



Socioeconomic Factors Have Been the Major Driving Force of China's Fertility Changes Since the Mid-1990s

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Fertility decline had already started in China's urban areas in the 1950s (Lavelly and Freedman 1990). This decline might have followed a route similar to that found in many countries if the famine of 1958–1961 and the nationwide birth control (or birth planning, as it is called in China) program launched in the early 1970s had not taken place. These events, the latter in particular, have considerably altered the trajectory of China's fertility change. Largely for this reason, debates about whether China's fertility decline is unique, what the major driving forces of this profound change are, and the extent to which China's falling fertility is a part of and significantly affected by the worldwide fertility transition have been ongoing for many years (Bongaarts 2002; Caldwell 2001; Caldwell and Zhao 2007; Lavelly and Freedman 1990; Poston and Gu 1987; Riley 2004; Wang et al. 2013).

“The Astonishing Population Averted by China's Birth Restrictions: Estimates, Nightmares, and Reprogrammed Ambitions” (abbreviated to “Astonishing” hereafter), recently published in this journal (Goodkind 2017), is a clear indication of continuing debates on these issues. We do not agree with some major conclusions drawn in that article, and we want to comment particularly on the author's explanations of China's fertility changes and their relationship with recent economic, social, and cultural changes in China and around the world.

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Major Claims Made in “Astonishing” and Its Author’s Interpretations of Our Views

In discussing “what drove China’s fertility to very low levels” and challenging the views of other researchers, the author of “Astonishing” made several claims and conclusions (Goodkind 2017:1387–1388). First, he suggested that “although most observers accept Wolf’s (1986) case that the ‘later, longer, fewer’ program played the preeminent role in China’s fertility transition during the 1970s, the current consensus is that socioeconomic progress thereafter drove fertility from replacement to well below two births per woman (Basten and Jiang 2014; Cai 2010; Greenhalgh 2008; Gu and Cai 2011; Gu et al. 2007; Hesketh et al. 2005; Morgan et al. 2009; Sen 1999; Wang and Cai 2010; Wang et al. 2013; Whyte et al. 2015; Zhang and Zhao 2006)” (p. 1387). Immediately following that claim, he added a second suggestion (Goodkind 2017:1388–1389):

Sen (2015:1) summed up this consensus as follows: “the big fall in fertility in China . . . for which the one-child policy is often credited, has, in fact, been less related to compulsion and much more to reasoned family decisions.” Similarly, Zhao (2015:684) claimed that the drop in China’s fertility to well below replacement was “driven increasingly by the effects of the remarkable social, economic, and cultural transformations of recent decades.”

According to the author of “Astonishing,” “these stories are not credible” (Goodkind 2017:1388). Later, in drawing conclusions from his analysis, he further claimed that “every comparative perspective examined herein points to the same conclusion: if China had not employed draconian penalties to enforce the national norm of 1.5 children over the past 25 years, most mothers *would* have had two children, one-half birth higher than observed Put another way, one-half of all Chinese couples had one child less than they otherwise would have had” (Goodkind 2017:1395). Finally, on the basis of these assertions, he claimed that “in the last dozen years of China’s one-child era, most experts dismissed the government’s view that its birth planning program played a central role in controlling population growth” (Goodkind 2017:1394).

In making these claims, the author cited and quoted our work several times. However, he misrepresented our views. Here is what we have said: “China’s nationwide family planning program and government fertility policies indeed played a significant part in driving fertility changes, but largely in their early years. Since the mid-1990s, fertility decline has been driven increasingly by the effects of the remarkable social, economic, and cultural transformation of recent decades” (Zhao 2015:684).

Careful readers can easily identify the following problems in “Astonishing” and the differences between the view of its author and ours. First, the author claims that there is a “current consensus” that socioeconomic progress “drove fertility from replacement to well below two births per woman” after the 1970s, but whether the researchers he listed have actually reached such a consensus is very questionable. Second, although he cited our work, we certainly do not hold such a consensus, which is indicated clearly by the two different time frames used in the alleged consensus and the quoted statement from

Zhao (2015) (“after the 1970s” vs. “since the mid-1990s”).¹ Third, in quoting Zhao’s statement, the author of “Astonishing” deliberately removed Zhao’s first sentence and the first part of the second sentence—that is, “since the mid-1990s.” The author thereby concealed some facts, blurred the timeline, and tried to lead readers to believe that Zhao indeed holds the view that socioeconomic progress became the dominant driving force of fertility changes from the early 1980s. Fourth, we emphasized the significant role of “China’s nationwide family planning program and government fertility policies” in driving fertility changes (in the sentence removed by the author of “Astonishing”), but he categorized us with the group of experts whom he blamed for having dismissed the central role of China’s birth planning program in controlling population growth. For these reasons, the author’s practices of citing and using published work are neither correct nor acceptable.

Recent Changes in Marriage Patterns, Reproductive Behavior, and Fertility in China

Our views about major driving forces of recent fertility changes differ significantly from those of the author of “Astonishing.” Since the mid-1990s, China’s remarkable social, economic, and cultural transformation has increasingly become the main driving force of its fertility change. The author of “Astonishing” acknowledges the “two roaring decades of economic growth” taking place after the early 1990s (Goodkind 2017:1395), but he insists that China’s birth control program maintained the very low levels of fertility “over the past 25 years” (Goodkind 2017:1395). He does not believe that there have been remarkable changes in people’s fertility intention and behavior and in their relationships with China’s rapid economic, social, and cultural changes since the mid-1990s. His attention focuses primarily on estimated total fertility rates (TFRs) for China and their relationships with gross national income (GNI) per capita or gross domestic product (GDP) per capita rather than on the many significant changes behind these numbers (Goodkind 2017:1389). As is well known, whether socioeconomic factors have increasingly become the driving force of fertility changes is reflected not only in the TFR but also in other aspects of social and demographic changes, such as marriage patterns, fertility desires, and reproductive behaviors. Furthermore, many factors other than GNI or GDP per capita also affect these changes.

For example, China’s marriage patterns and reproductive behaviors have changed significantly in recent years. China’s lowest age at first marriage for females in the last four decades (21.8 years) was recorded in 1989 and 1990.² Female mean age at marriage started increasing in the early 1990s; by 1996, it was already higher than

¹ The author of “Astonishing” also listed our 2006 paper (the publication year has been mistakenly given as 2005 by him) as evidence. In that paper, after suggesting that China’s actual fertility was very likely around 1.6 children per woman at the turn of the century, we emphasized that “if we also consider that China has had a highly effective and strictly enforced birth planning program for more than 30 years and that the country has been experiencing a dramatic socioeconomic transformation since the late 1970s, its rapid fertility reduction seems a rather predictable outcome” (Zhang and Zhao 2006:315). From this statement, one simply could not derive the conclusion that the author of “Astonishing” drew.

² The relatively low age at first marriage in the 1980s was partly a result of implementing the 1980 Marriage Law, which actually lowered the *de facto* minimum age at marriage that was applied widely in the 1970s (Cai and Wang 2014; personal communication, K. Xu, December 2017).

the previous record of 22.9 years (for 1979). The trend continued: the female mean age at first marriage reached 24.3 years in 2010 and exceeded 25 years in 2015,³ contributing directly to recent fertility decline, especially the delay and decline of first births (as we discuss later in this article). In the late 1980s and early 1990s, China's remarriages and divorces had already started to rise. They increased further from 834,000 and 1.1 million in 1995 to 3.4 million and 3.8 million in 2015, respectively (National Bureau of Statistics of China (NBS) 2002, 2016a). Differing significantly from those in the 1970s, recent changes in Chinese marriage patterns have not resulted directly from the government-led birth control program. They are broadly similar to those witnessed in many East and Southeast Asian populations, and they also have had considerable impacts on recent fertility changes.

Significant changes were also observed in the number of male and female sterilizations. According to the National Health and Family Planning Commission (2016), from 1991 to 1995, the number of male and female sterilization surgeries fell by 80 % and 66 %, respectively. Although these numbers fluctuated in the interim, they further declined to 6.3 % and 18.2 % of their 1995 levels by 2015. Similarly, the number of recorded abortions also fell 47 % between 1991 and 1995. Since then, the number of abortions fluctuated around 50 % of its 1995 level. In 2014 and 2015, the number of abortions showed some increase, which might be related to recent changes in premarital cohabitation, sexual behaviors, and marriage patterns.⁴ These changes, especially those taking place since the mid-1990s, are related closely to changes in fertility behavior and are also strong indications that family planning has been managed increasingly by families and individuals themselves rather than having been implemented coercively by governments. More and more couples have changed their reproductive behaviors according to their own choices, just like their counterparts in other countries. Otherwise, the major reduction in sterilization surgeries and abortions could not have been achieved.

That social and economic factors have become increasingly prominent in influencing people's fertility intention and reproductive behavior is also reflected in the compositional changes or the balance of such influence and that of the birth control program, and many other factors. Drawing a clear line between these impacts is difficult because they often interweave and work together. However, there is a strong indication that socioeconomic factors have increasingly played a more important part in recent decades, especially since the mid-1990s. As shown earlier, in the early years of China's birth control campaign, a considerable number of people had sterilizations after having had one or two children or had abortions after having become pregnant again, because of the pressure from the government policy imposed by the family planning officials. The impact of this kind of pressure, however, has been weakening considerably since the mid-1990s. Many couples still have had a similar, or a smaller, number of children while making their fertility decisions similarly to their counterparts in other countries.

³ Personal communication, K. Xu, December 2017.

⁴ The number of abortions recorded by family planning offices has declined continuously, which may partly reflect the fact that abortions are now less related to government-led birth control program and more related to changes in people's sexual behaviors, such as premarital sex and pregnancies.

Our analysis of the pattern and level of the first birth has further revealed recent changes in people's fertility intentions and behaviors. Total fertility rate (TFR) can be decomposed by parity. China's recorded TFR_1 (the component of TFR attributable to parity 1) computed for women up to ages 25–29 was approximately 1.01 between 1996 and 1998, thereafter falling with moderate fluctuations and reaching 0.45 in 2015. During the same period (1998 to 2015), the TFR_1 for women up to ages 35–39 fell from 1.06 to 0.55, and the TFR_1 computed for women aged 15–49 declined from 1.06 to 0.56.⁵ From the mid-1990s to mid-2010s, an increasing number of women postponed their first birth or decided not to have children (at least for the time being). As shown in Fig. 1, in 1990 and 1995, close to two-thirds of women aged 20–24 gave birth to their first child. The proportion dropped to slightly more than one-half by 2000 and 2005 and fell again to about 30 % in 2010 and 20 % in 2015. Our examination of cohort fertility also reveals that the TFR_1 among women aged 25–29 was 1.02 in 2000, compared with 0.85, 0.81, and 0.53 in 2005, 2010, and 2015, respectively.⁶

Two conclusions can be drawn from these results. First, fertility behavior, patterns, and levels have changed significantly, despite the fact that the estimated TFRs presented in “Astonishing” have shown no notable change after 1995 (Goodkind 2017:1378, 1391). Second, no evidence shows that recent changes in TFR_1 have been affected directly by China's birth control program or family planning policies because the government's intervention into the time of the first birth has generally been very limited since the 1980s, and couples could freely decide whether and when they wanted to have a child. These results shed new light on recent changes in fertility intention and reproductive behavior. It is unfortunate that the author of “Astonishing” did not consider these changes when drawing his conclusions about China's recent fertility decline.

China's Fertility Change Has Been Driven Increasingly by Social, Economic, and Cultural Transformations Since the Mid-1990s

The author's view about the major driving force of China's recent fertility changes is also affected by his overemphasis on the “linear” relationship between economic growth and fertility level. His assertion that “China's very low fertility arrived two or three decades too soon” and could not be an outcome of recent socioeconomic changes depends heavily on the idea that China's GNI or GDP per capita has been lower than in populations with similar levels of fertility (Goodkind 2017:1376, 1388–1389), although he has briefly mentioned some other factors. The same justification leads him to argue that it was the “harshly enforced” norm of 1.5 children that kept China's fertility at very low levels “during the last quarter century” (Goodkind 2017:1375).

A negative correlation has often been observed between fertility and GNI or GDP per capita, especially when fertility is relatively high, but it is also well known that this relationship has never been as strictly linear as the one portrayed in “Astonishing.” The

⁵ For related analysis, see Guo (2017) and Song and Tang (2017).

⁶ Strictly speaking, the TFR_1 for a birth cohort should not be greater than 1. However, fertility rates for different years may be computed from data gathered from different subpopulations of the same birth cohort, potentially resulting in slightly higher or lower cohort fertility. The TFR_1 computed for a period may also be greater than 1 because of the tempo effect.

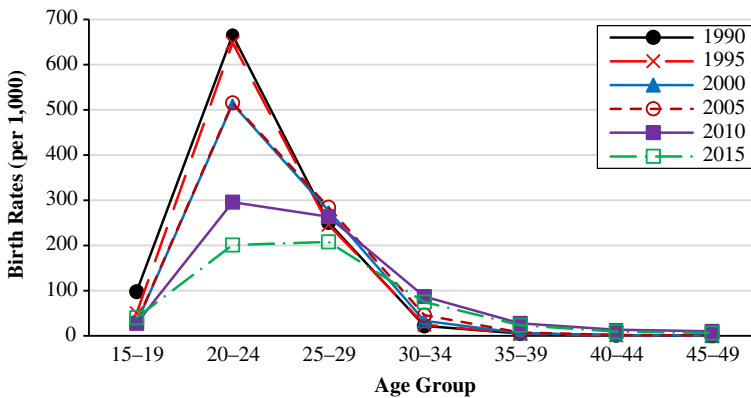


Fig. 1 Age schedule of first-birth rates in China, 1990–2015. *Source:* China’s recent censuses and national population sample surveys

highest level of GNI or GDP per capita may not necessarily be related to the lowest fertility, and vice versa—particularly when the TFR falls below 1.8, when fertility intentions and behaviors are often more affected by other factors (e.g., social institutions and policies, gender equity, and cultural divide) than by GNI or GDP per capita (McDonald 2000, 2006). According to the United Nations Population Division (UNPD 2017), TFRs in 25 countries and territories in the world were at or below 1.5 children per woman in 2015. Only five of them were among world’s 25 countries and territories with the highest GDP per capita (80 % of them were not). Four of the five countries and territories with world’s highest GDP per capita are Luxembourg, Switzerland, Norway, and Qatar (World Bank 2017); their TFRs were all above 1.5, higher or much higher than the top 25 countries and territories with the lowest fertility. Just as some countries and areas with very low GDP per capita had achieved high life expectancies in the 1980s (Caldwell 1986), many populations had comparatively lower levels of GDP per capita when their fertility fell below replacement or to a lower level. For example, in addition to the great fertility reduction in some East Asian populations, in India, fertility fell to 1.9 in Goa and 2.0 in Kerala, in 1992–1993 and 1990–1992, respectively (Pallikadavath 2000). In Addis Ababa, Ethiopia, the TFR also reached 1.8 in 1994 (Kinfu 2001).

The author of “Astonishing” only briefly mentioned Kerala’s experience in a footnote and regarded it as a special case (Goodkind 2017:1383). What he did not realize or failed to acknowledge is that a spectacular fertility decline has also taken place in other parts of India in recent years. According to Guilmoto and Rajan (2013:65), although India’s TFR was still 2.7 in 2011, fertility had already fallen below replacement “in no less than 12 states and union territories in the country.” In 174 out of 621 districts (or 28 % of all Indian districts), TFRs were also below 2.1. Their results further showed that recorded fertility levels in three Indian states (Goa, Kerala, and Tamil Nadu) were “close to 1.5 children per woman,” and fertility averages were below 1.5 in 24 districts. Many districts with very low fertility were cities or large cities; examples (with TFRs in parentheses) are Kolkata and Udupi (1.2); the Nilgiris (1.3); and Chennai, Coimbatore, Erode, Kollam, New Deli, Mumbai, Sindhudurg, and Thiruvananthapuram (1.4). However, some “typically rural districts” also had “unusually low fertility levels”—for example, Pathanamthitta (1.3), Idukki (1.4), Alappuzha (1.4), and Kottayam (1.4) in Kerala; Chickmagalur (1.4) and

Hassan (1.5) in Karnataka; and Kanyakumari (1.4) and Namakkal (1.5) in Tamil Nadu (Guilmoto and Rajan 2013:66).

The preceding results are counterintuitive if one draws conclusions based exclusively on the relationship between the level of fertility and GNI or GDP per capita in a population, given that TFRs in many of these Indian cities and rural districts are far lower than those in Australia, Canada, Luxembourg, Norway, Sweden, the United Kingdom, the United States, and many other wealthy countries. The fact that GDP per capita was lower in many of these Indian states and districts than in China in spite of the very low fertility they achieved some years ago, however, suggests that the low fertility observed in China in recent years should also not be seen as exceptional or achievable only through the “draconian” birth control program. More important than whether TFRs in these Indian cities or rural districts or in other countries should be slightly higher or lower are the emergence and persistence of a globally observed low fertility regime, the nature of this change, and its profound impacts on the long-term development and the future of humankind.

Although a zero population growth resulting from birth rates offsetting death rates was not uncommon in the past when mortality was high, fertility falling below or well below replacement under a low-mortality regime is a relatively new development, and it has rapidly become a worldwide demographic phenomenon. According to the estimation made by the UNPD (2017), only 20 countries and territories in the world achieved below-replacement fertility, and four of them had a TFR lower than 1.8 children per woman in 1970–1975. Fertility lower than 1.5 was not recorded in any country and territory at that time. By 1990–1995, 54 countries and territories had below-replacement fertility, 35 had a TFR lower than 1.8, and 11 had a fertility level of 1.5 or lower. These trends continued in the next two decades: by 2010–2015, 81 countries and territories (42 % of the world total) recorded below-replacement fertility, 55 (27 %) had a TFR lower than 1.8, and 27 (13 %) experienced a TFR lower than 1.5. Fertility falling below or far below replacement has already become a fairly common event.

Major historical events (such as the 1958–1961 famine and the government-led birth control program) delayed or accelerated China’s fertility decline, which indeed has some distinct characteristics. From a longer-term and global perspective, however, China’s fertility decline is also part of, and is influenced by, the worldwide fertility transition. By nature, this decline is the same as that taking place in other countries. China has experienced spectacular development in the last two decades, which should never be separated completely from the achievements made in the early reform period or even the pre-reform era.⁷ However, what has made the past two decades different is that during this period, China has greatly narrowed its gap with the developed world. Many of its major development goals have become realities. After the efforts of several generations, the country has once more become a major global power. Now, China is not only a gigantic factory for the global market, but it also has become a world leader

⁷ We do not agree with the author of “Astonishing,” who has also overlooked China’s rapid economic developments in the 1980s and their impacts on fertility decline. When discussing the driving force of recent fertility changes, he suggests that China’s fertility “plunge in the early 1990s *preceded* two roaring decades of economic growth” (Goodkind 2017:1395). In other words, he simply neglects China’s extraordinary economic growth of the 1980s, when GDP per capita (measured by either constant 2010 US\$ or constant local currency unit (LCU)) more than doubled in a decade (World Bank 2017).

in some major developmental and technological areas. China has more actively engaged in world affairs than ever before. All these developments have greatly changed Chinese society and inspired the country's 1.4 billion citizens. In recent decades, hundreds of millions of people have been lifted out of poverty and are now striving for more prosperity and comfortable life. Hundreds of millions of people left the countryside and now live and work in urban areas. The standard of living for Chinese people has greatly improved. Education has experienced an unprecedented expansion and development. Clearly, these and many other significant changes have had major impacts on family relations, intergenerational exchange systems, individuals' life goals, gender equality, fertility intentions, and reproductive behaviors. It is extremely unlikely that today's couples of reproductive ages have the same thoughts, fertility intentions, and behaviors as their counterparts 20 or 25 years ago. Unfortunately, what we have learned from "Astonishing" is just the opposite—that it was the harsh enforcement of "the national norm of 1.5 children" that played a key part in affecting fertility changes "over the past 25 years" (Goodkind 2017:1376, 1395). Although these suggestions may be applicable to certain aspects of China's birth control program and fertility changes at the very beginning of the 25-year period, they do not reflect the realities of recent years. Indeed, significant changes in people's fertility desires, reproductive behaviors, and the major determinants of these desires and behaviors have taken place during this period.

In the process of these aforementioned rapid sociodemographic changes, it is not uncommon for social scientists, including demographers, to sometimes underestimate the rate at which these changes take place, as Ronald Freedman (1986) pointed out three decades ago. We have also noted that policymakers in China and academic researchers (including us) did not promptly acknowledge China's far below-replacement fertility, partly because "their thinking lagged behind the rapid sociodemographic change" (Zhao 2015:682; see also Zhang and Zhao 2006). This phenomenon is also evident from the following example. According to the author of "Astonishing," hundreds of millions of Chinese women had intended childbearing that was prevented by the coercive birth control program in the past 25 years: "One-half of all Chinese couples had one child less than they otherwise would have had" (Goodkind 2017:1395). If China's recent low fertility were indeed a result of the birth control program "enforced" through "draconian penalties," then one would expect that a huge number of couples would want to have another child as soon as the one-child policy was partially relaxed in 2013 or completely abolished in late 2015, perhaps triggering a major baby boom as suggested in some studies (Zhai et al. 2014; see also Qiao 2017). Yet, the relaxed fertility policy led to no major change in the number of births in 2014 and 2015. Available evidence shows that in 2015, recorded TFR was very low (Guo 2017), and government-reported number of births was 16.6 million, slightly lower than the 16.9 million for 2014 (NBS 2015, 2016b). According to the latest statistics released by China's statistical authority, recorded TFR was also low (1.25) for the period from November 2015 to October 2016 (NBS 2017). The number of births was 17.9 million in 2016 and 17.2 million in 2017 (Li 2018). The National Health and Family Planning Commission (2017) reported a higher fertility level for 2016: the number of births was 18.5 million, and the TFR was adjusted to 1.7.⁸

⁸ Prior research has identified problems of both underreporting and overreporting fertility (Zhang and Zhao 2006). When possible, researchers should carefully examine whether these reported figures are also affected by similar practices.

However, even these figures—the number of births in particular—may represent a rather modest increase in fertility. Responses to the universal two-child policy so far have been less enthusiastic than policymakers and some demographers in China expected (Zhai et al. 2014). Thus, Chinese policymakers and academic researchers have become more active (for example, at the International Conference on Population Dynamics in Sustainable Development Era: Fertility Transition and Social Policy Responses held in Beijing in December 2017) in searching for effective policies to promote a further increase in fertility rather than worrying about, or trying to prevent, a possible fertility surge that was suggested before the government abandoned the one-child policy.

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References

- Bongaarts, J. (2002). The end of the fertility transition in the developing world. *Population Bulletin of the United Nations*, 48/49, 271–286.
- Cai, Y., & Wang, F. (2014). (Re)emergence of late marriage in Shanghai: From collective synchronization to individual choice. In D. S. Davis & S. L. Friedman (Eds.), *Wives, husbands, and lovers: Marriage and sexuality in Hong Kong, Taiwan, and urban China* (pp. 97–117). Stanford, CA: Stanford University Press.
- Caldwell, J. C. (1986). Routes to low mortality in poor countries. *Population and Development Review*, 12, 171–220.
- Caldwell, J. C. (2001). The globalization of fertility behavior. *Population and Development Review*, 27(Suppl.), 93–115.
- Caldwell, J. C., & Zhao, Z. (2007). China's demography in perspective. In Z. Zhao & F. Guo (Eds.), *Transition and challenge: China's population at the beginning of the 21st century* (pp. 271–285). Oxford, UK: Oxford University Press.
- Freedman, R. (1986). On underestimating the rate of social change: A cautionary note. *Population and Development Review*, 12, 529–532.
- Goodkind, D. (2017). The astonishing population averted by China's birth restrictions: Estimates, nightmares, and reprogrammed ambitions. *Demography*, 54, 1375–1400.
- Guilmoto, C. Z., & Rajan, S. I. (2013). Fertility at the district level in India: Lessons from the 2011 census. *Economic & Political Weekly*, 48(23), 59–74.
- Guo, Z. (2017). The main characteristics of China's low fertility process: Results of the 2015 1% population sampling survey. *Chinese Journal of Population Science*, 4, 2–14.
- Kinfu, Y. (2001). *The quite [sic] revolution: An analysis of the change toward below- replacement-level fertility in Addis Ababa* (Unpublished doctoral dissertation). Demography Program, Research School of Social Sciences, Australian National University, Canberra, Australia.
- Lavelly, W., & Freedman, R. (1990). The origins of the Chinese fertility decline. *Demography*, 27, 357–367.
- Li, X. (2018). *The effect of China's "two-child policy" was enduring in 2017*. Beijing: National Bureau of Statistics of China. Retrieved from http://www.stats.gov.cn/tjsj/sjjd/201801/20180120_1575796.html
- McDonald, P. (2000). Gender equity in theories of fertility transition. *Population and Development Review*, 26, 427–439.
- McDonald, P. (2006). Low fertility and the state: The efficacy of policy. *Population and Development Review*, 32, 485–510.
- National Bureau of Statistics, China. (2002). *China statistical yearbook 2001*. Beijing: China Statistics Press.
- National Bureau of Statistics, China. (2015). *Statistical communiqué of the People's Republic of China on the 2014 national economic and social development*. Beijing: National Bureau of Statistics of China.
- National Bureau of Statistics, China. (2016a). *Statistical communiqué of the People's Republic of China on the 2015 National Economic and Social Development*. Beijing: China Statistical Publishing House.
- National Bureau of Statistics, China. (2016b). *China statistical yearbook 2016*. Beijing: National Bureau of Statistics of China.

- National Bureau of Statistics, China, Department of Population and Employment Statistics. (2017). *China population and employment statistical yearbook 2017*. Beijing: China Statistical Publishing House.
- National Health and Family Planning Commission. (2016). *China's health and family planning statistical yearbook 2016*. Beijing: Peking Union Medical College Press.
- National Health and Family Planning Commission. (2017). *National health and family planning development statistical report 2016*. Beijing: National Health and Family Planning Commission. Retrieved from <http://www.nhfpc.gov.cn/guihuaxxs/s10748/201708/d82fa7141696407abb4ef764f3edf095.shtml>
- Pallikadavath, S. (2000). *The anomaly of lower caste fertility in Kerala: A case study of the Vettuvans* (Unpublished doctoral dissertation). Demography Program, Research School of Social Sciences, Australian National University, Canberra, Australia.
- Poston Jr., D. L., & Gu, B. (1987). Socioeconomic development, family planning, and fertility in China: A subregional analysis. *Demography*, 24, 531–551.
- Qiao, X. (2017, October). *The family planning and fertility change in China*. Paper presented at the IUSSP XXVIII International Conference, Cape Town, South Africa.
- Riley, N. E. (2004). *China's population: New trends and challenges* (Population Bulletin Vol. 59, No. 2). Washington, DC: Population Reference Bureau.
- Song, J., & Tang, S. (2017). The characteristics and changes of Chinese women's fertility model since 1995. *Chinese Journal of Population Science*, 4, 15–27.
- United Nations, Population Division (UNPD). (2017). *World population prospects: The 2017 revision*. New York, NY: United Nations, Department of Economic and Social Affairs, Population Division.
- Wang, F., Cai, Y., & Gu, B. (2013). Population, policy, and politics: How will history judge China's one-child policy? *Population and Development Review*, 38(Suppl. 1), 115–129.
- World Bank. (2017). *World Development Indicators (GDP per capita (constant 2010 US\$))*. Washington, DC: World Bank. Retrieved from <https://data.worldbank.org/indicator/NY.GDP.PCAP.KD>
- Zhai, Z., Zhang, X., & Jin, Y. (2014). Demographic consequences of an immediate transition to a universal two-child policy. *Population Research*, 38(2), 3–17.
- Zhang, G., & Zhao, Z. (2006). Reexamining China's fertility puzzle: Data collection and quality over the last two decades. *Population and Development Review*, 32, 293–321.
- Zhao, Z. (2015). Closing a sociodemographic chapter of Chinese history. *Population and Development Review*, 41, 681–686.