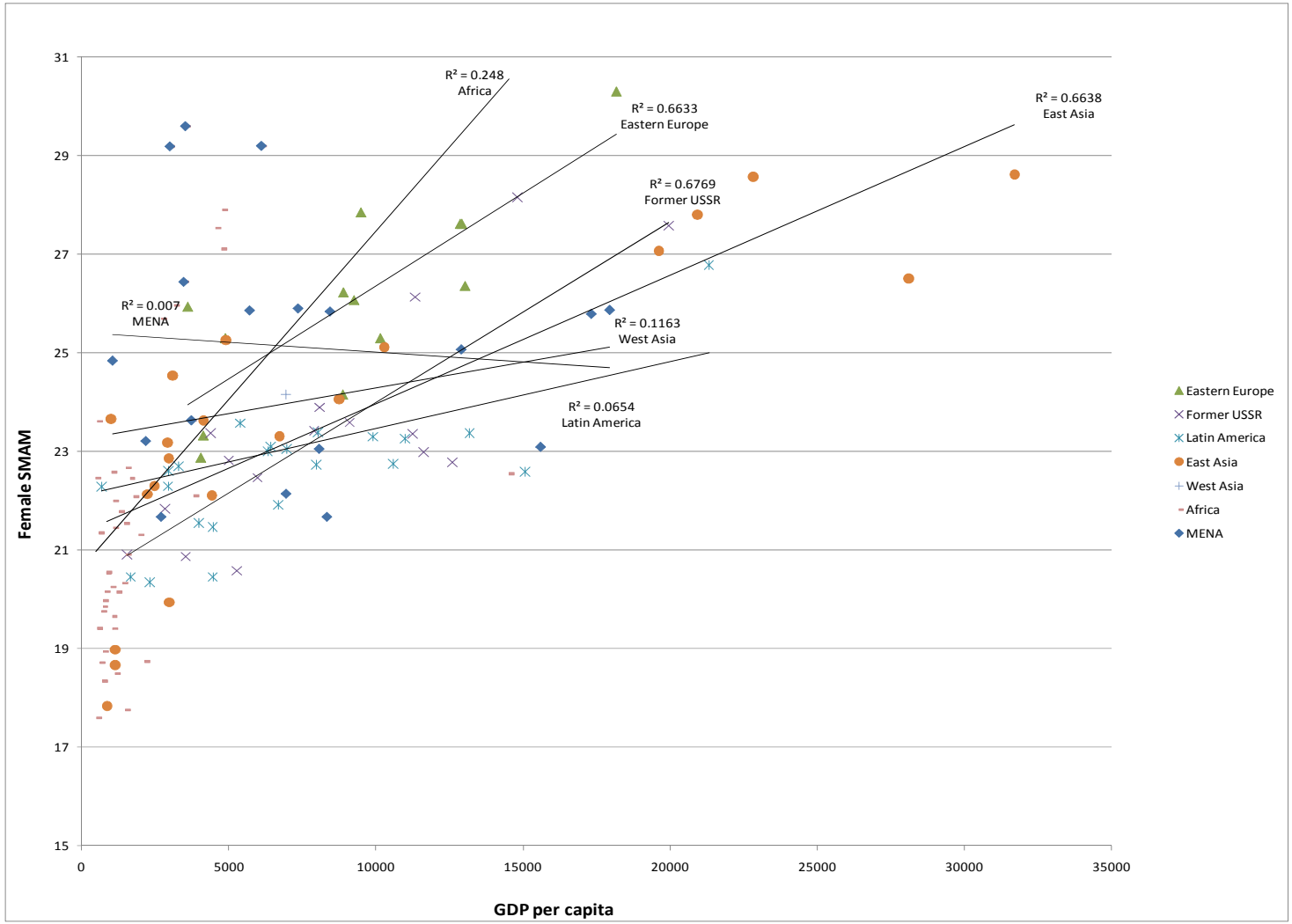
| Variable | Mean | Standard Deviation | Min | Max |
|---|---|---|---|---|
| Female SMAM | 21.35 | 2.71 | 13.88 | 31.8 |
| Spousal Age Difference | 4.27 | 1.53 | 1.37 | 9.53 |
| Average years of schooling at 15, female | 3.46 | 2.26 | 0.03 | 10.01 |
| Urbanisation (%) | 45.08 | 24.54 | 2 | 100 |
| Percentage population Islamic (%) | 3.46 | 2.26 | 0.03 | 10.01 |

The dataset is based on country-level variables. Obviously not all countries are identical in terms of population size and there will be variations within the countries at a regional level. However, the purpose of this analysis is to give an overview of trends and their determinants and for this, country level data is sufficient. Much work remains to be done to look at the micro-level determinants of marriage age and spousal age gap but that falls outside the scope of this current paper.

Another way of presenting the larger data set is by comparing regions of the world in terms of marriage age. Figure 2 has data points for every country in the dataset with female SMAM graphed against GDP per capita (taken as a rough indicator of development) with trend-lines added for the different regions. In the regression analysis all developed countries are excluded, leaving a dataset larger than that to be employed in the regression analysis as at this juncture Eastern Europe is included along with countries for which the education data needed for the later analysis is simply not available. For Figure 2, groupings used in Maddison's dataset have been employed with an additional category of the Middle East and North Africa (MENA). This region is interesting for later analysis but is largely a repetition of the West Asia category with the North African countries added to it. It does however have a substantially lower correlation coefficient of the relationship between female SMAM and GDP per capita than the West Asian grouping.

One thing that stands out when examining Figure 5 is the very low fit of the linear relationship in West Asia and the MENA category. Latin America is also noteworthy but removing the extreme outlier of Jamaica improves the fit of the line plotting the relationship between female SMAM and GDP per capita dramatically. It is interesting to note that the relationship between GDP per capita and female SMAM, in the group of predominantly Islamic countries which the MENA category represents, is not as straightforward in this part of the world as in others. This suggests some underlying institutional form is affecting the marriage systems of the countries involved. One of the key underlying institutional forms may well be that of the family. This is an additional reason for choosing to test the Todd framework as outlined above.

**Figure 2: Female SMAM graphed against GDP per capita in LDCs**



Turning now to spousal age gap, what one often sees as countries develop, or as women's rights improve, is a fall in the difference in age between husband and wife. Figure 6 below shows a general snapshot of the most recent men's and women's SMAM on a world-scale, for each country, graphed against the country's 2008 GDP per capita, used as a very rough indicator of development.[13] The lower trend line is that for female SMAM.[14]

**Figure 3: Male and Female SMAM**

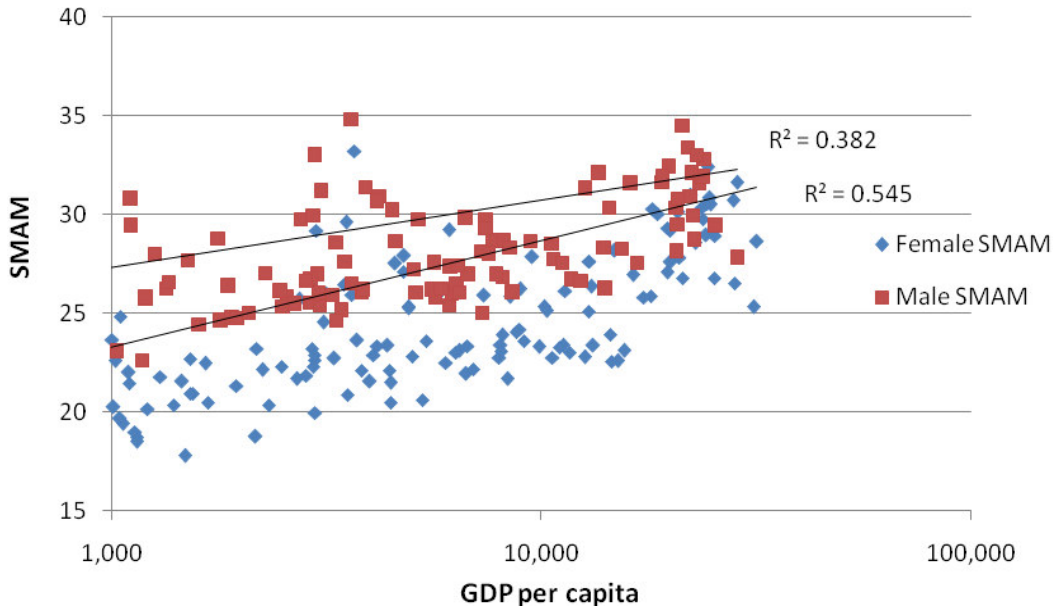



Figure 3 illustrates the narrowing of the age gap and the overall increase in SMAM that is seen as one moves from the countries with the lowest GDP to those with the highest. It supports the suggestion that economic growth goes hand in hand with an increase in the age at which people choose to marry and a decrease in the age gap between brides and grooms. The general trend is observable, as is the fact that the increase in SMAM as GDP increases across the sample is less marked for men than for women (this naturally causes the narrowing of the spousal age gap). This implies that economic growth has a greater impact on the female experience of marriage than on that of men. Turning now to an overview of the time trends exhibited by LDCs in terms of age at marriage, figures 4 and 5 below explore this for a subset of countries.

[13] Here data for Western European countries is also used to give a more general overview of the trend in marriage ages as countries grow.

[14] Jamaica has been removed as, with a marriage age above 30 for women and a very low spousal age gap, it represents a substantial outlier in both datasets in terms of the overall pattern and in terms of countries in its vicinity.

*Time trends of Age at first Marriage in LDCs*

The following two figures provide an idea of the trends over time in marriage ages of women to be observed in LDCs of the MENA region in the last century. This subset of countries demonstrate a general trend and tie in well with the focus on the fourth hypothesis, that of the percentage population Muslim. Figure 6 below includes countries from a wider geographic scope to highlight some similarities and differences which can be observed between regions.

**Figure 4: Time trends in female SMAM for MENA countries**

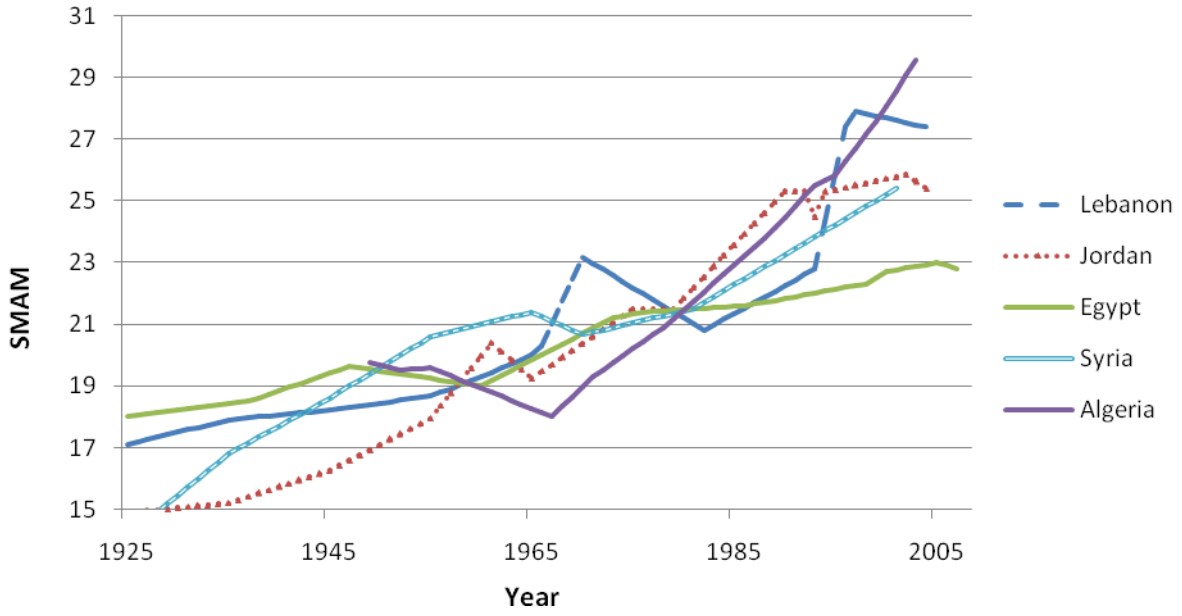



**Figure 5: Time trend in SMAM for a selection of MENA Countries**

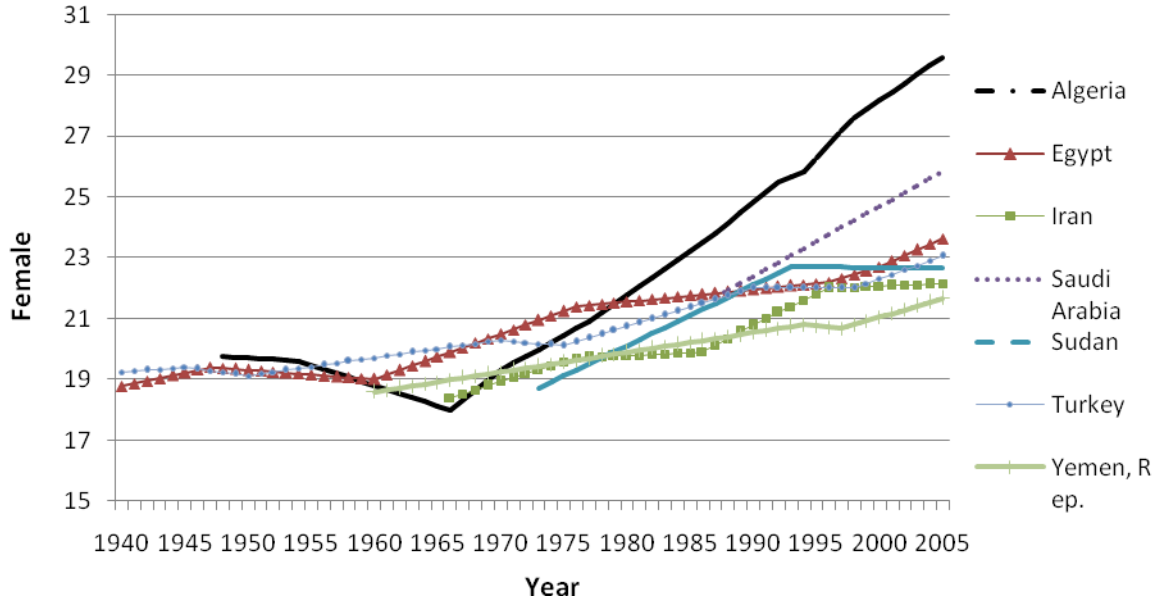
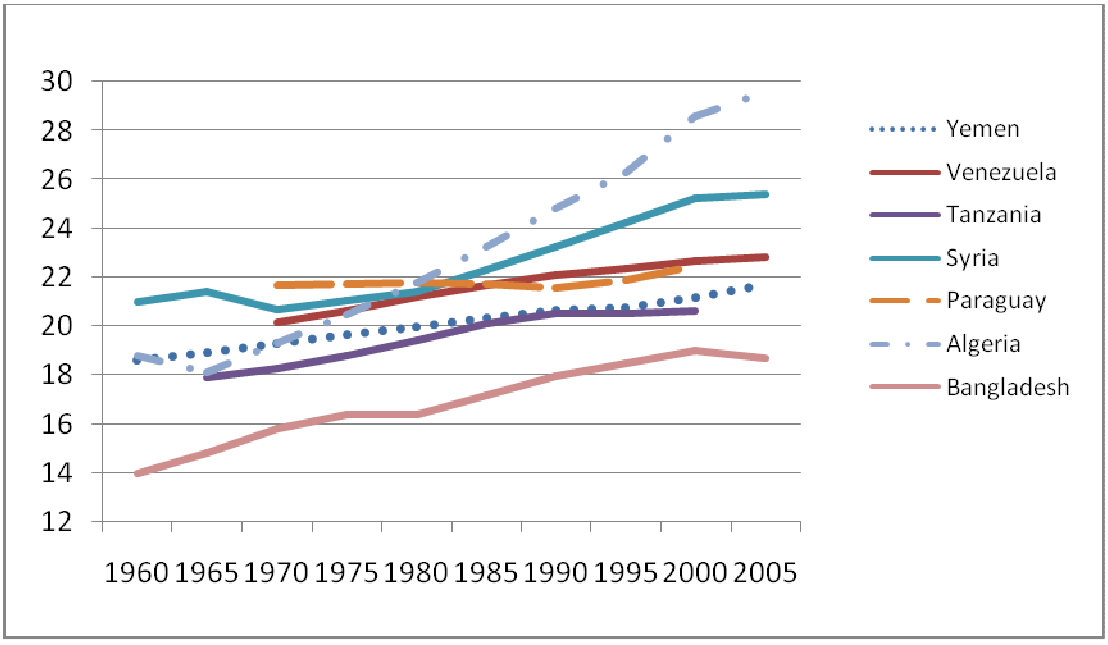


Figure 4 shows female SMAM increasing from under 15 in 1925 in Syria and Jordan to over 25 by the end of the period. Egypt has made steady and less significant gains (from 17.46 in 1907 to 23 in 2005) while Lebanon, having started just below Egypt now comes out as the second highest Middle Eastern country in this sample, rising from a marriage age of 17.1 in 1925 to 27.4 in 2005 while Egypt trails behind with a marriage age of under 23. These ages of first marriage of over 24 in the case of Algeria, Lebanon, Syria and Jordan stands in contradiction to Todd's predictions that community family types would demonstrate ages of marriage no higher than 24.

Figure 5 shows more clearly a divergence that seems to have occurred at a specific point in time. From the late 1960s onwards the age at which women were marrying seems to have been steadily increasing for all the countries graphed. However some countries have experienced far greater increases than others. Algeria, for example, has shot ahead of the rest of the pack and now has a SMAM for women close to that of Western European countries. This trend seems to have started around 1967 and continued as a steady, almost linear trend, over the intervening years. Yemen, Sudan, Iran, Turkey and Egypt meanwhile have experienced much smaller although still notable increases in their SMAM. Figure 5 also a group of countries classified by Todd as exhibiting endogamous community family characteristics who remain below the age 24 cut-off value. These are then Yemen, Iran, Egypt and Sudan. What factors underlie these differences? Why do some countries in the Arab region have such high age at first marriage (indeed that of Algeria is almost equal to the SMAM observed in the United Kingdom for the same year) while others lag behind? Figures 4 and 5 present just a handful of countries in one region but the same questions can be asked of a larger set of LDCs. The analysis below will seek to address these questions first by running regression analyses of the explanatory variables listed in the hypotheses section above on female age at first marriage and spousal age gap.

How do these observations for MENA countries compare to other regions of the world? Figure 6 gives some insight into this question:

**Figure 6: Time trend in SMAM for a selection of countries**



Here the pattern of rising SMAM can be observed for all countries but it appears that the two South American countries in the sample, Venezuela and Paraguay experience far less increase in their female SMAM than many of the other countries. Paraguay noticeably has almost stagnant female SMAM. Bangladesh sees consistently increasing SMAM over the period apart from a dip represented by the last data point. Bangladesh however starts from a much lower level than most of the countries in the dataset and therefore although it makes progress in terms of the age at which women marry it moves from an age of just below 14 to one below 19.

**Section 4: Results**

The results of the regression using the variables from section 2 to explain female age at first marriage and spousal age gap are presented in Tables 4 and 5. Table 4 presents the regression results for various model specifications including urbanisation, female education, family type and a static measure of percentage population Muslim.

The results from the regressions are close to those predicted by theory. Urbanisation has a small but significantly positive effect on female SMAM, and a small but significantly negative effect on the difference in ages between spouses. It seems that the break with parental authority outweighs the enlarged marriage market effect explained above in section 2. However although significant the result shows that increasing urbanisation from 0 to 100% only increases female age at marriage by 0.7 years. Urbanisation also decreases spousal age gap, indicating again that it results in greater female power over marital decisions. The values of these regressions are not definitive but the sign and the significance level indicates a relationship running from urbanisation to higher female age at marriage and therefore likely greater female agency. This lends credence to hypothesis 1.

The education variable is robustly significant at the 1% level, contributing to an increase in female SMAM and a decrease in the spousal age gap. Although the reciprocal effect of this variable discussed above must be kept in mind at the present stage the analysis reveals that educating women increases their age at marriage and decreases the age gap between husband and wife, thus likely contributing to greater female agency. An increase of one year of education increases female age at marriage by 0.69 of a year (when the family type variables are included in a panel data specification this value increases to 0.75). Considering that in the dataset average education runs from 0.36 to 10.01 years this can account for a substantial amount of the variation in female age at marriage. An additional year of education in this model decreases spousal age gap by 0.27 years in the first specification and 0.23 years in the sixth model, including family type and a panel data specification. Due to the reciprocal effect that may be present between education and age at first marriage this number may be inflated. However the sign is as expected and the result is significant. This provides some support for hypothesis 2.

Turning now to the third hypothesis: The exogamous community family has significantly lower ages at marriage for women than the endogamous community family. This is hardly surprising in view of the fact that in such a family structure daughters are a burden, who upon their marriage permanently leave their family group. This therefore encourages parents to marry their daughters off as early as possible. What is surprising is that the exogamous community family has significantly lower spousal age gaps in the ordinary least squares regression but this significance disappears when looking at the panel data specification. In this dataset exogamous community families occurs in China, India, Cuba and Nepal (Mongolia and Russia also have this family type but are not currently in the sample, but on inspection they have very similar age at marriage as the other four representatives).

**Table 4: Regression results for 1st model specification**

| Independent Variables | Dependent Variables | | | | | |
|---|---|---|---|---|---|---|
| | SMAM female, robust | SMAM female, robust | xtreg SMAM female, re | Difference in age between spouses | Difference in age between spouses | xtreg Difference, re |
| **Urbanisation (%/100)** | 0.70011 (0.46652) *** | 1.53167 (0.48)* | 2.60015 (0.71)* | -0.97702 (0.2746)* | -0.83398 (0.311)* | -1.92654 (0.53)* |
| **Average years of schooling for females at age 15** | 0.6974018 (0.05053)* | 0.5837697 (0.04586)* | 0.7473659 (0.0445)* | -0.2796061 (0.02671)* | -0.2334728 (0.02844)* | -0.2337 (0.0335)* |
| **Percentage Population Muslim (%/100)** | 0.9543943 (0. 213763)* | -0.6522606 (0.2770)** | -0.2643382 (0.5789) | 0.59741 (0.1535)* | 0.8853731 (0.2679)* | 1.2496 (0.4346)* |
| **Exogamous Community** | | -2.696165 (0.40208)* | -2.1847 (0.9550)** | | -0.5799 (0.30476)** | -0.690223 (0.7141) |
| **Asymmetrical Community** | | -0.2616 (0.40423) | 0.1384 (1.7260) | | 1.014162 (0.25166)** | 1.06304 (1.2933) |
| **Authoritarian** | | -0.4505 (0.2760) | -0.6607337 (1.5512) | | 0.7247475 (0.1929)* | 1.14079 (1.1621) |
| **Egalitarian Nuclear** | | -1.9617 (0.20953)* | -2.156589 (0.6079)* | | 0.3534748 (0.17484)** | 0.7414 (0.4545) |
| **Absolute Nuclear** | | 2.9160 (0.38730)* | 2.155088 (1.5427) | | -1.768931 (0.23879)* | -1.5962 (1.1490) |
| **Anomic** | | -0.1302 (0.18017) | 0.1587551 (0.5287) | | -0.2887 (0.12898)** | -0.3534221 (0.3946) |
| **African** | | -1.1881 (0.23403)* | -0.3687732 (0.5789) | | 0.9141521 (0.2495261)* | 1.007662 (0.3414)* |
| **Constant** | 18.4751 (0. 2075447)* | 19.8140 (0. 2557)* | 18.29 (0.4609)* | | 5.082028 (0.1987)* | 5.358842 (0.3414)* |
| **$R^2$** | 0.4843 | 0.5857 | 0.5701 | 0.38 | 0.44 | 0.44 |
| **F** | 187.24 | 82.7 | | 104.39 | 41.01 | |
| **No. of observations** | 596 | 596 | 596 | 517 | 517 | 517 |

*Significant at 1% level, **Significant at 5% level, *** Significant at 10% level

A complementary possible explanation for the lower ages of marriage found in the exogamous community families might be found in the study of endogamy. The incidence of endogamous marriage in the Arab world has remained high. A 2008 article by Alexander Weinreb cites the lowest level of endogamous, which he refers to as consanguineous, marriage in the region as being that of Algeria, where 23% of all unions are endogamous. At the other end of the spectrum Iraq, Jordan, Kuwait, Pakistan, Saudi Arabia and the UAE demonstrate a level of endogamous marriages of over 50% (Weinreb 2008). Why does endogamy remain an attractive prospect despite the well-documented possibilities of inbreeding and lowered immunity? And could this help explain the significant difference found between exogamous and endogamous community families? Following Weinreb there seem to be three mechanisms which are at work to make endogamous marriage an appealing proposition. These are the woman's position, economic factors and limited local cultural factors. This last category is not currently of interest. The first of these factors is directly related to women's agency. The attraction of endogamous marriage in this context arises from two factors; namely the legal position of women in Islam and the manipulation of kinship ties.

The legal position of women in Islam is often said to be characterised by a dichotomy between the public and private sphere. Within the confines of the household women have a degree of agency and have the right to move freely. Outside the household this is supposedly not the case.[15] The resulting institutional situation gives rise to the second factor, i.e. that women use the resources available to them, which in this case entails the manipulation of kinship ties. Endogamous wives in this setting are in a more powerful position as they have married into their own family and therefore have a more accessible network for influencing decisions made in their immediate environment. How this translates to higher age at marriage is not immediately clear. Possibly as there is reciprocity and close ties between the two families the pressure to get married young is less than in exogamous community families, which rely on incoming females for household chores. The lower spousal age gap in the exogamous community family, however, suggests that men are also getting married younger, although this value was not significant using the panel data specification. The asymmetrical community family is not significantly different from endogamous community family as predicted, apart from the OLS specification for spousal age gap which sees the asymmetric community family pushing the spousal age gap to a higher level than that found in the endogamous community family.

The egalitarian nuclear family in this dataset is represented largely by South American countries. In theory being a nuclear family form one would expect the age at first marriage for this family form to be higher than it is for the endogamous community family. However the results show a consistently lower age at marriage for women. Todd puts forward that one effect of the symmetrical treatment of brothers (as compared to the absolute nuclear family) in this family type is to create an ideal of male solidarity which in turn leads to a macho society whereby men are held to be superior to women (Todd 1985). This may to some extent explain the lower age at marriage, although the community family also reinforces the bonds between brothers therefore should also lend itself to a more "macho" society. Another point that must be made about South America is that marriage is not a universal institution. Historical studies of marriage in South America have found remarkably high numbers of single mothers and female-heads of household (Ramos 1991). This could suggest that those who get married are a distinct group within the population with different characteristics. One such study found that the age at first child birth was lower for those who got married than

[1515] This perspective should be nuanced somewhat as mentioned in Section 2 above however it remains a pervasive mode thought for some scholars working in this field.

those who had children out of wedlock (Ramos 1991). However more recent studies of Latin American marriage support the idea of near universal marriage at a young age as an important family institution in times of economic turbulence (Fussell and Palloni 2004). Other studies explore the additional phenomenon of the coding of marriage in Latin America which is confused by the presence of large groups of individuals in consensual unions (Martin 2004). This may further explain the unexpectedly low age at marriage to be found in this region, with those individuals who are in consensual unions being registered as permanently unmarried and those being discounted from the SMAM calculation.

The female SMAM of the anomic family is not significantly different from the endogamous community family. This is noteworthy as the anomic family is meant to encourage greater equality between the sexes. The spousal age gap using an OLS model specification is significantly different from that of the endogamous community family, and lower indicating greater equality, however this disappears when a random effects specification is used. Finally the African family type has a significant negative effect on female SMAM using OLS regression (this significance disappears in a random effects estimation) and has a consistently significant and positive effect on the spousal age gap.

The model specification where the spousal age gap is the dependent variable has significant values for all family types in the model specification of the first column although this significance disappears for all but the African family type when a panel data specification is used. The exogamous community family type, the absolute nuclear and the anomic family type all show decreased spousal age gap when compared to the endogamous community family, indicating some degree of improved female agency in these family types when compared to the endogamous community family. The asymmetrical community family type, the authoritarian, the egalitarian and the African family type all demonstrate greater spousal age gap than the reference category. The exogamous community family type and the anomic family type demonstrate a counter-intuitive pattern, one of lower female SMAM but also lower spousal age gaps. This suggests that some of the inequalities resulting from marrying young may be diluted by marrying closer to one's own age cohort.

The percentage Muslim population variable is worth noting. In the first model specification it has a positive value suggesting that contrary to standard perspectives, and that put forward in Hypothesis 4, a higher percentage of Islamic practitioners may well increase age at first marriage for women, indicating greater female agency. This positive effect of Islam disappears however with the inclusion of family type in the model. This suggests that the positive effect of Islam on female SMAM over other LDCs is largely subsumed by characteristics intrinsic to the predominant family type in Islamic countries (the endogamous community family). In the first model specification the difference between a country with 0% Muslim population and one with 100% is 0.95 years greater age at first marriage for women in the purely Islamic country This stands against the hypothesis that greater adherence to the Muslim faith will lower age at first marriage. Moving to the spousal age gap regression we see that the percentage population Muslim variable has a robustly significant effect on spousal age gap, increasing it. This effect is only strengthened by the inclusion of the family type variables and by the panel data specification. This result, contrary to the previous result, gives credence to the notion of female agency being worsened in countries with large Muslim populations as indicated by greater spousal age gap.

Next a regression was run to see how the percentage population Muslim effect changed over time. The regression results including the interaction effect for the effect of Islam with time are presented in Table 5.

The interaction effect of time with Islam shows an initially strong and significant negative effect of larger Islamic population on age of female first marriage. Similarly in 1950 the effect of percentage Islamic population upon the spousal age gap was significant and

positive. Over the subsequent 30 years the negative impact of Islam on female SMAM declines until in 1980 the effect becomes insignificant. By 1995 a new pattern emerges of higher percentage population Muslim having a positive effect on female age at first marriage. However the effect on spousal age gap, having become insignificant in the 1990s increases and becomes significant again in the new millennium thus suggesting that this proxy for of female empowerment has not seen a consistent improvement as a result of the influence of Islam.

The inclusion of the interaction effect makes insignificant the impact of urbanisation in a random effects specification (although for the model specification with spousal age gap as the dependent variable urbanisation is very close to being significant at the 10% level). The family type variables keep largely similar coefficients and significance apart from the absolute nuclear family which is now significant for all regressions.

The noticeable result of the model specification of the third column is over the last decade Islam does not seem to have had a negative impact on female age at first marriage. In fact on the contrary, it may even have a positive effect. This provides some basis for undermining the conventional view that Islam is not compatible with women's rights. It also begs an interesting question with several possible answers: Why is it that Islam's predictive power seems to be decreasing with time? This might be due to a convergence in marriage patterns over time, between Islamic countries and the rest of the countries in the dataset. It might also be because Islam has evolved, or because religion itself has become a less powerful force. Convergence has occurred between some countries in the MENA region and those of Western Europe. However since this last group is not included in the analysis this cannot be affecting the results. Indeed looking at Figure 8 we can even see a marked divergence in marriage patterns between a subset of countries. Similarly in some countries Islam may have evolved but in others this seems to be unlikely to be the case (e.g. Saudi Arabia where women are still not legally allowed to drive cars).

One question that must be posed here is what this variable is coding for exactly. High unemployment due to a youth bulge in the Arab world may mean that this variable partially codes for this phenomenon with young men unable to marry as they will not be able to support a wife or a family. Additionally, there are huge variations within the Islamic world itself when it comes to attitudes to women and interpretation of religious doctrine. This complicates the interpretation of the variable and opens it up to some criticism. However, what was attempted with this variable was to show the effect of a larger population practising the Islamic faith and regardless of the differences found within the category Islam an effect does seem to be present.

**Table 5: Regression results with models including interaction effect of Islam with time**

| Independent Variables | Dependent Variables | | | |
|---|---|---|---|---|
| | SMAM female | Xtreg SMAM female, re | Difference in age between spouses | Xtreg difference, re |
| **Urbanisation** | 1.42664<br>(0.40850)* | 0. 53857<br>(0.7007) | -0. 79227<br>(0.332)** | -0. 87758<br>(0. 5473) |
| **Average years of schooling for females at age 15** | 0.4567534<br>(0.0414)* | 0.5503387<br>(0.4279)* | -0.188549<br>(0.0328)* | -0.1672437<br>(0.0350)* |
| **Exogamous Community** | -2.854949<br>(0.3493769)* | -2.356611<br>(0.9557)** | -0.5503548<br>(0.2863)*** | -0.5350312<br>(0.6808) |
| **Asymmetrical Community** | -0.4856502<br>(0.6080) | -0.4485216<br>(1.73394) | 1.120818<br>(0.5080)** | 1.32803<br>(1.2334) |
| **Authoritarian** | 0.2234182<br>(0.5531) | 0.2283158<br>(1.5567) | 0.601554<br>(0.4613) | 0.7440005<br>(1.1092) |
| **Egalitarian** | -1.946127<br>(0.2411)* | -1.376844<br>(0.6054)** | 0.3450454<br>(0.1959)*** | 0.4493<br>(0.4358) |
| **Absolute Nuclear** | 3.283133<br>(0.5528)* | 2.944904<br>(1.5485)*** | -1.911084<br>(0.4099)* | -2.057348<br>(1.0965)*** |
| **Anomic** | -0.1300522<br>(0.2022) | 0.0059272<br>(0.5292) | -0.2800<br>(0.1619)*** | -0.2118271<br>(0.3774) |
| **African** | -1.492381<br>(0.2167)* | -0.642743<br>(0.4548) | 1.03618<br>(0.1760)* | 1.365843<br>(0.3307)* |
| **Interaction Islam 1950** | -2.326472<br>(0.6268)* | -2.661059<br>(0.6450)* | 1.627563<br>(0.5254945)* | 2.387816<br>(0.4858)* |
| **Interaction Islam 1955** | -2.18452<br>(0.6274)* | -2.494032<br>(0.6467)* | 1.69497<br>(0.5260)* | 2.454162<br>(0.4871)* |
| **Interaction Islam 1960** | -2.496489<br>(0.5122)* | -2.082788<br>(0.6168)* | 1.517996<br>(0.4940)* | 2.351879<br>(0.4804)* |
| **Interaction Islam 1965** | -2.379515<br>(0.4949)* | -1.80859<br>(0.6147)* | 1.525419<br>(0.4901)* | 2.26342<br>(0.4805)* |
| **Interaction Islam 1970** | -2.124923<br>(0.4576)* | -1.489925<br>(0.6095)** | 1.420579<br>(0.3999)* | 2.070385<br>(0.4612)* |
| **Interaction Islam 1975** | -1.7789<br>(0.4500)* | -1.044802<br>(0.6095)*** | 1.6242<br>(0.3575)* | 1.731438<br>(0.4484)* |

| | | | | |
|---|---|---|---|---|
| **Interaction Islam 1980** | -1.424524<br>(0.4315958)* | -0.6619886<br>(0.6043) | 1.2174<br>(0.3381)* | 1.376649<br>(0.4413)* |
| **Interaction Islam 1985** | -0.8431906<br>(0.4173)** | -0.0910193<br>(0.5997) | 0.8150894<br>(0.3233)** | 0.993529<br>(0.4360)** |
| **Interaction Islam 1990** | -0.0067853<br>(0.4120) | -0.7066566<br>(0.5977) | 0.5250173<br>(0.3238) | 0.6686305<br>(0.4343) |
| **Interaction Islam 1995** | 0.517983<br>(0.4074) | 1.19032<br>(0.5956)** | 0.3647542<br>(0.3160) | 0.6935029<br>(0.4307) |
| **Interaction Islam 2000** | 0.4863032<br>(0.4091) | 1.155802<br>(0.6012)*** | 0.7258903<br>(0.3606) | 1.097438<br>(0.4493)** |
| **Interaction Islam 2005** | 0.5715729<br>(0.4928) | 1.12809<br>(0.6123)*** | 0.1838868<br>(0.4323) | 0.9173781<br>(0.4600)** |
| **Constant** | 20.52544<br>(0.2548)* | 19.92972<br>(0.4603)* | 4.825525<br>(0.2058)* | 4.519689<br>(0.338277)* |
| **$R^2$** | 0.62 | 0.6162 | 0.4488 | 0.4620 |
| **F** | 47.86 | | 21.01 | |
| **Number of observations** | 596 | 596 | 517 | 517 |

*Significant at 1% level, **Significant at 5% level, *** Significant at 10% level

## Section 5: Conclusion

Teasing out the determinants of agency and/or power is a tricky business. Even when it comes to determining the level of agency, none of the available measurements is perfect. This paper therefore does not claim to give far-reaching answers on the determinants of agency per se. Marriage patterns are a mere proxy for agency, although one that could prove very useful in research on the historical development of female empowerment. What this paper does hope to do is contribute towards the theoretical framework surrounding the determinants of marriage patterns (and related to this those of female agency). What has been found is that there is a consistent upward trend in female age at first marriage for many countries of the world but that within this upward trend there is still significant variation in the speed at which age at first marriage increases (and spousal age gap declines). Variables were used to empirically analyse what causes these variations. Although these variables are not complete and cannot explain all the variation in female SMAM and spousal age gap, several variables were consistently significant. The second hypothesis receives considerable support from this analysis. Women's education proves to be a consistently significant factor, having a positive influence on female SMAM and playing a role in reducing the spousal age gap. The first hypothesis is also supported to some extent. Urbanisation also has a small and consistently significant effect on increasing female SMAM and decreasing the spousal age gap.

Controlling for percentage population Muslim had some surprising results with the interaction variable indicating that in the past decade Islam has had a positive influence on female SMAM. A simple regression of SMAM female on urbanisation, education and percentage Muslim showed the percentage population Muslim having a significantly positive effect on female SMAM, thus implying that the fourth hypothesis is not supported by this data. This lends itself to the presentation of a more nuanced picture of Islam than that of a religion which simply damages female agency, especially when comparisons are being made between LDCs. It also suggests that the role of religion in determining marriage may be decreasing.

The African family type and the egalitarian nuclear family have the most robust impact on spousal age gap and female SMAM with the endogamous family as the reference category. The African family type consistently depresses female age at first marriage and increases spousal age gap. The egalitarian nuclear family also depresses female age at first marriage and in some of the regressions increases spousal age gap significantly. For these two family systems it seems that Todd's framework provides an interesting variable to test. The exogamous community family proves significantly different from the endogamous variant in its influence on female SMAM. Its effect is to depress female age at first marriage, an effect that is somewhat surprising, although may be explained using features of the practise of endogamy as mentioned above and the need to get rid of daughters in the endogamous community family.

One argument against the inclusion of the Todd framework in this analysis is that in some senses is could be argued to be a set of regional dummies. It is still interesting to test however whether the predictions as based upon Todd's framework hold true with a modern dataset. Having run the regression including both a regional dummy and the family typology variable the inclusion of the regional dummy does change the results, but the effect of a number of the family types remains significant. Another bone of contention is the macro level of the data. This is also something future research hopes to address by using household level data to analyse marriage behaviour at a more detailed level.

Further issues might arise due to the use of the measurement female SMAM. Singulate mean age at marriage is a static measure which cannot capture dynamics and includes in its calculation couples who married many years before the date for which the data is recorded.

This is an issue which ongoing research on this topic hopes to address by using the percentages of individuals single in given age categories.

Future research will seek to empirically evaluate Todd's family system to see if it is relevant and/or accurate in view of the latter day situation, and use the separate variables that his framework is made up of as independent variables. I hope to expand the database to include additional countries in Central Asia and Eastern Europe to see how this affects the analysis and include data on Catholicism and Protestantism.

**References**


Bahramitash, R. (2003). Islamic Fundamentalism and Women's Economic Role: The case of Iran. *International Journal of Politics, Culture and Society*, 16(4), 551-568.

Anonymous, (2006). *Koran*. London: Penguin Classics.

Becker, G. (1973). A Theory Of Marriage Part I, *The Journal of Political Economy,* 81(4), 813-846.

Becker, G. (1974). A Theory Of Marriage Part II, *The Journal of Political Economy*, 82(2), Part 2, S11-S26.

Becker, G. (1992). Fertility and the Economy. *Journal of Population Economics*, 5(3), 185-201

Boserup, E. (1989). *Woman's Role in Economic Development.* London: Earthscan Publications Ltd.

De Moor, T. and van Zanden, J.L. (2010). Girl power: the European marriage pattern and labour markets in the North Sea region in the late medieval and early modern period. *The Economic History Review*, 63(1), 1-33.

Duranton, G., Rodríguez-Poseb,A. and Sandall, R. (2007). Family types and the persistence of regional disparities in Europe. BEER working paper no. 10. available at http://www.coleurop.be/content/studyprogrammes/eco/publications/BEER/BEER10.pdf

The Economist (2006). April 15th. 378 (8473), 16.

Engelen, T. and Kok, J. (2003). Permanent celibacy and late marriage in the Netherlands, 1890-1960. *Population-E*, 58(1), 67-96.

Esposito, J. (2001) *Women in Muslim Family Law* (2nd edition). New York: Syracuse.

Food and Agriculture Organization of the United Nations (2011). *The State of Food and Agriculture 2010-11. Women in agriculture. Closing the gender gap for Development.* available at: http://www.fao.org/docrep/013/i2050e/i2050e00.htm (last accessed 22nd August 2011).

Fussell, E. and Palloni, A. (2004). Persistent Marriage Regimes in Changing Times. *Journal of Marriage and Family*, 66 (5), 1201-1213.

Giddens, A. (2009) *Sociology*, 6th Edition, Cambridge: Polity Press.

Hajnal, J. (1965). European marriage in perspective. In D. V. Glass and D. E. C. Eversley, eds., *Population in History*, 101–43. London: Edward Arnold

Hajnal, J. (1982). Two kinds of preindustrial household formation system. *Population and Development Review*, 8(3), 449–94.

Hitlin, Steven, and Glen H. Elder, Jr. (2007). Understanding 'Agency': Clarifying a Curiously Abstract Concept. *Sociological Theory,* 25(2), 170-191.

Lapidus, I. (2002). *A History of Islamic Societies*, 2nd edition. Cambrige: Cambridge University Press.

Landes, D. (1998). *Wealth and Poverty of Nations*. New York: W.W. Norton & Company

Maddison, A. (2001). *The World Economy: a millenial perspective*. Development Centre of the Organisation for Economic Co-operation and Development. Paris: OECD.

Malanima, P. (2005). Urbanisation and the Italian economy during the last millennium. *European Review of Economic History*, 9, 97-122.

Martin, T.C. (2002). Consensual Unions in Latin America: Persistence of a Dual Nuptiality System. *Journal of comparative family studies*, 33 (1), 35-55.

Maynes, M.J. and Walter, A. (2001). Women's Life-Cycle Transitions in a World-Historical Perspective, comparing marriage in China and Europe. *Journal of Women's History*, 12(4), 11-21.

McKinsey (2011). Unlocking the full potential of women in the US economy. Full article: http://www.mckinsey.com/client_service/organization/latest_thinking/unlocking_the_full_potential.aspx (last accessed: 22nd August 2011)

Mill, J. (1861/1991). The Subjection of Women. *John Stuart Mill On Liberty and other essays*. Oxford: Oxford University Press.

Olmsted, J. (2005). Gender, Aging, and the Evolving Arab Patriarchal Contract. *Feminist Economics*, 11(2), 53-78.

Olmsted, J. (2011). Economic Conditions and Household Formation: A Case Study of the Arab World. *Journal History of the Family,* this edition.

Prothro, E. T. and Diab, L.N. (1974). *Changing Family Patterns in the Arab East*. Beirut: Heidelberg Press.

Puschmann, P. and Engelen, T.L. (2011). How Unique if the Western European Marriage Pattern? A comparison of Nuptiality in Historical Europe and the Contemporary Arab World. *Journal History of the Family,* this edition.

Ramos, D. (1991). Single and Married Women in Vila Rica, Brazil, 1754 – 1838. *Journal of Family History*, 16(3), 261-282.

Roded, R. (1999). *Women in Islam and the Middle East – A reader*. London: I.B. Tauris & Co. Ltd.

Schultz, T.P. (1997). Demand for Children in Low Income Countries. in Rosenzweig, M. and Stark, O. *Handbook of Population and Family Economics 1A*, 349-420. Amsterdam: Elsevier.

Sen, A. (2000). *Development as Freedom*. New York: Anchor Books.

Shehadeh, L. R. (2003). *The Idea of Women in Fundamentalist Islam*. Florida: University of Florida Press.

Stoeckel, J. and Sirisena, N.L. (1988). Gender-specific Socioeconomic Impacts of Development Programs in Sri Lanka. *The Journal of Developing Areas* 23, 31-42.

Therborn, G. (2006). *Between Sex and Power. Family in the World, 1900-2000*. Abingdon: Routledge.

Tilly, C. (1964). *The Vendée*. Cambridge, Massachusetts: Harvard University Press.

Todd, E.(1985*). The Explanation of Ideology*. London: Blackwell Publishers.

de Vries, J. (1990). Measurement, Description and Analysis. in Woude, van der A., Hayami, A. and de Vries, J. *Urbanization in History – A Process of Dynamic Interactions*. Oxford:

Van Zanden, J.L. (2011). The Malthusian Intermezzo. Women's wages and human capital formation between the Late Middle Ages and the Demographic Transition of the 19th century. *Journal History of the Family,* this edition.

Weinreb, A.A. (2008). Characteristics of Women in Consanguineous Marriages in Egypt, 1988-2000. *European Journal of Population*, 24, 185-210

The World Bank (2004). *Gender and Development in the Middle East and North Africa. Women in the Public Sphere.* Washington: The World Bank. (available at: http://go.worldbank.org/ENRPGWBY40)

The World Bank (2009). *World Development Report, Reshaping Economic Geography.* Washington: The World Bank. (available at: http://www-wds.worldbank.org/external/default/WDSContentServer/IW3P/IB/2008/12/03/000333038_20081203234958/Rendered/PDF/437380REVISED01BLIC1097808213760720.pdf (last accessed 22nd August 2011))

**Appendix table 1: Todd's typology expanded with examples of countries Todd ascribes each type to**

| | |
|---|---|
| Characteristics of the exogamous community family:<br>1. Cohabitation of married sons and their parents<br>2. Equality between brothers defined by rules of inheritance<br>3. No marriage between children of brothers<br>4. Low age of marriage as no need to establish separate household<br>Russia, Mongolia, China, Vietnam | Characteristics of endogamous community family<br>1. Cohabitation of married sons with their parents<br>2. Equality between brothers established by inheritance rules<br>3. Frequent marriage between the children of brothers<br>4. Low age of marriage as no need to establish separate household<br>Morocco, Western Sahara, Algeria, Mauritania, Libya, Egypt, Sudan, Saudi Arabia, South Yemen, Afghanistan, Pakistan, Turkey, Iraq, Iran |
| Characteristics of the authoritarian family<br>1. Cohabitation of married heir with his parents<br>2. Inequality of brothers laid down by inheritance rules, transfer of an unbroken patrimony to one of the sons<br>3. Little or no marriage between children of brothers<br>4. Expectation of higher number of permanent celibates<br>Germany, Austria, Southern France, Northern Spain, Switzerland, Belgium | Characteristics of the asymmetrical community family<br>1. Cohabitation of married sons and their parents<br>2. Equality between brothers laid down by inheritance rules<br>3. Prohibition on marriages between the children of brothers, but a preference for marriages between the children of brothers and sisters<br>4. Should not be significantly different from endogamous community family<br>Southern India |
| Characteristics of the egalitarian nuclear family<br>1. No cohabitation of married children with their parents<br>2. Equality of brothers laid down by inheritance rules<br>3. No marriage between the children of brothers<br>4. Age of marriage should be high<br>Portugal, Spain, Southern Italy, Poland, Romania, Brazil, Argentine, Chile, Uruguay | Characteristics of absolute nuclear family<br>1. No cohabitation of married children with their parents<br>2. No precise inheritance rules, frequent use of wills<br>3. No marriage between the children of brothers<br>4. Age at marriage should be high and spousal age gap low<br>England, parts of the Netherlands, Australia, Canada, USA |
| Characteristics of the anomic family<br>1. Cohabitation of married children with their parents is rejected in theory but accepted in practice<br>2. Uncertainty about equality between brothers: inheritance rules egalitarian in theory but flexible in | Characteristics of African systems:<br>1. Instability of the household<br>2. Polygyny<br>3. Marriage is looser – hard to predict what this will mean in terms of age of marriage –marriage as less of |

| | |
|---|---|
| practice<br><br>3. Consanguine marriage possible and sometimes frequent<br><br>4. Equality between the sexes – spousal age gap should be low<br><br>Thailand, Burma, Indonesia, Papua New Guinea | a permanent commitment so possibly lower age at marriage for women<br><br>All Africa except the Northern African countries and South Africa which is a hybrid of the African family type and egalitarian nuclear. |