

MARRIAGE STILL MATTERS

*Demonstrating the Link Between
Marriage and Fertility in the 21st Century*

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Executive Summary

Does marriage matter for fertility? Around the world, a growing share of births are to unmarried mothers. Public opinion polls show fewer and fewer people believe that parents need to be married. Many commentators assume that the historic link between marriage and childbearing is now broken. Some go further and claim that policymakers may be wise to ignore marital status as an important element of the fertility process. In related arguments, low fertility in East Asia, attributed to strong stigma against unmarried motherhood, is thought to be remedied by destigmatizing nonmarital childbearing and deprioritizing marriage.

This report challenges these ideas. Marriage still matters for fertility; indeed, marital behaviors remain closely tied to fertility behaviors, so much so that it is virtually impossible to promote marriage or fertility alone without also influencing the other. We demonstrate the consistent importance of marriage for fertility using three methods:

- 1.** First, across several cohorts of U.S. women, we show how the odds of marriage increase upon childbirth, and how the odds of childbirth increase upon marriage. That is, getting married still boosts childbearing today as it did in the past (and having a child boosts the odds of marriage).
- 2.** Next, we explore the observed empirical relationship between changes in marriage and changes in fertility rates in OECD countries and find that later marriage tends to mean lower fertility. Nonmarital fertility does not fully compensate for lost marital births.
- 3.** Finally, with a detailed quantitative analysis of fertility in select Asian and other countries, this report finds that common stories about Asian fertility are incorrect. While nonmarital fertility in Asia is low, marital fertility in Asia is *also* unusually low, suggesting that factors broader than stigma against nonmarital fertility must be driving low fertility.

While this report demonstrates that marriage and fertility are closely linked, whether the link is causal is not always clear. As shown especially in the NSFG data, while marriage does boost fertility, fertility also tends to lead to marriage. Because marriage and childbearing are linked in individual minds and plans, desire for children can motivate marriage, even as desire for marriage can motivate childbearing. But causality running both directions should not be construed to mean that the existence of either causal pathway is in doubt: it is clearly the case that changes to fertility or marriage behavior cause changes in the other behavior. The causal links between marriage and fertility are complex and bidirectional but undeniably important. As marriage is relinquished or postponed, so, too, is childbearing.

About the Data

This report covers a wide range of topics and geographic regions and as a result uses a wide range of data. The major data sources include the following:

National Survey of Family Growth (NSFG) and precursor surveys. From 1955 to 2019, a series of surveys have been conducted of women of reproductive age, asking a wide range of questions about fertility and family. Surveys since the 1970s have been labeled the “National Survey of Family Growth,” whereas older surveys include survey programs with other labels, including the “Growth of American Families” surveys. All surveys are included in the Integrated Fertility Survey Series.

We convert data on timing of first marriage and first birth into a discrete-time event-history data format by individual years, preserving data on relevant demographic covariates for use in robustness tests and sensitivity analysis, as well as a limited set of time-varying covariates (like age and decade) for use in main model specifications. This results in over 90,000 women’s fertility and marital histories being used in the model design, with births and marriages analyzed occurring between 1930 and 2019.

World Values Surveys/European Values Surveys (WVS/EVS). These surveys are semi-regular surveys of attitudes and values conducted across a large number of countries around the world. In total, these surveys include over 219,000 women of reproductive age from 115 countries with surveys from 1981 to 2020. WVS/EVS surveys have individually modest sample sizes (from about 300 respondents at a minimum for small countries to over 5,000 in a few cases), but together represent an enormous pool of data from around the globe. They are used in this study both to broadly estimate some basic demographic estimators across countries, as well as to estimate what social and demographic factors may correlate with marriage. All WVS/EVS uses involve the microdata from these surveys, not aggregated summaries.

Organisation for Economic Cooperation and Development (OECD) Family Database. The OECD Family Database is a collection of statistics related to family collected by the OECD from their member countries. These aggregated, country-and-year-specific indicators track basic features of family and social life, such as marriage age, and thus can be used for country-level panel models of the sorts used in the panel-model with fixed effects used in this report.

World Bank World Development Indicators. While the OECD Family Database provides extensive data on a small set of countries for social and family life, the World Bank collects similar country-and-year-specific indicators around the world for a range of economic, developmental, and social indicators. Thus, for example, World Bank indicators related to life expectancy and female share of tertiary enrollment are used in this report as control variables for the multi-country panel model.

National Censuses. In several cases, especially in estimating marital and nonmarital fertility rates for various countries, data from national censuses of various countries are used. Wherever this is the case, the data from those censuses have been queried from IPUMS International using standard weights.

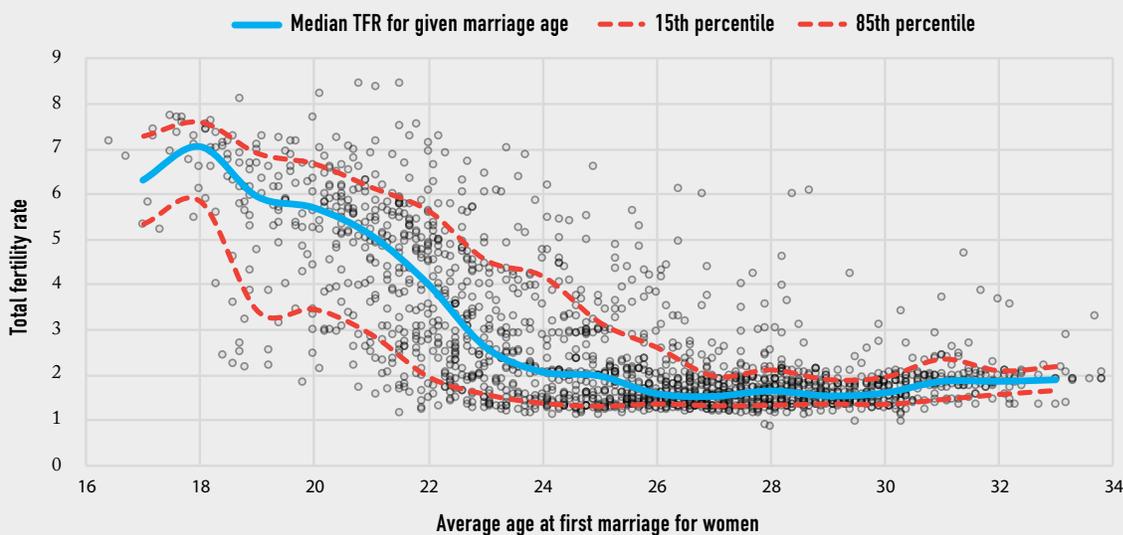
National Vital Statistics Offices. Likewise, in the estimation of fertility rates by marital status, national vital statistics data from statistical office websites are used wherever available.

Introduction: Marriage and Fertility

The strong link between marriage and fertility has long been taken for granted by demographers. In fact, age at marriage has historically been seen as a crucial determinant—perhaps even *the* crucial determinant—of birth rates in low-income societies without widespread access to contraception.¹ Despite lacking modern birth control, many historic societies saw fertility rates as low as 3 or 4 children per woman (and sometimes even lower) due to other strategies for controlling reproduction, including primitive methods of abortion, extended periods of breastfeeding, and especially delayed marriage.² Thus, the importance of marriage patterns for driving overall societal fertility rates is undisputed in at least some contexts.

This extraordinary importance of marriage for low-income societies with little access to contraception can be seen in the left half of Figure 1.³ Low-income countries predominate the left half of the figure because women typically marry earlier in those countries.

Figure 1. Marriage Age vs. Total Fertility Rate in 229 Countries



Source: Our World in Data. Marriage: United Nations, Department of Economic and Social Affairs, Population Division (2019). World Marriage Data 2019 (POP/DB/Marr/Rev2019); OECD Social Policies and Data. Fertility: Gapminder and UN World Population Prospects 2019. IFS/Wheatley

¹ Bongaarts, J. "The fertility-inhibiting effects of the intermediate fertility variables." *Studies in Family Planning* 13 (1982): 179-189; Coale, A.J., Trussell, T.J. "Model fertility schedules: Variations in the age structure of childbearing in human populations." *Population Index* 40, no. 2 (1974): 185-258.

² Ibid., Bongaarts, (1982); Spoorenberg, T. "Reconstructing historical fertility change in Mongolia: Impressive fertility rise before continued fertility decline." *Demographic Research* 33 (2015): 841-870; Kok, J. "The Thombo Treasure: Colonial population administration as source for the historical demography of early Modern Sri Lanka." *Australian Economic History Review* 60, no. 1(2020): 105-121; Blanc, G. "Demographic change and development from crowdsourced genealogies in early modern Europe." *Unpublished working paper draft, Brown University*, 2022; Hu, S. "A micro-demographic analysis of human fertility from Chinese genealogies, 1368-1911." *Unpublished doctoral thesis research, London School of Economics*, 2020.

³ This figure uses all data collected by Our World in Data on the average age that women married across 229 countries and many years between 1970 and 2017, for a total of over 1,900 data points, and compares those marriage ages to the society's contemporaneous total fertility rate (TFR), or the typical number of children per woman likely to be born in that society.

As the average age at marriage increases from around 16 to 24, moving right on the graph, the average TFR in a country tends to decline, moving down on the graph, summarized by the blue line. There is little dispute among demographers about causality in this case: when contraception is not widely used and stigma against nonmarital fertility is high, delayed marriage really does *cause* smaller families. But beyond age 24, the relationship is much less clear. In some countries, fertility fell as marriage age rose into the late-20s, but in others, no decline is evident.

As a result, in higher-income societies, the link between marriage and fertility is more debated. Whereas in most historic societies, marriage was a precondition for childbearing, today in most high-income countries, considerable shares of births are to unmarried mothers.⁴ This has led many scholars to suppose that the historical role of marriage in gatekeeping fertility is broken, at least in Western countries. Both academic research⁵ and recent public opinion polls from Gallup have identified the declining popularity of marriage.⁶ Indeed, those Gallup polls explicitly show a growing share of Americans saying that the parents of a child need not get married, directly demonstrating the supposed breakdown between marriage and childbearing.

Conventional demographic models historically assumed that fertility was a function of marriage, but the rise of nonmarital fertility left those assumptions in a precarious position.⁷ Today, a view held by many demographers is summarized well by biostatistician Reginald Smith:

*[T]he dilemma facing modern societies [is]: between a relatively high marriage age, low nonmarital birth ratios, and high fertility, they can only accommodate two in combination.*⁸

In other words, in high-income countries with delayed marriage, the only way to achieve high fertility is through numerous births to unmarried women. This has important political implications, since “pronatalism,” or a desire for higher fertility, is often associated with political conservatism (perhaps most famously in Hungary), whereas political conservatism also tends to be associated with concern about single motherhood. Thus, in the currently dominant theory, political conservatives are in a bind: either give up on emphasizing married parenthood or give up on having sustainable fertility rates.

The empirical evidence for this theoretical relationship can at first seem strong. Comparing only industrialized countries in Europe in 2005, the average marriage age in Poland (25), Lithuania (25), and Bulgaria (26) was fairly young, despite very low fertility rates below 1.4 children per woman. Meanwhile, marriage occurred later in Iceland (29), New Zealand (28), France (29), Ireland (30), Norway (30), Denmark (31), Finland (30), and Sweden (32), and yet they all had fertility rates above 1.75, and some near two. In particular, the Nordic countries have very late marriages, very high shares of births to unmarried mothers, and some of the highest fertility rates among high-

⁴ Lesthaeghe, R. “The second demographic transition, 1986–2020: sub-replacement fertility and rising cohabitation—a global update.” *Genus* 76, no. 10 (2020).

⁵ Kiernan, K. “The rise of cohabitation and childbearing outside marriage in Western Europe.” *International Journal of Law Policy and the Family* 15 (2001): 1–21; Kiernan, K. “Redrawing the boundaries of marriage.” *Journal of Marriage and Family* 66 (2004): 980–987.

⁶ Jones, J. “Is marriage becoming irrelevant?” *Gallup Politics*, Dec. 28, 2020.

⁷ Coale, A.J., Trussell, T.J. “Model fertility schedules: Variations in the age structure of childbearing in human populations.” *Population Index* 40, no. 2 (1974): 185–258; Smith, R. D. “Marital fertility patterns and nonmarital birth ratios: an integrated approach.” *Genus* 75, no. 9 (2019).

⁸ *Ibid.*, Smith (2019).

income countries, which all seems to suggest that countries could achieve sustainable fertility rates alongside delayed marriage if they just normalized single motherhood.

However, this cross-sectional evidence is not as strong as it may initially seem. Most of the countries with low fertility alongside young marriages are formerly Soviet countries where the crisis years in the 1990s seriously destabilized both fertility and marriage patterns. The circumstances of the fall of Communism probably do not directly translate to other countries.

On the other hand, Nordic countries with high fertility and late marriage are also unique: they have unusually egalitarian gender norms, generous welfare states, and high rates of long-term stable cohabitation. Academic research has found that cohabiting partners in the Nordic countries are far more stable than those in the U.S. or United Kingdom.⁹ Unmarried Nordic cohabiters have unions nearly as stable as many American marriages, and so the comparison to Nordic nonmarital fertility is dubious. The Nordic countries demonstrate that fertility *might* be separable from “legal marriage,” but it isn’t separable from “committed, long-term unions,” which in most countries means marriage. And indeed, one recent high-quality study of a large sample of almost the entire population of Finland¹⁰ finds that long-term stable partnerships strongly predict higher fertility.

In sum, while it might be possible that in some extremely unusual and impossible-to-replicate circumstances, the marriage-fertility linkage can be temporarily suspended, reasoning from these very narrow cases to the whole world is unjustified. The rest of the world is not Poland in 1995, nor Sweden in 2005.

Finally, the debate about marriage has particularly important implications for east Asian countries where marriage is widespread but very late, and where overall fertility is low. Numerous studies have argued that low fertility in Asia is primarily due to low rates of single motherhood, and *not* because married couples have small families.¹¹

Why do unmarried women in Asia have fewer children? Various factors may be important, but one commonly identified reason is the stigma against single motherhood arising from Confucianism.¹² In this account, values related to Confucianism cause unmarried Asian women to avoid single motherhood, and thus Asian fertility falls to extremely low levels. The implication is that, were Asian countries to abandon these traditional values and provide more support for single motherhood, fertility rates would rise. This argument has great public force and has been prominently advanced in recent debates about family policy in China, Korea, Japan, and elsewhere.¹³

Nonmarital childbearing, fertility rates, and marriage ages are inextricably linked. But while a mathematical model suggests one factor may be able to compensate for another, reality may not be so forgiving. While *in theory* high rates

⁹ Musick, K., and Micheltore, K. “Cross-national comparisons of union stability in cohabiting and married families with children.” *Demography* 55, no. 4 (2018): 1389-1421.

¹⁰ Andersson, Linus, et al. “A matter of time: Bateman’s principles and mating success as count and duration in contemporary Finland.” *SocArXiv*, 8 June 2022.

¹¹ Caldwell, J.C., and Caldwell, B.K. “The causes of the Asian fertility decline: Macro and micro approaches.” *Asian Population Studies* 1, no. 1 (2005): 31-46; Cheng, Y.A. “Ultra-low fertility in East Asia: Confucianism and its discontents.” *Vienna Yearbook of Population Research* 18 (2020): 83-120.

¹² Ibid., Cheng (2020). Myong, S., Park, J.J., Yi, J. “Social norms and fertility.” *Journal of the European Economic Association* 19, no. 5 (2021): 2429-2466.

¹³ Minzer, C. “China’s doomed fight against demographic decline.” *Foreign Affairs*, May 3, 2022.

of single motherhood could compensate for low rates of marriage, is this what happens in reality? Is Swedish fertility high because of numerous births among unmarried women? Are Korean births low because of Confucian stigma against single motherhood? Are there actually any societies where marital fertility rates are *low*, but nonmarital fertility is high enough to compensate? While it is mathematically possible that a country could have very late marriage but still high fertility due to a lot of births to unmarried mothers, is this something that happens in the real world? These are the questions with which this report is concerned.

We explore the linkage between marriage and fertility using three methods:

- 1.** A comprehensive analysis of marriage and fertility patterns across many survey waves of the U.S. National Survey of Family Growth (NSFG), which shows that even in recent years in a society with high nonmarital childbearing, marriage and childbearing remain closely linked.
- 2.** A comparison of birth rates and marriage behaviors across many countries over a long period of time that clearly illustrates that changes in marriage and fertility are tightly correlated, even in high-income European countries with high rates of nonmarital childbearing.
- 3.** A careful decomposition of fertility in Asia, which demonstrates that fertility among married couples there is very low, so that even boosting nonmarital fertility rates to the level of married couples would not stave off fertility decline.

No Ring, No Baby? Marriage and Childbearing in the United States

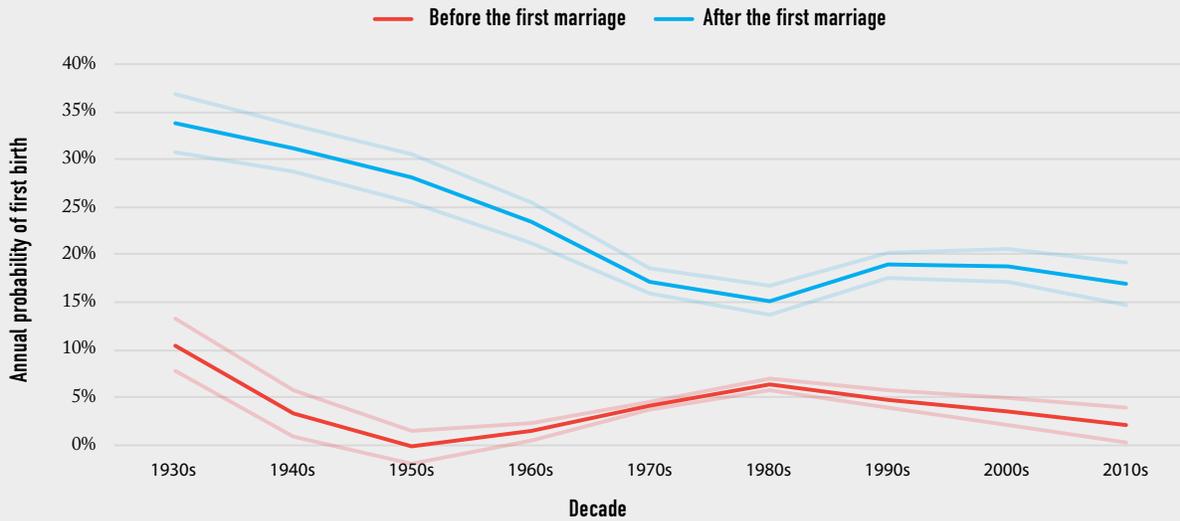
The simplest way to investigate how marriage and fertility are linked is to collect a large dataset of marriages and births and determine if marriage predicts births. If women tend to have higher fertility after getting married, then that would suggest that, at the micro-level at least, the marriage-fertility link remains important. This is exactly the approach taken here.¹⁴ By using tens of thousands of women's fertility histories across nearly a century of social change, this approach can estimate if the linkage between marriage and fertility has changed over time, using an event-history framework.¹⁵ This data is used to ask two simple questions: (1) Does the likelihood that women have their first child increase after they get married? and (2) Does the likelihood that women enter their first marriage increase after they have their first child?

Figure 2 presents the results for the effect of marriage on births, providing the estimated likelihood that a woman without any previous births and who either has or has not been previously married, experiences her first birth, in a given year.

¹⁴ Specifically, this report uses 15 waves of the National Survey of Family Growth (NSFG) and its precursor surveys, conducted between 1955 and 2019. The NSFG is a survey covering marriage and fertility histories of U.S. women.

¹⁵ Essentially, a model is used to estimate how a given woman's likelihood of having a first birth changes when she gets married for the first time. This kind of model is called a model with individual fixed effects.

Figure 2. Probability of First Birth Before or After First Marriage in the U.S.



Source: Marginal effects of marital status interacted with decade using NSFG 1955–2019 with standard weights, individual fixed effects with time-varying categorical age.

IFS/Wheatley

Across eight decades of American demographic history, the likelihood of having a first birth always rises dramatically after marriage. The effect of marriage was most pronounced in the 1950s, when births to unmarried women who would eventually marry were so rare that the model results suggest they are essentially undetectable, even as childless women who got married for the first time had about a 30% chance of having a child within a year. By the 1980s, the marriage premium shrank considerably: many more women had children before getting married, and married women were not as quick to have children. Nonetheless, even in the 1980s, marriage approximately tripled the likelihood that women with similar ages and family histories would have a first birth. Since the 1980s, marital birth rates have been fairly stable, even as premarital birth rates have fallen a bit, so marriage has become more predictive of fertility, not less. Far from a decoupling of marriage and childbearing, their linkage is intensifying.

Contrary to popular narratives about the declining relevance of marriage, it remains highly predictive of entrance into parenthood, and—in fact—marriage is becoming a bigger driver of fertility over time. For American women, even though about 40% of births occur to unmarried mothers, getting married is still a key step in forming a family. The effects shown here are similar under a variety of model specifications and with different control variables, and they are consistent with results found in prior studies with similar methodology.¹⁶

Far from a decoupling of marriage and childbearing, their linkage is intensifying.

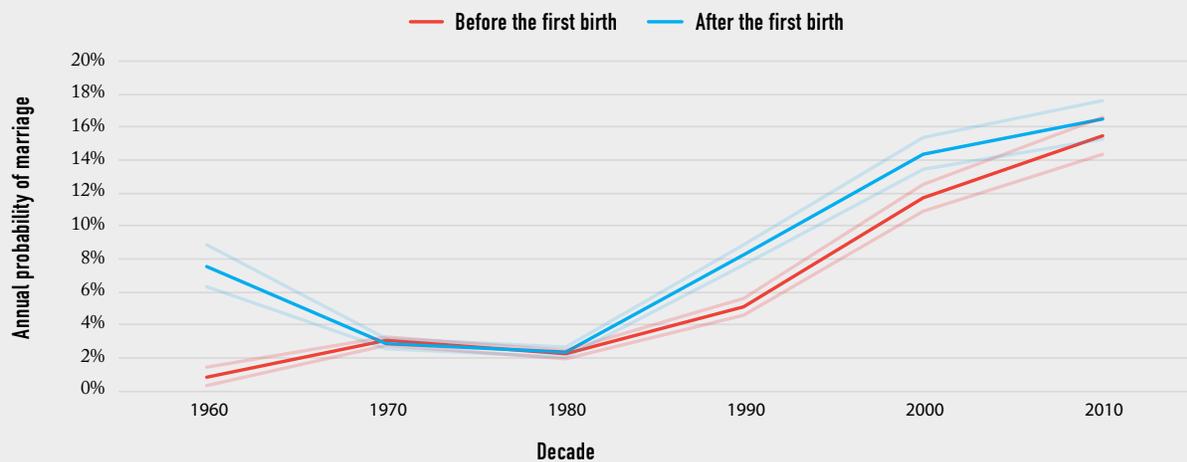
¹⁶ Hayford, S.R., Guzzo, K.B., Smock, P.J. “The decoupling of marriage and parenthood? Timing of marital first births, 1945–2002.” *Journal of Marriage and Family* 76, no. 3 (2014): pp. 520–538.

However, this effect might not be causal. That the linkage is very strong is undisputable, but there could be debate about what causes what. Does marriage cause an increase in fertility, or do people postpone marriage until they are ready to have children? There are some obvious reasons to think marriage might cause fertility: about 30% of couples do not cohabit before marriage,¹⁷ many of them for religious reasons, implying that some couples probably increase their sexual frequency after marriage, or weren't having sex at all before marriage. Moreover, despite the rising normativity of single parenthood, most people still want to raise children in a stable union with a co-parent,¹⁸ and marriage still provides a stronger guarantee of stability than cohabitation.¹⁹ Moreover, Gallup survey data mentioned above suggest that a large minority of Americans still see childbearing and marriage as inextricably linked. Thus, while marriage might not always cause increases in childbearing, and while the difference in fertility between married and unmarried women is not only due to the causal effect of marriage, it is also extremely likely that marriage does cause *some* fertility increase.

But reverse causality is very likely, too. In some contexts, having a child might even be a precursor to marriage. To test this latter possibility, Figure 3 uses the same kind of model, but instead tests the effect of having a first birth on having a first marriage: does childbearing tend to increase the likelihood of a wedding?

As the figure illustrates, in the 1970s and 1980s, having a baby did not lead to any clear change in marriage likelihoods. Before the 1970s, having a baby tended to lead quickly to marriage, perhaps reflecting shotgun marriages, as the method used here only measures births and marriages by year of occurrence. But things changed

Figure 3. Probability of First Marriage Before or After First Birth in the U.S.



Source: Marginal effects of parent status interacted with decade using NSFG 1955-2019 with standard weights, individual fixed effects with time-varying categorical age.

IFS/Wheatley

¹⁷ Stone, L., Wilcox, W.B. "The religious marriage paradox: Younger marriage, less divorce." Institute for Family Studies Blog, December 15, 2021.

¹⁸ Graf, N. "Most Americans say children are better off with a parent at home." *Pew Research Center*, October 10, 2016.

¹⁹ Musick, K., and Michelmores, K. "Cross-national comparisons of union stability in cohabiting and married families with children." *Demography* 55, no. 4 (2018): 1389-1421.

in the 1990s. Since the 1990s, marriage odds have been higher for women after their first birth than before it. Some of this may simply be a change in the timing of so-called “shotgun weddings:” weddings which previously occurred between conception and delivery or immediately after delivery now might occur months or years after a birth. There may also have been a reduction in stigma against single mothers dating and marrying in general.

Regardless, this points to a vital fact: far from weakening, the link between marriage and childbearing has strengthened over time by some measures. Single mothers are somewhat likelier to subsequently marry than in the past, and indeed, becoming a single mother increases the odds of getting married versus remaining childless. This is not the first study to find such an effect; in fact, an extensive amount of research has shown that childbearing can be an important *precursor* to marriage rather than a *result* of it, especially among cohabiting couples.²⁰ Thus, while marriage probably does boost fertility, it would be incorrect to attribute the entire difference in fertility between married and unmarried women to the effects of marriage itself.

Thus, at the individual level, even in a country with high nonmarital childbearing like the U.S., the link between marriage and fertility remains strong. Despite rising nonmarital childbearing, getting married is still associated with a sharp increase in the likelihood of having a child. To the extent fertility matters to policymakers at all, marriage should matter, too.

Marriage and Fertility in High-Income Countries

Data on fertility, income per capita, life expectancy, education, gender equality, and family structure are available for virtually every country in the OECD going back to 1990. These countries are mostly higher-income countries in Europe, Asia, and the Americas. As a rule, they are the countries from the right-hand side of Figure 1 with higher ages of marriage, where the linkage between marriage age and fertility is less visually clear. As such, they make an ideal test case for the linkage between fertility and marriage because these are the very countries for which the relationship is most debatable.

Cross-country variation in marriage and fertility is interesting, but uninformative for policymakers: Italy cannot simply choose to be Sweden, nor can Korea choose to be the U.S. The complex set of cultural features, social institutions, economic structures, and public policies in a country cannot all be changed overnight and vary in too many ways to categorize them all. As such, models that estimate the “effect” of marriage patterns on fertility based on cross-country variation, a practice sometimes called “reading history sideways,”²¹ are seriously flawed.

In contrast, panel models utilize many data points over time per country so that all time-stable factors specific to each country are controlled, and the effect of a change in marriage is measured *within* the country.²² This means that

²⁰ Graefe, D.R., Lichter, D.T. “Life course transitions of American children: parental cohabitation, marriage, and single motherhood.” *Demography* 36 (1999): 205-217; Lundberg, S., Rose, E. “Child gender and the transition to marriage.” *Demography* 40, no. 2 (2003): 333-349; Carlson, M., McLanahan, S., England, P. “Union formation in fragile families.” *Demography* 41 (2004): 237-261; Dahl, G.B. and Moretti, E. “The demand for sons.” *The Review of Economic Studies* 75, no. 4 (2004): 1085-1120; Bzostek, S.H., McLanahan, S.S., Carlson, M.J. “Mothers’ repartnering after a nonmarital birth.” *Social Forces* 90, no. 3 (2012): 817-841.

²¹ Thornton, A. “The developmental paradigm, reading history sideways, and family change.” *Demography* 38, no. 4: (2001): 449-466.

²² That is, including country “fixed effects” assumes that countries have specific histories and cultural features that are impossible to model specifically, and which may change only gradually over time. Essentially, if a country has lower or higher fertility than other similar countries in most periods regardless of controls, the model assumes there is some country-specific effect (like a cultural norm perhaps) reducing fertility; and when a country has a durably more negative or positive trend over time, the model assumes that trend is related to underlying non-specified factors.

panel models with country fixed effects produce estimates that are a close approximation of things governmental and cultural decisionmakers could expect to observe or perhaps accomplish.

Our panel models with OECD data also include several other important variables. Time itself matters independently of country-specific variables: new technologies are invented and spread across countries, new ideas gain popularity and diffuse through media and social ties, economic shocks spread from economy to economy, meaning that there are time-specific effects that are worth controlling. We control for these effects at the level of years, such that when most countries in a given year experience the same change in fertility, the model attributes that change to the year itself. The models also control for real income per person, life expectancy, and female share of tertiary enrollment. Therefore, it provides estimates of the effect on fertility of marriage age and other variables, using only relationships estimated from within-country variation, *after accounting for* the effect of specific time periods, country-specific cultural factors, and a country's underlying trend in fertility. These estimates are shown in Table 1 below.

Model 1 simply compares fertility rates and marriage ages with controls for the country and finds a very significant effect of marriage age. Marriages occurring two years later, on average, are associated with fertility rates being about

Table 1. Effects on Total Fertility Rate Associated With Given Variable Change

	MODEL 1	MODEL 2	MODEL 3	MODEL 4	MODEL 5
TWO-YEAR INCREASE IN AGE AT FIRST MARRIAGE FOR WOMEN	-0.036 (-0.041,-0.031)	-0.044 (-0.064,-0.024)	-0.071 (-0.088,-0.054)	-0.074 (-0.091,-0.056)	-0.086 (-0.105,-0.066)
\$2,000 INCREASE IN REAL INCOME PER PERSON			0.036 (0.033,0.038)	0.036 (0.033,0.039)	0.042 (0.038,0.045)
TWO-YEAR INCREASE IN LIFE EXPECTANCY				0.028 (0.011,0.046)	0.016 (-0.003,0.035)
FIVE-PERCENTAGE-POINT INCREASE IN FEMALE SHARE OF TERTIARY ENROLLMENT					-0.005 (-0.008,-0.003)
COUNTRY FIXED EFFECTS	X	X	X	X	X
YEAR FIXED EFFECTS		X	X	X	X
COUNTRY-LINEAR-TIME-TRENDS		X	X	X	X
COUNTRIES	41	41	41	41	41
AVERAGE YEARS PER COUNTRY	29.3	29.3	28.2	28.2	24.2
WITHIN-COUNTRY VARIATION EXPLAINED	4.13%	63.85%	72.01%	72.08%	73.86%

95% confidence intervals shown

IFS/Wheatley

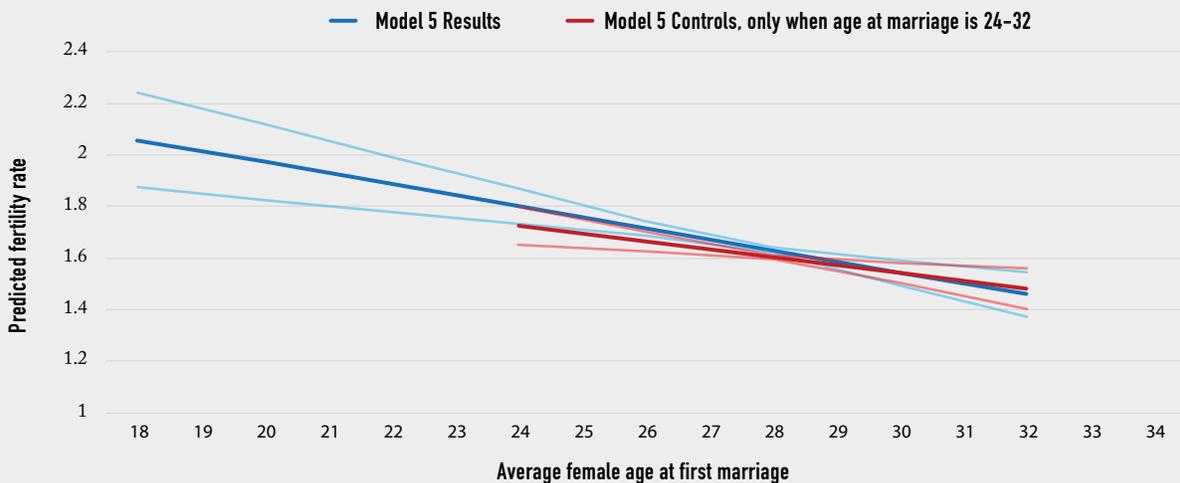
0.03 to 0.04 children lower per woman. This is a fairly small change, but the effect is very significant. However, it might be due to confounding with other variables.

Models 2 to 5 sequentially add more variables to see if they reduce or eliminate the effect of marriage age, but they do not. On the contrary, as more control variables are added, the estimated effect of marriage age grows, such that by the time country-specific trends, time variables, income levels, life expectancy (as a general measure of health and development), and women's education in comparison to men's are all added, the effect of marriage age appears to increase, while remaining highly statistically significant. In model 5, marriage being delayed two years has a larger negative impact than real incomes falling \$2,000.

For comparison, a \$2,000 decline is about the size of income loss during the Great Recession of 2007-2009. So, two years of marriage delay has a similar effect on fertility as a major economic recession. Likewise, while women's education and overall health conditions matter, their effects are smaller than marriage. A large change in women's tertiary enrollment has just one-twentieth the impact on fertility of a two-year change in marriage age. These relationships hold up if the sample is restricted to only the most prosperous countries and remain even if only countries and years with mean marriage ages over 24 are analyzed. These restrictions suggest that fertility keeps falling as marriage age rises—even in wealthy, developed countries with late marriages and widespread access to birth control.

Figure 4 below visualizes these differences for simpler interpretation, showing the estimated total fertility rate by age at marriage, after controlling for incomes, life expectancy, women's education, and all country- and time-controls. It shows the effect of mean age of marriage using two different methods: one, visualizing the implications of Model 5, and a second that shows the same results, but restricts the analysis and estimation to countries and years where age at marriage was over 24.

Figure 4. Predicted Fertility Rates by Age at Marriage



Source: Marginal outputs from model 5 in Table 1, and a duplicate of model 5 limited to countries with average age at first marriage over 24.

IFS/Wheatley

As Figure 4 shows, in both the core model using all data, as well as a model excluding periods with marriage ages below 24 (where there is widespread expert agreement on effects), fertility declines as marriage age rises. As first marriage ages climb (to 27 to 30), fertility rates tend to decline. Few countries have first marriage ages beyond 31 or 32 so extrapolation beyond those ages is challenging, but there is no reason to suppose that the relationship would fundamentally change.

Obviously, the specific experiences of individual countries vary widely, as shown in Figure 1. There are always exceptions, and the trends of one or two countries cannot be assumed to be causal or even typical. However, because the above analysis demonstrates that the association between marriage age and fertility is general, it is worthwhile to identify some examples of these trends in action in the recent history of specific countries.

UNITED STATES

Perhaps the clearest case is in the United States. From 1990 to 2005, the mean age at first marriage in the U.S. rose from 23.9 to 25.3. This comparatively modest increase of just about one month more delay per year occurred alongside stable fertility: birth rates in 1990 and 2005 were roughly equal, around 2.1 children per woman. But from 2005 to 2019, the pace of marriage delay accelerated rapidly: marriage age rose to 28 in 2019, making the pace of delay approximately twice as aggressive. U.S. fertility fell from around 2.1 in 2005 to a mere 1.7 in 2019.

HUNGARY

The U.S. experience is not unique, and the trends can go in the opposite direction as well. In Hungary, the mean age of marriage rose from 24.4 in 2000 to 28.3 in 2010, a delay of about four months each year. From 2000 to 2010, Hungarian fertility rates fell from 1.32 to 1.25. Hungarian birth rates were already low in 2000 due to the economic and social chaos after the fall of communism. But from 2010 to 2019, marriage delay slowed down in Hungary, rising at just half the pace; and from 2014 to 2019, marriage age did not rise at all. What happened to fertility? From 2010 to 2019, Hungarian fertility rates rose from 1.25 to 1.49.

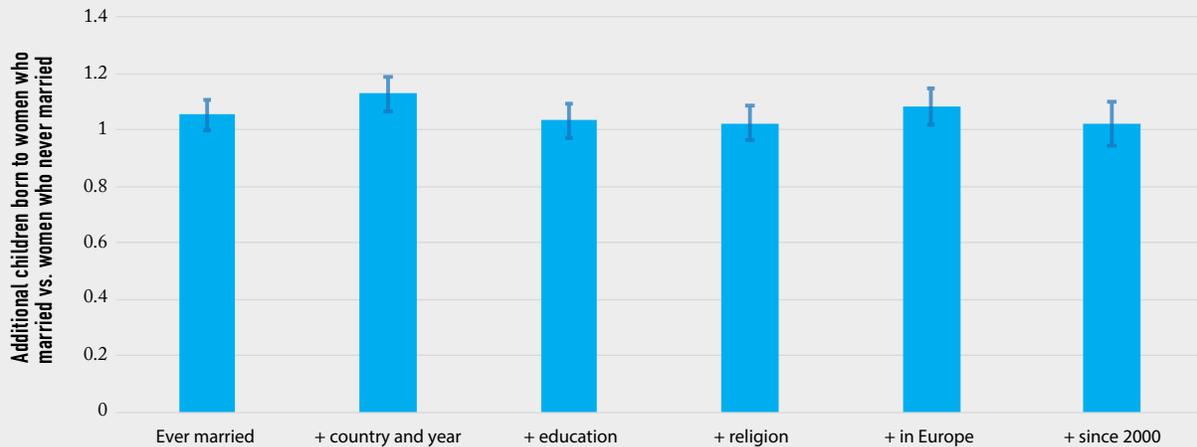
These kinds of case studies are not definitive proof, since they do not account for numerous other variables impacting fertility and marriage. But the multivariate analysis described above *does* have such controls and finds essentially the same relationship.

Thus, in a large panel of mostly high-income countries, across many models and different robustness tests, the effect of marriage on fertility is reasonably clear: delayed marriage yields lower fertility rates. The estimated effects are large: average marriage at age 32 is associated with about 0.2 fewer children born than average marriage at age 26, a difference which could dramatically alter a country's overall population growth rate in the long run. Despite rising nonmarital fertility rates in many high-income countries, marriage still matters. The micro-level results demonstrated among U.S. women appear to approximately match the macro-level results observed among high-income countries in general: when marriage is later or rarer, fertility is lower. Moreover, these results are robust to other analytic approaches, for example, if instead of using age at marriage as the key independent variable, the models in Table 1 use the share of reproductive-age women who are married.

Moreover, it is possible to directly analyze the fertility behaviors of individual married and unmarried women in European countries. The World Values Surveys (WVS) and European Values Surveys (EVS) have collected data on

marital status, fertility, and a wide variety of control variables for over 600,000 individuals in over 150 countries over the last 40 years. This extensive dataset can be leveraged to explore whether the effect of marriage has changed over time. In particular, we assess how having ever been married influences the total number of children women have by age 41 or older. Figure 5 shows how many more children ever-married women ended up having compared to never-married women, with various controls included.

Figure 5. Estimated Fertility Gap Between Ever- and Never-Married Women in the World Values Surveys



Source: Ordinary least squares regressions of children ever born against given variables, among women ages 40-65. Country-population-adjusted weights used and robust standard errors.

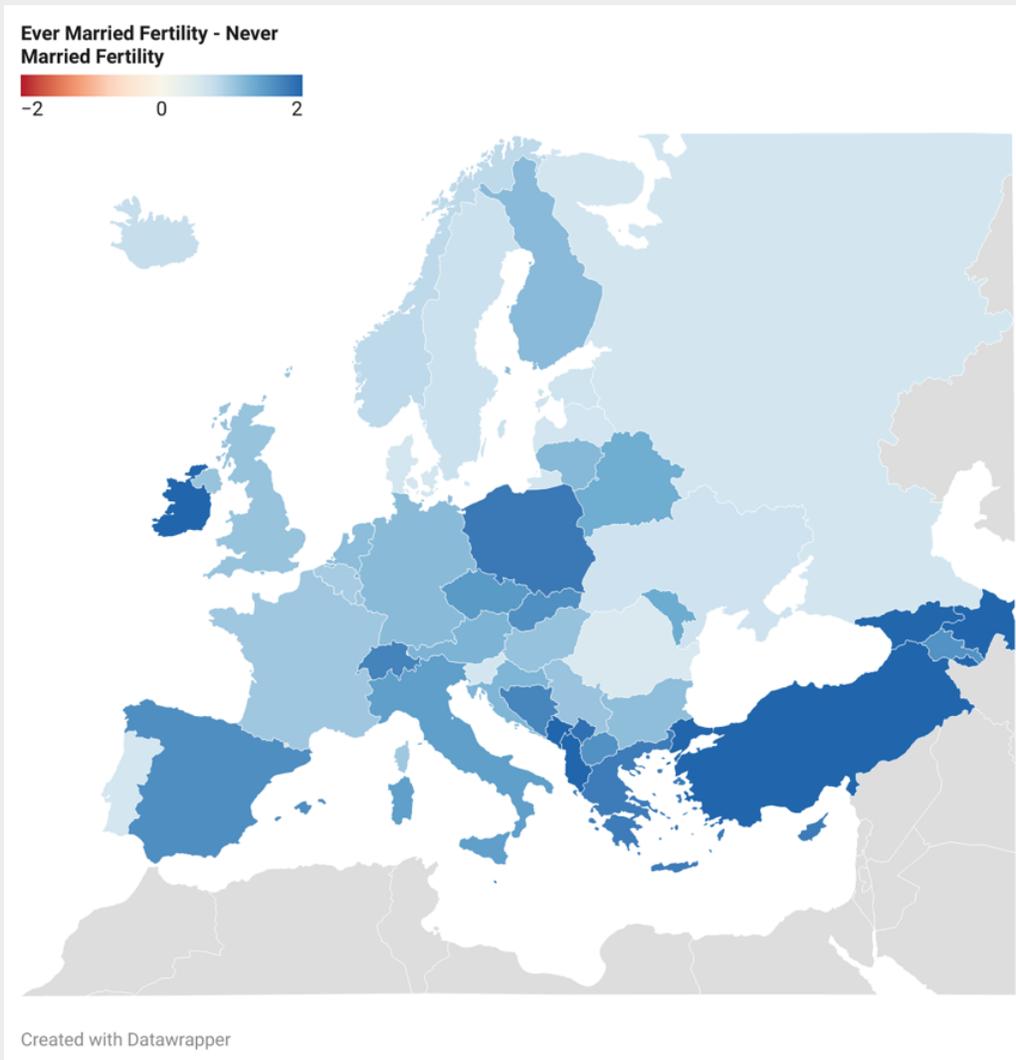
IFS/Wheatley

Regardless of the controls used, women who never marry have far fewer children than women who do marry, even if only surveys of European countries since the year 2000 are included, with controls for educational attainment, religion, and specific country and year. In other words, even in high-income countries with high rates of nonmarital fertility, the married still have far more children than the unmarried.

Figure 6 pools data from all WVS/EVS surveys since 2000 for women ages 40 to 65 and color-codes countries by how much higher fertility was among ever-married vs. never-married women. In every European or nearby country for which data exists, ever-married women had more children than never-married women, and in most cases the difference was quite large. In some more conservative countries in southern and eastern Europe, as well as Ireland, the gap is especially large: in Ireland, Turkey, Albania, Montenegro, Georgia, and Azerbaijan, married women had around two children more than

Even in high-income countries with high rates of nonmarital fertility, the married still have far more children than the unmarried.

Figure 6. Estimated Fertility Gap Between Ever- and Never-Married Women in European and Nearby Countries



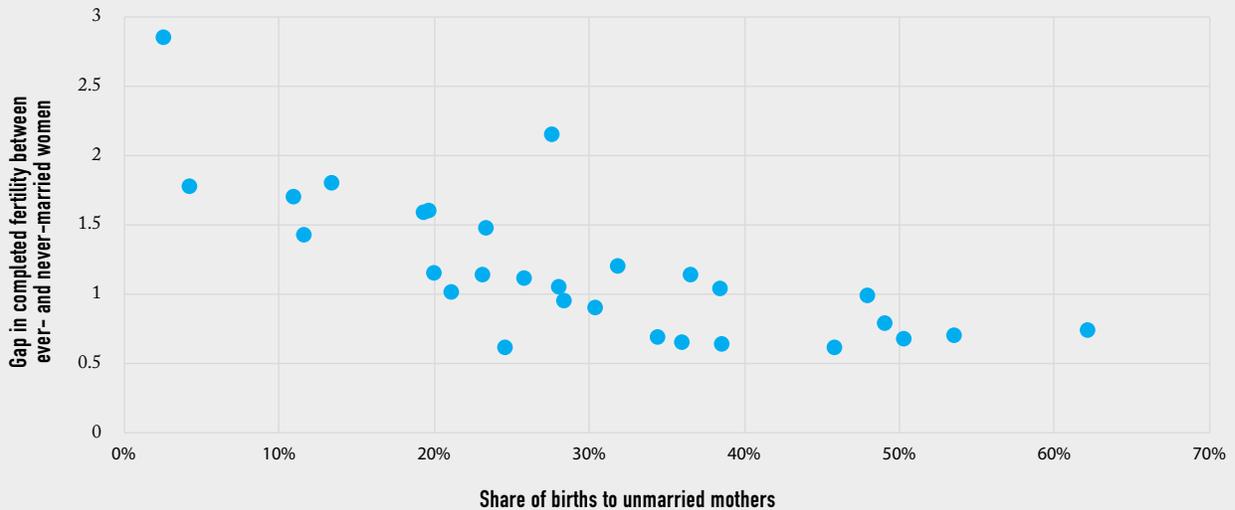
Source: Simple difference in country-level weighted-average fertility by marital status of women ages 40–65, in WVS/EVS rounds since 2000.

IFS/Wheatley

never-married women, on average. Meanwhile, in Romania, married women had just 0.5 more children on average. Romania's exceptionally small gap is most likely a product of the coercive pro-natal policies in place in the 1980s. Even in egalitarian countries like Sweden, Denmark, Norway, or Iceland, married women have around 0.6 to 0.8 more children than never-married women.

It is tempting to suppose that, as nonmarital fertility rises, it will result in a smaller gap between ever-married and never-married women. Figure 7 explicitly assesses this possibility, showing the correlation between the marital

Figure 7. Estimated Fertility Gap Between Ever- and Never-Married Women in European and Nearby Countries vs. OECD-Reported Nonmarital Birth Shares



Source: Gap: Same as Figure 6. Unmarried Share: OECD Family Database.

IFS/Wheatley

fertility gap as shown in Figure 6, and the average share of births to unmarried mothers from 1990 to 2010 in each country for which data is available.

As the share of births to unmarried mothers rises from very low levels to approximately 30-40%, the fertility gap between ever- and never-married mothers tends to fall. Put simply, as unmarried childbearing is destigmatized, a larger share of never-married women have children. However, that decline in the gap does not seem to continue beyond 40 percent. The countries with >40% nonmarital childbearing have virtually identical average marital status gaps as countries with 30-40% nonmarital childbearing. That is, the effect of destigmatization does not scale indefinitely. Once nonmarital childbearing is common enough to not be a major social taboo, the full fertility gains are realized. As nonmarital fertility shares rise beyond 30-40%, never-married women do not make any progress closing the gap in fertility with married women, perhaps because nonmarital fertility shares beyond 40% usually imply widespread adoption of more stable and committed forms of cohabitation, and this kind of stable cohabitation often ends up leading to marriage.

In sum, at both the aggregate country-level among high-income countries, and at the individual level across a large sample of women from numerous societies, marriage appears to matter. The evidence presented suggests that the “marriage effect” on fertility remains large and fairly stable, and that high rates of nonmarital fertility do not lead never-married women to have bigger families. It simply is not true that Sweden or Denmark achieved high fertility by leaning heavily on unmarried women: even in those societies, married women have much larger families, and a large share of unmarried women are

nonetheless in stable, committed, long-term relationships. Rather, across all societies, it is precisely through committed and long-term pair-bonded relationships—usually formalized through marriage—that childrearing is most efficient.

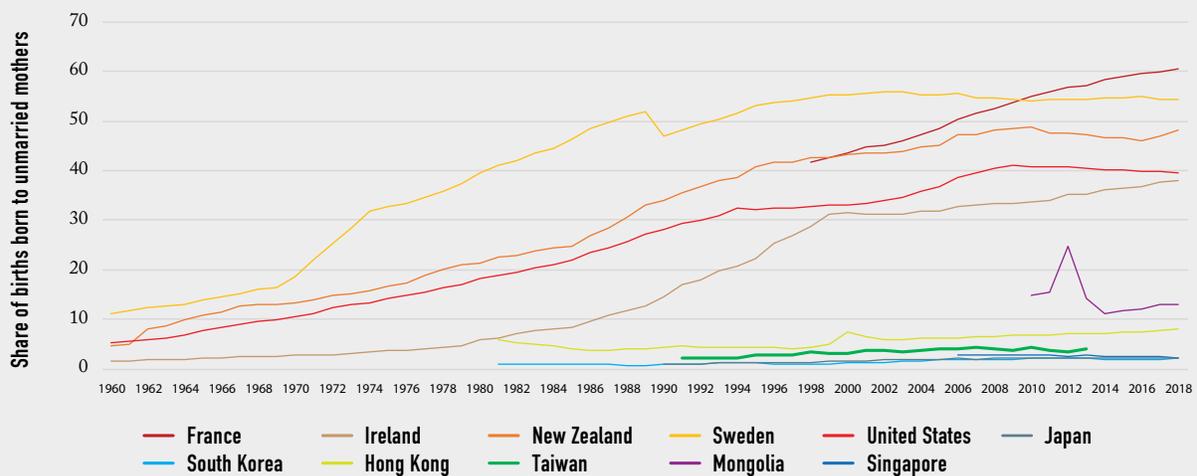
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Fertility in the Pacific Rim

One striking geographic fact about fertility is that almost all of the relatively high-income east Asian countries have very low birth rates. Singapore, Hong Kong, Macau, Taiwan, Japan, Korea, and mainland China all have birth rates far below two children per woman and in some cases even below one child per woman. As discussed in the introduction, a common explanation for these low birth rates is that there are strong discouragements against single motherhood in Asia even as marriage age has risen there, similar to Europe.²³ When marriage age is very late and nonmarital fertility is not an option, overall birth rates fall.

It is beyond dispute that nonmarital fertility is lower in east Asia than in the west. Figure 8 shows the nonmarital birth shares for a few Asian countries compared to a few countries elsewhere. As can be seen, nonmarital births make up a

Figure 8. Share of Births Born to Unmarried Mothers for Selected Countries



Source: OECD Family Database for France, Ireland, New Zealand, Sweden, United States, Japan, and South Korea; national statistical offices of respective countries for Hong Kong, Taiwan, Mongolia, and Singapore.

IFS/Wheatley

²³ Caldwell, J.C., and Caldwell, B.K. "The causes of the Asian fertility decline: Macro and micro approaches." *Asian Population Studies* 1, no. 1 (2005): 31-46; Cheng, Y.A. "Ultra-low fertility in East Asia: Confucianism and its discontents." *Vienna Yearbook of Population Research* 18 (2020): 83-120.

vastly larger share of births outside of east Asia than among the wealthy Asian countries. Asian countries are shown in “cool” colors, while other countries are shown in “warm” colors.

This low nonmarital fertility is not due to an absence of singleness: the average age at first marriage is around 30 or higher in virtually all wealthy, industrialized countries of northeast Asia. These countries have large populations of single people in reproductive years but very few nonmarital births. This is one of the sources of low fertility in these countries.

But is it the *primary* source? For decades, scholars have compared low nonmarital fertility rates in Asia to the much higher rates in Sweden or France, for example, and suggested that Asian fertility might be nearer replacement if nonmarital fertility were unleashed, such as by discarding traditional, cultural, or religious values discouraging single motherhood. As one scholar put it,²⁴ the math seems obvious: when marriage ages are high, as they are in east Asia, higher fertility rates seem to require high rates of nonmarital births.

This story, however, rests on an important assumption, namely, that married people in Asia and the other rich countries of the world have similar fertility. If, in fact, *marital* fertility is very low in east Asia, this would cast doubt on whether stigmas against nonmarital fertility are the main cause of fertility decline. More directly, marital fertility rates are an indicator of what fertility would be if every woman were coupled and having children similarly to women who do get married. This measure, then, tells us to what extent changing fertility is due to factors *besides* the difficulty of finding a suitable partner and getting married.

It is helpful to compare marital fertility to other countries that have relatively high fertility along with high nonmarital fertility. If high *nonmarital* fertility is really the key to higher birth rates in Sweden, France, or the U.S., then *marital* fertility should be similar in Sweden and Singapore, or France and Korea. But if even *marital* fertility rates in Asia are much lower than countries with high nonmarital births, then that would suggest that perhaps Asia's fertility problems are due to something besides simply having excessively traditional marriage attitudes. Since recent pro-natal policy programs in both Korea and Japan have prominently focused on gender and marriage attitudes as key causes of low fertility (as opposed to, e.g., insecure working environments, stressful educational systems, poor housing quality, or other factors), it is vitally important to identify whether Asia's problem really is traditional values stigmatizing single motherhood or something else.

Figure 9²⁵ shows estimates of how many children ever-married women had by the time they were age 45 (among women who were 45 years old in each country in the years shown). Again, Asian countries are represented in “cool” colors, while other countries are represented in “warm” colors.

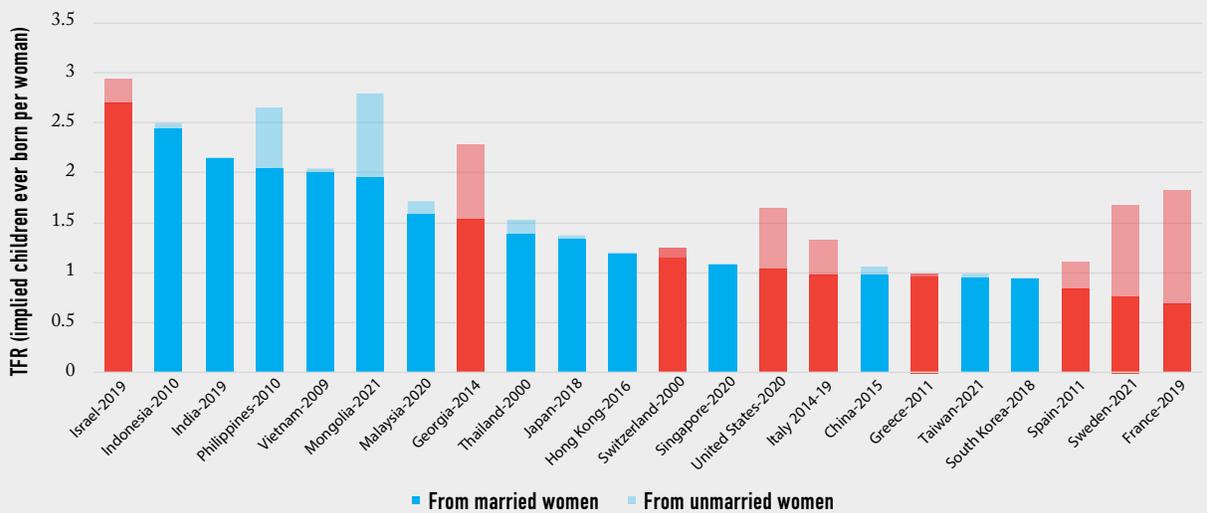
²⁴ Smith, R. D. “Marital fertility patterns and nonmarital birth ratios: an integrated approach.” *Genus* 75, no. 9 (2019).

²⁵ For China, Singapore, and Mongolia, actual marital CFRs are available. For Taiwan, Hong Kong, Japan, and Korea, marital CFRs are estimated from overall CFRs and marital population shares, with the assumption that never-married women have zero children, thus producing a *maximum* estimate of marital CFR for Asian countries. Marital CFRs are also available for the United States and Ireland. For New Zealand, France, and Sweden, marital CFRs are estimated from overall CFRs and marital population shares, with the assumption that the ratio between never-married and ever-married women's fertility becomes closer to 1 (i.e., unmarried fertility rises) as time progresses, thus producing something nearer a *minimum estimate* of marital CFR for these non-Asian countries. As a result, true Asian marital CFRs are likely lower than shown, and true non-Asian marital CFRs may be higher than shown, meaning the true gap in marital fertility may be even larger than shown.

dividing the number of births to married women of a given age by the population of married women at that age. However, this approach yields implausible estimates.²⁷

We adopt a modification to the standard TMFR and multiply age-specific marital fertility rates by the proportion of women of that age who are married, identifying the share of total fertility that is contributed by currently married women during their marriage. This measure creates a single snapshot estimate of how many children a woman is likely to have within a married union and outside of a married union, if age-specific fertility and marriage rates remained stable over her life. Figure 10 shows the value for this marital-status-apportioned TFR (TFR-M) for the most recent year available for a selection of Asian and other industrialized countries for which the relevant data was available.

Figure 10. Contribution to TFR of Married and Unmarried Women for Selected Countries and Years



Note: Non-Asian comparison countries highlighted in red.

Source: National statistical offices for Mongolia, Georgia, Japan, Singapore, United States, Taiwan, South Korea, Sweden, and France. Data from Thailand, Vietnam, Switzerland, and Greece reflect the most recent relevant census data available from IPUMS International. Data for China come from Yang et al (2022).

IFS/Wheatley

Non-Asian countries, shown in red, seem to have broadly similar marital contributions to TFR as Asian countries. Some, like Sweden and France, where both overall TFRs and nonmarital childbearing are high, have considerably *lower* TFR-M values for married women than Asian countries like Japan or Korea. On its face, the comparable-or-lower TFR-M values in non-Asian countries vs. Asian countries seems to support the idea that Asian countries must have higher rates of nonmarital childbearing to achieve higher overall fertility.

²⁷ The reasons for this are easy enough to understand: if individuals delay marriage until they want to have children, and forego marriage entirely if they don't want kids, then the population of married people of any given age will be very low, and a huge share of that group will be attempting to have children. Thus, a high TMFR does not necessarily represent high fertility; it simply represents a high correlation between childbearing and marital status. Especially when cohabiting unions or sexual relations without any stable union are relatively socially acceptable, the TMFR can become an extremely biased estimator of fertility. In general, as marriage becomes rarer, it also becomes more selective for fertility, and thus TMFR becomes more biased.

However, important caveats apply. First, none of the four countries with near-replacement-level fertility (Thailand, Vietnam, Mongolia, and Georgia) had TFR-M values for married women below 1.5; none of the low-fertility countries came even close to that value, except perhaps Japan. In other words, in no country did nonmarital fertility actually propel low-marital fertility into high overall fertility. Wherever marital fertility was low, overall fertility was appreciably below replacement rate.

Second, it is worth reiterating that not all unmarried childbearing is the same. In northern European countries, the vast majority of unmarried births are to women in stable cohabiting partnerships. For example, in Denmark, only 3.5% of babies in 2020 had unacknowledged paternity, despite more than 55% of babies being to unmarried mothers. In the U.S., just 44% of babies were born to unmarried mothers in 2020, yet 12.5% had unacknowledged paternity. In other words, while based on marital status, Danish children were more likely to be born to unmarried women, based on paternity acknowledgement, American children experienced more fatherlessness. Unacknowledged paternity data was not available for any Asian country. In Georgia, one of the few European countries with near-replacement-rate fertility, just 33% of babies are born to unmarried mothers, and just 2.4% of births have unacknowledged paternity. That is, where unmarried fertility makes a large contribution to overall fertility, it usually reflects high rates of stable cohabitation.

This, in turn, explains why Asian countries undershoot on completed fertility for ever-married women, but not current fertility rates for currently married women. In countries like Sweden, the U.S., France, or Denmark, marriage is becoming a “capstone” to a successful relationship, with children a step in that path. Rather than the traditional sequence of marriage, then sexual intimacy, then childbearing, many couples begin with sexual intimacy, then have a child, then marry once their roles as co-parents have become settled and stable. So Swedish or Danish women have children *before* marriage, not *apart* from it—they have children, and then subsequently often marry the father. Therefore, the rate of childbearing *totally unconnected to a partner*—that is, the rate of unacknowledged paternity—is quite low in these countries. Far from indicating that marriage is no longer important for fertility, these dynamics reveal the importance of marriage as a goal for many couples.

At the end of their reproductive years, married Asian women tend to have fewer children than married women in Europe or North America, and they tend to have fewer than two children. Even if every woman in Korea or Japan had children like women who eventually marry do, fertility rates would be below-replacement. Low fertility in these countries is about more than just low nonmarital fertility. It is true that some countries with moderate fertility rates, like Sweden or France, achieve these rates with high rates of premarital childbearing, but no country achieves replacement fertility rates with low childbearing (i.e., fewer than 1.5 children) within married unions. Moreover, wherever unmarried childbearing makes a large contribution to fertility, it does so primarily in the context of long-term committed unions, often with various degrees of legal formalization and rights. These unions are not marriages, but they bear many of the features that make marriages conducive to childbearing. As such, even in countries like Sweden and France, the link between fertility and long-term, stable pair bonding with formal social support has not been severed; it has simply been renamed and the exact legal arrangements have changed, but the social form is durable.

Finally, it bears noting that some prior research has attributed low nonmarital fertility in east Asian to the influence of Confucian values. This theory is almost certainly false, for several reasons. First, as Figure 10 makes clear, very low rates of nonmarital fertility are found across countries with many different religious backgrounds: Greece (Orthodox), Taiwan and China (Confucian and Buddhist), Japan (Buddhist and Shinto), Switzerland (Protestant), and Thailand (Buddhist). Were data for Italy and Spain shown, they would provide examples of low nonmarital fertility in a Catholic context. On the other hand, some of the highest nonmarital fertility rates in the world occur in Catholic-majority countries in Latin America. Religious background has remarkably little consistent correlation with country-level nonmarital fertility rates. Indeed, Japan, the paradigmatic example of a low-nonmarital-fertility country, is not Confucian, and the role of Edo-period Neo-Confucianism in modern Japanese culture must be bracketed alongside Japan's much longer Buddhist and Shinto religious traditions.

Nor is it even the case that Confucianism inherently condemns nonmarital childbearing. Prostitutes and courtesans often occupied elite positions in Ming Dynasty society,²⁸ and Chinese elites practiced concubinage throughout all periods of Confucian religious domination. Moreover, low rates of nonmarital fertility in Asia may not have deep historic roots. Historical demographic research has found that births out of wedlock constituted between 3 and 6% of births in Taiwan from 1906-1941,²⁹ similar to or higher than rates observed in the last few decades. Moreover, other scholars have found³⁰ that there was no infant mortality premium for illegitimate children in Taiwan, suggesting that nonmarital fertility may have been relatively destigmatized. In Japan, almost 9% of births were to unmarried mothers in 1900,³¹ compared to just 2% today. In the early 20th century, unmarried women in Taiwan and Japan had higher fertility rates than unmarried women in much of Europe and North America.³² Far from suppressing nonmarital fertility, Confucian acceptance of concubinage and some forms of prostitution, alongside the practice of "minor marriage," yielded both strong supply and demand for unmarried sex and, thus, childbearing. For this very reason, Qing Dynasty-era laws explicitly provided for inheritance to illegitimate sons in some cases.³³

Attributing low fertility in East Asia to Confucianism both compresses the myriad diversity of different religious and cultural forms in Asia into one monolithic "Confucian" cultural form, and neglects the actual record of demographic history, which points to relatively high rates of nonmarital fertility in early modern east Asia. Fertility is low in Asia, not because of stigma against nonmarital fertility, but because of adverse economic and social conditions for childrearing that affect fertility and marriage decisions for all people alike.

²⁸ Zurndorfer, H.T. "Prostitutes and courtesans in the Confucian moral universe of late Ming China (1550-1644)." *International Review of Social History* 56, no. 19 (2011): 197-216; Xu, H. "What kinds of use of sex robots can be morally allowed? A Confucian perspective." In R. Fan, & M. J. Cherry (Eds.), *Sex Robots: Social Impact and the Future of Human Relations*, 1 ed. (Springer, Cham, 2021): p. 3-21.

²⁹ Barrett, R.E. "Short-term trends in bastardy in Taiwan." *Journal of Family History* 5, no. 3 (1980).

³⁰ Gates, H., Kok, J., Wang, S. "Burden or opportunity? Illegitimate births in the Netherlands and Taiwan." In: Zhuang, Y., Engelen, T., and Wolf, A.P. (Eds.) *Positive or Preventive? Reproduction in Taiwan and the Netherlands, 1850-1940*. (Amsterdam: Aksant, 2006).

³¹ Hartley, S.F. "The decline of illegitimacy in Japan." *Social Problems* 18, no. 1 (1970):78-91.

³² Ibid., Hartley (1970); Barrett, R.E. "Short-term trends in bastardy in Taiwan." *Journal of Family History* 5, no. 3 (1980).

³³ Ibid., Barrett (1980).

Conclusion

Does marriage matter for fertility in the 21st century? The answer is a resounding “Yes!” Despite the rise in nonmarital childbearing, and contrary to widespread public opinion that marriage can be separated from bearing and raising children, the link between the formalized, stable pair bonding of adults and human reproduction remains robust. And by some measures, it is even stronger than in the past.

Data from a panel of high-income countries demonstrates that delayed marriage is associated with lower birth rates even in high-income, relatively egalitarian settings. Nonmarital childbearing and “catch-up” fertility do not fully compensate for the lost years of fertility supported by earlier marriage. Data from east Asian and other countries on marital fertility rates demonstrate that low Asian fertility is not only a product of low nonmarital births arising from Confucian norms around single motherhood; marital fertility in Asian countries is very low (even as relatively high marital and nonmarital fertility coexist in Sweden or the U.S.), and historic data on nonmarital childbearing do not support the idea that Confucianism stigmatizes nonmarital childbearing more than other cultural or religious. Rather than attempting the abstruse task of socially reengineering norms around marriage and childbearing, Asian pronatalism likely depends more on the success or failure of efforts to tamp down competition in education and extremely long working hours in precarious employment that affect married and non-married women alike.³⁴

Finally, even in countries where nonmarital childbearing has risen dramatically, such as the United States, microdata on the fertility and marriage histories of individual women reveals a continuing strong linkage between marriage and fertility. Being married is associated with much higher odds of becoming a parent—and becoming a parent outside of marriage increases the likelihood of a wedding in the near future. While historic changes in nonmarital fertility have been dramatic, they have not altered the fundamental, biologically- and economically-rooted linkage between stable pair bonding and formalized social support and childbearing.

POLICY IMPLICATIONS

With this understanding in mind, there are several key policy implications:

1. MARRIAGE STILL MATTERS. Policymakers interested in fertility should be careful not to disregard policies that affect marriage. New programs should be considered not only in terms of how they impact childbearing *per se*, but how they alter the total costs and benefits of marriage and union formation. As just one recent example, the recent Earned Income Tax Credit (EITC) expansion in the U.S. increased benefits for singles without a commensurate increase for married couples, inadvertently increasing “marital tax” penalties for working-class or welfare-receiving households. This kind of marriage penalty is also likely to produce lower fertility, and, indeed, prior academic research suggests that the EITC does reduce fertility.

³⁴ Brinton, M.C., and Lee, D.J. “Gender-role ideology, labor market institutions, and post-industrial fertility.” *Population and Development Review* 42, no. 3 (2016): 405-433.

2. HIGH FERTILITY AND ECONOMIC PROSPERITY DO NOT REQUIRE NONMARITAL FERTILITY.

Contrary to many public arguments, industrialized, wealthy countries can achieve relatively high fertility rates without heavy reliance on nonmarital fertility. The classic case of this is Israel, where income, education, and life expectancy are all at developed-country levels and fertility rates are high. Typical first-marriage age in Israel is relatively young and nonmarital fertility is near Asian levels. Therefore, policymakers should be cautious about diverting resources towards supporting single parents specifically as a strategy for boosting births because virtually all countries with near-replacement rate fertility achieve that outcome via high rates of marital fertility.³⁵

3. LOW FERTILITY IS SHARED ACROSS MARITAL STATUSES. In countries where overall fertility is very low, like Korea or Taiwan, it is not simply due to nonmarital fertility being low. In these countries, *marital* fertility is *also* low. Thus, the likeliest drivers of low fertility are conditions existing outside of a couple's relationship: grueling and competitive educational norms, long working hours for insecure and low-paying jobs, crowded housing, etc. In low-fertility societies, effective pronatalism mostly requires improving the quality of life for young adults and families across the board, such as improvements in housing, education, labor, and social, familial, and economic conditions.

In sum, marriage still matters for fertility. Where marriage is rare or delayed, fertility will be postponed and decline. While the exact causal dynamics at work in this process are hard to pin down, policymakers would be foolish to believe that fertility can be increased by deprioritizing marriage and counting on nonmarital fertility.

³⁵ Baughman, R., and Dickert-Conlin, S. "The earned income tax credit and fertility." *Journal of Population Economics* 22 (2009): 537-563; Michelmore, K. and Lopoo, L.M. "The effect of EITC exposure in childhood on marriage and early childbearing." *Demography* 58, no. 6 (2021): 2365-2394.

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