

# Missing Girls, Indirect Measures and Critical Assumptions: A Response to Yong Cai's Comments

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We thank Yong Cai for his comments and insights regarding our piece on the “missing girls.” We also recognize and appreciate his expertise in the field of population studies. In short, we agree that we have overestimated the number of nominally missing girls and that the number of hidden or recovered girls may be closer to 10 million or half of the truly missing girls rather than 15 million. Of course, the number of truly missing girls is inconclusive due to the lack of direct measures and the reliance on proxy measures such as previous census data, surveys and state education data. Given the absence of direct measures for the truly missing, scholars also rely on assumptions of villager behaviour and local policy implementation, such as the continued prevalence of son preference as well as the implementation of birth control measures across rural China. Our aim for the “missing girls” article is not to solely challenge the numbers (because we realize the margin of error is in the millions), but we want to challenge the social and political assumptions behind the truly missing. Therefore, we believe the debate over the general estimates of the truly missing is real and should continue.

We value Cai's comments regarding the missing People's Liberation Army (PLA) personnel and the double count problem in the 2010 census. While we only examine cohorts up to 20 years old, we did not include males between the ages of 18–20 enlisted in the PLA. This would reduce our estimates of the hidden or nominally missing girls. The issue of the double count also reduces our estimate. The 2010 census design counted people at their registered residence as well as their actual residence at the time of the survey. Consequently, some migrants were counted at both origin and destination.<sup>1</sup> Due to this new design, Wu and He find that about 6 million migrants between the ages of 15–54 were double-counted in the 2010 census.<sup>2</sup> Given the PLA and double count, we overestimated the number of nominal missing girls by at least 3 million.

In his response as well as Cai's evaluation of the 2010 census, he relies on the sex ratio of enrolled primary school students as an indirect measure of the truly

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1 Liang, Li and Ma 2014.

2 Wu and He 2015.

missing.<sup>3</sup> This seems logical. With the reported universal enrolment and completion of compulsory education, especially primary school, we should get an accurate look at whether or not nominally missing females attend school. However, the evidence suggests a significant gap between reported and actual attendance records. Indeed, Shi et al. in a recent issue of *The China Quarterly* demonstrate this discrepancy.<sup>4</sup> While the Ministry of Education national statistics suggest a dropout rate of about 3 per cent in 2006, Shi et al. examine data covering over 24,000 students in over 260 junior high schools between 2007 and 2013 in four provinces. They find that the dropout rate is between 18 and 33 per cent and it is highest in poorer rural districts. Studies also show smaller, but similar gaps in primary school enrolment throughout the 1990s and early 2000s. If current and previous census as well as education data are faulty, why should one trust the quality of the national education statistics?

There are two problems with using national primary school enrolment data to determine sex ratios. First, the enrolment rates for primary students in western provinces are typically below 80 per cent even in the early 2000s.<sup>5</sup> While primary enrolment rates are also lower in minority areas, enrolment is significantly lower for females.<sup>6</sup> Indeed, some studies suggest that many of the primary school students in poorer regions who never enrol or drop out are females.<sup>7</sup> Some regional or local surveys also reveal gaps between reported primary school enrolment rates and actual enrolments in poorer districts.<sup>8</sup> Second, due to the increase in rural to urban migration, millions of migrant children may not have been included in national primary school enrolment data. In the 1990s and early 2000s many of the private urban migrant primary schools were unlicensed and unregistered.<sup>9</sup> Indeed, the Ministry of Education did not start including migrant students as a separate category until 2010 as the “children of urban migrant workers (*jincheng wugong ren yuan sui qian ziniu* 进城务工人员随迁子女)”.<sup>10</sup> This suggests millions of school age migrant children were not included in the official enrolments during the 1990s and early 2000s. Third, matching age and grade levels is problematic. In poorer rural areas, first year enrolment age can vary from six to nine years old.<sup>11</sup> Moreover, it is difficult to match up birth dates and enrolment records. In 2003–2004, we collected data from several villages using the reported birth records from the village accountant and then matching these with the enrolment rolls provided by the principle from the village primary school. We were able to observe gender differences and additional students attending these village

3 Cai 2013.

4 Shi et al. 2015.

5 Wang 2004.

6 Hannum 2002, Wang 2000.

7 Brown and Park 2002, Connelly and Zheng 2007.

8 Liu and Hu 2012.

9 Kwong 2004, Chen and Feng 2013.

10 See the 2000 to 2015 *National Education Development Statistical Bulletins* (*Quanguo jiaoyushiye fazhan tongji gongbao*). [http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/moe\\_633/201203/xxgk\\_132634.html](http://www.moe.edu.cn/publicfiles/business/htmlfiles/moe/moe_633/201203/xxgk_132634.html)

11 Chen 2015.

schools. However, this becomes more difficult to duplicate beyond the village level without direct access to town and county birth records and school enrolments, as well as controlling for in and out migration. The problem is exacerbated in the early 2000s and especially after 2006 when village schools were combined such that students from five to ten villages would attend a single primary school that included dorms for all grades. Therefore, national school enrolment data may not reflect the actual sex ratio of various age groups in primary or junior high school.

In his response, Cai admits the problems associated with using more general non-government surveys to determine sex ratios, but this is still used as additional evidence for the truly missing. There are two possible problems with general national surveys to determine sex ratios. First, there may be differences between local and national surveys. Several scholars report significant differences between national statistics and local in-depth surveys in the 1990s that examine sex ratios of births and school age children.<sup>12</sup> Second, even national surveys, such as China General Social Survey (CGSS), reveal contradictions in the survey data. For example, the 2010 CGSS survey asks the respondent to report the number of children they have as well as their desired number of children if there were no single child policy. The question is: “If there were no policy constraints, how many kids would you have?” The response is the number of children and among them how many desired sons and daughters. The answer also includes “does not matter whether son or daughter.” Although the sex ratios based on the reported number of children are high, the vast majority of rural respondents reported a desire for both one son and one daughter as well as no difference.<sup>13</sup> This is similar to Bogg’s 1995 survey findings. Of course, it is difficult to determine which survey question has the most accurate answer. When respondents are faced with an official looking stranger at their door step with a clipboard asking detailed (or even politically sensitive) questions about their family, it is hard to determine the accuracy of respondent answers.<sup>14</sup> However, at the very least, this suggests possible contradictions in survey data.

While indirect measures and data reflect important ways to assess the number of truly missing girls, most studies rely on cultural and political assumptions of villager and local cadre behaviour. Cai and Lavelly find 12.8 million missing girls between 1980–2000 where 4.3 million are nominally missing and 8.5 million are truly missing.<sup>15</sup> They state that the truly missing have been removed from the population and do not appear in future census counts. This is based on a careful study of the census data and assumptions of villager behaviour regarding the

12 Bogg 1998, Smith 1994.

13 The question is A37. In the survey, 79 per cent of the urban respondents and 78 per cent of the rural respondents reported one son or no difference, and 79 per cent of the urban respondents and 77 per cent of the rural reported one daughter or no difference.

14 There are ways to design survey questionnaires that ask the same questions in several different ways to determine accuracy.

15 Cai and Lavelly 2003.

persistence of son preference as well as the implementation of a critical national policy. However, examining the 2010 census, Cai finds an additional 10 million hidden girls between 1981 and 2000.<sup>16</sup> Cai suggests that this is an over estimation of nominally missing girls due to lower reported sex ratio at birth statistics in the 1980s and the average age and sex ratios of enrolled primary school students. However, it is strong son preference and constrained fertility that leads to sex selective abortion and to a lesser extent infanticide. Given the lack of direct measures for the truly missing these assumptions are critical.

Several scholars including Cai demonstrate that underreporting births is a real problem in the 1990 and 2000 census, but underreporting is not considered widespread and cannot account for more than half of the missing girls. However, we examine the single child policy in the context of pervasive underreporting in rural China that took place from the 1980s to the early 2000s. Indeed, national level data may not accurately reflect what is happening on the ground. For example, in the early 1990s Lester Brown evaluated national grain and land statistics and suggested that China's grain output was not keeping pace with the increase in population including a serious decline in arable land.<sup>17</sup> However, agricultural economists, at the time, suggested significant underreporting of grain and land at the local level that could influence national statistics.<sup>18</sup> This was due to the contradiction between central grain procurement policies and villager interest to increase family income. Crook observed that villagers as well as local cadres underreported grain output to reduce government grain quotas and increase local feed grain.<sup>19</sup> Villagers increased income through livestock and local cadres increased revenue through the slaughter tax. Further evidence was a greater increase in reported livestock (meat) without a corresponding increase in reported grain output.<sup>20</sup> Regarding cultivated land, the cumulative reports and aggregate data suggests a reduction in the 1980s and 1990s. However, the use of satellite images and remote sensing in the mid and late 1990s reveal significant underreporting with up to 40 to 50 per cent more arable land than reported in the national statistics.<sup>21</sup> Indeed, a number of studies demonstrate pervasive underreporting, including articles from *The China Quarterly* in 1995 and 2000.<sup>22</sup> In this context, it is possible that there are more underreported females than the current literature suggests.

The main explanation for the truly missing girls is the combination of a strictly enforced birth control policy and historically persistent son preference. While son

16 Cai 2103.

17 Brown 1995.

18 Smil 1995.

19 Crook 1993, 1995.

20 Brown also discusses the increase in livestock and the use of feed grain, but he does not take into account underreporting and associated problems with national statistics. Nevertheless, despite the data problems with the original analysis in the early 1990s, he brings attention to the critical challenges China faces in agriculture regarding cultivated land and water use.

21 Frolking et al. 1999, Smil 1995.

22 Cai 2000, Huang 1995, Smil 1995.

preference (*zhongnan qingnü* 重男轻女), as a cultural practice, has resulted in sex selective abortion and female infanticide, the evidence suggests that son preference is not a static model of family relations. One of the main reasons for having a son is the virilocal marriage system and care for elderly natal parents, especially in rural China. Investment in a daughter is like “spilt water” because she will be married into another family and care for her husband’s parents. Yet, anthropological studies suggest that even in the 1980s and 1990s married women could and did care for their natal family.<sup>23</sup> Even historians examining local histories of the non-elite in imperial China show that daughters could maintain close and fluid ties with their natal families.<sup>24</sup> Moreover, some economists also find that within their surveys rural families tend to invest equally in their sons and daughters.<sup>25</sup> One question is whether or not we can identify son preference in an environment without strict birth control policies. In 2004, the United Nations Population Fund (UNFPA) worked with one county in Hainan province to officially relax elements of the birth control policy for 16 months.<sup>26</sup> The result was reduced abortions and more balanced sex ratios. Of course, this is only one county, but this study is suggestive particularly in the context of uneven implementation of birth control policies across rural China and local underreporting. Finally, the cultural practice of son preference varies across families. It may or may not lead to sex selective abortion or infanticide. In our study, we find that while many villagers are willing to have daughters, there is an administrative bias towards boys where sons are officially registered at younger ages.<sup>27</sup>

In short, the increasing value of daughters and uneven implementation of the birth control policies indicate a greater number of hidden girls in the population than the literature suggests. Given the evidence, it is possible that at least 10 million or half of the missing girls are nominally missing. Of course, our results are only suggestive. As scholars, we look at the same census data and use similar methods, but our approaches differ based on critical social and political assumptions. Thus, we believe the debate over the number of truly missing girls will continue.

### Biographical notes

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23 Zhang 2009, Judd 1989.

24 Bossler 2000.

25 Lee 2008, Hannum 2009.

26 Ryan 2005.

27 Although scholars observe an increasing value of daughters, son preference continues to exist in various forms and practices. This is a more dynamic view of son preference.

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