

Marriage, Family and Gender Inequality

An historical exploration of the relationship between family systems,
the position of women and development

*Huwelijk, familie en ongelijkheid tussen mannen en vrouwen:
Een historisch verkenning van de relatie tussen familiesystemen, de positie van de vrouw en het
ontwikkelingsproces.*
(met een samenvatting in het Nederlands)

Proefschrift

ter verkrijging van de graad van doctor aan de Universiteit Utrecht op gezag van de rector
magnificus, prof.dr. G.J. van der Zwaan, ingevolge het besluit van het college voor promoties
in het openbaar te verdedigen op woensdag 3 februari 2016 des ochtends te 10.30 uur

door

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geboren op 1 december 1984
te *Leamington Spa, Verenigde Koninkrijk*

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Chapter 1: Introduction

SECTION 1.1. OPENING

“Forget China, India and the internet: economic growth is
driven by women.”
*The Economist*¹

“The young men are slow to mate, and their virility is therefore not exhausted. Nor are maidens rushed into marriage. As old and full-grown as the men, they match their mates in age and strength and the children reflect the
might of their parents.”
Tacitus²

“Utterly unlike their miserable Mohamedan and Hindoo sisters, they (Burmese women) enjoy absolute liberty – a liberty of which, if rumor prove true, they make ample use.”
Gascoigne³

In the above quote from Tacitus' *Germania* (98AD) he describes the marital customs of the Germanic Tribes. He suggests that the Germans, in contrast to the Romans of the time, behaved quite differently as regards the position of women within marriage, which hints at deeper differences between the two cultures. Similar themes reappear in the works of the late 19th century author Gascoigne in his account of travelling in Burma, who compares the liberty enjoyed by the women of Burma to the far worse conditions of their sisters in India. These observations are presented in contrast to neighbouring

1. *The Economist* (2006), April 15.

2. (Tacitus translated by Harold Mattingly, 1948/2009)

3. Gascoigne 1896

populations, highlighting the fact that historically the position of women from society to society has differed markedly. This dissertation seeks to map out these long-entrenched differences between societies by looking at a variety of indicators of how women fare, both absolutely and relative to men.

At the date of writing attitudes to women and gender equality have entered the public debate as a rallying call in productive and less productive ways. The issues surrounding gender equality are complicated, ranging from abortion rights to sexual assault legislation and domestic violence reporting, to the portrayal of women in the media, gender pay gaps, and the glass ceiling. They often elicit strong responses from both feminists, as well as those who take the stance that gender equality has been achieved or is unnecessary (and the many gradations in between).⁴ A surge of recent high-profile campaigns has pushed inequalities between men and women prominently into the lime-light (Emma Watson's He for She, Angelina Jolie with the Centre for Warzone Violence against Women, and the Everyday Sexism project).⁵ The flurry of celebrity and social media attention aside, what the wave of recent "feminist" campaigns illustrate is, even today, there is much still to debate and tackle as concerns the treatment of women, even in the world's most economically developed countries. Indeed this becomes evident when you consider the following about the UK, based on the World Economic Forum Global Gender Gap report as summed up in the Guardian in 2014:

4. The field of inequality research is an academic field from which this dissertation draws inspiration. Particularly useful is an introduction by Goran Therborn to a book entitled *Inequalities of the World*. This text provides a discussion of the distinction between a difference and an inequality: "Inequalities are differences that we consider unjust... While equality may be divine – coming from the Creator – inequality is manmade. That is, it is something changeable" (Therborn, 2006).

5. <http://www.heforsheshe.org/> and <http://www.lse.ac.uk/newsAndMedia/news/archives/2015/02/WPSCentre.aspx>

“The UK is 74th of 186 in terms of female representation in parliament. We are below Sudan, where they operate sharia law; below China, where there is a government policy that coerces professional women to get married, called (yes, really) Leftover Women;”⁶

As unwelcome as these observations about the UK are, in general countries that historically had high levels of gender equality remain at the head of the pack when it comes to the treatment of women. For instance, the Nordic countries were amongst the first to grant women the vote and until today remain some of the most gender egalitarian countries in the world. Similarly the Netherlands and England have long been countries where women on average marry at age 24 or above, in contrast to many part of the world where pre-pubescent or teen brides were (and in some cases still are) the norm.⁷ In contrast Indian women, for example, have been subject to institutional subordination over the course of many decades if not centuries of history, with some even arguing that this gender inequality is the basis and reason for the existence of the Indian Caste System (Bidner and Eswaran 2015). This subordinate position of Indian women presents itself today as a preference for sons, resulting in sex selective abortion as well as in the frequency and violence of sexual assault. These examples illustrate that to a significant extent the position of women in a society is something that might persist over generations. However, as later chapters of this book will demonstrate, at the same time the world has seen much progress towards greater equality between the sexes over the past century.

This dissertation does not seek to directly address the feminist debates cur-

6. The Guardian, 28th October 2014 - “How Life for Women in Britain is getting tougher” - <http://www.theguardian.com/lifeandstyle/2014/oct/28/how-life-for-women-britain-getting-tougher>.

7. How far back in time this European Marriage Pattern dates is uncertain but from the Black Death onwards it seems to have been a fairly normal feature of North Western Europe. In developing countries more than 1 in every 3 girls marries before her 18th birthday, and 1 in 9 before her 15th (Girls Not Brides 2014).

rently raging in the media about the persistence of patriarchy, indeed it does not engage directly with feminist or gender studies, but rather aims to show the historical underpinnings of current day gender inequalities at a global scale, with a focus on female agency (the degree of control people have over their own lives, elaborated upon further in section 2). To do so it brings together different explorations of the position of women both historically and today, which attempt to draw out ways in which differences in gender equality between countries are historically determined, and what the effects of such differences are for the transmission of human capital to the next generation. A concerted attempt is made to show the institutional roots of outcomes today and over time by employing various measures of the ways families organize themselves, as well as of various dimensions of gender inequality. This long-term perspective is of use in capturing the root causes of women's disadvantages, and will hopefully provide insight into factors that policies to address systemic inequalities need to take into account. The three inter-related research questions which are, therefore, addressed in this book are: 1) How can we (best) measure female agency in the past?; 2) What are the determinants of gender inequality? 3) And what are the effects of greater equality on development, broadly construed?

Gender equality, female agency, women's empowerment and variations on these three are terms that have discrete meanings but here are used, to some extent, interchangeably. Gender is an alternative word for the sex of a human being. It is most often used in a way that emphasizes the social and cultural, as opposed to the biological distinctions between the sexes (Oxford English Dictionary). Gender equality is, therefore, a situation in which the social and cultural environment recognises both men and women as being of equal values, and provides them equal opportunities accordingly. In the context of this book gender inequality is a situation in which women's rights, in terms of access to resources and legal standing, vis-à-vis men are curtailed by cultural

or social phenomena, rather than biological differences.⁸ These cultural or social phenomena are held to directly impinge on the position of women in a given society.

Figure 1.1 below presents one form of the model to be explored in the next six chapters. A variant on this model is presented in section 3 of this introduction, however the diagram below is intended to give the reader a sense of the links that will be explored, both in this introduction, and throughout the book. It should be noted that the bold line running between marriage patterns and agency means that marriage patterns are used as a measure of agency, similarly they are used as a measure of gender equality.⁹ The theoretical underpinnings for each of these arrows are explored in various sections of the introduction. The dotted line running between development and family systems (inheritance systems, rules surrounding cousin marriage, intergenerational co-residence etc. considered in conjunction – see below for further elaboration) indicates that, although this link likely exists, it is not explicitly tested for in this book.¹⁰

The main message of this diagram is that family institutions/systems are central to the model explored in this book. Similarly the reciprocal relationship between development and gender equality is important to note. Devel-

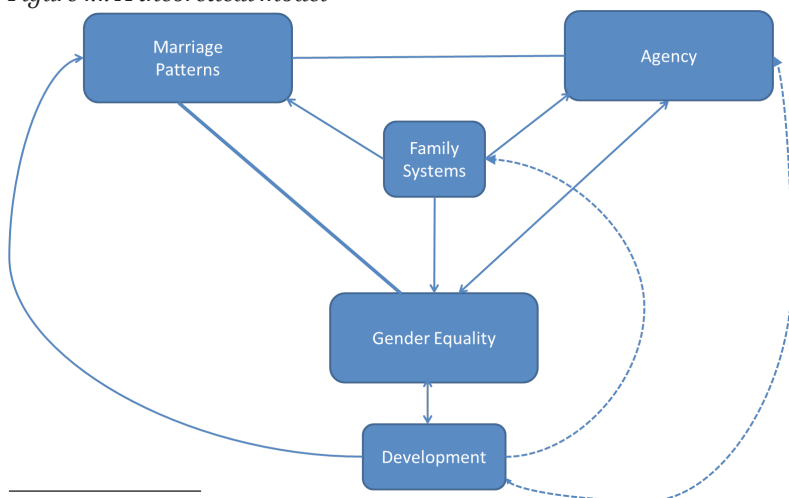
8. Of course gender inequality could also run in the other direction, with men being disadvantaged as compared to women. However, in practise this is rarely or never the case, particularly in a historical perspective. Nowadays some countries of Eastern Europe exhibit life expectancy differences between men and women which run counter to the general pattern and where this is relevant throughout the dissertation it will be discussed (see Chapter 6). See Dilli (2015) for an empirical assessment of this reciprocal relationship.

9. A discussion of marriage patterns as an indicator of agency and of gender equality can be found in section 5 of the introduction.

10. The relationship may also run in the opposite direction as things like generalized trust, important for conducting business transactions are thought, to an important extent, to be determined by the way families organize themselves (Greif, 1989).

opment¹¹ here is meant very broadly, but taking the example of economic development, the modernisation view argues that as countries develop economically the increase in occupational specialisation and rising income and education levels will result in changing gender roles and a decrease in fertility, which together will lead to more gender egalitarian societies (Inglehart and Baker 2000). However as section 3.1. will outline there is also substantial evidence that the reverse is true – that decreasing gender inequality has a positive effect on economic growth and a wide range of other development outcomes (Klasen 2002; Teignier and Cuberes 2014). One conceptual idea not incorporated into this framework, but important to note is that family systems (explained below), or other institutional arrangements, could themselves act as mediating factors in the relationship between development and gender equality, impeding potential progress towards greater gender equality. In chapter 6, in an attempt to address this point, we explore whether economic development or institutional arrangements play a larger role in determining gender equality.

Figure 1.1. A theoretical model



11. Political, social, economic and personal development are all aspects of the general concept of development.

The rest of the introduction elaborates upon the concept of agency, providing theoretical grounding to the analysis of women's position in society, before moving on to explain why it is important to study the position of women in the first place, and the importance of placing the position of women today in its historical context. In section 3 the concept of family systems is developed, and the variables used to measure family systems that are employed in the rest of the dissertation are briefly discussed. This is followed by an exploration of how to give substance to the measurement of gender inequality historically, in particular through the use of family systems. The research questions to be addressed are then elaborated upon, followed by the methodologies to be employed, before giving an overview of the contents of each of the 6 chapters.¹² The introduction subsequently introduces the methodology and various datasets used. Finally I end with a note on the larger debates this book hopes to contribute to, if only tangentially.

SECTION 1.2. AGENCY

Gender inequality, and its relationship to development affects how much freedom women have to determine the course of their lives.¹³ This concept of the freedom to make decisions about one's life is sometimes called agency (Sen 1999; Kabeer 1999), a term which has been used above, and is important in the framing of why gender inequality matters in this dissertation. Agency is a philosophical term that refers to the "capacity" of an agent (individual or other

12. It should be noted at this point that this book is based on a number of published articles (or working papers).

13. One qualifier that should be mentioned here is that in certain situations it could be the case that both men and women have equally low levels of agency, and are therefore equal but not able to exercise the ability to make choices about their lives. Throughout this dissertation, however, attention is not only devoted to measures which show the progress of women against that of men, but also to absolute measures of how well women are faring.

entity) to undertake action in a given environment. In this book the focus is on the individual rather than agency at any other level. Therefore, another way of describing this is to see it as the degree of control that people have over their own lives, or rather the capacity for autonomous decision making. On a personal level agency involves being able to decide over who one's marriage partner is, where one resides, what sort of job one has, etc. This is then as opposed to having these decisions made for you, by custom or others. On a political level this would mean the right and ability to vote, the right to participate in the political process and the right to freedom of expression.

Amartya Sen's writings on the subject are pivotal in this approach. Sen argues that development should be seen as a process of increasing the influence people have over their own lives and that this degree of agency in turn determines the level of development a region may experience (Sen 1999). This then is a virtuous cycle with agency increasing development potential and development leading to increasing agency, at least in an ideal world. Indeed in Sen's view it is this increased agency that should be taken as the very measure of societal development, rather than indicators of economic growth. The agency perspective is now well accepted by the development community (World Bank 2015), but taking the agency view of development to the historical record is something which has rarely been undertaken.

The agency view of development is closely tied to the capabilities approach, another of Sen's contributions to the welfare economics literature. The capabilities approach is a broad, normative framework meant to assess individual well-being, policy design, and societal organisation (Robeyns 2005). The argument is that societal focus should be on what people are actually able to do with their lives. Sen refrains from providing a list of which capabilities should be included in such a list, however others have built upon his work to provide more applied iterations of the framework. Martha Nussbaum, in particular, has made a key contribution to the literature with her list of ten capabilities (Nussbaum 2003). Although none of them explicitly refer to gender, as Ingrid Robeyns (2003) argues, the approach has much scope for use in addressing feminist and gendered questions.

The term agency, to paraphrase a term used by Steven Hitlin and Glen Elder, is a slippery concept (Hitlin and Elder 2006). Part of the slippery nature of the concept is because agency is closely related to a number of other concepts; empowerment and inequality being the most relevant here. Reading Karen Mason we learn that: "Empowerment is about power. It is about the extent to which some categories of people are able to control their own destinies, even when their interests are opposed by those of the other people with whom they interact." (Mason 2003). Looking at the definition of agency provided above (the capacity for autonomous decision making) it seems then that agency and empowerment are very closely related concepts. However Solava Ibrahim and Sabina Alkire provide us with some insight into just how many different definitions of empowerment there are in circulation, or rather just how slippery the concepts are (Ibrahim and Alkire 2007). Table 1 of their article presents a list of 29 of the possible definitions for empowerment used in the literature. Following Alsop et al. (2006) Ibrahim and Alkire split empowerment into two components; that of empowerment as an increase in an individual's agency and that of empowerment as an aspect of the institutional environment which allows people to exercise their agency in a meaningful way (Ibrahim and Alkire 2007). The article goes on to suggest four indicators which could be used to measure agency in future research to make research internationally comparable. Their proposals revolve around a series of questions that could be asked of people when collecting micro-level data. This is useful for future research, but it does not help us to look at the debate in historical context. However their second component of empowerment, the aspects of institutional environment which allow people to exercise their agency in a meaningful way, provides scope for applying such questions to an historical context. Therefore for the exploration of agency and its development over longer periods of time it is institutional measures, which also affect individual aspects of empowerment which should be sought.

We are, therefore, particularly interested in indicators which capture or proxy for the degree of freedom women had to make decisions about their lives in a historical setting, or rather variables which measure aspects of the

institutional environment as it impinges or enables individuals (in particular women) to exercise agency. But why look specifically at women? And why historically? The next two subsections provide the justification for this.

1.2.1. Why women?

Women make up roughly half of the world's population, and are therefore by definition a significant 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 (Inglehart and Norris, 2003). The counterpart of this is that male dominance has been a near universal phenomenon, although the degree to which it is practiced, as highlighted by the opening quotes, and the form it takes varies from culture to culture (Todd 1985). Intrinsically, this is unfair from a Rawlesian social justice, human rights perspective, and improving the lot of such a large share of the population should be a goal in its own right. However, the effects of achieving equality between men and women are greater than those experienced by women alone. This implies that there is also an instrumental importance to focusing on achieving gender equality.

The wider effects of diminishing structural disadvantage of women vis-à-vis men are multiple. For a start, gender inequality has been shown to inhibit economic growth and development (Klasen 2002; Klasen and Lamanna 2009; FAO 2011; McKinsey 2011). The idea that women might be an engine for economic development has risen to prominence in development studies over the past 20 years, largely as a result of the work of Ester Boserup (1970). However a relatively small body of quantitative work has focused on whether one can show the empirical relationship between gender inequality and economic growth and development (Klasen 1999; Teignier and Cuberes 2014). Klasen's results suggest that gender inequality accounts for between 0.4 and a 0.9 percentage points of the difference in growth rates in East Asia and Sub Saharan Africa, South Asia, and the Middle East between 1960 and 1992. This can be attributed to larger gaps in educational equality in Sub Saharan Africa and the Middle

East respectively (Klasen 1999). The UN's Food and Agriculture Organisation argued that increasing gender equality in access to agricultural resources could reduce world hunger by as much as 17 percent (FAO 2011).¹⁴ Finally, recent work by Teignier and Cuberes, using a model whereby women are inhibited from contributing to the labour force in various ways, finds an implied income per capita loss of 27% for Middle Eastern and North African countries and a 10% loss for Europe (Teignier and Cuberes 2014).

Though a society's treatment of women might only have risen to prominence as an indicator and root cause of development over the past twenty years, it is a theme 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). Here he had touched upon something deeper than the disadvantageous position for women vis-à-vis men being important from an intrinsic human rights perspective, or just because of their role in economic development, but rather that achieving equality has more instrumental, far reaching consequences of general "human improvement". Indeed recent research has provided evidence for his broad argument. Improving women's status has been shown to have positive effects on a wide range of development outcomes beyond the purely economic: children's educational attainment (Currie and Moretti 2003; King et al. 1986; Schultz 1988; Strauss and Thomas 1995), the quality of government, particularly by reducing corruption (Dollar, Fishman and Gatti 2001), reduced infant mortality (Dollar and Gatti 1999; Eswaran 2014), improved household efficiency (King and Hill 1997) and reduced fertility where this is necessary (Rosenzweig and Schultz 1982). All of these outcome variables could be argued to fall under general human improvement.

The widespread acceptance of the view originally put forward by Mills, that equality between the sexes is also important for a wider-concept of development (not purely economic) is to be observed in the proliferation, since the

14. For a summary see: <http://www.fao.org/news/story/en/item/52011/icode/>

1990s, of indices aimed at measuring female empowerment and the various development goals of the World Bank and United Nations. These organisations incorporate gender equality either explicitly or implicitly in their programmes. For example, the third Millennium Development Goal is explicitly about gender equality and the fourth (reduction of child mortality), fifth (improve maternal health), and sixth (combat HIV/AIDS) goals implicitly also concern gender equality. Yet many of these organisations focus very much on the present day, ignoring the longer historical precedent which underlies today's outcomes.

1.2.2. *Why historically? Systems, Institutions and Culture*¹⁵

As the above demonstrates much work has been done on the link between women and various development outcomes, however the overwhelming majority has focused on the past 20 years. In general there is a lack of history in much current work on gender inequality. None of the composite gender indices in the literature pre-date 1995, which entails an absence of long-term perspective, crucial for understanding progress towards gender equality.¹⁶ A short term perspective would not take account, for example, of the gains made by women in terms of life expectancy in the period since the 1980s, as everywhere in the world women now live longer than men (Carmichael et. al. 2014).¹⁷ Similarly, the impact of China's one-child policy on *missing girls* can

15. For a further literature on the determinants of gender equality please see chapter 6.

16. Some attempts at back calculation have been made. See, for instance, the 1995 Human Development Report for a back calculation for the year 1972. A consistent series is, however, not readily available (see Chapter 6 for more details and a new composite index extending back to 1950).

17. The UN uses a correction of five years because there is some evidence to show that at a biological level women have a greater life expectancy. However, Klasen (2004) argues that, “[a]s no society, past or present, treated the two sexes equally and the two sexes did not differ in survival-related behaviours, it is hard to separate biology from behaviour. Thus it is hard to say whether females ‘should’ enjoy a longevity advantage of 3, 4, or five years.”

only be observed if the evolution of sex ratios from before the 1980's onwards is taken into account (World Bank 2011). In addition the relationship between gender equality and economic development cannot be explored without long term data. Goldin (2006), for example, argues that the growth in labour force participation by women in the USA between 1930 and 1950 was due to the increase in service-sector jobs; however this is not observable or testable without long-term, time-series data. The decline of footbinding in China provides another example of the importance of exploring history to explain the rise or demise of inequalities. Bossen et al. (2011) show that as mass-produced textiles replaced domestic production in the early 20th century, women's household confinement was questioned, and with it the practice of footbinding. Lastly, such a long-term perspective not only provides an overview of changes in gender inequalities, but also helps in comparing the experience of different countries in the long run. Some inequalities can be pinned on the level of economic development, while others are more institutional in nature, something that becomes apparent when comparing historical gender inequality across the spectrum of institutional and developmental variety in the historical record.¹⁸

The lack of historical perspective in the development literature is, in some ways, surprising seeing as many aspects to do with the unequal treatment of women in comparison with men have to do with deep-seated cultural phenomena, such as son preference in India and China¹⁹, or the prevalence of child marriage in many parts of Africa and Asia. The most recent World Bank report, *Voice and Agency* (2014), introduces a framework for empowering women based on changing social norms but ignores the fact that social norms are based in history, where possible answers could be found as to their effect over

18. See chapter 6

19. Although Klasen and Wink (2002) observe improvements in terms of "missing women" in some countries as their income and education levels increase, they also found that China and India have experienced worsening sex ratios despite their rapid economic growth. Part of this stems from the availability of sex-selective abortion combined with a strong son preference in these countries, in turn associated with long-standing family systems (Dyson and Moore 1983).

the long term and ways to move past the constraints of one's past. For instance, the historical and cultural legacy of Arabic-Islamic countries may partly explain the position of women in some parts of the Middle East today (Inglehart and Norris 2002; Spierings, Smits and Verloo 2009; Korotayev, et al. 2015). Women are disadvantaged by Islamic/Arabic customs and laws concerning marital and inheritance practices (Weldon and Htun 2012). In cross-country analysis, van Staveren shows that gendered institutions are important determinants of women's empowerment (van Staveren 2013). Likewise, in sub-Saharan Africa polygamy is a persistent family practice and associated with gender inequality (Bove and Vallegia 2009; Tertilt 2006). Similarly in India, despite legislation to ensure equal inheritance for sons and daughters, in practice families circumvent these laws, and in many parts of India daughters will receive little, or no inheritance. However North-West European women had good access to labour markets before the Industrial Revolution, when the region was still poor by modern international standards (De Moor and Van Zanden 2010a; Horrell and Humphries 1995). Taken together, these examples point to the fact that practices exist within countries or across regions, which disadvantage women and may well be persistent across generations. These practices will not necessarily change as a result of modernisation and/or economic development. Chapter 6 of this book explores this in more detail.

The position of women in a given society is, therefore, to a significant degree, determined by cultural norms and associated institutional arrangements, sometimes dating back centuries. Culture is, of itself, a very broad concept with applications to different levels of society, and finding ways of capturing this notion empirically can prove challenging. This at least partly explains why culture as an explanatory variable disappeared from economics in the middle decades of the 20th century. As the economists toolkit of statistical and mathematical methods developed, concepts that proved difficult to measure in hard numbers fell by the wayside (Guiso, Sapienza and Zingales 2006). With the increasing interest in New Institutional Economics in the 1990s, economists found reason to look beyond formal institutions and consider informal institutions, which brought them into direct contact with notions of culture (Guiso,

Sapienza and Zingale, 2006). Similarly, through such projects as the World Values Survey and the Demographic Health Surveys, data became available which could be used to capture cultural differences. This recent resurgence of interest in “culture” in economics has generated a body of research showing that the norms and values of a society are persistent and rooted in long lasting institutions, rather than merely lagging behind the development process (Alesina, Giuliano and Nunn 2013; Branisa, Klasen and Ziegler 2010; Branisa, Klasen and Ziegler 2013).

Culture is inextricably linked to history. The beliefs, norms, practices, and rules²⁰ particular to each society together make up the tapestry that we call culture. These features are relatively impervious to change, or rather they change only slowly or in the face of external pressure. Culture is an informal institution (in the sense that it determines how we behave in certain situations and therefore qualifies as one of the “rules of the game” to paraphrase North (1990)) and can in turn influence other formal and informal institutions, for instance through codification in law²¹ (Casson et. al. 2010). How does this then link to women? In defining what features of a society result in certain gender relations Karen Mason defines a gender system as follows:

“a set of beliefs and norms, common practices, and associated sanctions through which the meaning of being male and female and the rights and obligations of males and females of different ages and social statuses are defined. Gender systems typically encompass both a division of labor and stratification of the genders.”(Mason 2001)

Beliefs, norms, and common practices, as used in the Mason definition, all describe various components of what we call culture. This implies that the system of gender relations, in a given setting, is determined by patterns and relationships established in the past. In order to understand gender inequality today we have to pick apart those elements which are associated with

20. Along with artistic expression, food etc.

21. A 2015 IMF discussion paper finds that 90% of the 134 countries studied have at least one gender based legal restriction on the books (IMF 2015).

economic growth and progress, and those which require the addressing of thorny cultural issues.

The historical aspect of a partially institutional problem, therefore remains under-explored, despite the fact that both institutions and attitudes to women change slowly over time, meaning that insights into what caused current day patterns of gendered inequality must be sought in history.²² However the challenge arises in how to capture the institutional determinants of women's position historically on a global scale. One solution offers itself in the form of the various dimensions of family practices. The household and family are key when looking at the position of women, as section 3 will elaborate upon.

SECTION 1.3. FAMILY SYSTEMS

Households are arguably the most fundamental unit of economic and demographic behaviour.²³ Furthermore, household decisions about marriage, children, migration, consumption, savings and investment in physical and human capital, are crucial for economic development and the position of women. It follows that the way households function – who takes which decisions? – is of great importance for economic development. The household is, therefore, a key locus in women's struggle for equality (Eswaran 2014; Malhotra et. al. 2003). Women often shoulder the lion's share of care for the young, the elderly, or the infirm (World Bank, 2015). Much of their time and energy is devoted to the running and upkeep of their households. Although families and households are not necessarily the same (Bender 1967) to a large degree relatives (through blood or marriage) will be the ones within a household who exercise power over a given woman, which means that the ways families organise themselves are important for the analysis of the position of women. Nancy Folbre (1982)

22. One very interesting paper in this regard is that of Grosjean and Khattar (2015), which illustrates that areas of Australia with sex ratios skewed towards men in the 18th century exhibit more conservative attitudes about women's work to this day.

23. The word 'Economics' derives from the greek 'oikos' and 'nomos', or household law.

introduces this idea to a Marxist framework, arguing that the fact that women can be exploited within the household had too long been ignored thanks to the standard assumptions of classical economics that any voluntary exchange cannot feature exploitation. Her contributions led to a growing appreciation of the fact that when examining the position of women the household/family is an important starting point. In a way Folbre's work builds on that of Friedrich Engels (1884) who, in his *The Origin of the Family, Private, Property and the State*, argues that women's subordinate position is a direct result of the rise of alienable property rights in tandem with monogamy, and that this in turn lies at the basis of modern civilisation.²⁴

The family is a pervasive institution, key in establishing power relations in a society. The family is the setting in which children learn about the values and norms of the society they live in, and subconsciously absorb lessons about power and equality, about justice and gender relations (Kok forthcoming). The way people manage power, (e.g. whether the pater familias dominates all decision making or, alternatively, if many household members have a say in family matters) teaches children how to behave both within their (future) families and outside their immediate family environment. The informal institutional arrangements which regulate family life are, therefore, of great importance to the way future societies will function, and societal development as a whole. An author who has elaborated upon this idea in his writings is Emmanuel

24. Engels, in turn, builds on Lewis Henry Morgan who, based on his study of native Americans, proposed that the earliest form of human domestic organization was matrilineal as opposed to patrilineal (Morgan 1877). As inheritance became increasingly important matrilineal forms of kinship organization were replaced by patrilineal ones. It became more important that men were assured of the fact that their children were really theirs (paternal uncertainty principle) so control of female sexuality increased in significance. For more on the evolutionary foundations of monogamy versus polygamy and matrilineal versus patrilineal societies see Fortunato (2011). This research theme has recently gained renewed impetus by studies of present-day hunter gatherer groups with the conclusion that this ancient form of organization exhibits a far greater degree of equality than many current day societies (Dyble et. al. 2015)

Todd. In his book, *The Explanation of Ideology*, he develops the idea that on a global scale the appearance of different political systems can be explained by socialization within the family sphere. These then establish, consciously or unconsciously, the models which people see as being those for good governance, political ideologies, and religions. Throughout the history of political thought there runs a thread which extends through the works of many theorists: family relations between parents and children and between husband and wife form the subconscious model for political systems, and serve to define the relationship between the individual and authority (Todd 1985, p.6; Aristotle 2014).

Families also matter for establishing other power relations such as those of men over women. Across the world families organise themselves very differently, with implications for the position of women. Is marriage, for example, based on consensus or arranged by the family? Do spouses, after marriage, move in with one of their parents to form relatively large multi-generational households, or do they set up their own household? Do marriages entail transfers of capital and goods, and if so, in which direction? To what extent are generations dependent upon each other? Assuming that authority within the family is part of a society's culture, how does the organisational form it takes affect development outcomes such as the accessibility of education and other forms of human capital formation of men and women — and hence, the choice between 'quality' and 'quantity' in terms of reproduction?

Family practices, such as inheritance systems, which single out one favoured male heir, or those which do not allow women to inherit are obviously more detrimental to the position of women than systems that do not stipulate that men must solely inherit. Similarly co-residence is an important determinant of the relationship between generations. Writing in the 1960s Goode (1963) concluded that the world was morphing towards one where every family would be of a nuclear structure. According to anthropologist Michel Verdon, people will strive to live in 'atomistic', nuclear families, in order to maximize their conjugal autonomy (Verdon 1998). Where the older generation controls access to resources, they frequently also control the younger generations choice of marriage partner. Here then, the generational co-residence aspect of

a family-system links directly to the marital behavior of its members, impinging on their agency to freely choose a marriage partner. However, in contrast to Verdon and Goode's predictions, families across the world, although possibly choosing to reside neolocally, continue to differ markedly in the degree of influence family has over the decisions of its members (Kok forthcoming).

The observation that the organisation of families seems to differ across the world, and that this has historical antecedents has been a focus of academic attention for some time. Starting with Frédéric Le Play (1871) and Edvard Westermarck (1891) a successive string of scholars has built up a body of literature based around dividing regions according to traits shown in family forms. William Goode, Emmanuel Todd, Goran Therborn, Peter Laslett, Richard Smith and David Reher all in their own way provide the basis for frameworks of the family. Todd breaks the families of the world down according to different attitudes to inheritance, endogamy, and liberty from parental decision making. He achieves world-coverage with his classification of family systems which, although open to criticism in some of its simplifications (particularly its lumping of Africa into one indefinable category), is impressive in its scope and the amount of material its designer has managed to subsume into the 7 categories he sets out. Reher focuses on (western) Europe, providing useful insight into the "weak" and "strong" family types which he assigns respectively to North-Western and Southern Europe (Reher 1998). Finally, Goran Therborn provides us with a text which is global in scope and pulls together a wealth of knowledge into what he calls a "geocultural road map". He focuses on three themes, patriarchy, the role of marriage and non-marriage in the regulation of sexual behaviour, and lastly fertility and birth control in past, present and future perspective (Therborn 2004). Todd and Therborn act as guiding texts in this research however where this research hopes to go further is in the empirical testing of these sorts of frameworks. In general approaches which try to arrive at classifications of cultures at the macrolevel are susceptible to criticism that they miss fine grain distinctions between different groups within countries and regions. This is certainly an issue, and one which this dissertation acknowledges. This book, however, wishes to demonstrate, in broad-strokes,

how family systems affect gender equality. In order to do this Todd's approach is somewhat better suited to the type of qualitative work undertaken in the later chapters, as he provides a more distinct classification scheme. This will be elaborated upon further in Chapter 3.

In the analysis of the family and economic development a tension exists. On the one hand there are those scholars, such as Goode, who would argue that changes in the family occur because of economic development and to a certain degree this may be the case (Goode, 1963). However in this dissertation the opposite direction is also considered, that underlying differences in the family system, through their impact on female agency, affect the capacity of a region to develop. This direction of reasoning is not unsupported in the literature. An important study in this respect is Todd's work *The Causes of Progress*, which sees the family form as one of the key explanations behind the different economic performances of nations (Todd 1987). More recent work on this subject has been done by Kick et al. (2000) who propose an approach to consider the effects of family characteristics on national outcomes, particularly economic growth. They argue that through human capital development, and other related productive processes the family has a fundamental impact on more macroscopic dynamics such as national economic growth (Kick et al. 2000). Yet, while some work on co-residence (neolocality versus multi-generational household units) in a modern context has been undertaken (see Ruggles and Heggeness 2008), looking at the historical influences of many family practices, such as co-residence, in a development and empowerment context is something that has seemingly been missed.²⁵

In what follows, under the umbrella of the family systems, patterns of generational co-residence and inheritance, as well as rules concerning cousin marriage, alongside monogamy, are picked out as being those indicators of family organisation which shed the most light on gender relations. These are also the elements which translate best into measurable concepts. They are used as indicators of the degree of freedom that women have. These measures are

25. In this book I do not test this link explicitly. For a more direct testing of the link see Dilli, 2015.

interesting in themselves, but what we are really interested in is the values that underlie them. Family systems are used as an approximation of these values. Below Table 1.1. presents the values which each component of the family systems used in this dissertation is theoretically linked to while table 1.2 repeats this, but with the presentation reversed (so values linked to the family system components). As with other forms of disadvantage multiple factors can be compounded to create greater disadvantage. Think of race intersecting with poverty for instance. Here we see gender and generations intersecting, with power of older women over younger also representing diminished agency for the young women. This is a simplified overview. For more discussion of these issues, and explanation of the concepts see chapters 2 and 4.

Table 1.1. Family organisation and the hypothesised values they reflect

Family organization component	Values associated
Inheritance systems (patrilineal, matrilineal, equally between heirs etc.)	Equality, both between brothers and between sisters and brothers
Intergenerational co-residence	Power of the older generation over the younger. Power of older women over younger daughters(-in-law).
Endogamy	Marriage partner defined by custom (in some cases possibly positive for women when combined with large joint families. as when opposed to exogamous joint families, daughters stay near their natal kin) rather than by consent
Monogamy/polygamy	Centrality of married couple, stronger bargaining position of women

Residence strategies (neolocal, patrilocal)	Centrality of married couple, power of older generation over the younger
Premarital sex norms	Power of older generation over the younger

Table 1.2 Values and their associated family practices

Central value	Related family system characteristics
Central married couple	Nuclear households, neolocal residence, monogamous, exogamy
Relatively strong bargaining power of women	Monogamous, bilateral and matrilineal inheritance practices
Consensus in the marriage/ choice of spouse	Exogamy, premarital sex norms

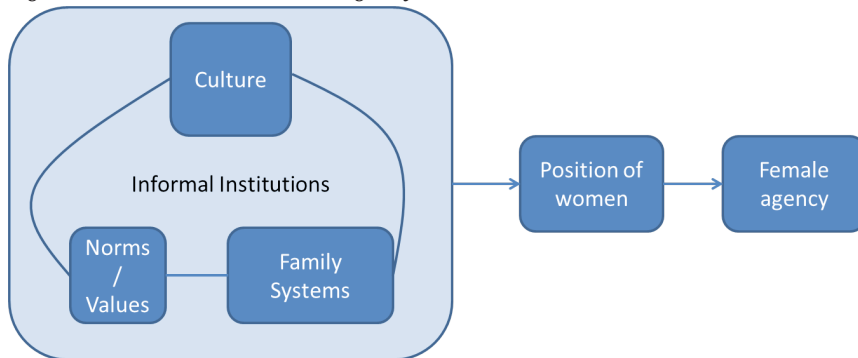
Each of the central values in table 1.2 is associated in some way with increased or diminished agency. The centrality of the married couple, for instance, will give more agency to the newly weds to forge their own lives and decide where and how they live. Similarly a relatively strong bargaining position for women is directly related to enhanced female agency as more bargaining power will give her greater leverage to make important decisions about how she lives. Lastly, consensus in the marriage is an indicator of greater agency as it reflects, to some extent, that power relations within the married couple are relatively equal. Obviously with all these postulated links between the central values and agency there are points of critique. For instance, the centrality of the married couple and neolocal, nuclear households are often held to result in nuclear hardship and may make life more economically precarious (Laslett 1988; Bouman, Zuijderduijn and De Moor 2012). However in the absence of systematic work to compare whether this then has serious detrimental welfare outcomes

for the people of regions dominated by nuclear versus extended households, this dissertation is informed by the idea that greater ability to choose for oneself allows for greater ability for people to realise their life goals, and drives development processes. However that does not mean to say we hold up individualism over collective decision making as the ideal. In the absence of strong family ties, other forms of societal organisation may take the place of families, with important societal benefits (Greif 2006).

In later chapters of this dissertation coresidence, endogamy, and inheritance will be used as indicators of family type. Todd's classification scheme will be tested against George Murdock's data (*The Ethnographic Atlas* 1967) in order to develop a dataset that brings together co-residence, inheritance and endogamy (Chapter 3). Chapter 4 adds to this framework the elements of pre-marital sex norms, location of marital residence, monogamy versus polygamy to illustrate where in Eurasia certain patterns of family organization existed. The other chapters use the family systems variables in order to test their influence on marriage ages and gender equality generally (chapter 2, 5 and 6).

The model below is a representation of what has been described in written form above, namely the interlinkage of culture, norms/values and family systems as parts of the informal institutions of a given society. These informal institutions in turn influence the position of women which then plays through in different agency outcomes.

Figure 1.2. Culture and Female Agency



To sum up, the rationale behind looking at family systems is threefold. Firstly, because they are of such importance for the position of women; secondly, as an example of an informal institution; and lastly, as they are the primary location of socialisation for all children and therefore important to societal development at large.

In linking Sen's ideas about agency to hypotheses at the household level one might distinguish three hypotheses that can be applied to the study of (economic) history; the *Todd hypothesis*, the *gendered Becker hypothesis* and lastly the *North hypothesis* (Carmichael, Dilli and van Zanden 2016). The Todd hypothesis concerns the effects of power relationships and family organisations at the household level replicating themselves at the level of government, or other forms of political organisation (or rather that both levels are a reflection of one another, and in themselves an indicator of deeper, underlying societal values). The gendered Becker hypothesis links differences and changes in the position of women to fertility and educational outcomes, held as important in driving processes of growth and development. Finally, the North hypothesis could be described as an extension of Douglass North's ideas about property rights at the macro level, to the household. Parallels can be drawn between checks and balances on the executive at the state level and the balance of power within the household. Households where men, or older generations have absolute control of resources could be held to be equivalent to extractive institutions at the state level. The arrangement of power in the household is associated with two related phenomena: the model of the transmission of resources to future generations, and minimising the paternal uncertainty principle, to ensure that future generations are indeed ones own offspring, by controlling female sexuality. In its extreme form this entails a form of family organisation which tries to maintain a fixed set of resources handed down from generation to generation, through the male line, thus leaving very little room for resources to be put to their most efficient use. I will return to this model in the concluding chapter.

SECTION 1.4. RESEARCH QUESTIONS, MODEL AND BOOK OVERVIEW

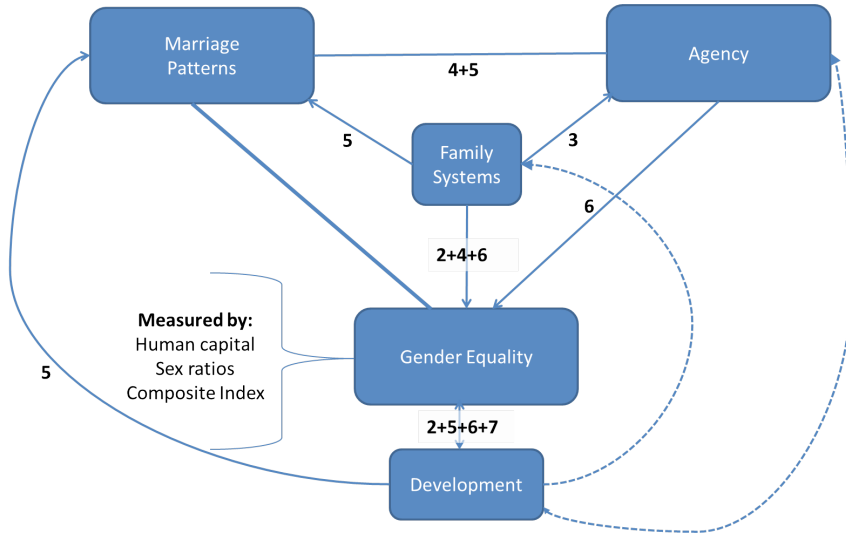
The rest of this book tests various components of the triumvirate structure of hypotheses sketched above (the North, Todd and gendered Becker hypotheses) by exploring three main research questions:

- 1) How can we best measure the position of women in the past, to map differences globally, and provide long-term overviews of the progress made towards equality, or lack thereof?²⁶
 - a) In terms of gender equality? (chapter 2)
 - b) In measures which capture family practices? (chapter 3, 4 and 5)
- 2) What are the determinants of gender equality (chapters 3, 4, 5 and 6)?
- 3) And what is, broadly construed, the relationship between gender equality and development (chapters 2, 6, and 7)?

These chapters each make their own contribution to testing the model shown below:

²⁶. Two important parts of the measurement strategy will be family systems and marriage patterns.

Figure 1.3. Model to be tested



The model highlights the fact that this dissertation uses multiple measures to capture gender equality. Chapters 4 and 5 use marriage patterns, broadly construed, while chapters 2 and 6 employ a composite index of gender equality. At various other points in the book data on sex ratios or human capital are used as indicators of the position of women. The model also shows where each chapter fits into the schematic model presented earlier. The dotted arrows represent relationships which are likely to exist but which I do not test for in the subsequent chapters. Similarly, the arrow between gender equality and marriage patterns is missing a number as this link is not explicitly explored in a separate chapter, as one of the underlying assumptions of this dissertation is that marriage patterns can be used as a measure of gender equality. Some discussion and justification of this is provided below in section 4. The dotted arrows running between development and family systems and development

and agency are those which are very likely to exist in practice but which do not explicitly enter into the analysis which follows.²⁷

The chapters, and the research questions each addresses are presented in the table below.

Table 1.3. An overview of chapters and research questions

Chapter title	Research Question
2 – Measuring gender equality globally Work with Selin Dilli and Auke Rijpma ¹	What progress (or lack thereof) has been made towards achieving gender equality globally in terms of a series of individual variables and together in a composite index? How does this composite index relate to economic development (evidence for Goldin's hypothesis through convergence)?
3 – Testing Todd and Matching Murdock Work with Auke Rijpma ²	Does Murdock's Ethnographic Atlas corroborates Todd's classifications? Do similar family systems appear from these two sources and from more recent data? Do we see an outcome today in terms of attitudes to women in the WVS data?
4- How "unique" was the European marriage pattern? (Hajnal revisited) Work with Jan Luiten van Zanden ³	Defining the EMP in institutional terms, where else do we see the same constellation of family practices? And does this also result in a better position for women?

27. I acknowledge that this may leave the dissertation open to criticism, however the idea here was to test certain relationships with the data available and the nature of the two dotted arrow relationships was simply outside the scope of the current research agenda.

5 - Marriage Patterns in the world today and what explains their variance ⁴	What factors determine age at marriage and spousal age gap as proxies for the agency of women?
6 - Achieving gender equality Work with Selin Dilli and Auke Rijpma ⁵	What factors, both economic and institutional, play a role in determining gender equality measured using the composite index?
7 - Household structure and educational attainment Work with Auke Rijpma and Lotte van der Vleuten ⁶	Under what circumstances does the Quantity-Quality tradeoff occur? What other factors, other than number of siblings, have an influence on the education of children?
8 – Conclusions	Stylised conclusions of the preceding chapters, suggestions for future research and policy implications

Notes to table.

1. Based on two separate publications - Partly published in the OECD's *How Was Life?* and partly submitted to *Feminist Economics* (revise and resubmit).
2. To be published in the *Economic History of Developing Regions*.
3. To be published in the 50th Anniversary Publication of the Cambridge Population History Group: *Population Histories in Context*.
4. Published in *History of the Family*.
5. Published in *CesIFO economic studies*.
6. CGEH working paper.

1.4.1 A Look Ahead (a.k.a. how the chapters fit together)

This dissertation is built up of six chapters, and a conclusion and introduction. Each chapter addresses a separate element of the framework sketched above. The first half of the book consists of three chapters whose focus is the

presentation of data, while the subsequent three chapters are more analytical. The second chapter presents a historical composite index of gender inequality, and demonstrates what progress has been made towards gender equality in various dimensions over the past century. The third introduces the concept of family systems at greater length, and undertakes a testing of Emmanuel Todd's classification scheme against ethnographic data from George Murdock's *Ethnographic Atlas*. The fourth chapter seeks to explore where constellations of the elements of female friendly family systems occur across Eurasia to get a sense of how the "European" Marriage Pattern, and its underlying institutions are distributed more widely. The fifth chapter builds on the ideas about family systems presented in Chapter two and uses the family systems classifications to test the determinants of female age at marriage and spousal age gap using a dataset of non-Western countries from 1950 until 2010. The sixth chapter then tests what the determinants are of gender inequality, on a global scale since 1950, measured using the composite index introduced in chapter two. The seventh chapter turns to micro-data for Europe and the Americas to look at what evidence can be found for the Quantity-Quality tradeoff. There are two important reasons for the inclusion of this chapter. The first is that the Q-Q tradeoff is intimately related to matters of female agency in that more educated women are more likely to have more educated children, and because lower fertility automatically frees up women's time from cycles of childbearing and rearing. The second is that this chapter incorporates the recently developed patriarchy index (Gruber and Szoltysek 2014) to look at whether areas where gender relations are more egalitarian allow for greater investment in children's education. The concluding chapter brings the various threads of the previous six chapters together to present a series of stylized conclusion and suggestions for future avenues of research.

The remainder of this introduction is devoted to an introduction to the various datasets employed, a description of the overarching methodology and a brief note on the use of marriage patterns as a measure of the position of women.

1.5.1 Methodology and Datasets

The chapters of this book employ a number of methods to establish their various arguments. Each chapter elaborates upon its own methods and datasets but here a number of recurring elements are discussed.

In order to achieve the broad coverage implied by the research questions quantitative analysis is the preferred approach. All the chapters of the book include cross-country comparisons and, in some cases, regressions. These analyses cannot always pull apart causal mechanisms but can, in broad strokes, demonstrate what variables are important determinants of which outcomes, which correlations of interest appear, and what avenues for future research should seek to explore. Where possible context is discussed in order to provide added depth to the analysis however in general this work lends itself more to a quantitative rather than a qualitative approach.

The choice for such a wide scope is driven, to some extent, by the sort of plea that Charles Tilly makes in his book *Big Structures, Large Processes, Huge Comparisons; a plea for comparative history* (Tilly 1984). The comparative method is specifically geared towards finding answers to questions as to why a given outcome occurred or failed to occur by comparing and contrasting cases of success and failure. Tilly proposes four types of comparison that a researcher may use; individualising, universalising, variation finding and encompassing comparisons. Individualising comparisons explore one specific case and use other cases as counterpoints to highlight the specificity of the chosen case. Universalising comparisons are employed to establish general patterns. Variation-finding comparisons are used to establish the differences between cases, and are specifically interested in variations of a phenomenon. Lastly, the highest stage of comparison in Tilly's classification system is the encompassing comparison, where researchers aim to identify variation and

then to understand the overarching systems in which these variations occur.²⁸ This dissertation engages with the last three types of comparison to a varying degree, using quantitative techniques to establish general patterns, set one case apart from another and to try and understand the overarching systems. In the proceeding chapters efforts are made to be as transparent as possible about the pitfalls of each approach employed, and the possible weaknesses of the results.

1.5.2. Macro versus micro research

Agency is an individual-level concept. However, at the macro-level it is best captured by variables measuring the outcomes and determinants of increased or diminished agency. For women's agency this means its measurement is closely related to gender inequality, where the measures used to capture the different experiences of the sexes represent underlying differences in the agency of women relative to men. Chapter 2 of this book is framed in terms of measures of gender equality, which are employed as macro level, reflections of the experiences of women at the individual level.

As mentioned above much of the analysis in this dissertation is done at the macro-level, using country or regional statistics to examine long term relationships and patterns. A smaller section of the book looks at micro-level data where individuals are the unit of analysis. Studying any sort of behaviour from a macro perspective you of course lose some level of detail. This is lamentable but largely unavoidable in the context of the scope of the book, and as the aim here is to paint a picture in broad strokes, should not overly weaken the conclusions. However to borrow from pure science (most prominently physics) I would suggest that in history, as in physics the following quote from P.W. Anderson (1972) holds some truth: "The behaviour of large and complex aggregates of elementary particles, it turns out, is not to be understood in term of simple extrapolation of the properties of a few particles. Instead at each

28. Tilly, C. *Big Structures*, pp. 82-83.

level of complexity entirely new properties appear, and the understanding of the new behaviours requires research which I think is as fundamental in its nature as any other”.

The micro-level approach is unquestionably valuable but is not a substitute for macro-level research. The two are complimentary ways of approaching questions, but are best employed to answer somewhat different questions. When seeking to pull apart precise causal mechanisms and what motivates certain behaviour, microdata is superior. However when looking for systematic behaviours within a population, in order to get a sense of the behaviour of the aggregate, to in turn come to general conclusions about the differences between societies over space and time then macro-level research has its own contributions to make. Some aspects of behaviour, such as the general practice of early marriage or marital co-residence practices, only become evident when one looks at the level of a population.

A further argument for the focus on the macrolevel is the fact that it is only at this level that it is possible to conduct analysis using control variables such as economic development, measures of the quality of political institutions, and family systems. These measures are only captured on a macro-level making lower levels of analysis challenging.

In this dissertation the focus is therefore on macrolevel data, supplemented by occasional microdata. Chapter 2 for instance, employs macrolevel indicators but then uses microlevel, current day interview data to test outcomes related to persistent norms and values.

1.5.3. Datasets

Throughout the book a range of different datasets are used. The various datasets are introduced in the respective chapters in which they are employed. However three datasets are more frequently employed, and were specially created for this dissertation, and therefore deserve a brief separate introduction.

The first is the dataset on marriage ages (Carmichael 2011), and is based on various resources, amongst which statistics from the United Nations, World

Bank, Demographic Healthy Surveys, Hajnal (1965), De Moor and van Zanden (2010a) and national censuses. Most of the data is expressed in terms of Singulate Mean Age at Marriage. The SMAM statistic was developed by Hajnal (1953) and is a calculation of the average length of single life expressed in years among those who marry before age 50 (United Nations, 2008).²⁹ This dataset is employed in Chapters 3, 4, 6 and 7. The dataset is linearly interpolated to allow for the construction of a dataset at 5 year intervals. No extrapolation was applied so only where 2 or more datapoints are available can a series be constructed. This dataset will be made available on the CLIO-infra website in the course of 2016.³⁰

Chapters 2,3, 4, 6, and 7 use various iterations of what could be called the “Murdock/Todd/Bolt/Rijpma-Carmichael” dataset. This is the outcome of what follows in Chapter 2 where we explore what the matches and mismatches are between Todd and Murdock’s datasets. Work by Jutta Bolt allows us to match the observations in Murdock to groups at the country level to subsequently come to national-level observations (Bolt 2012). This dataset will be made available on the CLIO-infra website in the course of 2016.³¹

Chapters 4, 6 and 7 use the composite index which has been mentioned above.³² This is composed of a number of different variables which were collected by myself and my various co-authors in the context of the CLIO-Infra project. CLIO-infra is a web-based platform for the sharing and linking of large scale databases on a wide variety of indicators (social, political, economic and institutional) focusing on the past 200 years, although with the scope and am-

29. See the appendix for a short note on the quality of the various observations.

30. For those wishing to access the data in the meantime please contact Sarah Carmichael at s.g.carmichael@uu.nl

31. For those wishing to access the data in the meantime please contact Sarah Carmichael at s.g.carmichael@uu.nl and Auke Rijpma (a.rijpma@uu.nl).

32. In order to achieve maximum coverage for the composite index it was necessary to impute values. This was done using a multiple imputation technique described in more detail in chapter

2.

bition to go back further in time.³³ The indicators available from CLIO-infra were supplemented with data from secondary sources; literature and web-based datasets. The various measures employed capture different aspects of inequality as described in detail in Chapter 3.

Two measures used in this dissertation, however, deserve special attention as they are not commonly used in gender inequality indices today i.e. marriage patterns. The section below discusses these in more detail introducing how marriage ages and spousal age gaps can be seen as an indicator of the position of women.

1.5.4. A note on Marriage patterns:

Under marriage patterns fall a number of different indicators: female age at first marriage, spousal age gap, percentage females unmarried in various age categories, polygamy, percentage permanent female celibates, and the Girl Power Index (the construction of which is the age at marriage for women minus the spousal age gap). This project particularly looks at female age at first marriage and spousal age gaps, although a number of the other measures also appear.³⁴

The topic of marriage is one that has been analysed by many different academics from different disciplinary backgrounds. From sociologists, to anthropologists, to economists, many different thinkers have weighed in with their analysis of the institution of marriage. As an institutional arrangement marriage patterns are an indication of what the social norms and values are surrounding the union of men and women. Nowadays the definition of marriage has shifted in some parts of the world, but this research covers historical territory, so the recent widening in the definition of marriage to include same-

33. A recently published report by the OECD, *How Was Life?*(2014) represents a near complete overview of the type of data available through the website and the kinds of work it can be used for.

34. Polygamy appears in chapters 3 and 4 while the Girl Power Index is discussed in chapter 5.

sex unions is not of vital importance.³⁵ As the “rules of the game” surrounding male-female unions, marriage patterns are pivotal if analysing the position of women in a society, particularly as they are one of the few indicators available for historical periods.

Western Europe is often identified as a region of two “peculiar” developments in terms of the link between family organisation and demographic behaviour (or marriage patterns), and economic change. John Hajnal was one of the first to identify a distinctly European marriage pattern (high age at first marriage for women, high proportion of women never marrying, low spousal age gap combined with high levels of life-cycle servitude) (Hajnal 1965). More recent work by De Moor and van Zanden (2010a) has looked at the historical emergence of the European Marriage Pattern, demonstrating its occurrence in 15th century Holland (De Moor and van Zanden 2010a). Secondly the North Sea area, where the EMP was present early in history, also happened to form the core area of the onset of modern economic growth. Although these two phenomena in Western society, the EMP and the Industrial Revolution, may seem, at first sight, to have developed independently of one another, the cumulative effect of the decisions taken by individuals within households may be greater than previously assumed (De Moor and van Zanden 2010a). Similarly De Vries’ hypothesis about the crucial role of households in the ‘industrious revolution’, has also led economic historians to increasingly focus on the household as a unit of analysis (De Vries 2008). The key point is that marriage plays a pivotal role in family formation (at least it has done historically) and therefore is an important determinant of fertility and investment in the next generation. The next three sections sketch the interpretation of three measures of marriage patterns, namely marriage ages, spousal age gaps and the girl-power index.

35. The author acknowledges that the right to same sex marriage increases agency, however this particular phenomenon would require separate study. As historically marriage was generally limited to being between man and woman, for the purposes of this book homosexual legally sanctified unions would give very little scope for long-term historical analysis.

Obviously there are weaknesses to be considered in the use of marriage patterns as measures of the position of women at a societal level. One important one that comes to mind is the under-registration of child-marriages where child-marriage is illegal. Similarly in some populations large groups of people may choose to co-habit and reproduce without ever marrying. However what the section below demonstrates is that there are still very distinct patterns to be observed in terms of marriage patterns between countries and that these differences coincide to some extent with differences in gender equality as measured by composite indices.

Marriage ages

'If you allow a girl to grow up freely until she has reached the age when her passions are aroused, you run the risk ... of her choosing a person with whom she will never enjoy a happy marriage. You can prevent this by compelling her to marry another man, but as they say in North Banten: "when the heart is baked, don't try to knead it"... you increase the chance of destroying marital fidelity....It's a completely different story for girls between the ages of seven and ten, who have yet to experience the feeling of love.'³⁶

The work by De Moor and van Zanden posits that a society where the average age for women is higher than 25 reflects a relatively high standing of women within that society, determined partially by religious convention and partly by labour market demand for female workers (De Moor and van Zanden 2010a). Later marriage can have important implications: "Those in the evolutionary phases (where women's engagement in the labourforce is curtailed by marriage) married early enough that their adult identity was formed after marriage, whereas those in the revolutionary phase (employment as part of adult identity) married late enough that their identity formation could precede

36. Gooszen, H. (1999) *A demographic history of the Indonesian archipelago, 1880-1942*, p. 147.

marriage.”³⁷ (Goldin 2006). This quote from Claudia Goldin’s 2006 “Richard Ely lecture” nicely captures one of the key elements of later marriage ages, that they allow women the time to develop fully into adults, with their own opinions and identities, before settling into a union that may well last the greater part of their adult life. The quote with which this section opens reflects a similar but reversed rationale. In this Indonesian saying young marriage is encouraged in order to avoid fully formed, headstrong young women making up their own minds. This ties in with other analyses of the reasons for increasing marriage ages. Hertrich, for example, in her study of the increase of age at first marriage in Africa, argues that this is because of a growing recognition of a status for woman besides that of wife and mother (Hertrich 2002).

Marriage ages occur across a spectrum with child marriages (defined as those of girls under 18) representing the most extreme cases of a lack of agency on the part of women. To this day, one in three girls in developing countries is married before the age of 18 and one in nine is married before the age of 15 (ICRW 2014). This measure of female agency has its attractions in that it is a simple measure to grasp the significance of, as opposed to indices of gender empowerment which are often expressed in numbers between 0 and 1 and are sometimes far removed from the underlying data they represent. The additional attraction is the possibility to uncover sources on the marital age of women over long periods of time which give us insight into this proxy for the position of women over long periods of history.

37. The brackets are my own insertions. In Goldin’s piece the terms evolutionary and revolutionary have quite specific meanings. In the evolutionary phase women’s time horizon is that their engagement with the labour force will be short-lived, her identity is not actively entwined with her career or profession, and her status is as a secondary worker, optimizing her time allocation with her husband’s labour market decisions taken as given. The change from evolutionary to revolutionary, in contrast, means a shift to dynamic decision-making with long-term horizons and employment as a part of their identity, rather than as solely a means to a financial end (Goldin, 2006).

As a rough test of marriage ages as a measure of the position of women we compared them to current day measures of the position of women. Marriage ages correlate well with the various gender indices made available by international organisations today. For instance, below the scatterplot of female SMAM and the UN's Gender Inequality Index (GII) for 2007-2008 is presented:

Figure 1.4. *GII and Female SMAM*³⁸



This correlation is remarkably high, even though marriage age is not a part of the construction of this measure, and therefore cannot be an explanation for the high level of correlation. Only seven countries have a standardized residual with an absolute value greater than 2.³⁹ The most extreme outlier is Jamaica. Jamaica is ranked 89th in the world when using the GII ranking but first in the world when looking at female SMAM. The high average marriage age of Jamaican women is difficult to explain. It could be related to the phenomenon of 'consensual unions,' a practice common in Jamaica. In a system of consensual

38. From Carmichael, De Moor and van Zanden, 2011

39. The others are Algeria, Botswana, Malta, Morocco, Namibia and South Africa.

unions couples live in an unwedded state until they have achieved economic stability after which they marry. Men in the Caribbean system seemingly have a low economic position which means they have to delay marriage and often do not play a significant role in the raising of children (Clarke 1957; Smith 1957; Otterbein 1965; Burnard 1994).

Spousal Age gap

Across the world grooms are, on average, older than their wives, however the extent of these gaps differs widely, from an average gap of over 11 years between bride and groom in Afghanistan to less than 0.6 in Austria. Spousal age gaps are related to marriage ages in the sense that girls who marry before their 18th birthday have an increased likelihood of being married to much older men (Mensch 1986; Mensch, Bruce and Greene 1998; NRC/IOM 2005). It therefore could appear that large spousal age gaps are an inherent part of the practice of child marriage. However the large gaps are not just because the girls involved are younger but also because their husbands are generally older than those men who marry older women (NRC/IOM 2005; Jain and Kurz 2007).

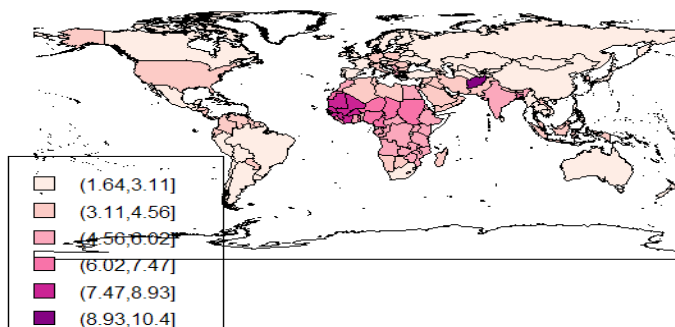
In this dissertation age gaps are used as an indicator of the equality between husband and wife. Results for research conducted in Bangladesh have shown that a smaller age gap is associated with a improved status of the bride, as measured by socioeconomic factors (Amin and Cain 1997). Similarly, research conducted on the experience of the transition to adulthood in developing countries found that girls with substantially older husbands are less likely to be in a position to negotiate, or make household decisions as a result of their lower status, which is in turn a direct result of their age (NRC/IOM 2005). These differences in status result in increased exposure to domestic violence, and in general in a power dynamic which impinges on the young wife's agency (Kishor and Johnson 2004).

Casterline et al. (1986) explored the determinants of spousal age gaps across a sample of 28 countries from Demographic Health Survey data for 48,000 couples. They find that the average age gap across countries cannot be ex-

plained solely by random matching on the marriage market due to shortages of women, but rather that the variation appears to reflect underlying preferences for a certain size of age gap. They postulate that this, in turn, is related to kinship systems and the position of women. It is clear, however, that large spousal age gaps influence the level of power that a woman has within her marital relationship and therefore that spousal age gaps provide one possible indicator of women's agency in marriage. Here the focus is on seeking out the determinants of these gaps at a macrolevel.

The map below gives an indication of the variation in spousal age gaps over the period 1970 until 2010. As can be seen much of Eurasia has a similar spousal age gap in the recent period, with the real variation occurring in the MENA and Sub-Saharan Africa region. Afghanistan stands out as the absolute worst performer in this measure of the position of women

Figure 1.5. Average Spousal Age Gap, 1970-2010



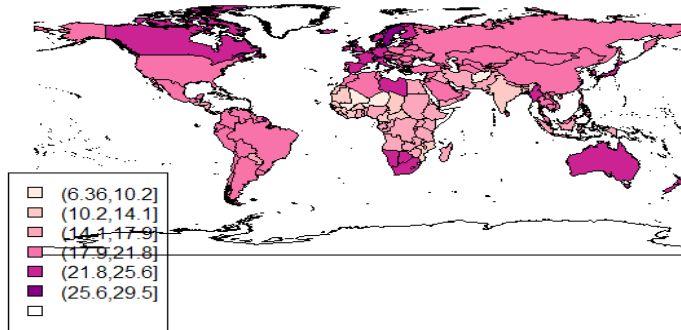
The Girl-power Index

The idea above is that higher marriage ages are associated with a certain values values, namely power of the older generation over the younger, and relatively strong bargaining positions for women. Similarly spousal age gaps are also associated with a relatively strong bargaining position for women and additionally consensus in the marriage (i.e. that the marriage was not an arranged one). In order to capture both sets of values in one measure De Moor and van Zanden (2006) devised a simple index:

$$\text{Female SMAM} - \text{Spousal age gap} = \text{Girl-power index}$$

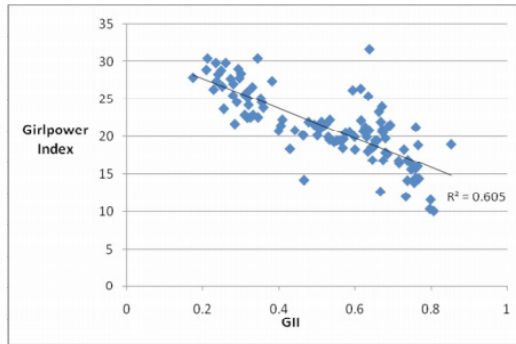
The subtraction of the one from the other allows us to capture in one figure both aspects of the marriage pattern as they are used here. This index is used in Chapter 3 and 4 as an additional outcome variable. Here I include a map of the global distribution of this index for average values from 1970-2010 to give the reader a sense of the variation.

Figure 1.6. Average Girl-Power Index 1970-2010



The map shows that in terms of this index there is much variety throughout the world, with Central Africa and parts of Southern Asia scoring worst. Namibia, Botswana, and South Africa, however, perform similarly to large parts of Western Europe. How does this correlate with current day measures of Gender Inequality? The graph below presents the data for 2010.

Figure 1.7. Girl-power Index against GII



The correlation is slightly stronger than the one presented in Figure 1.5 for Female SMAM. Here, as above, Algeria, Jamaica and Namibia are all still outliers with higher Girl-power scores than would be expected given their GII rankings. Guyana and Mauritius have joined the list of outliers, but both have a very high spousal age gap (more than 6 years). In combination with a low age at marriage this means that for these two countries their Girlpower-Index score is lower than would be expected from looking at the GII. Of the 138 countries analysed by the GII Guyana is ranked at 92nd while it belongs to a group of only 8 countries in the world with a Girlpower-Index of lower than 13.⁴⁰

1.5.5. Capturing Family Systems

How family systems are measured in this dissertation will be discussed in greater detail in chapter 3 however it is important, from a methodological perspective, to note that generally the measures used are time invariant. The reason for this is twofold. Firstly, in order to conduct the sorts of analyses pre-

40. The rest of the group are Niger, Afghanistan, Mali, Bangladesh, Chad, Guinea and Burkina Faso.

sented in the book data-constraints are a relevant factor in determining how certain variables can be captured. In order to achieve near global coverage in a consistent fashion the use of the time-invariant measure of family systems was one of the few feasible options. Secondly, in what follows we will demonstrate that there is a certain level of persistence of earlier forms of family organisation. This is not to deny that the way families are structured changes over time, but what I wish to explore here is whether these historically present family systems continue to resonate today.

SECTION 1.6. CLOSING

Finally, it is useful to think about the bigger question which underlies this dissertation, i.e. How does gender equality or the lack thereof relate to historical processes of development? This is a key question in understanding one of the central questions in economic history – why some countries excelled economically while others fell behind. Although the question is not directly addressed, the various chapters contribute to a research agenda where the position of women both in the family and in society is included in the explanation of the divergence between countries. This dissertation provides a number of measures with which one could capture the position of women historically, and across a wide geographical area. The resultant data can contribute to our understanding of current day gendered outcomes, as well as to processes of development. In the concluding chapter I touch upon the avenues for future research that might be pursued as a result of the work presented here.

Chapter 2: Gender Equality in Historical Perspective: A composite index and a world overview from 1950 until 2000

This chapter brings together work published with Selin Dilli and Auke Rijpma.¹

SECTION 2.1. INTRODUCTION

“I do not wish them [women] to have power over men; but over themselves.”
Mary Wollstonecraft, *A Vindication of the Rights of Woman*

In 1792 Mary Wollstonecraft set out what she saw as the principles for the emancipation of women: education of girls on the same footing as boys, an end to prejudice against women, and that women should be evaluated on their own merits rather than the achievements of their partners. As mentioned elsewhere in this book, the past 200 years has seen marked improvements in these respects as well as many that Wollstonecraft could never have foreseen. Women have gained numerous legal rights, such as now near universal female suffrage, and the implementation of legislation in many countries to ensure equal inheritance for sons and daughters. Girls around the world have achieved vastly increased educational attainment, both in absolute terms and relative to their male compatriots, and women everywhere can now expect to outlive men (World Bank 2011; Carmichael et. al. 2014).

However, for all the progress that has been made, as was highlighted in the introduction, the elimination of discrimination against women is not yet fully achieved. For instance, globally only 23% of parliamentarians are female

1. Carmichael, Dilli and Rijpma 2014 and Dilli, Carmichael and Rijpma (forthcoming).

and sex selective abortion is rife in China and India.² From the persistence of gender pay gaps to the fact that in 2002 there were between 65 and 110 million women missing due to discriminatory access to medical or dietary resources throughout their lives,³ women have not achieved equality with men when it comes to institutional treatment nor well-being outcomes.

As discussed in Chapter 1, this inequality between men and women is not just important from an intrinsic perspective, but also instrumentally. Increasing gender equality has been shown to play a key role in a wide range of development outcomes.⁴ To reiterate what was mentioned in the opening chapter, there is evidence that improving women's access to resources and legal standing vis-à-vis men can improve children's education (Strauss and Thomas 1995; Currie and Moretti 2003), reduce corruption in government (Dollar, Fishman and Gatti 2001), and stimulate economic growth (Klasen 2002; Klasen and Lamanna 2009).⁵

The literature cited above highlights gender equality as a key component in achieving many development goals, and an influence upon various aspects of

2. Between 1991 and 2011 sex ratios for children aged between 0-6 in India fell from 945 to 914 girls per 1000 boys (Jha et al. 2011).

3. Klasen and Wink (2002), using the most recent census returns. The range is due to the use of different methods of calculation. The World Bank (2012) calculates that excess female mortality was in the order of 3.8 million deaths of women per year for 2008, a small decline from the 4.1 million deaths in 1990.

4. Six of the eight United Nations Millennium Development Goals can be linked to female empowerment with the last two also having elements which can only be achieved through tackling female empowerment (United Nations 2013a). See <http://www.unwomen.org/en/news/stories/2013/7/the-gender-dimension-of-the-millennium-development-goals-report-2013>. The World Bank's take on Gender Equality as Smart Economics Project at <http://go.worldbank.org/FSV68RJ1F0>

5. This list is nonexhaustive. Improved female education has, for example, been shown to reduce infant mortality, improve household efficiency, and reduce fertility (Rosenzweig and Schultz 1982; King and Hill 1997; Dollar and Gatti 1999).

wellbeing for both men and women.⁶ Therefore the past two decades have seen many attempts to measure gender equality on a global scale. Because gender equality is a multifaceted concept, measuring it is often done by considering multiple indicators. Looking at single indicators shows that while a country like China has achieved parity between the sexes in educational attainment, the ratio of girls to boys shows a clear inclination to son-preference and the related practice of sex-selective abortion. However, no single measure can hope to capture the wide variety of dimensions in which gender inequality can manifest itself.

To compare the overall performance of countries in achieving gender equality, it is therefore necessary to have a measure that can summarise multiple indicators. This chapter therefore presents a series of separate indicators before showing how the variables interact in a composite measure of gender equality. Additionally, in order to better understand gender equality and its relationship to the development process, it is necessary to find ways to measure the position of women relative to men over time. This chapter therefore seeks to address three interrelated questions. First, how can we measure gender inequality in historical perspective and, second, using these measures, what trends do we observe in global gender equality over the last 100 years? Lastly, we explore the relationship between gender equality and economic development in the long run. These questions are addressed by analysing a wide range of indicators of gender equality, basing ourselves on indicators used in currently available gender equality indices.

This chapter proceeds in six sections. Section 2 discusses the variables that can be used to capture gender equality and the issues arising from the use of historical data, along with a discussion of the quality of the data. Section 3 then moves on to discuss and show the various indicators of gender equality

6. Gender inequality can also denote that men are disadvantaged relative to women (as recently observed in the case of higher educational attainment in some countries). However, as this is historically rarely the direction in which the inequality runs, we investigate the gaps disadvantageous to women.

separately so that for each variable the reader gets a sense of the progress that has been made and issues that remain. This section starts with the presentation of two institutional variables, namely inheritance and suffrage, before moving on to life expectancy, sex ratios, marriage ages, labour force participation, average years of education, and parliamentary activity all presented as ratios of female to male levels. Section 4 then explores the relationship of these individual indicators with GDP per capita both by presenting graphs of the changes in correlations over time and by showing the scatterplots of GDP per capita against the various indicators.

To explore the determinants of gender equality a historically consistent measure of the differences between men and women in various dimensions is required. Section 5 introduces such a measure (the Historical Gender Equality Index, HGEI) using data on various aspects of gender equality from 1950 onwards. Our measure aims to capture gaps between the genders rather than absolute levels of achievement, and in particular seeks to capture those results which stem from the unequal treatment of women.⁷ The index shows worldwide progress in gender equality, even among poor performers in the 1950s such as the Middle East and North Africa (MENA), Sub-Saharan Africa, and Southern Asia. Section 6 shows that while there is progress in achieving gender equality, there is little evidence for convergence. Section 7 concludes and suggests some avenues for future research. This chapter hints towards what will be demonstrated more explicitly in chapter 7, that historical institutions are an important hurdle to be overcome in achieving gender equality.

SECTION 2.2. VARIABLES AND DATA CAPTURING HISTORICAL GENDER EQUALITY

Even though the empowerment of women and closing the gap between the two genders have been widely acknowledged as important development objectives, for the reasons sketched above, finding “methods for systematically

7. This justifies the corrections we make for life expectancy differences and sex ratios between genders which in part stems from biological differences.

measuring and tracking changes in levels of gender equality” is not straightforward (Malhotra 2003). There have been numerous efforts by researchers and international bodies to develop accurate measures of gender equality. The UNDP’s Gender-related Development Index (GDI) and its replacement, the Gender Inequality Index (GII), are perhaps the best-known examples.⁸ Most of these measures have aspects and variables in common, though some focus more on gender inequalities in outcomes (such as gender disparities in human capital), and some focus more on the social institutions underlying gender inequality. One example of an index that focuses on the institutions underlying gender inequality is the Social Institutions and Gender Index (SIGI) compiled by the OECD’s Development Centre (Branisa et al. 2009).⁹ This index looks at a wide range of institutional measures that capture different aspects of gender inequality, such as whether women have the same rights of legal guardianship of their children during marriage, women’s legal protection from rape, and women’s legal access to land.

The fact that women have been placed prominently on the development agenda has resulted in different conceptualisations and measurements of women’s empowerment. However, despite this proliferation of conceptualisations and measures, most studies are limited to the contemporary time period. As mentioned in the introduction to this book none of the available indices start before 1995, meaning we lack a long-term perspective, which is crucial for understanding progress towards gender equality. However, such a long-term perspective is not only important in providing an overview of changes in gender inequalities, but also to compare the experience of different countries in the long run. Some inequalities can be pinned on the level of economic development, while others are more institutional in nature, something that

8. Others include the Gender Empowerment Index by the UNDP, the Social Institutions and Gender Index by the OECD, the Global Gender Gap Index by the World Economic Forum and the Women’s Economic Opportunity Index produced by the Economist Intelligence Unit.

9. This index is also used in chapters 2 and 4

becomes apparent when comparing historical gender inequality across the spectrum of institutional and developmental variety in the historical record.

In sum, the causes of gender equality and the prospects for improvement can be understood only by means of long-term, comparative analysis. This chapter aims to take a first step towards that goal. Though constrained by issues of data availability, we build on the ideas of the various composite gender indices available to choose variables that capture different aspects of gender inequality over time and subsequently provide a composite index running from 1950 until 2010.

2.1. Dimensions of gender equality

Gender disparities are discussed as they fall into four dimensions commonly used in the literature; health, socio-economic status, autonomy in the household, and political power. Each dimension is elaborated upon below.¹⁰

2.1.1. Health

Access to health resources and a subsequent healthy life is key to being able to enjoy other aspects of wellbeing (Sen 1999). The capability of life and physical health has two dimensions: being able to be born, and once born, being able to live a life of normal length in good health (Robeyns 2003). Sex ratios for different age groups give us an indication of this dimension of gender equality. While there are no strong indications of gender bias in the chances of being born in Western societies, neither historically or today,¹¹ sex selective abortion and infanticide has led to millions of “missing girls” in societies (such as China or India) where son preference is prevalent.

10. See table A1 in the appendix to this chapter to see how these dimensions are taken up in the various measures of gender equality available in the literature.

11. See Lynch, K, 2011 for an explanation of this

Gender differences in life expectancy at birth is another indicator where important changes took place over the course of the 20th century. Although currently female life expectancy is higher than that of men across the world, this was not the case at the beginning of the 20th century. Particularly South and South East Asia has seen massive gains in female life expectancy over the past fifty years. Inequality in life expectancy is associated with nutritional inequality and unequal access to medical care. As a measure it sheds light on physical well-being (UNDP 2014).

2.1.2. Socio-economic status

Access to knowledge is in itself important (Sen 1999), but increasing female education is also relevant for increasing women's capacity to make meaningful life decisions and development in general (Klasen and Lamanna 2009). The 2014 World Bank, *Voice and Agency* report highlights that around the world, better educated women are often better able to make and implement decisions and choices, even where gender norms are restrictive (World Bank 2014:xxii). In South Asia and the Middle East and North Africa, more educated women are less likely to have to ask their husband's or family's permission to seek medical care. Even in Western industrialized countries, where gender differences in education at the macro level have disappeared, young women are still less likely to choose Science, Technology, Engineering, or Mathematics (STEM) subjects as a field of study at the tertiary level. This translates into occupational segregation, and associated wage differences (OECD 2013). This however is not captured in the measure employed here, which focuses simply on educational attainment.

Whether or not women are able to be economically independent not only has intrinsic importance, but can also have indirect effects on women's position in the household by strengthening their options beyond marriage and childbearing (Gray 1998; Sen 1990). Employment matters because the income it generates gives women the ability to live their lives independently from men and strengthens their bargaining position in the household. This aspect

is closely linked to the dimension of material resources. For example, Goldin (2014) attributes a major role to the employment of women in explaining the converging gender roles of men and women, which she describes as among the grandest advances in society and the economy in the last century.

The World Bank (2014) also argues that employment is a crucial contributor to women's agency. They show that in Bangladesh, for example, women working outside the home, both in formal and informal employment are more likely to vote. Moreover, on average women who work in wage employment have more control over household resources (World Bank 2014). Developing-country evidence shows that women devote a larger share of the financial resources they control to family rather than personal needs relative to men (see Agarwal 1997 for a review).

2.1.3. Autonomy within the household

As already explained in Chapter 1 the household is where key decisions regarding education, marriage, and labour force participation are made. Interfamilial relations are argued to play a central role in women's disempowerment (Malhorta 2003). Gender equality in the household is therefore important for women and children's wellbeing as well as their economic activities. This capability involves raising children and taking care of other dependents, especially the elderly, and it is highly gendered: women do more nonmarket care for children as well as for the frail, the elderly, and the sick (Robeyns 2003).

Marriage ages are one way to capture the autonomy of women in the household. Child brides are the most extreme example of limited agency in the household, which has implications for the wellbeing of women throughout their lives and for the overall wellbeing of the societies. The World Bank (2014: xviii) observes that each year, almost one in five girls in developing countries becomes pregnant before her 18th birthday. The lifetime opportunity costs of teen pregnancy have been estimated to range from 1 percent of annual gross domestic product in China to as much as 30 percent in Uganda, measured solely by lost income (Chaaban and Cunningham 2011). In developing countries,

pregnancy-related causes are the largest contributor to the mortality of girls ages 15–19—nearly 70,000 deaths annually (UNFPA 2013). Besides the high fertility rates, early marriage ages have other implications such as lowering life expectancy, and higher child and maternal mortality.¹²

2.1.4. Political Power

Political power and representation are key to ensuring that women's voices are heard in determining a country's development path. Women's political voice therefore matters so that their wellbeing is taken into account in the political decision making process. Despite improvements over the course of the 20th century with respect to women's rights in politics, women's participation in national parliaments remains one of the major challenges in achieving gender equality globally: not even one-quarter of the world's parliamentarians are women (Carmichael et al. 2014).

Moreover, empowering women in the field of politics is not only important for intrinsic reasons, but also has consequences for the overall wellbeing of a society, as well as for the performance of women in other dimensions. For instance in India, in states where female parliamentarians have a larger share of seats levels of educational and health investments were also higher (Clots-Figueras 2012).

In line with the Global Gender Gap Index (a measure of gender equality produced by the World Economic Forum¹³), while presenting different dimensions of gender inequality we focus on gender-based gaps in development outcomes in individual countries rather than the actual levels of resources and opportunities available to women. This is so as to evaluate the gender differences independent of a country's level of development. However, a discussion of how women are performing in absolute terms is included when relevant, as it is important to understand whether gender gaps are closing over time due to

12. Marriage ages as a measure of the position of women are elaborated upon in chapters 1 and 3.

13. For more information on this and other composite indices see section 5

improvements in women's position or the worsening of men's position (in the case of life expectancy in parts of Eastern Europe, for example).

2.2. Historical sources

This section describes the data sources for the variables capturing different dimensions of gender inequality. Most of the measures go back to the beginning of the 20th century. The exceptions are the data on education and labour force participation, which are available from 1950 onwards. The table below presents an overview of the variables used in this chapter, along with their source and summary statistics.

Table 2.1 Gender equality variables, coverage and summary statistics

Dimension	Indicator	Range	Mean (sd)	Countries	Years	Source
Health	Life exp. ratio	0.87-1.66	1.08 (0.05)	130	1900-2003	UN (2013b); lifetable.de, Human Mortality Database; Preston (1975)
	Sex ratio	0.83-1.23	0.97 (0.02)	130	1900-2003	Mitchell (2007); UN (2013)
Socio-economic standing	Ave. years schooling ratio	0.03-1.46	0.73 (0.26)	130	1950-2000	Barro and Lee (2010)
	Lab. force part. ratio	0.02-1.29	0.6 (0.24)	130	1945-2003	ILO (2010)
	Inheritance	0-1	0.56 (0.5)	159	1920-2000	Murdock (1976); Hallward-Drie-meier et al. (2013)

Household	Marriage age ratio	0.61-0.98	0.85 (0.07)	129	1900-2003	Carmichael (2013)
Political	Parliament seats ratio	0-0.95	0.06 (0.1)	130	1900-2003	Paxton et al. (2008), online electoral archives
	Suffrage	0-1	0.35 (0.48)	152	1900-2000	Paxton et al. (2008); Przeworski (2009)

Before turning to the variables for which there is annual data, first an overview is given of gender differences in institutions that can be compared globally throughout the 20th century. To start with, global patterns of inheritance practices are examined. These indicate the extent to which women could inherit and are available at three time points; 1920, 1980 and 2000. Information on inheritance practices at the start of the 20th century comes from George Murdock's *Ethnographic Atlas* (1969), updated and turned into country-level variables by Jutta Bolt (2012).¹⁴ It provides information on the gender distribution of inheritance of land and inheritance of movable property. Both are split into 8 possible classifications: missing data, absence of individual property rights, matrilineal (sisters' sons), other matrilineal (i.e. youngest brothers), children with daughters receiving less, children equally, other patrilineal, and patrilineal (sons). To compare these to contemporary data available from the World Bank's Fifty Years of Women's Legal Rights database, a dichotomous scheme had to be used where 0 indicates inequality and 1, equality.¹⁵ Data from the World Bank's legal rights database for the years 1980 and 2000 is used to show changes over time in gendered inheritance practices.

14. See Chapter 2 for more details on this source

15. For more details on the Murdock data as used here, see Rijpma and Carmichael (2013). 0 always indicates inequality biased against women.

As a second measure of the gender equality of the institutional environment, data on the year women were granted the right to vote in national elections is used. This data gives the year when legislation was introduced allowing women to vote for the first time, even if they were granted this right on a narrower basis than men. The data comes from Paxton et al. (2008). Based on this information, a dummy variable was created where a score of 1 was given for the years where women had the right to vote. This information is then mapped for 1913, 1950 and 2000 to give an idea of changes in female suffrage over the past century. In order to have a better overview of gender inequalities in terms of suffrage, data on male suffrage has been gathered from Przeworski (2009).¹⁶

To evaluate the ability of women to live a long (and healthy) life, the chapter first turns to gender differences in life expectancy. UNWPP (United Nations World Population Prospects, 2013b) data is used for the post-1950 period and Clio-infra data for the earlier period (Zijde, 2014). The ratio of men's life expectancy to women's is then calculated.

Women's health can also be evaluated by looking at sex ratios, based on Sen's (1992) concept of missing women. The ratio of women to men for the age category between 0 and 5 is calculated. The focus is on this age category, rather than later stages of life, for two reasons. The first is that three-fifths of missing women go missing during birth and infancy/childhood. Secondly, the phenomenon of missing girls at birth reflects discrimination in the household, resulting from the combination of strong preferences for sons combined with declining fertility and the spread of technologies allowing parents to know the sex of the child before birth (World Bank 2011). Missing girls/women at later stages of the life cycle reflect not only discriminatory practices against women, but also poor institutions, such as lack of healthcare or water and sanitation infrastructure (World Bank 2011). Thus, our measure specifically focuses on a sex selection bias in the period of early infancy where the bias is caused by

16. The year men were granted the right to vote is defined as the year where universal suffrage took place, meaning all men could vote regardless of their income, ethnicity or any restrictions, whereas such a distinction has not been made for women.

abortion, infanticide, and the possibility that young girls are systematically less cared for (Anderson and Ray 2010). The data comes from Mitchell (2007) and the UN (2013).

As an indication of the gender differences in the household, the ratio of female Singulate Mean Age at Marriage (SMAM) to male SMAM is taken. The data comes from Chapter 3 (Carmichael, 2011), and, as described earlier, is based on various resources, amongst which statistics from the United Nations, World Bank, Demographic Healthy Surveys, Hajnal (1965), De Moor and van Zanden (2010a) and national censuses. The SMAM statistic was developed by Hajnal (1965) and is a calculation of the average length of single life expressed in years among those who marry before age 50 (United Nations, 2008). On average men marry younger women; however, where the age gap between spouses is low it is more likely that the partnership will be an equal, companionate one. A large difference in marriage ages is therefore likely to reflect an unequal position of spouses, and even arranged and child marriages (Caldwell, Reddy and Caldwell, 1983).

To explore the differences in the socio-economic position of men and women, we look at data on educational attainment and labour force participation. The data on education comes from Barro and Lee (2010) as their dataset has the best global coverage, split by gender. We use the variable for average years of schooling among the adult population aged over 25 for men and women. More information on the data can be found at <http://www.barrolee.com/>. To measure the differences between men and women in education, the ratio of women's average years of schooling compared to men is taken.

The gender gap in labour force participation is calculated based on data on the size of the labour force from the International Labour Organization (ILO 2010). First, the ratio of women actively participating in the economy compared to the total female population is taken. The same exercise is carried out for males to calculate the percentage of male labor force participation. Finally, the ratio of female labour force participation compared to men is taken to measure the gender inequality in labour force participation. Goldin (1995) finds that higher levels of female labor-force employment tend to exist at lower

income levels when agriculture dominates. However, this does not necessarily imply that women are equal to men in terms of their socio-economic position (Eastin and Prakash 2013). Ideally, therefore, we would have data on non-agricultural labour force participation or alternatively on wage levels. However, at the moment the data does not allow us to make this distinction.

To capture the political position of women, we focus on parliaments. Data on the percentage of seats in parliament held by women comes from the *Women in Parliament, 1945-2003* dataset provided by Paxton et al. (2008). This data was extended back to 1907 when the first woman MP was elected in Finland. Supplementary data was collected on all the countries that had women in parliament for the time period between 1907 and 1945 from various online electoral archives. Based on the percentage of female-held seats in parliament, the ratio of women to men in parliament is derived. The percentage of women in parliament provides only limited insight though. Actual political participation of women would provide more information on women's agency. However, because data on conventional forms of political participation (such as voting trends) are not available due to secret ballot systems, and as a result of the difficulty of capturing unconventional forms of political participation, such as protesting, with quantitative methods, it is very difficult to measure other forms of women's political participation (Carmichael et al. 2014).

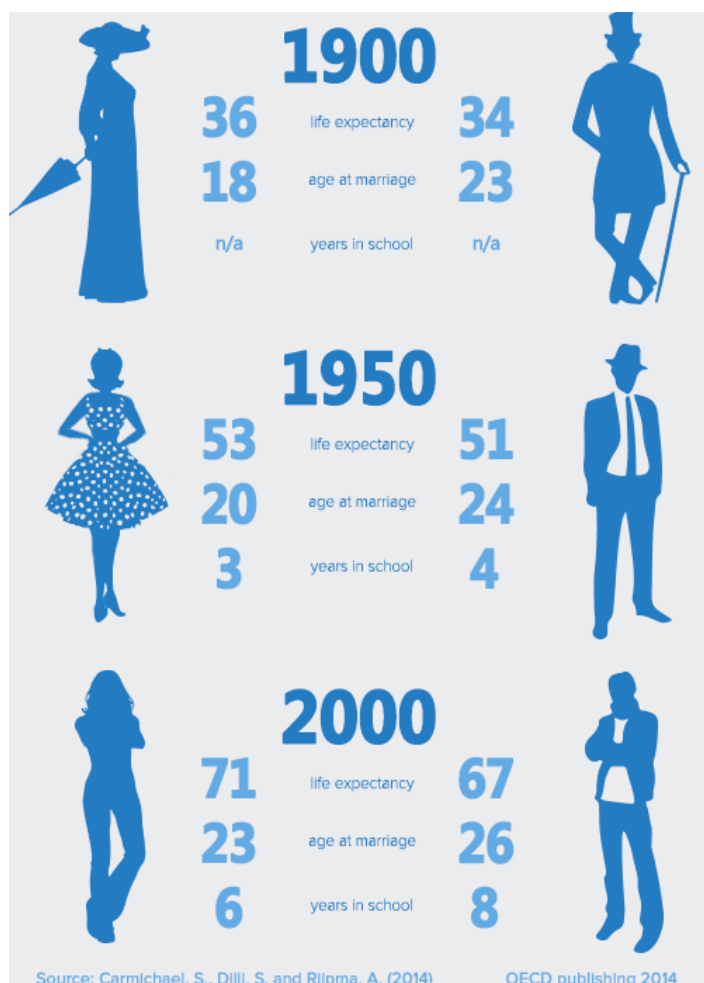
SECTION 2.3. DEVELOPMENTS IN THE SEPARATE INDICATORS

This section presents trends in gender equality for the individual variables described above. First, however, to give an idea of how the position of both women and men has improved in absolute terms over the past 100 years, statistics on the average woman and man in the 1900s, 1950s and 2000 are provided in the figure below. These numbers are population-weighted averages, and cover at least 40 % of the world's population, where missing countries are imputed to alleviate a bias against developing countries for which there is less statistical material available.

2.3.1. Average woman and man

In 1900, the average woman was married shortly before her 18th birthday to a man almost five years older than herself. Based on her life expectancy at birth, she could expect to be married for 18 years seeing as average life expectancy at birth was 35.5 years (though in actual fact she could be expected to be married for far longer, as life expectancy at age 18 will have been higher than that at birth). By the 1950s, however, she could expect to live 12 years longer and would marry just before her 20th birthday. Her educational attainment would be under 3 years compared to her husband's average educational attainment of just under 4. As the benchmark for functional literacy is set in a range between 3 to 5 years of education (UNESCO has adopted the 5-year benchmark in its surveys on this issue), this means the average woman at this time would have limited literacy (Gray, 1969). Fifty years later the equivalent woman would have more than double the educational attainment of her 1950s sister, having spent on average almost 6.5 years in school. At birth she could expect to live 18 years longer than she would have in 1950, to halfway through her 71st year. All in all, compared to her equivalent a century earlier, the average woman in 2000 could expect to live nearly twice as long, marry almost six years later and be literate, thanks to 6.4 years of education attainment.

Figure 2.1. The average woman and man over the 20th century



Source: www.clio-infra.eu.

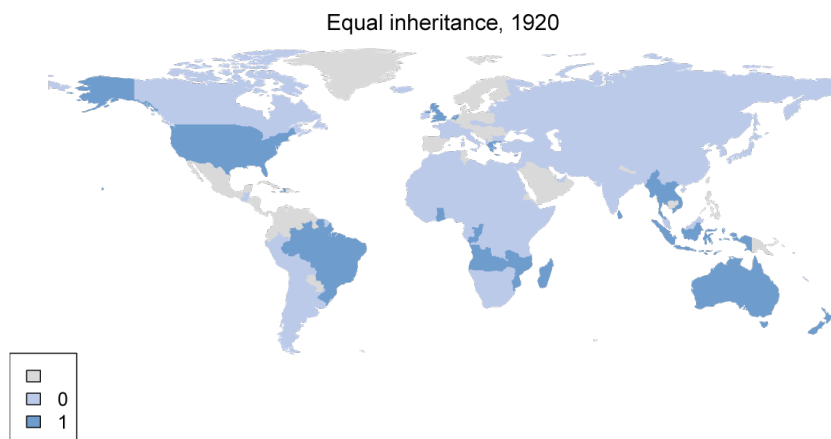
The average man's situation also improved over the course of the 20th century, moving from not seeing his 35th birthday in the 1900s to surpassing his 67th in 2000. His level of education more than doubled from 3.64 years in the 1950s (just shy of functional literacy) to 7.64 years in 2000.

Moving from the abstract notion of the average male and female performance over the 20th century to the institutional environment in which they functioned, two measures of institutional inequality, inheritance and voting rights, are presented below. These measures give an idea of how the institutional/legislative environment is biased against women and thus of women's legal standing historically.

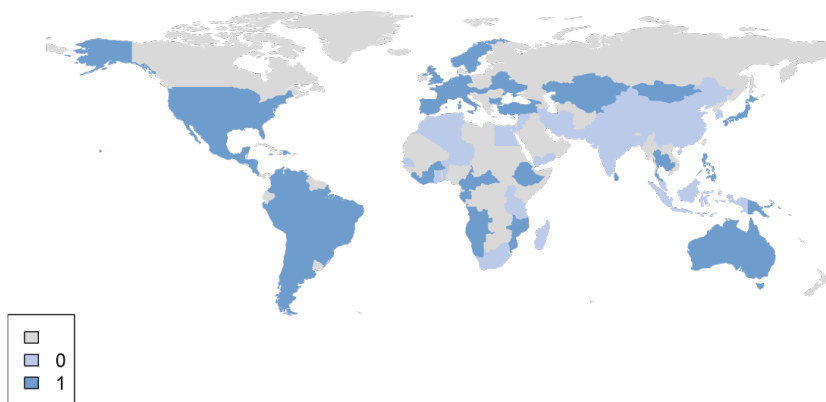
2.3.2. Inheritance

The three maps show gendered inheritance practices for immovables in 1920 (from the Murdock data), 1980 and 2000 (from the Hallward-Dreimeier et al. 2013a). Zero indicates unequal while 1 indicates equality.

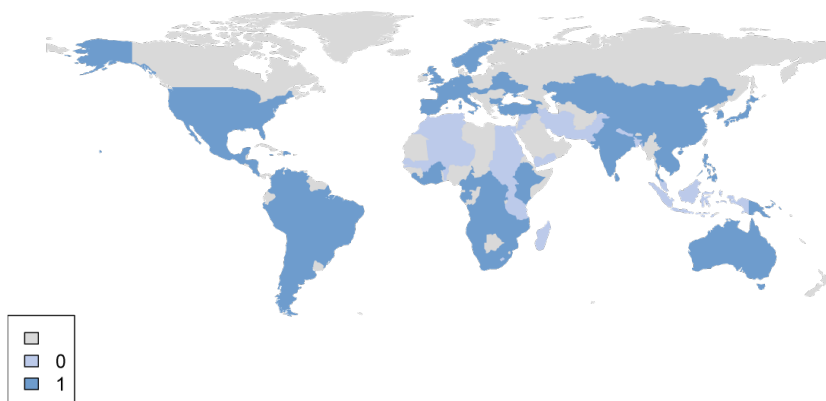
Figure 2.2 Gendered Inheritance systems; 1920, 1980, 2000



Equal inheritance, 1980



Equal inheritance, 2000



Source: www.clio-infra.eu.¹⁷

It becomes clear from the first map that gender equal inheritance systems were far from the norm in the early 20th century. Inheritance systems where daughters receive equal shares can be observed in some European countries, Brazil, and in a handful of countries in Southern Africa and Southeast Asia.¹⁸ By the 1980s substantial changes have taken place. A number of African, Eastern European, Central Asian and South American countries shifted their legislation to require gender equal inheritance (possibly linked to the adoption of the Convention on the Elimination of Discrimination Against Women, CEDAW, by the UN General Assembly in 1979). Meanwhile, the countries that had gender egalitarian inheritance laws in the early 20th century have generally maintained them. Indonesia is an interesting exception to this rule. This is likely due to the Islamisation of Indonesian law following independence (Cammack and Feener 2012; Lukito 2013; and Salim 2008). By 2000, it can be observed that the majority of the world's countries for which there is data had equal inheritance rights, although the Middle East and North Africa (MENA) region remain as a belt of unequal rights.

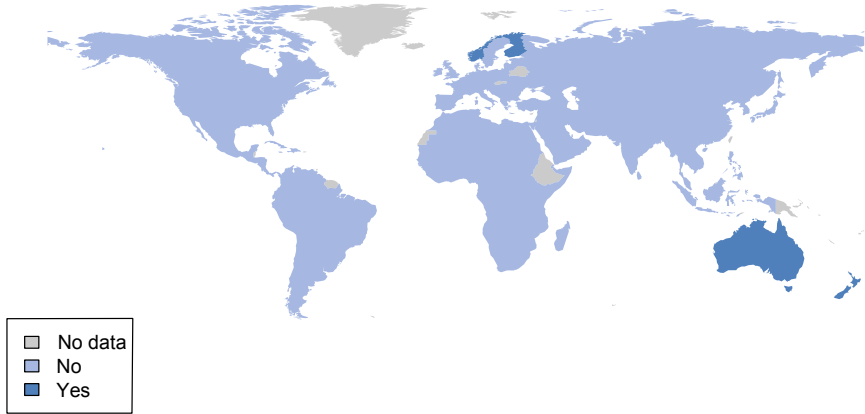
2.3.3. *Suffrage*

Turning now to a different dimension of institutional arrangements, namely suffrage, the next three maps present the geographical distribution of countries where women had the right to vote in 1913, 1950 and 2000.

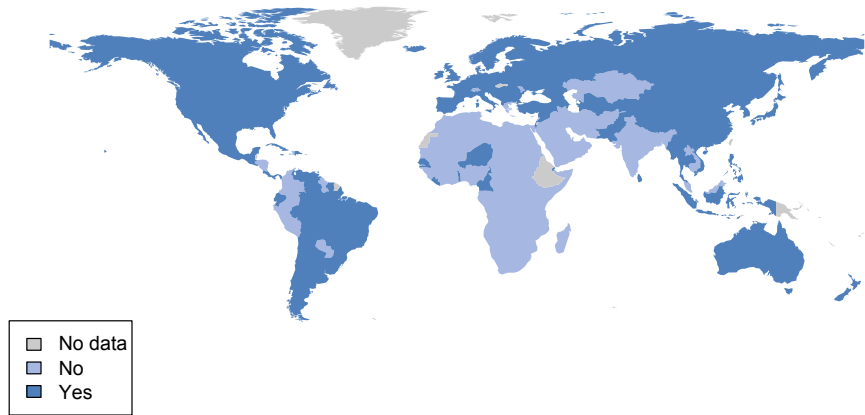
17. The data in the map for 2000 comes from the World Bank publication “Women's Legal Rights over 50 Years: Progress, Stagnation or Regression?”. Here they chose to select 100 countries to code their inheritance systems. The exclusion of Canada and Russia from this list drives a large part of the visual impression. According to the OECD's SIGI index Canada and Russia both have equal inheritance for women: <http://www.genderindex.org/country/canada> and <http://www.genderindex.org/country/russian-federation>

18. In the case of the Scandinavian countries we complemented the Murdock data with information on the year in which legislation was enacted to mandate equal inheritance.

Female suffrage, 1913



Female suffrage, 1950



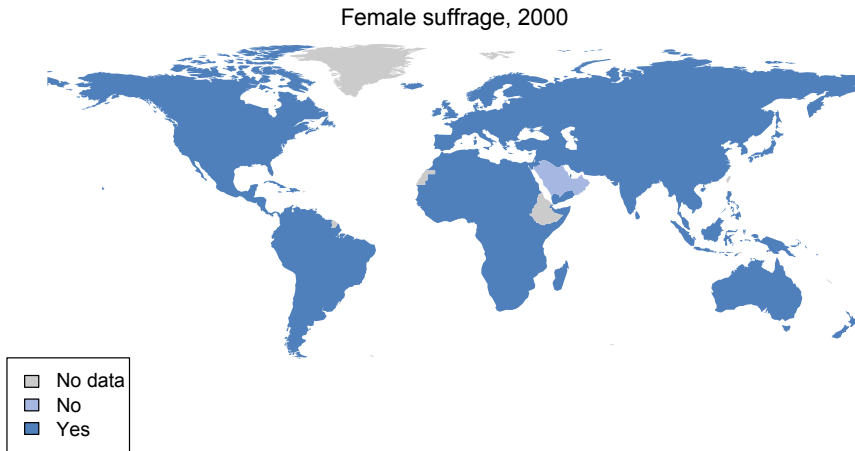


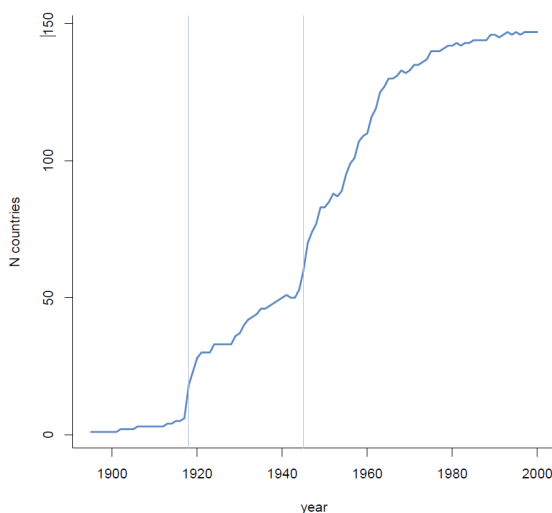
Figure 2.3. Countries where the franchise was extended to women; 1913, 1950 and 2000

Source: www.clio-infra.eu.

It is clear from the maps above that the world has come a long way in providing equal rights to women in politics. In 1913, only New Zealand, Australia, Finland and Norway had granted women the vote. Among these countries, New Zealand (in 1893) became the first to extend the franchise to women. The 1950 map illustrates that the interim period has seen a substantial extension of suffrage to women, as countries where women have the vote outnumber those where only men could vote. Figure 2.4 below shows that the two big jumps in extending the vote to women came after the First and Second World Wars. Regional disparities are also present. All the countries in Western Europe and its Offshoots, except Switzerland, had granted women the right to vote by 1950, whereas this right was denied in most of the countries in the MENA and Sub-Saharan Africa. At the turn of the century, Qatar, Kuwait and Saudi Arabia were the only countries still denying this right to women. However, in 2011 Saudi Arabia, the last country in the world to deny this right, granted women the vote for the next elections, which will take place in 2015, 122 years after the

first country granted women the vote, gender equality in this measure across the globe will have been achieved.

Figure 2.4. Female suffrage, 1900-2000



Source: www.clio-infra.eu.

When considering the gap in years between when men and women received suffrage rights, the formal institutional structure and the overall inequality in a society are important explanatory factors. For instance, in Sub-Saharan Africa most of the post-colonial countries granted men and women the vote either simultaneously (for the first democratic elections) or in quick succession (such as in the case of Gambia)¹⁹; whereas in Latin America and many Western European countries a large gap exists between when men and women got the vote

19. The exception is Namibia, where universal male suffrage was granted in 1926, while it was extended to women only in 1989, following independence.

(relying on the data from Przeworski (2009)). Some of these Western European countries (e.g. England) and its Offshoots (e.g. United States) had already established forms of liberal democracy in the early 19th century (Marshall et al., 2010). During most of the 19th century, however, countries that had a parliamentary election restricted the right to vote to adult men who owned property, had an income or paid taxes (Przeworski 2009; Sokoloff and Engerman 2000). Therefore in these cases it is hard to argue too strongly that gender-specific discrimination existed. Yet the democratisation experience of some countries hints to the fact that gender-related institutions are also a relevant factor in explaining the gap in voting rights between men and women. For instance, in the case of Switzerland, although the first parliament was established in 1848 and universal suffrage to men was granted in 1879 (i.e. without any eligibility restrictions), women gained the right to vote only in 1971. Similar examples can be found in the MENA region where there is a large gap between when the extension of male and female suffrage occurred, as in the case of Saudi Arabia.

Turning now to the measures of female performance relative to men, the trends across the world in the ratios of the various indicators are presented below. Absolute outcomes are highlighted where they are of interest. The variables are discussed in the following order: life expectancy, sex ratios, marriage age ratios, educational attainment, and labour force participation.

2.3.4. Life expectancy

There have been significant improvements in life expectancy in recent decades. This is visible both from the individual country trends and the world average. Since 1950, countries such as Afghanistan and India, which were characterised by significant gender differences in life expectancy, have seen improvements in this measure meaning that they have now almost closed the gap. This can also be seen in the statistics for South and Southeast Asia, which move from a more than 1-year difference in life expectancy in favour of men in 1900 (28.92 compared to 27.66) to almost four years in favour of women in 2000 (65.3 compared to 69.3).

Table 2.2. Gains in life expectancy by gender, 1950-2000 (years)

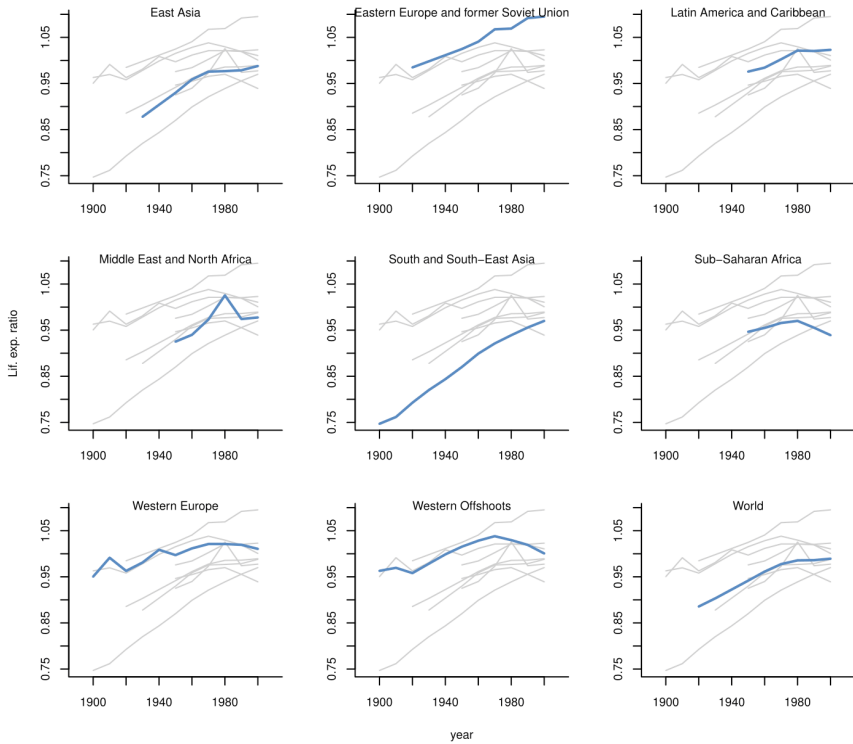
Region	Gain in male life expectancy	Gain in female life expectancy
Eastern Europe	8.13	10.29
Western Offshoots	9.75	9.35
Western Europe	9.87	11.05
Sub-Saharan Africa	10.24	9.2
Latin America	17.55	20.03
South and South East Asia	19.67	21.74
East Asia	21.52	24.32
Middle East and North Africa	23.24	23.64

Source: www.clio-infra.eu.

Looking at the gains that have been made in life expectancy over the last 50 years of the 20th century reveals some interesting patterns. It becomes immediately evident that the regions that have made the most progress in increasing both female and male life expectancy are the MENA, East Asia, and South and Southeast Asia. In East Asia and South and Southeast Asia, the progress in the life expectancy of women was more rapid than that of men. These countries also came from levels of male and female life expectancy of below 50 years (apart from East Asia where female life expectancy stood at 53 years in 1950). A disappointing performer in this context is Sub-Saharan Africa, where life expectancy for men in 1950 was just shy of 40 years and that for women stood at 42.78 years. The gains the region has made, relative to other regions with similarly low levels, are comparatively small, and that for females is the lowest globally. There was less scope for improvement in Europe (both East and West) and in the Western Offshoots, as in 1950 life expectancies for both men and women were around 60 or above. Here Eastern Europe is the disappointing performer. Here, in 1950, life expectancy was just under 60 years for men and 65 for women (compared to 66.5 and 71 for Western Europe). Seen in this

context the increase achieved in the period from 1950 to 2000 leaves it considerably behind its European counterpart. A different facet of this development can also be observed in Figure 2.5 below.

Figure 2.5. Regional distribution of female-to-male ratios for life expectancy



Source: www.clio-infra.eu.

The regional graphs show that for Eastern Europe, Western Europe and the Western Offshoots, the ratio of female to male life expectancy has converged on a ratio in the 1.05–1.08 range. Some argue that the lower male life expect-

tancy reflected in such a ratio is due to societal factors that encourage men to adopt riskier life styles, and hence reflects an inherent gender bias against men (Waldron, 1967). However, the life expectancy difference is something that is found across mammal species, and there is evidence to show that it finds its origins in slower ageing by the female of the species and, at least in humans, to greater resistance to disease and lower mortality rates at all ages for women (Clutton-Brock and Isvaran, 2007; Kalben, 2000; and Austad, 2006).²⁰ The UNDP, in calculations of its gender equality indices, assumes that due to biological advantages women will live, on average, five years longer than men, and the Global Gender Gap report uses a ratio of 1.06 as its benchmark for equality. This is justifiable if gender equality is seen as a situation where men and women achieve equal development outcomes insofar as there are no sound biological reasons for them not to do so (for more information see Anand and Sen 1993; Eskes and Haanen 2007; and Austad 2006). In the composite index presented at the end of this chapter and used in chapter 7 we make this correction.

In the case of Eastern Europe this ratio has even been exceeded. Women in this region have made greater progress in life expectancy than men, leading to an instance where gender inequality now even reflects a disadvantage for men, although male life expectancy has not fallen. If we look at how the average life expectancy of Eastern European men (67.4 years in 2000) ranks against that of men in other regions of the world, only two regions score lower (Sub-Saharan Africa at 50.13 and South and Southeast Asia at 65.3). Western European men live almost ten years longer than their Eastern European counterparts, whereas the gap for women in the two regions is just under six years. Ours would not be the first study to show that Eastern European men are at a heightened risk of mortality. The reasons for this are often attributed to life style factors, largely related to tobacco and alcohol consumption (McKee and

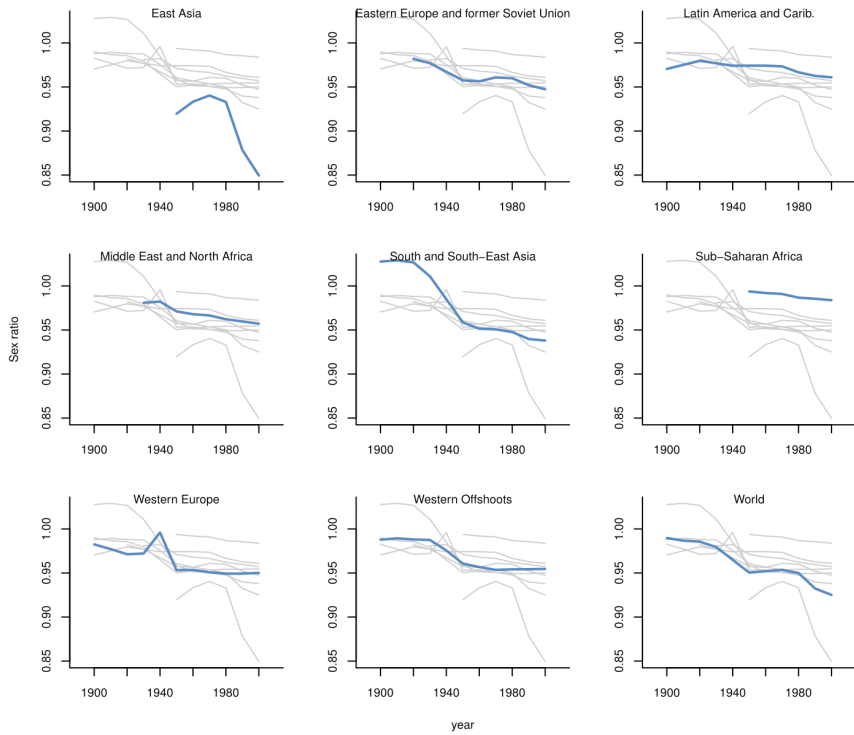
20. The biological reasons for this are still up for debate but may be related to the use-value of grandmothers in caring for grandchildren. Maternal grandmother's can be absolutely certain that their daughter's children are genetically related to them.

Shkolnikov, 2001; Rehm et al., 2007). All other regions (apart from Sub-Saharan Africa) have also made progress in closing the gap for this indicator, with South and Southeast Asia (SSEA) making the most marked progress. The SSEA, the MENA and Sub-Saharan Africa have not managed to catch up with the rest of the world. Sub-Saharan Africa has even, worryingly seen a decline in female life expectancy relative to male over the last decade of the sample. However excluding Sub-Saharan Africa, the world's regions can generally be observed to be converging towards a global ratio of 1.05, reflecting a near-universal advantage of women in life expectancy.

2.3.5. *Sex ratios*

When we look at sex ratios, a different picture emerges. For instance, the position of women in both India and China, when measured this way, has declined sharply. China saw its sex ratio fall rapidly after the introduction of the one-child policy in 1979, from 0.94 female infants for every male infant to 0.83 female infants for every male in 2003. In India, the decline began in the 1930s, with a fall from 1.02 females to males at birth to 0.92 females to males in 2003. However, in other countries there was progress toward gender equality in terms of sex ratios. For instance, Brazil experienced progress starting from the 1870s, and Turkey started to close the gap in gender ratios from 1930 onwards. Both of these countries were initially below the world average.

Figure 2.6. Regional distribution of female-male sex ratios, ages 0–5



Source: www.clio-infra.eu.

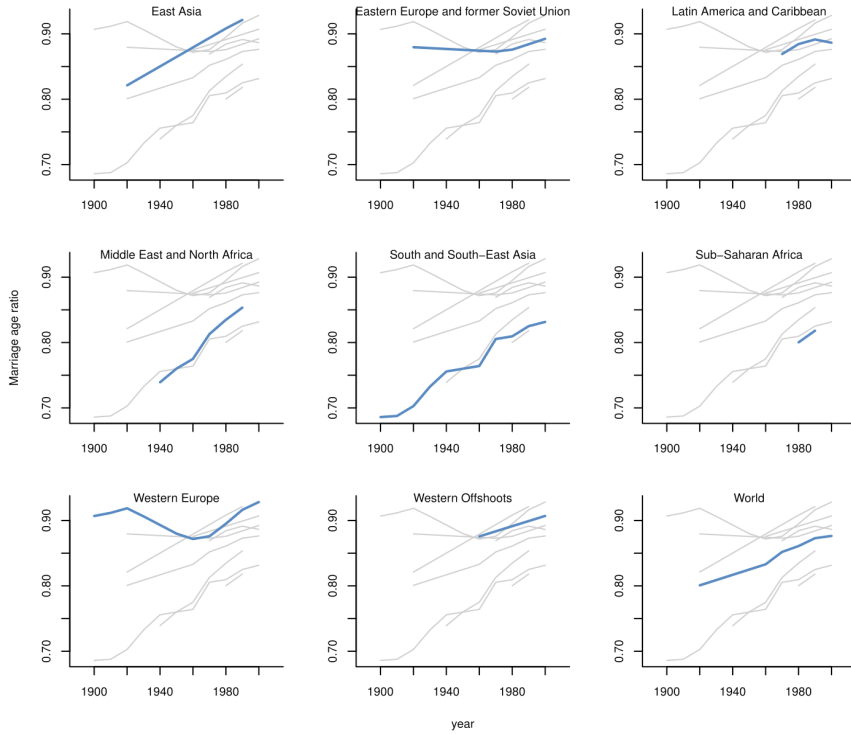
The regional graphs highlight two things. First, in general it is assumed that at birth the ratio between females and males should be about 0.94 (i.e. there are slightly more male births than female) (Grech 2002; Coale 1991). The data presented above is for infants aged 0–5. Therefore, presuming that the 0.94 ratio is a biological norm, what we see in the regional data is that in the early stages of development the higher sex ratios for children aged 0 to 5 illustrates that more boys than girls die in infancy. The arguments made as to why male-biased sex ratios at birth have emerged revolve around higher male mortality in the

early years of life. This aspect of the graphs is therefore not surprising, and the world average graph, to some extent, reflects the better survival chances of male infants thanks to modern medicine. However, the more important picture that emerges is the substantial worsening of sex ratios for women, reflected in the massive drops in East Asia, to a level where there are 85 girls for every 100 boys in the 0-5 age category, and the more moderate drop in South and Southeast Asia. This is largely driven by the behaviour in India and China described above.

2.3.6. Marriage ages

Moving now to the ratio of marriage ages, there are large cross-national differences in the ages at which men and women marry on average. In the most recent observations, Gambia and Egypt have the largest gender differences in marriage ages, while the gap is smallest in Sweden and Japan. Moreover, although the cross-national differences seem to be the result of a long-term process, and progress towards gender equality has been limited, countries such as India, Japan, South Africa and Mexico have nevertheless made headway in this measure of equality.

Figure 2.7. Regional distribution of female-male marriage age ratios



Source: www.clio-infra.eu.

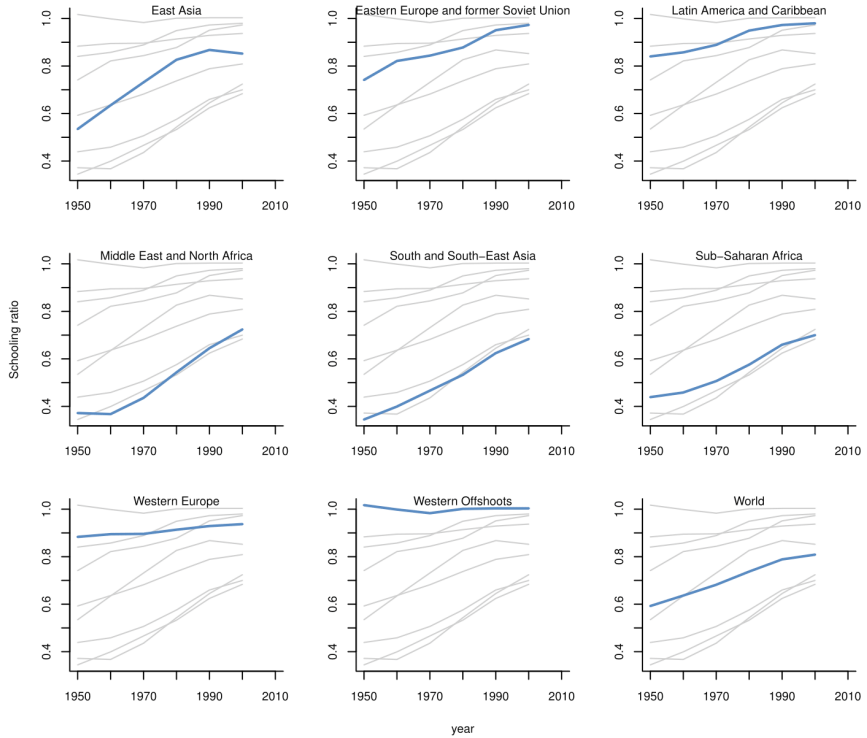
The regional graphs present a mixed picture. East Asia and the MENA have narrowed the age gap between husband and wife, while Western Europe experienced first a decline and then an increase for this ratio. We see that Sub-Saharan Africa continues to hang behind the other regions. Lastly, a large difference continues to exist between the various regions of the world. This observation coincides closely with the findings of Casterline et al. (1986), who demonstrate that spousal age gaps reflect underlying cultural preferences closely related to

concepts of patriarchy, which likely explain the persistent gaps. At the same time marriage ages themselves are sensitive to economic developments and therefore fluctuate over time.

2.3.7. Education

Looking at gender inequalities in education, the last five decades have witnessed significant improvements in terms of closing the gender gap, except in the Western Offshoots where there was no gender gap in the 1950s to begin with. The greatest progress in closing the gap was made in the MENA region, although the countries of Asia and Sub-Saharan Africa have also shown remarkable progress. The countries of the former USSR, Latin America and Western Europe have also closed the gender gap in education over the last 50 years. Moreover, since the 1990s there has been a trend towards women's outcomes in education surpassing those of men, and in some countries women now, on average, achieve higher levels of education than men. This is the case in parts of Western Europe (e.g. England, Sweden) and its Offshoots (e.g. Australia, United States). Among the developing economies, Kenya and India made substantial progress in catching up with developed countries in terms of gender equality in education. In the MENA region, Egypt also made great progress in closing the gender gap in education, but progress was limited in Yemen and Afghanistan.

Figure 2.8. Regional distribution of female-male ratios for average years of education



Source: www.clio-infra.eu.

This progress toward gender equality in education is inextricably linked with the overall progress made in educational attainment, where inequality in years of schooling between and within countries is found to be rapidly decreasing (Murrison and Murtin 2013). Since 1950, average years of schooling of the population aged 25 and above has increased substantially around the world. In South and Southeast Asia and the MENA, average years of schooling has

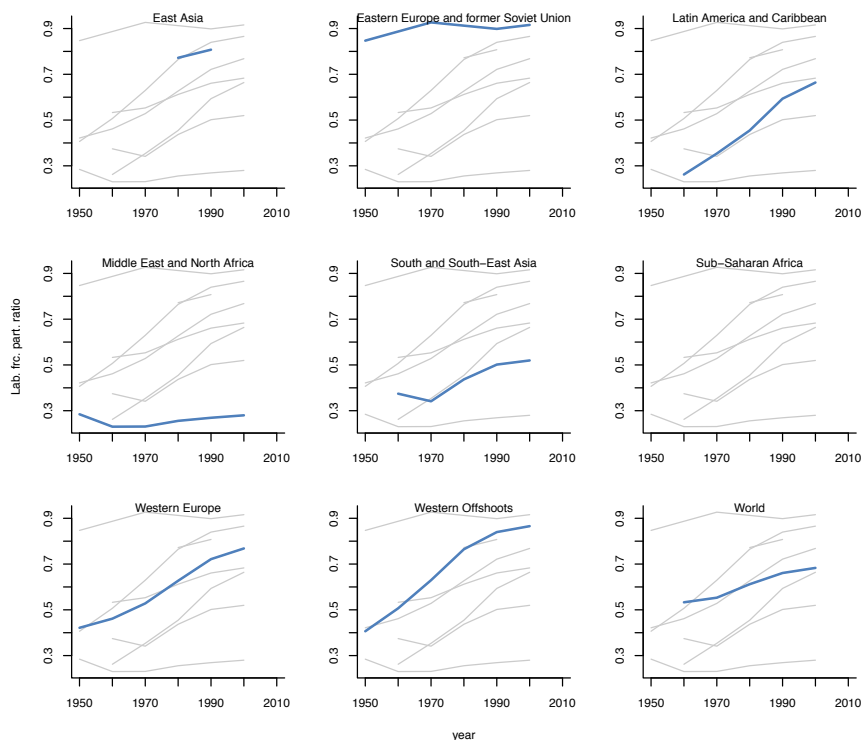
more than doubled since the 1980s. To take the example of female education, in South and Southeast Asia, educational attainment for the female population aged 25 and above increased from an average of 1.43 years in 1950 to 3.45 years in 1980, and was at a level of 5.15 years by 2000. The MENA region made the most progress in increasing average female educational attainment, from an average of 0.91 years in 1950 to 5.71 years in 2000. However what Figure 2.8. also shows is that a sizeable gap remains between those at the front of the pack in terms of achieving gender equality in education (Latin America and the Caribbean, Western Offshoots and Western Europe) while areas like the MENA, Sub-Saharan Africa and South and South-East Asia lag behind.

2.3.8. Labour force participation

The picture for labour force participation is varied. Some regions, such as Latin America and the Caribbean, Western Europe and Western Offshoots have made substantial progress towards achieving equality in this measure. Eastern Europe and the Former Soviet Union stand out as a region of long-lasting equality in this indicator. However for the MENA and South and South-East Asia progress has been decidedly less marked which is reflected in the fairly flat incline of the trend line for the world.²¹

21. Sub-Saharan Africa has no trend line as its coverage did not meet the 40% of the regional population coverage requirement set to make these graphs. There is substantial coverage for Africa indicating very high ratios of female to male work force participation (in the range of 80%)

Figure 2.9. Regional distribution of ratios of female to male labour force participation

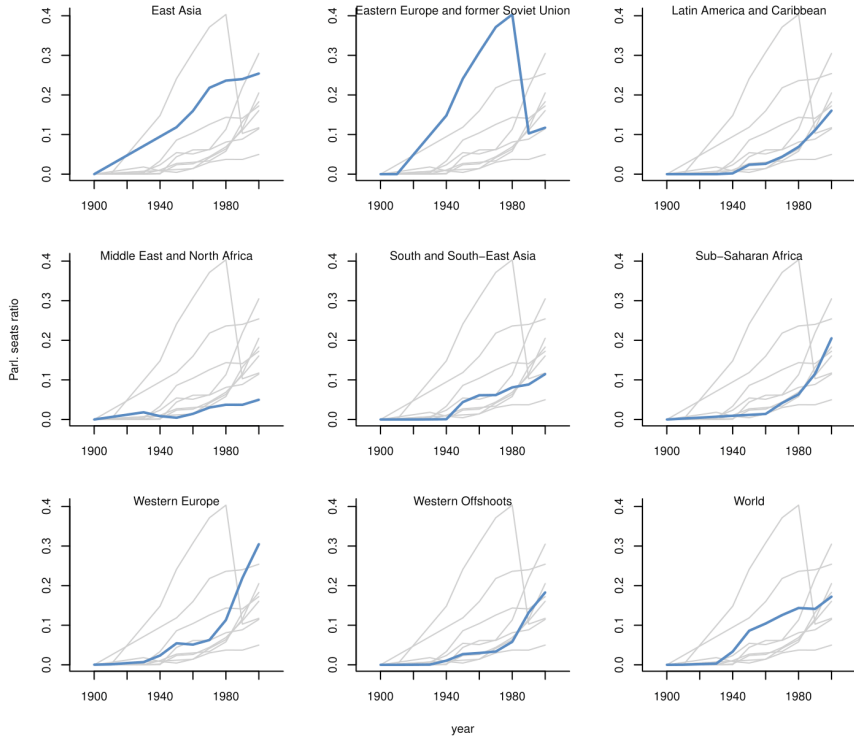


2.3.9. Parliamentary Representation

With respect to women's rights in politics, despite improvements over the course of the 20th century, women's participation in national parliaments remains one of the major challenges in achieving gender equality globally: not even one-quarter of the world's parliamentarians are women. Despite this persistent gap, the past century has played witness to some considerable

progress. The most progress can be observed in Western Europe, Eastern Asia and Eastern Europe and the countries of the former Soviet Union. The case of Eastern Europe and the former Soviet Union is particularly interesting, if one observes the sharp decline in female members of parliament after the collapse of the Union and the subsequent widening gender gap. Former Soviet countries, which were once near the top in the world rankings of female representation, have now fallen far behind Western Europe, and even behind many developing countries. This marked decline is due to the removal of the quota system implemented by the Communists, after the Union had collapsed (Saxonberg 2000). Other regions of the world have shown considerable progress on this measure from the 1950s onwards, except for the MENA. The quota system seems to be an important determinant of the position of women in parliament. This is exemplified in Rwanda, which achieved the highest percentages of women in parliament after the introduction of a quota system in 2002. With 44% female parliamentarians, Rwanda outperformed even Sweden, one of the few countries that has made continuous progress towards closing the gender gap in parliament (without a quota system).

Figure 2.10. Regional distribution of ratios of women-men seats in Parliament



Source: www.clio-infra.eu.

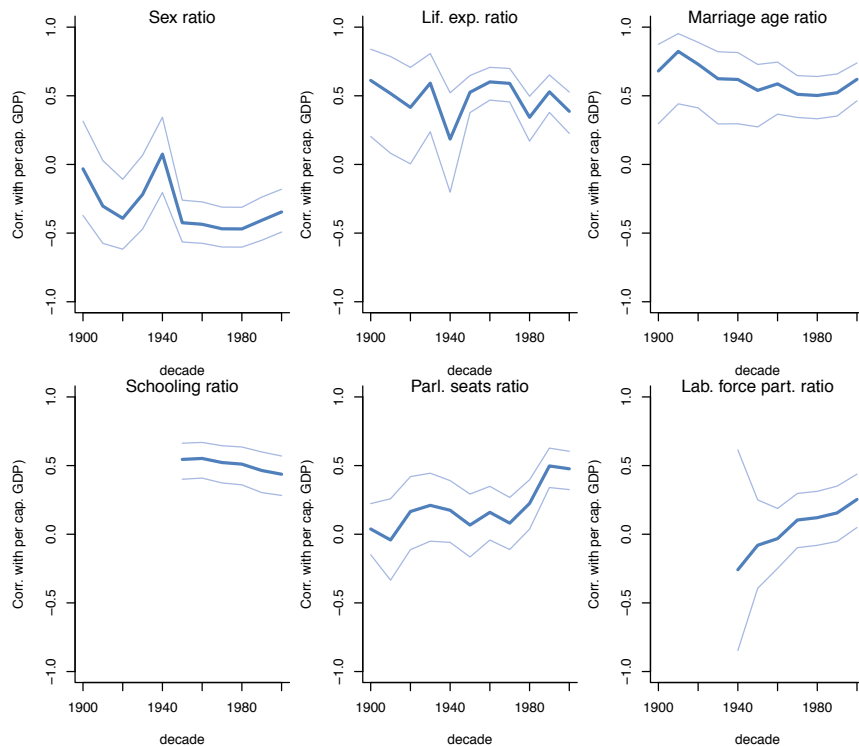
SECTION 2.4. CORRELATION WITH GDP PER CAPITA

This section examines the relationship between the six gender equality indicators presented above and economic development. As explained in the introduction, over the past 20 years researchers and policy-makers have started to pay more attention to gender equality as one of the core drivers of economic

development. Tertilt (2005), for example, concludes that enforcing a ban on polygyny decreases fertility by 40%, increases the savings rate by 70%, and increases output per capita by 170%. In another recent study, Branisa et al. (2013) provide empirical evidence that higher gender inequality is associated with lower female secondary education, higher fertility rates, higher child mortality, and a higher perceived level of corruption in a country. However, these studies mainly provide cross-national evidence rather than evidence over time. So the question remains: has there been a positive association between gender equality and development, captured by GDP per capita, throughout the course of the 20th century?

Figure 2.11 below illustrates that the relationships between the single indicators of gender inequality and GDP per capita differ from each other and change over time. On the y-axis we plot the correlation coefficient of each variable with GDP per capita in a given year (displayed on the x-axis). The relationship between sex ratios and GDP per capita became weaker over time, and even negative after the 1940s (for a discussion, see below). The reverse is true for the relationship between inequality in life expectancy and GDP per capita, which was positive and relatively strong from the early 20th century onwards. Among our indicators, marriage patterns seem to have the strongest persistent relationship with GDP per capita, starting from the 1850s onwards, with a positive link between the two remaining observable throughout the period. Gender equality in parliament also seems to be positively related to GDP per capita, but only after the 1970s. An explanation for this might be sought in the fact that the parliamentary activity of women was very limited in the early period, giving little variation between countries with higher and lower GDP per capita. Since the 1970s we have seen an increase in female parliamentarians, particularly in developed countries.

Figure 2.11. Correlation between gender equality and GDP per capita over time



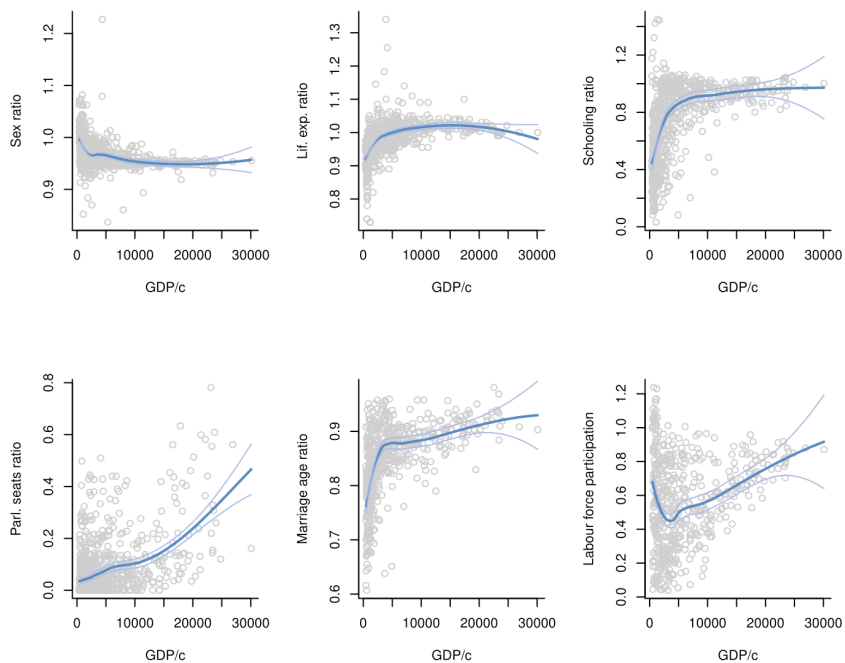
Source: www.clio-infra.eu.

The relationships between the various indicators of gender inequality and GDP per capita are largely positive. The weakly negative association of sex ratios with per capita GDP is the one exception to this rule. The reason for this negative relationship between GDP per capita and the ratio of female to male infants may lie in improved paediatric care. As mentioned above the sex ratio at birth is generally around 1.06 male infants to every female infant. Historically this ratio was balanced out over the life course by the fact that young boys had

higher mortality, due to their biologically determined vulnerability at young ages. However, modern medicine has largely eliminated this mortality bias. This relationship is also likely to be due to the practices mentioned above in countries such as India and China, where increased wealth and access to modern technology are used for sex selective abortion.

Another way of presenting the relationship of the various measures of gender inequality and GDP per capita is to plot them against each other directly. This excludes a direct visualisation of the time element, so is not a dynamic analysis, but it gives a sense of how the various measures of gender inequality relate to GDP per capita across different levels of development. The results of plotting the data this way are shown in Figure 2.12. These plots can also reveal any nonlinear relationship between gender equality and economic development (Mammen and Paxson 2000; Friesen et al. 2012), which are not directly evident from Figure 1.11. This investigation of the underlying data reveals a number of non-linearities. For one, the relation between per capita GDP and gender inequality is often strongest at lower income levels (below 5000 dollars per capita). Life expectancy ratios, sex ratios, schooling ratios and marriage age ratios all have a strong association with per capita GDP in this range. The relationships level off substantially at incomes above 5000 dollars. A non-linear U-shaped relationship between economic development and female labour force participation is often posited, or demonstrated in the literature (Goldin 1995). Here, however, the descending segment of the U, if there is one, is very concentrated in the lower end of the income scale where there is a wide distribution of percentages of female labour force participation. The ratio of female to male members of parliament is the one plot characterised by a linear relationship with GDP per capita.

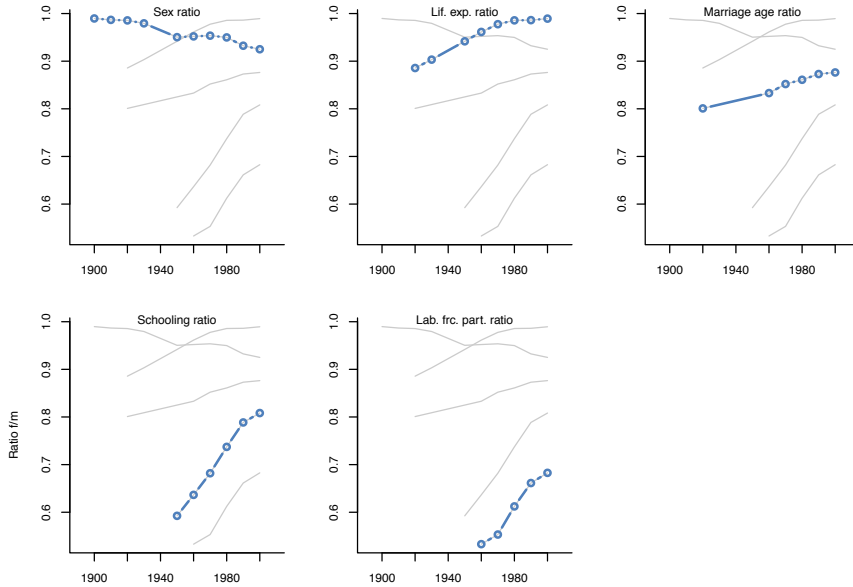
Figure 2.12. Scatter plots of gender equality variables against GDP per capita



Source: www.clio-infra.eu.

The following set of graphs give an impression of the progress that has been made globally over the period 1900-2000 presented in terms of female to male ratios.

Figure 2.13. World Averages of Gender equality over time in the separate variables



We see here that for 4 of the 5 indicators progress towards equality has been made. Life expectancy is the clearest example of equality being achieved. Labour force participation has made the least headway with less than 70 women for every 100 men engaged in the labour force in 2000, globally. The only index which shows a decline is sex ratios (0-5 years). This is due to the fact at the beginning of the period the data showed equal numbers of male and female infants, whereas one would normally expect a slight male bias, however this advantage has been eroded over time.

To sum up, this section has illustrated trends in the well-being of women compared to men across the globe over the past century. Although we still live in a world where women are, on average, disadvantaged relative to men, the situation seems to have improved in the second half of the 20th century, especially from the 1980s onwards. Looking at the dimensions separately, the

good news is that gender equality has been achieved – and for some countries surpassed – in terms of life expectancy and that some progress has been made in closing the gender gap in marriage ages, although structural differences remain between different regions. In some developed countries, parity has also been achieved in educational attainment. However, there is still much scope for progress in all the other dimensions. Women’s participation in politics remains a point of particular concern around the world, even for countries in Western Europe and its Offshoots. The lack of progress on this measure is more striking once regional differences are taken into account. While worldwide average female parliamentary representation in 2010 stood at 17 per cent, the average for the MENA was only five per cent. Missing girls and the associated skewed sex ratios remain a major challenge for China and India. However what remains to be explored is how all these measures work together. In order to do this a composite measure is needed.

SECTION 2.5. A COMPOSITE INDEX

It is important to explore how these different dimensions of gender inequality develop in tandem. The following section introduces the concept of composite indices as they are used in the literature, before introducing our own composite index (the Historical Gender Equality Index – HGEI) which builds on the variables described above.

Combining data into a composite index means that different dimensions can be brought together into a single standardised value. These sorts of measures allow for insights into overall gender inequality at a national level (World Bank 2014). Therefore, the use of composite indicators has proved an attractive proposition, resulting in the development of a number of such measures. The first of these was the United Nations Development Programme (UNDP)’s Gender-Related Development Index (GDI) in 1995. The GDI was an attempt to quantify the impact of gender gaps on the original Human Development Index (HDI). Since then, and in response to various criticisms of the UN measures, many more indices of gender inequality have been produced. These include

the World Economic Forum's Global Gender Gap index, Dijkstra and Hammer's (2000) Relative Status of Women index, the African Gender Status Index, Social Watch's Gender Equality Index and the Women's Economic Opportunity Index produced by the Economist's Intelligence Unit.

However one thing that all these measures lack is historical coverage.²² Despite the fact that women have been placed prominently on the development agenda, resulting in different conceptualization and measurement of women's empowerment, currently most studies are limited to the contemporary time period. The GDI, which starts in 1995, is the earliest available measure and was replaced in 2010 by the Gender Inequality Index (Klasen 2006).

This means there is little long-term perspective on how gender equality has changed over time. This begs questions like how and when does gender equality change over time how do these shifts relate to economic development? Historical measures are needed to understand how gender inequality is determined and to fully evaluate what progress has been made. Such data is also necessary for testing different theories on the determinants of gender equality such as the role of modernisation or institutions (see chapter 7; Dilli, forthcoming). Long-term panel data can also help in establishing the robustness and direction of causality of the link between women's empowerment and development (Doepke et al. 2012). It is also in this form that we can test for the existence of a non-linear relationship between gender equality and development (Boserup 1970; Goldin 1995; Eastin and Prakash 2013).

22. The World Bank's (2014) *Voice and Agency* report highlights data challenges, yet frames these in terms of collecting better data in the future rather than gaining a better understanding of the past. However, the report also highlights the fact social norms and customary law play a key role in defining women's empowerment. Both these facets are rooted in the longer history of a country and therefore exploring the long-term processes by which greater equality is achieved or more unequal relationships persist is key to understanding present day outcomes.

2.5.1. Gender Indices to date

In order to provide measures and advocacy tools to highlight gender inequality many organisations have developed composite indices. However there are important differences between what the various indices measure. This section will compare the most prominent gender indices and highlight what they measure, how they are constructed, and possible flaws.

First generation indices

The first two composite indices attempting to measure gender inequality on a global scale were introduced by the UN in their 1995 Human Development Report: the GDI (Gender Related Development Index) and the GEM (Gender Empowerment Measure). The GDI was the gender weighted version of the Human Development Index (HDI), and as such did not capture gender inequalities directly but was rather meant to show the extent to which the HDI (made up of life expectancy, literacy and per capita income) was affected if gender inequalities were taken into account. The GEM, on the other hand, aimed to capture the extent to which women could participate in economic and political activities. It looked at what jobs women held, share of parliamentary seats held by woman, and a measure of economic resources using unadjusted GDP per capita. Both the GDI and the GEM, therefore, mixed overall welfare levels with measures of gender equality and came in for much criticisms as a result (Dijkstra 2006; Permanyer 2010; Klasen 2006). This made these measures hard to interpret, and inappropriate for analyses of the determinants of gender gaps. For these reasons the UNDP retired these two indices in 2010.

Second Generation indices

Dijkstra and Hammer (2000), as a critique on the UN measures, developed the Relative Status of Women (RSW) index. They used the same variables as the GDI but, instead of comparing them to an absolute level of wellbeing, looked

at the ratios between men and women. They highlight that any index which seeks to evaluate the way that countries perform in terms of gender equality needs to measure the position of women compared to that of men, and that doing this significantly changes the ranking of countries in terms of gender inequality (Dijkstra and Hammer, 2000). The UN responded to this and other criticism by introducing the Gender Inequality Index (GII) to replace the GDI and the GEM. However, again this measure captures deviation from the ideal of gender equality and is not intuitively interpretable (Klasen and Schüler 2011, Permanyer 2013).

In 2005 the World Economic Forum launched a measure of gender equality looking at the extent to which women have achieved equality to men. They do this by bringing together four dimensions in their Global Gender Gap Report and a related Index (GGG): economic participation and opportunity, educational attainment, health and survival, and political empowerment. Each of these is related to a subindex, which is built up of various ratios reflecting different elements of the dimension. Economic participation and opportunity is, for instance, captured by the difference in labour force participation rates, female to male earned incomes, and the ratio of female to male legislators, senior officials, managers and in technical and professional jobs. A complete overview of all the variables can be found in the World Economic Forum's (2013, p. 5) report. The data is converted to ratios and countries are not rewarded for surpassing the parity benchmark. This is because the GGG aims to measure gender equality rather than women's empowerment. This measure allows both for comparisons between countries as well as to notions of an ideal level of equality. Leaving the equality benchmarks fixed over time also means that comparisons can be made between years. The HGEI is based upon the methods used in the construction of the GGG.

Other indices

The list of measures mentioned above is by no means exhaustive. A multitude of other measures exist, such as White's (1997) Gender Equality index (GEQ),

Forsythe's Gender Inequality (GI), the Gender Equality Index, and the Standardised Index of Gender Equality. A further index that deserves special mention is the Social Institutions and Gender Index by the OECD. The SIGI brings together data on a variety of social institutions that influence the roles of the genders. This measure is a useful addition to the literature in terms of getting to grips with the national differences in women's institutional position. From a historical perspective, however, it is hard to capture the same variables (see above for a presentation of inheritance practices over time). An overview of the various measures of gender inequality, their advantages and disadvantages is included in appendix 2.1.

Criticism and Defence of Composite Indicators

Composite indicators of gender equality can be criticised from a number of perspectives. As we have seen, the conflation of gender outcomes with development outcomes meant that the GDI and GEM were biased towards showing better gender outcomes in more developed countries. One has to carefully frame what it is one seeks to measure so as not to confuse the interpretation of any composite indicator.

Furthermore, composite indicators are calculated on the macro level, that is, for countries or states. This means they face criticism for their aggregated approach as gender inequality affects people at the individual level. However, in order to link gender equality to a host of other development outcomes macro level indicators are a necessity. Policy is determined at the macro-level and trends can be observed despite the level of aggregation. Composite indicators are a tool which can inform policy and avenues of future research. In the case of this paper a composite index represents one of the best ways to capture changes in gender equality over time, as individual level data is often not available. Composite indicators also allow us to bring different elements of a multidimensional concept such as gender equality together (World Bank 2014).

2.5.2 *Introducing the Historical Composite Gender Inequality Index*

All of the gender indices mentioned above capture different dimensions in which gender inequality can occur.²³ These dimensions vary between indices (see appendix 2.1, Table 2A.2). In this section, we discuss the dimensions that are covered in the Historical Gender Equality Index and how each dimension matters for the position of women. The dimensions differ slightly from those in Table 2A.2.

First of all, we are interested in providing a global overview of gender equality, which means our choice of dimensions is constrained by international comparability. We therefore use an approach closer to Nussbaum (1995, 2000, 2003) who defines a list of capabilities that she defends as universally valid (see a critique of this approach in Robeyns 2003). Issues related to data availability also play a crucial role in determining the dimensions we can include in our composite index. For instance, data on time allocation (or rather access to leisure and sleep) is hard to obtain, let alone for the historical period. For gender identity a similar issue arises combined with the fact that these sorts of qualitative measures do not fit well in the scheme of a composite indicator. Bodily autonomy is a dimension for which historical data might become available in the future and for which there is reasonably detailed data available for the present day. However, at this time it is not possible to include it in our index.

Another issue is that although the composite indices created at the macro-level aim to include gender-sensitive well-being indices in line with Sen's capability approach; these indices, as well as our index compare countries, not individuals.²⁴ Agency is an individual-level concept. This means that our index can only provide macro-level reflections of the experiences of women at the

23. The list though, is non exhaustive. Gender equality can occur in other dimensions not captured by these indices, for instance social capital, so all composite measures only capture dimensions that can be measured at the macrolevel.

24. For the contemporary indices see UNDP (1995) and Dijkstra and Hammer (2000). For criticism of their macro approach see Robeyns (2003).

individual level. Thus we are not able to capture the diversity and the size of the gender gap between individuals or groups within countries, depending on their socio-demographic, economic or cultural background, such as age group, health status, country of origin, income, or urban-rural.

Construction of the Historical Gender Equality Index

Variables

We use the variables described in section 2 and 3 to create a composite indicator which covers the dimensions of health, autonomy within the household, socio-economic position and political power. See Table 2.1 above for the descriptive statistics of the non-imputed data.

Important to note is that for the composite index, in contrast to the data presented above, we take into account the assumption made by the UN amongst others that, due to biological advantages, women will live on average five years longer than men (see Eskes and Haanen 2007; Austad 2006). Before taking the ratio for the composite index, therefore, this difference was corrected for.²⁵

Method

Missing Values

Before we describe the construction of the Historical Gender Equality Index

25. Some would argue against this correction because reduced male life expectancy is due to societal factors that encourage men to adopt riskier life styles and hence reflects an inherent gender bias against men (Waldron, 1967), but the life expectancy difference is something that is found across mammal species and there is evidence that it finds its origins in slower aging by the female of the species and, at least in humans, to greater resistance to disease and lower mortality rates at all ages for women (Clutton-Brock and Isvaran, 2007, Kalben 2000 and Austad 2006).

(referred to as HGEI from here onwards), first we must address how missing values in the variables underlying the HGEI were dealt with.

As highlighted in the previous sections, all the indicators included in the composite index capture important aspects of gender equality. Thus, rather than excluding the indicators to improve coverage, a multiple imputation technique was used, which estimates the missing values using a bootstrapping-based algorithm. This technique has been shown to outperform other commonly used techniques in dealing with missing values such as dummy variable adjustment, mean imputation or list-wise deletion (Allison 2002). It also prevents “loss of valuable information at best and severe selection bias” (King et al. 2001: 49).

Prior to multiple imputation, countries which completely lacked observations on any of the six measures we used to create the composite index were dropped, so that we had at least one observation for each variable before the values were imputed. This selection left us with 129 countries which had information on all the dimensions.

We used the Amelia II package in R to predict the missing values for all the indicators presented in Table 1 in section 3.1 above. Amelia II can impute the missing values separately for each country and each wave of the countries (Honaker and King 2010). Ignoring the nested structure of the data (in our case years nested within countries) would result in imprecise imputations (van Buuren 2010). To get more precise imputations of the missing values of the gender inequality measures, we include auxiliary variables,²⁶ namely: economic development (GDP per capita), religion (the percentage of the population that have Catholic, Protestant or Muslim denomination), total public spending on education as a percentage of GDP, oil rents as a percentage of GDP, and the percentage of the labour force employed in the industrial and service sector. All these indicators have been included as additional variables in the imputation model as they have been shown to be related to overall country-level

26. An auxiliary variable is not a variable of interest, but is instead employed to improve the estimation of the variables of interest (Lavrakas 2008)

gender equality (Dilli et al. 2014; Spierings et al. 2009). The data coverage and the descriptive statistics of the variables after the imputation are provided in Table 2.4 below.

Construction of the Historical Gender Equality Index

We aim to keep our composite index as simple as possible. As argued by Permyer (2010), sophisticated techniques like latent variable models can produce “sophisticated results” that are however difficult for researchers and policy makers to interpret. Our primary interest lies in having a composite measure that is easily comparable over time and between countries. We carried out a Principal Component Analysis (PCA) to evaluate whether our indicators tap into one single component, in our case, gender equality. The eigenvalue for the first component was above 1 (eigenvalue= 2.15), justifying the construction of a single measure of gender equality. The scale has internal consistency with a Cronbach’s alpha of 0.64.

In constructing the HGEL, we follow in the footsteps of Hausman et al. (2012) who created the Global Gender Gap index (GGG) as our measures, similar to those of GGG, are in ratios. By focusing on ratios rather than levels, we are able to evaluate the position of women relative to that of men in a given society, rather than the actual levels of resources and opportunities available to women (Bericat 2012). We do this in order to assess the gender differences independent of a country’s level of development. Furthermore, ratios provide a straightforward way to evaluate countries’ progress over time in each dimension related to gender equality and the overall composite index (Hausman et al. 2012). For the ease of interpretation of the composite index, as a second step we set an equality benchmark for all the variables to be 1, except for sex ratio where the equality benchmark is set to be 0.944.²⁷ Life expectancy was corrected for the

27. See Klasen and Wink (2003) for a discussion on the “missing girls”.

natural life expectancy advantage of women before calculating the ratio.²⁸ We also truncate the ratios at the equality benchmark for each variable. This assigns the same score to a country that has reached parity between men and women and one where women have surpassed men. Thus, as in the Global Gender Gap index, our HGEI assesses how women are performing relative to men, but does not penalize countries for surpassing the equality benchmark. This is justified by the fact we want to develop a measure of how far women have progressed towards equality, rather than looking at empowerment or gender inequality.

As a third step, the weighted averages of four sub-indexes (namely, health, socio-economic status, household, and politics) were calculated to avoid a single measure driving the variation in the sub-index. However, as our choice of variables is dependent on the availability of the historical data, household and politics are captured by single components, so no weighting procedure was necessary.²⁹ Following the strategy of the Global Gender Gap index, we normalize the variables in each sub-index by first determining what a 1% point change would translate into in standard deviations (calculated by dividing 0.01

28. The UN uses a correction of five years to correct for the biological sex differences in life expectancy. However, Klasen (2004) argues that, “[a]s no society, past or present, treated the two sexes equally and the two sexes did not differ in survival-related behaviors, it is hard to separate biology from behaviour. Thus it is hard to say whether females ‘should’ enjoy a longevity advantage of 3, 4, or five years.”

29. Originally the ratio of years women have had the right to vote compared to men was included in the politics sub-index. However, principal component analysis revealed that suffrage captured a different characteristic of the gender equality (i.e., related to the institutional structure and opportunities) than our measures (i.e., mostly capturing outcomes). Therefore, suffrage ratios were excluded from the composite index.

by the standard deviation of each variable).³⁰ The weights this procedure leads to are presented in the table below.

Table 2.3. Weights for the historical gender equality index

Sub-index	Variable	Weights
Health	Life exp. ratio	0.09
	Sex ratio	0.16
Household	Marriage age ratio	0.25
Political	Parliament seats ratio	0.25
Socio-economic	Av. years schooling ratio	0.12
	Lab. force part. ratio	0.13

Finally, once the value of each sub-index is calculated, an arithmetic average of the four sub-indices was taken and multiplied by 100. Bericat (2012) suggest that ideally the arithmetic mean of the four sub-indices should be calculated by taking the logarithm and exponential function of these values, as the ratio used on the underlying variables is a multiplicative function. However, we chose for a simple arithmetic conversion, as we would like to have an easily interpretable index over time, both in terms of the composite index and for single components in the index. Our measure thus ranges between 0 and 100 where 100 is a score indicating women have at least achieved an equal position to men on each constituent indicator.

30. For instance, average years of schooling has a standard deviation of 0.26. This means a value of 0.01 was divided by 0.26, giving a value of 0.04. Then the same procedure was carried out for labor force participation, meaning 0.01 was divided by the standard deviation of 0.24, giving a value of 0.04 again. This means that average years of schooling got a weight of 0.12 which has slightly a higher standard deviation than that of labor force participation

Table 2.4. Overview and Descriptive of the variables after Imputation

Sub-index	Variable	Range	Mean (sd)	Coun-tries	Years
Health	Life exp. ratio	0.8-1	0.97 (0.03)	130	1950-2003
	Sex ratio	0.83-1	1 (0.02)	130	1950-2003
Household	Marriage age ratio	0.61-0.98	0.84 (0.08)	129	1950-2003
Political	Parliament seats ratio	0-0.95	0.1 (0.13)	130	1950-2003
Socio-economic	Av. years schooling ratio	0.03-1	0.73 (0.25)	130	1950-2003
	Lab. force part. ratio	0.02-1	0.56 (0.29)	130	1950-2003

Shortcomings of the HGEI

As is common to all composite indexes of gender equality, the HGEI also has its shortcomings. For one, our measure does not capture how women are doing on any indicator in absolute terms, but only how they are doing relative to men. This is because achieving the necessary conceptual coherence prevents combining absolute and relative measurements of attainment in the same index (Bericat 2012). However, focusing on gender inequalities rather than attainment comes at the cost of not being able to say whether gender gaps are closing over time due to the improving position of women or worsening position of men. In Eastern Europe (as highlighted above), for instance, research shows that mortality for men in the region increased over the past two decades, which is often attributed to life style factors, largely related to tobacco and alcohol (McKee and Shkolnikov 2001; Rehm et. al. 2007). Hence gains in male life expectancy have not kept pace with those made by women. This means that improvements in gender equality in this indicator are not always solely due to an improvement of the position of women. Furthermore, truncating the ratios at the equality benchmark for each variable implies that rather than the

gender inequality in a given society, we provide only an overview how women are performing relative to men.

Another issue arises from the need for composite gender equality measures to evaluate countries' performances independent of their income level (for which GEM and GDI were heavily criticized, e.g. Parmayer 2010, Dijkstra 2006). We try to deal with this issue by taking ratios of women to men. However, our measures of gender equality may still be dependent on the overall level of development, for example female labour force participation could be driven by the existence of a large tertiary sector. Various attempts have been made in the literature to overcome this shortcoming, such as the UN Economic Commission for Africa (Dijkstra 2006) or the Social Institutions and Gender Index (Jütting et al. 2008). However our choice of indicators is limited by historical data availability.

Lastly, we are not able to provide a full overview of the gender disparities in some of the dimensions that were captured by other current day composite indexes. For instance women's income, an important component of socio-economic resources, is not included as historical data on wages disaggregated by gender is only sparsely available. We also cannot capture unequal distribution of housework, which is related to women's wellbeing in itself (Klasen 2004) and also closely related to the position of women outside the household, linked as it is to political participation or labour force participation (Verba et al. 1997; van der Lippe et al. 2011). We also do not cover issues related to the institutional structure of the societies, which play a crucial role in the opportunities available for women, such as inheritance rights or freedom of movement (Tertilt 2010; Jütting et al. 2008).³¹ This exclusion is made on the basis of a lack of data but also due to the fact such measures do not translate simply into ratios.

We plot how the HGEI performs when compared with the current day indicators, namely Gender Inequality Index (GII), Global Gender Gap (GGG),

31. However, see section 3 above for women's inheritance rights in the years 1920, 1950, and 2000 based on the data from Murdock (1967), Chapter 3 of this dissertation and Hallward-Driemeier, Hasan, and Rusu (2013).

Social institutions related to Gender Inequality (SIGI), and Women's Economic Opportunity Index (WEOI) (results presented in figure A.1 in the appendix). Despite the difference in the choice of measures and methodology in construction of the indices, overall our composite measure corresponds well with the current day indices.

2.5.3. Long-term trends in gender equality

Figure 2.14. below presents the overall results of the HGEI in the form of a population-weighted global average of country scores over the period 1950–2000. The figure illustrates a steady upward trend since 1950 with the growth increasing slightly after the 1960s. However, the gender gap was far from closed in 2003. Looking at regional averages reveals further failings in achieving gender equality. The highest gender equality scores are found in Western Europe and its offshoots while the Middle East and North Africa (MENA), Sub-Saharan Africa and Southern Asia are characterized by the largest gender inequalities.

Figure 2.14. The trend in world and regional averages in the HGEL, 1950s–2000s

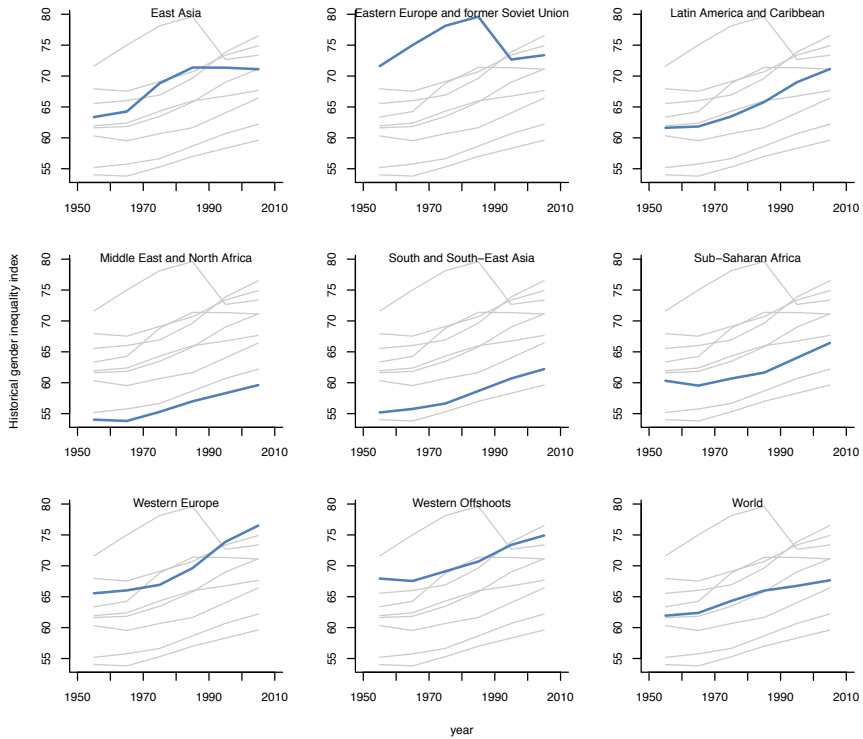


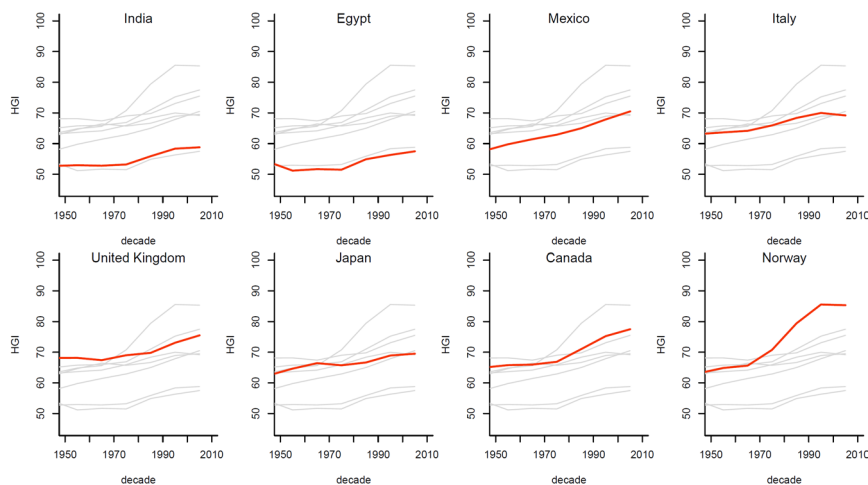
Figure 2.14. shows that while there was progress in terms of gender equality everywhere, important regional gaps persist. The most striking observation is the reversal in the former socialist countries of Eastern Europe and the Soviet-Union where a strong decline in gender equality is observable in the 1990s. One explanation for this decline is that female representation in the parliaments of Eastern Europe has decreased markedly in the last two decade following the collapse of the Soviet Union. Eastern European countries such as Estonia and Romania, which were once near the top in the world rankings of female representation, have now, with the removal of Communist party

institutions which made politics accessible to a number of women, fallen far behind Northern Europe and even behind many developing countries (Saxenberg 2000).

Most progress in gender equality was made in the Western Offshoots and Eastern Asia. Nonetheless, the overall picture is one of a persistent gap between the regions of the world. While poor performers like sub-Saharan Africa, Southern Asia, and the Middle East and North Africa made absolute progress in gender equality, they have not caught up with the middle performers, Latin America and Eastern Asia, or the top performers, Europe and the Western Offshoots. Since the measure has an asymptotic limit of one hundred, the lack of convergence is remarkable.

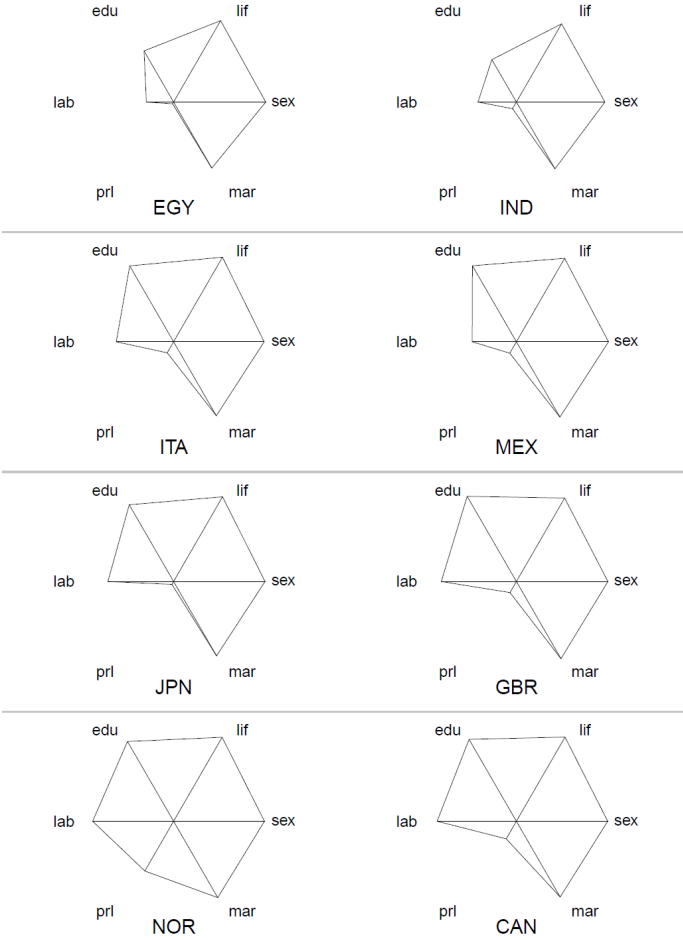
Figure 2.14 only provides an overview of the regional patterns whereas substantial variation exists within the different regions around the world. Below in Figure 2.15, we provide a further look at the individual trends of selected countries between 1950 and 2000 in the HGEI index, and compare the performance of these countries on the overall composite index to the individual dimensions used in the construction of the composite index in Figure 2.16. The aim of this exercise is to highlight that although composite measures provide an overview of the overall gender inequalities in a given society and enable general comparisons, the composite index may mask differences in some of the individual indicators. It is clear from Figure 2.16 that the problems each society face differ substantially from country to country despite the fact that they score the same on the HGEI.

Figure 2.15. Selected country trends in the HGEL, 1950s–2000s



For example, in Figure 2.15, we can see that India and Egypt start with similar values on the HGEL and although India has a slightly smaller gender gap compared to Egypt by 2000, overall they follow a similar trend. Looking at Figure 2.16, it becomes clear that the underlying indicators reveal further differences in countries' performance in terms of different dimensions of gender inequality. For instance in Egypt, the gender inequalities are largest in labour force participation and parliamentary activity, whereas for India, schooling together with sex ratios are the major issues. Similar differences exist between Mexico and Italy, which perform alike on the composite index, but gender inequalities in labour force participation are a particularly relevant issue for Mexico. Lastly, the United Kingdom and Japan, also have similar scores on the HGEL, but the gender inequalities in parliamentary activity are a more important problem for Japan. Thus, although composite indexes are useful to provide insight into the overall level of gender inequalities, caution is necessary because the issues of gender equality faced by each society can differ substantially.

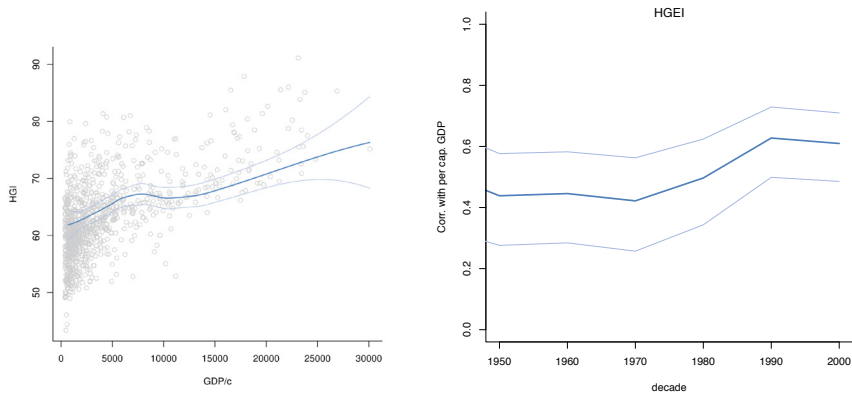
Figure 2.16. Selected country performances in dimensions of the HGEI in the 1990s



SECTION 2.6. CORRELATIONS WITH GDP AND CHARACTERISING TRENDS IN GENDER EQUALITY

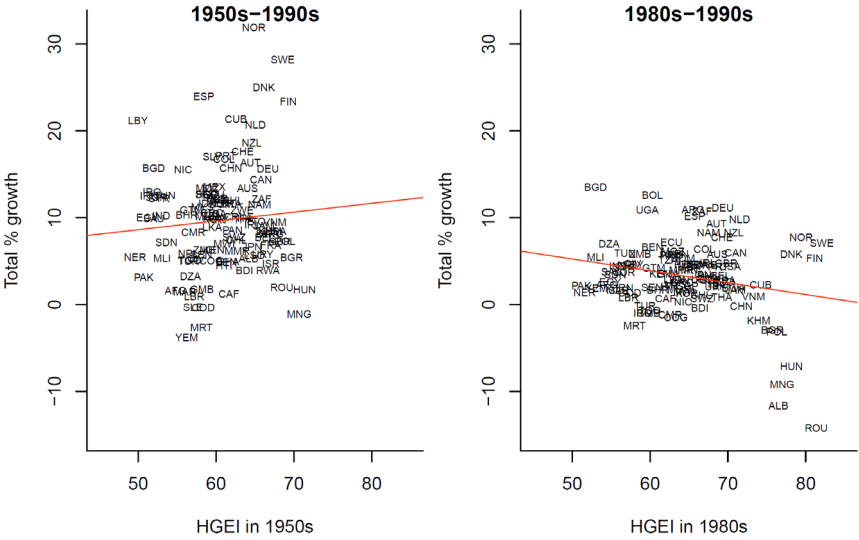
Figure 2.17 below show different ways of conceptualising the relationship between gender equality and GDP per capita. The graph on the left shows the correlation between GDP per capita and the composite index. It shows a slightly non-linear relationship between the two, with a slight dip in the fitted line occurring at GDP per capita between 7000 and 11000. The graph on the right shows that the correlation between GDP per capita and the HGEI has increased slightly over time between 1950 and 2000.

Figure 2.17. The Composite Index and its relationship to GDP per capita



Graph 2.18 below provides the growth rate of the HGEI for each country compared to their starting value on the HGEI in the 1950s and 1980s.

Figure 2.18. HGEI levels and growth: 1950s–1990s and 1980s–1990s



Gender equality in the 1950s and its development since display diverse patterns. Although Western Europe and its offshoots are generally the best performers, in the 1950s countries like Denmark, Canada and Australia had gender gaps similar to current day outcomes for countries in Sub-Saharan Africa, Latin American and the former Soviet Union and Eastern European (e.g. Botswana, Uruguay, and Albania). Overall Denmark has made the most progress in closing the gap, Albania the least. Within regions there is also substantial variation. Progress in the MENA region in closing the gender gap differs substantially from one country to the next. Libya, for instance, was the least gender equal in the 1950s, but made the most progress in the region (with a similar growth rate in the HGEI to the Netherlands), whereas progress was much more limited in countries like Egypt. Also interesting are the cases of Yemen and Mauritania, neither of which had strong gender inequality in the 1950s, but over time their gender gap actually grew.

More generally, the overall pattern from the 1950s to the 1990s seems to be divergence: countries that had a low score on the HGEI in the 1950s grew less than countries that had a high score. Only from the 1980s onwards can convergence be observed, in part driven by a fallback in gender equality in the former socialist countries in the 1990s (though it can also be observed when considering growth to the 2000s).

Whether the trends in gender equality are characterised by convergence or divergence is tested more formally in table 2.5. The growth rate in the HGEI per decade is regressed on the lag of the level of the HGEI. Progressively more controls are added to check for conditional convergence, and to test the extent to which the results were driven by biases in the fixed-effects model (Barro 2012; Croissant and Millo 2008).

There was no unconditional convergence in the HGEI over the entire 1950s–2000s period.³² If anything, there is slight divergence: countries scoring a point higher on the HGEI had a 0.05 percentage point higher decennial growth rate. This would make only a very minor difference on the HGEI over the entire period. The FE model too shows no sign of unconditional convergence.

Controlling for the level of economic development by including the log of GDP per capita makes only a small difference. The coefficient on the growth rate has become negative, indicating convergence, but the effect is very small (0.02 percentage points) and not statistically significant. Only the FE model displays significant convergence conditional on per capita GDP, though estimating convergence this way is known to have a downward bias (Barro 2012). The appendix reports regressions for sub-periods, which only show slight unconditional convergence (0.13 percentage points) from the 1980s onwards and

32. Unconditional convergence would be a situation where convergence occurs irrespective of the characteristics of the countries concerned whereas conditional convergence takes certain characteristics into account and sees whether, when these factors have been controlled for, convergence occurs.

convergence conditional on economic development from the 1970s onwards (0.26 percentage points).³³

Table 2.5. Panel regressions of growth rate on lag of HGEI: 1950s-1990s

	Pooled OLS	Pooled OLS	Fixed Effects	Fixed Effects	Pooled w. hist/inst
(Intercept)	-1.150 (1.337)	-1.762 (1.485)			8.267*** (3.017)
Lag of HGEI	0.053** (0.022)	-0.026 (0.026)	0.047 (0.042)	-0.345*** (0.082)	-0.252*** (0.059)
Log GDP		0.749*** (0.133)		2.924*** (0.432)	0.886*** (0.247)
Polity 2					-0.046 (0.028)
Educational expenditure					0.080 (0.088)
International Women's movement					0.117*** (0.020)
Protestant					3.405*** (0.954)
Catholic					0.422 (0.516)
Islam					-1.667** (0.770)
English Common					0.267 (0.600)

33. See Appendix 2.4, Table 2A.5

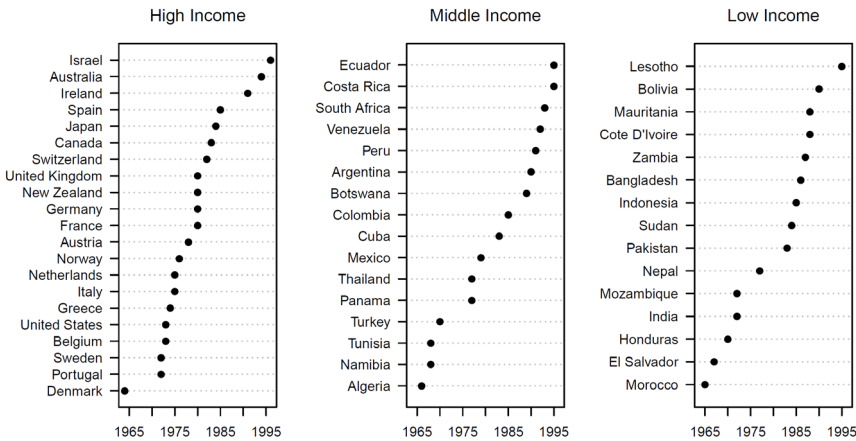
French Civil					0.090 (0.473)
Socialist					1.560** (0.754)
Absolute Nuclear Family					-1.231** (0.566)
African Family					0.658 (0.693)
Anomic Family					0.676 (0.492)
Authoritarian Family					0.999* (0.585)
Egalitarian Nuclear Family					0.437 (0.535)
Exogamous					0.978* (0.541)
R2	0.010	0.042	0.003	0.099	0.119
Adj. R2	0.010	0.042	0.002	0.080	0.115
Num. obs.	857	644	857	644	577

Moreover, the FE model controls for the long-term institutional and historical characteristics of countries, which in themselves might be important as a source of persistent difference in gender equality. To investigate this further, we have also estimated convergence, in a pooled OLS setting, controlling for historical and institutional characteristics that influence gender equality, such as religion, legal systems, and family organisation (see chapter 6). Once these are controlled for, conditional convergence appears: countries with one point higher HGEI increase their HGEI score by 0.25 percentage points per decade slower. However, at average growth rates and HGEI levels, this would still only lead to a half point increase in the HGEI over the entire period. In sum, unconditional convergence is absent and conditional convergence is weak. Since the

HGEI is capped at a value of 100 (should have an asymptotic limit) this finding is particularly surprising.

Besides the importance of long-term characteristics of countries for progress towards gender equality, other mechanisms might be driving the lack of convergence as well. Claudia Goldin (2006) has pointed to the existence of a “quiet revolution” from the late 1970s onwards in a broad range of indicators of gender equality. These originated from changing expectations among women about their career, in turn due to three preceding evolutionary phases of increasing female labour force participation in the tertiary sector. If these revolutions mostly occurred in developed countries which already had high gender equality, this could obstruct convergence.³⁴

Figure 2.19. breakpoint dates in HGEI, by income group



34. We have also tested for the existence of a U-shaped relation between gender equality and income (Goldin 1995) that could also contribute to divergence, but have found no evidence for it in our HGEI. It can be found for labour force participation, for which Goldin originally observed the U-shaped relation.

To test for this possibility we have looked for breakpoints in the annual HGEI series by applying an F-test for linear models of a time trend on the HGEI before and after each year (Zeileis et al. 2002).³⁵ Figure 2.19 shows the timing of breakpoints resulting in higher growth in the HGEI for countries broken down by income group (low, middle, and high).³⁶ Indeed, around c. 1980, many countries' HGEI growth rate increased. However, these breakpoints were not exclusive to developed countries and countries which already had a high HGEI. In fact, some of the earliest breakpoints actually occur in low-income countries. Breakpoints in these countries do occur at lower levels of the HGEI and their progress afterwards is less consistent. In sum, the HGEI series shows some evidence for Goldin's quiet revolution. However, these breaks also occur in developing countries, making them an unlikely explanation for the lack of convergence.

SECTION 2.7. ISSUES AND CONCLUSION

2.7.1. Comparability issues and data limitations

Issues of comparability and data limitations are unavoidable in compiling a series of historical measure on gender equality on a global scale.³⁷ So while this study does provide an overview of how gender inequality has changed since the early 20th century, it also has limitations. First of all, although trends in a number of indicators from the late 19th century onwards can be described, data coverage improves significantly from 1950 onwards. The geographic coverage is also a challenge, since historical data on gender equality is scarce

35. To minimize the chance of finding a breakpoint as small as possible, the annual series used here was linearly interpolated rather than using the full multiple imputation procedure.

36. Income groups from the World Bank: <http://data.worldbank.org/news/2015-country-classifications>.

37. See appendix 2.5 for a summary table on data quality.

for countries outside of Western Europe and a handful of other large countries. Furthermore, only an overview can be given for institutions related to gender equality in terms of inheritance and voting rights. Furthermore it is not possible to capture coherently many other aspects that matter for gender equality, such as violence against women or freedom of movement, as the OECD (Branisa et al. 2009) does for the SIGI. Additionally it is not possible to provide a full overview of the economic well-being of women, as historical data on indicators such as female labour force participation and female wages are scarce or not systematically available on a cross-national scale.³⁸ It is also not possible to capture the unequal allocation of time use in the home, which is closely related to the well-being of women outside the household, linked as it is to political participation and labour force participation (Verba et al. 1997; van der Lippe et al. 2011).

Another issue that has to be acknowledged here is that the size of the gender disparities in various dimensions described above is likely to differ between groups within countries, depending on socio-demographic and economic status (e.g. age group, health status, country of origin, income, urban-rural). However, although a within-country comparison on gender equality between different socio-economic groups might shed further light on the causes for and mechanisms perpetuating gender inequality, the point of this study is to analyse such trends at the macro-level. Individual or group level analysis is beyond the scope here, and so it is left to others to take up this gauntlet in future research.

38. There has been valuable work on women's labour force participation in the historical context for a handful of cases such as England and the Netherlands (see for example Horrell and Humphries, 1995; Schmidt and van Nederveen Meerkerk, 2012). However these studies are limited to a small number of cases, which makes them unsuitable for global comparison, the main focus of our study. In the future it might become possible to make such an analysis by using data to be made available through the History of Labour Relations project (<http://socialhistory.org/en/projects/history-labour-relations-1500-2000>) at the International Institute for Social History.

A further concern that should be noted is the comparability of these measures in a cross-national setting, which requires cautious use of the data. For instance, for the marriage indicator, a comparison can be made only based on legally documented marriages. Definitions of marriage differ in different contexts, muddying the data somewhat. Similar issues occur when one wants to measure women's political participation. The only comparable data on a global scale are on the date of suffrage and the percentage of female seats in parliament, which provide a very limited overview of gender disparities in politics. Because data on conventional forms of political participation (such as voting trends) are not available due to secret ballot systems, and as a result of the difficulty of capturing unconventional forms of political participation, such as protesting, with quantitative methods, it is very difficult to measure other forms of women's political participation. A similar issue arises when using data on education. Although the chapter reflects on the overall performance in terms of closing the gender gap in average years of education, this measure hides any gender imbalances related to the choice of academic field (to take a very modern example, for instance, young women being less likely than young men to choose Science, Technology, Engineering, or Mathematics (STEM) subjects as a field of study at the tertiary level), which later in life translates into occupational segregation (OECD, 2013). Furthermore, to achieve the greatest coverage in terms of time period, different data sources had to be employed, which sometimes come at the cost of jumps in the estimates.

2.7.2. Concluding remarks

Gender equality is an important issue, both from the intrinsic perspective that women should not be denied wellbeing, but also from a policy perspective as empowering women has been shown to have an effect on other development outcomes. For this reason many attempts to measure gender equality have been made, often by means of composite indices. However the current indices are limited to the period after 1995, which means a long-term perspective is lacking. This is problematic not only because economic development and

changes in the values regarding the attitude to women are long-term processes, but also because it provides only a limited sense of what progress has been made towards achieving greater equality between the sexes.

To address this problem we have created a long-term index measuring gender equality from 1950 to 2000. It is a composite index consisting of female to male ratios of life expectancy, sex ratios at age 0–5, average years of schooling, labour force participation, marriage ages and parliamentary seats, meaning it covers the four gender equality dimensions of political power, autonomy within the household, employment and income and social resources.

An aggregation procedure was chosen that keeps the index comparable over time and is as transparent as possible, while also accommodating the structure of the data. The resulting index reveals that most regions and countries of the world made progress regarding gender equality over the past fifty years. However, while there has been much progress, there is remarkably little convergence in gender equality. The explanations for this phenomenon are important for scholars interested in gender equality and development. At all times, however, it should be remembered that behind a composite index there can be great variation in the underlying indicators. This means that future research should also pay ample attention to the dimensions in which gender inequality occurs.

This chapter provided an historical perspective on women's well-being. Clearly, the availability of historical data plays a crucial role in influencing which dimensions this overview could discuss. More historical data and analysis are needed to understand the development and the causes of gender equality/inequality over the past century. Areas where new data and analysis would be particularly useful include educational attainment disaggregated by gender before 1950 and female labour force participation. Another priority for future research is to collect data on female wages so as to have a better understanding of the socio-economic dimensions of women's well-being and position. Moreover, violence against women is one of the most crucial fields where gathering historical data is highly desirable. Although this aspect is harder to capture with quantitative data, mortality data, which indicate the cause of

death, would be a good starting point to provide an historical perspective on this issue.

Geographical coverage is another issue that future research should ideally take into consideration, in particular for Sub-Saharan Africa. Generally, data only becomes available for Africa starting from the 1950s onwards, and data is scarce for many countries in this region. Similar issues of data scarcity exist for the East Asian and MENA regions. These regions are of particular importance as they are still poor performers in the various dimensions of women's well-being highlighted in this chapter. A longer historical perspective would provide insights to help researchers and policy-makers better understand the drivers of these gender inequalities so as to achieve the goal of overcoming such inequalities.

Lastly, further valuable insights into the well-being of women could be gained by breaking down the national data on women's well-being into indicators that reflect socio-demographic and economic status. The size of the gender gap may differ significantly between different social groups, and therefore indicators at a less aggregate level could provide further understanding of the drivers of gender inequality. A good starting point would be censuses and/or micro data where detailed information on various aspects related to the well-being of women can be found.

Overall, three main messages can be taken from the above. First, significant progress did take place over the 20th century in terms of achieving gender equality, but there is still a long way to go as gender gaps persist in many dimensions. Second, regional differences in gender equality are not a recent phenomenon but have deep historical roots. Finally when testing for convergence it appears that there has not been unconditional convergence between the front runners and those bringing up the rear of the pack. As for conditional convergence weak evidence was found for convergence contingent upon family systems, religious and legal system characteristics. In chapter 6 we move on to test what the deep roots of these inequalities may be, taking as our starting point the variables which seem to matter for the convergence analysis.

Chapter 3: Testing Todd and Matching Murdock: global data on family characteristics

Work with Auke Rijpma

SECTION 3.1. INTRODUCTION

As put forward in chapter 1, families are a fundamental building block of society. They provide the setting in which children learn about power relations and equality, which are in turn important for the formation of adult beliefs (Gross and McIlveen 1998; Dolan 1995; and Mitterauer and Sieder 1982). As such, they play an all-important role in socialization, education, and the instilling of values which are key to the way societies function. The way families are organized differs around the world, and likely has important consequences for the education of children, the rights of women, the level of freedom or agency of an individual, and lastly for economic development.

A number of authors have already explored these themes. Theoretical and empirical research into intra-household bargaining highlights the importance of the division of power and resources within households (Agarwal 1997; Schultz 2001). In work on the link between family organisation and social and economic outcomes, Tim Dyson and Mick Moore (1983) found differences between the Southern and Northern states of India in terms of female autonomy and demographic behaviour. They ascribed the superior performance of the Southern states in both aspects to kinship structure: spousal choice preferences, control over female sexuality, kinship reckoning, and inheritance practices.

Branisa, Klasen and Ziegler (2013) used data on social institutions in non-OECD countries to measure gender inequality, with a prominent role for family codes. In cross-country analysis they find that gender inequality is associated with lower female school enrolment, and higher fertility, and child mortality. Looking at an Indonesian family life survey from 2000, Rammohan and Johar (2009) find that kinship norms matter for female autonomy. Specifically, they

find post-marital residence near the parents of the bride (uxorilocality) to be associated with greater autonomy for women. Likewise, Olmsted (2005) argues that the strong family obligations in the Arab world create care regimes that constrain women's options.

As for more general economic and social outcomes in developed regions, Duranton, Rodriguez-Pose and Sandall (2009) find for Europe that family systems purported to date back to the Middle Ages still have an effect on a wide range of social and economic outcomes. Similarly, using a cross-national world-system approach, Kick, et. al. (2000) find that family characteristics are a vital, if somewhat unpredictable contributor to economic development. David Reher (1998) shows, in a paper which ends in a plea to policy makers to take the family system context into consideration, that there is a persistent contrast between Southern and Northern Europe when it comes to social organisation and elderly care. This, he puts down to long term differences between the two regions in terms of the importance they give to family ties, with the North stressing the importance of the individual while the South gives the family grouping priority.

It seems, therefore, that the way families organise themselves is important both for general development outcomes and more specifically for the position of women at home and within the wider society. However, in order to test global level hypotheses about how family types affect any number of different outcomes (female empowerment, human capital formation, political systems to name but a few), global data on family systems is needed. Moreover, identifying which variables are important in distinguishing family systems from one another and how they interrelate remains a challenge.

This leads to a fundamental question: what is a family system? Mason (2001: 160–1) defines family systems as:

a set of beliefs and norms, common practices, and associated sanctions through which kinship and the rights and obligations of particular kin relationships are defined. Family systems typically define what it means to be related by blood, or descent, and by marriage; who should live

with whom at which stages of the life course; the social, sexual, and economic rights and obligations of individuals occupying different kin positions in relation to each other; and the division of labour among kin-related individuals.

Besides identifying relevant aspects of a family system, this definition also highlights the fact that we are talking about systems, implying that what is being analysed is a series of variables working together in some combination to form a whole. It is important to note that her definition refers to beliefs and norms. Norms and beliefs are typically measured by surveys (e.g. the World Values Surveys). They are not the sort of information one can extract directly from historical data. Therefore we use proxies from the historical record which provide insight into the rights and obligations of individuals within a given family setting.

There are two scholars who have attempted to create world-scale historical classifications of family systems: Emmanuel Todd and Göran Therborn. Therborn's (2004) work, although based on an extensive number of case-studies and regional analyses, does not provide a systematic framework for family systems. Rather, he uses relatively loose categories which are basically the major geographic regions of the world. The Therborn classification therefore does not lend itself to being transformed into a country-level dataset.

Todd (1985, 1987), on the other hand, provides strict categories into which he divides all countries of the world on the basis of a number of indicators, combinations of which make up a family system. At the time his work attracted criticism from historians, anthropologists, and sociologists alike for its far-reaching generalizations and claims. Todd also makes some sweeping simplifications, for example lumping much of Africa together into one system classification, and at times he only gives scant attention to the evidence underlying his classification. On the other hand, many of the reviewers also suggest that his ideas deserve to be further tested (Kiernan 1990; Kertzer 1988; Greenhalgh 1987; Roseberry 1990). Overall, his model is attractive for its com-

bination of historical grounding, global scope and, given his global overview, level of detail.

The purpose of this chapter is to examine how we can measure family systems, where we can improve upon existent global family system models and finally to test the persistence of the values associated with certain types of family organisation over time. We do this by taking up the gauntlet laid down by Todd's critics. We test his classification of family systems, the only system of global scope, against ethnographic data to see if we observe the same patterns of indicator variables, both in terms of combinations of family system indicators and in the geographical patterns of the underlying family characteristics which Todd puts forward.

The central research question is whether Murdock's *Ethnographic Atlas* corroborates Todd's classifications. And do similar family systems appear from these two sources and from more recent data, such as the OECD's Gender, Institutions and Development Database (GID-DB), the censuses available through IPUMS (Minnesota Population Center 2013) and the data of the World Values Survey?

In order to do this we make use of Jutta Bolt's (2010, 2012) work with George Murdock's *Ethnographic Atlas* (1969), which she updated and turned into country level variables using ethnic population estimates based on the *Atlas Narodov Mira* (Bruk and Alenčenko 1964). Murdock's global ethnographic data has become increasingly popular amongst economists and economic historians (e.g. Fenske 2013; Giuliano and Nunn 2013; Michalopoulos and Papaioannou 2013; Michalopoulos and Papaioannou 2014; Osafo-Kwaako and Robinson 2013). It is especially, though not exclusively, used in African economic history as a source for pre-colonial data. Nunn and Wantchekon (2011) and Bolt (2010) have used it in their research on slavery, while others have used it to investigate fertility and female labour force participation, linking these to traditions stemming from historical plough use (Alesina, Giuliano and Nunn 2011, 2013). Moreover, Todd himself used Murdock's atlas to analyse the origins of domestic organization (nuclear versus community households), though not as a test of the soundness of his observations (Sagart and Todd 1992). Although Mur-

dock's data has become popular, the reliability of the data is rarely questioned. By providing an in-depth analysis of his observations on family organisation – characteristics which should be relatively straightforward to observe – we put this important dataset to the test as well.¹

After a discussion of Todd's family systems and how comparable variables can be constructed from Murdock's data, we move to a variety of tests. These show a decent, if imperfect, correspondence between the two datasets. We finish with suggestions on using the two datasets. In light of their imperfect matchup, we emphasize the importance of playing to their relative strengths and present a hybrid dataset that can do just that. This is then used to check the persistence of family values by comparing it with present-day data on family practices from the OECD's Gender, Institutions and Development database (used to construct the Social Institutions and Gender Index or SIGI), census data from IPUMS (c. 2000), data on consanguineous marriage (Bittles 1994), and the World Values Survey (2014).

SECTION 3.2. HISTORICAL DATA

Emmanuel Todd has written extensively on family systems. Here we choose to focus on the two books in which he provides a family system classification scheme on a world scale. Both works, *Explanation of Ideology* (1985) and *Causes of Progress* (1987), use family systems to explain larger societal phenomena. *Explanation of Ideology* is intended to explain the global development of political systems based on the underlying values ingrained in individuals from an early age through family systems. In *Causes of Progress* he claims that the more power women have in a family, the more educated the next generation will be

1. Family organization was one facet of a society that ethnographers were trained to observe and describe.

(cf. Schultz 2002).² In short, Todd describes family traits that are hypothesised to be linked to key developments in the economic and social history of the nineteenth and twentieth centuries. For the purposes of this chapter we will focus on *Explanation of Ideology* as it provides the most workable framework. *Causes of Progress*, although interesting, is essentially a reinterpretation of the same classification. The book identifies the same regions and family characteristics, but gives different meaning to them. Below the different family types with their characteristics are described in Table 3.1.

Table 3.1: *Explanations of Ideology family systems*

Family Type	Liberty	Symmetry	Endogamy
Endogamous Community Family	Marriage defined by custom	Symmetry	Permitted
Asymmetrical Community Family	Marriage defined by custom	Asymmetry	Permitted
Egalitarian Nuclear Family	Free choice	Symmetry	Obligatory exogamy
Absolute Nuclear Family	Free choice	Indifference	Obligatory exogamy
Authoritarian Family	Marriage determined by parents	Asymmetry	Little or no marriage between the children of two brothers

2. Todd is currently engaged in writing a series of volumes which rework some of the earlier ideas but focus each on a separate part of the world. Unfortunately currently only the Eurasian section is published, which means we could not use it in this chapter.

Anomic Family	Free choice	Indifference	No obligatory exogamy
African Family			Generally strong prohibitions of consanguinity

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 establish a neolocal residence upon their marriage. This family type is observed in parts of Western Europe but also throughout South America. In the authoritarian (or stem) family the heir remains resident in the parental home while all siblings must fly the nest if they marry. 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.

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 (see chapter 5 for a test of this).

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 a given generation are treated equally. Often this is a system used to favour male offspring, creating equal-

ity 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 captures whether 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.³ 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.

To check the classification of Todd, an independent source of information on household (family) systems is needed. Todd's work started with 1960s and 70s censuses (and Le Play's studies on European family systems) and went to the historical record from there to arrive at data that was meant to capture preindustrial, yet persistent family characteristics.⁴ The ethnographic infor-

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

4. Demographers are highly critical of the extent to which Todd does this accurately but it should be kept in mind that most people working in this field are not attempting the sort of world level overview that Todd aimed for.

mation on many societies for the period 1820–1960 contained in Murdock's *Ethnographic Atlas* (1969) can provide comparable data. The atlas was initially a regular feature of the journal *Ethnology* from 1962 to 1980. In 1967 the existing data was compiled into a book.⁵ One of the most important underlying reasons for producing data this way and on this scale was to facilitate comparative research, particularly of a cross-cultural nature (Murdock 1967: 111).

Nunn and others claim that Murdock's data is historical, even pre-colonial (e.g. Nunn 2008: 165; Nunn and Wantchekon 2011: 329, 333, 339). As half the observations pre-date 1920 and a quarter pre-date 1890 (see figure 3.4 below), there is some limited truth to this, though it is important to note that many of the observations in Murdock are from the (post-)colonial period. We will at first assume Murdock's data captures pre-industrial conditions (like Todd's) and will later consider the effect of loosening this assumption.

SECTION 3.3. CONSTRUCTION OF VARIABLES

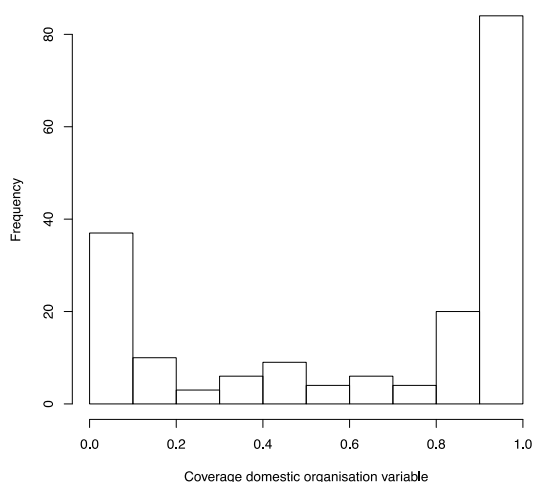
Todd's data is largely defined on the country level, although he reports regional differences for a number of European countries (e.g. France, Italy, Spain, and the Netherlands). Murdock's observations on the other hand are all on the level of ethnic groups. In some countries, especially in Africa, this means that there are multiple observations for each of the ethnic groups in a country. To make the data comparable, both datasets need to be at the same level of observations.

The practices for the 1267 societies tabulated by Murdock were assigned to present-day population using the ethnic population figures in the 1964 *Atlas Narodov Mira* (Bruk and Alenčenko 1964; cf. Weidman, Rød and Cederman 2010). Bolt (2012) did this by adding up the population shares of ethnic groups within a country characterised by the same trait for each variable. In doing

5. A revised *Ethnographic Atlas* was used that has been published by the World Cultures journal: <eclectic.ss.uci.edu/~drwhite/worldcul/world.htm>. The data is available at <intersci.ss.uci.edu/wiki/pub/XC/EthnographicAtlasWCRevisedByWorldCultures.sav>.

so, a share of the population characterised by a given variable was derived, in our case practicing some form of family organisation.⁶ For our purposes, we coded as follows: if a family trait was practiced by more than 50 percent of the population covered in Murdock for a given country, and if the total coverage of ethnic groups for that country was more than ten percent, we coded that family trait as present. If coverage was lower than ten percent, the observation was set to missing. The dominance of one ethnic group in most countries meant that a coverage threshold of 10 percent included mostly countries with extensive coverage (figure 3.1).

Figure 3.1: Population coverage in combined Murdock and Narodov atlases for domestic organisation variable.



6. A similar approach was employed by Jütting, Morrison, Dayton-Johnson and Drechler (2008, 68) in the construction of their Gender Institutions and Development Database (GID-DB), who take into account the share of the population adhering to certain social institutions when coding their ordinal variables.

For most Eurasian and American countries, the populations were fairly homogeneous and this procedure gave few problems. However, in some countries, especially in sub-Saharan Africa, the high number of different ethnic groups within the borders of modern day nation states (cf. Easterly and Levine 1997), meant that this procedure did not always result in clear-cut results. For example, in some countries there was no clear-cut majority of the population practicing one type of family organisation (for instance, Cameroon, where both asymmetrical and symmetrical inheritance are practiced by groups of around 40% of the population each). These countries were coded as not having either of the traits as present. However there are only four countries in the dataset with this problem (Kenya, Cameroon, Niger and South Africa) which together represent 1.4% of the global population covered. In a further 2.2 % of the world population a large ethnic group is coded differently than the majority (Senegal, Angola, Ghana, New Zealand, Mexico, Guinea and Qatar). Since they had a majority, its practice was nonetheless coded as unambiguously present.

The coding of variables in Murdock's Atlas is also far more detailed than Todd's classification of family systems.⁷ Therefore, the first step before comparing Murdock and Todd's data was to reclassify Murdock so that his variables matched those of Todd. This section presents the reconstruction for each of Todd's variables and the underlying arguments.

In *Explanation of Ideology* Todd makes his breakdown of family systems based on three variables that he thinks determine values on liberty and equality: endogamy, co-residence, and inheritance. We have tried to define these directly in terms of Murdock variables in the following manner.

7. For example, variable 23 in Murdock is "cousin marriage allowed" which is broken down into 13 different types of cousin marriage. Then, in addition to variable 23 there is variable 25 detailing the presence of preferred cousin marriage which in turn is split into 15 different categories. Todd, on the other hand, mentions only four types of cousin marriage: obligatory exogamy, endogamy, asymmetric endogamy and indifference.

Liberty is measured through a combination of choice of marriage partner (whether marriage partners are pre-determined by custom such as consanguinity, chosen by parents, or chosen by the couple-to-be), and where married couples live after marriage (co-residence of all married sons with parents, neolocal residence, or in the stem family that one child remains at home after marriage as a successor). For the first aspect of cousin marriage (or endogamy) the *Ethnographic Atlas* includes a number of variables. These are variable 23: Cousin marriage (Allowed); variable 24: Subtypes of Cousin Marriage; variable 25: Preferred rather than just Permitted Cousin Marriages; and variable 26: Subtypes of Cousin Marriages (Preferred rather than just permitted).

Table 3.2: Variable construction on exogamy/endogamy.

Todd Variable	Murdock variable	Murdock sub variables added together
Permitted	Variable 25. Preferred rather than just permitted cousin marriage	1/Cc = duolateral, symmetrical preference; 2/Cm = duolateral, matrilateral preference; 3/Cp= duolateral, patrilateral preference; 4/Em = duolateral, with maternal cousins only, MoBrDa; 5/Mm = Matrilateral cross-cousin with MoBrDa only; 6/Pp = Patrilateral cross-cousin with FaSiDa only; 7/Qa= Quadrilateral, FaSiDa preferred; 8/Qc = Quadrilateral, symmetrical preference; 9/Qm = Quadrilateral, matrilateral preference; 12/Tc = Trilateral with bilateral preference; 13/Tm= Trilateral with matrilateral preference; 14/Tp = Trilateral with patrilateral preference)

Exogamy	Variable 25. Preferred rather than just permitted cousin marriage (includes Variable 23, Cousin marriage allowed)	15 = no preferred cousin marriage. This includes all cases where Variable 23 has one of the following codes: 7/N = nonlateral all first and second cousins barred; 8/O = nonlateral based only on evidence for first cousins; 11/R = nonlateral: no first cousins, some second cousins; 12 /S= nonlateral: no first cousins, all second cousins)
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Note: The prefixes before “lateral” specify which, if any, cousins are permitted or preferred as marriage partners, e.g., duolateral means there are two types of cousins permitted or preferred.

To capture endogamy and exogamy we only used variable 25 (and therefore indirectly, variable 23) to construct categories that match those of Todd (table 1). Even though Todd speaks of permitted cousin marriage in his tables, his text argues more for the interpretation of preferred cousin marriage. This also solves some problems. Many societies in his *Ethnographic Atlas* are said to nominally allow cousin marriage (e.g. New Englanders, Dutch). Though cousin marriage is not necessarily legally forbidden in these societies, they rarely practice it and even condemn it (Goody 1983). It makes sense to classify these as exogamous societies. From the perspective of non-exogamous societies, it seems that those societies likely to practice endogamy (Islamic societies), were characterised in Murdock as having a preference for cousin marriage rather than merely permitting it. It is difficult to identify societies that were indifferent to the issue of cousin marriage, which Todd ascribes to the anomic family system.⁸ Arguably, societies where exogamy was neither obligatory nor preferred, can be viewed as indifferent. However, since Murdock followed strict legality of cousin marriage as his measure of whether cousin marriage was permitted, this would include countries like the Netherlands, the USA, Por-

8. See Table a2 for descriptions of Todd's different family systems

tugal, and Britain in the category indifferent. This problem means it becomes impossible to distinguish Todd's category of anomic families.

Todd considers intergenerational co-residence to be an important family characteristic determining liberty, arguing that permanent residence with older generations diminishes the freedom of younger generations within the household. For this we turned to variable 8 in Murdock: Domestic organization. The translation of this to Todd's categories is described in table 3.3 below.

Table 3.3: Variable construction on co-residence.

Todd Variable	Murdock variable	Murdock sub variables added together
Nuclear	Variable 8. Domestic organization	Code 1/M independent nuclear families, monogamous; 2/N independent nuclear families, occasional polygyny;.
Community	Variable 8. Domestic organization	7/F = Small extended families; 8/E = Large extended families
Stem	Variable 8. Domestic organization	Code 6/G = Minimal (stem) extended families;
Polygamy	Variable 8. Domestic organization	4/PS polygynous unusual; 5/QR polygynous usual; 3/O polyandrous

The last variable in the table above, polygamy, is not strictly speaking part of Todd's liberty classification scheme, nor does it fall neatly into a category of co-residence. Polygamy may, however, be useful for introducing greater nuance to the category of the African family system. It is one of the attributes Todd ascribes to Africa but does not go into great detail on the prevalence of, or how it combines with other family traits. He merely notes that polygamy was frequently practiced in sub-Saharan Africa and that this means the other family traits were not as readily defined as elsewhere in the world (Todd 1985).

We have therefore included polygamy in the analysis below to strengthen the analysis of African family systems.

The final variable in the *Explanation of Ideology* scheme is inheritance. Symmetric (partible) and asymmetric (impartible) inheritance in Todd's structure determines whether individuals are seen as equal or not. He divides inheritance practices into three categories: symmetry and asymmetry between brothers as well as an indifferent category. For this variable we used Murdock's variable 75: Inheritance distribution for real property (land).⁹ As in the case of cousin marriage, it was not possible to find variables in Murdock that captured indifference to inheritance practices. The only societies that did not have a rule for the inheritance of real property, were those without individual property rights.

Table 3.4 Variable construction on inheritance.

Todd Variable	Murdock variable	Murdock sub variables added together
Symmetrical	Variable 75. Inheritance distribution for real property (land)	Code 1/e = Equal or relatively equal
Asymmetrical	Variable 75. Inheritance distribution for real property (land)	Code 2/q = Exclusively or predominantly to one deemed best qualified; Code 3/u = Ultimogeniture; Code 4/p = Primogeniture
Indifference	This variable proved impossible to find in the data	

9. Using variable 77, inheritance distribution for movable property, was an option but the rules on inheritance of land are closer to Todd's ideas on the subject, since he distinguishes real estate from "money, a secondary asset" (Todd, 1985: 78).

SECTION 3.4. UNDERLYING SOURCES

Before quantitatively comparing the two datasets, it is worthwhile to briefly examine some of the sources used. This may help determine where the two datasets fall short and understand any discrepancies that might surface. Both Todd and Murdock rely on case studies. For Murdock, these are mostly ethnographic studies, although he also uses historical and sociological works.¹⁰ Some of the case studies concern whole countries or regions, but some cover one or a few villages. Besides anthropological works, Todd also relied extensively on historical work and censuses from the 1970s. There is little overlap between the sources of the two authors. Looking at the sources used for Europe, North-Africa, the Middle East, and Northern and Eastern Asia, only eight were in both Murdock's (209) and Todd's (136) sources for these regions.¹¹ In two more cases, they relied on the same author, but not on the same work.

The sources are not without problems. For one, it is often difficult to reconstruct how the information from the case studies was coded into a dataset. Furthermore, Todd had to reconcile observations for a 400-year period for some countries. Stephen and Ethel Dunn's *Peasants of central Russia* (1967), a book both Todd and Murdock rely on, is a case in point. Most land was communally owned and rights to it were vested in households that continued to exist after the head died (Dunn and Dunn 1967, 31, 41, 47). Should this be interpreted as Murdock's "absence of individual property rights in land" or Todd's "symmetrical inheritance" since, arguably, all household members inherited rights to the land? Extended households could also be difficult to establish. Dunn and Dunn claim the nuclear household was the norm, but also consider the extended households as the ideal and present census data showing that 20–25 percent of households contained three or more generations. At the same time, the decline

10. See appendix 3.3 for a selection of source material of both authors.

11. Murdock's references to sources are spread over the issues of *Ethnology* from 1962–71.

of extended households between the 1920s and the 1960s gives difficulties for Todd's classification (Dunn and Dunn 1967, 11–2).

As another example the existence of nuclear or extended households was also difficult to establish in Greece. Although the ethnographic study used by Murdock as well as Todd explicitly calls the families nuclear, newlyweds unable to afford setting up their own household at first moved in with their parents and could stay there until one of their parents died. Consequently twenty percent of the households in the 1950s contained three generations (Friedl 1962: 12–3, 18, 53–61). Generally, establishing the preference for extended households from the case-studies is problematic, and this can cause discrepancies between the two datasets to arise (cf. Berkner 1975).

Another problem lies in the thin empirical base for some countries and regions. Though most societies (Murdock) and countries (Todd) are based on multiple case studies, some are based on only one or a few villages. Murdock's data on Dutch society, for example, relies entirely on a study of a single village in the north-east of the country (Keur and Keur 1955). In turn, Todd has been criticised for using observations for one locality to describe entire regions, for instance by conflating South China and Taiwan (Rawski 1988).

Finally, the two datasets focus on different regions of the globe. Although Todd includes many countries, his data is at its most detailed for Europe. Africa gets scant attention, according to Todd because the prevalence of polygyny made detailed analysis of households impossible (Todd 1985: 25, 191). Murdock says his data is worst for Europe and that coverage in Latin America is also problematic (Murdock 1969: 7). Bolt confirms this assessment with her figure on data coverage per continent (Bolt 2013: 12). The data for Africa, on the other hand, is where Murdock excels, as this is the area where most ethnographic work was conducted.

Since there is little overlap in the underlying sources of the datasets, comparing the two with each other can provide an important check. It alleviates problems arising from relying on one or a few cases and can provide a second opinion on the coding practice. Moreover, given the different focus of the da-

tasets, they might be able to complement each other, especially for coverage of Africa and Europe.

SECTION 3.5. RESULTS & TESTS

How do the family systems originating from Murdock's data compare to Todd's classification of countries by family system? Beginning with an exploratory analysis for the family systems from *Explanation of Ideology*, we compare maps of Todd's original classification (figure 3.2) and the match to the societies in Murdock's *Ethnographic Atlas* (figure 3.3).

Figure 3.2: Map of Todd's classification of countries by family systems.

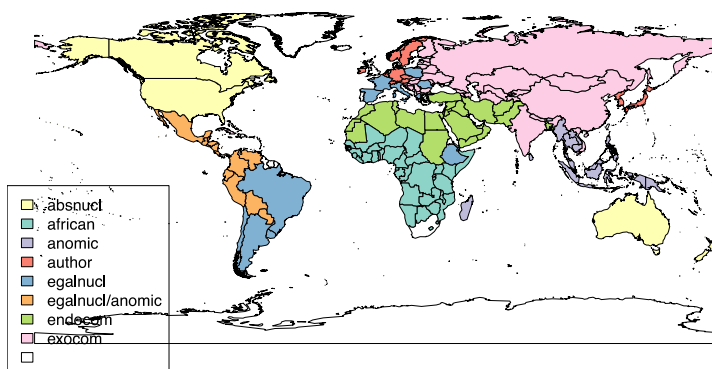
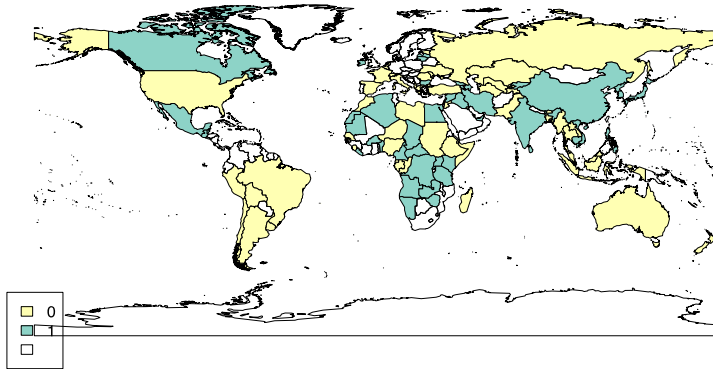


Figure 3.3: Map of matching family systems in Todd and Murdock.

Green (dark) indicates match, yellow (light) indicates no match, no fill indicates missing data in either dataset.



Broadly speaking, parts of Africa and the Americas in Murdock-Narodov match Todd's classification, as do China, Japan and Vietnam. Europe and countries in the former USSR fare a lot worse.

The extent of similarity between these two classifications of family systems can also be explored by cross-tabulating the data in a contingency table and computing its measure of association. Table 3.5 below examines the family systems presented in *The Explanation of Ideology* and shows that 49 of the 102 cases are matched correctly. Todd and Murdock match well for a number of systems: the African, authoritarian, egalitarian nuclear, and endogamous community family systems reappear from Murdock's ethnographic data. Absolute nuclear, anomic, and exogamous community families, on the other hand, are not frequently matched.

Table 3.5: Contingency table of EoI family systems as found in Todd and in Murdock.

Test for statistical independence: $\chi^2 = 142.15$ ($p \approx 0$); Cramér's $V = 0.48$.

Murdock Todd	absnucl	african	anomic	author	egalnucl	endocom	exocom
absnucl	1 (14 %)	0 (0 %)	0 (0 %)	0 (0 %)	3 (14 %)	0 (0 %)	1 (3 %)
african	1 (14 %)	15 (100 %)	0 (0 %)	0 (0 %)	0 (0 %)	0 (0 %)	7 (24 %)
anomic	2 (29 %)	0 (0 %)	3 (27 %)	1 (20 %)	4 (19 %)	1 (7 %)	3 (10 %)
author	0 (0 %)	0 (0 %)	1 (9 %)	3 (60 %)	1 (5 %)	0 (0 %)	0 (0 %)
egalnucl	1 (14 %)	0 (0 %)	1 (9 %)	0 (0 %)	7 (33 %)	1 (7 %)	2 (7 %)
egalnucl / anomic	0 (0 %)	0 (0 %)	1 (9 %)	0 (0 %)	2 (10 %)	0 (0 %)	2 (7 %)
endocom	0 (0 %)	0 (0 %)	3 (27 %)	0 (0 %)	2 (10 %)	8 (57 %)	4 (14 %)
exocom	2 (29 %)	0 (0 %)	2 (18 %)	1 (20 %)	2 (10 %)	4 (29 %)	10 (34 %)
total	7	15	11	5	21	14	29

What explains the differences between Murdock and Todd? For a start, there is a mismatch between the coverage of Europe. For Todd, Europe is the heartland of his classification, and where he has the highest level of detail. However, it is exactly in Europe that Murdock's data coverage is poorest. This makes it difficult to compare cases of absolute nuclear families. Moreover, asymmetrical inheritance, as we have defined it, is very rare in Murdock (occurring mostly in Africa) but in Todd asymmetric inheritance should occur in the authoritarian family system ascribed to large parts of Western Europe. A final problem is in Todd's coding of societies being indifferent towards exogamy (anomic systems) and inheritance (absolute nuclear systems). There was no equivalent to this concept in the coding of Murdock's *Ethnographic Atlas* resulting in a mixing of the anomic and nuclear family types. Since indifference is a very broad

concept, Murdock's more detailed observations seem preferable. Moreover, Todd's later work does not reproduce these concepts of indifference towards inheritance or marriage partner (Todd 2011). Recommendations for dealing with the strengths and weaknesses of the two datasets are discussed more extensively below.

Investigating the constituent variables of the family systems can help identify weaknesses and strengths of the two datasets in further detail. Tables 3.6–3.8 present contingency tables for the underlying family characteristics in Todd and Murdock.

Table 3.6: Contingency table of domestic organisation in Todd and in Murdock-Narodov.

$\chi^2 = 91.95$ ($p \approx 0$); Cramér's $V = 0.51$.

Murdock Todd	community	nuclear	polygamy	stem
community	36 (59 %)	11 (39 %)	0 (0 %)	3 (38 %)
nuclear	7 (11 %)	14 (50 %)	1 (5 %)	0 (0 %)
polygamy	17 (28 %)	1 (4 %)	18 (95 %)	1 (12 %)
stem	1 (2 %)	2 (7 %)	0 (0 %)	4 (50 %)
total	61	28	19	8

Table 3.7: Contingency table of inheritance in Todd and in Murdock-Narodov.

$\chi^2 = 10.33$ ($p \approx 0.001$); Cramér's $V = 0.46$.

Murdock Todd	asym. inherit	sym. inherit
asymmetric	4 (44 %)	2 (5 %)
symmetric	5 (56 %)	37 (95 %)
total	9	39

Table 3.8: Contingency table of endogamy in Todd and in Murdock-Narodov.

$\chi^2 = 22.44$ ($p \approx 0$); Cramér's $V = 0.46$

Murdock Todd	endogamous	exogamous
endogamy (sym.)	16 (46 %)	5 (7 %)
exogamy	19 (54 %)	67 (93 %)
	35	72

Generally, the two datasets match somewhat better when considered from the angle of the underlying family traits. This makes sense, as combining variables into family systems increases the chance of mismatch.

In domestic organisation, there are two main sources of disagreement between the datasets. One is that Todd identifies a substantial number of community families (extended households) where Murdock observed nuclear households. The mismatches mostly originate in the Middle East (e.g. Iraq, Jordan, Kuwait) where Murdock observes nuclear households whereas Todd observes extended households. This mismatch is difficult to trace back in detail. Many of Murdock's sources for this region are out of print or otherwise unavailable, but the few we have accessed suggest that extended households were in fact preferred (Salim 1962; Barth 1954; Harris 1958). Similarly, the descriptions of different ethnic groups contained in Weekes (1984) suggest that extended households are the ideal household organisation for this part of the world. The disagreement between the two sources may also arise from the fact that in both Murdock and Todd's sources there are references to the fact that increased urbanisation is causing a shift away from traditional village life and domestic organisation.

The second source of disagreement in the domestic organisation variable concerns the classification of a number of African countries by Todd as polygamous which Murdock sees as community families. Todd's blanket categorisation of Africa as polygamous means we place more trust in Murdock's

observations. At the same time, many African countries displayed great ethnic diversity, so the countries that are coded as community families in Murdock-Narodov might nonetheless have substantial minorities that practice polygamy.

Table 3.7 shows that the two datasets generally agree on symmetric inheritance practices. Although there is some disagreement on asymmetric inheritance, this is a rare feature in both datasets. Table 3.7 also shows that there are fewer observations on this family trait than there are for the others. Again, this is due to our inability to match Todd's indifferent inheritance systems with any variable in Murdock.

The two datasets are generally in agreement on the variables on exogamy (banning or not preferring cousin marriage). The mismatches mostly occur in Africa, where Todd suggests exogamy was the norm, whereas Murdock observes numerous ethnic groups in Western Africa practicing some preference for cousin marriage. Again, Murdock is probably the more accurate source on Africa.

Table 3.9: Results of logistic regressions of variables constructed from Murdock's EA on the equivalent variable in Todd's EoI.

	Estimate	Std. Error	Pr(y=1) if x 0->1
Nuclear	2.303***	0.529	0.487
Community	1.549***	0.407	0.363
Stem	3.565***	0.918	0.535
Polygamy	4.569***	1.059	0.528
Sym. inherit	1.819***	0.452	0.422
Asym. inherit	1.21	0.893	0.293
Consanguinity	2.423***	0.575	0.541
Exogamy	2.735***	0.575	0.575

***, **, * indicate significance at <0.1 %, 1 %, and 5 % respectively.

We have also performed logistic regressions between Murdock's and Todd's constituent variables. In all cases except that of asymmetric inheritance, the variables are statistically significant predictors of one another. Having a certain family trait in Murdock is usually associated with about a 40–60 percent higher probability of the same family trait being found in Todd (table 3.9, rightmost column).

Another way to test whether Todd's systems exist in Murdock's ethnographic data is by looking at whether these combinations also match when we cluster the data based on the constituent variables of Todd. This can show whether the data naturally divides in groups based on these criteria (Everitt 2011). The results are similar to the previous tests and are reported in Appendix 3.1, table a1.

SECTION 3.6. CHANGES OVER TIME

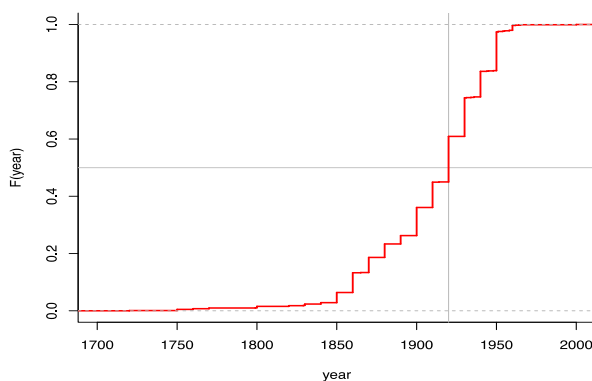
One of the downsides of consolidating the data in the *Ethnographic Atlas* to country level variables is that this process lumps together observations of ethnic groups from the entire 1820–1960 period to come up with one set of observations per country. In order to check how much of an effect this had on the data and to see whether we can observe changes over time, we conducted a check of whether using observations from two different time periods affects the match up with Todd. We split the dataset in two: one set for before 1920 and one for after 1920, each capturing about half of the observations in Murdock (see figure 3.4). This allowed us to compare the results before and after 1920 for each of the underlying variables: domestic organisation, inheritance and exogamy.

However, note that for each ethnic group, we have only one observation in one year. The ethnographic atlas does not provide two observations for the same ethnic group. Any conclusions of consistency and change over time therefore depend on the assumption that ethnic groups in the same country are similar. Murdock himself claims geographic proximity would make soci-

eties similar (Murdock 1967, 112), but the results should nonetheless be interpreted cautiously.

Figure 3.4: Empirical cumulative distribution function of observation years in Murdock, excluding observations before 1700.

Reference lines at 50 per cent of observations and the year 1920.



The maps showing these results are presented in Figure 3.5-3.6. In these figures, “false” indicates that Murdock and Todd do not match on their categorisation of a certain country while “true” indicates a match.

One thing that all these maps highlight is the lack of data coverage of Latin America for the pre-1920 period. Looking at the first set of map (Figure 3.5a and 3.5b), we see that comparing nuclear families for before and after 1920 the largest change is driven by the former satellite states of the USSR in Central Asia. For most of the other countries in the dataset the match remains relatively stable. This shift in Central Asia data is likely caused by the sea change which occurred in the Soviet political scene during the first half of the 20th century and the issues of interpretation this can give (see above). It suggests that if we base ourselves on the interpretations of later scholars and later data this

area of the world changes in one key variable in the family systems structure, suggesting the presence of dynamism in the family system.

The maps for polygamy again show shifts in the mismatch between the two datasets over time, although these shifts are small. These are driven entirely by countries in Africa. While countries such as Mali, Nigeria and Cote d'Ivoire are classified both before 1920 and after as non-polygamous by Murdock. In 1920 Niger and Chad have also joined the mismatches along with Zambia. As opposed to the 14 mismatches out of 65 comparisons before 1920, the post-1920 data exhibits 23 mismatches out of 134 comparisons. Angola is one of the few countries which goes from being classified as non-polygamous before 1920 to polygamous after 1920.

Figure 3.5: Comparison of matches between Todd and Murdock in nuclear domestic organisation before and after 1920.

Fig. 5a: nuclear match, before 1920

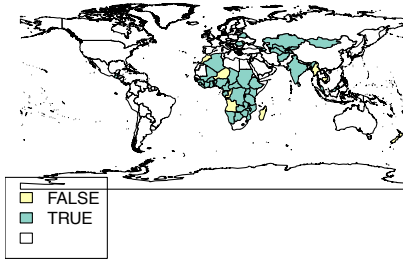


Fig. 5b: nuclear match, after 1920

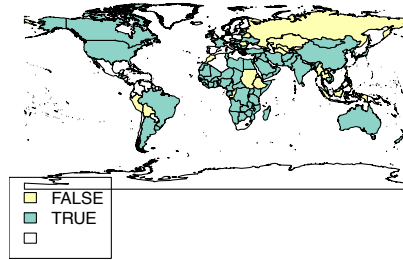


Figure 3.6: Comparison of matches between Todd and Murdock in polygamy before and after 1920.

Fig. 6a: polygamy match, before 1920

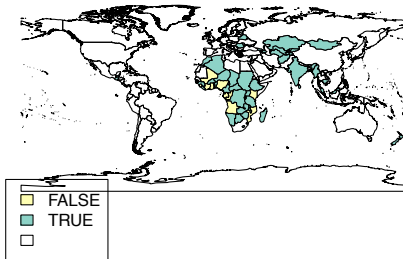
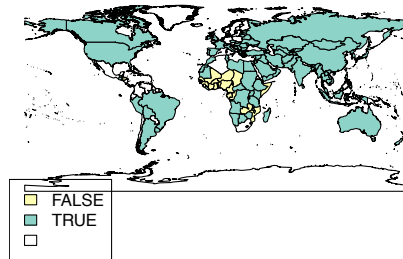


Fig. 6b: polygamy match, after 1920



Two further sets of maps show how classifications of preferences regarding cousin marriage and asymmetrical inheritance differ between the sources we have for before and after 1920 in the *Ethnographic Atlas* (available upon request). The only area where differences arise is in Africa where some countries

change from being endogamous to exogamous and vice versa. For asymmetrical inheritance we again see overall good matching with little change between the two maps.

SECTION 3.7. USING THE TWO DATASETS

Since the match between Murdock-Narodov and Todd is far from perfect, the question arises which of the two should be preferred as a historical dataset on family practices. Here we will discuss some of the discrepancies between the two datasets and their relative merit.

We first report our research into the discordant observations using the underlying sources and the wider literature. We have done this for the top fifteen mismatched countries sorted by population size. We will briefly discuss these cases and their resolutions here. Further details and the literature consulted for this can be found in appendix 3.4.

The first issue is a number of countries in South-East Asia that Todd classified as anomic: Indonesia, Thailand, the Philippines, Myanmar (Burma), and Malaysia. Since this system implied a lack of strict rules, it was difficult to code the equivalent system with Murdock's data. Although the literature bears out Todd's observations of flexible family systems, we largely follow Murdock's more detailed observations for these societies.

In Turkey and Morocco, Todd's observations of preferences for cousin marriage and extended families respectively were corroborated by the literature. We have also investigated two cases for Africa: Madagascar and Ethiopia. Madagascar again is a case of Todd's anomic family and we have followed Murdock's more precise observations on nuclear families and partible inheritance, but the preferences in regard to cousin marriage are probably truly indeterminate there. In Ethiopia, Todd's observations of nuclear families rather than Murdock's extended families most closely resembled the temporary co-residence scheme to be found there.

In Bangladesh and Pakistan the clash is a result of Murdock coding the majority population group as practicing exogamous marriage while Todd

considers cousin marriage the norm for the region (particularly asymmetrical cousin marriage between the children of brothers and sisters). It is unlikely that Murdock is correct in this respect. To this day approximately 60% of marriages in Pakistan are consanguineous, 80% of which are between first cousins and these levels have remained more or less constant over the last four decades (Bittles 2001). We therefore choose to adopt Todd's coding of this variable.

In Europe a few countries gave mismatches as well. For France, Murdock's observation of impartible inheritance was rejected in favour of Todd's observation of partible inheritance in the more populous Northern France. For the Netherlands, Murdock's extended families were rejected in favour of the far more prevalent nuclear families observed by Todd. However, Murdock's observation of partible inheritance in the Netherlands has been followed instead of Todd's observation of indifference towards inheritance practices. For the English too, including settlers in America, partible inheritance has been followed rather than indifference.

For Russia we observe a mismatch between the two datasets driven by the classification of the society in Murdock as practicing nuclear domestic organisation while Todd categorises the majority of the area as following an extended household ideal. The sources reveal that the difference in classification arises from focusing on different time periods. Murdock's reading of the sources focuses on events after the Russian revolution, when collectivisation forced a break with past family structures. Todd, on the other hand, is more interested in the historical situation pre-dating such events. Murdock's sources would not dispute a historical predominance, or ideal type, of extended households in this region. We therefore choose to follow Todd. A further mismatch in Russia is due to the lack of property rights observed in Murdock's data while Todd assigns them the label of symmetrical inheritance. Most of the sources mention patrilineal inheritance as the norm, although a dowry for women appears to be common, and a degree of asymmetry in that oldest sons may well inherit more. In Murdock the classification of inheritance as lacking in property rights is likely due to the changes incurred after the Russian Revolution, which entails that again we follow Todd for the historical family system classification.

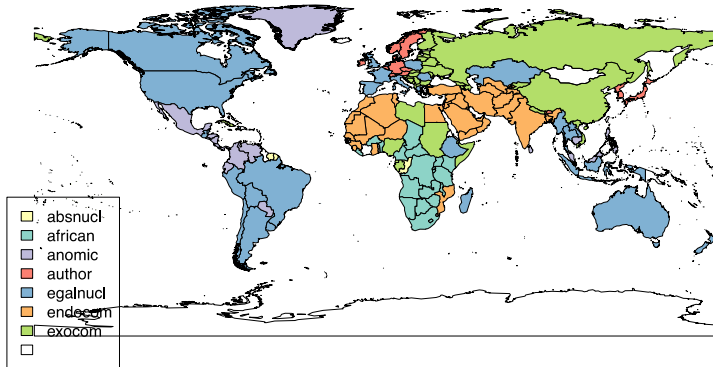
Overall, the data by Todd comes out favourably when trying to solve discrepancies between the data. Nonetheless, for the remaining, smaller countries that do not match, we think it is best to consider the fact that the two datasets have different strengths. Murdock's data is obviously at its most detailed for Africa and Asia while Todd has used very broad characterisations for these regions, though his later work provides more detail (Todd 2011). Murdock, on the other hand has a very weak empirical basis for European societies and their settler populations, which is where Todd is at his most detailed. Todd's broad observations of indifference in regard to family practices, though they sometimes capture reality well, should probably be discarded in favour of Murdock's more detailed observations. Finally, Todd has a stronger historical focus than Murdock. If the focus is on the historical traditions of family formation, the cultural ideal rather than actual practice at a given time, Todd's data has the edge.

We have used these observations on the strengths and weaknesses of the two datasets as a guide to creating a hybrid dataset. Provided both datasets are expressed in the appropriate dummy variable format, the strengths of the two can be combined. This involves using our corrections on the most populous countries, discarding Todd's observation of indifference to the practice of inheritance and consanguineous marriage, and using Murdock for Africa and Asia and Todd for Europe and the Americas.¹² Figure 3.7 presents a map with the family-systems in the hybrid dataset. When considered alongside Table 3A.2. in the appendix this shows most of the differences between the original Todd dataset and the new Hybrid dataset to be located in Africa and South-East Asia.¹³

12. Data will be made available on www.clio-infra.eu. If you desire access in the meantime please contact s.g.carmichael@uu.nl

13. See appendix 3.2 for table showing what all the countries in the dataset are classified as in Todd and how we classify them.

Figure 3.7: Map of countries by family systems based on the hybrid dataset.



SECTION 3.8. FAMILY PRACTICES PAST AND PRESENT

Because the data from both Todd and Murdock-Narodov should capture historical family organisation, it is feasible to use it to explore developments over time by comparing the hybrid dataset to present-day data. One source for this is the OECD's Gender, institutions and development database (GID-DB), containing data for non-OECD countries for 2009 (Jütting et al 2008; OECD 2009). Part of this dataset, and the resulting Social Institutions and Gender Index (SIGI), takes into account "family code" (consisting of indicators on early marriage, polygamy, parental authority, inheritance), therefore this data is very well suited for comparisons with data on family practices.

The OECD's GID-DB family code data looks at women's right to inherit, early marriages, polygamy and the parental authority of women (whether women have the same right to be a legal guardian of a child during marriage

and whether women have custody rights over a child after divorce). We compared data on polygamy and the right of women to inherit with the equivalent variables in Murdock and Todd. In the case of inheritance, this means we used another variable than has been used so far: variable 74 on real property inheritance rules to see whether inheritance rules were patrilineal. To compare Murdock's and Todd's data on co-residence, we used census data from IPUMS-International to compute the average number of married couples per household for all available countries in c. 1997 (Minnesota Population Center 2013). Finally, to compare data on preference for cousin marriage, we used data on the percentage of the population practicing consanguineous marriage collected by Bittles for the period 1957–1994 (1994, 2001; Woodley and Bell 2013).

The matchup of these data sources is not straightforward. Taking the example of polygamy, fewer countries show up in Murdock as practicing polygamy than they do in the GID-DB data. To Murdock, polygamy is by and large restricted to sub-Saharan Africa, whereas the GID-DB also records the practice in Muslim countries, India, and Russia. In part, this is due to their different method of measurement. Although the GID-DB claims to look at acceptance of the practice, as well as its legality, a look at the data from countries such as India or Pakistan suggests categorisation as polygamous based mostly on its legality (OECD 2012). As was the case for many of the variables in the Ethnographic Atlas, Murdock coded societies as polygamous only if it was the dominant practice in a society, or the practice of the majority group.

Despite these coding differences, some observations can be made. In countries the GID-DB codes as non-polygamous but Murdock coded as polygamous, the practice must have declined. After all, it used to be the dominant practice but is not even legal in 2009. Likewise, we can also observe cases where polygamy was stable and may even have grown. In countries with large Muslim countries, the GID-DB observes that polygamy is still accepted. As Murdock did not code them as polygamous, the practice was not dominant in ca. 1920, though it may still have been accepted. Muslim countries were therefore probably stable in this regard. Polygamy seems to have declined in some of the southernmost countries of Africa. While it was still common practice at the

	Polygamy (2009)	Polygamy (2009)	Polygamy (2009)	Inherit (2009)	Inherit (2009)	Inherit (2009)	Inherit (2009)	Consan- guinity (c.1960)	Consan- guinity (c.1960)	Consan- guinity (c.1960)	N. couples (c.1997)	N. couples (c.1997)	N. couples (c.1997)
(Intercept)	0.38*** (0.04)	0.27*** (0.04)	0.40*** (0.04)	0.27*** (0.06)	0.41*** (0.04)	0.25*** (0.05)	7.27*** (2.34)	8.97*** (2.46)	8.84*** (2.34)	0.82*** (0.03)	0.83*** (0.03)	0.82*** (0.03)	0.82*** (0.03)
Polyg. (MD)	0.38*** (0.13)												
Polyg. (Todd)		0.54*** (0.07)											
Polyg. (Hybrid)			0.32*** (0.09)										
Patrin. (MD)													
Patrin. (Todd)				0.15* (0.08)	-0.08 (0.06)								
Patrin. (Hybrid)						0.20*** (0.06)							
Cousin mar.							2.5.79*** (4.75)						
Cousin mar. (MD)								24.94*** (4.05)					
Cousin mar. (Hybrid)									21.12*** (3.82)				
Extended (MD)										0.14** (0.05)			
Extended (Todd)											0.18*** (0.04)		
Extended (Hybrid)												0.16*** (0.04)	
R ²	0.07	0.38	0.09	0.03	0.02	0.08	0.29	0.41	0.32	0.09	0.24	0.21	
Adj. R ²	0.07	0.37	0.09	0.02	0.01	0.07	0.28	0.40	0.31	0.08	0.22	0.19	
Num. obs.	118	98	113	113	108	111	73	57	67	65	55	63	

beginning of the twentieth century, it was no longer commonly accepted one hundred years later.

Table 3.10: Results of linear regressions of Murdock's polygamy, inheritance, cousin marriage preferences, and extended households on present-day equivalents.

Constant terms included, but not reported. ***, **, * indicate significance at <0.1 %, 1 %, and 5 % respectively.

Panel 1. OLS models.

see previous page

Panel 2. Ordered logistic models.

	Polygamy	Polygamy	Polygamy	Inherit	Inherit	Inherit
	(2009)	(2009)	(2009)	(2009)	(2009)	(2009)
Polyg. (MD)	1.70*** (0.60)					
Polyg. (Todd)		2.74*** (0.48)				
Polyg. (Hybrid)			1.42*** (0.45)			
Patrilin. (MD)				0.99** (0.48)		
Patrilin. (Todd)					-0.38 (0.37)	
Patrilin. (Hyb.)						1.26*** (0.41)
0 0.5	-0.19 (0.21)	0.40 (0.26)	-0.28 (0.21)	0.16 (0.37)	-0.70*** (0.26)	0.27 (0.33)
0.5 1	1.29*** (0.24)	2.08*** (0.37)	1.28*** (0.25)	2.67*** (0.46)	1.84*** (0.33)	2.90*** (0.44)
AIC	254.69	178.68	242.42	221.83	213.72	212.25
BIC	263.00	186.44	250.61	230.01	221.77	220.37
Log Likelihood	-124.35	-86.34	-118.21	-107.91	-103.86	-103.12
Deviance	248.69	172.68	236.42	215.83	207.72	206.25
Num. obs.	118	98	113	113	108	111

Keeping in mind that coding differences may add substantial noise, we now proceed to the regressions for the persistence of the family traits. Because some of the outcome variables can be interpreted as continuous variables, we

start with OLS regressions before moving to logistic models. Table 3.10 presents the results of the present-day data as the dependent variable against the hybrid dataset, Murdock, or Todd. Patrilineal inheritance practices in the hybrid dataset or Murdock-Narodov in c. 1920 were statistically significant predictors of present-day inheritance. It increases the score on inheritance in the GID-DB by 0.15–0.20 towards a more disadvantageous score for women.¹⁴ This is an intermediate effect on the GID-DB's 0, 0.5, 1 scale of the GID-DB (no, intermediate, and strong discrimination). Polygamy gives slightly higher estimates. Being coded as a country that practices polygamy in the hybrid data or Murdock increases the expected value of the GID-DB sub-index by 0.3–0.4. The Todd data on polygamy is an even stronger predictor of present-day polygamy. It is associated with a full step (0.5 points) on the GID-DB. Since the GID-DB scores are of an ordinal nature, ordered logistic models might be more appropriate for these variables. Such models generally show that the historical family characteristics poorly predicts countries being coded 0 or 0.5 in the GID-DB's present-day data, but strongly predict the difference between a country being coded 0.5 or 1.

Consanguineous marriage in ca. 1920 is a strong predictor of more recent figures on consanguineous marriage. Having a preference for cousin marriage in Murdock's data increases the expected value of the share of the population practicing consanguineous marriage in the 1960s and 1970s by 26 percentage points. For Todd's data, the effect is similar: it is associated with a 25 percentage points higher share of the population practicing consanguineous marriage, while the hybrid dataset predicts a 20 percentage point increase.

The existence of extended families has a positive association with the extent of co-residence in the 2000s and it too is statistically significant. A preference for extended families in Murdock's data in c. 1920 is associated with 0.14 more

14. Todd's data on daughters' inheritance from Causes of progress gives no significant results, but this is not unexpected given that it derives the ability of daughters to inherit entirely on the sharing between brothers i.e. if brothers are held to inherit equally then sisters are presumed to receive nothing.

couples per household in c. 2000. Extended families in Todd's data predict 0.18 more couples per household in c. 2000 and the hybrid data is in between these values (0.16). With the number of couples per household in IPUMS in c. 2000 varying between 0.5 and 1.4, this is a moderate effect.

In short, the data on historical family characteristics has some predictive power for today's measures of family characteristics, but it is far from perfect. Consanguineous marriage appears as a very persistent practice. Considering the GID-DB sub-indices, the variables from Murdock and Todd show some persistence, with better results for strong present-day cases. Extended households is also a moderately persistent trait.

SECTION 3.9. FAMILY SYSTEMS AND CURRENT DAY VALUES

Persistence in terms of the characteristics described above is one test of the value of the dataset. However, possibly more importantly are the outcomes in terms of values today. The underlying determinants of family systems can capture a set of norms and values for which we have very little systematic data available historically. However current day data allows us to explore whether the family systems we constructed above explain present day variation in norms and values. For this we made use of the World Values Survey's longitudinal data for 1981–2014 (World Value Survey 2014) and tested for the effect of the various family systems on variables related to gender attitudes and agency.

We focus here on two values that we believe could be influenced by historical family systems. First, the way families are organised and the norms and values accompanying this can influence the amount of liberty a person perceives themselves to have. For instance, strong expectations on where children should live or whom they should marry could limit the extent to which people can make decisions on their own life course. To measure this, we use question A173 asking people to indicate on a 1–10 scale “how much freedom of choice and control you feel you have over the way your life turns out?”¹⁵

15. This question is very closely related to agency.

We further look at attitudes towards women. Family practices can be particularly restrictive towards women because they have an important role in transmitting family values and membership to cultural groups (Shachar 2001). As a measure of the attitude towards gender equality, we look at question D059, asking whether respondents strongly agreed, agreed, disagreed, or strongly disagreed with the statement that “on the whole, men make better political leaders than women do”.

Table 3.11 presents the results of regressing the hybrid Murdock-Todd data on the responses to these two questions. At the individual level we control for the survey year, education, income, gender, age, age-squared, city size (to capture the difference between urban and rural respondents), marital status, and whether the respondents has children; at the country level we also control for GDP per capita.

Table 3.11: Results of OLS regressions of WVS responses on domestic organisation.

Outcome (freedom): feel no freedom (1) to great deal of freedom (10). Outcome (Men leaders): strongly disagree (1) to strongly agree (4) with men being better political leaders. ***, **, * indicate significance at <0.1 %, 1 %, and 5 % respectively.

	Freedom	Men leaders
(Intercept)	5.96*** (0.74)	4.36*** (0.45)
nuclear (hybrid)	1.05*** (0.19)	-0.22*** (0.07)
stem (hybrid)	0.92*** (0.25)	-0.71*** (0.11)
polygamy (hybrid)	0.23 (0.34)	-0.39*** (0.11)
R2	0.09	0.17
Adj. R2	0.09	0.17
Num. obs.	118673	109263

Relative to countries characterised by extended families (the reference category), respondents in countries with nuclear or stem families report feeling more freedom of choice and control: one point extra on the ten-point scale. Nuclear families especially lack the residence under the authority of a father

or in-laws, so this fits Todds (1985) model. Regarding gender equality, we find that people living in countries without a history of extended households were less likely to agree with the statement that men would make better leaders. The 0.7 points lower on a four-point scale for stem households is a large effect and coincides with Todd's (1987) idea that these family types were especially conducive to the empowerment of women.

SECTION 3.10. CONCLUSIONS

It is one thing to recognise that family characteristics matter for social and economic outcomes – gendered or otherwise – it is another to test this empirically. This chapter has tried to provide scholars with tools to approach the role of the family, by investigating whether the family systems that Todd attributes great explanatory power to can be corroborated with other data. This check came from a widely used source of data in economics and economic history: the ethnographic data collected in Murdock's *Ethnographic Atlas*, translated to country-level data with ethnic population figures from the *Narodov Atlas*.

The underlying characteristics of Todd's family systems (domestic organisation, inheritance, preferences for cousin marriage) match in roughly 70 % of the cases. The family systems composed of these variables correspond to the ethnographic data from Murdock in half the cases. Countries in North-Africa, the Middle East, and Southern Asia often match Todd's family types. As a result his endogamous community, African, and egalitarian nuclear family types perform well. There are also important mismatches in *Explanation of Ideology*. The exogamous community and the absolute nuclear, and the anomie family types are not readily matched to the Murdock data. Observing the absolute nuclear family in Murdock's Atlas is further hampered by the lack of indifferent inheritance classification. The opposite occurs in sub-Saharan Africa. Whereas this is classified with a blanket category by Todd, Murdock is at his most detailed for this region. Though the prevalence of polygyny in Africa means that Todd's African type is frequently encountered, the Murdock data allows for more detail.

This chapter has also explored the possibilities of the Murdock data by comparing it to present day data on family practices. Despite occasional coding differences between the two, doing so allowed us to observe moderate persistence of the practices of extended families, polygamy, and inheritance problems and strong persistence in preferences for consanguineous marriage. Likewise, historical family systems seem to have predictive power for people experiencing freedom and having positive views on gender equality.

Finally, we have made recommendations on the relative strength of the two datasets. We have made detailed suggestions to resolve some of the more glaring contradictions. For the remaining smaller contradictions, we suggest considering the relative strengths of the datasets: Todd's strong data on European and historical societies and Murdock's detailed observation for Africa and Asia. We would further recommend that scholars use the hybrid dataset as a robustness check where possible.¹⁶ This exercise provides scholars with a set of tools and data to further test and explore the role that different patterns of family organisation play in determining current day development outcomes.

16. In chapters 4, 5 and 6 the hybrid dataset is used for all the analyses.

Chapter 4: An Essay on the Ethnographic Building Blocks of the European Marriage Pattern: Global correlates and links with female status

Piece largely as forthcoming in Cambridge Population History Group 50th Anniversary volume. Written with Jan Luiten van Zanden

SECTION 4.1 INTRODUCTION

This chapter was written for the 50th anniversary conference of the Cambridge Population History Group. One of the major themes in the work of the Cambridge Group has been the European Marriage Pattern (EMP) (Hajnal 1965, 1982). To some extent this topic unites the two most influential branches of research that have emanated from the group since the 1970s; the reconstruction of English population development since the 16th century based on family reconstitutions by Wrigley and co-workers (Wrigley and Schofield 1981; Wrigley, Davies, Oeppen, and Schofield 1997) and the analysis of household size and structure by Laslett and co-workers (Laslett 1982). The first branch focused on the way in which demographic behavior was regulated, and concluded that marriage decisions, as analysed by Hajnal in his seminal papers, were key to explaining population growth. The second branch demonstrated, amongst other things that household size in England was typically quite small, and that servants played a relatively large role in them, conclusions that could only be understood against the background of Hajnal's EMP. So one could argue that the EMP – its functioning and consequences - has been at the core of the research carried out by the Cambridge Group over the years.

In recent years, the academic debate about the EMP has become part of a much wider debate about the Great Divergence, and in particular the 'unique' institutional framework that made Western Europe diverge in the long run from the rest of the world. The point that it helped, via its high age of marriage and large share of singles, to restrain population growth and diminish Malthusian tensions had already been made by Hajnal, and has returned in various versions in subsequent literature (Wrigley and Schofield 1981, Clark 2007). But, perhaps inspired by Unified Growth Theory, more recently other 'externalities' of the EMP have been stressed: it resulted in a new stage in the life cycle with more 'space' for human capital formation, it was relatively gender-friendly, empowering women who play a major role in human capital formation of the next generation (the list is much longer). In their "Girlpower" paper De Moor and Van Zanden claim (2010a; 2010b) such a link between the EMP and high levels of human capital formation, and they presented evidence to underpin the argument. It is in particular this link between the institutions which underlie the EMP, female agency and the education attainment of society, suggested by the theoretical literature that interests us here. We do this by scanning Eurasia to see where similar institutions related to family and marriage occur before moving to a series of case studies based on this exercise. For the case studies we look at educational attainment in the period 1900-1930.

Much of the literature on the EMP is, however, rather Euro-centric, focusing on the 'unique' features of the EMP and its consequences for demographic and economic development. Hajnal (1965) and Guichard (1977) (and others) have developed an argument in which the differences between 'the West' and 'the Rest' are stressed, but 'the Rest' is often not clearly specified – in the Hajnal-case it is everything to the east of his famous Trieste – St. Petersburg line. Such an approach has two weaknesses: it appears to be quite difficult to really map the Hajnal-line (Szoltycek 2012), but more importantly, it is based on the assumption that 'the Rest' had one undifferentiated marriage pattern which in all respects was completely different from the EMP of Western Europe. It is clear that marriage systems in Russia, China and large parts of India were in certain respects really different from those found in North-Western Europe – as

Hajnal already pointed out, age of marriage was usually much lower, in particular for women, and the share of single women was tiny. But what about the rest of Eurasia? As, for example, Goody has shown in many publications (most forcefully in Goody 1989, also Goody 1996), there were large differences within Eurasia – in terms of the position of women within marriage, for instance, the South of India differed significantly from the North. So the question can be asked, how different family systems in, for example Java, Burma or Sri Lanka (as we will see, regions with relatively women-friendly family practices) were from those in Western Europe.

The starting point of this chapter are these two contrasting views: the Hajnal-interpretation that the EMP was 'unique', and Goody's work, which finds many features of the West in the East (and vice versa). Part of the explanation of these differences is that Hajnal looked at outcomes of the marriage system such as high age of marriage, whereas Goody focused on the anthropological features (monogamy, exogamy, etc.) which some non-European regions shared with Western Europe. Our strategy is to analyse both, but our main focus is on the family related 'building-blocks' of the EMP.

The goal of this chapter is to broaden the discussion about the links between marriage systems and economic development by 1) Redefining the EMP in ethnographic terms as a marriage system characterized by monogamy, exogamy, consensus (no arranged marriages), neo-locality, and a relatively strong position of women in marriage (as measured by age of marriage); 2) To find out, using available maps of the global distribution of marriage systems and ethnographic data of societies, which other regions of the world shared these characteristics – do we find similar/identical marriage systems elsewhere? 3) Focus on a limited number of societies with similar (but not identical) characteristics, to find out if these marriage systems had comparable consequences for demographic and economic development, and more specifically, on human capital formation (measured here by literacy levels).

This chapter builds on the "Girlpower" paper (De Moor and Van Zanden 2010a) in that it takes as its starting point the classical definition of the EMP as a marriage system with high age of marriage (of females), large share of sin-

gles, low spousal age gap, and a large group of co-resident unmarried servants, but tries to look at the underlying institutions which explain such marriage behavior. Smith has already argued that the search for the European Marriage pattern as a 'statistical artifact' should not lead us away from the issue 'to detect the wider social structural features that sustained it' (Smith 1980: 102). Here we take an ethnographic route to address the same question, by selecting measures from the ethnographic literature which link to the basic elements of the EMP: centrality of the married couple, relatively strong bargaining power of women and an element of consensus in the marriage.

One of the most important institutions related to the EMP is the practice of neolocality. One of the driving factors behind high ages of marriage in North Western Europe is often argued to be the expectation that the newlyweds establish their own household independent of that of their parents. This is as opposed to systems where the young couple remains resident in the household of their parents. This in turn is linked to the matter of whether one's marriage partner is dictated by tradition and/or older generations or whether an element of choice exists. One way of measuring this is to look at whether a system of preferred cousin marriage exists. Where endogamous marriages are preferred this curtails one's options to choose a partner freely on the marriage market.

As the key element of the European Marriage Pattern is the conjugal couple, one of the building blocks of the associated family system is that of monogamy. Therefore a distinction must also be drawn between societies where polygamy is allowed, and those where it is prohibited. Monogamy is associated with an improved female bargaining position but is not the sole indicator used to capture this component of the EMP. To examine this element we also look at female ages of marriage and whether females can inherit (or rather whether the inheritance system is bilateral, matrilineal or patrilineal). These building blocks are based on the classification of the countries typically associated with the EMP.

Table 4.1. The EMP in ethnographic terms

EMP building block	Related ethnographic variables	Hajnal components
Central married couple	Nuclear households, neolocal residence, monogamous, exogamy	Neolocal residence
Relatively strong bargaining power of women	Monogamous, inheritance practices	High age of marriage
Consensus in the marriage	Exogamy, premarital sex norms	Low spousal age gap

We define centrality of the married couple as those variables which reflect that the conjugal couple acts as a relatively independent unit. Consensus in the union is meant to imply that the union is consensual and that the partners are, to some extent, each other's equals.

The building block of consensus in the marriage and the relatively strong bargaining power of women are obviously interlinked, although, at least as far as endogamy is concerned, this practice curtails the freedom of both men and women.

SECTION 4.2. SCANNING EURASIA

In order to get a picture of how the various facets of the EMP sketched above distribute themselves on Eurasian scale we will be using the hybrid dataset used in chapters 2 and 3, with supplementary data from Murdock where Todd provides no information, to create a series of maps. These maps present a snapshot of the historical "ideal type" that various studies have ascribed to different societies and should not be taken of representative of the current day situation. In principle all maps cover the whole world, but for the purposes of this

paper we concentrate on Eurasia (the North of Africa also appears on these maps, and we occasionally also comment on features of its family systems) but the argument presented here revolves around the Eurasian landmass.¹

4.2.1. Centrality Married Couple

Neo-locality

How families choose to organize themselves in terms of co-residence can have important implications for the roles different individuals have within the family structure. In a nuclear family model married couples do not co-reside. Newlyweds establish their own household outside that of their parents'. In the stem family system one child remains in the house of their parent with their spouse (this could be the oldest or the youngest child) while in the community (to use Todd's term), or extended family system all of the (male) children of a couple bring their spouses into the household of their parents.

There are two ways of looking at neo-locality; domestic organization and where the marital residence involves relocation to live with or close to the family of the groom or the bride.

1. The Murdock Atlas is not without flaws, particularly in its categorisation of European countries it is problematic as the ethnographies of the time were largely conducted for societies outside of Europe. In order to see how the Atlas holds up to a cross-check the variables related to endogamy, extended versus nuclear households and inheritance rules were compared to those at the country level as proposed by Emmanuel Todd's work on family system. The results of this are presented in Chapter 3. The major conclusions are that the two datasets match to a large extent (roughly 70%) but that problems exist. In order to draw upon both datasets strengths' a hybrid dataset for the three variables mentioned above was compiled. The details of how choices were made as to which dataset to follow on a country basis can be found in the previous chapter of this book. To summarise briefly the hybrid dataset follows Todd for Europe and Murdock for Asia and Africa.

Domestic Organisation

Figure 4.1 below shows the Eurasian pattern as concerns the norms surrounding domestic organization.

Category 4 in the map below is polygamy where it is the dominant form of domestic organization; this occurs solely in Africa but has been left on the map for the time being.

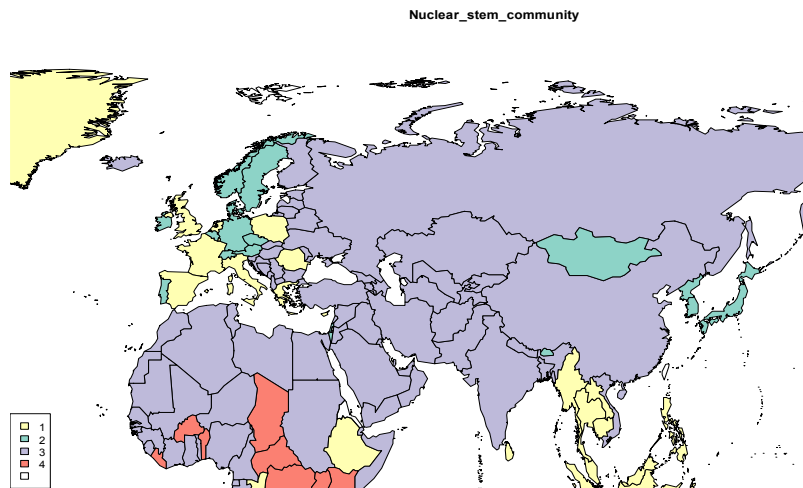
Category 1 = nuclear

Category 2 = stem

Category 3 = extended

Category 4 = polygamy

Figure 4.1. Domestic Organisation



The map clearly shows that for the bulk of the Eurasia extended households were the predominant ideal mode of household organization. Such domestic

organisation is observed throughout Central Asia, North Africa, the Middle East, parts of Eastern Europe and South East Asia. We observe pockets of simpler household organisation on the outskirts of the Eurasian continent. A particularly evident one is that of the Indochina peninsula and the surrounding countries of Indonesia, the Phillipines and Malaysia along with Sri Lanka. It is also found throughout Western and Southern Europe as well as in Poland, Romania, Ethiopia and Congo. The stem family variant is found even less frequently; in Japan and South and North Korea, Mongolia, Bhutan, and a handful of European countries.²

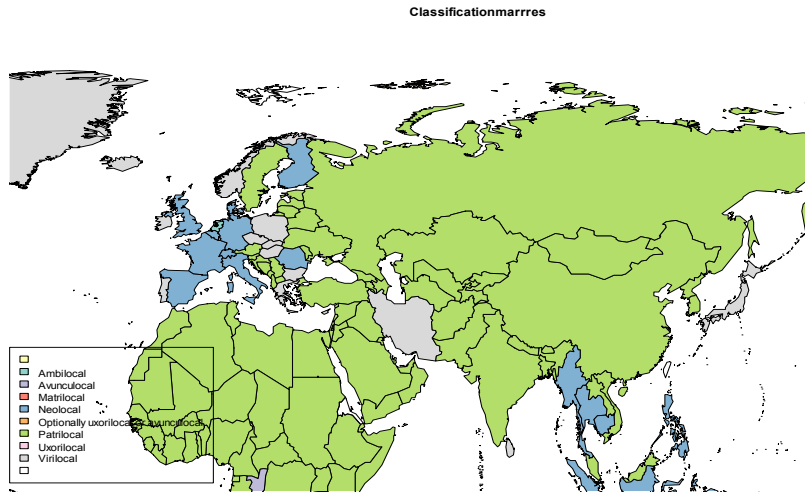
Marital co-residence

Another feature of the newly-weds home is whether the location of their household occurs along structural lines in proximity to their parent's household, or whether it is set up elsewhere. The following map shows the Eurasian patterns for this characteristic of households. This map uses a variable from Murdock which codes where the married couple lives in the years after the first years of marriage.³ Patrilocal and virilocal residence both imply moving to live close to the husband's parents or other relatives of the groom while matrilineal and uxorilocal involve moving to relatives of the bride. Avunculocal involves moving to live with or near male relatives of the female line while Ambilocal mean that the couple lives either near the male or the female line.

2. Mongolia is a case with conflicting literature on whether the family system should be classified as stem or extended. There does, however, seem to have been one favoured heir amongst the sons of a clan head lending itself to a stem classification however others suggest that if married sons move away from the central unit before their father dies this indicates a rift in the family and is frowned upon (Aberle, 1953).

3. This data is taken from the Murdock *Ethnographic Atlas* directly with the exception of the observations for the former Soviet republics which were categorized as neolocal in Murdock. See Rijpma and Carmichael (2014) for an explanation of why Murdock's reading of the Russian sources is questionable. Here we use variable 12: marital residence after first years.

Figure 4.2. Marital residence location

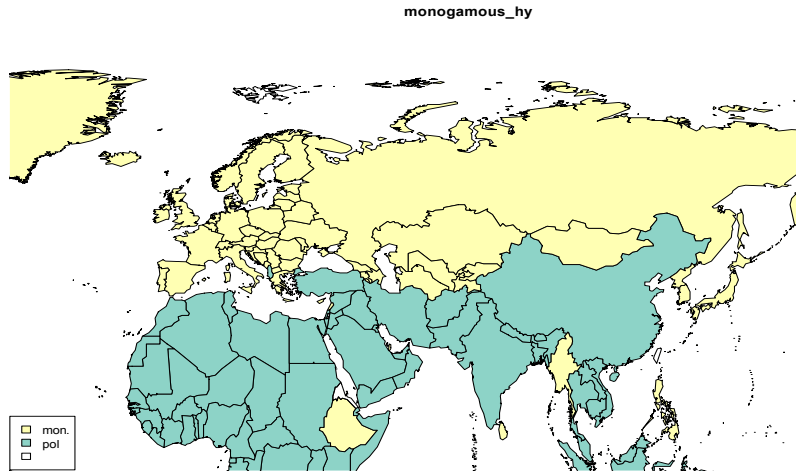


Here we see that the majority of Eurasia is characterized by patrilocality, with the associated form of virilocality. Neolocal residence occurs (unsurprisingly) in most of the same areas for which we found nuclear households with the exception of Laos, Malaysia, Norway and Sweden, where despite nuclear household domestic organization settlement near the husband's relatives appears to be the prescribed norm. Nowhere do we find dominant forms of matrilocal residence at the country level in Eurasia. Matrilocal and the related uxori/lococal forms of residence do exist however. In the entire dataset 83 societies are listed as Uxorilocal and 58 as Matrilocal. The majority of these are however located in the Americas. Ten Uxorilocal societies exist outside the Americas and 29 Matrilocal. The societies which adhere to these practices are listed in Appendix 4.1 along with a map of where the couple resides during the first years after marriage (Appendix 4.2). They occur largely in South East Asia, islands in the Pacific and the along the east coast of Africa.

Monogamy

Another way to look at the centrality of the married couple is to look more closely at the practice of polygamy shown in map 1 above. Map 4.1 shows the countries where polygamy is the general form of domestic organization but in other parts of the world polygamy is still accepted even if not widely practiced. To construct a bird's eye view of whether the various peoples of Eurasia tolerate a man's marriage to more than one wife figure 4.3 below shows the practices by country in terms of monogamy versus polygamy.

Figure 4.3. *Monogamous or polygamous*⁴



A number of countries stand out as the usual suspects based on the earlier maps, in terms of their regional context; the Philippines, Sri Lanka, Burma and Ethiopia. The countries, despite regional prevalence of the acceptance of polygamy are coded as overwhelmingly monogamous.

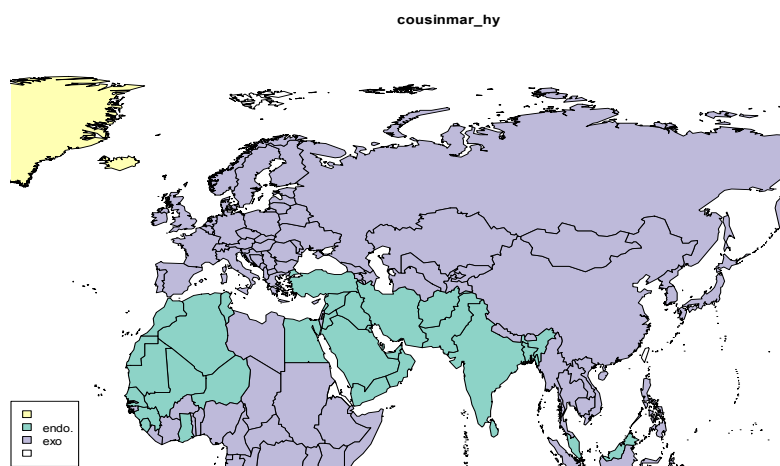
4. The classifications in this map differ slightly from those in figure 4.1. The discrepancy arises from the fact these maps are derived from two different variables. In figure 4.1 the data comes from the variables on domestic organization and therefore the polygamy variable included reflects the presence of societies where polygamy is the predominant form of domestic organization. Figure 4.3 is based, rather, on societies where polygamy is the preferential arrangement. This entails that although, for instance, China is coded as extended in Map 1 it is also coded as polygamous in figure 4.3. The extended family coding represents the dominant form of domestic organization, while the polygamous classification is based on marital composition.

4.2.2. Consensus?

Endogamy

The ethnographic variables available in Murdock do not quickly lend themselves to being interpreted as indicative of consensus within the union or not. One variable which might give us an indication of this is that of endogamy (or cousin marriage). In some countries one's marriage partner is prescribed by custom as being the daughter or son of one of your parent's siblings (i.e. a first cousin). Such practices of within family marriage are known as endogamy. In some countries such marriages are simply tolerated but in others they are the preferred mode of marriage. Where they preferred it is unlikely that the couple had much say in their choice of marriage partner, and therefore is indicative of a lack of consensus. The following map presents data on exogamy versus endogamy for Eurasia based on the classifications in the Murdock atlas, which concern preferred rather than permitted cousin marriage.

Figure 4.4. Endogamy versus Exogamy



Here we see that preferred cousin marriage occurs in a band of countries across the MENA (Middle East and North Africa) region along with parts of South and South East Asia with Libya as a seeming break between two regions of preferred endogamy. Sri Lanka, with its close proximity to India, follows its neighbour's pattern of preferred endogamy.

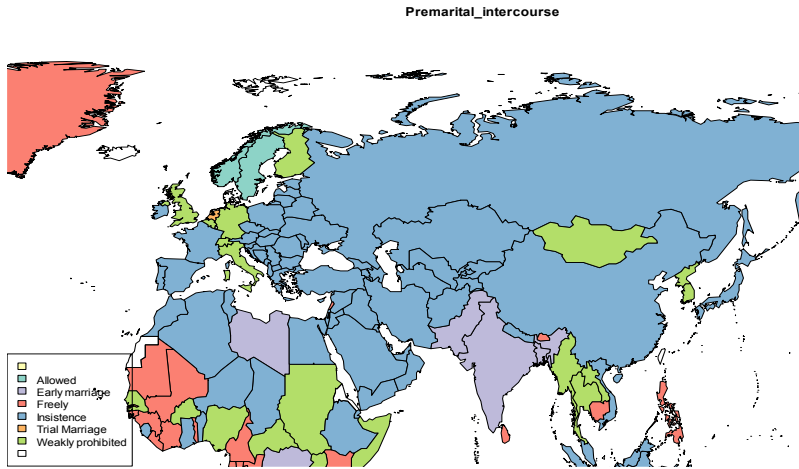
Pre-marital sex norms

Another possible way to capture consensus is through the norms surrounding pre-marital sex for young girls. Where strong norms concerning virginity of the woman exist it is likely that they have little say in the terms of their union as the family is under pressure to marry off their daughters before any suggestion of "impurity" arises. This is split into 6 categories listed below along with the shortened name used in the map key:

Table 4.2. Premarital sex norms

Early Marriage of Females (at or before puberty)	Early marriage
Insistence on virginity	Insistence
Prohibited but weakly censured and not infrequent	Weakly prohibited
Allowed, censured only if pregnancy results	Allowed
Trial marriage, promiscuous relations prohibited	Trial Marriage
Freely permitted, even if pregnancy results	Freely

Figure 4.5. Premarital sex norms



Here a slightly different pattern emerges than in the earlier maps. The Iberian peninsula and France are shown, in this respect, to be similar to much of Central Asia and the Middle East with an apparent insistence upon the virginity of the bride. The Indian sub-continent along with Libya adhere to a system where early marriage is the prescribed ideal in order to ensure virginal brides. We see weak prohibition of premarital intercourse in the United Kingdom, Germany, Italy, Switzerland, Finland, Burma and Thailand while Sweden and Norway allow premarital sex as long as pregnancy does not occur. The Netherlands is the only country in Eurasia where pre-marital sex is governed by trial marriages (*ondertrouwen*). However, strictly seen *ondertrouwen* does not allow for pre-marital sex. Yet if we turn to the legal record it appears that simply the promise to marry one another sufficed to create a legally binding union (for further detail see De Moor and van Zanden 2010a). Possibly most interesting are those countries which freely permit premarital intercourse. These include

Cambodia, the Philippines, Sri Lanka and a handful of African countries along with Greenland and Bhutan.

4.2.3. Relatively Strong Bargaining Power for Women.

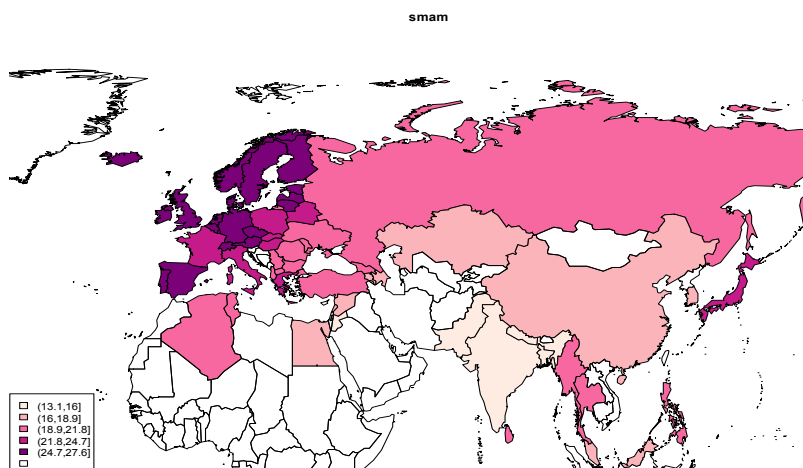
The indicator of premarital sex is closely linked to another indicator which is associated with the EMP building block of improved female bargaining position, that of female SMAM. The map below shows female SMAMs in Eurasia averaged over the period 1850 to 1950 to give an idea of where different patterns of age at first marriage exist.

This data is less complete than that of the earlier maps as it is reliant on census data or other statistical sources.⁵ We see here several types of marital behavior. The countries characterized by early marriage in the dataset above for premarital sex norms show up clearly as having marriage ages for girls of between 13 and 16 at the lowest end of the scale. Countries such as Egypt, China, Kazakhstan and Malaysia and North Korea, all of which, with the exception of Korea, had an insistence on the virginity of the bride make up the next group of countries where marriage occurs between 16 and 18.9. Thirdly we have a large group of countries with marriage ages between 18.9 and 21.8 in which Burma, Thailand, the Philippines and Sri Lanka stand out within their regional context of neighbouring India with its child marriage system and relatively young ages of marriage in China. Finally we have those countries with female ages of marriage of 21.8 and above split into two groups. Japan is the only Asian country with marriage ages above 21.8. All other instances of these ages of marriage are to be found in Europe where a distinction exists between those countries with marriage ages between 21.8 and 24.7 and those with marriage ages above 24.7. Here we see the United Kingdom, Ireland, the Netherlands, Scandinavia, the Baltic States, along with the Iberian peninsula and Austria, Germany, Switzerland and the Czech Republic as having the highest ages of marriages for women in Eurasia. In contrast France, Italy, Poland, Slovakia,

5. For more on the dataset see Chapters 2, 5 and 6.

Greece and Belarus have slightly lower ages of marriage which other parts of Eastern Europe fall into the same category of ages of marriage as Burma, Thailand and the Philippines.

Figure 4.6. Female SMAM averaged between 1850 and 1950



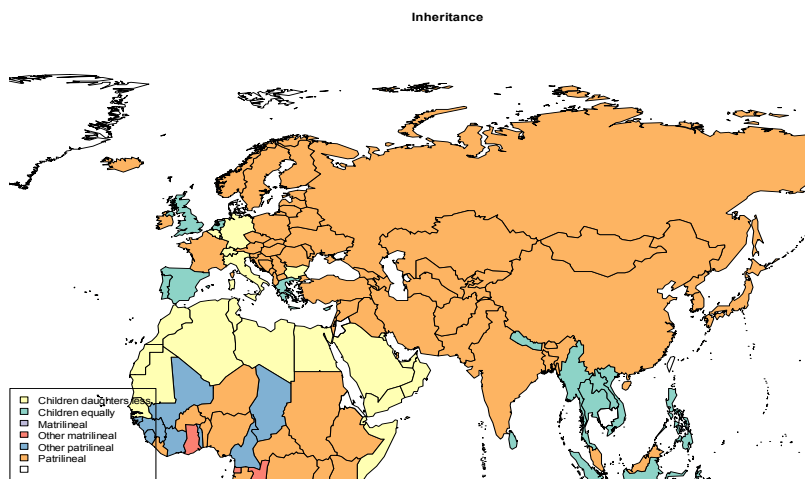
This is obviously one of Hajnal's indicators, and therefore not an ethnographic building block. Here we show it to give a sense of the Eurasian pattern. We move now to the ethnographic variables which reflect the position of women.

Inheritance and Descent

The norms surrounding inheritance are important in determining the position of women within a society. The map below shows the patterns for inheritance norms for Eurasia, constructed using Murdock's variables on inheritance for immovable rather than movable property.

It is immediately clear that patrilineal inheritance systems, or those where daughters receive less, are by far the dominant type. Patrilineal inheritance characterizes large parts of Asia, Eastern Europe, Scandinavia, France and Ireland, while systems where daughters receive less are predominantly to be found in North Africa and parts of the Middle East along with France, Italy and Belgium amongst others. In contrast practices of equal inheritance between sons and daughters are to be found only in a handful of countries in Europe along with a familiar group of countries in Asia (Thailand, Burma, Vietnam, Laos, Indonesia, the Philippines and Sri Lanka). Nepal is an island of equal inheritance systems surrounded by patrilineal systems as is Greece.⁶

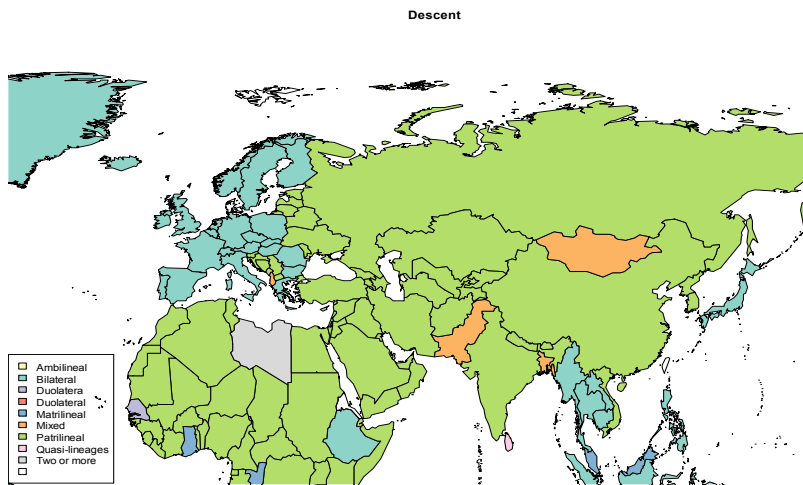
Figure 4.7. Inheritance



6. Please note here that contrary to chapters 3 and 5 here equality is measured in terms of equality between the sexes rather than equality between sons.

Another way of looking at “inheritance” is to look at how societies organize systems of descent. The map below uses a composite variable from Murdock which looks at whether countries have large kin groups of a matrilineal, patrilineal or other type in order to classify them into different forms of descent. For instance in order to be classified as a society with bilateral descent a country must have no matrilineal or patrilineal kin groups and be classified as bilateral or ego-oriented bilateral kin groups in terms of cognatic kin groups, i.e. how descent is calculated on the basis of which ancestors.

Figure 4.8. Descent



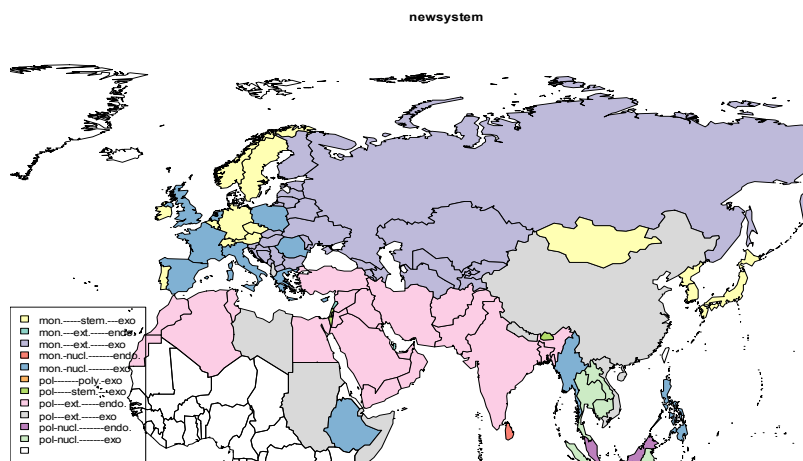
Despite inheritance practices in some parts of Europe which exclude women most of Europe is characterized by systems of descent which can be described as bilateral. A pocket of patrilineal descent can be seen in the countries of the former Yugoslavia. Albania, Mongolia, Pakistan and Bangladesh are all characterized by mixed systems of decent. Sri Lanka meanwhile, distinguishes itself

from the rest of Eurasia by being characterized by quasi-lineages where kin groups are based on filiation rather than on descent per se.

SECTION 4.3. COMBINING BUILDING BLOCKS

To bring together a number of the variables presented above and show how they work together the following map creates new categories based on monogamy versus polygamy, nuclear, stem and community and endogamy versus exogamy.

Figure 4.9. New System



What becomes clear here, as should have become evident from the maps above, is that there are a handful of countries outside the core area of North-Western/Southern Europe which exhibit similar if not identical family practices. These are Romania and Poland, Ethiopia, Burma and the Philippines. These five countries have the same combination of monogamy in conjunction with nu-

clear households and no preferred endogamy. Other parts of the Indochinese peninsula show similarities in two of the three variables with Laos, Cambodia, Thailand and Indonesia all practicing nuclear families and exogamy but combining this with a tolerance or acceptance of polygamy. An interesting case is that of Sri Lanka which stands out as the only country in Eurasia where the norms and practices of families entail monogamy and nuclear residence, but where cousin marriage is preferred, making it the only country in Eurasia with this combination of characteristics. Furthermore, Japan and Mongolia are quite similar to the stem families of central Europe.

Finally, in order to give a general picture of how the interplay between the various features of the family system as they relate to the position of women looks on Eurasian scale a composite measure was made. The composite measure gives a sense of how gender friendly each society was based on the various components of its family system. The scoring was as follows with a maximum score of 6, which no country achieved:

Table 4.3. Girl friendly family systems scoring⁷

Variable	Lowest Score	Intermediate Scores	Highest Score
Domestic Org.	Extended – 0	Stem – 0.5 ¹	Nuclear – 1
Cousin Marriage	Endogamy – 0 ²		Exogamy – 1
Monogamy	Polygamy – 0 ³		Monogamy – 1
Marital residence	Patrilocal and Virilocal – 0	Avunculocal – 0.25 Ambilocal – 0.5 Neolocal – 0.75	Matrilocal - 1

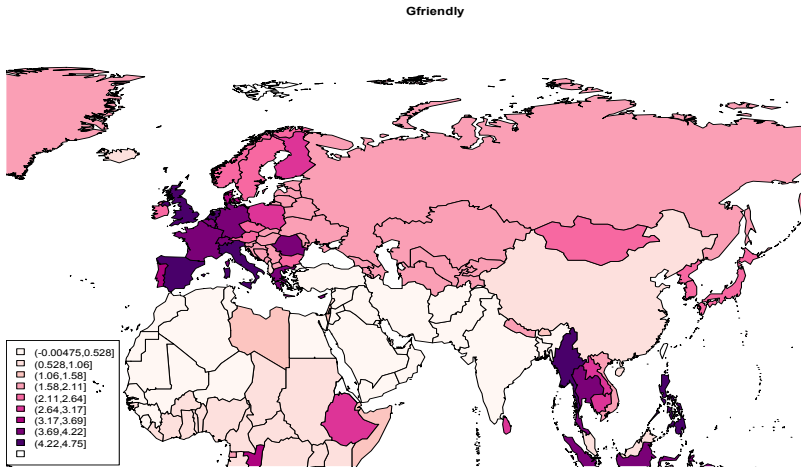
7. These variables were selected excluding descent rules, as it coincided largely with inheritance, and premarital sex norms.

Inheritance	Patrilineal – 0	Children daughters less – 0.5	Children equally – 1 Other matrilineal – 1
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Notes to table

1. Todd argues that stem families are associated with a strong position for women, however here we base ourselves on the ideas developed in this chapter on the centrality of the married couple, which is somewhat undermined in a stem setting. Future iterations of this index might try and take this into account better.
2. Assigning a score to the extended family variable and the endogamy is complicated as in some cases living in extended, endogamous families can be beneficial to women as it keeps their natal kin close-by and can provide them with a support mechanism in times of need. An argument could therefore be made for assigning a half point for the combination of the two however for simplicities sake this has not yet been implemented here (moreover it has only a marginal effect on the Eurasian distribution). Also Chapters 3 and 7 provide consistent evidence that the endogamous community family is detrimental to the position of women.
3. In chapter 3 polygamy has a significant positive effect but this was only after controlling for the level of economic development, and in a specification where polygamy was the dominant form of household organization. The reference category, therefore, was not monogamy, but community households. A simple regression including the different family characteristics used in chapter 3 but also including polygamy with the reference category monogamy is presented in the appendix of this chapter.

Figure 4.10. Girl friendly family systems



Countries missing data on a component thus lowering their score:

Cambodia and East Timor – inheritance

Greenland – cousin marriage and inheritance

Denmark and Luxembourg - inheritance

Iceland – cousin marriage

Here the pattern observed above is repeated. Two pockets of relative female friendliness emerge on the edges of Eurasia, in Europe and in South-East Asia, but within both regions there is some regional variation as well. Japan, Sri Lanka and Mongolia show a score similar to northern and parts of central Europe. Malaysia is a noticeable anomaly in the overall picture of South-East Asia. It has a total score of 1, being coded as having nuclear families but at the same time endogamous, polygamous, with patrilocal residence and patrilineal inheritance. Interestingly however, descent in Malaysia is bilateral (not included in the composite index as it overlaps largely with the residence and

inheritance variables). The studies which Murdock used for his dataset suggest that Malaysian nuclear families were to some extent being replaced by the extended form of household organization (Firth 1966; Jones 1981; Firth 1966).

SECTION 4.4. CASE-STUDIES, WITH SPECIAL ATTENTION TO CONSEQUENCES FOR HUMAN CAPITAL FORMATION

Thus far we have established that the ethnographic buildings blocks of the EMP seem only to be found in the margins of the Eurasian landmass: in Western Europe, Japan, the southern parts of the Indian subcontinent and South-East Asia. It is not the purpose of this paper to address the question why this was the case – why such family systems were not found in the Eurasian core regions. We limit ourselves to mentioning that an interesting hypothesis about the geography of family systems has recently been put forward by Emmanuel Todd (2011). He argues that simple, nuclear families are the original pattern found in hunter-gatherer societies, in which women often have a relatively strong position.⁸ The development of sedentary agriculture, of states and complex power structures also had its effects on power balances within the family: in the core regions where these processes originated – the Middle East (Fertile Crescent), North India, North China – this co-evolution of hierarchies at the level of the state and of the family started earliest and resulted in the rise of family systems in which the agency of women (and children) was severely constrained. In the margins, where agriculture and state hierarchies emerged much later, stem families (a ‘compromise’ between nuclear and community family patterns) and nuclear families developed or survived. This resulted in the spatial pattern that we find here (based, however, to some extent on Todd’s

8. This idea has received recent support from work done on hunter-gatherer groups in the Congo and the Philippines (Dyble et. al. 2015). They demonstrate that in these modern day hunter gatherer groups equality between the sexes is the norm, with men participating in child-care and unanimous decision making the norm. These findings hark back to the work of Morgan and Engels mentioned in the introduction.

own data from earlier publications). The price paid for early development was a demographic system in which women were stripped of their power – which may have had negative consequences for economic development.

But did the marriage system really matter for economic development? Such a case has been made for Western Europe and the EMP, where successful economic development and women-friendly ethnographic characteristics coincide, and perhaps Korea and Japan fit into a similar argument, but Sri Lanka, Kerala, Burma and South-East Asia are not high income countries (and have, as far as we know, never topped the real income league). Obviously, the spatial distribution of economic development does not correlate perfectly with the maps just presented. However, economic development is caused by a multitude of institutional (and non-institutional) factors, of which the characteristics illustrated above are only a small part. So we cannot hope to explain the entire development process in this way, and have to focus our search for links between the marriage system and development. The link we want to investigate is: does the relatively strong position of women in certain regions result in higher levels of human capital formation - a link that is considered very important in the case of the EMP. The literature suggests a number of mechanisms to explain such a link: firstly, delayed marriage leaves more time for building up experience, networks and human capital; secondly, a stronger bargaining position of women within the household will result in less children and/or more investment into the education of children. We cannot test this in any detail but will scan the oldest sources available (for most regions: censuses for the 1900-1930 period) to measure the literacy (and marriage ages) of the women concerned.

4.4.1 Japan

We can be brief about the case of Japan, which is covered by a substantial literature and already plays a central role in the international debate about marriage systems and economic development. It is a well-documented stem-family system, in which the position of women was relatively strong, in particular

compared with China – in terms of inheritance, sexual freedom before marriage, and position within the household (a recent survey in Kok forthcoming). Saito (2005) characterizes the Japanese marriage system as a ‘third pattern’, in between Western Europe and the joint family systems of Russia and China (also Cornell 1987). By Asian standards, female age of marriage was relatively high at about 20 years, with large regional differences; in the less developed north it was lower than in the more commercial and urban south (data from the 17th and 18th centuries). Almost all women (and men) did marry, however – the large group of singles characteristic of the EMP is missing (Saito 2005 169-171). The spousal age gap was also quite high by EMP-standards (about 5 years).

At the same time, during the Tokugawa period, Japan began to invest in its human capital. In the 18th century, the level of literacy and of book production/consumption was already quite high, probably higher than in China, the only serious Asian ‘competitor’ (Van Zanden 2009; also Baten and van Zanden 2008). Recent research has also shown that the economy of Japan was growing gradually during the period: urbanization increased, markets developed, and GDP per capita went up, in a way preparing for the post-1870 growth spurt (Bassino et.al. 2011; Hayami 2004). More detailed detail on Japanese literacy is hard to come by however Robert Rubinger in his book *Popular Literacy in Japan* presents graphs indicating that for 1890 literacy of Japanese women ranged from 10 to 60% over the prefectures of Okayama, Kagoshima and Shiga (Rubinger 2007).⁹ The range is wide but the Kagoshima figures of 10% are remarkably low, suggesting that in general a substantial portion (between 30 to 50%) of Japanese women were literate. Do we find evidence for this in Indian sub-continent, Sri Lanka, Myanmar and Indonesia?

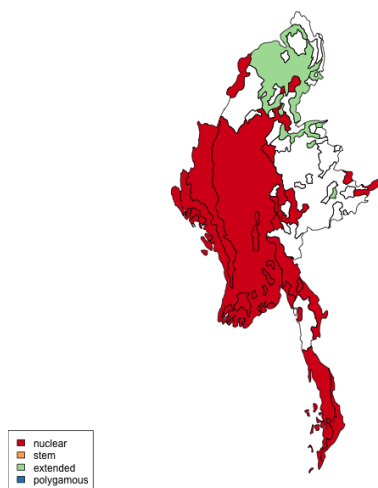
4.4.2. Myanmar

Myanmar is an ethnically diverse country with 135 distinct ethnic groups rec-

9. For an overview of the available information see van der Vleuten (2009) and Carmichael (2008).

ognized by the government. However by far the most numerous group is that of the Bamar, or Burmese. In 1960 they constituted 73% of the population with the next largest group, the Karen, capturing 8.5% of the population. Here the focus will be on these two groups.

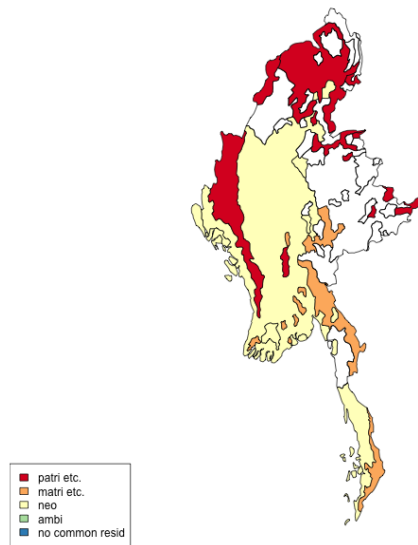
Figure 4.11. Myanmar Domestic Organisation



The two groups have a number of similarities. Both live in predominantly nuclear households (as shown in map 4.11), practice monogamy and do not prefer cousin marriage as the preferred mode of choice of marriage partner. Both, also, adhere to systems of equal inheritance for children (with no distinction made between sons and daughters). When it comes to pre-marital sex norms both groups also prohibit pre-marital sex but only weakly enforce this norm. However while the Burmese practice neolocal residence the Karen follow a pattern of matrilineal marital residence as shown on map 4.12 below. Here we

can also see that the ethnic groups of Northern Burma are characterized by patrilocal marital residence. The Burmese, therefore, adhere in all their practices to the same set of behaviours as can be found in parts of North-Western Europe. The Karen differ only in their practice of matrilocal residence. These two groups can be seen clearly on the map below. The areas coloured red, indicating patrilocal residence, are those of the Chin and the Kachin both of whom represent less than 2% of the population of Burma.

Figure 4.12. Myanmar marital residence



How did this relatively strong position of women in their family systems play through into their wider position within society? One interesting, although not unbiased, source to elucidate this comes from the reports of European travellers to Burma at the turn of the 19th century. The following three quotes give a

sense of the general opinion to be found in the accounts of the Europeans to visit Burma between 1890 and 1920.

"Utterly unlike their miserable Mohamedan and Hindoo sisters, they enjoy absolute liberty – a liberty of which, if rumor prove true, they make ample use." (Gascoigne 1896)

"What is the position of women in Burma ? He would reply that he did not know what you meant. Women have no position, no fixed relation towards men beyond that fixed by the fact that women are women and men are men. They differ a great deal in many ways, so a Burman would say; men are better in some things, women are better in others; if they have a position, their relative superiority in certain things determines it. How else should it be determined?" (Fielding, 1898, p.85)

"Since marriage is so purely a civil contract, divorce is almost as simple a matter. Either party may go before the elders and claim a separation, and it is seldom refused. Each party takes away what property they brought to the alliance, and property acquired during coverture is equally divided. Since it is the women who are the great workers and money-makers their interests are thoroughly guarded. No women in the East are freer, or are more safeguarded against adventurers, or drones, than the Burmese. Polygamy is not forbidden, but is not common. The rich sometimes have two establishments, particularly if they have business in different towns, but it is very rare for two wives to be under one roof." (Scott, 1921, p.85)

The picture that can be derived from these quotes is overwhelmingly positive. Elsewhere in Fielding's book he does mention that Burmese men still consider themselves superior to women by virtue of greater physical strength. However in general the picture that emerges from these sources is that Burmese women

seem to have an unusually equal playing field in terms of property rights, and access to resources.

A very detailed picture of Burmese life comes from a book entitled *The Burman: his life and notions*, written by Shway Yoe (London 1910). At the time this book caused a sensation in London as the British, presuming it was written by a Burmese national, wondered at the quality of the English used. However Shway Yoe turned out to be the Burmese version of the name of a colonial administrator, James George Scott. His is a very detailed account written during his 7 year stint in the country between 1875 and 1882. The picture he paints of Burmese women coincides with that sketched above:

... they enjoy a much freer and happier position than in any other Eastern country, and in some respects are better off even than women in England. All the money and possessions which a girl brings with her on marriage are kept carefully separate for the benefit of her children or heirs, and she carries her property away with her if she is divorced, besides anything she may have added to it in the interim by her own trading or by inheritance. Thus a married Burmese woman is much more independent than any European even in the most advanced states. (Shway, 1910, p. 52)

Another perspective on Burmese women comes from across the border in India. A 1899 quote from Lokamanya Tilak, a social reformer and Indian nationalist, shows how Burma compares to India :

“all the reforms like absence of caste division, freedom of religion, education of women, late marriages, widow remarriage, system of divorce, on which some good people of India are in the habit of harping ad nauseam as constituting a condition precedent to the introduction of political reforms in India, had already been in actual practice in the province of Burma. . . . It is borne in upon us by the situation of the Sinhalese and the Burmese that the opinion of some wise person about the

indispensability of social reform for national or industrial advancement of our country is entirely wrong. . . ." (Chousalkar 1990:214)

Some have argued that these late 19th/early 20th century perspectives are imbued with an orientalist slant which fails to take into account the limits to women's freedom in the religious or political sphere, and sees Burmese women only in terms of an "other", be that Indian or European women (Ikeya, 2006).¹⁰ However the ethnographies which Murdock employed from the late 1960s and 70s come to similar conclusions about the position of Burmese women. Melford Spiro, for instance, mentions the structural equality between men and women, and that women outlive men (Spiro, 1977). Manning Nash also observes that spouses choose each other and that household authority is shared between husband and wife with men and women having near equal social position (Nash, 1965)

In the early 20th century censuses literacy statistics for Burma were recorded alongside those of the various Indian states. In 1921 45% of the male population and just under 10% of the female population was literate. By 1931 56% of the male population and 16% of the female population were now literate. For women these percentages do not look particularly impressive but when we compare them to the literacy levels found in neighbouring India, in the Northern State of Assam we see that Burma compares very favourably. In Assam in 1921 male literacy was 11% while female literacy hovered at 1.2%. By 1931 male literacy had improved slightly reaching 15% while female literacy had increased by one percentage point to 2.2%. The percentages for Assam are close to those found for the whole of India on average (1921 male literacy of 12% female literacy of 1.8%). However some provinces stand out for their very high levels of literacy, for instance the Madras States Agency (consisting of several states in Southern India which are now part of Kerala, Tamil Nadu and Karnataka) with 40% literacy for men and 18% for women. However, Southern

10. The last quote is from the writings of an Indian national so should not be a concern in considering his words.

India, as we shall see below, differed markedly from the States in the North of the country.

4.4.3. Sri Lanka

Sri Lanka is relatively ethnically homogenous with two groups accounting for 93% of the population (the Sinhalese at 69% and the Tamils at 24%). Between these two groups there are differences in how they deal with inheritance and co-residence. The table below shows how each of these ethnic groups, along with the very small hunter-gatherer society, the Veddas, is classified according to the Murdock Ethnographic Atlas.

Table 4.4. Sri Lankan ethnic groups

Ethnic group	Domestic Organisation	Cousin Marriage	Inheritance	Dowry or Bride Price
Tamils	Small extended	Symmetrical preference	Patrilineal equal	Dowry
Veddass	Small extended	Patrilateral preference	Patrilineal equal	Bride Price
Sinhalese	Nuclear	Matrilateral preference	Equally for both sexes	Dowry

That the Sinhalese chose to live predominantly in nuclear households can be found also in the work on Sri Lankan marriage patterns by Bruce Caldwell who argues that, in contrast to much of India, the preference in Sri Lanka is not for joint families but rather for the eventual establishment of a separate residence for the newlywed couple, even if many young couples do initially remain resident in the parental home (Caldwell 1999). His book does not explore the differences between ethnic groups but as the Sinhalese are the largest ethnic group on the island it is likely that this observation is predominantly about their behaviour.

The Murdock Ethnographic dataset shows Sri Lanka as having a system whereby dowries were the predominant form of marital exchange, with parents transferring capital to their daughters. According to the Murdock data this was the case in 92% of marriages. This high percentage of marriages in which the woman receives a dowry is similar to that of Burma, but the high percentage sets it far apart from all its other Asian counterparts where the most common form of marital arrangement appears to be the Bride price, or wealth, transferred to the bride's family. Dowries given directly to the bride imply a system where it is not the families who directly benefit from the marriage of their children but the individuals getting married themselves. These various indicators of family systems in Sri Lanka imply that the family system of the Sinhalese majority in particular is one that is, relatively, friendly to women.

The differences between the family systems of the ethnic groups in the implied value which is placed on women are likely responsible in part for the observations made by Census Commissioner E. Denham in his report on the 1911 census. He notes that:

“negotiations for the marriage of Sinhalese women were expected to start immediately after puberty had been reached. In contrast to this the custom among Moorish and Tamil women was for pre-pubescent marriage.”(Denham, 1912)

Caldwell links this to how marriage differs between the ethnic groups. The Sinhalese left space for the individual (and most importantly the woman) to reach maturity while the Moors and the Tamils were highly concerned with the control of female sexuality and ensuring that no doubt could be cast on a woman's morality before she married (Caldwell 1991).

When it comes to the literacy of Sri Lankan women the statistics from the censuses held in 1901 and 1911 reveal that Sri Lankan literacy for women is of a similar level to that found for Burmese women.

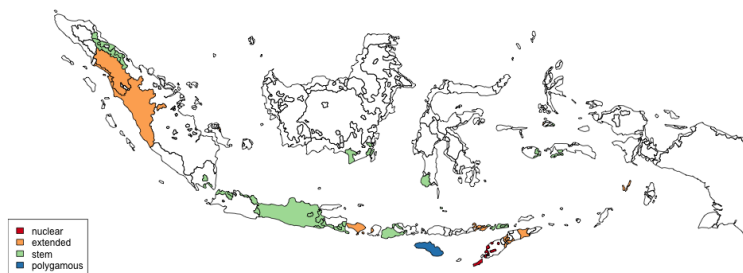
Table 4.5. Sri Lankan Literacy 1901 and 1911

Year	Group	%male literate	% female literate
1901	Total	34.7	6.9
1911	Total	43.3	11.7
1901	Low-country Sinhalese	40.8	11.1
1911	Low-country Sinhalese	47.8	17.5
1901	Ceylon Tamils	28.2	4.1
1911	Ceylon Tamils	46.7	11.1

By 1911 11% of women were literate, compared to 43% of the men. The Sinhalese also fair slightly better than the Tamils however both groups are far out performing the literacy levels to be found on average in India 20 years later, as referred to above (1921 male literacy of 12% female literacy of 1.8%).

4.4.4. Indonesia

Figure 4.13. Indonesia domestic organisation



In the Indonesian archipelago we find an enormous variety of ethnic groups. The ones for which the Murdock Ethnographic Atlas contains data are mapped above where domestic organization is the variable displayed.

The most 'promising', gender-friendly marriage systems were present on Sumatra, in particular in the Lampong districts and the Minangkabau region. In the Lampong districts, in the south of Sumatra, the boy and the girl were main actors – even initiators - of the process, as a report from 1852 already makes clear.

'It takes a long and tedious delay in the Lampongs before a marriage is brought about. If a young man is in love with a girl, he makes her proposals in writing and sends love letters to her, writing on lontjar leaves. From the time he becomes a declared suitor, he no longer repairs to the village where his bride lives, but does everything by writing and leaves his relations and friends to act for him. They require not only to obtain the consent of the bride's parents, but also in the first place with them the amount of dowry (jujur). ... It often happens that a long time elapses before the suitor has collected the whole sum, and even that many never attain the whole and consequently die unmarried. This is the reason why such a large number of unmarried persons are found. Perhaps in this also consists one of the causes of the small population of the country' (Zollinger 1851: 697).

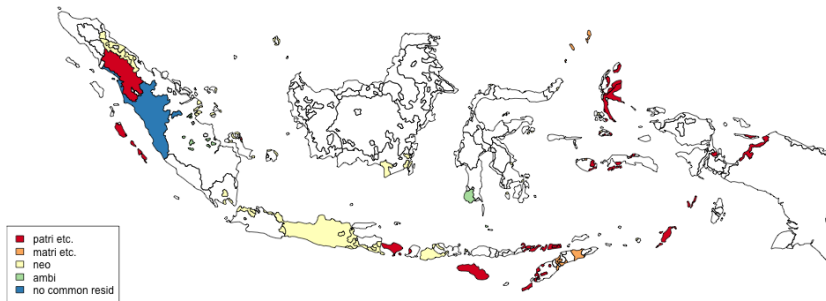
This is a mixed pattern, in which consensus between the future spouses was the starting point of long negotiations about the dowry, but which required the consent of the father of the bride. But it is remarkable that the boy and the girl communicated via letters, a practice that still existed in the 1920s; the Census of 1930 (volume VIII p. 29) for example writes, when noting the high level of literacy in this region:

'In the Lampong districts the high level of literacy has a special cause

in the village game of young men and women, who court each other by writing letters' ('die met briefjes elkaar het hof maken (mandjau)')

An interesting aspect of this system was that the dowry was closely linked to the social status of the family of the father, and that the complexity of the social hierarchy in its turn was related to the degree to which a village/district had been integrated in Javanese socio-political structures. The part of the region that had been subordinate to the sultan of Banten, had copied an elaborate socio-political structure from this Javanese state, with a highly skewed system of dowries. Parts of the Lampong region which had been marginal to the Banten state, had not developed the same social hierarchies and related costly dowries (Broersma 1916).

Figure 4.14. Indonesia marital residence



Another region with only very weak political structures – in which all villages were more or less independent political communities – is in Western Sumatra, inhabited by the Minangkabau, the ‘embodiment of matriarchy’ (Bachtiar 1967, 348). A rich literature has covered the ethnographic features of this society. Land and houses are inherited via the female lineage, and villages consist of large, matrilineal descent groups. Girls continue to live in the house of the mother; their spouse may live there as well (in particular when he is from

outside the village), or more usually, continue to live in his ancestral house, and only visit her in the evening (a pattern also found in other matrilineal societies, such as Kerala). Often men are quite mobile and live elsewhere. This can be seen in map 4.14 where the Minangkabau are shown in dark blue on the westernmost island, coded as forming no common residence upon marriage. The Minangkabau are also Muslims, and the sharia (locally known and interpreted as *sjarak*) is another – to some extent alternative- source of social norms (Bachtiar 1967, 364). Marriage is relatively unregulated: ‘the choice of a marriage partner may be made by the individuals concerned, the initiator being the man, the woman, a close relative, or an obliging friend’ (note that parents are not mentioned here) (p.366). Usually a groomprice is paid, instead of a dowry (it is an exceptional case of the ‘exchange of men’ instead of the more usual ‘exchange of women’) (Krier 2000). Divorce is relatively easy and frequent (which is a more general feature of marriage in the Malay world), in particular by men, who are also allowed to have more than one wife; children stay in the household of the wife after divorce. Women have quite some agency in family matters – in particular ‘the elder women may have the most to say in a family discussion’ (Bachtiar 1967, 368), and important decisions are taken by a family gathering in which unanimity is the norm. The heads of the matrilineal descent group or clan are however men, who regulate relationships with the outside world; these *pengkulu* are usually recruited from the oldest brothers living in the family household. The position of men in these matrilineal societies, is rather complex: ‘All in all, the position of a male in traditional Minangkabau society is a strange one in our eyes. He does not have any property, although he may manage and expand it for his sisters and his children. He does not really have a house or a place he can call his own’ (Kato 1982:60). Or as explained by one of Krier’s (2000; 890) informants: “The problem with being an in-married male (*urang sumando*) is that you always face financial loss. You invest in your wife’s ancestral property, but then if she dies it goes back to her lineage’.

Did these Sumatran marriage systems also ‘produce’ high levels of literacy? The censuses of 1920 and 1930 show that in general, literacy in Indonesia was

very low; according to the census of 1920, only 6.5 percent of the male Indonesians (older than 15 years) were able to read and write, and only 0.5% of the women; in 1930 this had increase to 13.2% and 2.3% respectively. There were, however, a few regions with much higher levels of literacy. Lampong (western Sumatra) is the best example: here 48% of men and a staggering 35% of women were literate in 1920. In 1930 these scores were somewhat lower: 30.4% and 22,5%, still much higher than the Indonesian average. The Minangkabau however did only slightly better than the national average (1930: 14.1% for men, 3.9% for women), but easily surpassed the surrounding regions of Sumatra such as Riouw (9.8 and 1.0) and Djambi (13.1 and 0.8). Only in the (partly) Christian regions of Manado (northern Sulawesi) and Ambon also stand out, with similar or even higher levels of literacy (in 1920: Manado: 53/35%, Ambon 36/37% - in the latter island women were according to these statistics even slightly more literate than men). These high levels of literacy reflect the activities of missionaries there, and the access people in these regions had to employment in the colonial army (and administration).

4.4.5. India

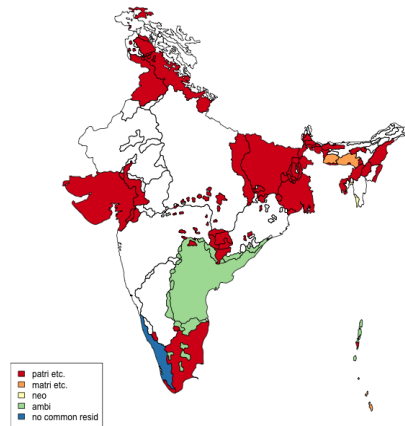


Figure 4.15. India marital residence

There are many similarities between marriage systems of the Minangkabau and those in Kerala, in south-west India (shown in blue on the map above indicating no common marital residence). The story of Kerala has been told before (Jeffrey 1992): the largest ethnic group, the Nayers, lived in matrilineal households, where (certainly by Indian standards) women enjoyed an exceptional strong position. After marriage, women and men continued to live in the household of their mother, husbands visiting their spouses only occasionally. Women had a say in the choice of marriage partner, and divorce was easy and occurred regularly. The marriage ceremony was also quite basic. Jeffrey (1992: 35) for example concludes 'Matrilinty in Kerala was humane... it accorded [women] greater freedom, choice and respect than they would have found elsewhere in the world until the twentieth century'. He explains how this system resulted in high levels of education, a vibrant civil society (emerging already in the Interwar period), which became the basis for the progressive social-economic policies that became the hallmark of the 'Kerala model' of the 1960s and 1970s (Jeffrey 1992). His data on human capital formation and advanced marriage ages are confirmed by the 1931 census: Kerala men have a literacy rate of 21.3%, women are almost as literate with 19.3%; the male level of literacy was not exceptional (Tamil Nadu, also in the south, scored highest with more than 40%, the Indian average was about 15%), the female literacy was (Indian average 4%, nearest competitor Tamil Nadu with 16.7%) (see van der Vleuten, Carmichael and Dilli 2015).

SECTION 4.5. TESTS AGAINST OTHER MEASURES

In order to test the relevance of the measure developed in the first part of the paper in this section its relationship with three other measures is elaborated upon. Firstly a somewhat similar 'patriarchy index' was constructed by Gruber and Szoltyzek (2015) although the focus and methodology are rather different, constructed as it is of large micro-datasets concerning demographic behavior,

measuring 14 different dimensions, such as ‘familial behavior, including nuptiality and age at marriage, living arrangements, postmarital residence, power relations within domestic groups, the position of the aged, and the sex of the offspring’. The index runs from 0 to 40, with 40 being the most “patriarchal” societies. Their results, are however, only available for a limited number of countries, but show the same West-East gradient in patriarchy as was found in our construction of the ‘girlfriendliness’ index. A quick check of their results, averaged at the country level against our own can be visually judged by means of the scatterplot provided below. Here a Turkish sample has been excluded as it is based solely on Istanbul. Similarly Italy is based on only one location (Legano) in 1430, and therefore has also been left out of this scatterplot.

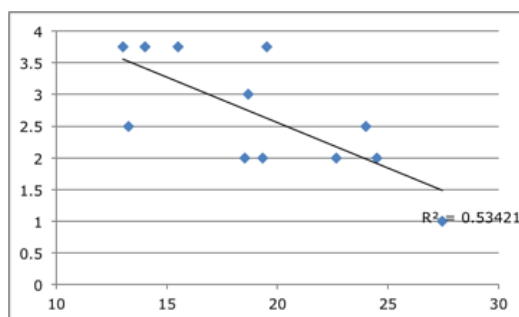


Figure 4.16. Scatter plot of Girlfriendliness index against Patriarchy index

This correlation, although for a very small number of cases, shows that there is indeed a relatively strong relationship between the ethnographic measures captured in the girl-friendliness index and the patriarchy index, based on micro-level data. In view of the very different data sources a perfect correlation would not be expected.

Another index which is interesting to test our own against is the SIGI (Social Institutions and Gender Index). The SIGI is based on a series of indicators of

family values, son preference, civil liberties, access to resources and physical integrity. The SIGI data is, however, only available for non-OECD countries so here the whole dataset has been used (not just Eurasia). Again a simple scatterplot indicates how well the two match each other. A clear relationship is visible; countries which score poorly on the girlfriendliness index have high SIGI scores, where a high score means a more gender unequal situation. The fact that the OECD countries are not included here means that the effect is not simply driven by economic development, or Western European results.

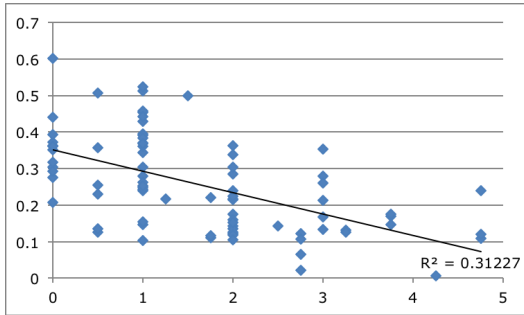
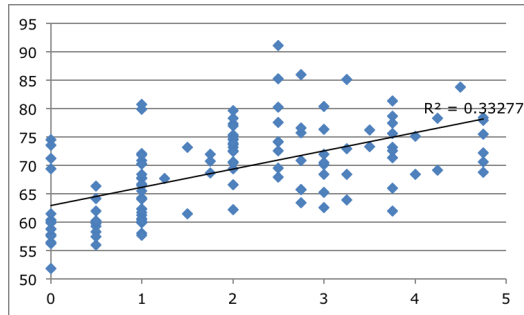


Figure 4.17. Scatter plot of SIGI against GFI

Much of the above is based on historical observation however one of the more interesting questions that could be posed based on this sort of data is whether the combination of various institutions, with more or less female friendly characteristics, have a lasting influence on gender equality today. In order to answer this question a simple scatterplot was made between the score on the Historical Gender Equality Index for 2000 (as presented in Chapter 2 of this book) and the girlfriendliness index. The HGEI captures gender differences in life expectancy, labour force participation, infant mortality, educational attainment, marriage ages, and political participation. The scatterplot is shown below:

Figure 4.18. Scatterplot of HGEI against GFI



There is a clearly observable positive relationship between the two, with countries which score well on the girl-friendliness index also doing well in present day gender equality. A few of the outliers are interesting. The most prominent one is Sweden (scoring 2.5 on the GFI but the best performer in terms of current day gender equality). It appears that Sweden, despite its status as world leader in terms of gender equality has achieved this despite a set of relatively female unfriendly institutions.

Lastly four simple regressions were run, one using the HGEI as the dependent variable and the girlfriendliness index and a control for economic development, and the second to see if the girlfriendliness index has any relationship with the marriage patterns data to be explored in the next chapter, although here for Eurasia rather than all countries outside Western Europe. These regression are not intended to ascribe causality but rather to highlight the relationships between the measures. What it is intended to illustrate is the strength of the relationship between historical family institutions and the level of gender equality expressed both as a composite index, and as various indicators of marriage patterns for a given Eurasian society.

Table 4.6. Regression of GFI on various current day outcomes for period 1950-2000

	(1)	(2)	(3)	(4)
	Historical Gender Equality Index	Female SMAM	Spousal Age Gap	Girl Power Index
Girl-friendliness	2.069*** (0.395)	0.520*** (0.121)	-0.470*** (0.0696)	0.991*** (0.152)
Log GDP	2.820*** (0.665)	1.633*** (0.190)	-0.339*** (0.118)	1.929*** (0.272)
Constant	35.38*** (5.381)	8.489*** (1.620)	7.337*** (1.122)	1.630 (2.387)
N	442	465	413	413
R-sq	0.347	0.394	0.331	0.417

The results show strong, significant correlations between the Girl-friendliness Index and the various measures of gender equality and marriage patterns respectively. In terms of magnitude of the effect for both the historical gender index and the spousal age gap the girl-friendliness index is very similar in magnitude to the coefficient on log GDP. For the other two regressions its magnitude is about half that of log GDP. In general these regressions show that this measure warrants further exploration as a possible determinant of current day gender outcomes. In further research Carmichael et. al. have demonstrated that the Girlfriendliness index helps explain divergent patterns of economic growth within Europe in the early modern era (Carmichael et. al. 2015). Expanding the scope of this research to include a wider range of countries would be a valuable exercise.

SECTION 4.5: CONCLUSION

In this paper we approached the EMP from a global – or more precisely Eurasian – perspective. The question we addressed is how ‘unique’ this marriage system was. To answer this question, we redefined the EMP in ethnographic terms, as a marriage system characterized by monogamy, exogamy, consensus (no arranged marriages), neo-locality, and a relatively strong position of women in marriage. Thanks to Murdock’s *Ethnographic Atlas*, and Emmanuel Todd’s work on the spatial distribution of family systems, we could map the various dimensions of the institutions making up the EMP on world maps (of which we presented the parts of Eurasia). This allowed us to map the spread of marriage systems on the Eurasian landmass.

We can now turn to the question which is right: Hajnal’s eurocentrism or Goody’s cultural relativism? Hajnal definitely has a point that marriage systems (and related institutions concerning inheritance) in Western Europe are clearly different from what we find in the greater part of Eurasia. This is very clear when looking at female age of marriage in which Western Europe stands out (only Japan comes close), but this was already more or less known (or could be suspected on the basis of the available literature). What we could demonstrate now, is that the various institutions (and cultural norms) determining marriage behavior, were also quite different from the overwhelming rest of Eurasia. If one scores these institutions on a ‘gender-scale’, as we tried to do in this paper, the contrast between Western Europe and India, China, Russia and the Middle East is indeed remarkable. In the centre of Eurasia really different marriage systems dominate, which were characterized by different outcomes (e.g. much lower ages of marriage) and underlying institutions (endogamy, polygamy, patrilocality, patri-lineal inheritance, etc.)

However, Goody does have a point that in the margins of these Eurasian marriage systems we find marriage arrangements which show parallels with the EMP; moreover, there is also more variation within Western Europe than the original Hajnal classification suggests. This second point has already been made frequently by scholars who followed in his footsteps, and resulted in

literature stressing the importance of the stem family (of central Europe), of a separate Southern European system, and the diverse nature of Eastern European family systems (Laslett 1982; Szoltycek 2012 etc). The heterogeneity of marriage systems in the rest of Eurasia, and in particular in the outskirts of the landmass, has recently been stressed by Todd (2011) and is one of the main concerns of Goody (1989). South-East Asia in particular is a region characterized by a large variation in marriage systems (and related institutions). Kerala and Sri Lanka, even Japan can be seen as extensions of the region of diversity, in which a number of relatively female-friendly family characteristics persisted (if we accept Todd's analysis of the phenomenon). In spatial terms, South-East Asia in a way mirrors Western Europe as the region without strong versions of patrilocality, endogamy and polygamy.

Finally, we tried to establish if the pockets of female-friendly marriage systems in the margins of the Eurasian continent produced higher levels of general human capital formation (as has been suggested for the EMP). We were unable to test this link systematically, because data are still scarce and patchy, but the data we found do not contradict this claim: Japan is a case confirming this hypothesis, the same applies, but at a lower level, to the Sumatran Lampong districts (a rare non-European case of marriage based on consensus, where the boy and girl wrote letters to each other as part of their courtship), Kerala, Burma and Sri Lanka. Female literacy among the Minangkabau was only marginally higher than in Indonesia as a whole, but the differences with neighbouring regions were quite large. These regions all excelled in female literacy, but male literacy was also in general higher than in the rest of the country concerned. We therefore find some confirmation of the hypothesis that female-friendly family systems enhance human capital formation.

Chapter 5

Marriage and Power:

Age at first marriage and spousal age gap outside Western Europe 1950-2010

Largely as published in *History of the Family* (Carmichael, 2011)

SECTION 5.1. INTRODUCTION

As Chapter 1 highlighted the position of women in society is important not only for intrinsic reasons, but also for instrumental reasons. However, the question of what factors have an influence upon female empowerment remains. Taking a measure of female empowerment to the historical record, across a wide geographic area has not yet been systematically attempted. An option for such a measure is offered by the study of marriage patterns. Marriage represents an observable bond between man and woman.¹ 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

1. This is not to dismiss homosexual marriage but for the purposes of this chapter 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.

men many years their senior, are unlikely to have much say in this decision.² 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 non-Western countries.

As was explained in the introduction (Chapter 1) there is a general consensus that female empowerment is important for development, 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, none of which pre-date 1995. Such measures obviously do not allow researchers to examine the development of female agency over a long period of time.³ This chapter 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 134 countries, from 1950 to the present day.⁴ Marriage 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. This dearth of work was observed

2. As mentioned by other authors (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).

3. See Chapter 6 for an index going back to 1950.

4. In other, work by Carmichael, De Moor and van Zanden (2011) 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). Some of this work was presented in chapter 1.

by Ruth Dixon in 1971 and not much work since has taken up the gauntlet she threw down. This void is a phenomenon this chapter hopes to address.

In the next section the theoretical framework of the relationship between female agency and marriage will be elaborated upon. Section 5.3 covers data and methods while section 5.4 provides the conclusions of the chapter.

SECTION 5.2. 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.⁵ 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.⁶ The general pattern is

5. Marriage is not, however, universally practised and the line between married and unmarried can be indistinct.

6. See Chapter 1 for further explanation

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 has little agency within the relationship. 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 women 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. For more on these mechanisms see Chapter 1, section 5.

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.⁷ 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 such as Gary Becker have argued 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

7. 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.

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.⁸ 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. Schultz found that the most important factor in explaining decreased fertility in Lesser Developed Countries (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 graph below illustrates that the relationship between marriage and child birth is a strong one. The data here includes Western Europe. There are a number of outliers in the bottom left corner of the graph.⁹ Yet the overall picture is one where the two are closely linked. This is despite the fact that the two statistics are calculated very differently. The correlation between the two is 0.86.¹⁰

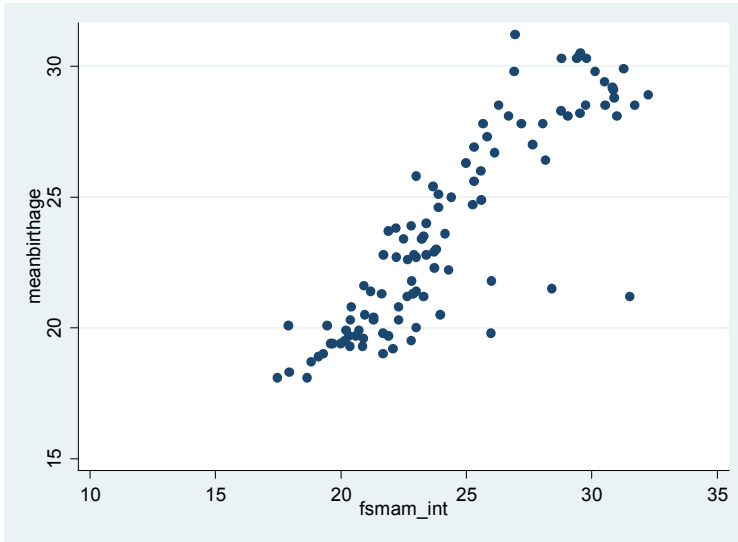
8. These ideas are explained more completely in Chapter 7.

9. These are, from left to right, Sierre Leone, Myanmar, Namibia and Dominica, where female SMAM is higher than average age at first birth.

10. The strength of the correlation is, in some ways, surprising seeing as recent developments in Western Europe have decoupled child birth from marriage.

Figure 5.1. Mother's mean age at birth of first child for 2006-2011 and Female SMAM 2005

Source: Mother's age at first birth from *CIA World Factbook*



The economic analysis of marriage in this chapter 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 chapter 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 7 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.

5.2.1. Islamic Marriage

As mentioned elsewhere in this book, Europe, particularly Western Europe, has been held up as an example of an exceptional marriage pattern. John Hajnal first identified a marriage pattern specific to Western Europe, west of the St Petersburg-Trieste line (Hajnal 1965). 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 the special issue in which this chapter was originally published, Jennifer Olmsted calls for more research to be conducted into marriage patterns in the Islamic societies (Olmsted 2011). This chapter 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 were not addressed (World Bank 2004). 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 in the Middle East, 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, 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 price. The Qur'an explicitly altered this in favour of the brides: "And give the women [on marriage] their dower as a free gift" (The Qur'an 2006, IV:4), mandating that brides be granted their

mahr (dower) as a way to safeguard their economic position during and after marriage (Esposito 2001). 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 2001).

The Islamic system of dowry was fundamentally different in Western Europe. For a start in the Islamic system the transfer was from the bride's family to the new couple, either as a fund to be held separately 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" De Moor and 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 2010a). 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 coresidence. The Western European Marriage Pattern is marked by its creation of a separate family unit that occurred when a couple wed; the formation of the neolocal household. As discussed in chapter 3 and 4, in the Middle East and North Africa it was historically traditional for the married couple to co-reside with the parents of one of the partners, generally 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.

5.2.2. 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 (fe-

male SMAM and spousal age gap).¹¹ This chapter chooses to focus explicitly on four 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, or nomadic to non-agricultural pursuits, agglomeration in cities becomes economically efficient. The 2009 *World Development Report*

11. 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 (SMAM). The method was explained in Chapter 1 but for readers who wish to read chapters separately 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. SMAM is, therefore, a measure of the central tendency of a population. Not reflecting the behavior of all members of the population but rather that of the majority. It is important to keep these issues in mind, yet SMAMs remain a useful way to provide an index of (historical) marriage patterns where there is an absence of alternative data.

highlights the process of urbanisation as a source of 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 areas 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 2005). As such, the inclusion of the variable urbanisation in the model specification is justified as a proxy for the larger process of “economic development and 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

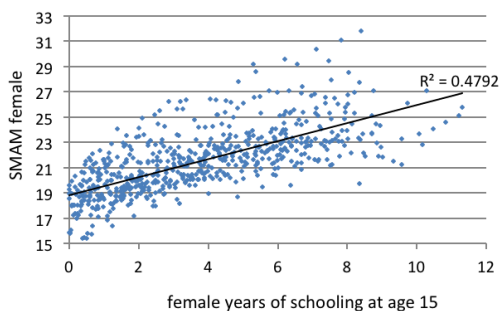
terms of more casual relationships and in terms of labour force participation. This effect would logically result in delaying marriage and therefore higher SMAM. Overall it is hard to predict which effect will be strongest.¹² As to the difference in age between spouses, one would expect that both the 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:

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

Figure 5.2. Education and Female SMAM



Source: Data on education from Barro and Lee (2010)

Figure 5.2 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 millennium 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 result 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. Subhypothesis 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.

Chapters 1 and 3 have highlighted that the family is a fundamental unit in 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. As chapter 3 has demonstrated families around the world differ in their approach to marital relations, intergenerational power relations, inheritance laws and co-habitation. In this book we are interested in, what we see as one of the most important impacts of a family system, the way in which it influences the power balance between men and women, parents and their offspring. Todd (as explained in Chapter 3) 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 eight family types (however the eighth 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 (Duran-
 ton et al. 2009). Although this does not prove that the typology 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 (some evidence was provided
 for this in chapter 3.

Table 5.1 presents the same stylised facts about each family system as pre-
 sented in Chapter 3, 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:

Table 5.1. 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 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.¹³ 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

13. In the dataset used in the analysis below the asymmetric community family cannot be identified as we use the hybrid dataset in which this type never occurs on a scale that it is the dominant classification of a given country

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 and parents are free to decide how they distribute their property.

As Chapter 3 highlighted while Todd's framework is appealing in some respects, it also has weaknesses. This led us to create a hybrid classification system combining the strongest features of the Todd classification system with those of Murdock's *Ethnographic Atlas*. It is this classification of family systems that will be used here. This means that some of Todd's hypotheses might no longer hold, seeing as they were based on his understanding of certain countries, but in the sense that we have an "improved" dataset if his theoretical arguments are correct we should still find support for his arguments. For a full overview of which countries fall under which family system see the table in the Appendix to Chapter 3.

The dataset employed in this analysis is not even in its coverage of family types. Certain family types are represented by only a handful of countries. Table 5.2 below shows the percentage distribution by family type in the hybrid dataset sample used here. When looking at the results of the regressions it should be kept in mind that the absolute nuclear and authoritarian family systems are based on a much smaller number of countries and observations.

Table 5.2. Distribution of family types

Type	Frequency of observations	Percent of observations	Number of countries
Absolute Nuclear	65	3.65	5
African	260	14.6	20
Anomic	221	12.41	17
Authoritarian	91	5.11	7
Egalitarian Nuclear	247	13.87	20

Endogamous Community	429	24.09	33
Exogamous Community	468	26.28	34

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

Table 5.3. Todd's predictions of age at first marriage for women

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. Table 5.4 gives the average age at marriage for women for the whole dataset over time and space, excluding sub-Saharan Africa, as Todd categorized this as one family system, defined by polygamy rather than nuclear, extended or stem families. At a glance we see that, contrary to Todd's expectations, community families have average ages of marriage of above 24 although the overall average in the sample for community families is almost 3 years below that of stem families and over a year under that of nuclear families. Extended families do appear to also have a minimum age at marriage almost 4 years below that of the minimum age found for nuclear family countries. However using this full sample the difference between nuclear and stem families appears to be marginal.

Table 5.4. Summary statistics for age at marriage by type of household organization

Female SMAM for	Observations	Mean	Std. Dev.	Min	Max
Nuclear	575	23.249	2.8019	16.2	32.38
Extended	628	21.94	3.26	12.5	31.1
Stem	248	24.88	3.05	16	32.31

Todd devotes attention to the possible effects of domestic organization on marriage patterns but does less to consider how cousin marriage might affect women's roles. This ties in well with hypothesis 4, on the percentage of the population adhering to Islam so will be discussed in the next section. The endogamous community family is used as the reference category in Section 5.3 to see whether the effects hypothesized above hold.¹⁴

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

14. See appendix 5.3 table 5A.3 for the regressions with the egalitarian nuclear family as the reference category

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 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? 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. 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 would play through into marriage ages is not immediately evident. Possibly as there is reciprocity and close ties between the two families the pressure to get married young is less than in community families where exogamous families are the norm, which rely on incoming females for household chores. By using the exogamous community family as a separate variable from the percentage population that is Muslim the analysis should give a sense of what is being determined by the family practices and what is being determined by religion.

The inclusion of this variable begs the question why not look at other religions. This chapter 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. Future research could include the data on Catholicism and Protestantism, but for the analysis below this data will be excluded.

SECTION 5.3. DATA AND METHODS

The data was collected from the United Nations, the World Bank, Demographic Health Surveys, and national censuses, as well as from summarizing works.

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 134 countries outside Western Europe and its offshoots from the earliest possible point for which there is data available (going back no further than 1950 through to 2010). 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 22.35, ranging from 13.95 in Bangladesh in 1960 to 33.45 in Jamaica in 2010. The average spousal age gap ranges from 0.9 years for Martinique in 1995 to 11.42 in Afghanistan in 2005. The summary statistics for the variables employed in this analysis are presented in Table 5.5 below. The values for SMAM, Urbanisation, Spousal Age gap, and the percentage Muslim have been linearly interpolated to give a dataset in panel form with observations at 5 year intervals:¹⁵

Table 5.5. Summary Statistics

Variable	Observations	Mean	Standard Deviation	Min	Max
Female SMAM	1422	22.35	3.2	13.95	33.45
Urbanisation	2072	42.27	24.54	1.35	100
Spousal age gap	1267	3.89	1.65	0.90	11.42
Girl Power Index	1267	18.58	4.29	5.05	31.9

15. For the uninterpolated see appendix 5.2.

Percentage Muslim	1497	25.9	35.92	0	99.84
Average total years of education for those aged over 15, female	1548	4.47	3.14	0.01	12.77

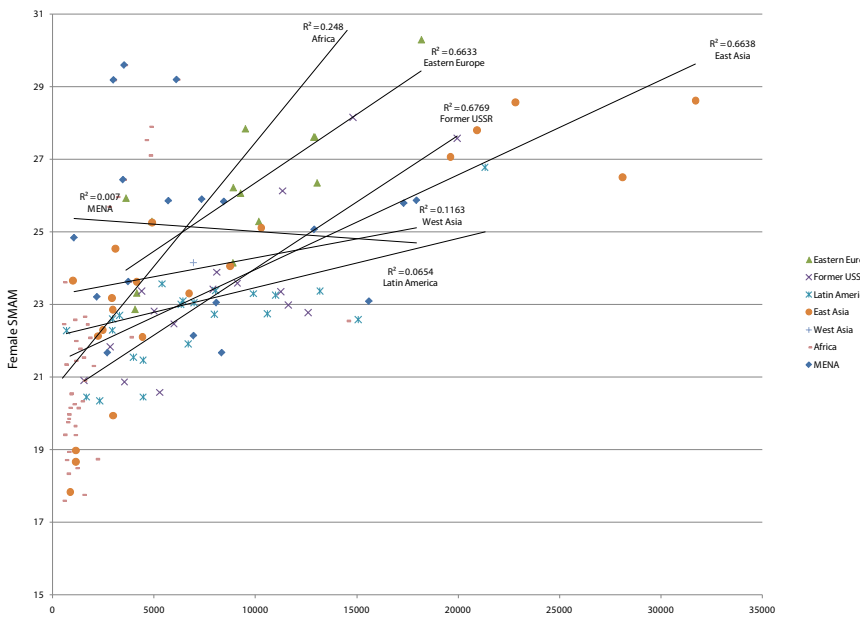
The Girl-power index is a measure which brings together female SMAM and spousal age gaps very simply by subtracting spousal age gaps from female marriage ages. For more information on the index see Chapter 1 and De Moor and van Zanden (2006). The lowest score here is 5.05 for Bangladesh in 1960 where marriage ages for women hovered just below 14 and those for men were nearly 23. By 2005, however, the only country to score under a 10 on this indicator was Afghanistan, with average marriage ages of 17.9 and an average spousal age gap of 10 years, giving a Girl-power index score of under 7. The highest scorers in this dataset (which excludes Western Europe) are Jamaica, French Guiana, Martinique, and Saint Lucia. Three of the four are Caribbean countries while French Guiana is spatially proximate as well. This could be related to the phenomenon of ‘consensual unions’, mentioned in chapter 1 as being associated with the Caribbean. In this system couples live in an unwedded state until they have achieved economic stability after which they marry. Keith F. Otterbein, in an article on Caribbean family organization, describes the dominant role of women. Men in the Caribbean system have, according to a number of authors, a low economic position, which means they have to delay marriage, and often do not play a significant role in the raising of children (Clarke 1957; Smith 1957; Otterbein 1965; Burnard, 1994). This seems to fit well with the high girl-power index scores which suggest a strong position for women.

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 chapter.

Another way of presenting the larger data set is by comparing regions of the world in terms of marriage age. Figure 5.3 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. 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.

Figure 5.3. Female SMAM graphed against GDP per capita



One thing that stands out when examining Figure 5.3 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 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 family systems framework as outlined above.

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 5.4 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.¹⁶ The lower trend line is that for female SMAM.¹⁷

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

17. 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.

Figure 5.4. Male and Female SMAM

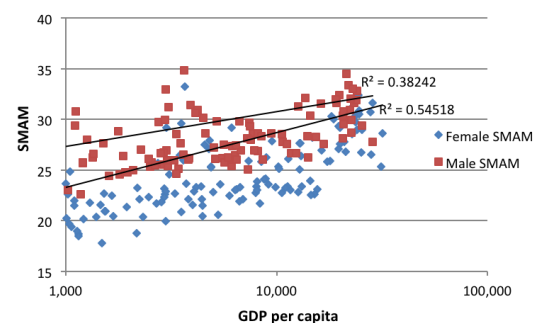


Figure 5.4 illustrates the narrowing of the age gap and the overall increase in SMAM that is seen as one moves from the countries with the lowest GDP to those with the highest. It supports the suggestion that economic growth goes hand in hand with an increase in the age at which people choose to marry 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. The next section turns to an exploration of the time trends exhibited by age of first marriage.

5.3.1. Time trends of Age at First Marriage

The following two figures provide an idea of the trends over time in marriage ages of women to be observed in 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

5.6 below includes countries from a wider geographic scope to highlight similarities and differences which can be observed between regions.

Figure 5.5. Time trends in female SMAM for a selection of MENA countries

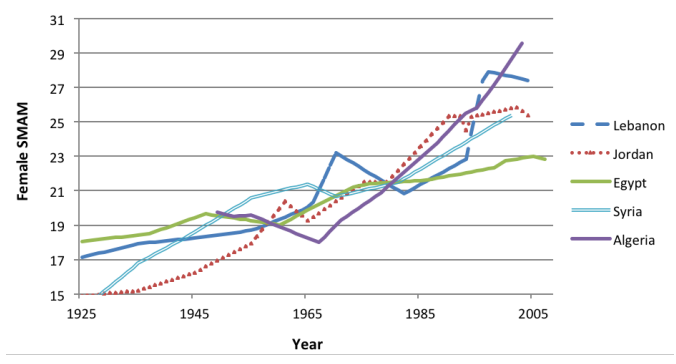


Figure 5.6. Time trend in SMAM for a selection of MENA Countries

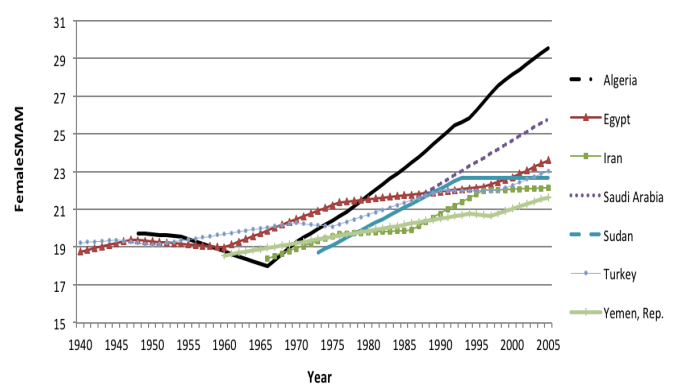


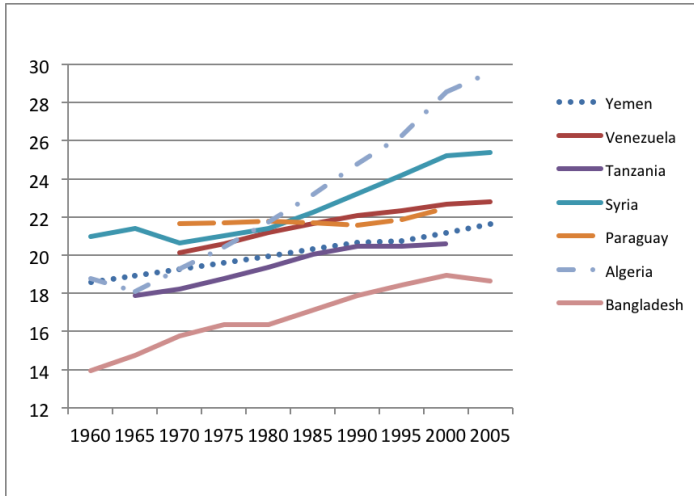
Figure 5.5 shows female SMAM increasing from under 15 in 1925 in Syria and Jordan to over 25 by the end of the period. Egypt has made steady, less significant gains (from 17.46 in 1907 to 23 in 2005) while Lebanon, having started

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 again stands in contradiction to Todd's predictions that community family types would demonstrate ages of marriage no higher than 24.

Figure 5.6 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 development, over the intervening years. Yemen, Sudan, Iran, Turkey and Egypt meanwhile have experienced much smaller, although still notable increases in their SMAM. Figure 5.6 also features 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 5.5 and 5.6. present just a handful of countries in one region but the same questions can be asked of a larger set of countries. The analysis below will seek to address these questions 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 5.7 gives some insight into this question:

Figure 5.7. 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, moves from an age of just below 14 to one below 19.

SECTION 5.4. RESULTS

The results of the regressions using the variables suggested by the hypotheses above to explain female age SMAM, spousal age gap and the Girl-power Index

are presented in Table 5.6. Here regression results for various model specifications including urbanisation, female education, family system and a static measure of percentage population Muslim are presented. All the regressions have standard errors clustered at the country level to account for the panel structure of the dataset.

Table 5.6. Regression results, clustered standard errors¹⁸

	(1)	(2)	(3)	(4)	(5)	(6)
	Female SMAM	Female SMAM	Spousal age gap	Spousal age gap	Girl Power	Girl Power
Absolute Nuclear	5.175*** (1.294)	0.781 (0.494)	-1.495** (0.621)	0.464 (0.285)	6.354*** (2.119)	0.227 (0.661)
African	0.512 (0.752)	1.526** (0.710)	-0.366 (0.446)	-0.111 (0.432)	0.839 (1.087)	1.538 (1.017)
Anomic	1.215** (0.515)	0.881 (0.606)	-1.340*** (0.379)	-0.641* (0.343)	2.298*** (0.814)	1.452* (0.820)
Authoritarian	3.064*** (0.816)	1.496 (1.087)	-1.778*** (0.392)	-0.127 (0.395)	4.748*** (1.120)	1.563 (1.240)
Egalitarian Nuclear	1.773*** (0.531)	1.391** (0.601)	-1.887*** (0.367)	-0.978*** (0.327)	3.542*** (0.801)	2.331*** (0.773)
Exogamous Community	1.928*** (0.525)	0.997 (0.603)	-1.749*** (0.363)	-0.568* (0.327)	3.790*** (0.778)	1.497** (0.752)
Urbanisation		0.0321*** (0.0100)		-0.00666 (0.00497)		0.0384*** (0.0133)
Year		0.0327*** (0.0110)		0.00274 (0.00769)		0.0293* (0.0158)

18. See appendix 5.3 for regressions using egalitarian nuclear family as the reference category.

Percentage Muslim		0.00984 (0.00603)		0.00698** (0.00321)		0.00227 (0.00796)
Average years of education, female		0.351*** (0.0963)		-0.189*** (0.0530)		0.534*** (0.120)
Constant	20.62*** (0.400)	-47.31** (21.77)	5.058*** (0.310)	-0.0834 (14.97)	15.81*** (0.654)	-45.72 (30.91)
N	1215	815	1097	779	1097	779
R-sq	0.148	0.495	0.214	0.408	0.187	0.501

Standard errors in parentheses. *p<0.1 **p<0.05 ***p<0.01

The results from the regressions are close to those predicted by theory. Urbanisation has a small but significantly positive effect on female SMAM. It seems that the break with parental authority outweighs the enlarged marriage market effect explained above. The result shows that increasing urbanisation from 0 to 100%, holding all other factors constant, is associated with an increase of female age at marriage of 3 years. Urbanisation has a negative but insignificant effect on spousal age gaps. This suggests that age gaps between spouses are impervious to modernization processes, which contradicts the hypothesis but aligns with the conclusions of Casterline et. al. (1986) who find that the age gaps between spouses must be explained by underlying cultural preferences, possibly related to kinship practices. Interestingly the time trend variable, year, is insignificant for spousal age gaps, suggesting that we are not seeing a decrease in their magnitude over the period once other factors have been controlled for, despite increasing female age at marriage. Urbanisation also has a positive, significant impact on the Girl-power index, even though the spousal age gap gives an insignificant result. The values of these regressions are not definitive but the sign and the significance level in the female SMAM and Girl-power index regressions indicates a relationship running from urban-

isation to higher female age at marriage and therefore likely greater female agency. This lends credence to hypothesis 1.

The education variable is significant at the 1% level, contributing to an increase in female SMAM and the Girl-power index 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 is associated with a 0.35 year increase in female age at marriage. 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 0.189 years, controlling for all other factors. 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 at the 1% level. This provides some support for hypothesis 2.

Turning now to the third hypothesis, using the endogamous community family as the reference category we find that in the baseline regressions (without controls) all the family systems apart from the African family type have higher female SMAM, and Girl-power index scores and lower spousal age gaps. This indicates that the endogamous community family is detrimental to the position of women. With particularly high coefficients on the absolute nuclear and authoritarian family it seems that nuclear, or stem household organization is key here, rather than inheritance practices.¹⁹ However once the controls are added we are left with significant results only for the African and the egalitarian nuclear family type. Both of these have a significant, positive effect on female age at marriage. The African family therefore seems to give rise to a higher age at marriage for women but no change in spousal age gaps or the Girl-power index, relative to the endogamous community family.

19. Although both feature unequal inheritance between brothers which could be argued to contribute to more equal relationships between brothers and sisters.

The higher age at marriage is in some ways curious as African family systems in the hybrid dataset are largely classified by the presence of polygamy as the majority, domestic organization characteristic. One would expect that in situations of polygamy the fact that one man marries multiple women causes a shortage of women on the marriage market, possibly driving down age at marriage. However this seems not to be the case. One possible explanation here might be that younger marriages go unregistered, particularly if polygamy is officially banned. However this also holds for all areas where child-marriage is the norm. It seems that the African family system is, in this dimension of female ages at marriage, associated with a somewhat better status of women than the endogamous community family.

The egalitarian nuclear family also has a significant negative effect on spousal age gaps and a significant positive effect on the Girl-power index. The egalitarian nuclear family in this dataset is represented largely by South American countries, along with a number of Central European and South-East Asian 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, and indeed this is what the regression shows. However in some ways this is not a perfect fit with Todd's ideas about this family system. He 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). However 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, for the 18th and 19th centuries, found that the age at first child birth was lower for those who got married than 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).

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, however as we use the hybrid dataset, in which indifference is hard to capture, a number of countries which were previously anomic in Todd have shifted to the egalitarian nuclear classification. The spousal age gap is significantly different from that of the endogamous community family, and lower indicating greater equality. Similarly the anomic family does have a significant, positive effect on the Girl-power index, so Todd's hypothesis of greater female autonomy in this form of family is partially upheld.

The authoritarian nuclear family, despite being significant in all the base line regressions, is insignificant when other factors have been controlled for. This suggests that the combination of unequal inheritance and stem families is no worse for the position of women, as measured by marriage patterns than extended households, and equal inheritance (between brothers) as represented by the endogamous community family

The percentage Muslim population variable is worth noting. In the first model specification it has a positive value but it is insignificant. 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 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. However the effect is rather small. An increase in percentage of the population coded as Islamic from 0 to 100% is associated with only a 0.6 year change in spousal age gaps.

In order to better understand what features of family systems drive these results, or whether it is the coming together of characteristics in a system that is important, the table below presents regressions run for the same dataset but this time including the three underlying characteristics; household organization, inheritance systems and cousin marriage.

Table 5.7. Regression results for underlying family characteristics, clustered standard errors

	(1)	(2)	(3)	(4)	(5)	(6)
	Pooled Female SMAM	Pooled Female SMAM	Pooled Spousal Age Gap	Pooled Spousal Age Gap	Pooled Girl Power Index	Pooled Girl Power Index
Symmetrical Inheritance	-0.0542 (0.590)	0.644 (0.499)	-0.860* (0.455)	-1.140*** (0.432)	1.219 (0.954)	2.203*** (0.691)
Endogamy	-1.376*** (0.448)	-0.0417 (0.537)	1.104*** (0.293)	-0.107 (0.318)	-2.48*** (0.648)	0.292 (0.717)
Nuclear	0.715 (0.464)	0.277 (0.429)	-0.509** (0.255)	-0.462** (0.216)	1.104* (0.612)	0.935* (0.519)
Polygamy	-0.862 (0.751)	0.874 (0.791)	0.126 (0.529)	-0.564 (0.513)	-0.711 (1.142)	1.948* (1.014)
Stem	1.282 (0.840)	0.657 (0.919)	-1.174** (0.483)	-0.612 (0.382)	2.678** (1.204)	1.739* (1.025)
Urbanisation		0.0354*** (0.00997)		-0.00752 (0.00553)		0.0464*** (0.0130)
Average years of education, female		0.334*** (0.0815)		-0.219*** (0.0581)		0.548*** (0.100)
Percentage Muslim		-0.00238 (0.00715)		0.0112** (0.00488)		-0.0129 (0.0100)

year		0.0399*** (0.0103)		0.00472 (0.00781)		0.0339** (0.0144)
_cons	22.35*** (0.615)	-61.08*** (20.14)	4.444*** (0.482)	-3.209 (15.22)	17.78*** (0.997)	-55.98** (28.19)
N	1108	727	981	684	981	684
R-sq	0.098	0.508	0.197	0.471	0.157	0.566

Standard errors in parentheses. *p<0.1 **p<0.05 ***p<0.01

When exploring the determinants of female SMAM only cousin marriage has a significant negative effect before the other controls are added. However once female educational attainment, urbanization and percentage Muslim are included this effect falls away. This suggests that the significant effect found in table 3.5 of African and Egalitarian Nuclear families on female ages of marriage is a result of the interaction the various characteristics of the family system measure, rather than one particular characteristic driving the result.

Moving to the determinants of the spousal age gap cousin marriage is again significant in the base line regression (increasing the age gap between spouses) but with the inclusion of controls this effect again disappears. However in the regression with controls symmetrical inheritance and nuclear families both have a significant effect in reducing spousal age gaps. For the nuclear family result extended households are the reference category. Nuclear families, therefore, appear to be associated with a reduction of the spousal age gap by half a year compared to extended households. Similarly symmetrical inheritance is associated with, once other factors have been controlled for, a 1.1 year reduction in the spousal age gap. If we look at these results in light of those presented above for the family systems this coincides well with the significant value on the egalitarian nuclear family but fits less well with the anomic family, which is characterized by a stem settlement pattern and unequal inheritance. This suggests that the systems values, here also have added value in exploring the determinants of spousal age gaps.

Finally in the Girl-power index regressions cousin marriage is again significant in the baseline regression but that result disappears with the inclusion controls. However in the full model both symmetrical inheritance and all categories of domestic organization relative to extended households have significant coefficients. The picture that emerges is one in which community family organization is by far the most detrimental to the girl-power index scores, while unequal inheritance practices play a similarly important role in reducing a country's score on this indicator. Overall, looking at all six regressions it seems that domestic organization and inheritance practices are the most important elements in distinguishing one family system from another in terms of outcomes in marriage ages. However, particularly in the case of female ages of marriages, but also for spousal age gaps, it seems to be that the combination of features in a family system is also important.²⁰

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 5.8.

20. The cousin marriage find is surprising as much of the literature supports the idea that in a community family setting endogamy is preferable to exogamy where the incentives to get rid of the women young is strong as they will not stay in the natal household. In the endogamous community family girls remain near the natal kin after marriage. However recent work for India has shown that this interpretation does not hold.

Table 5.8. Regression results with models including interaction effect of Islam with time

	(1)	(2)	(3)
	Female SMAM	Spousal Age Gap	Girl Power Index
Urbanisation	0.0314*** (0.0103)	-0.00680 (0.00506)	0.0382*** (0.0135)
Average education, female 15+	0.407*** (0.0863)	-0.184*** (0.0439)	0.585*** (0.102)
Absolute Nuclear	0.960* (0.513)	0.472* (0.280)	0.541 (0.629)
African	1.589** (0.706)	-0.118 (0.433)	1.755* (1.012)
Anomic	0.797 (0.616)	-0.660* (0.342)	1.521* (0.794)
Authoritarian	1.108 (1.099)	-0.169 (0.342)	1.354 (1.165)
Egalitarian Nuclear	1.314** (0.602)	-0.997*** (0.324)	2.392*** (0.742)
Exogamous Community	0.833 (0.608)	-0.562* (0.319)	1.459** (0.718)
interaction1950	0.0556** (0.0256)	-0.103*** (0.0184)	0.158*** (0.0375)
interaction1955	0.00184 (0.0263)	-0.0729*** (0.0180)	0.0737* (0.0377)
interaction1960	-0.00481 (0.0283)	-0.0783*** (0.0182)	0.0726* (0.0395)
interaction1965	-0.00798 (0.0339)	-0.0783*** (0.0200)	0.0692 (0.0452)

interaction1970	0.000768 (0.00558)	0.00777* (0.00465)	-0.00487 (0.00868)
interaction1975	0.00260 (0.00580)	0.00683 (0.00451)	-0.00224 (0.00876)
interaction1980	0.00180 (0.00604)	0.00995** (0.00399)	-0.00760 (0.00812)
interaction1985	0.00612 (0.00621)	0.00758* (0.00387)	-0.000387 (0.00811)
interaction1990	0.0142** (0.00670)	0.00435 (0.00371)	0.0102 (0.00845)
interaction1995	0.0195*** (0.00739)	0.00491 (0.00363)	0.0151* (0.00904)
interaction2000	0.0212*** (0.00749)	0.00694* (0.00360)	0.0148 (0.00894)
interaction2005	0.0160** (0.00801)	0.00724 (0.00517)	0.00752 (0.0113)
interaction2010	0.00441 (0.00760)	0.0113* (0.00642)	
_cons	17.55*** (0.576)	5.355*** (0.457)	12.17*** (0.923)
N	815	779	779
R-sq	0.497	0.415	0.505

Standard errors in parentheses: *p<0.1 **p<0.05 ***p<0.01

The inclusion of the interaction effect does not change the significance of urbanization or education. The family type variables keep largely similar coefficients and significance apart from the absolute nuclear family which is now significant for both the female SMAM regression and the spousal age gap regression. However the interaction effects do not give a consistent effect of Islam on female ages at marriage and spousal age gaps over time. The first interaction effect for 1950 shows a significant positive effect on female SMAM

and a significant negative effect on spousal age gaps. However the effect for SMAM disappears until 1990-2005, when a significant, positive effect reappears. The negative effect on the spousal age gaps remains until 1965 when a switch occurs to a small positive effect (also significant). Until 2000 the effect is insignificant, regaining significance with a positive sign in 2000 and 2010. This effect suggests that this proxy for of female empowerment has not seen a consistent improvement as a result of the influence of Islam, but nor has it been strongly detrimentally affected. For the overall Girl-power index the start of the period, from 1950 until 1960 displays a positive, significant result, which other than that is only to be seen in 1995.

These results paint an ambiguous picture of the role of Islam for the position of women. In the final decade a significant effect is found both for marriage ages and spousal age gaps which is associated with both an improvement of the position of women and a worsening. 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 fluctuate over 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. Another explanation could be that the "negative" effect of Islam is already being captured by the endogamous community family form, which is to be found predominantly in majority Muslim countries.

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, so they have to wait longer to get married, hence increasing spousal age gaps. 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 pop-

ulation practising the Islamic faith, and regardless of the differences found within the category Islam, an effect does seem to be present, although it is not an unambiguously negative or positive one.

SECTION 5.5. 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 chapter 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 the position of women. What this chapter 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 has a small and consistently significant effect on increasing female SMAM however no effect of urbanization on spousal age gaps was found.

Controlling for percentage population Muslim had some surprising results, with the interaction variable indicating that when it has a significant effect it is one which indicates that 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 has no signifi-

cant effect on SMAM, but a significant positive effect on spousal age gap, thus implying that the fourth hypothesis is not wholly 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 non-Western countries. It also suggests that the role of religion in determining marriage may fluctuate over time.

The egalitarian nuclear family and the anomic family have the most robust impact on spousal age gap and female SMAM with the endogamous family as the reference category. The egalitarian nuclear family is linked to increased female SMAM and decreased spousal age gaps, while the anomic family is associated with a decrease in the spousal age gap and an increase in the Girl Power index. For these two family systems it seems that Todd's framework, as supplemented by Murdock's data, provides an interesting variable to test. The exogamous community family is different from the endogamous variant in its influence on female SMAM but this effect disappears once other variables have been controlled for. It is associated with a significant decrease in spousal age gaps. In general the analysis shows that the endogamous community family is detrimental to the position of women measured in this way. Chapter 3 sought to empirically evaluate Todd's family system to see if it is relevant and/or accurate in view of the latter day situation, and therefore the resultant hybrid dataset was employed here. Discrepancies between the results using the two datasets could be more closely explored in future work to understand the underlying cause.

One argument against the inclusion of the Todd framework in this analysis is that in some senses it 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 slightly, but the effect of a number of the family types remains significant.²¹ Another bone of contention is the

21. See appendix 5.4 for regression results.

macro-level of the data but the goal here is to provide, in broad strokes, an overview of how women are faring over time and space and what variables play a role in determining their position in a given society.²² For this purpose macro-level analysis is a suitable tool.

Further issues might arise due to the use of the SMAM as the unit of measurement. Singulate mean age at marriage is a static measure which does not capture dynamic developments very well. This means it changes only slowly in the face of shifts in the behavior of the population. It includes in its calculation couples who married many years before the data was recorded. This does not necessarily undermine its value as a proxy of the position of women, and it remains one of the more widely available, historical statistics for this purpose.

22. For an attempt to move to the micro-level using household level data to analyse marriage behaviour see Gruber and Szoltysek (2015).

Chapter 6: Achieving gender equality: development versus historical legacies, 1950-2000

Published in *CESifo Economic studies* with Selin Dilli and Auke Rijpma.

SECTION 6.1. INTRODUCTION

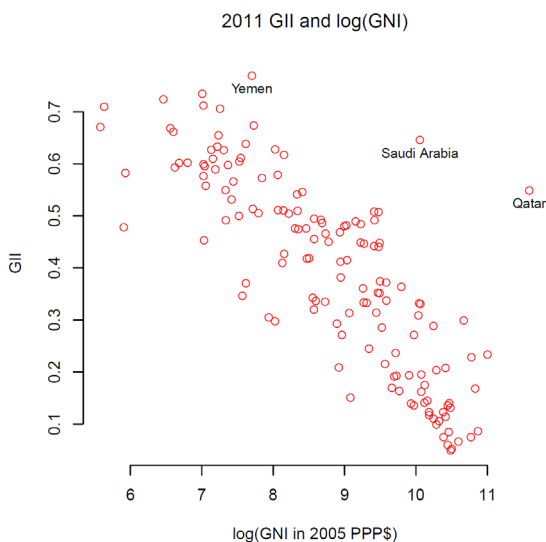
As the earlier chapters, and particularly chapter 2, have demonstrated much of the world is still characterised by gender inequality. Especially in developing countries, many women face limits to their freedom. They are discriminated against, not just in the workplace and the political arena, but also within the household. This negatively affects women's decision making powers and sometimes even their survival chances. Besides the intrinsic importance of women's well-being (Sen 1999), the World Bank (2011) highlights the instrumental importance of women gaining an equal position to men for attaining other development goals. However, there is a lack of consensus on how to achieve this goal. Therefore this chapter seeks to provide an empirical assessment of the relative importance of economic development on the one hand, and the persistent institutions of a country on the other, in determining gender equality. To achieve this, the chapter builds on the composite index introduced in Chapter 2, picking up where chapter 2 left off, to explore the deep historical roots of current day gender inequality. The introduction repeats material from Chapter 1 and elsewhere but is necessary to embed the subsequent analysis.

Broadly speaking, the literature offers two sets of explanations for cross-national disparities in gender equality: modernization (development) and institutions (especially the informal institutions that shape norms and values). The modernization view argues that as countries become more economically developed, industrialized, democratic and their populations' more educated, equality between the sexes will result, as the resources available to women will increase and give them a better bargaining position (Inglehart and Baker 2000). An alternative mechanism put forward in the modernization literature

is that the very process of modernisation is expected to lead to gender equality, in that it brings about shifts in the norms and values of societies, which promote more gender egalitarian attitudes (Norris and Inglehart 2003).

The strong cross-sectional correlation between income and gender equality illustrated in figure 6.1 broadly supports the modernization view. However, this figure also highlights some stark outliers. Most prominent are wealthy countries such as Qatar and Saudi-Arabia which nevertheless perform poorly on measures of gender equality (UNDP 2011). Other counterexamples include China and India, which have economic growth records, but have not made similar headway in gender equality (Klasen and Wink 2002). Even among highly-developed European countries, there are substantial differences in gender equality in matters such as parental leave and labour force participation (Bruning and Plantenga 1999).

Figure 6.1. Gender equality and economic development



One explanation for these counterexamples and the lack of an automatic link between gender equality and economic development lies in the role of long-lasting, historical institutions, many of which have appeared in the earlier chapters, such as religion, family systems, and legal traditions that disadvantage women.¹ This is the second branch of the literature seeking to explain differences in the gender equality of countries. From this perspective, contrary to what would be expected from modernization theory, the norms and values of a society are persistent and rooted in long-lasting institutions, rather than merely lagging behind the development process (Alesina, Giulinano and Nunn 2013; Branisa, Klasen and Ziegler 2010; Branisa, Klasen and Ziegler

1. Note that these three examples of institutions all work on different time-scales. For a more elaborate discussion of the way different institutions (or factors) persist over different periods of time see Therborn (2011).

2013). For instance, the historical and cultural legacy of Islamic countries may partly explain what is observed in Saudi Arabia and Qatar (Spierings, Smits and Verloo 2009). Women are strongly disadvantaged by Islamic customs and laws concerning marital and inheritance practices (Weldon and Htun 2012). Likewise, polygamy is a persistent family practice in sub-Saharan Africa and associated with gender inequality (Bove and Valleggia 2009; Tertilt 2006). Finally, in cross-country analysis van Staveren shows that gendered institutions (alongside access to resources) are important determinants of women's empowerment today (van Staveren 2013).

Another example where economic development does not always translate to gender equality is that of "missing women" (Sen 1992). Although Klasen and Wink (2002) observe improvements in this respect in some countries as their income and education levels increase, they also found that China and India have experienced worsening sex ratios despite their rapid economic growth. Part of this results from the availability of sex-selective abortion combined with a strong son preference in these countries, in turn associated with long-standing family systems (Dyson and Moore 1983).

The historical record also suggests that gender inequality is not solely determined by the level of development. As mentioned in the introduction the literature shows that North-West European women had good access to labour markets well before the Industrial Revolution when the region was still poor by modern international standards (De Moor and Van Zanden 2010; Horrell and Humphries 1995).² Taken together, these examples point to the fact that practices exist within countries or across regions, which disadvantage women and are unique and long-standing, probably going back centuries. These prac-

2. See chapter 4 for further examples of countries where economic development and gender equality do not go hand in hand.

tices will not necessarily change as a result of modernisation and/or economic development.³

This chapter shows that historically persistent institutions are important explanations of persistent variation in gender equality in addition to economic development. Although the development process better the condition of women, long-lasting institutions are at least equal determinants of persistent gender inequalities. Furthermore, our results show that the relation between long-lasting institutions and gender equality is dependent on the course and/or level of development in a country.

The chapter is organized as follows: Section 6.2 will discuss the views on the relationship between gender inequality and development, history and culture. Section 6.3 discusses the methodology. Section 6.4 will present the results and the final section concludes. The data is not introduced here as this was done at length in chapter 2.

SECTION 6.2. LITERATURE AND HYPOTHESES

Much of the literature on gender inequality suggests that as countries develop economically, gender inequality will decrease. In a recent review of the literature on women's empowerment and development, Esther Duflo (2012) concludes that the two are closely, though not automatically, related. A multitude of studies exist which examine links from development to gender equality. Doepke, Tertilt and Voena (2012) present a model where women's rights are determined by their returns to education, in turn largely driven by technological progress. Goldin (2006) argues that the growth in labour force participation by women in the USA between 1930 and 1950 was due to the increase in service-sector jobs. The decline of footbinding in China provides another

3. Migration and urbanization can weaken traditional family systems (Kok 2015) but even in the case of migration migrants often maintain different norms and values to the receiving population. This has been shown particularly by looking at son preference and female labour market participation amongst migrant groups in the US (Almond et. al. 2009; Alesina et. al. 2013)

example of women's status improving with economic development. Bossen et al. (2011) claim that as mass-produced textiles replaced domestic production, women's household confinement was questioned, and with it the practice of footbinding.

A related idea is that over the course of the development process the relationship between gender equality and economic progress may change. Claudia Goldin (1995) posits a U-shaped relation between married women's labour force participation and economic development. In the initial stages of growth, men move into higher productivity jobs outside family enterprises and this income effect depresses women's labour force participation. However eventually a tipping point is reached where women's wage-earning opportunities in the service sector outweigh the family income effect. Alternatively, initial gains in economic development may temporarily reinforce norms that preclude the inclusion of women in life outside the household (Eastin and Prakash 2013). Das and Desai (2003) find that as economic development in India leads to improvements in a family's status, women from these families are less likely to work, as women working outside the household is viewed as a taint on family honour.

The idea that economic development will lead to gender equality fits with modernization theory. Proponents of this view argue that economic development leads to occupational specialization, rising educational and income levels, bringing about changes in gender roles and declining fertility rates. The combination of this leads to increased gender equality (Inglehart and Baker 2000). Modernization reduces the importance of biological differences between the sexes. For example, industrialization, machine technology, and the growth of the service sector decrease the importance of muscular strength and increase the value of intellectual skills, in which the two sexes are more equal. Higher income and education also lessen the need for numerous children, while modern medicine provides women greater control over reproduction. Therefore, women spend less of their lifetime bearing and rearing children (Christy 1987). Another argument is that modernization is associated with more general cultural change. Cavalli (1983), for instance, observes that indus-

trialization encourages egalitarian ideals, such as aspirations for more equality between the two sexes and the idea that society should provide more egalitarian educational and occupational opportunities. Overall, we expect that *more socio-economically developed countries will have lower gender inequalities* (H₁).

Although the modernization view suggests that development will bring about gender equality and cultural change, a growing body of literature claims that persistent norms, beliefs, and values matter. Inglehart and Baker (2000, p.19) themselves highlight that cultural change depends on the heritages of societies and these heritages have autonomous and enduring effects. Hence, besides economic development, the norms of a country or community likely also matter for gender inequality. These long lasting institutions also have to be studied to fully understand gender outcomes.

Examples in the literature confirming that norms matter are plentiful. This applies to development outcomes in general, as well as to gender equality. Nunn (2012) argues the importance of taking into account values and beliefs when trying to explain the economic performance of countries. Spolaore and Wacziarg (2013) provide a review of literature showing that development outcomes are influenced by persistent traits that are culturally and genetically transmitted across generation.

Turning to gender outcomes, Branisa, Klasen and Ziegler (2013) find significant associations of gender inequality with long-lasting norms, values, and codes of conduct. In their study of missing women, Almond, Edlund and Milligan (2013) show that gender bias continues to exist among immigrants to Canada and can only be explained by taking into account their cultural background. Furthermore, Alesina, Giuliano and Nunn (2013) demonstrate a relationship between traditional agricultural practices and present-day gender outcomes. By analysing the children of immigrants, they identify culture as a transmission mechanism of attitudes to gender roles.

From a historical perspective three types of institutions seem particularly important. First, religion is a cultural institution likely to affect gender equality. The religious traditions of the world vary strongly in their prescriptions on the proper role for women. For instance, controlling for the level of economic

development, Donno and Russett (2004) found that the position of women is significantly worse in Islamic countries. Catholicism too is associated with less gender equality. Catholic cantons in Switzerland have been shown to have invested substantially less in the education of girls between 1860 and 1930 (Praz 2006).

The second long-lasting cultural institutions likely to affect gender outcomes are the traditions and practices regulating family life. These near-universal institutions hold great weight for communities because they regulate their membership and transmit their values from generation to generation (Shachar 2001). One scholar who has looked at the importance of family ties is David Reher (1998). He considers family ties persistent, historical systems, and observes their impact on policy issues such as old-age care on a European wide scale. Likewise, Galasso and Profeta (2011) used a family system classification scheme devised by Emmanuel Todd (1985) to explain current day pension system differences within Europe. Duranton et. al (2009) also suggest that family systems have a lasting impact on regional disparities in many social and economic indicators in Europe. Alesina and Giuliano (2010) find that respondents in the World Value Surveys indicating strong family ties have significantly lower female labour force participation and more traditional views on gender roles. Finally, by using Italian data at the regional level, Bertocchi and Bozzano (2015) find that historical family structure matters for gaps in education by gender.

Lastly, the legal system of a country may influence gender equality. Htun and Weldon (2011) claim that family law “shapes virtually every aspect of a woman’s life”, including property rights, the ability to work outside the home, and freedom in marriage. They furthermore illustrate that family law and state-building histories have a substantial influence on present-day gender equality outcomes. For example, in many former British colonies gender-biased family practices were codified. Moreover, countries where the state-building process required accommodating tribal and religious authorities could result in family law systems that disadvantaged women (Weldon and Htun 2012). Hallward-Driemeier, Hasan and Rusu (2013) also look at women’s legal

rights over the past fifty years and show that the rights women hold are relevant for women's labour force participation, education, health condition, and representation in parliament.

Related to this point is the work on legal origins (La Porta et al. 1999; 2008). Although their work has been criticised for being too Europe-centric (Siems 2007), their concept of legal origins as an historically determined "style of social control of economic life" is relevant for gender equality. Legal equality of men and women was an important step towards gender equality, while educational reform, labour market access and health care priorities all required the active government styles that are associated with civil and socialist law countries (see also Hallward-Driemeier, Hasan and Rusu 2013). A stronger legal position of women regarding divorce and property rights is also associated with better outcomes such as higher labour force participation and investment in daughters' human capital (Gray 1998; Deininger, Goyal and Nagarajan 2013).

Thus we expect that *in societies that are characterized by historical institutions related to religion, family and legal traditions that are more supportive of the position of women, gender equality will be higher* (H2).

Overall, the literature suggests that both development as well as the historical and cultural legacy of a country matter for achieving gender equality. However, it should be noted that the interpretation of our results is limited by the fact that these two sets of relationships can suffer from endogeneity issues. There is the possibility that gender equality is both a cause and a consequence of economic development (Duflo 2012). Such reverse causality issues may also hold for the historical institutions, for instance in a situation where increasing gender equality influences family practices. However, since we are looking at slowly changing historical legacies, reverse causality issues are less of a concern for the latter set of variables (Nunn 2012). The data to be used in this chapter has already been discussed extensively in Chapter 2, therefore here we turn to the methodology, before moving on to the results and conclusion.

SECTION 6.3. METHODOLOGY

Global data was collected covering the period 1950 to 2003 to test the possible determinants of the gender equality measure outlined above. Our independent variables consist of two groups: the long lasting (informal and formal) institutional factors and the political and economic characteristics of countries. The descriptive statistics of the variables are shown in Table 6.1.

To measure the long lasting institutions of societies, we focus on religion (Maoz and Henderson 2013), legal origins (Teorell et al. 2013), and family systems (Todd 1985 and Chapter 3). While our measure of family systems is time invariant, data on religion and legal origins are available in panel data form from 1946 onwards. Our first variable, religion, is the percentage of the population that identifies as Muslim, Protestant or Catholic and is taken from the World Religion Dataset (WRD). This dataset provides detailed information about religious adherence worldwide for every 5-year period since 1945.⁴ As a measure of long lasting formal institutions determining the style of governance, we include the legal origins of the countries from the Quality of Government dataset available annually from 1946 onwards (many of these are time invariant although a number, such as Cuba, the former USSR and Vietnam shift from one category to the other over the period of consideration). The legal origins variable has four categories: (1) common (reference category), (2) French civil, (3) Socialist, and (4) Scandinavian/ German civil law.⁵ Family system is a categorical variable which classifies countries according to their egalitarianism in inheritance practices, the freedom they allow children in terms of spousal selection, and co-residence practices. Rijpma and Carmichael (2013) scrutinise Todd's classification of family systems by comparing Todd's classification of

4. The results are similar when religion is included in the analysis as a time-invariant categorical measure classifying countries as Muslim, Catholic and Protestant.

5. Besides the institutional variables, the effect of colonial origin on gender equality has been tested. As the effect of colonial origin on gender equality is not significant, this variable was dropped from the final analysis.

countries to a classification created based on the measures from Murdock's (1967) *Ethnographic Atlas*. We use six categories: (1) egalitarian nuclear, (2) authoritarian, (3) endogamous community, (4) exogamous community, (5) anomic, (6) absolute nuclear, and (6) African families.⁶

To capture the effect of economic characteristics and development on gender equality, we include log GDP per capita (Maddison 2008) and total public spending on education as a percentage of GDP (Wejnert 2007).⁷ The Polity IV index (Marshall, Jaggers and Gurr 2011) is used to control for the level of democracy, as democracy and gender equality have been shown to be related (Inglehart, Norris and Welzel 2002). The Polity IV index scores countries on the quality of their democratic institutions. It is based on three criteria: competitiveness of political participation, competitiveness of executive recruitment, and constraints on chief executive. The scale ranges from -10 (hereditary monarchy) to +10 (consolidated democracy). For ease of interpretation, the Polity IV index has been standardized to range between zero and one in which a higher score is a higher level of democracy.

We also include a global measure on the institutionalization of women's equality, or rather the women's movement (Paxton, Hughes and Green 2006). It is measured based on three world-level indicators: (1) cumulative foundings of WINGOs; (2) the cumulative count of international conferences, treaties, and groups related to women; and (3) the cumulative count of countries ratifying the 1919 Maternity Protection Convention. Finally, we use a time trend and add regional fixed effects to control for the effect of omitted global and regional characteristics. The regional dummies are: (1) East Asia and the Pacific, (2)

6. More information on the family systems classification can be found in Chapter 3. We use the hybrid loose dataset in the following analysis.

7. We also tested for the effect of urbanization and the size of the workforce employed in the industrial and service sectors. Because these variables are highly correlated with GDP, their inclusion did not provide additional information on the role of socio-economic development on gender equality. The effect of oil rents as a percentage of GDP was also tested and turned out to be insignificant.

Europe and the former Soviet Union, (3) the Americas, (4) the Middle East and North Africa, (5) South Asia, and (6) Sub-Saharan Africa (reference category).⁸

Table 6.1. Descriptive statistics
(N=106, n= 2736)

	min	max	mean	sd
Gender equality index	43.82994	93.58386	64.23196	7.526319
Absolute Nuclear	0	1	0.008211	0.090249
African	0	1	0.129463	0.335744
Anomic	0	1	0.140729	0.347775
Authoritarian	0	1	0.114569	0.318532
Egalitarian Nuclear	0	1	0.236968	0.425263
Endogamous Community	0	1	0.227802	0.419454
Exogamous Community	0	1	0.142257	0.349347
% Protestant	0	0.9901	0.173676	0.188365
% Catholic	0	0.9936	0.369047	0.296371
% Islam	0	0.9999	0.30112	0.290119
Scandinavian/German C. code	0	1	0.091847	0.288837
English Common Law	0	1	0.278977	0.448539
French C. Code	0	1	0.494367	0.500016
Socialist/Communist Laws	0	1	0.13481	0.341553
log GDPPC	5.313206	10.667	8.034843	1.059434
Polity IV	-10	10	0.324041	7.549039

8. Although Sub-Saharan Africa largely coincides with the African family system, we keep this regional control in the analysis as inclusion of this variable does not change the interpretation of the other variables in the regression analysis.

% Education expenditures	0.4	13.04	4.096807	1.797864
Inst. international women's movement	7.192	33.893	17.24172	8.628671

As an alternative dependent variable two other gender equality measure are used. First, we used the Gender Inequality Index (GII) from the UNDP (2011) for 2000, giving an indication of the inequality between men and women in health, empowerment and labour market participation. It is designed to measure the shortfall in human development due to gender inequality. The index ranges between 0 and 1 and was rescaled so that a higher score on the index implies higher gender equality. The second alternative gender equality measure is the World Economic Forum's Global Gender Gap (Hausmann, Tyson and Zahidi 2012). Although its data only start in 2006, it is conceptually closer to our index since it measures the extent to which women have achieved equality to men in economic participation, economic opportunity, political empowerment, educational attainment, and health and wellbeing. Its earliest set of scores (2006) are therefore compared to our measure for the year 2000. Our measure has a correlation of 0.76 and 0.86 points with the GII and GGG respectively.

6.3.1. Estimation Strategy

The bivariate relation between the independent variables and our historical gender equality index is provided in the Spearman's correlation matrix in table 6B in the appendix.

The effect of institutions and development on gender equality is studied using the following panel data specification:

$$G_{it} = \alpha + \beta_k Z_{it} + \beta_l K_{it} + \beta_m X_{it} + \beta_n \vartheta_{it} + \varepsilon_{it} \quad (1)$$

G is gender equality at time t for country i , α is the constant, Z represents the time-invariant institutional characteristics, namely family systems, for country i , whereas K represents time-varying institutional characteristics, religion and legal institutions for country i , at time t . X represents the time-varying economic and political characteristics for country i at time t . ϑ represents the year variable which is included to capture long-term growth in gender equality and ε is the error term. Since a number of variables of interest are either time-invariant or hardly change over time (i.e. religion and legal institutions), pooled OLS is used (clustering standard errors at the country level). Equation (1) is estimated in three separate models (Table 6.2). The first model includes only historical institutional variables, the second model takes into account time varying economic and political characteristics, and the third model includes regional dummies and a variable measuring the global institutionalization of women's equality. Additional model specifications and robustness checks are discussed in the following section.

Multiple imputation specifically designed for panel data was used to address missing-data issues (Honaker and King 2010). Imputations are especially important here because calculating the composite index requires all underlying variables to be present. Linear interpolation has also been tried as an imputation strategy. Generally, this gave similar results, though some of the results considering developing countries separately are sensitive to the imputation strategy since missing data is most problematic for developing countries.⁹

9. The results using interpolation can be found in the working paper version (Dilli, Rijpma and Carmichael 2013).

SECTION 6.4. RESULTS

The results of model 1 and 4¹⁰ (Table 6.2) show that relative to the endogamous community family all of the other family types have a significant positively higher HGEI score. Compared to the exogamous community family, for instance, the endogamous community family is expected to score 8.9 points lower on the HGEI a substantial difference on our index where about 90 percent of the countries score between 40 and 70. Similarly, using the egalitarian nuclear family as the reference category, the absolute nuclear family and the endogamous community family both score significantly worse on the HGEI. Surprisingly the exogamous community family scores significantly better than the egalitarian nuclear family in this simple model (in a model not controlling for GDP this effect disappears). An explanation for this might have to do with the Soviet countries (largely classified as exogamous community) implementing policies to push up parliamentary and labour force participation by women. Indeed once additional controls are added in models 5 and 6 this significant effect disappears. In fact it is the addition of the legal origin controls which cause this effect to vanish, suggesting that it is indeed associated with Soviet legal codes (which has a positive significant effect in model 5). However, no significant differences emerge between authoritarian (also known as stem) family structures and the egalitarian nuclear family. This finding is interesting as Todd (1985) argues that maternal authority in stem families is stronger than in the egalitarian nuclear family. We therefore expected stem families to have higher gender equality. In line with what was presented in other chapters in this book (most particularly chapter 2), there is a significant improvement in gender equality as the time trend is positively significant.

In model 1 we also include religion and logGDP. For both Protestantism and Islam we find a significant relationship. An increase in Protestant population from 0 to 100% seemingly increases gender equality by 6 points on the HGEI.

10. Baseline specification with family systems, religion, economic development indicators and a time trend, with different reference categories.

The same shift from 0% Muslim population to 100% is associated with a 5.4 point drop on the HGEI. For logGDP we find a significant positive relationship with the HGEI. The fact that the endogamous community family performs significant worse relative to all the other family systems even though the percentage population Muslim is in the model implies that the disadvantageous position of women in the Middle East may be the result of family structure rather than of Islam (Todd and Courbage, 2011). This provides empirical evidence for the discussion in the literature related to the position of women in Islam (see for instance al-Hibri 1997).

In the second model, other institutional controls are included to see whether family systems are the cause of variation in gender equality or if the effects are due to different institutional characteristic of societies which are being subsumed into the family systems coefficients in model one. The results of model two show that once the differences in legal structure, educational expenditure, and the quality of democratic institutions are taken into account, with the endogamous community family as the reference category all other family systems still perform significantly better. In model 5, however, we find that the exogamous community family is no longer significantly different from the egalitarian nuclear family (as mentioned above). The inclusion of the additional controls does not change the interpretation of either the religion, GDP or time variables, although the time trend becomes slightly less significant.

Among the legal origins variables, countries with socialist legal origins score 6.45 points higher on the gender equality index relative to the Scandinavian/German civil code, whereas other legal origin measures do not seem to have a significant impact on explaining gender equality. The coefficient and significance of the socialist legal code is not surprising considering the experience of Soviet countries where gender equality was achieved in various dimensions by active policy implementation (Schalkwyk and Woroniuk 1999; Weldon and Htun 2012).

The polity2 score is insignificant, indicating that the quality of democratic institutions does not have an influence on gender equality. However the International Women's Movement score has a significant positive effect. This is

a measure of the institutionalization of women's equality in the world. Since the 1975 declaration of the Decade of Women by the United Nations and its four international conferences, achieving gender equality has become an issue on the international agenda, creating common interests and strategies for action in gender equality the world over (World Bank 2011). While including this variable does not change the interpretation of our main interest variables, the institutionalization of women's equality on a global level is positively and significantly related to gender equality.

In the third model, regional controls are included. Here the absolute nuclear family and the authoritarian nuclear family are no longer significantly different from the endogamous community family (the other 4 still are significantly positive relative to the reference category). In model 6 only the endogamous community family has retained its negative coefficient relative to the egalitarian nuclear family. This suggests that there is some interplay between regions and family systems. Using Sub-Saharan Africa as the reference category the two regions with significant coefficients are the Middle East and North Africa, and South Asia. Both have lower HGEI scores, once all other factors have been controlled for, than Sub-Saharan Africa. Interestingly with the inclusion of regions the significant value on the time trend disappears, which suggests that, once regions have been controlled for (i.e. holding regions constant) progress, towards equality has not been marked.

Table 6.2. Results for OLS regressions of gender equality, 1950-2003¹¹

	HGEI 1 (endo)	HGEI 2 (endo)	HGEI 3 (endo)	HGEI 4 (egal)	HGEI 5 (egal)	HGEI 6 (egal)
Absolute Nuclear	2.064* (1.047)	2.889** (1.117)	1.11 (1.543)	-3.684*** (0.773)	-2.711*** (0.911)	-3.037 (2.008)
African	5.269*** (1.311)	5.317*** (1.316)	3.266** (1.517)	-0.479 (1.180)	-0.283 (1.257)	-0.881 (1.996)
Anomic	4.682*** (1.267)	4.880*** (1.071)	4.143** (1.55)	-1.066 (0.962)	-0.719 (0.7)	-0.00396 (0.757)
Authoritarian	6.551*** (1.221)	4.730** (1.669)	3.577 (2.107)	0.803 (0.856)	-0.87 (1.294)	-0.57 (1.491)
Egalitarian Nuclear	5.748*** (1.163)	5.600*** (1.159)	4.147** (1.56)			
Exogamous Community	8.908*** (1.584)	5.513** (1.822)	4.372** (1.781)	3.160*** (1.164)	-0.0865 (1.394)	0.225 (1.162)
Endogamous Community				-5.748*** (1.163)	-5.600*** (1.159)	-4.147** (1.56)
Protestant	6.093*** (1.234)	5.394*** (1.132)	4.479*** (1.114)	6.093*** (1.234)	5.394*** (1.132)	4.479*** (1.114)
Catholic	-0.735 (1.018)	0.0666 (0.716)	-0.349 (0.705)	-0735 (1.018)	0.0666 (0.716)	-0.349 (0.705)

11. In the appendix (Table 6C) the same regressions are run but using the underlying family system characteristics; nuclear, stem, community, symmetrical inheritance, and endogamy. These show that in the full specification none of the individual characteristics is significant (in the 1st and 2nd model cousin marriage has a significant negative effect on the HGEI). This suggests that the negative results found for the endogamous community family are a result of the features of this family system working together, rather than a result of its underlying components.

Islam	-5.366*** (1.477)	-4.023*** (1.092)	-3.535*** (0.789)	-5.366*** (1.477)	-4.023*** (1.092)	-3.535*** (0.789)
Log GDP	1.610*** (0.351)	1.536*** (0.35)	1.544*** (0.369)	1.610*** (0.351)	1.536*** (0.35)	1.544*** (0.369)
year1	0.131*** (0.0108)	0.0517* (0.0288)	0.0337 (0.029)	0.131*** (0.0108)	0.0517* (0.0288)	0.0337 (0.029)
English Com- mon		2.608 (1.477)	1.352 (1.6)		2.608 (1.477)	1.352 (1.6)
French Civil		-0.156 (0.702)	-0.652 (0.759)		-0.156 (0.702)	-0.652 (0.759)
Socialist		6.546*** (1.361)	4.695*** (1.251)		6.546*** (1.361)	4.695*** (1.251)
Polity 2		0.0312 (0.0371)	-0.0173 (0.0384)		0.0312 (0.0371)	-0.0173 (0.0384)
Educational Expenditure		0.390*** (0.103)	0.466*** (0.0948)		0.390*** (0.103)	0.466*** (0.0948)
International Women's Movement		0.153*** (0.0495)	0.191*** (0.0499)		0.153*** (0.0495)	0.191*** (0.0499)
East Asia and Pacific			0.0572 (2.164)			0.0572 (2.164)
Europe and Central Asia			1.103 (1.972)			1.103 (1.972)
Americas			-0.575 (1.94)			-0.575 (1.94)
Middle East and North Africa			-3.470** (1.343)			-3.470** (1.343)
South Asia			-3.181** (1.43)			-3.181** (1.43)
Constant	43.62*** (2.929)	41.19*** (2.925)	43.01*** (2.99)		46.79*** (3.057)	47.16*** (3.418)
N	6023	5237	5237		5237	5237

Standard errors in parentheses: * p<0.1, ** p<0.05, *** p<0.01.

To judge the relative impact of the variables, we need standardized coefficients. Table 6.3 reports these coefficients for the most complete model (3 and 6) and shows that institutional variables clearly matter for gender equality. The International Women's Movement, Socialist legal systems, and the egalitarian nuclear family and endogamous nuclear family have the largest effects. Next in line is Islam along with the MENA region and educational expenditures. However, we would like to emphasise that the development level of countries is as important for gender equality outcomes as institutional characteristics are. For instance, a one standard deviation increase in log GDP per capita is associated with a 0.215 standard deviation increase in the gender equality index. The international institutionalization of equality also has a large positive impact on gender equality ($\beta=0.22$).

Table 6.3. Standardized coefficients based on model 5

	Standardized coefficients endogamous community	Standardized coefficients egalitarian nuclear
Absolute Nuclear	0.013	-0.036
African	0.144	-0.039
Anomic	0.189	-0.000
Authoritarian	0.150	-0.024
Egalitarian Nuclear	0.232	
Exogamous Community	0.201	0.010
Endogamous community		-0.229
% Protestant	0.111	0.111
% Catholic	-0.014	-0.014
% Islam	-0.135	-0.135
Scandinavian/German	0.051	0.051

French C. Code	-0.043	-0.043
Socialist/Communist Laws	0.211	0.211
log GDP	0.215	0.215
Polity IV	-0.017	-0.017
% Education expenditures	0.110	0.110
International Women's Movement	0.217	0.217
East Asia & Pacific	0.003	0.003
Europe & Central Asia	0.064	0.064
Americas	-0.031	-0.031
MENA	-0.161	-0.161
South Asia	-0.098	-0.098
Year	0.067	0.067
Observations	5237	5237

In order to test whether the effect of our explanatory variables differs depending on the stage of development, we split our data into developed versus developing countries. For this classification, we adopt the World Bank definition of countries with a Gross National Income (GNI) less than \$4,085 classified as developing versus the developed countries with a higher GNI. Table 6.4 shows that some of our indicators do seem to matter for gender equality differently at different stages of development. For instance among our family systems measures, endogamous community family is detrimental for gender equality only in developed countries, whereas Islam is important across both sets of countries. The positive effect of Protestantism only holds for developing countries as well. Another interesting finding is that socialist legal origin only matters for developed countries whereas educational expenditure promotes gender equality across the board. These results are in line with the conclusions drawn from table 6.3 that both institutional conditions and economic development

are important drivers of gender equality and that in most cases they work for or against gender equality together.

Table 6.4. Results for OLS regressions of gender equality, 1950-2003 by level of development

	Develop- ing Endo. Comm.	Developing Eg. Nucl.	Developed Endo. Comm.	Developed Eg. Nucl.
Absolute Nuclear	1.42 (1.80)	0.10 (2.86)		
African	2.83 (1.65)	1.51 (2.98)		
Anomic	3.21 (2.44)	1.89 (1.11)	3.76* (2.27)	-1.43* (0.78)
Authoritarian			4.62* (2.65)	-0.57 (1.51)
Egalitarian Nu- clear	1.32 (2.68)		5.19** (2.26)	
Exogamous Com- munity	4.94* (2.46)	3.61 (2.61)	4.60* (2.63)	-0.59 (1.01)
Endogamous Community		-1.32 (2.68)		-5.19** (2.26)
% Protestant	1.75 (1.76)	1.75 (1.76)	4.82*** (1.13)	4.82*** (1.13)
% Catholic	0.70 (0.89)	0.70 (0.89)	-1.07 (0.91)	-1.07 (0.91)
% Islam	-3.81*** (1.00)	-3.81*** (1.00)	-2.83** (1.12)	-2.83** (1.12)
Scandinavian/ German C. code			1.35 (1.55)	1.35 (1.55)

			(1.55)	(1.55)
French C. Code	-0.36 (1.13)	-0.36 (1.13)	-1.23 (0.93)	-1.23 (0.93)
Socialist/Com- munist Laws	1.70 (1.58)	1.70 (1.58)	4.45*** (1.22)	4.45*** (1.22)
log GDP	0.91 (0.88)	0.91 (0.91)	1.13** (0.46)	1.13** (0.46)
Polity IV	0.02 (0.04)	0.02 (0.04)	-0.05 (0.05)	-0.05 (0.05)
% Education expenditures	0.46** (0.16)	0.46** (0.16)	0.40*** (0.11)	0.40*** (0.11)
International Women's Mov.	0.17** (0.07)	0.17** (0.07)	0.20*** (0.06)	0.20*** (0.06)
East Asia & Pacific	4.73 (2.72)	4.73 (2.72)	-7.50*** (2.63)	-2.32* (1.25)
Europe & Central Asia	0.76 (2.87)	0.76 (2.87)	-4.56* (2.58)	0.63 (1.38)
Americas	-0.16 (2.74)	-0.16 (2.74)	-5.30** (2.65)	-0.11 (1.24)
Middle East and North Africa	-3.18* (1.50)	-3.18** (1.50)	-9.46*** (1.82)	-4.27 (2.60)
South Asia	-3.29* (1.48)	-3.29** (1.48)		
Year	0.03 (0.05)	0.03 (0.05)	0.06* (0.03)	0.06* (0.03)
Constant	47.99*** (5.94)	49.31*** (7.00)	51.66*** (3.39)	51.66*** (3.39)
Observations	2129	2129	3108	3108

Standard errors in parentheses. * p<0.10, ** p<0.05 *** p<0.01

Table 6D in the appendix provides further robustness checks on the development variables. First, in the literature, the relation between economic development and gender equality is argued to vary by level of economic development (Goldin 2005; Eastin and Prakash 2013). This U-shaped link has been tested by separately considering developing and developed countries (Table 6.4), and through a quadratic GDP per capita term. The joint insignificance of per capita GDP and its quadratic term (Table 6D appendix) means we find no evidence of this relationship. For the entire range of per capita GDP the effect of income is positive. To control for endogeneity due to unobserved time-invariant country characteristics, random and fixed effects model were estimated. Both are very similar to the pooled OLS specification, though the time-invariant family systems and legal origins cannot be estimated in the FE model. Finally, an instrumental variable model was used to assess reverse causality running from gender equality to economic development. Lagged GDP per capita and latitude were used as instruments (Gallup, Sachs and Mellinger 1999). This specification causes a small decrease to the coefficient on the log per capita GDP variable, but it remains a statistically significant predictor of gender equality.

To see whether our explanatory variables have different explanatory power for different dimensions of gender equality, we regress our full set of explanatory variables on single components of the historical gender equality index (see appendix, table 6A). There are a few interesting results for the explanatory variables that had a robust relation with gender equality in the previous models. For instance, Protestantism seems to be particularly relevant for closing the gender gap in education and parliament, whereas Islam is especially associated with gender inequality in labour force participation and education. This finding is in line with the World Bank's MENA 2013 report which finds that despite significant improvements both in overall human development and closing the gender gap in various aspects (e.g., life expectancy) in the MENA region, women's participation in the public sphere, both for labour force and political

participation remains one of the main challenges in achieving gender equality. Furthermore, socialist legal systems, which had a robust relation with gender equality seems to matter most for labour force participation, education, and participation in parliament. Thus, one might conclude that the institutional structure of countries seems to be particularly relevant for the gender gap in the public sphere. GDP per capita seems to matter particularly for closing the gender gap in education. Moreover, estimating the models for the single components using non-imputed data does not change the interpretation of the results.

It is also noteworthy that some of the family systems variables show significant results on the underlying dimensions of the HGEL. African family systems, relative to the endogamous community family, seem to have a particularly large effect on labour force participation, while the exogamous community family measured against the same reference category is most associated with labour force participation and parliamentary activity. Again, taking the endogamous community family as the reference category, the Egalitarian nuclear family seems to effect labour force participation most. In a slightly different result to those presented in Chapter 5 both the absolute nuclear family and the African family have a positive effect on the marriage indicator. Lastly the anomic family has a substantial, positive relationship with the education component of the index.

SECTION 6.5. CONCLUSION

Over the past decades the idea that gender equality matters has steadily gained credence. The reasons for this are many, ranging from the intrinsic importance of treating women as equal to men, to “smart economics” – the idea that improving gender equality is beneficial for development outcomes such as children’s health, or for increased economic growth due to higher female labour force participation (World Bank 2011). Given the importance of achieving gender equality, this chapter explores the determinants of cross-national differences in gender equality outcomes over a fifty year period (1950–2003).

The literature suggests that both development (modernization) and long-term, (in)formal institutions could matter for gender equality. To analyse these from a long-term perspective, we have constructed a new index of gender equality spanning five decades. We find that long-term institutions, especially religion and legal systems, are almost as important for gender equality outcomes as economic development.

These results illustrate how gender equality is determined by a range of different factors. Furthermore, institutional factors continue to matter in different stages of development. This provides a better understanding of why countries that achieve economic development, such as China and India, still struggle to achieve gender equality. This is key to keep in mind when designing policy geared towards tackling gender inequality. The specific historical and cultural legacy of countries will mean that, when it comes to reducing gender gaps, there is no one size fits all policy. Even when simply trying to understand why gender gaps persist, a multifaceted approach is required.

Our results also suggest avenues for future research on the determinants of gender equality. For one, there should be a closer inspection of the relative role of institutions and development at different levels of income. Simply breaking our sample in two sets of countries already revealed differences and it would be useful to analyse in-depth the interaction with development levels. Second, the dominant norms and values in a country today can also be measured directly through surveys and this can sharpen our view of how long-term legacies matter (similar analyses to those presented at the end of Chapter 3 could be conducted). Thirdly, a further exploration of how family systems and regional blocks overlap would enable researchers to better understand how norms and values interplay with geographical proximity. Finally, an even longer-term view on gender equality might be warranted. Progress towards gender equality and the development process go back to at least the nineteenth century. Data on these issues has been collected (Van Zanden et al. 2014), though much work remains. With this contribution we hope to have inspired scholars to take up this gauntlet in future research.

Chapter 7: Quantity versus Quality: Household Structure, Number of Siblings, and Educational Attainment in the Long Nineteenth Century

Written with Auke Rijpma and Lotte van der Vleuten

SECTION 7.1. INTRODUCTION

In 1881 the UK census was conducted, providing an invaluable insight into the lives of all those resident on the British Isles at that moment in time. One such resident was Mary Taylor, not yet past her first birthday, who is recorded as residing in Ayrshire in Scotland with her 5 siblings.¹ Mary's family was relatively affluent, with 3 living in servants, farming an area of 135 acres in the parish of Dreghorn. Of her 5 siblings 4 were in school and the two who were not were under the age of 5. This brief example already highlights some of the possible determinants of educational outcomes of children, namely wealth, and number of siblings.

This chapter is rather different from the others in this book in that it looks at a series of micro-data samples for a number of European countries and Western Offshoots. However as Chapters 1, 3 and 4 highlight that the shift in investment in child quality over child quantity may be an important result of the improved position of women and in turn, due to lower investments in child bearing, improves the possibilities of women to have lives independent of their roles as mothers and wives. Therefore this chapter seeks to explore whether the trade-off occurs in all contexts, and what drives the strength of the effect.

Education is an important driver of economic development. Moreover, it is an important source of wellbeing, and a key determinant of social mobility (Blake 1981; Breen and Jonsson 2005). Educating women, in particular, has

1. Mary is the sister 2nd from the left on the front cover of this book.

been shown to significantly reduce fertility, as well as having positive effects on a range of other development outcomes (Schultz 1997).

In this context a key question is how the educational level of a given child is determined? One model, put forward by Gary Becker (Becker 1960; Becker and Lewis 1973; 1991), is that of the quantity-quality trade-off (QQT), which postulates that parents, given a limited set of resources, face a choice between investing in child quantity (the number of children) or child quality (e.g. education).² This choice is held to take place at an individual level with societal level outcomes and push factors. A relevant push factor here would be the level of female labour force participation, whereby the higher the possibilities women have for paid employment the higher their opportunity costs of child bearing.

This model is popular amongst economists, particularly those working on Unified Growth Theory (UGT). The QQT is put centre-stage, as an essential mechanism in the nineteenth and twentieth century shift from a situation of Malthusian stagnation toward sustained growth (Galor and Weil 2000; Galor 2005). Technological innovation during the later phases of the Industrial Revolution is supposed to have raised returns to education (O'Rourke et al. 2013), which made it attractive for parents to have fewer children while investing more in their education. Unified Growth Theory thus models the connection between the transition to modern economic growth and the demographic transition.

In Western Europe the demographic transition occurred over 150 years ago, which means data is hard to acquire for most countries. This makes testing the model challenging, and the empirical findings for more recent data are mixed

2. In this model, parents derive utility from their children, much like they would from consumer goods. Under budget constraints households maximize utility by investing in a combination of quantity and quality. If we turn to the evolutionary biology literature then pursuing a quality or quantity strategy does not have to be a conscious choice but is rather driven by environmental factors. The environment dictates whether pursuing a quantity or quality strategy will best ensure the passing on of one's genes to the next generation.

(Black et. al. 2005, Qian, 2009). However, with the recent surge in large-scale collaborative historical data projects (Ruggles 2012), micro-data has become available to test the existence of the QQT using historical data from before, during or directly after the demographic transition of various countries.

Other than the implications of Unified Growth Theory a further two reasons exist for exploring the existence of the QQT in a pre-demographic transition context. The first is that with the advent of compulsory schooling to age 16 or above and high levels of government subsidy for schooling the link between parental fertility decisions and investments in child quality is interrupted to some extent. The second is that in a post-demographic transition era fertility in general is much lower, giving less scope for variation in the variable of interest.

This chapter, therefore, explores the existence of the QQT in pre-1920 micro-data across a variety of contexts. We define the QQT as the idea that children of families with a greater number of offspring will be less educated than those with lower numbers of offspring.³ The underlying idea is to see if common denominators can be identified that determine if the trade-off occurs. Additionally, we explore which other determinants of educational outcomes exist at the household level. To the best of our knowledge, this approach has not been applied before, with most historical studies limiting themselves to one country.

One determinant of particular interest is how decision-making power is distributed in the household, with specific reference to the position of women.

3. Given the fact that six surviving children was a relatively large family size for the time (the average number of children was 3.7 for Scotland at this time in our sample) the Taylor's could be held to be exceptional in the fact they chose to send all their children to school (Mary and Anne, the younger two siblings were also sent to school eventually - while Mary went on to marry Hugh Watt, Anne remained at home with her father until his death). However for this family we know that they were relatively affluent, as witnessed by the presence of three servants and the size of the farm and that their mother was literate, reading Shakespeare on the sly because her own mother had disapproved. These factors of wealth and mother's education will return in the following section.

This could be referred to as a ‘gendered’ Becker hypothesis: societies with an improved bargaining position for women will exhibit a greater tendency to switch from quantity to quality of offspring. The literature suggests that the relative power of spouses may have an effect on average years of schooling (van der Vleuten 2014). Recently, Diebolt and Perrin (2013) have developed a growth model to show that female empowerment is an important factor in determining fertility and the investment in the education of offspring. The bargaining position of mothers in particular, is thought to have a positive influence on the educational attainment of children and, above all, daughters (Thomas 1990, 1994). Other household members may also be important for decisions regarding children’s education. For example, extended family members in the household may also matter, i.e. the presence of aunts, uncles or grandparents (Duflo 2003; Ragsdale 2004).

Overall, we find mixed evidence for the QQT. In some samples we find it while in others we fail to. In order to try and explain when it does and does not occur we turn to a number of country level variables that capture the position of women and economic development. There seems to be a relation between economic development and the likelihood of a QQT existing and its strength. Upward extensions to the household (grandparents) appear to be beneficial for children’s enrolment. Indicators of a strong position of the mother, such as literacy or occupational status, can also have a positive effect.

The chapter is structured as follows. The next section reviews the literature on the QQT and other household-level influences on fertility and human capital formation. After a discussion of the data and methods, the results are presented. The final section concludes.

SECTION 7.2. DETERMINANTS OF CHILDREN’S EDUCATION

Since schooling usually happens at a young age, educational decisions are, to an important extent, determined in the households children grow up in. It is in the context of the household that resources and time need to be reserved for the education of children. In his work on the economics of the family,

Becker famously asserted the existence of a quantity-quality trade-off (Becker 1960, 1991; Becker and Lewis 1973). The QQT, according to Becker, means that parents face a choice between having fewer children, and investing more intensely in the human capital of those fewer children or alternatively, choosing to produce quantity (more children) over quality. Becker has proposed a number of explanations for the choice between quality over quantity and its relation to parental income, including preferences for child quality, increasing opportunity costs of (child rearing) time, and the fact that if parents want to treat their children similarly, increases in quality must apply to all children, thus increasing the price of additional quality at a higher number of children (Becker and Lewis 1973).⁴

Numerous empirical studies have provided support for Becker's models (Hanushek 1992; Rosenzweig and Wolpin 1980; Lee 2008; Downey 1995; Steelman and Powell 1989; see Steelman et al. 2002 for a review).⁵ With reduced fertility, human capital investment per child can increase. Growth models stress the importance of technological development and human capital in stimulating the shift from investments in quantity to quality. Parents are motivated to limit fertility and increase the amount of human capital per child because of the increasing expected returns to education, due to more rapid technological change (Galor and Weil 2000).⁶ An alternative explanation is

4. This is a fairly stringent assumption in the face of variations in the way given children are valued i.e. if younger or male children are treated differently from their siblings. In the absence of strong preferences on child quality and/or income effects the QQT at the individual level would breakdown if not all children are treated equally. This makes a comparative approach, such as the one included in this chapter, all the more valuable.

5. Outcomes of 'quality' are not only educational by nature; they can also be health or social status attainment but in general, in the economic literature, quality has been defined in terms of educational investments (see Carmichael, Störmer and Rijpma 2015 for an attempt to bring together the economic approach with evolutionary biology, where the emphasis of the QQT is more on health and survival).

6. The benefits here are construed in terms of utility for the parents, not necessarily remittances.

that women will face higher opportunity costs to child rearing, if their participation in the labour force increases. Again, technology plays a role in this by weakening the male strength advantage and thus increasing female labour force participation (Galor and Weil 1996).

While this chapter focuses on household influences on children's education, the context these households operate in is also very important. For example, recent research suggests that the introduction of child labour laws substantially increased costs per child, though the enforcement of these laws was not successful in all countries (Doepke and Zilibotti 2005). Compulsory schooling also increased the cost of children, not only because of their forgone potential income, but also because of the costs that accompanied formal education, such as books or travel expenses (Humphries 2010, 319). Compulsory schooling thus put pressure on families to limit their size.

The importance of both education and fertility decline for economic growth and development makes the study of the quantity-quality trade-off especially relevant for developing countries. However, the empirical record on the trade-off in developing countries yields mixed results. For instance, Vogl (2013) looks at micro data for 48 developing countries and finds evidence for changing preferences in terms of the quality and quantity of children. Other results corroborate such findings (Patrinos and Psacharopoulos 1997; Jun 2013; Li, Zhang, and Zhu 2008). In contrast, Angrist, Lavy, and Schlosser (2010) look at Israeli micro-data for 1983 and 1995 and systematically fail to find evidence for a trade-off. Several other scholars failed to find a strong relationship (Black et al. 2005; Lu and Treiman 2008; Buchmann and Hannum 2001 for a review).

Historical studies exist that provide evidence for the link between family size and educational attainment, though data requirements make this challenging. Such case studies include Prussia between 1816 and 1867 (Becker, Cinnirella, and Woessmann 2010), England 1700-1830 (Klemp and Weisdorf 2011), Spain 1900-1920 (Basso 2013) and the Netherlands 1812-1883 (Vandezande, Matthijs, and Kok 2011). The trade-off was also found for a number of different cities, i.e. Antwerp 1846-1920 (Van Bavel et al. 2011), and different cities in Prussia 1875-1910 (Galloway, Lee, and Hammel 1998). Fernihough (2011) studies

Dublin and Belfast for 1911 and found a significant effect of sibship size on the probability of school enrolment in both localities.⁷ However, Clark and Cummings (2015) fail to find a QQT effect for England between 1750 and 1879. The historical record provides an important testing ground for exploring whether the trade-off occurs. Looking at countries during the period in which their demographic transition occurred, could shed light on the determinants of the trade-off.

Besides simply the number of siblings a given child has, the sex of those siblings can also matter, particularly in a situation of son preference. In such a context parents will not limit fertility, but instead keep expanding the family until the desired sex composition is reached. Lee (2008) looks at South-Korea in the 1990s and finds evidence of son preference. Using the sex of the first child as an instrument, he shows the detrimental effect of a larger sibling size on educational attainment.⁸ Using historical data, Vandezande and Kok (2011) find that in Netherlands between 1850 and 1920, investment in boys education was no greater than that for girls, measured in terms of their literacy. They do find that older sisters seem to help younger sisters. Once again, contemporary scholarship shows varied results. Some find no evidence of sibship composition affecting the limitation of fertility and educational attainment (Kaestner 1997; Hauser and Kuo 1998), whereas others do (Butcher and Case 1994; Zeng et al. 2012; Yamauchi and Tiongco 2013). In some situations son preference might inhibit fertility limitations, and thus block the shift to investment in quality.

As the above demonstrates the inverse relationship between child quantity and quality is not a straightforward one. Its embedding in different cultural contexts influences its extent or presence. The relationship is confounded when different family attributes are introduced, such as the birth order, the sex ratio of the sibship and whether the family is nuclear or complex. Bras, Kok,

7. However, the extent of this effect did vary per city, depending on the level of industrialization, and per cohort.

8. When son preference is present, those families with more daughters in earlier phases of fertility end up with a larger number of children (Lee 2008).

and Mandemakers (2010), for instance, find a relationship between sibship size and occupational status attainment for the Netherlands in the period 1840-1925. However they also show that sometimes the impact of a large family on attainment may be neutral or even positive. One of the possible explanations they give for this is the security provided by extended (kin) networks.

Besides siblings, therefore, other extensions of the family might also have an impact on the educational attainment of children. An extended family could include a variety of upward (grandparents) and lateral kin extensions, such as aunts, uncles, but also cousins and nephews or nieces. It is difficult to assess the impact of these additional household members, because co-residence occurs for different reasons. For families with limited resources, doubling-up with other family members provides the possibility of economies of scale and improves the household's scope for division of labour. Grandparents, aunts and uncles can provide childcare or contribute in other ways to the family budget (Duflo 2003; Jamison et al. 2002). Related to this is the 'grandmother hypothesis', the idea that post-reproductive women positively support the health and education status of their grandchildren (Duflo 2003; Gibson and Mace 2005; Parker and Short 2009). Children from poor families might benefit from these additions to the household because more resources are available. However, when these kin cannot contribute to the household economy, due to age, infirmity, etc., they may act as a drain on resources. In addition, the inclusion of lateral extensions such as cousins, nephews and nieces may drain household resources. Globally as well as historically, families and households come in a wide variety of forms. The question arises whether different patterns of co-residence will have different effects on the educational outcomes of their offspring.

Women bear the bulk of the opportunity costs of fertility, which might result in a disparity in fertility preferences within the household. Diebolt and Perrin (2013) use this idea to develop a growth model that suggest that the position of women within the household matters for the shift from quantity to quality. Studies from development economics also indicate that differences in female

bargaining power within the household might be a fruitful factor to explore further, as various studies show that the household position of women directly impacts fertility behaviour (Mason 1987; Jejeebhoy 1995; Alvarez 2011). A substantial literature on household bargaining power underlines the importance of resource distribution and the relative position of household members in resource allocation. It has been shown that, relative to men, women tend to favour children in their resource allocation behaviour (Handa 1994; Hoddinott and Haddad 1995; Thomas 1990, 1994; Thomas, Strauss, and Henriques 1991; Doss 2012). A stronger position of women in the household can thus positively influence children's education.

Moreover, a stronger position for women in the household allows women to build their own human capital stock. In turn, women with higher human capital are better able to negotiate the limitation or postponement of fertility (Jejeebhoy 1995). Maternal education has been shown to have a positive impact on children's nutrition and health (Behrman and Wolfe 1989; Glick and Sahn 2000; Schultz 1993), thus lowering child mortality rates. The relationship between mother's and children's education seems to be more robust than that of father's education. There is historical evidence to support the above premises. For Prussia between 1816 and 1867, Becker, Cinnirella, and Woessmann (2010) show the link between women's education and their fertility before the demographic transition and find a strong negative effect. Baizan and Camps (2007) look at the effects of female education and professional achievement on fertility decline in Spain over the period 1920-1980, and find that women's education had a very significant impact on fertility decline. A strong position of women in the household seems, therefore, to be conducive to higher resource allocation towards children.

To test the position of women within the household with limited historical data, marriage patterns can be used as an indicator. Delayed marriage – which coincides often with the delayed onset of childbearing – is associated with decreased fertility and greater human capital investment (Field and Ambrus 2008). A small spousal age gap – the age difference between husband and wife – may indicate a situation with relatively high female bargaining power

compared to a marriage where girls are married to men many years their senior (Carmichael 2011; Carmichael, De Moor and Van Zanden, 2011).⁹

On the basis of the above we formulate the following hypotheses. First, we expect sibship size to be inversely related to educational attainment, meaning that a higher number of siblings within a household will be associated with a lower likelihood that children will be enrolled in school, or less literate. Second, the sex composition of a set of siblings may inhibit the QQT in a situation of son preference. We therefore explore whether the number of sisters or brothers have different effects on educational outcomes, and whether being male increases or decreases the chance of being enrolled. Third, we expect that a stronger female position, as indicated by a lower spousal age gap or mother's educational attainment, will lead to higher educational investment per child and lower fertility. Lastly, we hypothesise that the presence of extended kin within the household can either be detrimental or beneficial to educational attainment of children.

SECTION 7.3. DATA

To explore these issues, micro-data is needed. After all, decisions about education and fertility are taken at the level of individuals or households (Guinane 2011). To this end, we use census micro-data. This is not the ideal data with which to study the QQT. To test the sort of hypotheses we set out above, longitudinal micro-data (life-course or family reconstitution data) with completed fertility would be best suited. This can show exactly how many children a couple had, rather than merely showing how many children were present at the time of the census. Moreover, longitudinal data can provide a range of outcomes to measure child quality. Besides outcomes such as literacy, longitudinal

9. It must be kept in mind, though, that the majority of our datasets come from regions west of the Hajnal line so might not provide enough variation in order to say anything meaningful about this. The literature cited here use data at the level of the region or country where different mechanisms may be at work than at the microlevel.

data can provide information on status attainment at a later age (conditional on parental status attainment), thus giving much more encompassing information than the snapshots of a census.

There are examples of historical, longitudinal micro-data (an overview of historical micro-data can be found in Ruggles 2012). However, they are of a far more limited number than the micro-census data we use here. While census micro-data does not allow for the same detailed analysis of fertility as longitudinal data, its wider availability means it is possible to include a much broader sample of countries. The data used here therefore allows us to look at a far wider range of national contexts, thus giving a bird's eye view of in what contexts the QQT occurs. This would not be possible with longitudinal data.

The aim of this paper is thus to bring together as many examples of pre-1920 census data at the microlevel as possible in order to test the QQT in a range of societies. At the very least, we require micro-data which gives information on household size and a measure of education of the children.

We have used complete or sampled census data or similar for Ireland, Canada, the USA, Scotland, England and Wales (Minnesota Population Center 2008; National Archives of Ireland 2014). We have further used micro level data for towns or regions in Serbia, Germany, Italy, Austria, Albania and Switzerland. The data covering towns or regions in central and Eastern Europe has been collected from the data releases of the MOSAIC project which aims to make available comprehensive census micro-data sources for Europe and beyond. An overview of the data we have used from MOSAIC is presented below.

Table 7.1: datasets.

Panel A: Regional

sample	year	sample % original	nhh	hh ana- lysed
mos-rostock-1867	1867-1867	100	6748	1701
mos-san_marcello-1827	1827-1827	100	278	72
mos-kruja-1918	1918-1918	100	1361	381
mos-rostock-1900	1900-1900	100	14144	3697
mos-jasenica-1884	1884-1884	100	1474	674
mos-zurich-1870	1870-1870	100	1537	364

Panel B: National

sample	year	sample % original	nhh	hh ana- lysed
mos-hungary-1869	1869-1869	0.3	6572	1059
mos-austria-1632_1947	1632-1947	unknown	26370	4247
mos-austria-1910	1910-1910	unknown	4124	363
arch-ie-ireland-1911	1911-1911	5	36558	7475
arch-ie-ireland-1901	1901-1901	5	35094	7612
napp-scotland-1881	1881-1881	100	73708	13588
napp-englandwales-1881	1881-1881	100	53252	9756
napp-great_britain-1851	1851-1851	2	7802	2939
napp-usa-1860	1860-1860	1	53830	19336
napp-usa-1850	1850-1850	1	37010	13605
napp-usa-1870	1870-1870	1	78703	27138
napp-usa-1880b	1880-1880	10	116852	53919
napp-usa-1900	1900-1900	5	82523	35738
napp-usa-1910	1910-1910	1	217622	62100
canfamilies-canada-1901	1901-1901		51774	14525

The other data we use comes from a variety of sources. Most importantly, they come from the North Atlantic Population Project (NAPP) website which, similarly to MOSAIC, aims to provide historical micro-data for Great Britain, Germany, Iceland, Norway, Sweden and the United States from 1801-1910. Table 7.1b presents an overview of the data used for this paper.

Typically, the census micro-data used is organised by enumerating each individual or a sample of individuals in a country or region. In the censuses employed here, each individual's place in their household is also provided. This is done by specifying the relation to the household head (e.g. son, wife, or mother of the household head). In addition, the occupation, age, ethnicity, schooling, and religion of each individual may be reported (although this is not always consistently available). Micro-data lacking any data on the relation to the household head or schooling were disregarded.

While some of the data was already integrated and processed (the NAPP data and some of the Mosaic data, see below for more detailed description), other data required substantial cleaning before it could be used (e.g. Ireland). Moreover, all data needed to be harmonised so that we could be sure that the analysis for each sample was as similar as possible. After all, if we want to say something about differences in countries regarding household structure and educational outcomes, the data should be as comparable as possible. Otherwise we increase the risk of attributing differences to country characteristics while they are actually caused by differences in the coding of the data.

Enrolment was gathered either from occupational information or from a variable directly reporting enrolment (the USA and Canadian samples). Wherever it was available we also used literacy as a robustness check. In many cases the enrolment data had to be obtained from the literal transcription of the occupation, which meant that a lot of spelling variations had to be accommodated (in the case of Ireland this held for the literacy data as well). String distance packages using Jaro-Winkler distance (Van der Loo 2014) were used to facilitate this. Sometimes the procedure was used for the coding of occupations, the

relation to the household head, sex, and religious affiliation. These and other variables were harmonised to a more manageable number of possibilities.

It was also important to have information on whether or not the household was in an urban location. Often this was already coded in the micro-data; in other cases the data was matched to the extended database on city sizes of Bosker et al. (2014). The data was also geocoded at the country level to be able to combine it with country-level data. Additionally, geocoding was occasionally done at the village level to be able to cluster villages for regional controls that covered enough observations.¹⁰ Finally, it was necessary to create identifiers for households and persons. In most cases this was already done in the micro-data, but in some cases this information had to be derived from information on the address and the relation to the household head.

An additional step was made to exclude unreliable or unrepresentative observations. This was particularly pertinent for households which had multiple heads of households. These turned out to often be larger scale institutions (think poor houses, orphanages, boarding schools) and would thus skew the results as they would show a large number of children going to school. In order to ensure that these observations were excluded from the dataset we followed the NAPP-definition of an institution and dropped such households with 10 or more members unrelated to the head.

With the data harmonised, it still needed to be reshaped to get household-level observations for each variable. For each child, observations were created on the number of siblings, brothers, sisters, servants, extended and lateral household members, whether there were twins in the household, and the birth order of each child. Moreover, all available relevant parental information (occupation, literacy, religion, ethnicity) was added. From this, the spousal age gap and the implied age of the mother at first child were calculated.

A final step was the selection of relevant cases. If schooling was mandatory for children of a certain age, we should not expect there to be much variation

10. Google's geocoding API was used to geocode villages <<https://developers.google.com/maps/documentation/geocoding/>>

in their enrolment. Also, in the case of mandatory schooling the mechanism is no longer one of parental choice for investments in quality over quantity. For this reason we collected data on the age to which school was mandatory in the various countries considered (table 7.2). We then only looked at the enrolment (and literacy) of children older than this, yet below age 16.

Table 7.2: mandatory schooling ages.

sample	iso3	year	age
mos-austria-1910	AUT	1910	12
mos-austria-1632_1947	AUT	< 1774	5
mos-austria-1632_1947	AUT	1774–1869	12
mos-austria-1632_1947	AUT	1869–1947	13
napp-canada-1891	CAN	1891	13
canfamilies-canada-1901	CAN	1901	13
mos-hungary-1869	HUN	1869	11
arch-ie-ireland-1901	IRL	1901	13
arch-ie-ireland-1911	IRL	1911	13
mos-jasenica-1884	SRB	1884	5
mos-kruja-1918	ALB	1918	5
napp-usa-1850	USA	1850	5
napp-usa-1870	USA	1870	5
napp-usa-1880b	USA	1880	5
napp-usa-1900	USA	1900	5
napp-usa-1910	USA	1910	5
mos-rostock-1867	DEU	1867	5
napp-englandwales-1881-1pc	GBR	1881	12
napp-great_britain-1851	GBR	1851	5

mos-rostock-1900	DEU	1900	5
mos-san_marcello-1827	ITA	1827	5
napp-scotland-1881-10pc	GBR	1881	12
mos-zurich-1870	CHE	1870	5

We also constrained the data so that the age of the mother at the time of the census was between 18 and 49. The implied age of the mother at birth of first child was calculated by subtracting the age of the oldest child from her age. If this age was implausible (14 or lower), implying for example that some of the children were from a previous marriage of the household head, the observations were dropped.

As mentioned above, an issue with census data is that it rarely provides information on completed family size, let alone intended family size. While longitudinal data may provide the former, the latter is the exclusive realm of modern-day surveys. We nonetheless think that an analysis of the QQT using census data is valuable due to its broad historical coverage. However, it is necessary to control for the possibility that children have already left home or that a couple is at the start of their reproductive career we include the implied age of the mother at first birth. At low ages of mothers at first birth, the household may not yet be completed. The high implied ages at first birth, it is more likely that some of the siblings have already left the household. The summary statistics also provides figures on the singulate mean age at leaving home (Steckel 1996) to assess any differences in this regard between the samples.

It is important to consider issues that might arise due to any biases in sibship size. Note first that, on average, we would still expect households where the parents intend to have many children to show up in the census with more children. Any bias in the estimates, if the QQT exists, would be upwards (closer to zero): children with many siblings might have more siblings than we observe they do. The lower the average age at leaving home in society is, the larger this bias would be.

A further issue, due to the fact that we measure sibship size inaccurately, is the introduction of noise. This means we need a large number of observations to measure the effect of sibship size on educational outcomes. Finally, looking at the number of children present in the household has some advantages over looking at completed sibship size. In a situation where saving or borrowing is difficult, competition for resources is mostly between children present in the household, not those that have left the household.

A different issue is that we possibly underestimate the amount of enrolled children in some cross-sections because of how they were recorded. Some datasets provide information directly about the enrolment of children. Others provide information on school enrolment as reported in the occupational status. In the latter, we frequently find no occupation reported, and this under-registration seems to vary by country and by individual census taker. Similar issues of occupational under-reporting arise in defining women's occupational status, which in our datasets is seldom reported. The under-reporting of married women's work in censuses is a recurring issue that all scholars face in working with census data and has been addressed as such in the literature (Humphries and Sarasúa 2012; Schmidt and van Nederveen Meerkerk 2012).¹¹

Lastly, the classification of occupations differs per data source. Some of the NAPP and Mosaic data classifies occupations using OCCHISCO, which we aggregate to control for occupation. The US censuses also report imputed incomes for occupations, which were preferred as a control over occupational dummies when they were available. Likewise, the UK censuses provide occupational status scores for the occupations which were also preferred over the dummies. Others lack such structuring of the data, in which case we assigned dummies to the most frequently occurring occupations. Tables 7.3 and 7.4 present summary statistics. Table 7.3 shows descriptive statistics for the entire

11. The under-registration of women's work in the 19th century can be interpreted as the official outlet of the ideal of the male bread-winner family, prohibiting married women participating in the labour force (Humphries and Sarasúa 2012; Schmidt and van Nederveen Meerkerk 2012).

dataset whereas table 7.4 presents a number of variables specifically for the sample we used in each case.

Table 7.3: Summary Statistics for total datasets

Country	Sex ratio		Popu- lation		Mean age	Female SMAM	Male SMAM	Mean age	
	total	under 20	under 20	at leaving home				Spousal age gap	
Hungary 1869	0.98	0.48	0.48	24.4	20.95	25.82	18.04	4.87	
Rostock 1867	1.04	0.37	0.37	28.28	28.23	30.37	16.84	2.14	
San Marcello 1827	0.97	0.33	0.33	30.73	26.68	27.9	18.61	1.22	
Kruja 1918	0.96	0.44	0.44	26.97	18.75	27.41	16.66	8.66	
Rostock 1900	1.17	0.38	0.38	29.18	25.24	27.25	17.45	2.01	
Jasenica 1884	0.97	0.53	0.53	21.06	19.55	22.87	17.76	3.33	
Zurich 1870	1.34	0.31	0.31	30.08	29.09	30.07	16.88	0.97	
Austria 1632-1947	1.06	0.38	0.38	30.91	28.73	30.96	16.98	2.23	
Austria 1910	0.97	0.41	0.41	29.11	27.59	31.3	17.41	3.72	
Ireland 191	0.99	0.39	0.39	30.3	29.03	32.93	18.31	3.9	
Ireland 1901	1.01	0.42	0.42	28.46	28.65	32.42	18.34	3.77	
Scotland 1881	1.04	0.53	0.53	23.19	26.6	28.46	18.23	1.85	
England and Wales 1881	1.05	0.52	0.52	23.12	26.03	27.2	18.29	1.16	
Great Britain 1851	1.03	0.5	0.5	23.75	26.65	28.12	17.72	1.47	
Great Britain 1851	1.03	0.5	0.5	23.75	26.65	28.12	17.72	1.47	
USA 1860	0.96	0.51	0.51	22.68	NA	NA	18.88	NA	
USA 1850	0.96	0.52	0.52	22.29	NA	NA	18.76	NA	
USA 1870	0.99	0.5	0.5	23.47	NA	NA	18.79	NA	
USA 1880	0.96	0.54	0.54	22.23	23.96	27.72	18.96	3.76	
USA 1900	0.95	0.5	0.5	23.7	24.5	28.5	19.35	4.01	
USA 1910	0.95	0.42	0.42	26.63	23.08	26.8	19.04	3.71	
Canada 1901	0.95	0.45	0.45	26.26	25.45	28.68	19.51	3.23	

Table 7.4: Summary statistics for analysed data

Country	N chil- dren	N house- holds	Mother age first child	Lateral Extensions	Upward extensions	All ex- tensions	Serv- ants	hh. w. twins
Hungary 1869	1304	1059	23.08	0.02	0.03	0.05	0.09	0.03
Rostock 1867	3236	1701	26.53	0.03	0.04	0.07	0.32	0.03
San Marcello 1827	139	72	23.15	NA	NA	0.22	0.36	0.04
Kruja 1918	689	381	25.81	0.35	0.35	0.49	0.07	0.02
Rostock 1900	6862	3697	25.13	0.03	0.07	0.1	0.03	0.02
Jasenica 1884	1380	674	21.91	0.26	0.14	0.32	0.04	0.07
Zurich 1870	677	364	25.77	NA	NA	0.15	0.62	0.02
Austria 1632-1947	6590	4247	25.09	NA	NA	0.1	0.42	0.05
Austria 1910	461	363	25.02	0.11	0.08	0.18	0.19	0.06
Ireland 1911	19680	7475	25.67	0.09	0.08	0.15	0.11	0.03
Ireland 1901	20931	7612	24.53	0.08	0.08	0.15	0.12	0.03
Scotland 1881	16703	13588	23.96	0.06	0.04	0.1	0.11	0.04
England and Wales 1881	11908	9756	23.91	0.06	0.05	0.1	0.10	0.03
Great Britain 1851	7143	2939	24.59	0.07	0.05	0.11	0.18	0.03
Great Britain 1851	7143	2939	24.59	0.07	0.05	0.11	0.18	0.03
USA 1860	44344	19336	22.52	0.06	0.06	0.11	0.05	0.04
USA 1850	33883	13605	22.37	0.07	0.06	0.12	NA	0.05
USA 1870	62485	27138	22.68	0.05	0.07	0.11	0.06	0.04
USA 1880	134181	53919	22.33	0.09	0.07	0.15	0.14	0.04
USA 1900	88658	35738	22.69	0.08	0.08	0.15	0.08	0.05
USA 1910	132532	62100	22.98	0.07	0.07	0.13	0.06	0.03
Canada 1901	32791	14525	23.62	0.06	0.08	0.12	0.08	0.03

SECTION 7.4. METHOD

The basic estimation strategy is captured in the equation below. The outcome variable is a binary enrolment variable (1 if a child is enrolled, 0 otherwise) of a child i in household j . The analysis is restricted to children at ages when education is no longer compulsory, but below age 16. When available, literacy is used as an alternative outcome variable (see online appendix in working paper version).¹² To test for the existence of a quantity-quality trade-off, the main predictor variable of interest is the number of siblings. A negative coefficient on the number of siblings-variable would indicate the presence of a quantity-quality trade-off.

$$enrol_i = \beta_0 + \beta_1 nsib_j + \beta X + \epsilon$$

This model is estimated using logistic regressions with standard errors clustered at the household level. A number of robustness checks and alternative models were estimated using OLS regressions, again clustering standard errors at the household level. In the results section we mainly discuss estimates for data and regressions that are fully harmonised. This means the data is coded identically and the model specification is the same across all samples. However, this does imply that we cannot include all relevant information in the regressions. For example, the US censuses do not report religion, so we could not control for this in the harmonised regressions.¹³

A number of further variables, X , are included as controls and to investigate other hypotheses. First, we control for birth order as it has been found that this

12. http://www.cgeh.nl/sites/default/files/WorkingPapers/cgehwp73_qqt.pdf

13. We have included such information in the most complete models in the online appendix available with the working paper version of the chapter at: http://www.cgeh.nl/sites/default/files/WorkingPapers/cgehwp73_qqt.pdf

might influence the QQT (Hanushek 1992; Black et al. 2005). Including birth order effects can also pick up investments in specific children, such as the oldest child. Variables that measure the number of relatives present in the household that are not part of the nuclear family are also included. This includes both upward and lateral (uncles, aunts) extensions of the household. Some censuses only provided data on whether members of the household were nuclear or other relatives; in this case we have only used a variable measuring the number of extended household members.

Two variables are included to investigate the importance of maternal authority on children's education. First, the age difference between husband and wife (the spousal age gap) was used to check if the relative position of a wife vis-à-vis her husband captures relative maternal authority effects in regards to education. Second, where available, the literacy of the mother and the father are included as well.

It is important to control for household income as increased resources would allow parents to increase both the number of children and their quality (Becker and Lewis 1973; Galor 2011). Another way household resources matter is because they could alter the need for children's income or labour. In the complete (unharmonized) models in the appendix, parental occupational dummies are included as a control for household income. However, since occupations are only a crude approximation of income and sometimes even this information is not available, we followed Fernihough's (2011) approach by creating a variable on the number of servants present in the household. Servants were still very common in the nineteenth century and allow us to make a crude distinction between the richest deciles that could afford servants and the rest.¹⁴ Finally, in the unharmonised regressions in the appendix we include parental occupations and as many further controls as the data provides: parental religion, parental race, parental ethnicity, and regional dummies (the exact definition of a region varies by sample).

14. In our samples, between 3% (Rostock 1910) and 62% (Zurich 1870) of the households have servants. See also the summary statistics in table 7.4.

A separate model is also estimated where the number of siblings is replaced by the number of brothers or sisters to check for gendered effects. This tests whether the number of brothers or sisters has a different effect than the overall number of siblings. Thus, this can show whether having a largely female or male sibling set influenced educational attainment. Dummies for sex of the child itself are also included and have a similar purpose.

The model above might have endogeneity issues (omitted variable bias related to household income and simultaneity bias are especially important here). For the estimation of the QQT using micro-data, instrumental variable techniques using the occurrence of twins has become standard practice (Rosenzweig and Wolpin 1980). The occurrence of twin birth increases sibship size (it is a relevant instrument) and its occurrence is random (it meets the exclusion restriction), making it a seemingly perfect instrument.

$$\begin{aligned}enrol_i &= \beta_o + \beta_i nsib_j + \beta X + \epsilon \\nsib_j &= \gamma_o + \gamma_i twin_j + \gamma X + v\end{aligned}$$

Two caveats must however be mentioned. First, twins often have low birth weight, which may lead parents to lower their investment in them because they expect their survival chances to be lower (Rosenzweig and Zhang 2009). In turn, such early-childhood disadvantages may have consequences for educational outcomes later on (Currie 2009). This direct effect on the outcome variable would mean that the instrument would fail the exclusion restriction. Secondly, most of the censuses do not allow us to identify twins perfectly; there is a possibility that some of them are two children born within the same year to the same mother. Another possibility is that the census misreports ages due to age-heaping, making it more difficult to identify twins. As a check we provide the number of twins in our sample (see the summary statistics in the appendix) to see whether the figure is not too far from the natural share of twins in a society, which should be around 3–4 %. Lower figures can be explained by higher mortality among twins, but higher figures indicate that too many children in the data are identified as twins. The sample for Jasenica in Serbia

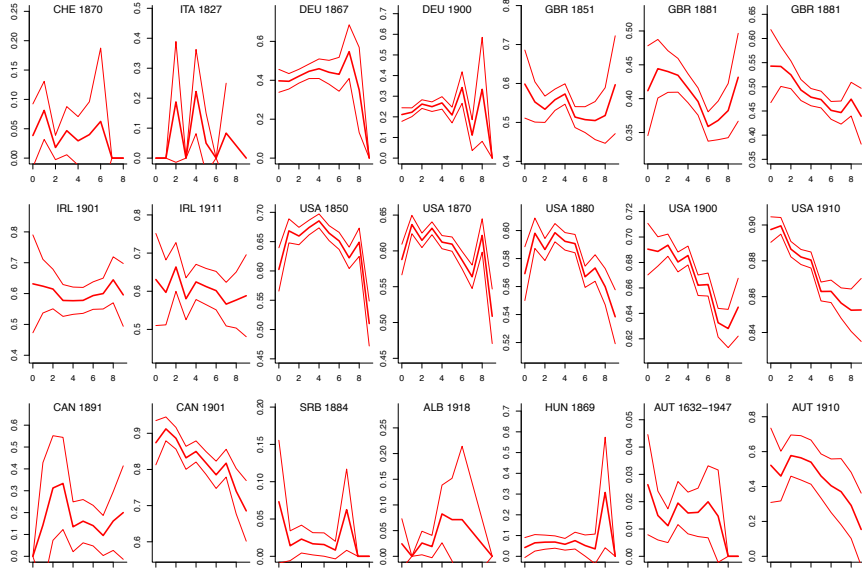
shows a very high number of twin children (seven per cent). This is probably due to the prevalence of age heaping in this census (Whipple index > 200).

SECTION 7.5. RESULTS

This section mainly discusses the results of the harmonised logit regressions, regressing enrolment on the number of siblings, the sex of the child, the child's age, the child's birthorder, the number of servants in the household, the spousal age gap of the parents, the implied mother's age at first child, and whether the household is in an urban location. More elaborate regression models can be found in the appendix.

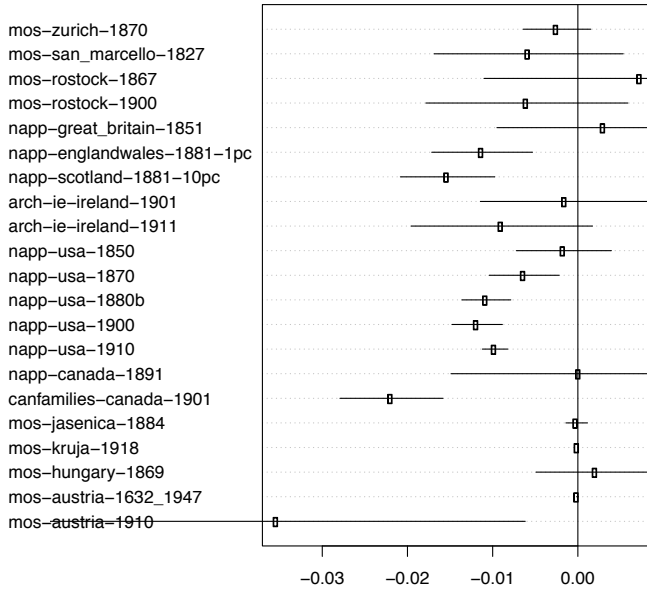
We start by presenting graphs of enrolment against number of siblings for each of our 21 samples with the 95% confidence interval included (figure 7.1). These results highlight visually what we find below, i.e. that a QQT cannot be established for all samples. Visually it is also clear that the US samples show a tighter relationship between the two, with smaller confidence intervals, than the other samples.

Figure 7.1: Graphs of average enrolment by number of siblings (*nsib*) for 21 samples.



The coefficients on the number of siblings in the harmonised regressions with 95 per cent confidence intervals are presented in figure 7.2 below. The coefficients reported here are the marginal effects for the logit regressions. Looking at the results we find evidence for a quantity-quality trade-off in roughly half the samples, many of which are for US data. The coefficients found are around -0.01 . This means, that even if we generously take the difference between a large and a small number of siblings to be five children, this only increases the chance of being enrolled by 5 per cent. It could be argued that over generations this effects adds up, but at the same time it does suggest that in understanding human capital accumulation, sibship size is not the only things that matters.

Figure 7.2: Coefficients on number of siblings for all samples.

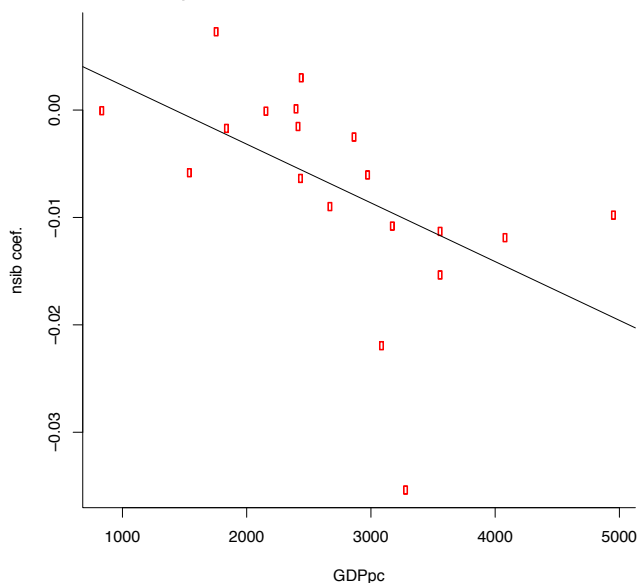


The varying and weak effect of sibship size is to an extent an unexpected finding. While we do expect variation in the society-level results of the tradeoff (the extent to which individuals in a given society choose quality or quantity), we would generally expect to find the tradeoff at the household level. At the household level, in turn, the tradeoff is a fairly simple mechanism. Even if one does not believe fertility is consciously controlled to the end of investing in children, it would still be the case that having fewer children would free up resources to invest in the remaining children (Lucas 2002; see the conclusion for a brief discussion). Income is of course only imperfectly proxied by the number of servants in the household (or occupational controls in the full models reported in the appendix). It is interesting to note that for the countries where we have multiple datasets for a number of different years there is one

almost universal result – the coefficient on the number of siblings becomes increasingly negative over time. This can be observed for Great Britain in 1851 compared to England & Wales, and the Scottish sample in 1881. Similarly Rostock, Ireland and Canada show the same sort of results. The US coefficients increase from 1850-1900 after which they dip slightly.

Figure 7.3: GDP/capita (1990 \$GK) against the coefficient on the number of siblings.

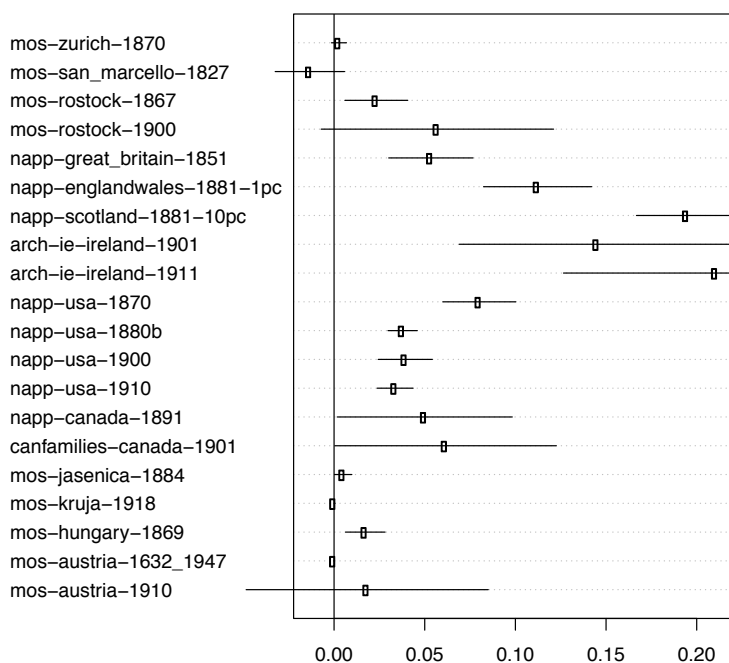
Source: Bolt et al., 2014



The increasing effect over time suggests that the strength of the QQT may be tied to economic development. Figure 7.3 plots GDP per capita of each country included here for the year the observation is for against its corresponding coefficient on number of siblings. On the basis of the graph there does indeed seem to be a relation between GDP per capita and the strength of the QQT.

Countries with a higher income are more likely to have a QQT and typically a stronger QQT.

Figure 7.4: Coefficient on dummy variable for servants.



On the micro-level we capture wealth with a dummy variable for servants and figure 7.4 shows that here we find a majority of significant, positive effects, suggesting that the number of servants indeed captures the resources households had to send children to school. Zurich, San Marcello, Kruja, Jasenica, and Austria are the clearest examples of samples that do not adhere to this general pattern, having either a 0 coefficient or negative relationship with school enrolment (although no sample has a significant negative coefficient on this variable). Our samples for Kruja and Jasenica have two of the lowest percent-

ages of households with servants (7 and 4 percent respectively – see table 7.4, summary statistics). As samples from Eastern European countries this is likely driven by the reduced importance of life-cycle servitude in these economies, which might mean that we are not capturing the same sorts of households with this variable as we do in the other samples. Meanwhile Zurich stands out for having 62% of households in our sample with servants, the highest percentage by far. Again this may indicate that in Zurich households with servants are different from those in the other samples. The aspect of change over time in the countries for which we have multiple years of data paints an inconsistent picture. In the US the coefficient on servants gets smaller over the period for which we have data, while for the UK between the 1851 and the 1881 samples there is a substantial increase on the coefficient on servant.

Next we move on to explore gendered effects, in this way attempting to test the gendered Becker hypothesis. Little difference between the number of siblings and the number of brothers and sisters on enrolment could be found.¹⁵ Figure 7.5 presents the coefficients on the variable male as a dotplot, capturing whether samples display preferences for educating boys over girls.

15. See appendix 7.2, figure 7A.1 for this dotplot

Figure 7.5: Coefficients on male for all samples.

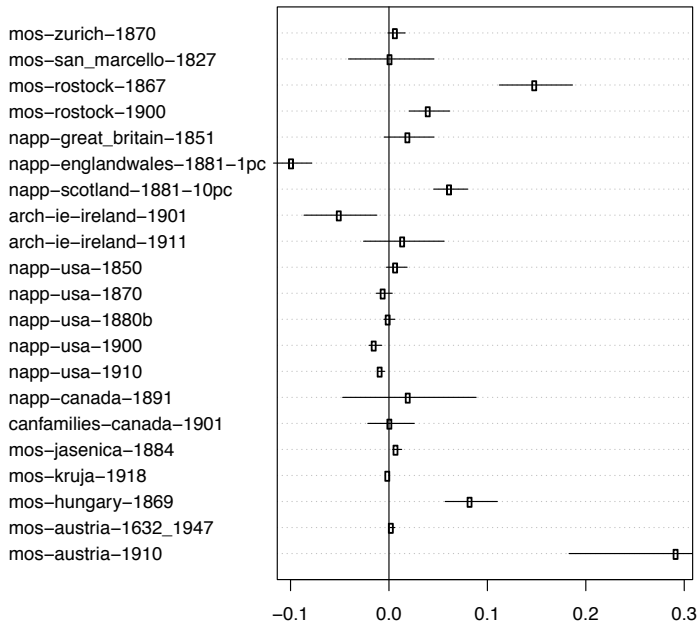
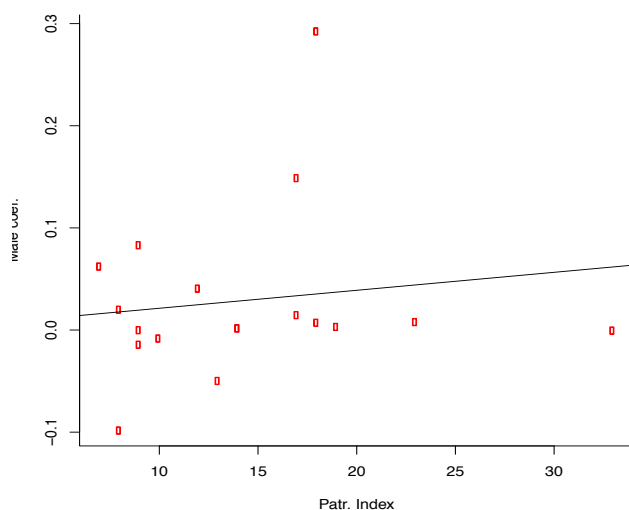


Figure 7.5 shows that boys were often more likely to be enrolled than girls. It is interesting to observe that this is not the case for the USA, England and Wales in 1881, and Ireland in 1901. These countries exhibit a negative coefficient on male meaning that girls are more likely to be enrolled than boys. One interpretation for this could be that boys have greater labour force opportunities at younger ages, leaving girls behind in formal educational institutions.

Next we explore how our coefficients on the number of siblings and on the male dummy correlate with an aggregated indicator of patriarchal practices which can be derived from micro-data. Therefore in figure 7.6 the patriarchy

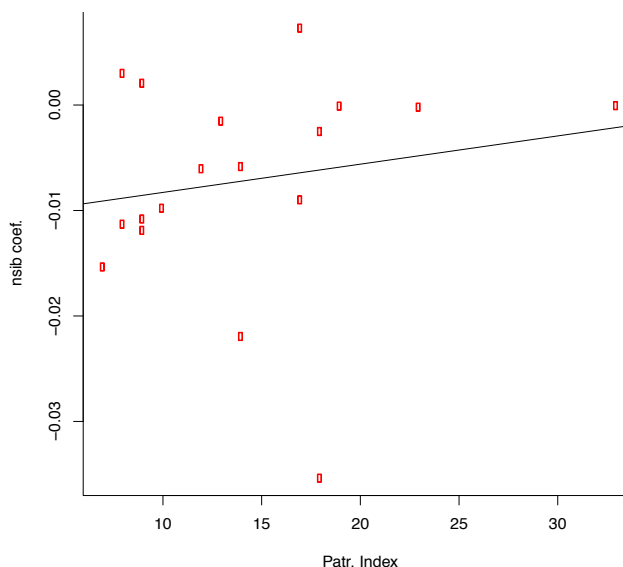
index (Gruber and Szoltysek 2014) was graphed against the coefficients on nsib to see if we can say that more patriarchal societies are less likely to enrol girls.¹⁶

Figure 7.6: Coefficients on male and number of siblings against the patriarchy index.



A slight positive relationship appears to exist between the patriarchy index

16. Note that we calculated our own index using their method, rather than directly using Gruber and Szoltysek's patriarchy-index results because our samples are not identical. The index is made up of a male dominations cluster (lack of female headed households, lack of wives older than husbands, high numbers of child brides and low numbers of female non-kin resident), a generational domination cluster (old laterals and old joint families, low nuclear family percentages and high old men resident percentages), a patrilocal cluster (low numbers of married daughters living at home with parents) and a son preference cluster (ratio of last child son high and sex ratio 0.5 skewed towards boys).



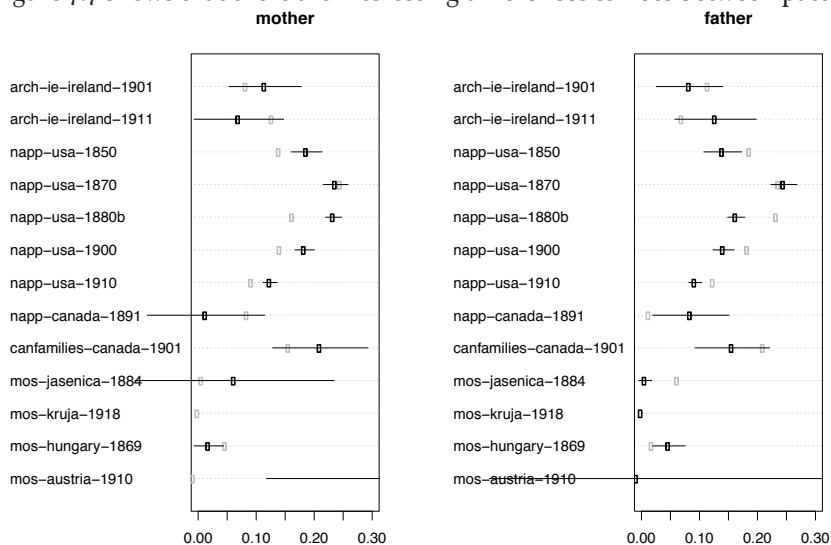
and the coefficient on male as well as between the patriarchy index and the coefficient on the number of siblings. This is what we would expect to find, that in patriarchal societies investment in the education of males is greater relative to females. This, in turn could interfere with the functioning of the QQT. However the result for the coefficients on male seems to be being largely driven by the Austria 1910 sample, which had a very high and significant coefficient on male. The relationship between the patriarchy index and the number of siblings coefficients suggest that less patriarchal societies are more likely to have a quantity-quality trade off, however this relationship is far from perfect. Two of the countries scoring below 10 are Hungary and England and Wales (1851), however they both also have a coefficient on number of siblings which is indistinguishable from zero. The correlation again seems to be largely driven by two outliers in the bottom left of the plot. These two observations are Canada (with a coefficient lower than -0.02) and Austria (with a coefficient below -0.03).

Spousal age gap usually has no significant effect (see appendix). The exception is the United States where the effect is negative: a larger spousal age

gap, indicative of a weaker bargaining position for women, is associated with a lower chance of children being enrolled. In Britain in 1881, the opposite effect is found. Overall, the prediction that female empowerment, as measured by the spousal age gap, would affect children's education is not borne out. The results for our other measure of the status of mothers, mother's literacy is presented below, alongside father's literacy.

Figure 7.7: Maternal and paternal literacy coefficients.

Figure 7.7 shows that there are interesting differences to note between pater-



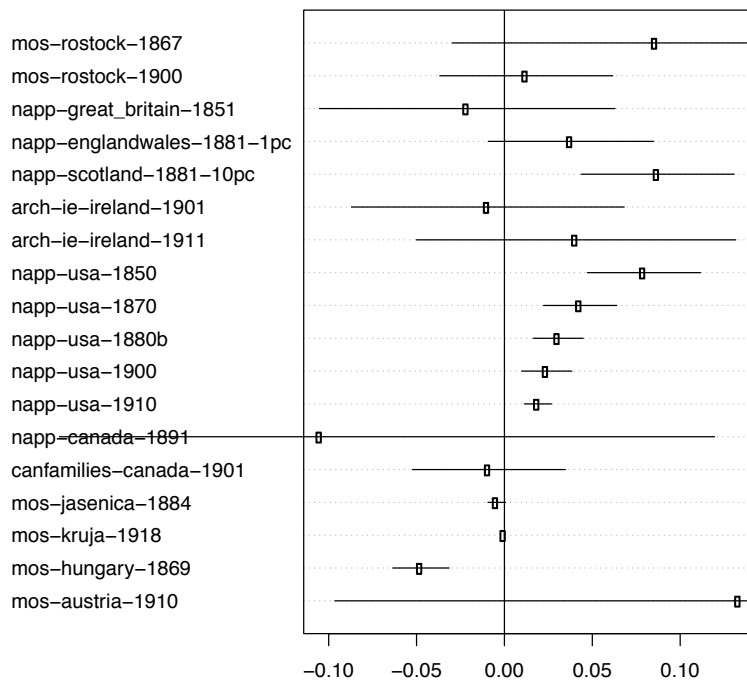
nal and maternal literacy (as well as paternal and maternal occupation and occupational status/income). Generally, these variables have large effects. The impact of maternal literacy tends to be higher than paternal literacy. This provides indirect support for Diebolt and Perrin's (2013) model. Not only do they

suggest that maternal human capital can be an input in children's education¹⁷, their model also shows that human capital increases the opportunity cost of rearing children by raising women's income and labour force participation.

These various tests suggest some evidence for the validity of the Gendered Becker Hypothesis but the results for the spousal age gaps and the weakness of the patriarchy index correlation undermines this to some extent. Data on the occupational status of mother's would provide an interesting additional check, unfortunately occupational statuses for women are notoriously under-recorded in historical data meaning this is unrealistic with our current data.

¹⁷. This is only support for their thesis in the broadest sense as their work suggests that parents educate their children themselves or improve the efficiency of education and we cannot test this here.

Figure 7.8: Coefficients on upward extensions of households.



Next we move to look at how different extensions of the household influence the chances of enrolment. Figure 7.8 present the coefficients for upward (that is, multiple generational-households). The number of upward extensions to the household tends to have a positive effect on enrolment, significantly so in Britain and the United States. This provides support for the grandmother hypothesis, that having a grandmother in the household increases the chance of schooling of the children, although here no distinction is made between grandmothers and grandfathers. Negative effects were, however found in Jasenica and Hungary. If any significant effect can be found at all for lateral kin, it is

that their presence in the household was associated with a lower probability of children being enrolled.¹⁸

SECTION 7.6. CONCLUSIONS

The overall conclusion of this paper is that, when it comes to investments in children's education there is more to households than just the number of siblings. A quantity-quality trade-off was found in a number of cases, with 8 significant negative results and a further 6 where the coefficient is negative although not significantly different from 0. However, in the other 7 samples the coefficient was either positive and insignificant or 0. Therefore, though the number of siblings has a significant negative effect in some cases, the finding is not as robust as theory suggests. The assumptions necessary for a QQT are very basic, requiring only that income is limited and parents value both a large number of children (which makes sense from a biological perspective) and quality children (which parental altruism would suggest). Our findings reflect the ambivalent status of the QQT in the empirical literature discussed earlier.

One explanation for this lack of robust results is that while having less children should free up resources to invest in the remaining children, there may be contexts where children can relax the budget constraint. The contributions to the household budget of farm labour and child labour in general seem especially pertinent here. In a similar vein, we possibly fail to uncover a QQT in certain societies because the household structure, e.g. the presence

18. Figure available upon request; see also the results in the online appendix (http://www.cgeh.nl/sites/default/files/WorkingPapers/cgehwp73_qqt.pdf).

of extended family members, affects the budget constraints and who takes the choice to have and educate children.¹⁹

While our results may partially be driven by data issues, they could be of importance for theories, such as Unified Growth Theory, which incorporate the QQT explicitly into their underpinnings. The observation that the QQT appears to be stronger at later stages of development is especially important. The increasing opportunity costs of childrearing may be part of the explanation. Another interesting avenue to explore is the potential contribution of children to the household budget. As the returns to education increase, the opportunity costs of child labour increase. This could account for a lack of QQT at first, as additional children also provide resources.

Contexts of high child mortality or where high fertility is linked to higher social or religious status (see e.g. Caldwell and Caldwell 1990), could mean that the tradeoff between quantity and quality is inhibited. Similarly the effects of schooling on fertility may be mitigated by other family strategies, such as requiring older children who are no longer compelled to attend school to work, while sending younger children to school for a longer period (Emerson and Souza 2002; Lingwall 2014, Ch. 4; Lingwall 2014, Ch. 3).²⁰

However, although a consistently strong QQT is not found, other household-level determinants of children's educational outcomes are shown to matter. Household extensions can have a positive effect on average educational attainment per child. Upward extensions especially, were found to have beneficial effect on educational attainment. At present, we have not divided this

19. In other work, Carmichael et. al. (2015) summarise the concept of the QQT from an evolutionary biology perspective which highlights that parents of all species and across the world face choices as to whether to invest their limited resources in a large number of offspring with little investment in quality or vice versa. In evolutionary biology the measure of quality is differently construed, mainly used to denote investments which improve life expectancy, height, weight (i.e. which improve chances of reproductive success).

20. Such negative spillovers could explain why we fail to find an effect, because our data captures children who are in schooling, but no longer compelled to attend.

effect by grandmothers and grandfathers, but the result suggests that further historical research should delve deeper into the 'grandmother hypothesis'. It is noticeable that in a nuclear family setting, such as the US, the addition of grandparents is not a drain, but seems to stimulate children's schooling. This aligns with the findings of Bras, et. al. (2010) who find that for the Netherlands, from 1840 to 1925, the presence of kin extensions has a buffering effect on the wellbeing of children. However in Jasenica and Kruja, which have the highest level of upward extensions in our dataset, the effect was negligible or negative. This suggests that in the context of frequent upward extensions the way in which the presence of grandparent's works is different from those contexts where they are far less frequent. Lateral extensions did not have a consistent, significant effect.

When it comes to gendered outcomes we found that boys were, on average, more likely to be enrolled than girls. However, the reverse was true in the USA in 1910 and 1900 and Ireland in 1901. The first explorations of the female household position yielded positive yet limited results. We found that the mother's educational status, as measured by literacy, mattered.²¹ This corroborates contemporary research that claims that mothers' education is important for the education of the next generation (Handa 1994; Glick and Sahn 2000). We found a limited relationship between the Patriarchy Index and the coefficients

21. When viewed in terms of the outcomes of schooling the gendered effects can again be briefly explored using the example of the Taylors. Two of the daughters married well, Mary to Hugh Watt who was a reverend and Professor of Theology at New College Edinburgh and Jean to a lawyer. The two sons went on to become a civil engineer and a doctor, both moving far beyond the boundaries of their natal village, Robert Taylor to London and his older brother David even moving as far afield as China. The sons, therefore, made good use of the investments in their human capital, yet there was less scope for the daughters to do so and it is harder to measure what the influence of their education was without detailed information on how their children fared. Mary's daughters, Anne and Nancy both went on into higher education with Nancy going on to serve with ATS intelligence during the second world war. Their brother, John, trained as doctor and moved to London to work in obstetrics.

on the QQT, this links to our finding of no effect of the sibling composition of the household.

The finding that maternal literacy did in fact contribute to the QQT, may mean that women's knowledge is especially important in determining investments in children, for instance because it is important for children's health and personal reproduction (Jejeebhoy 1995; Janssens 2007: 9). Ideally we would also explore maternal labour force participation however data on women's occupation is often missing.²² Surprisingly, the spousal age gap proved a weak predictor of a child's education, an unexpected finding in light of the findings on the basis of aggregate data (van der Vleuten 2015b). This could be because at an individual level spousal age gaps not only reflect bargaining power between the spouses, but may also reflect developments on the marriage market. It could also be driven by the fact that certain age gaps between spouses may be culturally preferred and thus deviation from such an age gap has different meanings in different contexts.

Building and using datasets to test these sorts of hypotheses has a number of requirements. The first has to do with size. As the QQT seems to be a relatively small effect, large datasets are required in order to be able to discern a result significantly different from zero (1000 children or more). Secondly the coding of occupational statuses is key. Standard classification system like HISCO or OCCHISCO do not code for students as an occupational status, which is understandable given the scope of the system. However, it meant we had to manually code students from occupational strings which may make reproducibility of our results in other settings difficult. A related point is that in an ideal world the occupational status of parents would be coded in a way that allows for a conversion to social status or income indicators in a comparable way (e.g. Lambert et al. 2013). A further useful step would be to try and derive a way to estimate completed family size from census data when it is not directly mentioned. In longitudinal studies this is possible, obviously, but in census

22. This is a common issue with census data (Humphries and Sarasúa 2012; Schmidt and van Nederveen Meerkerk 2012).

snapshots the information is often missing. Possibly using average fertility, singulate mean age at leaving home and singulate mean age at marriage one could work out the number of missing children. Finally, data linkage, between various sources of micro-data as well as with macro data would facilitate comparisons and allow more thorough exploration of the link between the household behaviour and the environment.

SECTION 7.8. DATA REFERENCES

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Chapter 8: Conclusions and a look to the future

This book has provided, in six chapters, a global overview of the position of women covering approximately the past century. In doing so it has tested a number of different determinants of gender equality outcomes. This conclusion starts with short summaries of each chapter before returning to the original model presented in the introduction and highlighting what conclusions the various chapters came to. This is done by addressing each of the research questions from the introduction and providing in summary form the answers found in the various chapters. Building on this, avenues for future research and priorities for data-collection are suggested before the chapter ends with a final note on what this dissertation hopes to have contributed to the literature.

SECTION 8.1. QUICK SUMMARIES OF EACH CHAPTER

Chapter 1 sketched the model that this book has sought to explore while embedding the topic of the book within the wider framework of New Institutional Economics, and the increasing interest in exploring the deep cultural roots of current day outcomes. I also elaborated upon why it is important to look at the position of women beyond a social justice perspective. This is because of the instrumental aspects of improving the position of women which play out at all levels of society from reducing corruption, to improving the health outcomes of children, to improving agricultural productivity. Furthermore, the chapter explored the importance of looking to history for an analysis of gender equality. This was done by referring to the literature on informal institutions, persistence and cultural determinants of current day outcomes. Finally, the chapter explained what is meant by family systems and the rationale behind looking at them. This is a three part rationale: firstly, because of their importance for the position of women; secondly, as an example of an informal institution; and lastly, as the families are the primary location of socialisation for all children, and therefore are important to societal development at large.

Chapter 2 presented a large body of data which traces the position of women, relative to that of men and in absolute terms, over the period 1950-2000 for a series of indicators capturing different dimensions of equality for as many countries as possible. A composite measure to capture the multiple dimensions in which gender inequality can occur in one variable was developed (the Historical Gender Equality Index or HGEI). The chapter highlighted the fact that data constraints limit the dimensions one can explore when looking at historical data. However using the data available a picture emerged of significant progress over the 20th century in terms of achieving gender equality, but what also became clear is that there is still a long way to go as, gender gaps persist in many dimensions. Secondly, what the data showed was that regional differences in gender equality are not a recent phenomenon but have deep historical roots. Finally, convergence analysis indicated that there was no unconditional convergence and only weak conditional convergence when we included family system, religion and legal origin as control variables.

Chapter 3 is another data chapter, here giving form to the measurement of family systems. This was done by testing a framework of family systems devised by Emmanuel Todd against the more detailed, ethnographic data coded in George Murdock's *Ethnographic Atlas*. By means of cluster analysis and a comparison on the basis of the underlying variables we compared the two different classification systems. Where discrepancies arose we turned to the original sources to unpick how the two authors had coded their data. This resulted in a hybrid dataset which merges the strengths of both datasets. We also tested for the persistence of the underlying characteristics of the family systems on current day attitudes to women and equality and found significant, although not very large effects.

Chapter 4 extended the framework of family characteristics sketched in chapter 3 and added premarital sex norms for girls, marital residence location (avunculocal, neolocal, etc.), monogamy/polygamy and descent rules. This resulted in the creation of a new system classification which we called the girl-friendly family systems score. This index highlighted, in particular, the existence of societies in South-East Asia scoring as well as those in Europe. For

this reason we looked briefly in more detail at Myanmar, Sri Lanka, Indonesia, Japan, and India. This showed that countries or ethnic groups with a higher level of girl-friendly family systems also had higher levels of literacy compared to their neighbouring societies.

Chapter 5 moves on to test the family systems classifications devised in chapter 3 as determinants of marriage ages of women and spousal age gaps for countries outside Western Europe for the period 1950-2000. The effects of urbanisation (as a proxy for economic development), female education and Islam are also tested for. The endogamous community family proved to both have a negative impact on female SMAM while Islam had a positive effect on the spousal age gaps. Meanwhile urbanisation and female education served to push up ages of marriage for women.

Chapter 6 returns to the composite index developed in chapter 2 to test what variables determine the gender equality outcomes of a country from 1950 until 2010. We test the modernisation hypothesis (economic growth will lead to gender equality) as well as the idea that historical characteristics of a country matter. We find that historical institutions and economic development matter in determining gender equality outcomes.

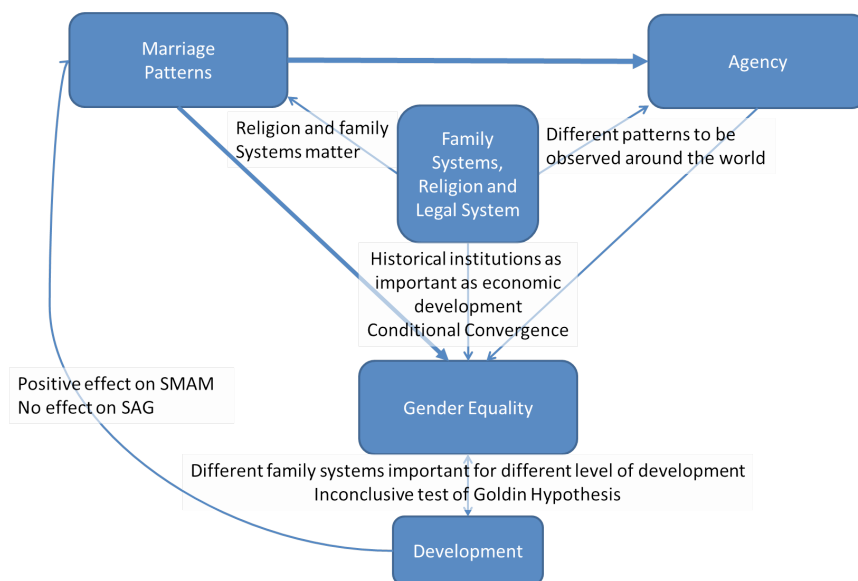
Chapter 7 shifts focus to explore the Quantity-Quality trade-off on the micro-level using 19th and early 20th century census data for a variety of European and North American countries. Here we attempt to develop a comparative framework to draw out under which circumstances a Q-Q trade-off holds and when it fails to, at least in terms of education. The findings are mixed but suggest that economic development is an important driver of the trade-off along with mothers' education. However, they also call into question the assumption to be found in the literature that the QQT in terms of education is the driver of the shift to modern economic growth.

SECTION 8.2. BACK TO THE BEGINNING

The model below was included in the introduction. Here we return to it to

highlight what evidence was found for the various links, and attempt to pull all the chapters of the book back together.

Figure 8.1. The Model from the Introduction



Above I have highlighted the most pertinent findings. Here, I present the findings as answers to the three research questions as they appeared in the introduction:

How can we best measure the position of women in the past, to map differences globally and provide long-term overviews in the progress made towards equality?

In chapters 2, 3, 4 and 5 I presented various measures of the position of women, conceptualised as gender inequality, or in the form of family systems. Chap-

ter 2 demonstrated that while the position of women has improved across a series of indicators there is still much scope for progress. In terms of suffrage, for instance, globally women everywhere have the right to vote (as of 2015, in the case of Saudi Arabia). For life expectancy, a global trend towards equality can be observed but worrying developments in Sub-Saharan Africa suggest that women are falling behind in this region. We also explored whether there was convergence towards a given level of gender equality, using the composite measure of gender inequality, but found no evidence for unconditional convergence. Convergence conditional on a series of control variables (religion, legal and family system) was found, but the effect was not a large one. This means that taking into account these different characteristics of countries a small amount of convergence is observed.

In chapter 3, the testing of Emmanuel Todd's family systems classifications against the data provided in George Murdock's *Ethnographic Atlas* found substantial overlaps; discrepancies were solved by returning to the original sources used by the authors. The resultant hybrid Todd-Murdock dataset was used throughout the rest of the book as a way of capturing family systems. We tested to see if the variables used in the framework had a lasting impact on values surrounding the position of women using the World Values Survey with significant results. In chapter 4 the hybrid dataset along with extra variables from Murdock's Atlas were used to specifically pick out additional practices (alongside co-residence practices, inheritance and cousin marriage) which could be important indicators of the position of women in a given society for Eurasia. This exercise of mapping the girl-friendliness of family features resulted in a Eurasian picture of female friendly family institutions occurring in conjunction on the outskirts of the continent, while in its heartland more patriarchal and female unfriendly characteristics were the norm. Finally, chapter 5 uses marriage patterns as a measure of the position of women and tests which determinants are important for this outcome. Here family systems (particularly the endogamous community family), prove to be an important determinant of marriage ages. Chapters 1 and 5 devote attention to exploring why marriage patterns would be a relevant measure of the position of women.

Although there are drawbacks to the use of marriage patterns, they represent a form of data that can be collected across a wide geographic area and over long periods of time.

Although family systems are imperfect measures of the position of women, particularly given that data-constraints mean we can often only code this as a static variable, even this limited historical insight into the position of women within households and families is important. In a historical context getting to grips with kinship norms, inheritance practices, etc. is one of the few ways we have of measuring the position of women. Such practices can change (sometimes rapidly in the face of legislation) but the argument this dissertation would attempt to make is that aspects of the underlying norms and values persist even when practices themselves fall away. I believe interesting work remains to be done on the development of long-term marriage patterns by, for instance, looking at how responsive the age at marriage is to economic pressure. In situations of strong cultural preference for a certain age at marriage there is likely to be less response to economic change than in situations where the couple themselves decide when to marry. A lack of response to economic change could in itself be used as an indicator of agency. However this is not an aspect that this dissertation has been able to explore.

What are the determinants of gender equality?

In chapters 3, 4, 5, and 6 various determinants of current day gender equality are explored. Chapters 3, 4 and 5 focus largely on family systems as the explanatory variables although urbanisation, religion and education are also considered. In chapters 3 and 4 the tests are not the main message but rather provide an indication of how elements of the family system play out in terms of either current day attitudes to women, or historical human capital formation. It seems that family system features, which were hypothesised to have negative effects on the position of women, are indeed associated with current day gender inequalitarian attitudes, and values which favour men over women. In chapter 5 and 6 the analysis of the determinants of gender equality forms

the bulk of the chapters. The outcome variables differ between the two chapters. Here the family systems classification dataset, which was an outcome of chapter 3 was used as an independent variable. Family systems are shown to be a significant determinant of gender equality. However it should be kept in mind that in Chapter 6, in the quantitative analysis, other historical institutions such as legal origin and religion provide also to be important. Similarly economic development is, as was to be expected, an important contributing factor towards achieving greater gender equality.

And what is, broadly construed, the relationship between gender equality and development?

In chapters 2,4, 6 and 7 this was touched upon, although no rigorous test of the mechanisms was performed (for such a test see Dilli 2015). The analysis that was conducted in chapter 2 indicated that different institutions matter in determining gender equality for developed versus developing countries. Similarly breakpoints in the HGEI occur at different points in time for low versus middle and high income countries. Interestingly, they occur earlier for the low income bracket versus the high income bracket. In chapter 4 a limited body of evidence shows that family systems which scored higher on girl friendliness seem to foster better literacy of both women and men. Similarly in chapter 7 some tentative evidence was presented suggesting that the position of women at a societal level plays a role in determining if a quantity-quality trade-off is present but that the presence of a QQT itself is associated with the level of economic development. None of these findings are conclusive as to the relationship between gender equality and development but they do suggest mechanisms by which such a relationship could work. They also suggest that at low levels of GDP per capita different interactions between gender equality and human capital/development more broadly construed may be present than at higher levels of gender equality and development. Chapter 4, in particular, suggests that development in the economic sense is not a necessary precursor to gender equality.

All in all these findings leave scope for additional research. Of particular interest would be to explore empirically whether the sort of family system institutions shown here to be favourable to women played a role in the onset of economic growth in pre-industrial Europe, or rather to explore what role these institutions played in economic divergence within Europe and across Eurasia.

SECTION 8.4. RECURRENT FEATURES

There were a number of recurrent elements which reappeared at various points in the dissertation. Firstly, in terms of the relationship between family systems, marriage patterns and gender equality the conclusion that came up several times was that the community family, particularly the endogamous community family, has a detrimental effect on gender equality construed both as marriage patterns and as a composite indicator. This suggests that cousin marriage, community households and equal inheritance between men together act in a way detrimental to the position of women. This suggests that setting brothers above sisters in terms of inheritance when those sisters are in close proximity, given how the endogamous community family is organised, puts them in a weaker position than if they had married outside their kin-group.

Secondly, various analyses using the underlying components of family systems suggest that it is not so much the underlying variables which matter but rather their function when combined in tandem. This can be seen in both chapters 2 and 7. However in chapter 3 the regressions on the WVS data are run using the underlying components (rather than the systems) we hypothesise will be most closely related to the outcome we are exploring, with significant results. The fact that the systems seem to outweigh the individual components in some analyses provides evidence for the idea that family systems interact with the way gender is controlled or defined with the two functioning in an intertwined way (Mason 2001).

Thirdly, the importance of women's education was touched upon a number of times. The Quantity-Quality trade-off runs through many of the chapters as a red line either explicitly or implicitly. Education is important for the

transition to modern economic growth, but the position of women is key in fostering an environment where fewer children are born and those fewer children are better educated. A virtuous feedback loop is therefore likely to exist between higher status for women and education of the next generation, but this probably works very slowly and incrementally over time, only gaining real traction once a certain threshold of wealth and/or education has been surpassed. However it proved very challenging to test this at the micro-level with the data available. At the micro-level it is possible that indicators like spousal age gaps and female ages at marriage are indicative of different dimensions than at the macro-level.

A further recurrent finding which this book has not explored further in depth is the fact that African family systems and polygyny sometimes return as having a positive effect on the position of women, once all other factors have been controlled for. This runs contrary to the findings of various scholars who suggest that the cause for Africa's under-development lies partly in the prevalence of polygyny and linked to this argue that in situations of polygyny wives are seen as assets to be purchased (Tertilt 2006; Gould, Moav and Simon 2004). However with the endogamous community family as the reference category, and once the level of economic development and other characteristics have been controlled for this does not seem to hold up to scrutiny. The comparison here is not between monogamy and polygamy but rather between polygamy as a form of domestic organisation versus community and nuclear families with community families as the reference category. Here, for women, there seem to be beneficial effects of having co-wives, as opposed to being a solitary wife within a community family setting. Exploring this mechanism using insights from evolutionary anthropology might provide useful results.

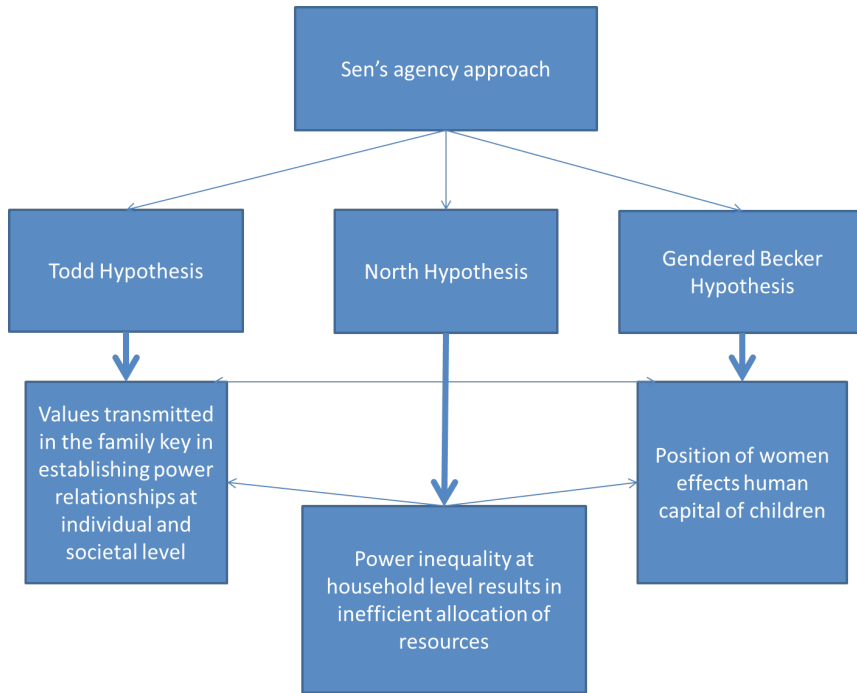
Islam, measured by percentage of Muslims in the population, in chapters 5 and 6 has slightly different effects. A relatively strong negative effect of Islam is found on gender equality measured using the composite index and marriage patterns, even when controlling for family systems, regional effects and level of economic development. The composite index result is largely driven by relatively large negative effects of Islam on women's labour force participation and

education. However there seems to be a mismatch in Muslim majority areas between marital behaviour and these two other dimensions. In chapter 5 Islam had no consistent effect on marriage ages, and a small significant effect on spousal age gaps. What is interesting about this is that the endogamous community family is often associated with Islam. The heartland of Islam coincides largely with countries classified as belonging to the endogamous community family yet even when controlling for both they retain separately significant effects. This suggests that both separately impinge upon the position of women.

SECTION 8.5. AN AGENDA FOR FUTURE RESEARCH; RETURNING TO THE TODD,
NORTH AND BECKER HYPOTHESES

To return to the idea of the Sen approach as being split into three hypotheses (Todd, North and Becker) introduced in the 1st chapter I would like to bring the three together visually to suggest future avenues for research.

Figure 8.2. The Todd, North and Becker hypotheses



The North hypothesis does not explicitly receive attention in any of the chapters. Yet the logic of this hypothesis runs through the book, in the sense that the presumption throughout is that skewed allocation of resources biased against women is inefficient. This hypothesis is however worthy of more attention, particularly as it is likely important in determining how the other two parts of the approach operate. In this book the links between the household level and societal level gendered outcomes, or rather the Todd hypothesis, were tested by looking at how family systems affect societal level attitudes towards women. I also explored whether Todd's family systems affect marriage patterns at a country level. Various chapters explored the effects of family systems on

gender equality constructed at a more macro-level. Chapters 4 and 7 were concerned, to some extent, with the gendered Becker hypothesis. Chapter 4 suggested that there was some evidence for this hypothesis, whereas the tests in chapter 7 were partially inconclusive, even though mother's literacy was a significant predictor of offspring's education. However much more could be done to explore the various links illustrated above. Of particular interest would be work to explore the North hypothesis, drawing inspiration from New Institutional Economics, to explore dynamics and developments on the household level with special reference to gendered inequalities. The rest of this section elaborates upon specific elements that could be better elaborated upon in further research.

This dissertation has addressed multiple issues however one element in which it lacks is in explaining the deeper origins of these differences in family institutions around the world. It seems likely, from a purely speculative perspective, that a combination of geography, the related development of different agricultural practices, the spread of innovations in the form of joint families and/or settled agriculture, and the timing of state-formation may all play a role. Future research into the roots of family systems could look to evolutionary anthropology where work of this type is already being done (Fortunato 2015, Fortunato and Archetti 2010) . Here the focus would be on exploring under what conditions a certain family organisational form is "efficient".

There are, therefore, a number of avenues for future research which the insights from this dissertation suggest might be fruitful. One is into the deep roots of family systems. How did these different forms of kinship organisation emerge? Do certain family systems represent innovations, and is the global distribution of them therefore associated with adoption of a certain innovation (for example the plough as suggested by Alesina et. al. 2013)? Why do some family systems develop such rigid rules around the policing of women's sexuality and freedom of movement while others allow women far more free-

dom? What is the relationship between the evolution of gender inequality and wealth/income inequality?¹

Another avenue that future research might seek to take up is the importance of geographical groupings of countries for the determinants of current day gender equality outcomes. In some specifications including regional controls undermined the significance of family systems variables. This suggests that there is something going on the regional level which is not captured by development, religion, or family systems. Murdock (1967, p112) himself suggests that geographic proximity will likely make societies more similar to each other, but how to capture this in an empirically meaningful way that would better explain gender equality outcomes? Finding better ways of measuring whatever phenomena these are would be a valuable contribution to the literature.

Another point to be made here is that obviously the family system of a country is not the whole story. As chapter 6 highlighted legal origins and religion seem to play a big role too. However there are also links between religion and the way family is organised, and possibly between legal codes. Both religion and legal codes are formed on the basis of pre-existing societal norms, so it is possible the values they reflect are indicative of the values found at a family level.²

Additional sources of data on institutions and measures of gender equality is another avenue where future research could make headway. For instance global data on widow remarriage, dowry customs, or percentage permanent celibates would allow for alternative ways of testing the various hypotheses explored in this book, either as robustness checks or new analyses. Furthermore exploring gendered institutions at the micro, meso, macro level might give us greater insight into drivers of the position of women and allow us to tease apart the variables which underlie regional similarity and difference better.

1. I hope to be able to take some of them up in my own research in the future as they remain fascinating questions.

2. This is obviously not the case with internationally imposed legislation or conventions.

Although parts of this book may read as though they have a normative element, proposing one set of family values and characteristics is superior to the other I prefer to see this slightly differently. We set out with a theoretical framework and the desire to test it, and see where in the world similar features of families arose. From there ways to test this framework and its outcomes were developed. The one finding that comes back time and time again is that the endogamous community family is significantly detrimental to gender equality. This is still the case when economic development and religion have been controlled for. Therefore the most important finding for real world application that stems from the material in this book would be that we look for ways to overcome this particular constraint on the freedom of women. By this I do not mean that we should ban cousin marriage, or joint households, but that one addresses the root values and takes them into account in policy design, being sensitive to what they mean to the people involved, while finding ways to give women options and avenues for the expansion of their agency.³ What works to promote gender equality in a nuclear family setting may well fail to work in settings where the endogamous community family was or is the norm.

In as far as academic work of this sort can inform policy today the take home lesson would be a case-by-case approach to the position of women which takes into account religion, family-practices, and features of the legal system. History is not destiny, nor are institutions immutable but the past echoes through to today in cultural differences and varying norms which, this book, suggests are passed down across generations. The importance of taking into account norms and values is already increasingly acknowledged by the World Bank (see the *Voice and Agency* report). However translating this into concrete behaviour,

3. In this context Michele Tertilt's work on polygamy is interesting to take note of. She argues that transferring the rights of choosing a future husband from fathers to daughters will be a policy that is enforceable in the context of wide-spread polygyny, rather than a blanket enforcement of monogamy (Tertilt, 2006).

or ensuring that policy advisors or consultants apply models which take such aspects into account remains challenging.

What also becomes clear at this point is the mismatch, pointed out by Banerjee and Duflo in their 2014 paper “Under the thumb of history? Political Institutions and the scope for Action” between much of the work being done in the field of New Institutional Economics (with particular reference to the work focused on the deep roots of current day outcomes and culture) and the ability of governments, policy makers or advocates to make changes in such a context. The suggestion here is not that history exerts a stranglehold on current day outcomes but rather that it should be considered when examining norms and values which persist to the present day. We should not see family systems (or any other institutions) as deterministic features of a country's history, but rather as a facet to be considered when looking at present day outcomes.

In general within economic history topics concerning women are either pushed out to the margins of the discipline or seen more as belonging to social or demographic history. Within economic history the study of women is somehow seen as less valuable than the work done on financial matters, state budgets, and consumption baskets.⁴ While debates continue to rage about how best to capture real wages, or inequality in an early modern setting, what often seems to be lacking is a perspective on gender, and in some cases any consideration of women in the equation. This is problematic as women make up approximately 50% of any given population, so excluding their contribution to is likely to bias results in an undesired way. For instance if doing comparative work on real wages or the monetised economy differences between countries and regions in terms of female labour force participation, be it casual or otherwise, likely play an important role.

I realise that this dissertation is very interdisciplinary in its approach (then again economic history is a discipline very well situated to borrow from neighbouring fields) but I do hope that it pushes the agenda of what constitutes

4. This point takes inspiration from the comments of Elise van Nederveen Meerkerk during the WEHC 2015 Kyoto in the session “Towards a Social History of Money”.

economic history a little bit further in the direction of the inclusion of women in history. Although much excellent work has been done on women in economic history (Jane Humphries, Janet Hunter, Tine De Moor, Jan Luiten van Zanden, and Elise van Nederveen Meerkerk are just some of the names which come to mind) there is scope for much further research to integrate women (and I don't mean female scholars) into the corpus of the bread and butter of economic history. The position of women should not be relegated solely to gender studies departments, or the reports of international organisations, but placed centre stage in the disciplines where it is relevant.

Nederlandstalige samenvatting

De zes hoofdstukken in dit boek hebben een mondiaal overzicht gegeven van de positie van de vrouw in de afgelopen eeuw. Om daar dieper op in te gaan zijn tevens een aantal verschillende determinanten van de ongelijkheid tussen man en vrouw getoetst. Deze samenvatting geeft eerst korte samenvattingen van al de verschillende hoofdstuk en licht dan per hoofdvraag van het proefschrift toe welke antwoorden er gevonden zijn.

KORTE SAMENVATTINGEN VAN DE HOOFDSTUKKEN

In hoofdstuk 1, het inleidende hoofdstuk, werd het model dat in dit boek werd gehanteerd toegelicht en geplaatst in het kader van de *New Institutional Economics* en de steeds toenemende interesse in de diepe wortels van hedendaagse ontwikkelingsuitkomsten. Ik heb ook benadrukt dat het belangrijk is om te kijken naar de positie van de vrouw omdat gelijkere relaties tussen mannen en vrouwen effecten hebben op een breed scala van uitkomsten (van het verminderen van corruptie, betere gezondheid uitkomsten voor kinderen tot het vergroten van de productiviteit van landbouw). Verder werd er in dit hoofdstuk beschreven waarom het belangrijk is om te kijken naar de geschiedenis voor een analyse van ongelijkheid tussen man en vrouw. Dit werd gedaan aan de hand van literatuur over informele instituties, persistentie en de culturele determinanten van hedendaagse uitkomsten. Ten slotte werd er uitgelegd wat er met familiesystemen bedoeld wordt en waarom er in dit boek naar gekeken wordt. Hier zit een drietal redenen achter: ten eerste vanwege hun belang voor de positie van de vrouw; ten tweede als voorbeeld van een informele institutie; en als laatste omdat de socialisatie van kinderen, waar zij leren wat de normen en waarde van hun maatschappij zijn, voornamelijk binnen de familiekring plaatsvindt.

Hoofdstuk 2 gaf een overzicht van een database waarmee de positie van de vrouw over de periode 1950-2000 te traceren is. Hier werden maatstaven van de relatieve en absolute positie van de vrouw besproken. Een samengestelde index

van de verschillende data werd er ontwikkeld (de Historical Gender Equality Index, ofwel HGEI). Dit hoofdstuk besprak hoe moeilijk het is om historische data te vinden over bepaalde aspecten van de positie van de vrouw. Ondanks dataproblemen kon alsnog worden geschetst dat er veel vooruitgang over de afgelopen eeuw wat betreft toenemende gelijkheid tussen man en vrouw heeft plaatsgevonden. Maar wat ook duidelijk werd is dat er nog veel persistente verschillen zijn tussen landen wat betekent dat er nog veel te bereiken valt op dit vlak. Ten tweede liet dit hoofdstuk zien dat regionale verschillen in ongelijkheid tussen man en vrouw geen recente fenomeen is maar iets met diepere historische wortels.

Hoofdstuk 3 is ook een hoofdstuk met een data-overzicht dat gebruikt wordt in de rest van de dissertatie, namelijk om een goeie manier te vinden om familiesystemen te meten. Dit werd gedaan door twee classificatiesystemen tegen elkaar te toetsen; de data van Emmanuel Todd data tegen die in de Ethnographic Atlas van George Murdock. Hier keken we er naar of erfrechten tussen broers en zussen gelijk waren, of trouwen met een nicht/neef de norm was, en of getrouwde stellen in gingen wonen bij de ouders van ofwel de bruid of de bruidegom. Hiervoor werd clusteranalyse gebruikt en een vergelijking gemaakt van de onderliggende variabelen van de twee verschillende databronnen. Waar er verschillen bleken te zijn, keerden we terug naar de oorspronkelijke bronnen van de twee auteurs om te kijken hoe die verschillen tot stand zijn gekomen. Dit resulteerde in een hybride dataset die de sterke eigenschappen van beide onderliggende bronnen probeert mee te nemen. Er werd ook getoetst of er blijvende effecten waren van familie systemen op hedendaagse ideeën over vrouwen en gelijkheid. Er werden significante, zij het niet al te grote effecten gevonden.

Hoofdstuk 4 bouwt voort op hoofdstuk 3 en voegde aan de hierboven genoemde aspecten nog normen aangaande seks voor het huwelijk, waar het getrouwde stel zich huisvest (dicht bij familie van bruid of bruidegom of juist ergens anders), monogamie versus polygamie, en wat de normen waren rondom afstamming (descent). Hier kwam een andere soort classificatiesysteem uit waarvan de index vooral benadrukt dat er vooral op de randen van Eurazië

maatschappijen zijn met familiesystemen die goed zijn voor de positie van de vrouw. Vooral in Zuidoost Azië bleek dit het geval te zijn. Om hier verder naar te kijken hebben we korte case-studies van Myanmar, Indonesië, Japan, Sri Lanka en India uitgevoerd. Deze lieten zien dat landen of etnische groepen met een betere positie van de vrouw binnen een familiesysteem ook hogere niveaus van alfabetisme hadden in vergelijking met omliggende landen.

Hoofdstuk 5 toetst wat het effect van de familiesystemen (toegelicht in hoofdstuk 3) hebben op de huwelijksleeftijden van vrouwen en op de leeftijdsverschillen tussen getrouwde mannen en vrouwen in landen buiten West Europa van 1950 tot 2000. De effecten van urbanisatie (als maatstaf van economisch ontwikkeling en sociale verandering), educatie van vrouwen en Islam werden ook meegenomen. Hier werd gevonden dat familiesystemen waar alle broers met hun families bij hun ouders huisvesten en waar trouwen met een nicht of neef de voorkeur heeft een negatieve impact hebben op de huwelijksleeftijd van vrouwen. Uit de analyse bleek dat Islam een positieve impact had op leeftijdsverschillen tussen man en vrouw (wat een zwakkere positie van de vrouw aangeeft). Urbanisatie en educatie van vrouwen hadden beide een positieve effect op de huwelijksleeftijd van vrouwen.

Hoofdstuk 6 keerde terug naar de samengestelde index die in hoofdstuk 2 geïntroduceerd werd om te toetsen welke variabelen van belang zijn voor afnemende of toenemende ongelijkheid tussen man en vrouw over de periode 1950-2010. We toetsen of het idee dat economische ontwikkeling automatisch leid tot meer gelijkheid in onze data naar voren komen en daarnaast het idee dat het de historische eigenschappen van een land zijn die er toe doen. We achterhalen dat beide van belang zijn.

Hoodstuk 7 veranderd van benadering om dieper in te gaan op de kwantiteit-kwaliteit (Q-Q) trade-off op microniveau. Hiervoor maken we gebruik van negentiende en twintigste-eeuwse volkstellingen voor verschillende Europese en Noord-Amerikaanse landen. Er word een poging gewaagd om een vergelijkende framework te ontwikkelen om te kunnen analyseren wanneer er wel of niet een Q-Q trade-off plaats vindt. De bevindingen zijn gemengd maar suggereren dat economische ontwikkelingen een belangrijke

rol speelt samen met het educatieniveau van moeders. Daarnaast geven ze enige reden om te twijfelen aan het idee dat vaak in de literatuur als aanname wordt gehanteerd dat educatie de grote factor is achter het overschakelen naar moderne economische groei.

ONDERZOEKSVRAGEN

Deze dissertatie probeerde een drietal onderzoeksvragen te beantwoorden. Hieronder staan de drie onderzoeksvragen met korte antwoorden erop die voortkomen uit de verschillende hoofdstukken die hierboven worden beschreven.

Hoe kunnen we het beste de positie van de vrouw in het verleden meten om verschillen op mondiaal niveau te kunnen schetsen en om een lange-termijn perspectief te kunnen geven op hoeveel vooruitgang er op dit vlak is geweest?

In hoofdstukken 2, 3, 4, en 5 heb ik verschillende maatstaven van de positie van de vrouw gepresenteerd. Hoofdstuk 2 liet zien dat terwijl er veel vooruitgang is geboekt in de positie van de vrouw over een serie indicatoren er nog veel ruimte voor verbetering is. Wat betreft stemrechten, bijvoorbeeld, hebben vrouwen nu overal (sinds 2015 ook in Saoedi-Arabië) recht om te stemmen. Voor levensverwachtingen was er een mondiale verbetering in het gelijkheid tussen man en vrouw behalve in Afrika beneden de Sahara waar vrouwen achter lijken te blijven in dit aspect.

In hoofdstuk 3 heeft het toetsen van de twee datasets tegen elkaar geleid tot de bevinding dat er veel overeenkwam tussen de twee bronnen waren. Verschillen werden opgelost door terug te keren naar de oorspronkelijke bronnen van de twee auteurs. De hieruit voortkomende hybride Todd-Murdock dataset werd gebruikt in de rest van het boek als een manier om familiesystemen te meten. We hebben getoetst of de variabelen die hier gebruikt werden nog effecten hebben op de positie van vrouwen door de World Values Survey data te gebruiken. Hieruit kwamen significante resultaten. In

hoofdstuk 4 werd deze dataset gebruikt met aanvullende data uit Murdock om verdere praktijken er uit te halen die belangrijke indicatoren zouden kunnen zijn voor de positie van vrouwen. Dit heeft geleid tot kaarten van Eurazië waaruit duidelijk werd dat een combinaties van vrouwvriendelijke instituties voorkwamen aan de randen van het continent terwijl het centrale gebied gekenmerkt werd door meer vrouwonvriendelijk patriarchische normen. Ten slotte gebruikt hoofdstuk 5 huwelijkspatronen als een manier om de positie van vrouwen in beeld te brengen en toetst het welke factoren van belang zijn in het determineren van huwelijksleeftijden en leeftijdsverschillen tussen bruid en bruidegom. Hier bleken familiesystemen een belangrijke rol te spelen in het bepalen van huwelijksleeftijden. Hoofdstuk 1 en 5 besteden aandacht aan de reden waarom huwelijkspatronen een maatstaf kunnen zijn voor de positie van de vrouw. Hoewel ze niet zonder problemen zijn, zijn ze wel een vorm van data die over een lange periode en groot geografische gebied te verzamelen zijn.

Ondanks het feit dat familiesystemen niet perfect de positie van vrouwen kunnen weergeven, vooral omdat vanwege data beperkingen we deze variabeel alleen als iets statisch kunnen coderen, is zelfs dit beperkte historisch inzicht van de machtsverhoudingen binnen huishoudens en families. Verwantschapsnormen, praktijken rondom het erven van land etc. zijn een van de weinige manieren waarop we grip op de positie van vrouwen in vele delen van de wereld kunnen krijgen. Wat betreft huwelijkspatronen geloof ik dat er nog veel interessante werk te doen is op de vlak van hun langetermijn ontwikkelingen. Onderzoek zou bijvoorbeeld kunnen kijken naar hoe huwelijksleeftijden reageren op economisch druk. In situaties waar er een sterke culturele voorkeur is voor een bepaalde leeftijd om te trouwen zou er minder ruimte zijn om in te spelen op veranderde economisch omstandigheden dan in situaties waar het stel zelf mag bepalen wanneer ze gaan trouwen. Een gebrek aan reactievermogen op economische veranderingen zou dan op zichzelf een maatstaf van de machtspositie van stellen kunnen zijn. Dit was echter een aspect dat deze dissertatie niet heeft kunnen uitzoeken.

Wat zijn de determinanten van gelijkheid tussen mannen en vrouwen?

In hoofdstukken 3, 4, 5, en 6 werden verschillende determinanten van ongelijkheid tussen man en vrouw uitgelegd en getoetst. Hoofdstukken 3, 4, en 5 leggen de nadruk op familie systemen als factoren van invloed maar toetsen daarnaast urbanisatie, religie en educatie. In hoofdstukken 3 en 4 waren deze toetsen niet de hoofdzaak maar geven een indruk van hoe familie systemen invloed hebben of in termen van hedendaagse houdingen tegen over vrouwen of historisch menselijk kapitaal. Het lijkt alsof familie systemen die in hypothese negatieve effecten zouden hebben op de positie van vrouwen daadwerkelijk geassocieerd zijn met hedendaagse normen en waarden die mannen boven vrouwen zetten. In hoofdstuk 5 en 6 staan de analyses van de determinanten van ongelijkheid tussen man en vrouw centraal. Hiervoor werd het dataset wat uit hoofdstuk 3 kwam gebruikt als onafhankelijk variabel. Familie systemen blijken een significante determinant te zijn van gelijkheid tussen man en vrouw. Maar daarnaast moet het genoteerd zijn dat in hoofdstuk 6 andere historische instituties, zoals de origine van het vorm van wethouding, en religie ook belangrijk blijken te zijn. Economisch ontwikkeling is ook een belangrijk factor in het bepalen van ongelijkheid tussen man en vrouw.

3) En wat is, breed gezien, de relatie tussen gelijkheid tussen man en vrouw en ontwikkeling?

In hoofdstuk 2, 4, 6 en 7 kwamen elementen van een antwoord voorbij maar werd er geen uitgebreide test hiervan uitgevoerd (voor zo een test zie Dilli 2015). Het analyse in hoofdstuk 2 liet zien dat verschillende instituties van belang zijn voor het bepalen van ongelijkheid tussen man en vrouw in ontwikkelings- versus ontwikkeld landen. In het samengebrachte maatstaaf (de HGEI) zijn de punten van verandering (breakpoints) op verschillende momenten voor laag- middel- en hoog-inkomst landen. Interessante is dat deze eerder in de tijd gebeuren in laag-inkomst landen dan in hoog-inkomst landen. In hoofdstuk 4 worden een klein aantal observatie gepresenteerd die

laten zien dat familie systemen met hogere scores op vrouw-vriendelijkheid een positieve effect lijken te hebben op het alfabetisme van mannen en vrouwen. In hoofdstuk 7 is er beperkt bewijs dat de positie van vrouwen op een maatschappelijk niveau een effect heeft op of er een quantiteit-qualiteit trade-off plaats vind maar dat de QQT zelf geassocieerd is met het niveau van economisch ontwikkeling. Geen van deze bevindingen geven sterk aan wat de relatie tussen gelijkheid tussen man en vrouw en ontwikkeling is maar ze wijzen naar mechanismes waardoor zo een relatie zou kunnen werken. Ze suggereren dat als economisch ontwikkeling nog niet ver gevorderd is er verschillende interacties tussen gelijkheid tussen man en vrouw aan de ene kant, en menselijke kapitaal/ontwikkeling aan de andere kant plaats vinden dat in tijden en plekken wanneer er hogere niveaus van economisch ontwikkeling is of waar gelijkheid tussen man en vrouw groter is. Hoofdstuk 4 suggereert bijvoorbeeld dat ontwikkeling in economisch zin geen noodzakelijk voorloper is op toenemende gelijkheid tussen man en vrouw.

TEN SLOTTE

Alle bevindingen in deze boek laten ruimte voor extra onderzoek. Wat heel interessant zou zijn is een empirisch onderzoek van of het soort familie systeem indicatoren die in de afgelopen bladzijdes positief zijn gebleken voor de positie van vrouwen ook nog een rol hebben gespeeld in het toenemen van economisch groei in Europa en daarmee te kunnen bepalen of ze van belang waren in de economische divergentie tussen bepaalde stukken van Europa en de rest van de wereld.

De laatste belangrijk bevinding die ik hier wil benadrukken is het feit dat uit veel van de analyses blijkt dat het juist de combinatie van verschillende elementen van families is die belangrijk is. Dit geeft het idee dat familie systemen een interessant manier zijn om historische instituties te benaderen extra kracht maar zou ook nog verder onderzocht moeten worden om tot sterke conclusies hierover te kunnen komen.

Appendices

APPENDIX TO CHAPTER 2

Appendix 2.1: Composite Indicators overview

Table 2A.1. Dimensions and variables in composite indicators of gender equality.

Index	Compiling Agency or author	Variables/Dimensions	Coverage
Gender-related Development Index (GDI)*	UNDP	life expectancy, adult literacy, school enrolment, and logarithmic transformations of per-capita income (measures gaps between men and women in these variables)	1995-2009
Gender Empowerment Measure (GEM)*	UNDP	women's relative economic income, participations in high-paying positions with economic power, and access to professional and parliamentary positions.	1995-2009
Social Institutions and Gender Index (SIGI)	OECD	Family Code, Civil liberties, Physical integrity, Son preference, and Ownership rights	2009-onwards

Gender Inequality Index (GII)	UNDP	captures the loss of achievement, within a country, due to gender inequality, and uses three dimensions to do so: reproductive health (maternal mortality rate and adolescent fertility), empowerment (share of parliamentary seats held by each sex and female and male population with at least secondary education), and labour market participation (female and male labour force participation rates)	Appears in 2010 HDR, data for 2008 onwards
Global Gender Gap (GGG)	World Economic Forum	Wage levels, labour market participation, and access to highly skilled employment, access to both primary and further education (primary, secondary, tertiary and literacy), measures of the ratio of women to men in ministerial positions and, if relevant, parliamentary roles, ratio of women to men in terms of the number of years spent in executive office in the past 50 years, differences between men and women in terms of life expectancy, sex ratios at birth.	2006-onwards

Women's Economic Opportunity Index (WEOI)	Economist Intelligence Unit	26 variables falling into the following categories: labour policy and practice, access to finance, education and training, women's legal and social status, general business environment	Pilot 2009
Relative Status of Women	Dijkstra and Hammer	Same dimensions as GDI	
GEQ	Whyte	GDI/HDI	
Standardised Index of Gender Equality (SIGE)	Dijkstra	Education, health and labour force participation	
Gender Inequality (GI)	Forsythe	$(HDI - GDI)/HDI$	

All of the gender indices discussed in the text try to capture different dimensions in which gender inequality can occur. These dimensions can vary between measures, but the eight dimensions listed in Table A.2. are those which appear regularly in the gender equality measurement literature.

Table 2A.2. Shared dimensions of Gender Equality

Dimension	Which variables used to measure	Where does it appear
Political Power	Voting rights, percentage of women and men at different levels of government (national, municipal, unions, etc.)	GEM, GII, GGG, SIGI

Autonomy within the household	Freedom to marry and divorce, right to custody in divorce, right to assets and decision making power within the household	SIGI
Employment and income	Distribution of paid and unpaid work, wage differentials, formal and informal labour	GDI, GEM, GII, WEOI, (SIGI)
Social Resources	Access to health and education	GDI, GII, GEM, WEOI
Material Resources	Access to land, houses and credit	SIGI
Time	Relative access to sleep and leisure	OECD (2009) - http://www.oecd.org/berlin/42675407.pdf
Gender Identity	Cultural issues such as socialisation of boys and girls and how rigid sex divisions of labour are	None
Autonomy of the body	Gender based violence, control over sexuality, control over reproduction	SIGI

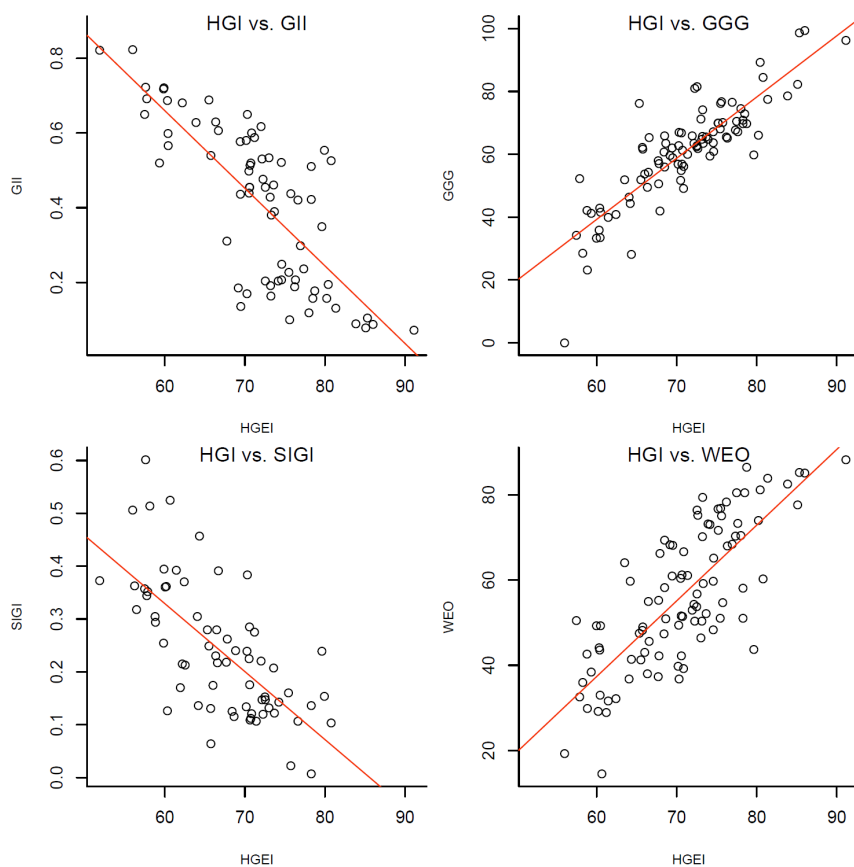
Notes: This table is partially based on Dijkstra (2002: 318) which in turn draws upon Wieringa (1997).

Appendix 2.2: Comparison with current composite indices

In this section, we outline the comparability of our index with a number of gender equality measures. Previous indices differ in the aspects they choose to focus on regarding gender equality. The figure below illustrates to what extent our historical gender equality index is correlated with the Gender Inequality Index (GII), the Global Gender Gap Index (GGG), Social Institutions and Gen-

der Index (SIGI), and the Women's Economic Opportunity Index (Economic Intelligence Unit, 2012).

Figure 2A.3: Correlations HGEI and a selection of other composite indices



Notes: Data comparison with the Gender Inequality Index is done based on the year 1995 and for the period between 1995 and 2005. Data for the Global Gender Gap Index (GGG) and Women's Economic Opportunity Index are based on 2009 and is compared with the data for the Historical Gender Equality Index in year 2000. The Pearson's correlations have been presented, except for

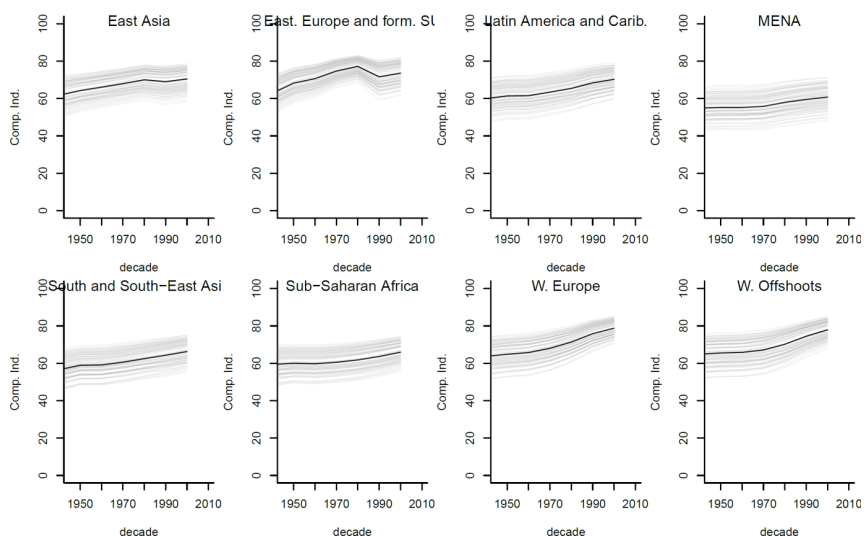
the relation between our index and the SIGI. To compare these two indexes, first the average of the Historical Gender Equality Index for the time period between 1995 and 2000 was then taken and then compared with the SIGI index, of 2009, based on Kendall's tau-b.

Overall our historical measure is reasonably related to the current gender equality measure. Our measure is strongly related to the Global Gender Gap index, whereas the association between our index and SIGI is weak. While SIGI aims to capture the long-term institutions that cause the gender gaps in various development outcomes, our measure aims to capture these disparities themselves. A further explanation for the lack of association is likely that the SIGI focuses only on non-OECD countries, thereby reducing the number of observations shared with our index. Further differences are apparent from the figure. For instance, South Africa, and Greece are but two of a number of outliers present in the correlation between our HGEI and the GII. These differences between the two indexes could be result of the choice of the underlying variables and the method used to construct the index. For instance we exclude fertility from our index, which is included in the GII, and instead include differences in political empowerment and marriage patterns which are not captured by GII. And while the GII is a complex index featuring non-linear transformations, we keep all our measures in ratios and create our composite index as a linear combination of these. A second reason for the differences could be that the GII is strongly driven by the overall development level of a society (i.e. a high correlation between GII and UN Human Development Index) whereas this is not the case for our index. The association between the Historical Gender Equality Index and the Women's Economic Opportunity Index is moderate, which is likely driven by the fact that while our measure captures inequalities in various dimensions, the latter focuses only on the gender differences in labour force participation.

Appendix 2.3: sensitivity to weights

Composite indicators are commonly critiqued in the choice of their weights. The weights to any composite indicator are open for discussion and it is conceivable that the results would change if different weights were used. To see the extent to which our index is sensitive to the choice of weights, the overall trends were recalculated using a wide set of weights. Figure A.4 below shows the results of halving the weights of either one or two of the six indicators constituting the composite indicator. As can be seen, most choices of weights do not significantly alter the regional trends.

Figure 2A.4. Shifting Weights of HGEI



Appendix 2.4: convergence per sub-period.

Table 2A.5. Regressions of decennial growth rate of the HGEI on its level for four periods.

	1950-1960	1960-1970	1970-1980	1980-1990	1950-1960	1960-1970	1970-1980	1980-1990
(Intercept)	3.554 (7.900)	4.963 (7.551)	12.188** (6.844)	12.066*** (5.337)	-9.567 (7.775)	-5.616 (6.897)	2.571 (6.124)	6.842* (4.731)
hgi_ame_1950	0.101 (0.132)				-0.162 (0.106)			
hgi_ame_1960		0.069 (0.127)				-0.157 (0.108)		
hgi_ame_1970			-0.089 (0.113)				-0.260*** (0.103)	
hgi_ame_1980				-0.137** (0.085)				-0.265*** (0.091)
log(gdp_1950)					3.930*** (0.648)			
log(gdp_1960)						3.178*** (0.571)		
log(gdp_1970)							2.556*** (0.460)	
log(gdp_1980)								1.678*** (0.416)
R2	0.007	0.004	0.013	0.049	0.262	0.237	0.238	0.180
Adj. R2	-0.002	-0.005	0.003	0.040	0.248	0.223	0.223	0.165
Num. obs.	110	110	110	110	110	110	110	110

Outcome variable: % growth to 1990. Robust std. errors between parentheses. *** p < 0.01, ** p < 0.05, * p < 0.1.

Appendix 2.5:

Table 2A.6 Quality of sex ratio, parliament ratio, and marriage ratio data by region and benchmark year, 1820-2008.

Western Europe (WE), Eastern Europe (EE), Western Offshoots (WO), Latin America and Caribbean (LA), Sub-Sahara Africa (SSA), Middle East and North Africa (MENA), East Asia (EA), South and South-East Asia (SSEA).

Quality of Data on Sex ratios

	WE	EE	WO	LA	SSA	MENA	EA	SSEA
1820	2	2	2	2	2	2	2	2
1870	2	2	2	2	2	2	2	2
1913	2	2	2	2	2	2	2	2
1950	1	1	1	1	1	1	1	1
1973	1	1	1	1	1	1	1	1
2008	1	1	1	1	1	1	1	1

Quality of Data on Parliament

	WE	EE	WO	LA	SSA	MENA	EA	SSEA
1820	1	1	1	1	1	1	1	1
1870	1	1	1	1	1	1	1	1
1913	1	1	1	1	1	1	1	1
1950	2	2	2	2	2	2	2	2
1973	2	2	2	2	2	2	2	2
2008	2	2	2	2	2	2	2	2

Quality of Data on Marriage

	WE	EE	WO	LA	SSA	MENA	EA	SSEA
1820	3	3	3					
1870	2	3	2					
1913	2	2	2	2				2
1950	1	1	1	1	1	1	1	1
1973	1	1	1	1	1	1	1	1
2008	1	1	1	1	1	1	1	1

1= high quality – national statistical offices

2=body other than national statistis office compiling statistics using same methods

3= independent researchers using methods similar to national statistics but for more limited samples

When available, the quality of the data is typically quite high. Most observations are estimates of official statistical agencies (1) or the product of historical research using the same sources and methods as these agencies (2). The quality of the data for sex ratios is similar to that of most other indicators used in this chapter. The only exception is the data on marriage ages. Here, the estimates for the period up to 1870 are usually based on the same kind of data and method as statistical agencies would use, but do not always cover the entire country.

Appendix 2.6:

Table 2A.7 Regression with historical institutions and region controls

	Pooled w. hist+reg
(Intercept)	7.821**
	(3.397)
hgi_ame_lag	-0.275***
	(0.062)

loggdp	1.035***
	(0.273)
polity2	-0.065**
	(0.030)
educexp	0.153*
	(0.092)
iwmfactorscores	0.119***
	(0.021)
prt	3.554***
	(1.027)
cat	0.440
	(0.671)
isl	-1.073
	(0.846)
legalorcomm	-0.294
	(0.737)
legalor2	0.278
	(0.472)
legalor3	1.345
	(0.855)
absnucl_hyTRUE	-1.113*
	(0.670)
african_hyTRUE	0.977
	(0.783)
anomic_hyTRUE	0.479
	(0.533)
author_hyTRUE	1.052
	(0.729)

egalnucl_hyTRUE	0.110
	(0.529)
exocom_hyTRUE	0.830
	(0.539)
wbregionac1	1.011
	(0.750)
wbregionac2	0.812
	(0.902)
wbregionac3	0.348
	(0.813)
wbregionac4	-1.214*
	(0.715)
wbregionac5	0.742
	(0.845)
R2	0.133
Adj. R2	0.128
Num. obs.	577

APPENDIX TO CHAPTER 3

Appendix 3.1: results of cluster analysis.

K-means cluster analyses looking for seven, eight, and nine clusters for the EoI systems have therefore been performed on the data. Here, only the best result is reported.

Table 3A.1. Mean values for the constituent variables of EoI by cluster, generated by k-means clustering for 8 clusters. The row names give our interpretation of the clustering results as a family system.

	sym. inherit	asym inherit	prefer cous. mar.	nucle- ar	com.	stem	polyg- amy
(egalitarian nu- clear)	1	0	0.89	0.78	0.22	0	0.11
african	0.17	0.92	0.29	0	0.12	0.21	0.75
((exogamous com- munity))	0.08	0.85	0.38	0	1	0	0
absolute nuclear	0.32	0.45	0.14	0.5	0.41	0.09	0
egalitarian nuclear	0.96	0.04	0	0.96	0.04	0	0.04
exogamous com- munity	0.92	0.08	0.12	0.04	0.88	0.08	0.04
7 = (endogamous community)	0.5	0	1	0	1	0	0
8 = endogamous community	1	0	0.8	0.2	0.8	0	0

The first column represents our interpretation of the clustered data in terms of Todd's family types. The clustering procedure for The Explanation of Ideology gives mixed results. Most of Todd's combinations return as a cluster. Only the anomic family type is missing. The clustering procedure did not pick up this particular system, which is defined by a lack of rules. We have also projected these clusters on a map (available upon request).

Appendix 3.2: Todd's EOI classifications compared to our hybrid dataset

Table 3A.2. Todd versus Hybrid

Country	ISO3	Original Todd Classification	Hybrid classification
Afghanistan	AFG	endocom	endocom
Albania	ALB	exocom	exocom
Algeria	DZA	endocom	endocom
Angola	AGO	african	african
Argentina	ARG	egalnucl	egalnucl
Armenia	ARM	exocom	exocom
Australia	AUS	absnucl	egalnucl
Austria	AUT	author	author
Azerbaijan	AZE	exocom	exocom
Bahrain Islands	BHR	endocom	endocom
Belgium	BEL	author	author
Belorussia	BLR	exocom	exocom
Benin	BEN	african	african
Bhutan	BTN	anomic	author
Bolivia	BOL	egalnucl/anomic	egalnucl
Botswana	BWA	african	african
Brazil	BRA	egalnucl	egalnucl
British Guiana	GUY		
British Honduras	BLZ	egalnucl/anomic	egalnucl
British Solomon Islands	SLB		
Brunei	BRN	anomic	exocom
Bulgaria	BGR	exocom	exocom
Burkina Faso	BFA	african	african

Burma	MMR	anomic	egalnucl
Burundi	BDI	african	african
Cambodia	KHM	anomic	anomic
Cameroon	CMR	african	african
Canada	CAN	absnucl	egalnucl
Cape Verde	CPV		author
Central African Republic	CAF	african	african
Ceylon	LKA	anomic	anomic
Chad	TCD	african	african
Chile	CHL	egalnucl	egalnucl
Cocos (Keeling) Islands	CCK		egalnucl
Colombia	COL	egalnucl/anomic	anomic
Comoros	COM		anomic
Congo (Capital: Brazzaville)	COG	african	absnucl
Congo (Capital: Leopoldville)	COD	african	african
Cook Islands	COK		exocom
Costa-Rica	CRI	egalnucl/anomic	anomic
Cote d'Ivoire	CIV	african	
Cuba	CUB	exocom	exocom
Cyprus	CYP		egalnucl
Czechoslovakia	CZE	author	author
Czechoslovakia	SVK	exocom	exocom
Czechoslovakia	SVK	exocom	exocom
Djibouti	DJI	egalnucl	exocom
Dominican Republic	DOM		
Dutch Guiana (Suriname)	SUR		absnucl
East Timor	TLS	anomic	endocom
Eastern Samoa	ASM		

Ecuador	ECU	egalnucl/anomic	anomic
Egypt	EGY	endocom	endocom
El Salvador	SLV	egalnucl/anomic	anomic
Equatorial Guinea	GNQ	african	exocom
Estonia	EST	exocom	exocom
Ethiopia	ETH	egalnucl	egalnucl
Fiji	FJI		anomic
Finland	FIN	exocom	exocom
France	FRA	egalnucl	egalnucl
French Guiana	GUF		absnucl
French Polynesia	PYF		absnucl
Gabon	GAB	african	exocom
Gambia	GMB	african	
Georgia	GEO	exocom	exocom
Ghana	GHA	african	endocom
Gilbert And Ellice Islands	TUV		
Great Britain	GBR		egalnucl
Greece	GRC	egalnucl	egalnucl
Greenland	GRL		anomic
Guam	GUM		egalnucl
Guatemala	GTM	egalnucl/anomic	egalnucl
Guinea	GIN	african	endocom
Guinea Bissau	GNB	african	
Haiti	HTI		egalnucl
Honduras	HND	egalnucl/anomic	anomic
Hong Kong	HKG	exocom	exocom
Hungary	HUN	exocom	exocom
Iceland	ISL		

India	IND	exocom	endocom
Indonesia	IDN	anomic	egalnucl
Iran	IRN	endocom	endocom
Iraq	IRQ	endocom	endocom
Ireland	IRL	author	author
Israel	ISR	author	author
Italy	ITA	egalnucl	egalnucl
Jamaica	JAM		
Japan	JPN	author	author
Jordan	JOR	endocom	endocom
Kazakhstan	KAZ	exocom	exocom
Kenya	KEN	african	african
Kirghistan	KGZ	exocom	exocom
Korea	KOR	author	author
Korea	PRK	author	author
Kuwait	KWT	endocom	endocom
Laos	LAO	anomic	egalnucl
Latvia	LVA	exocom	exocom
Lebanon	LBN	endocom	endocom
Lesotho	LSO	african	african
Liberia	LBR	african	african
Libya	LBY	endocom	exocom
Lithuania	LTU	exocom	exocom
Macau	MAC	exocom	exocom
Malagasy Republic	MDG	anomic	egalnucl
Malawi	MWI	african	african
Malaysia	MYS	anomic	anomic
Mali	MLI	african	endocom

Malta And Gozo	MLT		egalnucl
Martinique	MTQ		
Mauritania	MRT	endocom	endocom
Mauritius Rodrigues	MUS		
Mexico	MEX	egalnucl/anomic	anomic
Moldova	MDA	exocom	exocom
Monaco	MCO	exocom	exocom
Mongolian People'S Republic	MNG	exocom	exocom
Morocco	MAR	endocom	endocom
Mozambique	MOZ	african	endocom
Namibia	NAM	african	african
Nauru	NRU		endocom
Nepal	NPL	exocom	exocom
Netherlands	NLD	absnucl	egalnucl
New Caledonia	NCL	anomic	absnucl
New Zealand	NZL	absnucl	egalnucl
Nicaragua	NIC	egalnucl/anomic	anomic
Niger	NER	african	endocom
Nigeria	NGA	african	exocom
Niue	NIU		anomic
Norfolk	NFK		egalnucl
Norway	NOR	author	author
Oman (Muscat And Oman)	OMN	endocom	endocom
Pakistan	BGD	endocom	endocom
Pakistan	PAK	endocom	endocom
Panama	PAN	egalnucl/anomic	anomic
Paraguay	PRY	egalnucl/anomic	anomic
Peru	PER	egalnucl/anomic	egalnucl

Philippines	PHL	anomic	anomic
Poland	POL	egalnucl	egalnucl
Portugal	PRT		
Prc	CHN	exocom	exocom
Puerto-Rico	PRI		
Qatar	QAT	endocom	endocom
Romania	ROU	egalnucl	egalnucl
Russia	RUS	exocom	exocom
Rwanda	RWA	african	african
S?O Tom? And Pr?Ncipe	STP	african	author
Saint Helena	SHN		egalnucl
San Marino	SMR	exocom	exocom
Saudi Arabia	SAU	endocom	endocom
Senegal	SEN	african	endocom
Sierra-Leone	SLE	african	endocom
Singapore	SGP	anomic	exocom
Somali Republic	SOM	african	exocom
South Africa	ZAF		african
Spain	ESP	egalnucl	egalnucl
Spanish Sahara	ESH	endocom	endocom
Sudan	SDN	endocom	exocom
Swaziland	SWZ	african	
Sweden	SWE	author	author
Switzerland	CHE	author	author
Syrian Arab Republic	SYR	endocom	endocom
Tajikistan	TJK	exocom	endocom
Tanzania	TZA	african	african
Thailand	THA	anomic	egalnucl

Togo	TGO	african	
Tokelau	TKL		
Tonga	TON		anomic
Trust Territory Of New Guinea	PNG	anomic	
Tunisia	TUN	endocom	endocom
Turkey	TUR	endocom	endocom
Turkmenistan	TKM	exocom	endocom
Uganda	UGA	african	african
Ukraine	UKR	exocom	exocom
United Arab Emirates	ARE	endocom	endocom
United States Of America	USA	absnucl	egalnucl
Uruguay	URY	egalnucl	egalnucl
Uzbekhistan	UZB	exocom	endocom
Vatican	VAT	egalnucl	egalnucl
Venezuela	VEN	egalnucl/anomic	anomic
Vietnam	VNM	exocom	exocom
Wallis And Futuna	WLF		anomic
West Germany	DEU	author	author
Western Samoa	WSM		
Yemen	YEM	endocom	endocom
Yugoslavia	BIH	exocom	exocom
Yugoslavia	HRV	exocom	exocom
Yugoslavia	MKD	exocom	exocom
Yugoslavia	MNE	exocom	exocom
Yugoslavia	SRB	exocom	exocom
Yugoslavia	SVN	exocom	exocom
Zambia	ZMB	african	african
Zimbabwe	ZWE	african	african

Luxembourg manual	LUX		egalnucl
Denmark manual	DNK	author	author
Andorra manual	AND	author	author

APPENDIX 3.3: ETHNOGRAPHIC SOURCES.

We have consulted the following sources to resolve the most populous countries that did not give a match between Todd and Murdock.

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Appendix 3.4: An excerpt of our country notes

Malay

R. Firth, *Malay fishermen: their peasant economy* (London 1966).

Mostly research on the economy of the Malay fishermen, focused on north-east of Malay peninsula, coastal area. The Malay make up 90 % of the population there (1).

Conducted in 1939–40 and 1963 in three kampongs (villages). Most inhabitants did not own their own land (of course, they were fishermen)(4). Nonetheless, the villages were part of the peasant economy.

There were no descent groups and kinship reckoning was bilateral (11).

Islam is the dominant religion and there is strong spiritual leadership. However, spirit mediums are still popular (12–3).

The Malay fishermen are very individualistic and family support obligations are consequently low.

Competition among siblings is not rare (348).

* Cousin marriage: -

* Descent: bilateral

* Inheritance: -

* Household: -

* Polygny: -

N.S. Ginsburg and C.F. Roberts, *Malaya* (Seattle 1958).

The areas most strongly influenced by colonialism are the most densely populated.

Three ethnic groups make up most of the population.

Immigration was very important in the past, including Malay from other islands (Indonesia) to the Malay peninsula (47–8, 193).

Chinese 44.7 %; Malay 43.5 %; Indians 10.3% (55).

The Malay are predominantly rural whereas the Chinese dominate the cities (57).

Malay households consist of extended families of two–three generations (82).

There are few cities in Malay areas and few cities have Malay populations (86).

The Malay are Moslems and the Shari'a unifies them (191, 215).

Rice paddy agriculture is the main livelihood (196–7).

Despite the importance of Islam, the main social tie is the kampong (216).

The inland *Negri Sembilan* make up 10 % of the Malay population and are organised by matrilineal descent groups (218).

Polygamy is permitted but rare (221).

Inheritance goes through the clan, both in the male and female line.

Cousin marriage is permitted, but it is unclear if the Negri have any preferences in regard to this (223).

The *kampong* based groups are the majority at 90 % of the Malay population.

Their kinship system is bilateral in line with other Muslim groups.

They have extended families in a common residence (222).

Both bilateral and Islamic precepts to inheritance matter (221).

Property (descent) goes through the male and female line (222).

Distribution of the property is deferred until the death of both parents, thus keeping the extended families' property intact (222).

The Shari'a rules apply to affinity, presumably meaning that cousin marriage is at least allowed.

It is unclear whether there is a preference for cousin marriage.

Polygamy is also allowed but rare.

They practice brideprices that go to the bride, not the parents.

Child-rearing is permissive (224).

There is fragmentation of landholdings due to Moslem / egalitarian inheritance rules (385).

* Cousin marriage: permitted (perhaps preferred).

* Descent: bilateral

* Inheritance: egalitarian (perhaps bilateral)

* Household: extended.

* Polygamy: rare, but permitted

Jones, 'Malay marriage and divorce in peninsular Malaysia: three decades of change' in *Population & development review* 7 (1981), pp. 255–278.

Malaysia is an exception to the rule of universal marriage and high fertility among Muslim countries (255).

Islam gives unity to the Malay in a country where they are almost a minority, identify with Indonesia where Islam however has no unifying role (255).

Islam is the state religion, however: there are no veils; it only has influence in

family law; women are independent and work; moreover, half the country is not Muslim (256).

Marriage can fall under two types of civil law, Christian law and Islam (258).

Most divorces are initiated by the man (259).

Although the Shafi law applies to marriage, it is a “pale copy” of the institution as it exists elsewhere: residential arrangements are flexible, often uxori-local; children often stay with the mother after divorce (259).

Marriages are usually arranged, are unstable, and there are high divorce rates (261): over half the marriage end in divorce, usually within a few years after the union; the crude divorce rate (divorces per 1000 inhabitants) can be as high as 20, Indonesian levels (262).

Divorce probably most common among people of low socioeconomic status, as in Indonesia (263).

Malay kinship is traditionally bilateral and individualistic; tradition of equality of husband and wife; women can be economically self-sufficient; remarriage easy (263).

Although men start most divorces formally (259), there is evidence that many are in fact initiated by women (264).

Polygny is prestigious and may have been relatively common in the 1950s (264).

Age at marriage has been rising: female 16.6, 17.1, 20.5, 21.4 male 22.9, 22.1, 24.4, 25.2 in 1947, 1957, 1970, 1974 (265).

Divorce and polygny rates have also been declining (266).

Urbanisations and employment of women in factories driving factor (269).

Improving position of women also due to women choosing their own partners rather than arranged marriages (269).

Women bring more material assets in a non-arranged marriage, key to lower divorce rates (269-70).

* Cousing marriage: permitted (Islamic law), no clue on preference.

* Descent: bilateral.

* Inheritance: -

* Household: -

* Polygny: rare, but prestigious and permitted.

R. Firth, *Housekeeping among Malay peasants* (New York 1966)

Research into household budgets among Malay fishermen in 1939–40 (4).

The majority coastal Malay are Muslim; some inland Malay are pagans (5).

On average, households have 3.5 inhabitants and there is low fertility (11).

So-called simple households (47.5 %) are more common than extended households (5.7 %) (11–3).

Adoption practice is informal and easy (11).

Daughter tend to care for parents in their old age and are therefore desired (15).

Although a Muslim people, non-elite women go unveiled and are free to appear in public (26).

Women control the household budget (27).

Divorce is easy (28, 35ff).

Women usually have means to their own livelihood (31ff).

Marriage happens at an early age (45).

Polygny is permitted, but rare (48).

Curry recipes (219ff).

* Cousin marriage: –

* Descent: -

* Inheritance: -

* Household: nuclear, some daughter extensions

* Polygny: rare, but permitted

Djamour, *Malay kinship and marriage in Singapore* (London 1959).

Research in a Malay suburb of Singapore in 1949–50, a fishing community (1).

Malay make up less than 10 % of the island; Chinese are the majority at 77 % (2).

There are much more male Malay on Singapore due to migration from Indonesia; young children show approximately normal sex ratios (4).

Most Malay work in transport, communication, administration, fishing (5).
 Marriage outside ethnic group is very rare (6).
 Singapore Malay have bilateral descent and kinship reckoning; there are no lineages (14, 33ff).
 Marriage with paternal parallel cousins is prohibited because of Malay tradition (*Adat*), in spite of Islamic rules (14).
 In regards to inheritance, Adat is more equal towards women than Islam is (14).
 Singapore laws are English, but are generally not used by the Malay (15).
 Even the pillars of the Islamic faith are adhered only lightly (15–6).
 Malay communities are strongest in villages (kampongs) (21).
 Little landownership among Malay in Singapore (38).
 In practice, inheritance happened according to Adat rules, meaning equal inheritance and inclusive of women (40).
 Widows retained ownership too and could sell their goods if their children did not provide assistance (40).
 Adopted children share fully in inheritance (41).
 The wife managed the household budget, except when the household had to purchase goods on credit (42).
 Young married couples are uxorilocal (47).
 The most common household is the parent with unmarried children, parents with married daughter and a baby are also common, as are parents or siblings of the conjugal couple; more distant relatives are rare (53).
 More complex households than nuclear make up 10 % of the households (55).
 Rules governing marriage and divorce are Islamic (66).
 Women keeps control over propopert acquired before marriage (67).
 Nearly everyone marries (68).
 Marrying parallel parental cousins is prohibited (68).
 Intergeneratinonal marriage is prohibited into many degrees (69).
 Kin marriages are slightly preferred (saudara / orang lain), but these cousin claims are not as strong as they are in MENA (70–1).

Spousal age gap should not be too large, 2–5 years; girls marry not long after first menstruation, age 16–9 (71).

Consent of bride in marriage not sought; she could only refuse to consummate the marriage (presumably easy divorce after that); the grooms consent was sought, though it was primarily an arranged marriage (73).

Polygny permitted, but rare; less accepted among young Malay (87).

Prior to 1950, half of the marriages ended in divorce (110).

Husband can easily get an Islamic divorce (111–3), but in practice, wives can also obtain a divorce by pressuring their husbands (114–5).

* Cousin marriage: preferred (less than in Muslim countries), most forms permitted

* Descent: bilateral

* Inheritance: bilateral, egalitarian

* Household: nuclear, some extended through daughter

* Polygny: rare, but permitted

Thai

P.K. Benedict, 'Studies in Thai kinship terminology' in *Journal of the American Oriental Society* 63 (1943), pp168–175

Kinship nomenclature shows Thai to have more affinity with Indonesians rather than Sino-Tibetan (168).

System here covers most Thai languages (168).

Maternal and parental uncles and aunts fused; no sex distinction for sibling terms, there are age distinctions (170).

Grandparents have paternal/maternal reckoning (170).

Affinal terminology relatively simple (172).

* Cousin marriage: -

* Descent: bilateral

* Inheritance: -

* Household: -

* Polygny: -

S.H. Potter, *Family life in a Northern Thai Village: a study in the structural significance of women* (Berkeley and Los Angeles 1977)

Significant blood ties are between women and social structure is female-centered. It is neither patrilineal or matrilineal (which goes through mother's brother or sister's son, 1).

Northern-Thai system has previously been characterised (Embree being the most influential) as loose because woman-centered family system is difficult to recognise (2), seen as having minimal reciprocal rights and duties (4).

In Sharp, *Siamese rice village* (1953), loose Thai family structure was accepted, seeing a neolocal, nuclear family with few obligations towards parents, no lineages, practicing equal, bilateral inheritance, and daughter staying with parents (5).

De Young's *Village life in modern Thailand* (1955), a study on the North, sees comparatively little importance in family links and the powerful position of Thai women (5).

Kinghill's *Ku Daeng* (1960) is also on Northern Thailand and observes matrilineal residence and family property rights like those in Western society (5-6).

Kaufman's *Bangkuad* (1966) on the central plains, sees households run by the mother, youngest daughter residing with parents to care for them, matrilineal residence for the first years after marriage, patrilineal afterwards (in house though?), father-controlled but equal inheritance, there are no economic family relationships that make the extended family the economic unit, family property goes from father to son-in-law (6-7).

Phillips' *Thai peasant personality* (1965) 7-8 followed Embree in observing unpredictable, inconsistent and chaotic kinship (7-8).

Moerman claimed that the whole Thai village was a kin relation (8-9).

Gijewardene's "Aspects of rural life in Thailand" (1967) Northern Thai village research departed from the idea that there were no formal kin groups, bilateral with a tendency towards uxori-locality, affines had strong relations with brothers-in-law (10).

1968 *Areal handbook for Thailand* emphasised individual independence rather than family solidarity, neolocal nuclear families are the ideal, men and women are equals, households are arranged by practical considerations rather than structural norms (10).

The 1969 volume *Loosely structured social systems* edited by Evers claims there are no prescriptions regarding residence after marriage, regarding extended families, or regarding family cooperation, though it is later claimed that some villages had a high proportion of extended family households (11-12).

In 1970, Tambiah's *Buddhism and the spirit cults* observed uxorilocal residence, inheritance of residence by daughters, (12-3).

Mizuno's 1971 *Social system of Don Daeng village*: bilateral, nuclear and extended households existing together, focused on maternal kin, women equal to men, no lineages (14-5).

Turton's "Matrilineal descent groups and spirit cults" (1972) does see matrilineal descent groups in Northern Thailand organised around for cult practices, but not as common landowners (16-8).

Davis' "Tolerance and intolerance" (1974) confirms Turton's observations of matrilineal descent groups for cults (18).

Literature in sum: research on North is more recent and also observes stronger family structures, loose structures have been found in the central plain (19).

Kin group membership is important for spirit cults and is organised matrilineally, yet wives take their husband's name, marriage is matrilocal for at least a token period, inheritance is divided equally among all children, male and female, with the house going to the youngest daughters and men selling their rights to their sisters (19).

Northern Thai family system is interplay of women defining social structure yet men having higher formal social status, passed along males, but through relationships with women (20).

However: women is not dominant (no matrifocality as on Java), system is only centered on her (21).

Book studies one family (21).
 Extended family in a courtyard, but not one house (23).
 Age-based respect (33).
 Cultivate rice (52).
 Average household has 4.3 members (52).
 Property to all children, youngest daughter, expected to stay with and care for parents and gets residence (54).
 Father-in-law has authority over son-in-law (55).
 Supposed to be little formal secular division of labour, but not true in this village: tasks for each sex (56).
 Villagers help each other with hard task, especially bilateral kin groups and households with the same matrilineal spirits (58-9).
 Thai schools traditionally run by monks (89).
 Multiple loyalty ties: neighbourhood, agricultural labour exchange, matrilineal spirit worship groups (90).
 Northern Thai family relationships ordered according to: first, formal authority to men; second, juniors deferring to elders; third, family relations are lineal and traced through women (99).
 Authority of father-in-law over son-in-law good example (100).
 Men can only become the head of a household by marrying, they will never inherit headship of the one they are born in (100-1).
 In courtship, parents mediate and suggest because there is much at stake, but spouses choose each other (out of love), this gives daughters power in family, even though formal authority resides in men.
 Wife can threaten to break up marriage; women make most important decisions in household (103).
 Woman can be "minor wife" of already married man, inferior position, polygamy? (110).
 * Cousin marriage: -
 * Descent: matrilineal or bilateral
 * Inheritance: egalitarian, both sexes
 * Household: nuclear, but also extended

* Polygny: perhaps permitted

H.K. Kaufman, *Bangkhvad: a community stude in Thailand* (New York 1960).

Thai established in Thailand in c13 (4).

European influence over the economy has waned, but Chinese are still important middlemen, rice most important (5).

Research in 1957 (5).

Bankgkhvad is a representative village of the rice delta area, close enough to urban area to be influenced by it (14).

Only settled in late c19 (15).

Few educational opportunities for women until at least 1920s (16).

147 families; 744 persons (17).

Buddhist, some villages have small Muslim populations (18).

Household has average of five members (19)

Basic household is nuclear, though one of the children frequently has his wife and children residing in the same or an adjacent house (20), but no more than one child (22).

Division of labour not rigid (20).

Bride-price (21).

Father putatative head of the household (22), mother however runs the household (22).

Parents consulted in marriage decision, but spouses can decide for themselves (22).

Inheritance is equal and bilateral, though parents can withhold property as long as they live, youngest son or daughter gets household and cares for parents (22, 81).

Adopted children share equally in inheritance, widow keeps property, even if she remarries (81).

No specified time for inheritance (81).

Wills possible (81-2).

In case of remarriage, children of old wife receive larger share of inheritance (82).

Contrary to claims in some literature, there are family responsibilities (23).
 For rites, extended family matters again, up until cousins (23), these households give each other some mutual aid (24).
 Differences with Chinese family structures living nearby: more economic assistance, considered privilege to help less well-off cousins; Thai only focused on immediate family; Thai households more autonomous (27).
 Marriages used to be arranged, but parents are nowadays more mediators in spouses found by men (27).
 Marrying first cousins is permitted, but frowned upon (27).
 Polygny is permitted, but rare, only three men in village ever practiced it, oldest wife could force dismissal of newer wife (28).
 Elopements frequent, but couple often returns and pays token bridesprice, paid to family of bride (29, 151).
 Matrilocal residence for first year or so, then patrilocal (29).
 Husband at matrilocal phase has strong obligations to affines (29).
 Residence is permanently matrilocal if it is economically more convenient (29).
 Little intermarriage with Chinese (30).
 Age important social structure in village (31).
 Women are culturally inhibited (shy), but do enjoy wide freedom and independence, wife consulted on all important household decisions, sex differentiation in labour reduced to minimum (39).
 * Cousin marriage: permitted, not preferred.
 * Descent: -
 * Inheritance: egalitarian, bilateral.
 * Household: nuclear, temporarily extended.
 * Polygny: permitted

J.E. deYoung, *Village life in modern Thailand* (Berkeley 1955).
 Study of north-northeast of Thailand, outside Bangkok delta (v).
 On Southern peninsula there are some Malay, elsewhere it are Thai (4), most live on central plain and northeast (6), cultural convergence since 1920s (7).

Village headmen are elected by men and women of village (17).

Typical Thai household consists of couple and children (nuclear), sometimes also grandparents; after marriage the couple temporarily moves in with bride's parents, but they set up their own household quickly, usually when the first child is born (22).

One child remains to care for parents (22), in the North this is usually the youngest daughter, whose husband moves in and succeeds his father-in-law as household head, he is quickly accepted; this pattern was probably common in all of Thailand earlier (65).

Sons and daughters inherit equally, daughter usually inherits house (23). The father is the head of the household, but he does not have the same authoritarian position as in China or Japan (24).

Women have a strong social position; they vote, represent the household in the absence of their husband and they control the household budget (24). There are no tightly integrated extended families as in the rest of southeast Asia; there is room for individualism (24-5).

Compared to other SE Asian countries, Thailand has low fertility (49).

Girls are marriable at age 16, most marry age 18-21, though in poorer families they can stay single until their late twenties; men marry at age 20-24 (60); marriage is nearly universal (61).

Trial marriages exist (62).

Parental consent is sought, in part because new couple resides with bride's parents for a few years (63-4).

Elopements exist (64).

There are few kinship prohibitions in marriage; in small villages cousin marriage is frequent (64).

Polygamy has always been exceptional (66).

After divorce, property is divided equally between the spouses; the children usually stay with the mother and her family (67).

Most Thai are independent peasants (75).

In 1937, 31 % of women and 47 % of men was literate (168).

* Cousin marriage: permitted, not preferred, though not rare.

- * Descent: -
- * Inheritance: egalitarian, bilateral.
- * Household: nuclear, temporarily extended.
- * Polygny: permitted, but rare

W. Blanchard, *Thailand: its people, its society, its culture* (New Haven 1958).

Society is organised laterally rather than vertically, relatively individual (8). Nuclear families, married couples have their own residence, children are raised permissively, and family ties are not strong (9).

In 1957, the Thair are the vast majority of the country, also some 10 % Chinese (49).

Local sex distributions greatly skewed due to rural labour migration. However, up to age 15, boys outnumber girls (50), 15-30 there are more women, 30-70 is even, from 70 onwards women outnumber men greatly (50).

Muslims are a significant minority in Thailand, most of which are Malay (60).

Most Chinese live in Bangkok and surroundings (66).

Limited knowledge of ancestors (79).

Election of local headmen old tradition, all adult villages vote, follows friendship and kinship ties (145-6).

Rice economy, characterised by small-scale peasant holdings (305), industry still of minor importance (326).

Standard of living relatively high, no mass poverty (366).

Corvée labour for the king was the norm in the distant past (398-9).

Social relations based primarily on kinship (399).

Reciprocal work groups in villages, usually consisting of neighbouring households (400).

Family basis for Thai social organisation (421).

Families are lenient, permissive, nuclear families that strive for independence (421).

Nuclear families comparable to US: mother, father, children, sometimes

grandparent; at times an extended household as a daughter's spouse and children move in (421).

One daughter remains in household and inherits residence; if there are multiple couples they'll reside in separated quarters (421-2).

No lineages, feeling of ancestry (422).

Further kin only important during "rites of passage" (422).

Conjugal couple basic kin relationship; neolocality for all but one daughter (423).

Formally, all sons and daughters inherit equally, though landholding is not extremely scattered, so something must have mitigated this system (424).

Girls begin courting at age 15-6 (433).

Young people choose own marriage partners, though there is encouragement by parents and approval by parents is usually adhered to (434).

Thai are overwhelmingly monogamous, though wealthier farmers sometimes practice polygamy, usually in the form of a helper wife for the first wife (435).

Divorce is by mutual agreement (435).

No preference for boys over girls (435).

Urban upper class families do take pride in their ancestry (439), also greater division in sex roles (440)

Catalonia

R. Congost, L. Ferrer-Alòs and J. Marfany, "The formation of new households and social change in a single heir system: the Catalan case, eighteenth century", in Head-König and Pozsgai (eds) *Inheritance practices, marriage, and household formation*, pp. 49-73

Single-heir inheritance systems where the heir and his spouse move into parental house are seen to limit population growth. However, population growth did not always mean that this stem family inheritance practice had broken down. It was also possible that there were new opportunities for the other heirs. This was the case in eighteenth and nineteenth-century Catalonia (49).

However, the new households made possible by proto-industry and changes in landholding and cultivation were still socially inferior to those of heirs (though not necessarily poorer).

Catalan system of inheritance was based on the *Masos*, the family farm, that was to remain intact. Originated from preferences feudal lords in Middle Ages and lasted into nineteenth century. To this end 75% of the inheritance went to one heir, usually the eldest son when he married; his inheritance as well as the dowry would be stipulated in a marriage contract. Remainder of inheritance, supplemented with benefices, charities, incoming dowries, labour (50-53).

FMAM 20-22; MMAM 21-25 (58).

North-West Spain (Basque country)

O. Rey Castelao, "Inheritance, marital strategies, and the formation of households in rural North-Western Spain in the eighteenth and nineteenth centuries: an overview", in Head-König and Pozsgai, pp 75-

Basque country, Cantabria, Asturias, Galicia are economically, socially homogeneous (75). Very rural (76).

Galicia, Cantabria, and Asturias were under Castilian inheritance law (developed in Middle Ages, law 1505): equal inheritance in lineage from 4/5 of estate, women could get a dowry, conjugal property was jointly owned. However, there was a preference for single inheritance, so 1/3 + 1/5 was given to one heir so as to avoid fragmentatio of estates. Came down to one heir receiving house and better part of land (78-9). Interior of these provinces practiced stem families proper. In Basque country, first-born son or daughter inherited everything.

Ireland

J Gray, "nineteenth-century Ireland"

Smallholders. Stem-family is classic image from Arensberg en Kimball field-work in 1930, however, remains to be seen if this applied to the pre-Famine period as well. Connell: before Famine it was simple households, after it was

late marriage and impartible inheritance.

After Famine, there was a bump in the share of extended hh (from 12ish to 17%) and solitary hh (165).

Household formation was more flexible than stem label implied, hh sought extra income to settle more offshoots while keeping hold on land (176)

Bohemia

A. Velková, "rural Western Bohemia, 1700–1850"

Landholders did not formally own property, subjects to landlord, variant of serfdom, but they could dispose of it (103).

(107) MMAM 28, 27.6, 28.3, 28.7, 26.5, 27.8; FMAM 25.0, 24.9, 25.2, 25.8, 24.0, 25.5 in 1701-25, -50, -75, -1800, -1825, 1850

Like elsewhere in north-west Europe (Cerman, "Central Europe")

One heir inherited the farm, but rest of inheritance was settled (120).

Switzerland

Head-König, „rural Switzerland, 1860-1960

Each canton had its own inheritance law with regard to farms; strict partability in western cantons influenced by French Civil Code and Alpine areas where it was traditional. Impartability happened in agrarian lowlands, due to feudal tradition (283).

With regard to property (besides farm?), there were three main inheritance systems: egalitarian, including sons and daughters, especially in Valais and Graubünden; inegalitarian between sexes, sons inherited equally, but more than daughters, this happened in Lucerne, Zug, Thurgau, and Fribourg; impartible in which one son took over the farm (so not only farms), in Zug (eldest) and Bern and Solothurn (youngest) and Emmental. Testamentary succession (Ticino) and lower than market price buyouts (Zürich) were used to subvert the egalitarian systems (284).

Serbia

Gruber, "nineteenth-century rural Serbian life courses"

FSMAM 19.3 MSMAM 22.5 (214)

Zadruga, patriarchal multiple household; mean household size 6.5 in c19, yet half lived in 2g households, only 30-40 in 3g or more, extensions were to male hhh (218-9).

In Eastern Europe equally partible inheritance among men predominated, originated in animal husbandry and slash-and-burn agriculture requiring cooperation of many male family members and pastures were joint property; men of a household owned land jointly; division took place after death of father, unlike Russia where *intervivos* was also practiced (224)

No nobility with large estates (ie no feudalism, 225)

Sweden

Holmlund, "rural Swedish community, 1810-1930"

Typical community, but experienced demographic transformation.

1846 legislation introduced equal inheritance (232).

Inheritance left holdings undivided unless there was enough to set up multiple children; sons had preference over daughters; there were retirement contracts stipulating that parents stayed on the estate (235).

System existed well before 1800, probably medieval. These practices stayed in place during whole period. However, whether it happened through sale and post- or pre-mortem transfer did change (236).

1810-45: men preferred; pre- or post-mortem transfer, former with retirement contract (236-7).

After 1845 equal inheritance was stipulated by law, so parents sold holdings to eldest son with retirement contract, sale was below market value; wealthy families did practice equal inheritance now (237-8).

After 1886 urbanisation made transfers less important to children, parents less well-off in retirement contracts so they held on longer and passed farm to youngest son (239).

Children became less dependent on inheritance for marriage (251)

Moscow

H. Kolle, "Moscow province, 1834–1869"

Equally partible male inheritance, as elsewhere in Europe; household split into smaller units, was a split of previously commonly owned property (181). Variation in household formation was achieved by the timing of the split. Peasant communes (*Mir*) divided land among household according to the number of married couples, gave incentive for large hh, tried to stay multiple households as long as possible (181-2).

Patrilocal (181).

FSMAM 20.2-23.1; MSMAM 20.9-23.0 in c19, was increasing (183-4).

Some 70% of the households was multiple, they typically split only when new multiple hh could be set up (191-3).

However, hh authority, who was hhh, was inherited through primogeniture (199).

Greece

Hiounidou, "Greek island, Mykonos, mid-nineteenth to mid-twentieth century"

Family ties important welfare arrangement in southern Europe (Reher), this is indeed found for Mykonos (261).

1861: 70% conjugal families and only 2% multiple, though 12% is extended, most of them upwards (Laslett system: one or more relatives, not children of hhh).

FMAM increased from 19 to 22 years from c1850 to c1950.

Mid-c19: equal inheritance, both sexes, daughters as dowry 271

Netherlands, Groningen

Paping - Early urban, high standard of living (311), Calvinist population (312).

Leased land was connected to farms (*Beklemming*), making the land somewhat indivisible; this was unique for the region, divisibility was much easier in France, Germany, and the Southern Low Countries (313-5).

Many farms not inherited, but sold to outsiders (318-9).

Similar patterns in market-oriented societies like the Paris basin and Vernon

Normandy (320-1)

From late c18 onwards rents stayed fixed, but *Beklemming* became stronger, making tenants owners and very wealthy; now a shift towards inheritance happened. One child succeeded, but the others were bought out (325-6).

In c17 and c18 it was not considered attractive for parents to live with their married children, so they sold their farms (332).

APPENDIX TO CHAPTER 4

Table 4A.1: Matrilocal and uxoriocal societies

Society name	Country	Matrilocal or Uxorilocal
Yukaghir	North Eastern Russia	Uxorilocal
Nicobares	Andaman and Nicobar	Uxorilocal
Hanunoo	Philippines	Uxorilocal
Toradja	Indonesia	Uxorilocal
Ontong-ja	Solomon Islands	Uxorilocal
Karen	Burma	Uxorilocal
Tagbanua	Philippines	Uxorilocal
Jibu	Nigeria	Uxorilocal
Puyuma	Taiwan	Uxorilocal
Kalinga	Philippines	Uxorilocal
Garo	India	Matrilocal
Mnonggar	Vietnam	Matrilocal
Trukese	Micronesia	Matrilocal
Vedda	Sri Lanka	Matrilocal
Belu	East Timor	Matrilocal
Lesu	Papua New Guinea	Matrilocal
Ponapeans	Micronesia	Matrilocal
Yao	Mozambique	Matrilocal
Rotuman	Fiji	Matrilocal
Khasi	India	Matrilocal
Nomoians	Micronesia	Matrilocal
Bikinians	Marshall Islands	Matrilocal
Nauruans	Marshall Islands	Matrilocal
Rhade	Vietnam	Matrilocal

Carolinia	Northern Mariana Islands	Matrilocal
Luguru	Tanzania	Matrilocal
Cham	Vietnam	Matrilocal
Nyanja	Mozambique	Matrilocal
Nyasa	Mozambique	Matrilocal
Sena	Mozambique	Matrilocal
Kwere	Tanzania	Matrilocal
Zigula	Zanzibar	Matrilocal
Daka	Nigeria	Matrilocal
Ami	Indonesia	Matrilocal
Mimika	Indonesia	Matrilocal
Lamotrk	Micronesia	Matrilocal
Kaguru	Tanzania	Matrilocal
Negriseb	Laos	Matrilocal
Marshalle	Marshall Islands	Matrilocal

There are a further 8 societies in which the society prescribes a situation in which no common residence is established:

Appendix table 4A.2: No common residence and neolocal societies

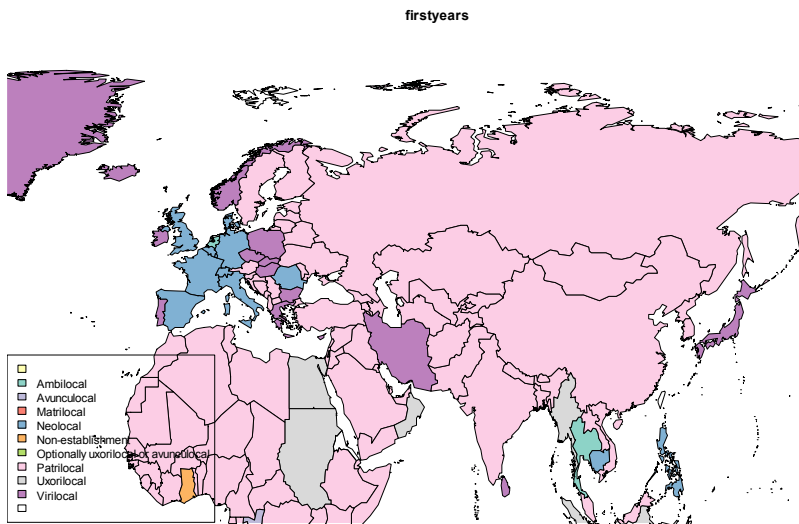
Kerala	India	No common residence
Minangkabau	Indonesia	No common residence
Kutubu	Papua New Guinea	No common residence
Siane	Papua New Guinea	No common residence
Fur	Sudan	No common residence
Ga	Ghana	No common residence
Marindani	Indonesia	No common residence

Aua	Papua New Guinea	No common residence
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Bajun	Kenya	Neolocal
Konso	Ethiopia	Neolocal
Javanese	Indonesia	Neolocal
Romans	Italy	Neolocal
Hutsul	Ukraine	Neolocal
Kumyk	South Western Russia (by Azerbaijani border)	Neolocal
Burmese	Burma	Neolocal
Nyakyusa	Tanzania	Neolocal
Walloons	Belgium	Neolocal
Cambodian	Cambodia	Neolocal
Selung	Burma	Neolocal
Ganda	Uganda	Neolocal
Cheremis	South Western Russia (by Azerbaijani border)	Neolocal
Siamese	Thailand	Neolocal
Chamorro	Northern Mariana Islands	Neolocal
Neapolita	Italy	Neolocal
Bena	Tanzania	Neolocal
Spaniards	Spain	Neolocal
Ngonde	Tanzania	Neolocal
Barea	Eritrea	Neolocal
Kunama	Eritrea	Neolocal
Ancient Egyptians	Ancient Egypt	Neolocal
Sugbuhano	Philippines	Neolocal
Sumbawene	Indonesia	Neolocal

Romanians	Romania	Neolocal
Bilaan	Philippines	Neolocal
Bisayan	Philippines	Neolocal
Chekiang	China, Shanghai	Neolocal
Khmer	Cambodia	Neolocal

Appendix 4.2 map 4A.1: First years marital residence



APPENDIX TO CHAPTER 5

Appendix 5.1

Table 5A.1: Todd's typology expanded with examples of countries Todd ascribes each type to

<p>Characteristics of the exogamous community family: Cohabitation of married sons and their parents Equality between brothers defined by rules of inheritance No marriage between children of brothers Low age of marriage as no need to establish separate household</p>	<p>Characteristics of endogamous community family Cohabitation of married sons with their parents Equality between brothers established by inheritance rules Frequent marriage between the children of brothers Low age of marriage as no need to establish separate household</p>
<p>Characteristics of the authoritarian family Cohabitation of married heir with his parents Inequality of brothers laid down by inheritance rules, transfer of an unbroken patrimony to one of the sons Little or no marriage between children of brothers Expectation of higher number of permanent celibates</p>	<p>Characteristics of the asymmetrical community family Cohabitation of married sons and their parents Equality between brothers laid down by inheritance rules Prohibition on marriages between the children of brothers, but a preference for marriages between the children of brothers and sisters Should not be significantly different from endogamous community family</p>

<p>Characteristics of the egalitarian nuclear family</p> <p>No cohabitation of married children with their parents</p> <p>Equality of brothers laid down by inheritance rules</p> <p>No marriage between the children of brothers</p> <p>Age of marriage should be high but possible raised spousal age gaps due to creation of macho society</p>	<p>Characteristics of absolute nuclear family</p> <p>No cohabitation of married children with their parents</p> <p>No precise inheritance rules, frequent use of wills</p> <p>No marriage between the children of brothers</p> <p>Age at marriage should be high and spousal age gap low</p>
<p>Characteristics of the anomic family</p> <p>Cohabitation of married children with their parents is rejected in theory but accepted in practice</p> <p>Uncertainty about equality between brothers: inheritance rules egalitarian in theory but flexible in practice</p> <p>Consanguine marriage possible and sometimes frequent</p> <p>Equality between the sexes – spousal age gap should be low</p>	<p>Characteristics of African systems:</p> <p>Instability of the household</p> <p>Polygyny</p> <p>Marriage is looser – hard to predict what this will mean in terms of age of marriage – marriage as less of a permanent commitment so possibly lower age at marriage for women</p>

Appendix 5.2

Table 5A.2: Uninterpolated sumstats

Variable	Observations	Mean	Standard Deviation	Min	Max
Female SMAM	339	22.56	3.12	14.8	33.16
Urbanisation	1276	43.61	12.89	1.35	100
Percentage Muslim	495	26.23	36.22	0	99.84
Spousal Age Gap	252	3.65	1.61	1.4	11.94
Girl Power Index	252	19.23	4.21	6.48	29.3

Appendix 5.3

Table 5A.3: Regressions with egalitarian nuclear as reference category for female SMAM and Spousal age gap

	(1)	(2)	(3)	(4)
	fsmam_int	fsmam_int	differenceint	differenceint
absnuclhy	3.402*** (1.279)	-0.609 (0.381)	0.392 (0.573)	1.442*** (0.221)
africanhy	-1.261* (0.727)	0.135 (0.759)	1.521*** (0.376)	0.866** (0.407)
anomichy	-0.558 (0.477)	-0.510 (0.465)	0.547* (0.294)	0.337 (0.262)
authorhy	1.291 (0.792)	0.106 (0.903)	0.109 (0.311)	0.850*** (0.265)

endocomhy	-1.773*** (0.531)	-1.391** (0.601)	1.887*** (0.367)	0.978*** (0.327)
exocomy	0.155 (0.487)	-0.394 (0.455)	0.137 (0.273)	0.409* (0.239)
urb_int		0.0321*** (0.0100)		-0.00666 (0.00497)
year		0.0327*** (0.0110)		0.00274 (0.00769)
percmus- lim_int		0.00984 (0.00603)		0.00698** (0.00321)
ayetot_fe		0.351*** (0.0963)		-0.189*** (0.0530)
_cons	22.39*** (0.350)	-45.92** (21.54)	3.172*** (0.196)	-1.061 (14.93)
N	1215	815	1097	779
R-sq	0.148	0.495	0.214	0.408

Standard errors in parentheses. =*p<0.1 **p<0.05 ***p<0.01

Appendix 5.4

Table 5A.4 Regressions controlling for OECD regions with Sub-Saharan Africa as reference category

	(1)	(2)	(3)
	Female SMAM	Spousal Age Gap	Girl-Power Index
Urbanisation	0.0266*** (0.00880)	-0.000116 (0.00487)	0.0259** (0.00117)
Average years of education, female	0.431*** (0.0901)	-0.149** (0.0577)	0.583*** (0.125)

% Muslim	-0.00429 (0.00642)	0.0216*** (0.00553)	-0.0263*** (0.00927)
year	0.0255** (0.0115)	-0.00755 (0.00726)	0.0325** (0.0163)
Absolute Nuclear	0.571 (0.450)	-0.438 (0.509)	0.899 (0.682)
African	1.309** (0.606)	-0.921 (0.559)	2.109** (0.903)
Anomic	1.354* (0.714)	-0.446 (0.586)	1.785 (1.122)
Authoritarian Nuclear	0.126 (1.023)	0.535 (0.556)	-0.472 (1.321)
Egalitarian Nuclear	1.930** (0.746)	-0.768 (0.587)	2.685** (1.143)
Exogamous Community	0.926 (0.629)	-0.304 (0.480)	1.173 (0.879)
East Asia	0.0912 (0.987)	1.025 (0.668)	-0.963 (1.424)
Eastern Europe and Former S.U.	-2.633*** (0.819)	1.581** (0.686)	-4.265*** (1.355)
Latin America and Carribean	-3.205*** (0.826)	2.034** (0.783)	-5.291*** (1.516)
MENA	-1.265 (0.793)	1.305* (0.761)	-2.638* (1.466)
South and South-east Asia	-1.674*** (0.625)	2.980*** (0.460)	-4.632*** (0.816)
_cons	-31.06 (22.40)	17.79 (14.22)	-47.68 (31.84)
N	815	779	779

R-sq	0.597	0.549	0.626
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Standard errors in parentheses. *p<0.1 **p<0.05 ***p<0.01

Appendix 5.5

Table 5A.5 Regression with family system characteristics plus polygamy as marital form (extended households as reference for domestic org and monogamy as reference for polygamy)

	fsmam_int	differenceint	ggpint
Symmetrical inheritance	-0.172	-0.710	0.945
	(0.598)	(0.436)	(0.927)
Endogamy	-1.103**	0.784**	-1.878***
	(0.488)	(0.310)	(0.687)
Domestic Organisation			
Nuclear	0.505	-0.405*	0.817
	(0.452)	(0.240)	(0.596)
Polygamy	-0.633	-0.124	-0.264
	(0.762)	(0.512)	(1.129)
Stem	0.887	-0.832*	1.924
	(0.829)	(0.480)	(1.177)
Monogamy versus polygamy			
Polygamy	-0.846*	0.795***	-1.588***
	(0.455)	(0.245)	(0.591)
_cons	22.92***	3.965***	18.80***
	(0.659)	(0.460)	(0.981)

N	1096	969	969
R-sq	0.111	0.230	0.178

Standard errors in parentheses. =*p<0.1 **p<0.05 ***p<0.01

APPENDIX TO CHAPTER 6

Appendix 6.1

Table 6A. Results for OLS regressions of gender equality, 1950-2003 by component of the gender equality index.

	sexratio	le	marriage	labour	edu
Absolute Nuclear	0.01	0	0.03***	0.10*	-0.01
	-0.01	-0.01	-0.01	-0.06	-0.05
African	0.01	0.03***	0.03***	0.13*	0.05
	-0.01	-0.01	-0.01	-0.07	-0.06
Anomic	0.01	0.01	0.01	0.07	0.12**
	-0.01	-0.02	-0.02	-0.06	-0.06
Authoritarian	-0.01	-0.02	0.01	0.11	0.08
	-0.01	-0.01	-0.01	-0.08	-0.05
Egalitarian Nuclear	0.01	0	0.02	0.12*	0.05
	-0.01	-0.01	-0.02	-0.06	-0.05
Exogamous Community	-0.01	0.01	0.01	0.11*	0.03
	-0.01	-0.01	-0.02	-0.06	-0.06
Endogamous Community					
% Protestant	0	-0.02***	0.02**	0.01	0.11***
	0	-0.01	-0.01	-0.03	-0.04
% Catholic	0	0	0.02***	-0.09***	0.09***
	0	-0.01	-0.01	-0.03	-0.03
% Islam	0	-0.01*	-0.03***	-0.16***	-0.08***
	0	-0.01	-0.01	-0.03	-0.03
Scandinavian/German C. code	0	0.02**	0.01	0.02	-0.09**
	-0.01	-0.01	-0.01	-0.06	-0.04
French C. Code	0	0	0	-0.01	-0.05
	0	-0.01	-0.01	-0.03	-0.03
Socialist/Communist Laws	0	0.02*	0.01**	0.14**	0.10**

	parliament	sexratioen	leen	marriageen	labouren	eduen	parlia- menten
	-0.04*	0	-0.01	0.01	-0.02	-0.06	-0.04
	-0.02	-0.01	-0.01	-0.02	-0.08	-0.07	-0.03
	-0.01	0.01	0.02	0.01	0.01	0	-0.02
	-0.02	-0.01	-0.02	-0.02	-0.09	-0.08	-0.03
	0.01	0	0	-0.01	-0.06	0.07**	0.01
	-0.03	0	-0.01	-0.01	-0.04	-0.03	-0.01
	0.01	-0.01**	-0.02**	-0.01	-0.01	0.02	0.01
	-0.03	-0.01	-0.01	-0.01	-0.06	-0.03	-0.03
	0.01						
	-0.03						
	0.06**	-0.01**	0.01	-0.01	-0.01	-0.02	0.05*
	-0.03	-0.01	-0.01	-0.01	-0.05	-0.03	-0.03
		-0.01	0	-0.02	-0.12*	-0.05	-0.01
		-0.01	-0.01	-0.02	-0.06	-0.05	-0.03
	0.13***	0	-0.02***	0.02**	0.01	0.11***	0.13***
	-0.03	0	-0.01	-0.01	-0.03	-0.04	-0.03
	-0.02	0	0	0.02***	-0.09***	0.09***	-0.02
	-0.01	0	-0.01	-0.01	-0.03	-0.03	-0.01
	-0.03**	0	-0.01*	-0.03***	-0.16***	-0.08***	-0.03**
	-0.02	0	-0.01	-0.01	-0.03	-0.03	-0.02
	0.06*	0	0.02**	0.01	0.02	-0.09**	0.06*
	-0.03	-0.01	-0.01	-0.01	-0.06	-0.04	-0.03
	0.02	0	0	0	-0.01	-0.05	0.02
	-0.01	0	-0.01	-0.01	-0.03	-0.03	-0.01
	0.06**	0	0.02*	0.01**	0.14**	0.10**	0.06**

	-0.01	-0.01	-0.01	-0.06	-0.04
log GDPPC	-0.00***	0.02***	0.02***	-0.02	0.09***
	0	0	0	-0.02	-0.01
Polity IV	0	0.00**	0	0	0
	0	0	0	0	0
% Education expenditures	0	0	0.00**	0.01**	0.01***
	0	0	0	0	0
Inst. international women movement	-0.00**	0	0.00**	0.01***	0.00***
	0	0	0	0	0
East Asia & Pacific	-0.02	0.02	0.05***	-0.05	0.06
	-0.01	-0.02	-0.02	-0.08	-0.07
Europe & Central Asia	-0.02	0.03**	0.04**	-0.03	0.04
	-0.01	-0.01	-0.02	-0.08	-0.07
Americas	-0.01	0.02	0.03	-0.13	0.08
	-0.01	-0.02	-0.02	-0.09	-0.08
Middle East and North Africa	-0.01	0.02	0.05***	-0.21***	-0.02
	-0.01	-0.01	-0.01	-0.06	-0.06
South Asia	-0.03**	-0.02*	0.03**	-0.16**	-0.09*
	-0.01	-0.01	-0.01	-0.07	-0.05
Year	0	0.00***	0	0	0
	0	0	0	0	0
Constant	1.02***	0.80***	0.61***	0.62***	-0.17*
	-0.02	-0.02	-0.02	-0.14	-0.1
Observations	5237	5237	5237	5237	5237

-0.03	-0.01	-0.01	-0.01	-0.06	-0.04	-0.03
0.01	-0.00***	0.02***	0.02***	-0.02	0.09***	0.01
-0.01	0	0	0	-0.02	-0.01	-0.01
-0.00***	0	0.00**	0	0	0	-0.00***
0	0	0	0	0	0	0
0.01***	0	0	0.00**	0.01**	0.01***	0.01***
0	0	0	0	0	0	0
0.00**	-0.00**	0	0.00**	0.01***	0.00***	0.00**
0	0	0	0	0	0	0
-0.03	-0.02	0.02	0.05***	-0.05	0.06	-0.03
-0.04	-0.01	-0.02	-0.02	-0.08	-0.07	-0.04
0.01	-0.02	0.03**	0.04**	-0.03	0.04	0.01
-0.03	-0.01	-0.01	-0.02	-0.08	-0.07	-0.03
-0.01	-0.01	0.02	0.03	-0.13	0.08	-0.01
-0.03	-0.01	-0.02	-0.02	-0.09	-0.08	-0.03
-0.06***	-0.01	0.02	0.05***	-0.21***	-0.02	-0.06***
-0.02	-0.01	-0.01	-0.01	-0.06	-0.06	-0.02
0	-0.03**	-0.02*	0.03**	-0.16**	-0.09*	0
-0.02	-0.01	-0.01	-0.01	-0.07	-0.05	-0.02
0	0	0.00***	0	0	0	0
0	0	0	0	0	0	0
-0.1	1.03***	0.80***	0.63***	0.74***	-0.12	-0.1
-0.06	-0.02	-0.03	-0.02	-0.16	-0.11	-0.07
5237	5237	5237	5237	5237	5237	5237

Table 6B. Spearman's Correlation Matrix between Variables

	Gender equality index	Abs nucl	African	Anomic	Author	Egal Nucl	Exo comm	Prot.	Cath	Islam	Scan
Gender equality index	1.000										
Abs Nucl	-0.033	1.000									
African	-0.035	-0.040	1.000								
Anomic	-0.010	-0.036	-0.161	1.000							
Authoritarian	0.251	-0.032	-0.142	-0.127	1.000						
Egal Nucl	0.175	-0.048	-0.216	-0.193	-0.170	1.000					
Exocom	0.276	-0.044	-0.194	-0.173	-0.153	-0.233	1.000				
% Protestant	0.357	0.003	0.073	-0.128	0.326	0.077	-0.056	1.000			
% Catholic	0.140	0.005	-0.085	0.355	0.002	0.255	-0.127	-0.101	1.000		
% Islam	-0.494	-0.042	-0.152	-0.164	-0.178	-0.238	-0.076	-0.234	-0.371	1.000	
Scandinavian/German C. code	0.270	-0.028	-0.125	-0.112	0.771	-0.150	-0.047	0.485	-0.090	-0.160	1.000
French C. Code	-0.348	0.092	-0.090	0.252	-0.291	0.116	-0.300	-0.310	0.347	0.179	-0.290
Socialist/Communist Laws	0.374	-0.036	-0.152	-0.079	-0.123	-0.007	0.612	-0.124	-0.080	-0.138	-0.112
log GDPPC	0.436	-0.039	-0.440	-0.027	0.378	0.265	0.031	0.317	0.168	-0.148	0.339
Polity IV	0.399	-0.062	-0.154	0.101	0.385	0.220	-0.081	0.367	0.176	-0.356	0.310
% Education expendi- tures	0.314	-0.027	0.025	-0.122	0.224	-0.088	0.048	0.284	-0.111	-0.034	0.170
Inst. international wom- en movement	0.352	-0.002	-0.009	-0.008	0.003	-0.011	0.039	0.047	0.007	-0.031	0.003
East Asia & Pacific	0.129	-0.035	-0.154	0.115	0.064	0.160	0.055	-0.018	-0.159	-0.097	0.085
Europe & Central Asia	0.475	-0.057	-0.255	-0.227	0.355	0.096	0.387	0.239	0.081	-0.209	0.277
Americas	0.054	-0.046	-0.204	0.510	-0.161	0.321	-0.160	-0.026	0.532	-0.263	-0.116
Middle East and North Africa	-0.362	-0.039	-0.174	-0.155	-0.052	-0.209	-0.120	-0.165	-0.256	0.570	-0.090
South Asia	-0.249	-0.023	-0.101	0.030	-0.080	-0.122	-0.004	-0.104	-0.151	0.108	-0.055
Year	0.345	-0.002	-0.008	-0.007	0.003	-0.010	0.034	0.049	0.006	-0.029	0.004

Frenc	Soc	log GDPPC	Polity IV	%educ exp	IWM	EAP	Europe & Central Asia	Americas	MENA	South Asia	Year
1.000											
-0.398	1.000										
-0.087	-0.080	1.000									
-0.179	-0.156	0.469	1.000								
-0.235	0.035	0.328	0.203	1.000							
-0.048	0.082	0.204	0.230	0.170	1.000						
-0.277	0.296	-0.040	0.014	-0.084	0.001	1.000					
-0.172	0.305	0.459	0.337	0.179	-0.003	-0.212	1.000				
0.214	-0.145	0.129	0.147	-0.117	0.001	-0.155	-0.300	1.000			
0.207	-0.153	0.154	-0.327	0.163	0.001	-0.120	-0.232	-0.170	1.000		
-0.179	-0.095	-0.240	0.019	-0.191	0.000	-0.073	-0.141	-0.104	-0.080	1.000	
-0.043	0.058	0.236	0.192	0.183	0.949	0.000	-0.002	0.001	0.000	0.000	1.000

Table 6C. Individual family system components

	hgi	hgi	hgi
nuclear_hy	-0.319 (1.146)	1.034 (0.965)	0.275 (1.050)
stem_hy	1.671 (1.823)	0.0978 (1.357)	0.887 (1.716)
cousinmar_hy	-7.146*** (1.202)	-2.584** (1.010)	-1.017 (0.980)
syminherit_hy	-0.307 (1.150)	-0.292 (0.842)	0.428 (0.945)
loggdp	1.874*** (0.459)	1.439*** (0.342)	1.549*** (0.372)
year1	0.126*** (0.0118)	0.0565* (0.0294)	0.0270 (0.0303)
prt		5.862*** (1.220)	4.983*** (1.159)
cat		0.566 (0.796)	-0.498 (0.737)
isl		-5.995*** (0.996)	-5.020*** (0.879)
legalorcomm		2.189 (1.491)	0.273 (1.652)
legalorz		-0.763 (0.727)	-1.245* (0.731)
legalorz3		7.105***	4.621***

		(1.188)	(1.221)
polity2		0.0222	-0.0464
		(0.0439)	(0.0432)
educexp		0.487***	0.571***
		(0.115)	(0.104)
iwmfactorscores		0.132**	0.188***
		(0.0512)	(0.0511)
wbregionac1			1.039
			(1.808)
wbregionac2			2.258
			(1.633)
wbregionac3			1.162
			(1.586)
wbregionac4			-4.181***
			(1.416)
wbregionac5			-3.239**
			(1.247)
_cons	47.89***	46.98***	45.69***
	(3.425)	(2.585)	(2.815)
N	5645	4808	4808
R-sq			
Standard errors in parentheses			
=**	p<0.1	**	p<0.05
		***	p<0.01"

Table 6D: Results for OLS regressions of gender equality, 1950-2003: specification with random effects, fixed effects, quadratic GDP per capita term, and instrumental variables

	gdp				second-
	nonlinear	random	fixed	firststage	stage
eoifamtype2_ hy==absnucl	1.29 (1.66)	2.89 (1.66)		0.29*** (0.04)	2.98 (2.67)
eoifamtype2_hy==af- rican	3.25* (1.54)	3.93** (1.67)		0.03 (0.05)	3.28*** (1.14)
eoifamtype2_hy==a- nomic	4.18** (1.55)	5.21** (1.79)		0.13** (0.05)	3.95** (1.54)
eoifamtype2_hy==au- thor	3.50 (2.11)	3.79 (2.19)		0.10** (0.04)	2.39 (1.61)
eoifamtype2_hy==egal- nucl	4.12** (1.56)	5.44*** (1.74)		0.13*** (0.05)	4.01*** (1.47)
eoifamtype2_hy==ex- ocom	4.38** (1.78)	5.09** (1.83)		0.05 (0.04)	4.92*** (1.38)
% Protestant	4.33*** (1.02)	0.60 (0.66)	0.51 (0.59)	-0.20*** (0.05)	1.24** (0.52)
% Catholic	-0.36 (0.71)	-0.06 (0.44)	-0.01 (0.32)	-0.03 (0.03)	0.14 (0.31)
% Islam	-3.54*** (0.79)	-1.24** (0.43)	-0.86** (0.37)	-0.03 (0.03)	-2.80*** (0.34)

Scandinavian/German					
C. code	1.35	2.15		0.02	2.26
	(1.59)	(1.88)		(0.04)	(1.46)
French C. Code	-0.65	-2.82***		-0.08**	-2.45***
	(0.76)	(0.92)		(0.03)	(0.56)
Socialist/Communist					
Laws	4.70***	0.86		-0.22***	-0.31
	(1.25)	(1.25)		(0.07)	(0.82)
log GDPPC	-0.40	1.27**	1.53***		1.25***
	(3.96)	(0.45)	(0.40)		(0.27)
gdp2	0.12				
	(0.23)				
Polity IV	-0.02	-0.04	-0.02	0.01**	-0.08***
	(0.04)	(0.03)	(0.03)	(0.00)	(0.01)
% Education expendi- tures	0.48***	0.31***	0.29***	0.02***	0.45***
	(0.10)	(0.07)	(0.06)	(0.00)	(0.05)
IIWM	0.19***	0.23***	0.25***	-0.01***	0.24***
	(0.05)	(0.05)	(0.04)	(0.00)	(0.03)
East Asia & Pacific	0.12	0.03		0.28***	1.53
	(2.19)	(2.49)		(0.07)	(1.82)
Europe & Central Asia	1.23	2.29		0.25***	3.43**
	(2.02)	(2.23)		(0.07)	(1.72)
Americas	-0.44	0.16		0.16**	0.61
	(1.99)	(2.23)		(0.07)	(1.80)
Middle East and North Africa	-3.35**	-3.47**		0.23***	-3.33***
	(1.42)	(1.58)		(0.05)	(1.23)

South Asia	-3.21**	-4.53**		-0.02	-3.96***
	(1.44)	(1.75)		(0.06)	(1.48)
Year	0.03	0.04	-0.00	0.01**	0.03
	(0.03)	(0.03)	(0.02)	(0.00)	(0.02)
L10.log GDPPC				0.85***	
				(0.02)	
lat				0.00***	
				(0.00)	
Constant	50.76***	45.37***	46.63***	1.13***	45.48***
	(16.14)	(3.47)	(3.11)	(0.18)	(2.05)
Observations	5237	5237	6563	4338	4338
Adjusted R-squared				0.951	
Standard errors in parentheses					
=**	p<0.10	**	p<0.05	***	p<0.01"

APPENDIX TO CHAPTER 7

Appendix 7.1

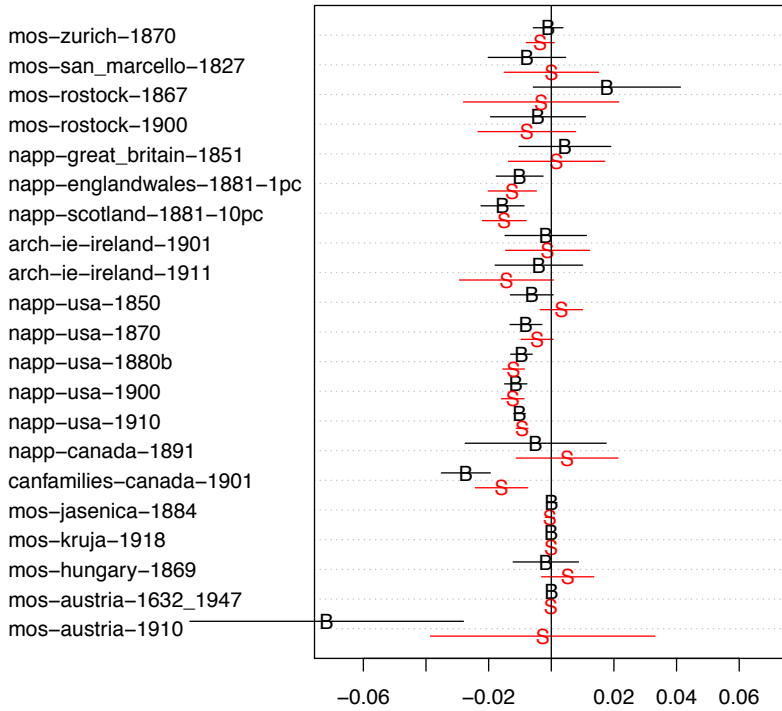
Table 7A.1. Legend to appendix regression tables

Indicator	Meaning
nsib	Number of siblings
age	Age
maleTRUE	Child is male
nserv	Number of servants present the household
urbanTRUE	

motheragefirstchild	Implied age of the mother at first child
spousagegap	Age gap between husband and wife (spousal age gap)
nupw	Number of upward relatives living in the household (grandparents)
nlat	Number of lateral relatives living in the household (uncles and aunts)
nextd	Number of both upward and lateral relatives living in the household (when we cannot differentiate between the two)
factor(birthorder)N	Child's birth rank, N being the rank.
factor(fatherliterate) TRUE	Father is literate
factor(motherliterate) TRUE	Mother is literate
nbro	Number of brothers
nsis	Number of sisters
fatherreligionX	Father has religion X (Protestant, Catholic, Orthodox, Jewish, or Other)

Appendix 7.2

Figure 7A1. Coefficients on number of brothers and number of sisters.



Red indicates sisters and black, brothers. There seems to be no substantial difference between the patterns.

Table 7A.2. Summary statistics continued

Country	HH size	Singles over 16	N chil- dren	Enroll- ment	Age heaping	Literacy 7+	Female hh heads
Hungary 1869	4.75	0.24	2.63	0.09	93.86	0.39	0.13
Rostock 1867	4.16	0.46	2.33	0.44	101.37	NA	0.24
San Marcello 1827	5.44	0.46	3.09	0.11	91.91	NA	0
Kruja 1918	5.62	0.19	2.58	0.03	292.79	0.04	0.03
Rostock 1900	3.74	0.33	2.16	0.26	102.25	NA	0.23
Jasenica 1884	6.4	0.2	3.36	0.02	211.85	0.12	0.02
Zurich 1870	4.62	0.53	2.19	0.09	103.07	NA	0.01
Austria 1632-1947	5.62	0.5	2.71	0.05	119.27	NA	0
Austria 1910	4.7	0.47	3.03	0.72	99.66	0.97	0.16
Ireland 1911	4.63	0.48	3.2	0.85	147.97	0.89	0.23
Ireland 1901	4.78	0.49	3.31	0.82	196.34	0.87	0.24
Scotland 1881	5.99	0.44	3.7	0.79	120.36	NA	0.17
England and Wales 1881	6	0.39	3.61	0.73	113.64	NA	0.13
Great Britain 1851	6	0.42	3.44	0.5	124.43	NA	0.14
Great Britain 1851	6	0.42	3.44	0.5	124.43	NA	0.14
USA 1860	5.03	1	3.24	0.68	150.11	0.57	0.09
USA 1850	5.29	1	3.46	0.63	148.65	0.54	0.09
USA 1870	4.83	1	3.1	0.57	156.47	0.75	0.11
USA 1880	6.08	0.37	3.71	0.55	152.1	0.73	0.1
USA 1900	5.73	0.38	3.58	0.65	119.08	0.81	0.1
USA 1910	4.21	0.32	2.81	0.87	119.65	0.86	0.12
Canada 1901	4.99	0.39	3.37	0.91	115.35	0.94	0.09

Table 7A.3.

Country	Young brides	Older wives	Female non kin	Old men
Hungary 1869	0.17	0.11	0.21	0.18
Rostock 1867	0.02	0.21	0.36	0.1
San Marcello 1827	0.07	0.1	0.32	0.23
Kruja 1918	0.31	0.03	0.21	0.14
Rostock 1900	0.02	0.19	0.21	0.17
Jasenica 1884	0.16	0.1	0.26	0.07
Zurich 1870	0.01	0.21	0	0.19
Austria 1632-1947	0.01	0.26	0	0.47
Austria 1910	0.01	0.23	0.26	0.33
Ireland 1911	0.01	0.18	0.16	0.16
Ireland 1901	0.01	0.13	0.16	0.14
Scotland 1881	0.01	0.2	0.25	0.22
England and Wales 1881	0.02	0.23	0.28	0.31
Great Britain 1851	0.01	0.24	0.32	0.27
Great Britain 1851	0.01	0.24	0.32	0.27
USA 1860	0	0.13	0.12	0.25
USA 1850	0	0.13	0.14	0.23
USA 1870	0	0.13	0.13	0.24
USA 1880	0.08	0.12	0.15	0.28
USA 1900	0.07	0.12	0.14	0.31
USA 1910	0.12	0.13	0.11	0.26
Canada 1901	0.05	0.15	0.12	0.25

Neolocal	Old join	Old lateral	Married Daughter	Last child a boy
0.31	0.06	0.01	0.07	0.51
0.17	0	0.06	0.01	0.49
0.1	0	0.38	0.06	0.44
0.3	0.21	0.23	0.01	0.52
0.38	0	0.06	0.02	0.48
0.31	0.3	0.12	0.02	0.45
0.17	0	0	0.01	0.46
0.16	0	0	0.01	0.5
0.18	0	0.13	0.02	0.51
0.12	0	0.13	0.04	0.52
0.12	0	0.13	0.05	0.51
0.22	0	0.12	0.07	0.5
0.27	0	0.11	0.07	0.5
0.22	0	0.1	0.06	0.51
0.22	0	0.1	0.06	0.51
0.39	0	0.04	0	0.5
0.37	0	0.03	0	0.51
0.4	0	0.04	0	0.5
0.27	0	0.09	0.08	0.51
0.24	0.01	0.09	0.08	0.5
0.36	0	0.07	0.06	0.5
0.27	0	0.07	0.03	0.5

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Acknowledgements

One of my earliest school reports reads “Sarah is very interested in Justice and the boys”¹. As a former seemingly justice-obsessed tomboy tackling issues of deeply embedded gender inequality seems like a fairly logical culmination of the past 30 years. I have been very lucky to be able to spend the past 4 years exploring these matters.

I have worked in the Economic and Social History department of Utrecht University since 2008. Over the past 7 years I have had the privilege to attend a guided tour of the area around Stellenbosch organised by Jan Luiten, celebrate Tine’s oratie, Keetie’s “retirement” and been a paronymph to Dr. Dani Teeuwen, Dr. Pim de Zwart and Dr. Felix Meier zu Selhausen, watched Jessica, Claartje, Daniel, Selin, Johan, Ruben and Auke stand where I will be standing today to defend their respective manuscripts. My colleagues are a supportive group who all, in their way, helped me pick up the pieces when things went wrong and celebrated with me when all was well. I appreciate them greatly. However I have some specific words of thanks for various people that I must convey.

First and foremost my thanks go to Jan Luiten van Zanden who supported me through this process, through ups and downs, and never seemed to doubt that it would all work out in the end. A very capable supervisor who knows how to tailor his approach to each individual’s needs, generally with a smattering of jokes of varying quality. Creative, humorous, caring and fair. He and Maarten Prak (along with many others) make the economic and social history department the great place that it is to work. This brings me to the second person I want to mention: Maarten. Maarten is the sort of person you can go to with any issue, and his door will always be open (or slightly ajar) despite his insane agenda. My thanks go out to him for his personal touch to his “management style” and for seeing me through a crisis or two (also of course for his reliable

1. And my feminist 30 year-old-self finds it typical that 6 year old girls can’t be friends with boys without having comments made about it in their report cards...

stream of postcards and Christmas cards). I had the privilege to organise the theatrical side of Jan Luiten and Maarten's 20th anniversary dinner as chairs of the department. At this staged "wedding" the close personal bonds between the two were evident, as was the warmth with which the whole department interacts on such occasions.

I had the dubious honour of being a PhD with three professors as my supervisors so there are obviously two other people I of course need to mention now. Firstly Tine; Tine De Moor took me under her wing in her team before I had a proper project to work in, she welcomed me into her home (both in Gent and in Utrecht) and her team-meetings. For this I am very grateful. Tine is a whirlwind of energy and ideas who rarely seems to come up for air. I found this rather overwhelming when I first met a heavily pregnant Tine back in 2009, but since then have come to very much appreciate her detailed feedback and criticism, and her desire to look across the boundaries of disciplines. One special element of my interactions with Tine has been the bond I formed with her daughter Kaat during a workshop in Evora, Portugal. Kaat was 2 and a half but already a very competent walker, however at some point she looked up at me, snuck her tiny little hand into mine and wouldn't let go for the rest of the afternoon (her grandfather was amazed). I am grateful for having been allowed to watch her become a wise (if sometimes monstrous) 6 year old little lady and look forward to watching her grow from a distance over the next few years.

And to the last of my supervisors Jan Kok; Jan always wants you to push yourself further, include more, take on board a few more nuances. This can be challenging for a PhD just starting out with a topic but I am grateful for his earnest attempts to always be our projects devil's advocate. His feedback was meticulous and made one think more deeply about the concepts underlying the words used and he was always trying to encourage us to do more and less at the same time. His final edits were always very helpful and somehow done at record speed.

One of the best things about working in Utrecht in recent years has been having the privilege to be part of a burgeoning group of PhD students. These

are the people I share an attic space with and in no particular order my special (and slightly ridiculously worded) thanks to a number of them:

Lotte – I would send you a video of a dog getting distracted by treats and make some analogy to the process of writing a PhD but unfortunately this is a printed medium so no urls today. An endlessly energetic puppy life would not be the same without Lotte; stubborn yet scatter-brained, focused yet hyperactive, creative, independent and a rock in times of adversity, you couldn't ask for more in a frolleague. To Miguel for the “come on”s, the inane humming, the presumption that everyone in the world is as deaf as him (much mortification caused by this one) and generally being the only person I would have wanted to spend 3 years sitting opposite watching his beard grow and observing with amusement the way this urban intellectual and wannabe writer of operas is most amused by toddler like antics. Selin, the third wheel, the “lady”, the amazing cook, the thoughtful woman, the considerate friend AND my very frequent co-author, this book wouldn't exist without you (and you being the modest-being you are would have no problem acknowledging that: “because there's me, and there's you, and let's face it, there's me”). Felix, for his undying love of Africa, his wisdom, trimming ducks wings, and the way he balances his appearance with a totally insane side without which he wouldn't be the Felix we've come to be so fond of. To Pim, the rollercoaster man (or urban cowboy), never a dull moment with this one. Thank you for the meditation trainings, the book tips and the frequent laughter you generated (more often than not as the brunt of jokes, apologies for that!). Danielle – always sensible but with a tongue like a whip. A shoulder to cry on, a fellow cat-lover and a source of inspiration for her calmness and diligence (to these last two particular thanks for agreeing to be my paranymphs). Ruben – the quiet one in the corner, observing and filing everything away for use in wickedly accurate Sinterklaas poems (beware the quiet ones). Annelies – giggling wickedly at her desk, always a joy to have around with her slightly dark, intense sense of humour. Michalis Zontos for company in the later evenings and weekends and the stream of facebook posts to read (although only the one's in English, the one's in Greek defeat me). Michalis Moatsos with his endless out-of-the-blue questions (torture as

an instrument for gender equality anyone?) and his general positive outlook (even in the face of lost data or train delays). Wenjun who always comes to work with a smile on her face and a cheery hallo and is never scared to laugh at us all for eating too much! Sander who couldn't be a prouder father (although Michalis is also in the running for this prize) and who seems to have been won over to the dark side of ESG by a process of osmosis (at least we see him making graphs in excel now all the time).

As to the next floor down where the other ESGers sit a few people I would like particularly to mention:

Winnie who is an integral part of the department and a women with vision. Someone I've come to appreciate greatly over the past few years and my regular partner in organizing various things. I look forward to continuing our co-operation both at work and at the food collective. Charlotte who introduced me to the joys of Call the Midwife (even if it does feel designed to get your tear-ducts into practice) and distracted me with cups of coffee when need be and who shares an interest in ridiculous craft products, and baking.. Fia who was one of the first people to welcome me to the department when I was a student assistant, and one of the few to ask me who I was and what I was doing. Jessica who is always reasonable and measured, and whose distinctive laugh echoes throughout the building regularly, cheering us all up. Jaco, Eltjo and Heleen, who were some of my first office mates and provided insights, support, and in Eltjo's case amazing espresso and supplementary vitamin c in the form of grapefruit at lunch.

And to all the rest in the department; Bram and Bram, Anita, Keetie, Gerarda, Corry, Kati, Peter, Joris, Jieli, Bas van Bavel for his twinkling sarcasm and Bas van Leeuwen, Joost Dankers for his cheerful charming nature, René who introduced me to Island Bakery White Chocolate Lemon cookies... , Oscar, Joost who loaned me a power saw for a bike-lock when it was sorely needed (disclaimer - no laws were broken), Erik for whom I had one of my first jobs in the department making powerpoints, Lex who came to the aid of a floundering, early-stage PhD during one of her first presentations and accompanied three bedraggled, PhDs around Stellenbosch having run into them outside a

real-estate agents without enquiring as to why they were quite so green around the gills, with bags under their eyes.

And to others in the building; Hilbert, who marches through the attic with his fancy headphones on very much like one of his students and won't even take them off when he tries to talk to you.. Jan and Paul the doormen, who keep us safe from alien intrusions and guard the office-supplies with varying doses of humour, good-will and confusing comments and Berg who deals with our practical needs. Paul van Lugt who saw me through the first conference I organised. José, who as a PhD mentor provided an important role in reassuring me that it was okay to take a weekend or a day off, which I appreciated greatly.

Moving to friends beyond the department a few people I need to mention. To Julia who I wouldn't have got to know had life not taken us both in unexpected directions but who I would never want to be without. Child-like delight and serious academic ambition, my most reliable adjunct zoo-keeper, a swing-dance addict, a pleasure to live with, and always a cheerleader for others. Maarten (van Doornmalen) for his endless supply of enthusiasm and energy. I don't know how you do it but I appreciate it. Bobby – some friendships follow moon-cycles of waxing and waning and waxing again. Although we never lost touch completely I appreciate the rekindled contact, the help with making infographics and the Maltese lemons. Karel who is a rock of a hobbit and to whom I owe a considerable amount of furniture and curtains and some of my sanity. Liquan with whom I shared a messy weekend break to Barcelona and who is forever on the run (I still owe you an egg) Samantha, my occasional houseguest, with her fondness for fat-fat (as she delightfully christened my tom-cat). Emma who was key at the beginning of this process. Mariska who I've known forever and for whom I have endless respect for the way she has learnt to deal with adversity over the past five years (so glad you had your PhD epiphany! I hope all goes well in Wageningen!). Willem who is always there when you need him and who is the only person who has ever asked me to browse through engagement rings... Jess, I hereby put in non-facebook writing that I will make it to Hong Kong sometime in the next decade. Tabe and Agnes and Sabine and Ron – the Dwinger/Dallmeijer clan who have been like

a second family to me. Something I very much appreciate, even if I fall in and out of touch. Agnes in particular for being home and opening her door to me when I needed it most. Ray, Lorenzo and Olivier for the coffee, the chats, and to Lorenzo for his intuition of imminent emotional collapse. Somaye, Kiran, Noortje and Iris who were all great colleagues on the UCAA Board. Viola and Nathalie, my yoga teachers who ensured my shoulders and neck survived the stressful final year of the dissertation writing process.

And to the people I met along the way some of whom provided feedback at various points: Jose and Elba, Matthias Lindgren, Joerg Baten; Marco van Leeuwen; Heidi; Richard Zijdeman; Annemarie Bouman; Ewout, Elise, Dacil, Michiel, Kleoniki, Corinne, Kate, Angus and Kostadis (the Wageningen crowd), Bastiaan and Paul, Pier Paolo Viazzo, Paolo Malanima, Faustine Perrin, Jennifer Olmsted, Tracy Dennison, Ambra, Merel, Ankie, Paul, Tessa, Marijn, Judith and Rik (and all my fellow VOKOers), Bishnu Gupta, Jutta Bolt, Maarten Bosker, Claartje, Annina (father!), Jeroen Touwen, Manon van der Heijden, Ariadne Schmidt, Ivo Sikkema, Jacob Weisdorf, Els Hiemstra (for making the ESSHC possible), Ineke Kellij (ditto), Leo Lucassen, Jan Lucassen, Rombert, Karin and Filipa, Richard Yntema, Debin Ma, Sarah Simmelink, Silvana, Didi, Devin, Michele Campopiano (who chaperoned my through my first few lunches with the ESG group when I was still too shy to talk about anything other than haggis), Erik Stam (who gave me my first opportunity to teach and checks in on me from time to time), Benjamin Guilbert (I wonder how and where you are), Saskia Stevens (for guiding me through tutoring and being generally amazingly enthusiastic) Tomasz Gora, David Reher, Jane Humphries, Osamu Saito, Johan Fourie, Christiaan; Belen and Elisa; Tjeerd Deelstra, Michiel Dol, Bianca Peeters, Mark Kras and Martijn Kramer (my IIUE/Witteroos colleagues); and my very first friend: Sam Smith, and his family, Holly (particularly for a much needed afternoon of distraction and getting lost in the Rijksmuseum in my last week of writing), Thomas, Pat and Neil.

To my co-author, Auke Rijpma, who is more than a colleague or a friend. An endless source of support. The substitute duck and cat carer when I'm ill or away or simply passed out asleep at 9 pm. My personal chef (because my

attempts to cook meet with constant interference). My flatmate. My love (too many possessives there, sorry). And to the family Rijpma with their various partners who provided distraction and much appreciated baby-related gifts in the final months of my dissertation (particularly Jocelyn and Sterre for their amusement value).

To my mum, for checking in on me from time to time, sometimes with amazing food. My sister, Flora, who I haven't seen much of of late but of whom I will always be proud. And to my dad who might have preferred if I'd done a PhD in straight up economics, as the daily barrage of links about innovation economics in my inbox attest to, but who would never interfere in his eldest's chosen course of action. Who's words, uttered in the car, while speeding through the Hague on a route designed to avoid traffic-lights, "your twenties are a period of existential crisis" saw me through many an uncertain moment. A highly interdisciplinary thinker, able to discuss any topic and funny to boot. Thank you for the sarcasm and laughing at my idiosyncrasies and respecting that I just needed to be me.

To the family and friends who have come from abroad to attend this event. Particularly George and Sandra with whom I spent a lovely two days in October and who have been always been a very welcoming aunt and uncle, Sebastian (forever associated in my mind with shouts of "listen to me!") and Catriona who are great cousins and Guiland, with whom I share a name. Many thanks to all of you who have come to Utrecht to attend this event!

Olive, Sookie and Loki for the distraction, the teddy-bear like antics or the stubborn demands for attention but only on your own terms. And the ducks for the distractions of a daily egg and introducing me to the weird world of duck keeping, complete with occasional showers, escape attempts, and teaching them to swim in a sink.

To my various teachers through the years from the Montessori Pavillion, to Mr Shaw and the Duinoord school, the HSV, and the ISH (Mr Mythen deserves special note as does Mr Hogg who encouraged a deep interest in economics) as well as at UCU, and during my MA and my LLM.

This dissertation is dedicated to my grandmothers (women in history); Granny Reid nee Watt and Granny Joyce nee Medland. Two women who shaped my childhood, and both of whom I sense in my own actions. The front cover image is of my great-grandmother on the Watt side and her siblings and parents, while the back cover is of my maternal grandfather's attempt to map out his side of the family. So to acknowledge the Carmichael side of the family the following:



And with that bit of slightly absurd clan pride I bring this book to a close.

P.S. A final person to mention who will be prominently present at the defense but not yet with a distinct physical presence is my as yet unborn child. Here you hold in your hands the culmination of your mother's career to date, completed just as you were forming in my stomach. I write this while your kicks become ever more distinct and I can feel your hands fluttering against the wall of my womb. I look forward to meeting you soon!

1. **DAVID TAYLOR**
Civil Engineer; married twice; served in China; 2 children: Gordon and William. Gordon has 2 children.
2. **MARY SMITH TAYLOR**
born 1880; married Hugh Watt. Children: John Watt, doctor. Married Sybil Russell: 3 children. Anne Guillard Watt, married George Reid: 4 children, 7 grandchildren. Nancy Watt, M.A., served with ATS Intelligence during War. Secretary to Third Statistical Account of Scotland 1946-56; Secretary to Edinburgh University Library 1956-to retirement.
3. **JESSIE TAYLOR**
married William Mitchell, Grougar Mains. 4 children. Great grandchildren still on farm. Daughter married Norwegian Tveit. 9 grandchildren.
4. **JEAN TAYLOR**
born 1867 married Hugh Laird, lawyer. (second cousin to Hugh Watt) 2 children: Anne Laird and James Laird, doctor. No issue.
5. **ANNE TAYLOR**
born 1876, spinster. Kept house for Father Taylor. Lived with Watts.
6. **WILLIAM TAYLOR**
youngest son, (eldest brother born 1815), farmed Buiston End. Retired to Ayr then Standalane. Cheery chap, knew his Bible and Burn and Hogg like the back of his hand. Whistled and sang.
7. **ANNE TAYLOR nee GUILLAND**
of proud folk; brother psychiatrist, brought up strictly by mother who had notions: took her children to the dentist; made her daughter and maids change to the skin for afternoon then back again for milking; her Mother thought Shakespeare a bit improper and she used to read him on the sly. Very knowledgeable about the business of being a farmers wife. "always tidy up after baking and dont leave your dishes for the maid to wash up". Made cheese commercially.
8. **ROBERT TAYLOR**
doctor in London; died 1917. Married Nellie: children Bryce and Helena. Bryce became a doctor: 1 daughter and grandchildren. Helena joined "Miss Cochrane's Young Ladies"(dance troupe), married Donald Wilson of 'Fortyte Saga' T.V. fame.

As detailed by Anne Guillard Reid (nee Watt) October 1994.

