Demographic Research a free, expedited, online journal
of peer-reviewed research and commentary
in the population sciences published by the
Max Planck Institute for Demographic Research
Konrad-Zuse Str. 1, D-18057 Rostock · GERMANY
www.demographic-research.org

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DEMOGRAPHIC RESEARCH

VOLUME 18, ARTICLE 5, PAGES 145-180
PUBLISHED 28 MARCH 2008
http://www.demographic-research.org/Volumes/Vol18/5/
DOI: 10.4054/DemRes.2008.18.5

Research Article

Fertility trends by social status

Vegard Skirbekk

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Demographic Research: Volume 18, Article 5
research article

Fertility trends by social status

Vegard Skirbekk[1]

Abstract

This article discusses how fertility relates to social status with the use of a new dataset, several times larger than the ones used so far. The status-fertility relation is investigated over several centuries, across world regions and by the type of status-measure. The study reveals that as fertility declines, there is a general shift from a positive to a negative or neutral status-fertility relation. Those with high income/wealth or high occupation/social class switch from having relatively many to fewer or the same number of children as others. Education, however, depresses fertility for as long as this relation is observed (from early in the 20th century).

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1. Introduction

Before the onset of fertility decline, individuals of higher social standing have frequently been identified to have more children compared to individuals of lower social standing (Betzig 1986, Razi 1980, Sogner, Randsborg and Fure 1984). With a decline in fertility levels, however, high status has often been found to be associated with relatively low fertility (e.g., Coale and Watkins 1986, Cochrane 1979, Haines 1992, Jejeebhoy 1995), although some studies argue that the fertility-status relation remain positive (Fieder et al. 2005, Hull and Hull 1977, Stys 1957, Wrong 1958).

Italy is an example of a country where the status-fertility relation switched from positive to negative. Livi Bacci (1977) studies three Italian cities from the 15th to the 18th centuries and find a positive relation between status and childbearing outcomes for all of them. For example in Florence in 1427, poor 30-34 year old women had 3.0 children; the middle income group had 3.6, while the richest had 4.9 children. Observations from 20th century Italy, however, show a negative relation between fertility and occupational rank/educational length (FFS 2006, Jones 1982).

Bardet (1983) is a rare study that actually shows how the status-fertility relation between identical groups' switches from positive to negative over time. Bardet studies marital period fertility of four social classes from 1670 to 1789 in Rouen, France. The two lower classes, the *Artisans* and the *Ouvriers*, had about 6 children in 1670, decreased their fertility slightly first from around 1730, ending at around 5 children in 1789. However, the higher classes; the *Notables*, *Boutiquiers* and *Employés*, had more than 7 children in 1670, but substantially decreased their fertility from around 1700 and by 1789 had only around 4 children.

In spite of the considerable academic interest in the status-fertility relation, there exists no study that reviews more than a fraction of the available evidence. In this investigation a dataset several times larger than the ones used so far is collected.[2] The dataset is used to study the impact of fertility variation by status over time and during the demographic transition. I investigate to which extent fertility decline is initiated by elites and later imitated by the rest of the population. I also test whether the status-fertility differences eventually converge when fertility levels reach replacement levels and below.

I conduct separate analyses of fertility by status measures (education, occupation/social class/rank in a social hierarchy, income/wealth) and world region.

[2] Castro and Juarez (1993) present data on the relation between education and fertility based on DHS data in 26 developing countries. Cochrane (1979) analyse the relation between education and fertility, based on 96 samples. Pérusse (1993) presents 11 studies (mainly tribal societies) on various measures of social status and fertility. Jejeebhoy (1995) discusses a total of 134 samples on education and fertility, and provides a meta-analysis of 59 of the samples. The dataset presented in this study consists of 879 samples.

This is done to investigate how the same status measure can affect childbearing differently across periods and socio-economic circumstances. For example, being wealthy in a pre-industrial rural setting can have made it easier to set up a new home and marry at a young age, while in a modern urban industrialized context, wealth could be related to higher consumption aspirations, which ¨may depress fertility. I also study fertility trends for all status measures combined. This is done to investigate how changes to the concept of *status* over time can have very different fertility implications.

I organize the article in the following way: I begin by describing how social status related to fertility in historical settings as evidenced by societal/legal descriptions and DNA analyses. Then I go on to discuss possible causes for why high status groups were likely to reduce their fertility first, including their relatively early mortality decline, better contraceptive knowledge and weaker religious beliefs. The sample selection procedure for generating the status-fertility dataset is then presented. The final part presents the findings, where also the outlook for future childbearing trends by status is discussed.

2. Social status and fertility differences

One important reason why fertility outcomes once correlated with a man's social rank was that status increased the number of sexual partners or wives. The positive association between status level and sexual access to women has been identified for several pre-demographic transition societies, including Celts, German tribes, Macedonians, Persians, Egyptians, African tribes, Mongolians, Chinese and Indians (Betzig 1986, Scheidel 2000). Except for the Greek *polis*, and the roman *republic*, where monogamous marriage contracts was the norm also for society's leaders (although they anyway are likely to have had many out-of-wedlock-offspring), most human societies allowed and expected high ranking men to have more than one wife.

In China, the head of the Ch'i dynasty had sexual access to several thousands of women in his palace (van Gulick 1974), while among the Yoruba in Africa, landowners and warlords had multiple wives, some even hundreds (Lovejoy 1983). Even in hunting and gathering subsistence economies that once were described as un-stratified societies, a positive relation between reproductive success and individual's resources, power and influence has been observed. This includes the !Kung of the Dobe area in Botswana or the Murngim in Arnhem Land, Northern Australia (Berndt and Berndt 1964, Hill 1984, Marshall 1976).

Evidence on the prevalence of certain DNA structures revealing common ancestry may provide important information on the relation between social rank and childbearing outcomes. Zerjal et al. (2003) show that 0.5% of the current world male population

share a certain Y chromosome signature and therefore one male ancestor. This individual, who Zerjal et al. suggest is Genghis Khan, is likely to have fathered a very high number of children in Eurasia around the 12th-13th century. Xue et al. (2005) identify, also through DNA samples, another highly prolific historic male in China, possibly Giocangga, grandfather of the first emperor in the Qing-dynasty that ruled China 1644-1912. Blood drawn from men in northwest Ireland (Moore et al. 2006) reveal that 20% of the population have a joint male ancestor, possibly a 5th century chieftain called Niall of the Nine Hostages (the specific Y chromosome signature is also significantly more common among men with surnames genealogically linked to the last known relative of this chieftain's dynasty). These studies reveal that a few men (regardless of whether they actually were the historical characters suggested), had a very high number of children, which is likely to have occurred in social systems where high social rank granted sexual access to a large number of women.

Male fertility can be positively associated with hierarchy position when access to sexual partners and basic resources relate to status (Ellis 2001, Irons 1979). Boyd and Richerson (1985) argue that all traits of high status model individuals, including the relatively recent phenomenon of small family size, is preferentially imitated by others in the population, irrespective of whether these traits contribute to the models' success. When attaining status is likely to decrease long-term reproductive success, biologists may describe status-seeking as evolutionary "maladaptive" (Dieckmann and Ferrière 2004, Falster and Westoby 2003).

Historical fertility patterns in Europe were strongly influenced by low levels of extramarital childbearing combined with a late marriage age and substantial population shares that never married (Hajnal 1965). As there were social status differences in marital timing and the proportion remaining unmarried, this could provide part of the answer to why lower status groups had relatively low fertility before the onset of fertility decline (Bongaarts and Menken 1983, Knodel 1983, Knodel 1988, Wilson 1984). Knodel (1988), for instance, in a study of German villages 1700-1899, shows that wives of village leaders got married when they were 2.1 years younger than wives of non village-leaders.

3. Fertility limitation among elites

Several factors causing a reduction in fertility affected high status groups before they had a similar impact on the rest of the population. Knowledge and practice of traditional birth control methods is likely to first have been practiced by high status groups who were more exposed to different ideas and knowledge (Cleland 2001). Contraceptive use correlates with education and income also in contemporary societies (Jejeebhoy 1995, Kanazawa 2003). Infanticide may also positively correlate with status, and has been found to be more common among high-caste communities than among the rest of the population in northern India in the 1980s (Sudha and Rajan 1999).

Mortality has in several studies been found to be similar between the social classes before the demographic transition in Europe (Knodel 1983, Livi Bacci 1991, Surault 1979). Gadeyne (2006) writes: "In general, it is accepted that socio-economic mortality differences were rather limited in pre-industrial Europe". However, the decrease in mortality that followed increased hygiene, better nutrition, less strenuous lifestyles and better medical treatment is first likely to have affected the higher social classes. As mortality declined, a general tendency emerged that status relates to life expectancy, which is still evident (Marmot 2004).

If uncertainty is high, childbearing may be perceived as a basic social insurance, as children may support parents when they become frail and dependent on transfers. Effective social security systems that provide support in old age could therefore reduce fertility preferences (Cain 1983). Social security schemes are more likely to first have been utilized by the upper social echelons. For example, evidence from medieval Germany shows that monasteries receiving gifts from wealthier individuals repaid the contributors as they grew old through the provision of old age care and support (Lyon 2006).

The fertility decline occurred as female labour force participation increased, a cultural transition took place with rising material aspirations, individualisation and changes in gender roles – which may particularly have affected fertility of high status groups (Brown and Guinnane 2002, Caldwell 1999, Lesthaeghe and Meekers 1986, Matysiak and Vignoli 2006, Sathar and Kazi 1990). The effect of religion on fertility may also play an important role, as secularisation and liberal interpretations of religion is more common among the more educated (Banu 1992, Sacerdote and Glaeser 2001), and those with weaker religious beliefs tend to have lower fertility (Schellekens and van Poppel 2006, Goujon et al. 2007).

In most pre-fertility transition settings, social mobility was limited, and inherited land and wealth meant children's opportunities were largely predetermined by parents' social rank (Grusky 1994). In contemporary societies, status is to a much larger extent attained through personal achievement rather than parents' social standing. Striving to

for status in modern societies requires time; higher education attainment consuming, finding a job and climbing the career ladder, buying a car and a house, identifying a spouse and attaining financial security can take many years of reproductive life and imply postponed and reduced fertility.

Education is increasingly important to attain or maintain social status and to be competitive in marriage markets characterised by rising education levels and increased educational homogamy (Lutz et al. 2007, Smits, Ultee and Lammers 2000). Education can affect preferences for fertility timing and outcomes, raise female autonomy, increase contraceptive use and raise the opportunity costs of childbearing (Jejeebhoy 1995, Kravdal and Rindfuss 2007, Skirbekk, Kohler and Prskawetz 2004). Jain (1981) and Gustavsson (2006) argue that education can reduce fertility strongly if opportunity costs increase with schooling, which for example could be the case when labour force participation rates correlate with educational levels.

Declining fertility among high status groups can also lead to self-reinforcing effects. Lutz, Skirbekk and Testa (2006) argue that ideational/normative fertility preferences affect family size, and if actual fertility for one generation is lower, the fertility preferences of the next generation will also be lower. Moreover, particularly for upper social echelons, increasing consumption aspirations and wealthier reference groups can imply higher opportunity costs of childbearing and reduced fertility.

The perception that the number of children may be inversely related to their success – that there is a tradeoff between the children's quality and quantity – could decrease fertility preferences among those most concerned with the status attainment of their offspring (Angrist, Lavy and Schlosser 2006, Becker 1991, Black, Devereux and Salvanes 2005). Ryan-Johansson (1987) suggests that the low fertility of European rulers between 1500-1924 was caused the fear that too many children could lead to wealth dilution and a reduction in social status.

Attaining status rather than *maintaining* status can relate to especially low fertility (Baltzell 1953, Røskraft, Wara and Viken 1992, van Bavel 2006). Van Bavel studies an urban Belgian population during the demographic transition and finds that those who reduced their fertility most had the strongest increase in social status.

Also ideational change stemming from concerns about growing human pressure on the environment may influence fertility decisions. A report commissioned by the Dutch government (van de Kaa and van der Windt 1979) concluded: "We recommend the government to aim for an end to natural population growth as fast as possible". Studies arguing that one should decrease population growth in order to contribute to environmental sustainability may have affected fertility preferences particularly among the tertiary educated, as the discussion on the impact of population growth on the environment took place in university environments (Ehrlich 1968, Meadows et al. 1972).

4. Data inclusion criteria

Having explained possible reasons for the status-fertility reversal, we now turn over to the empirical evidence. I construct a dataset in order to investigate the relation between social status and fertility in all societies and periods where samples are available. To be included in this dataset, each sample must have a measure of fertility by social status (education, occupation/social class/rank in a social hierarchy, income/wealth). Data on minimum two social status groups are required for the sample to be included.

Several search procedures were used to identify studies that describe the relation between social status and fertility in quantitative terms. Relevant references from the following literature reviews were included: Castro and Juarez 1993, Cochrane 1979, Jejeebhoy 1995, Jones 1982 and Pérusse 1993. I searched for studies containing the keywords: "education" and "fertility", "status" and fertility", "differential fertility", or "fertility differences" in Popline, Medline, Scopus, JSTOR and scholar.google. The following journals were manually searched: Demography, Population and Development Review, Population Studies, Journal of Biosocial Science, Studies in Family Planning and International Family Planning Perspectives. In addition, descriptive results from all countries included in Demographic and Health Surveys (DHS), Family and Fertility Survey (FFS), Reproductive Health Survey (RHS) and World Value Survey (WVS) were included. Finally, experts were consulted and reference lists in the collected studies were examined in order to identify additional data. Studies published until 2006 were taken into account.

This procedure produces a dataset of 909 samples. I exclude 30 samples where only a coefficient on the fertility effect of education is available. The final data set consists of 879 samples from 129 sources. A list of all the references used in the meta-analysis is found in the appendix, and the data is available online (http:// www.demographic-research.org/volumes/vol18/5/files/StatusFertilityDataset.xls).

Observed correlations between social status and fertility levels are recalculated in a standardised way to produce comparable indicators. I present the information in terms of the relative fertility of the highest status group relative to the lowest status group in each sample, $[\text{Fertility}_{\text{High status}}\text{-Fertility}_{\text{Low Status}}]/\ \text{Fertility}_{\text{Low Status}}$ (see Figures 1-5 and Tables 1-3). I also present the total number of samples, *k*, and the number of positive samples, *l* in Tables 1-3 (joint and by region/status measure).

Several different measures of fertility are included in the database. Children Ever Born represents 782 of the samples, followed by Total Fertility Rate or Total Marital Fertility Rate (81 samples), births within a given duration (7 samples), Birth Rates (5 samples) and Live births (4 samples). 18 samples are from before year 1750, 37 samples from 1750 to 1900, 22 from the years 1901-1924, 32 from 1925-1949, 127 from 1950-1974, 192 from the 1975-1989 and 451 samples from 1990-2006. The

samples from before 1800 are predominantly European, while more recent samples come from all world regions.

If "Children Ever Born" data are available for different age groups, only those aged 40 and above are included. For the few studies where fertility data is reported for every 1- or 5-year period in a period spanning more than 20 years, fertility differences for individuals born every 20 years apart are reported. If the same sample using the same status measure is considered in more than one study, only one sample is used.

Status in our dataset is predominantly own adult status (769 samples), followed by husband's status (102 samples) and in a few samples parents' status (13 samples). Hence, the status measure usually refers to adult status and not to status given by birth. The most common status measure is education (528 samples), income/wealth (243 samples) followed by occupation/social class (108 samples).

I divide the sample in two world regions: Europe and North America (where the fertility reduction, and therefore possibly changes in the status-fertility relation, took place at an earlier period) and Asia, Africa, Latin-America and the Middle-East. There are 497 samples from North America and Europe and 382 samples from Asia, Africa, Latin-America and the Middle-East.

Number of status categories differed from 2 to 14 categories; 619 samples had 2-3 categories, 208 had 4-5 categories, 38 had 6-7 categories and only 19 samples had 8 or more categories. I report the highest and lowest status category for all samples. For the studies with 3 or more categories, I also report the middle category, and if there is an even number of categories, e.g. 4 or 8 categories, I define the middle group as upper middle, e.g. 3rd or 5th categories, respectively.

Sample size is not available for 164 of the 879 samples. For where sample size information is available, 335 of the samples are below 500 individuals (71 of which are between 29 and 100), 73 samples consist of 501-2 000 individuals, 237 samples range from 2 001-10 000 individuals and 70 samples have more than 10 000 individuals. Until year 1800 sample size ranges from 101 to 10 923 individuals, and sources tend to be genealogies, parish registers, tax records and other official registers. Samples from recent years are frequently compiled from surveys and population censuses.

5. Findings and conclusion

Figure 1 shows the relation between fertility and all status measures for all countries over time. The vertical axis shows the relative percentage fertility gain for high status group relative to low status groups, $[Fertility_{High\ status}\text{-}Fertility_{Low\ Status}]/\ Fertility_{Low\ Status}$, which means that a value of "50" implies that the high status groups had 50% higher fertility than the low status group.

The fitted quadratic curve in Figure 1 reveals a shift from a positive to a negative status-fertility relation from the 13th to the 21st century. The negative effects in recent periods are, however, of considerably smaller magnitude than the positive effects before the fertility decline. Hence I find support for Haines' (1992, p. 224) argument that: "fertility decline was 'led' by the middle and upper classes. Social elites apparently did act as leaders in modifying this most basic of activities – human reproduction. The evidence can therefore be said to support a "leader-follower" model of fertility change (Bongaarts 2003, Cochrane 1979, Jejeebhoy 1995)."

Figure 1: Percentage fertility difference, high relative to low status individuals by period. All countries. All Measures. R^2 (adj.) for the fitted curve=0.09

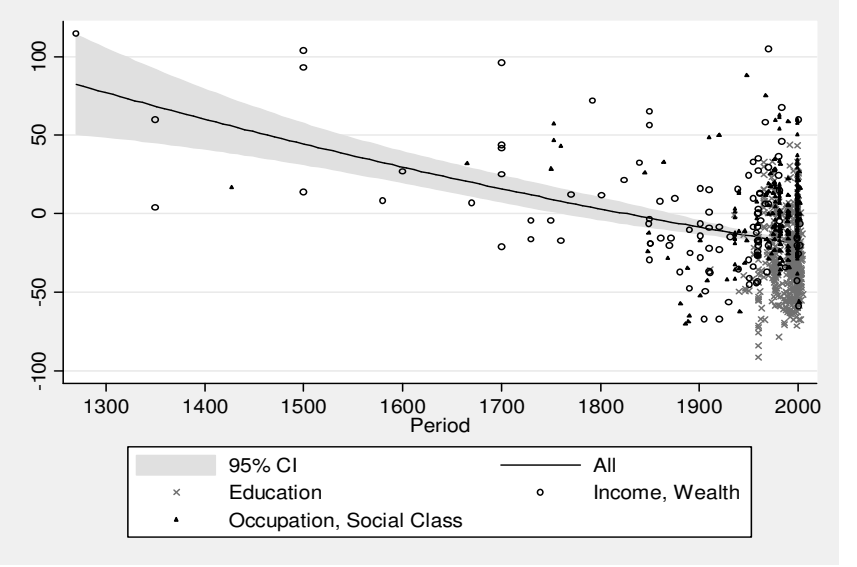
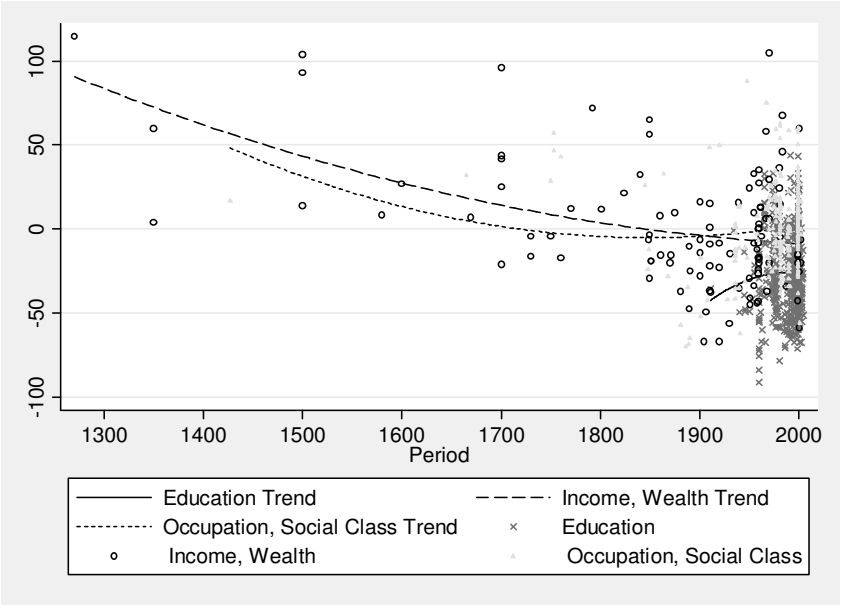


Figure 2 shows the separate trends describing how different status measures (occupation/social class, income/wealth and education) relate to fertility from 1270-2006. Over this period, those with high occupation/social class switch from having more children to have slightly fewer children than those with low status. High income/wealth switches from having a positive to a neutral fertility effect, while the fertility effect of education is negative for as long as this relation has been measured[3]. The current negative relation between overall status and fertility shown in Figure 1 is due to the fact that education is the most frequent status measure, and that income/wealth and occupation/social class have a neutral or slight negative fertility effect.

Figure 2: Percentage difference in fertility for high relative to low status individuals by Period. All countries. By Status Measure. R^2 (adj.) for the Income Trend=0.01. R^2 (adj.) for the Occupation, Social Class Trend=0.19. R^2 (adj.) for the Education Trend=0.00



[3] Samples describing how education relates to fertility first appear early in the 20th century. From around 1950 education is the most common measure of fertility.

Fertility differentials over time for Asia, Africa, Latin-America and the Middle East is shown in Figure 3, while data for Europe and North-America is shown in Figure 4. Fertility differentials by status measure, period and world region are presented in detail in Table 1. For the whole world before 1750 a positive fertility-status relation is found in most (15 out of 18) samples, while from 1750-1900 less than half (15 out of 37) of the samples are positive, and in 1900-2006 less than a quarter (201 of 824 samples) are positive. For Europe and North America, high status groups have more children until 1750, but less from 1750 and thereafter, and for Asia, Africa, Latin-America and the Middle East, a negative effect is found only from the 20th century, suggesting a much later fertility-status reversal (most likely due to the later fertility transition in these world regions). An important fact to be kept in mind while interpreting the regional findings is that Asia, Africa, Latin-America and the Middle East may be more culturally and economically heterogeneous as compared to Europe and North America.

Figure 3: Percentage difference in fertility for high relative to low status individuals by period. Asia, Africa, Latin-America and the Middle-East, All Status Measures. All periods. R2 (adj.) for the fitted curve=0.11

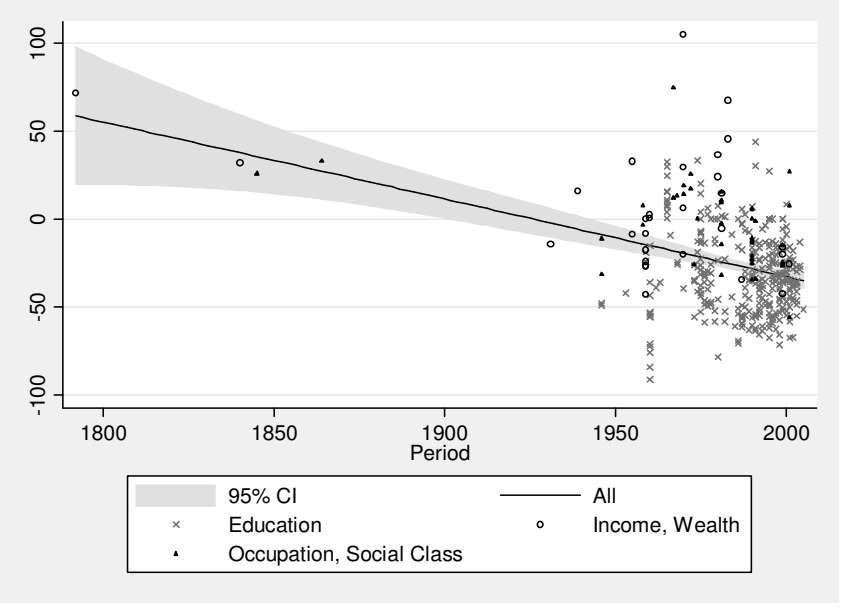


Figure 4: Percentage difference in fertility for high relative to low status individuals by period. Europe and North America. All Status Measures. R^2 (adj.) for the fitted curve=0.10

Table 1: Status and fertility for highest relative to lowest status group across world regions over time

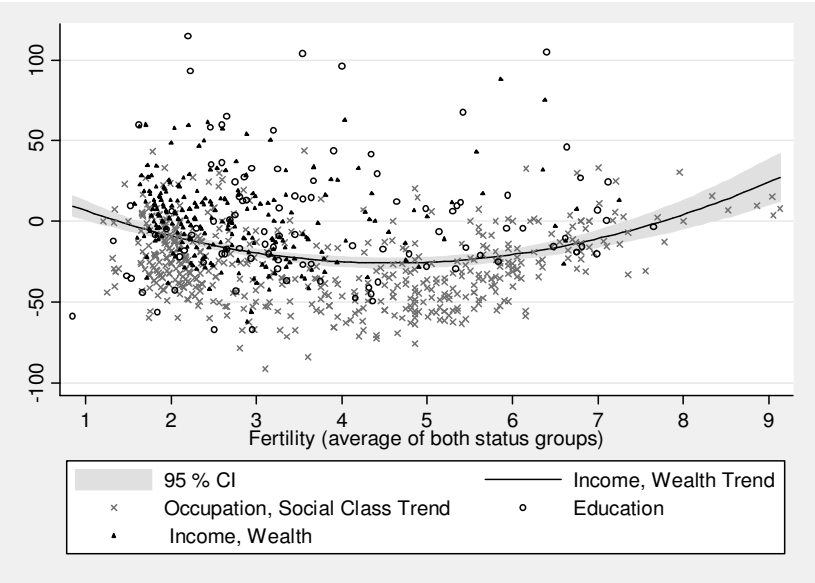
			Before 1750	1750-1899	1900-1924	1925-1949	1950-1974	1975-1989	1990-2006	All periods
All Status groups	All countries	*d*	**35.8**	**-2.9**	**-15.1**	**-1.8**	**-14.4**	**-15.4**	**-19.1**	-15.7
		k	18	37	22	32	127	192	451	879
		l	15	15	6	6	41	51	97	231
	Europe and North America	*d*	**35.8**	**-8.2**	**-15.1**	**-17.0**	**-15.5**	**-5.2**	**-9.0**	-8.1
		k	18	33	22	26	58	93	248	497
		l	15	11	6	5	14	33	87	171
	Asia, Africa, Middle East, Latin-America	*d*		**40.7**		**-22.9**	**-13.4**	**-25.0**	**-31.3**	-25.6
		k		4		6	69	99	203	382
		l		4		1	27	18	10	60
Income/wealth	All countries	*d*	**24.3**	**-8.9**	**6.1**	**-13.2**	**2.4**	**1.9**	**2.7**	0.5
		k	2	14	6	22	19	73	107	243
		l	2	6	3	5	10	34	62	122
	Europe and North America	*d*	**24.3**	**-45.0**	**6.1**	**-12.4**	**-13.9**	**2.3**	**6.7**	1.3
		k	2	12	6	20	8	67	87	202
		l	2	4	3	5	1	31	57	103
	Asia, Africa, Middle East, Latin-America	*d*		**29.5**		**-21.0**	**14.2**	**-2.1**	**-14.9**	-3.4
		k		2		2	11	6	20	41
		l		2			9	3	5	19
Occupation/ social class	All countries	*d*	**49.1**	**32.0**	**-22.3**	**-22.4**	**-3.3**	**21.4**	**-15.9**	0.8
		k	16	23	15	4	34	7	9	108
		l	13	9	3	1	14	5	1	46
	Europe and North America	*d*	**30.9**	**-4.2**	**-22.3**	**-45.6**	**-6.0**		**-7.9**	-0.9
		k	16	21	15	2	19		5	78
		l	13	7	3		8		1	32
	Asia, Africa, Middle East, Latin-America	*d*		**51.9**		**0.7**	**0.2**	**21.4**	**-25.9**	5.1
		k		2		2	15	7	4	30
		l		2		1	6	5		14
Education	All countries	*d*			**-35.7**	**-33.3**	**-23.8**	**-29.0**	**-26.1**	-26.5
		k			1	6	74	112	335	528
		l			0	0	17	12	34	63
	Europe and North America	*d*			**-35.7**	**-25.8**	**-21.8**	**-24.6**	**-17.8**	-19.4
		k			1	4	31	25	156	217
		l					5	2	29	36
	Asia, Africa, Middle East, Latin-America	*d*				**-48.4**	**-25.2**	**-30.4**	**-33.3**	-31.5
		k				2	43	87	179	311
		l					12	10	5	27

Note: The variable *d* is the relative fertility of the high status group, [FertilityHigh status-FertilityLow Status]/ FertilityLow Status, *k* indicates the number of samples, and *l* refers to the number of samples where d>0

Education becomes a common status indicator early in the 20th century and bypasses income/wealth in the 1950-1974 period as the most common measure of status, as shown in Table 1. The relation between education and average fertility is always negative, and depresses fertility by 26.5% on average for all periods. Separate analysis of men and women indicate that the fertility depressing effect of schooling is considerably stronger for women than for men for all periods. For example, in the period 1990-2006 for the whole world, highly educated women have 29.9% fewer children than women with low education, while highly educated men have 11.6% fewer children than low educated women. The stronger fertility impact of female education is found both in Europe and North America as well as Asia, Africa, Middle East and Latin America.

Figure 5 shows how status differences in fertility differ when average fertility is at the horizontal axis (all periods and all countries). Presenting the findings according to average fertility reveals how status differences relate to the fertility decline – as the demographic transition was initiated at different periods in different countries. Differences in fertility levels are narrow at the highest average fertility levels, but as fertility levels decline, elites are the first to reduce their fertility, producing a negative status-fertility relation. When fertility is close to replacement levels, the fertility differences between high and low status groups are again small (although variation is high and education is still negatively related to fertility).

Figure 5: Percentage difference in fertility for high relative to low status individuals by average fertility of status groups. All countries. All Status Measures. R^2 (adj.) for the fitted curve=0.07



Figures 1-5 reveal large variation in the status-fertility relation at each period and fertility level – also when disaggregating by world region or status-measure. The quadratic functions only explain a small part of the variation; R-squared (adjusted) values range from 0.00 to 0.19. However, the current study focuses on presenting new data describing broad fertility-status trends over time and demographic development, and not variation between societies. Among the factors that are likely to have a strong effect on childbearing differentials in different societies are social inequalities in female labour force participation, mortality, childbearing norms and contraceptive practice. Further research on this topic is needed.

Inferring from the evidence on declining fertility differentials, the question arises as of whether status differentials will converge. Of particular interest is to which extent education will continue to negatively affect fertility in the coming years. For Norwegians born 1935-58, cohort fertility for women with advanced tertiary degrees fell from 2.1 to 1.9 children while for those with primary school, it fell from 2.5 to 2.1, narrowing the education-fertility gap from 0.4 to 0.2 children. However, during the last

few recent decades in Belgium, Sweden, Germany and Japan, the fertility gap between high and low educated has not converged (Björklund 2006, Retherford et al. 2004). Moreover, in the US 1960-1990 the gap between college and non-college educated women widened from 0.3 to 0.5 children as TFR fell from 3.7 to 2.1 children (Statistical abstract of the United States 2001, Yang and Morgan 2003). On the basis of data from 57 less developed countries, Bongaarts and Menken (1983) suggests that even where fertility approaches replacement levels, the tertiary educated will continue to have low fertility as the more educated still prefer smaller families.

Jejeebhoy (1995) and Essock-Vitale (1984) put forward evidence suggesting that the status-fertility relation need not be linear, as increased status may first increase fertility and thereafter decrease it. Moreover, as the "high" and the "low" can in different samples represent different proportions of the population, which could relate to different degrees of selection, I also consider the middle status group. I therefore look at the fertility differences between those with low and middle status (Table 2) and between those with middle and high status (Table 3). These tables show that in general increasing status from low to medium status and from medium to high status implies higher fertility until the mid 18th century, and lower fertility for later periods. From 1750-2006, occupation/social class tend to be negatively related to fertility (positive in only 12 out of 49 samples from both low to middle and middle to high status) while the income/wealth-fertility relation is more ambiguous (94 of 226 samples from low to middle and 108 of 226 samples from middle to high status are positive). Fertility drops in most cases from lowest to middle education levels (only 104 out of 506 samples have a positive relation) and the negative relation is even more common when one compares middle education with highest education levels (where 64 out of 506 samples have a positive relation).

Table 2: Status and fertility for middle relative to lowest status group across world regions over time

			Before 1750	1750-1899	1900-1924	1925-1949	1950-1974	1975-1989	1990-2006	All periods
All Status groups	All countries	d	**20.3**	**-6.3**	**-3.5**	**-8.3**	**-5.8**	**-5.1**	**-7.8**	-6.5
		k	10	21	17	30	91	176	446	791
		l	7	5	6	9	29	63	112	231
Income/wealth	All countries	d	**-14.7**	**-12.4**	**10.7**	**-2.8**	**-2.6**	**-2.0**	**2.2**	-0.4
		k	1	9	4	20	15	71	107	227
		l		3	3	8	5	33	56	108
Occupation/ social class	All countries	d	**24.3**	**-1.8**	**-7.1**	**-10.6**	**4.3**	**1.2**	**-12.6**	0.0
		k	9	12	12	4	10	2	9	58
		l	7	2	3	1	4	1	1	19
Education	All countries	d			**-17.1**	**-25.1**	**-8.0**	**-7.4**	**-10.9**	-10.0
		k			1	6	66	103	330	506
		l					20	29	55	104

Note: The variable *d* is the relative fertility of the high status group, [$\text{Fertility}_{\text{Middle status}}$-$\text{Fertility}_{\text{Low Status}}$]/ $\text{Fertility}_{\text{Low Status}}$, *k* indicates the number of samples, and *l* refers to the number of samples where d>0

Table 3: Fertility for high status group relative to middle status group across world regions over time

			Before 1750	1750-1899	1900-1924	1925-1949	1950-1974	1975-1989	1990-2006	All periods
All Status groups	All countries	d	**14.2**	**-12.5**	**-8.3**	**-11.8**	**-12.9**	**-13.6**	**-12.6**	-12.2
		k	10	21	17	30	91	176	446	791
		l	8	7	5	6	21	42	89	178
Income/wealth	All countries	d	**36.8**	**-22.8**	**11.9**	**-11.2**	**-3.0**	**3.7**	**1.3**	0.1
		k	1	9	4	20	15	71	107	227
		l	1	2	3	3	5	35	46	95
Occupation/ social class	All countries	d	**11.7**	**-4.7**	**-13.9**	**-15.7**	**-12.0**	**-20.1**	**-5.6**	-6.7
		k	9	12	12	4	10	2	9	58
		l	7	5	2	1	1		3	19
Education	All countries	d			**-22.4**	**-11.2**	**-15.3**	**-25.3**	**-17.3**	-18.6
		k			1	6	66	103	330	506
		l				2	15	7	40	64

Note: The variable *d* is the relative fertility of the high status group, [$\text{Fertility}_{\text{High status}}$-$\text{Fertility}_{\text{Middle Status}}$]/ $\text{Fertility}_{\text{Middle Status}}$, *k* indicates the number of samples, and *l* refers to the number of samples where d>0

In sum, I find that before the fertility decline high status was associated with relatively high fertility, but thereafter had a neutral or negative fertility effect. The switch towards a more negative status-fertility relation is found to be more pronounced for Asia, Africa, Latin-America and the Middle-East than for Europe and North America. Contemporary fertility differences by status are, however, much smaller than historical ones as there has been a partial convergence in fertility levels. Individuals with high occupation/social class have slightly lower fertility, while those with high income/wealth have about the same fertility as those less well off. Education has become an increasingly important determinant of status during the 20th century. Since the education-fertility relation is more negative, this implies that the overall status-fertility relation is more negative.

6. Acknowledgements

I appreciate support and suggestions from Bilal Barakat, Francesco Billari, Anders Björklund, Marilyn Brandl, Daniel Chen, Ulf Dieckmann, Dalkhat Ediev, Daniel Falster, James Heckman, Aviott John, Hans Peter Kohler, Ron Lesthaeghe, Nico Keilman, Øystein Kravdal, Wolfgang Lutz, Laura McNamara, Etienne van de Walle, Frans van Poppel, Walter Scheidel, Marcin Stonawski, Erich Striessing, Uwe Sunde, Chris Wilson, Maria Winkler-Dworak, as well as participants in Social Science History Association and the European Association for Population Studies conferences. Part of this work was done while the author stayed at the Centre for Advanced Study. The support from the centre is greatly appreciated.

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