Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally

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In Lieu of an Introduction—Debates on the Great Leap Forward: the Significance of a Reassessment

Background and Significance

This introduction serves three purposes. Firstly, it outlines the background and significance of the publication of such a book, followed secondly by an exposition of the main arguments of the book, with an analysis related to the field. Finally, it attempts to set forth the limitation of the book from our points of view.

This is a book about what is standardly referred to as the Great Leap Forward (GLF) and the "three years of hardship" of 1958–1961. It is a well-trodden subject by well-known publications of which there are two accepted conclusions in the field by many respectable scholars as well as the media and self-claimed knowledgeable public in both the west and China. One accepted conclusion is that at least 30 million Chinese were starved to death (referred to either as the GLFfamine toll, population loss or demographic change). The other accepted conclusion is that the Chinese Communist Party, especially dictator Mao Zedong, was responsible for this largest man-made disaster in human history. Frank Dikötter simply titles his book on the subject as "Mao's Great Famine", so does Jasper Becker as "Mao's Secrete Famine". On this subject and on the conclusions the mainstream elite Chinese intellectuals and mainstream western publications are comfortable in agreement.

But here we have is this book by Yang Songlin who challenges both accepted conclusions. The significance of this challenge has to be seen in a broad context. The GLF is an important event in understanding the

PRC in that the truth of the GLF is important for us to debunk the simple black versus white myth of China, then as well as now. What if this book demonstrates that the GLF was genuinely meant to improve rural and urban living, involving progress in mass education, healthcare, community welfare as well as women's participation, and that serious policy mistakes were not the whole story? What if this book convinces you the opposite of, or at least gets you to question, the two above-mentioned conclusions that there was a GLF famine toll as many as 30 million and that Mao was responsible for all and everything?

If, let us say if, the book is credibly convincing that the GLF was not a disaster of the scale that has been accepted so far, in that the famine death toll was less than four million, as it is concluded in this book, instead of the claimed 30 million, then the era of Mao would be looked at with a different light. Several million is still a horrible and unforgivable number in absolute terms, but not an unprecedented number in relative terms in Chinese and global histories. Furthermore, what if, again if, Mao actually unsuccessfully tried to correct ultra-leftist "wind of communism" in late 1958 and early 1959 when he wrote a series of letters and directives to cool the "wind", and also addressed the three levels of grassroots party officials (Production Team, Production Brigade, and the Commune) directly for fear that the middle bureaucracies would not pass the spirit on (Mao, 1993, see Pang and Jin, 2013), and a real human being who could not control all the unintended consequences once catastrophic events took their course? Though Mao had the supreme power theoretically, in real political life, he needed colleague support and narrative consensus. Therefore, just as everything that has been positive in China could not and should not been all credited to Mao, not everything that has been negative in the PRC was Mao's doing alone.

If this book can convincingly contribute to a more accurate understanding, then it is a step forward to accept that the era of Mao was not as irrational and disastrous as it is often perceived. This would then also be a step further to the understanding that the post-Mao economic growth is not a miracle. There are miracles in religion but no miracles in economic development. The market-orientated policy reforms and international capital contributed to the post-Mao economic development; but the industrial, agricultural, and human resources foundation laid down in the era of Mao could never be overestimated. Take industry as an example. By the time when the CCP took over power in 1949, China's industrial capacities were that of Belgium; but by the end of the 1970s (Mao died

in 1976), China's industrial capacities were already the sixth largest in the world (Meisner, 1999)

The GLF might be seen as the most damaging event in the era of Mao, though the Chinese political and intellectual elite, understandably, would see the Cultural Revolution as the most damaging. If such a damaging event as the GLF can be understood, as this book tries to show, as a result of policy mistakes, not irrational, but rational within the political ambition and discourse at the time, then it is a step further to the understanding that the Chinese are also normal humans and that the PRC under the rule of the CCP is not an evil monster threatening the world.

The post-Mao Chinese intellectual elite is fond of comparing China with not only Japan, but also Singapore, Hong Kong, and South Korea, to argue that China's economic development was stunt by Maoist policies as reflected in the GLF and the Cultural Revolution. But it can be argued that a comparison with any of these economies cannot be as fruitful as comparing orange with apple, especially so when the economic rationalist approach in such a comparison ignores the Cold War context. A more comparable comparison is between India, the largest democracy in the world, and China, the largest so-called communist state, with two contrasting regimes but similar socio-economic conditions. In spite of the fact that India did not but China did go through 14 years of Japanese invasion and occupation involving the death of tens of millions and incalculable material destruction, and then also three years of large-scale civil war subsequent to the end of World War II involving millions of troops, the PRC established in 1949 in the era of Mao performed better for the lives of its large population than India after independence in 1947 in every socio-economic index, such as life expectancy, infant mortality, health care and literacy, let alone women's status.

A Debate on the GLF is also a Debate on Socialism

Ultimately and fundamentally, the debate on the GLF is a debate on the explanation of China's economic development which is a debate on socialism, or rather experiment of socialism. The PRC in the era of Mao was experimenting socialism and the GLF was an experiment for collective farming and faster industrialization. Because it was an experiment that was meant to be different from the USSR model, all kinds of initiatives, especially from the local and grassroots levels, were encouraged. Many of the GLF initiatives such as the institution of the People's Commune and

village and street furnace making iron and steel were not planned from the top but emerged from the bottom. Some were eventually endorsed, but with modification by the centre such as the People's commune and others were stopped such as makeshift furnace and public canteens. The GLF went wrong because some of these experiments were too large to manage, or too fast for the centre to be informed, or too late to be stopped.

The Cultural Revolution, which was meant to curb bureaucratization by changing the mentality of political and intellectual elite, was also an experiment. Just like the GLF, the Cultural Revolution also encouraged grassroots initiatives and therefore the populous were urged to hold the power accountable by having criticism and self-criticism sessions targeting the political and intellectual elite. But populism can and often is indiscriminate and destructive, as the development of the Cultural Revolution demonstrated.

One fundamental content of the 1949 Chinese Revolution (Gao, 2020) experiment on socialism is that of collective farming, initiated during the GLF, which laid an infrastructure foundation in rural China and spurred a steady growth in grain production. China's progressive socio-economic programs were a success in that they addressed the issues and problems of social inequity and gender inequality, increased life expectancy, raised literacy, reduced infant mortality, and dealt with a whole range of health problems that had plagued China before 1949. Even a socialist would not argue that the GLF was a success but would argue that it taught the Chinese a good lesson.

The commonly held yet mistaken equation between GLF failures and communization ignores latent rationality in both projects. As Dan Vukovich (2011, see ch4) argues, local knowledge (as opposed to "orientalist" one), practical rationality and the self-understanding and discourse of the historical actors should be taken into account. In retrospect, Chris Bramall posits that "the very fact that agricultural output did rise as fast as population during the late Maoist era is in many ways a tribute to the effectiveness of collective farming" (2009, 245), which allowed China to use its available land "far more productively than any other large-scale agricultural producer on the planet" (2009, 231). Even a tragedy of famine cannot obliterate the constructive side of development since 1949 (Lin, 2006, see ch1; Gao, 2018, see ch8; Wemheuer, 2019, see ch4).

Most relevant to our concern here is the beyond dispute reality of an eventually drastic reduction of infant mortality and impressive increase in life expectancy from around 36 in 1949 to 68 in 1979 (Sen, 2005).

This increase "ranks as among the most rapid sustained increases in documented global history" (Babiarz et al., 2015, 39). In the end, notwithstanding grave setbacks, China has succeeded in feeding then a quarter and now one-fifth of the world's inhabitants on 7% of the globe's cultivable land, achieving a leap on every main index of human development (Lu & Montes, 2002, 8–9). Even Judith Banister, a leading demographer who has put up larger estimations of famine deaths, stressed that the PRC was a "super-achiever" in extending life at a faster pace than most other countries. Apart from the worst year of 1960, Banister's estimated famine tolls for 1958, 1959, and 1961 in China are all below the 1949 baseline and indeed anything known to "old China" (Banister, 1987). As Joseph Ball points out, the GLF deaths "have to be set against the Chinese people's success in preventing many other deaths throughout the Maoist period. Improvements in life expectancy saved the lives of many millions" (2006).

Furthermore, and immediately relevant to explaining the "miracle" in post-Mao China is the fact that it was during those radical years of all-out resource mobilization, China had markedly upgraded its land and irrigation infrastructure and "green revolutionary" technologies (Eisenman, 2018). Along the way, not only was collective agriculture enabled China's internal accumulation of both capital and labour for industrialization, it also created conditions to nurture a healthy and literate workforce. China's spectacular economic takeoff has thus been prepared for since 1949 including the lessons from the GLF and nothing is miraculous.

This recognition, shared by Yang in this book, overturns the received wisdom of stagnation before market transition. The Mao era can thus be looked at with a different and more objective light against the feeble portrayal of presumably Maoist irrationality and anguish. Even today, the collective ownership and management of land, however diluted, functions as the last defence of social security for the rural population as well as the massive migrant workers who are often on precarious jobs. Rural China organized by the CCP under Mao with its spatial depth has over both pre- and post-reform periods served the country as a vast safety velvet especially in times of crisis (He, 2007; Wen & Xiaodan, 2019). This is most recently demonstrated during the 2020–21 covid-19 crisis.

China at a Cross Road again

China is at a crossroad again, like it was in 1945 when it took the socialist road by 1949, or like it was in 1978 when it took the market reform road that eventually led China into the world of capitalism. After 40 years of development, post-Mao China now is in many ways both a developing country and a developed country, both a socialist country in terms of its path-dependent socialist legacies and a capitalist country due to its policies towards global integration. The road to be taken now is whether to make further moves to be completely capitalist, or to be more socialist. To the right is an urge to "complete" market transition and to adopt a form of so-called multi-party liberal democracy accordingly. To the left, on the other hand, is an option of the CCP holding on power to pursue more socialist socio-economic policies to defend labour and benefit the poor and the marginalized. The latter has a momentum riding on the victory over the 2020 covid-19 pandemic, but the struggle is intensified because of resistance from the pro-capitalist elite and because it is certainly a threat to the international capital.

The collective ownership of land in the rural sector is one principal indicator of Chinese socialism, despite its dilution in recent years. The collective system in the era of Mao enabled the PRC to accumulate capital and to mobilize labour for industrialization. It laid down conditions for raising a healthy and literate workforce for the post-Mao economic take-off. But for at least two decades now, alongside breakneck urbanization, the logic of the market cries out for the economy of scale in rural China, which pushes time and again China's policymakers to design policies that encourage those who have the capital to buy up land from small households for modern and large-scale farming. This is the case because no Chinese leadership in the name of the CCP so far dares to change the relevant stipulation in the state Constitution so as to get rid of the collective ownership of land. What has been tried is to encourage household farmers to lease their use rights of the land they own in return for rent in the form of some annual cash or grain compensation. Hence we witness the development of a mixture of a complicated system by which the land is collectively owned constitutionally by the villagers, but distributed to households on a per capita basis administratively for their own use. These households can then transfer their use rights of the land to an entrepreneur farmer. To speed up this process of amalgamation of land, various levels of local government have introduced various programs to subsidize those

who rent out the use rights so as to "circulate" as much land as possible. The neoliberal market economist critiques argue that this is not going far enough, not surprisingly, because they want to have a clear-cut and unambiguous private ownership right of land by those who invest.

The state-owned enterprises (SOEs) present another conundrum, the solution of which may eventually decide to what extent China retains its remaining socialist characters, although state ownership by itself does not define socialism. Enterprises that are considered to be crucial to China's strategic interest such as banks, transportation, and national defence are mostly state-owned, though many of them now have shares owned by private entities including foreign ones. In general, personnel and staff members of the SOEs have better earning, better working conditions, and better welfare provisions than the private sector, partly as a heritage of their socialist past and partly because they do not have to prioritize making profit for shareholders. However, SOEs are under attack from two opposite directions. From one direction is the market demand of efficiency; from another is state demand for accountability of the management. It is not uncommon to see the top managers reward themselves, their families, and friends handsomely while the enterprise runs a loss. In recent years, a number of high-level management personnel have been exposed to have committed crimes of corruption and losing state assets.

Yang's book is relevant to all these issues involving the debate on socialist China and on the future direction of China. A work like this from a truth-seeking position and empirically grounded that challenges the accepted wisdoms of the GLF brings fresh air to the field. Because this book aims at presenting a more accurate understanding of an important episode of PRC history and Chinese socialism more generally, its relevance is not just about the era of Mao, but also the current China as well as its future.

Debating GLF and Famine: Global and Historical Context

The accepted conclusion of a minimal toll of 30 million famine toll is widely taken as factual, inside and outside China, on the left and right, even though PRC National Statistical Bureau (NBS) has, only quietly, approved figures around 17–22 million (Jiang, 1987; Li, 1997, 1998). These numbers, however, have been disputed unofficially at the margin by unofficial researcher, who set the scale of the famine at millions rather

than tens of millions (see Tian Lao, 2008; Sun, 2011; Yao & Song, 2011; Qi, 2012; Yang, 2013; Sun, 2016; Huang, 2018). Yang Songlin in this book reviews these debates and makes his own argument in a thoroughly informed and logically analytical manner.

Is there any real difference between the two numerical scales, four million versus 30 million? To be sure, several million is just as catastrophic in absolute terms. However, there is a difference because several millions toll as a result of a famine had been frequent in China before 1949. So we need a historically comparative perspective in which famine is no stranger to histories the world over, and frequently occurred in China before the revolutionary victory. Even some of those who do not directly challenge the upper scale estimations feel the need of observing the distinction. Carl Riskin noted that "in general, it appears that the indications of hunger and hardship [following the GLF] did not approach the kinds of qualitative evidence of mass famine that have accompanied other famines of comparable (if not equal) scale, including earlier famines in China" (Riskin, 1998). Even if we take the NBS's high death rate at 25.43 per thousand for 1960 supposedly because of the GLF (Li ,1998), it is still much lower than the average population loss during the Republican period before 1949 (Deng et al., 1997). According to John Leighton Stuart, the US ambassador in Nanjing 1946–49, three to seven million people starved to death every year in China during his tenure. "Famine was endemic but nobody mentioned it until the Communists won the war" (Mei, 2013).

Few would deny that the GLF failed and people's livelihood was very steeply harmed. However, globally a closer look at modern famine tolls suggests the record of the British Empire is at least just as deplorable: "Under the Raj between 1896 and 1900, more than ten million people [in colonial India] died in avoidable famines out of a population little more than one third the size of China's in 1960. In the Bengal famine of 1943, between three and seven million died, out of a population of sixty million. …Needless to say, a proportionately far greater number died in Ireland under British rule in 1845–46" (Benton & Lin, 2009, 10). Moreover, and this is hugely important, after 1961, China has for the first time definitively eradicated famine while gradually moving towards the end of poverty as well—an unprecedented achievement in human history that cannot be taken for granted (Gao, 2008, see ch5). Since hunger was a signatory fixture in old China, the dramatic downward curve of starvation-induced mortality after 1949 except the hardship around 1960 was a testament to the capacity of delivering public good built up

in such a short time span in new China. The socialist industrialization and egalitarian social policies sustained the feat of agriculture and rural development of what E.A. Preobrazhenski termed the "primitive socialist accumulation" (Preobrazhensky, 1926, see ch2).

The same point can be further illustrated with a reference to the horrendous crimes of "imperialist famine" (Davis, 2001, see ch9) and other countries in the postcolonial world. In terms of this context, the foremost Indian political economist Utsa Patnaik (2002, 53, 64–5) asks why India did not experience a "famine" when its total food output per capita in the same period as the GLF was actually lower than China. Her argument is not only that output is not the same as availability due to social structural, pricing, and policy factors, but also how in most poor countries, the people suffer from persistent hunger. As Jean Dreze and Amartya Sen put it, if the 30 million Chinese GLF famine toll was indeed the case, then "India seems to manage to fill its cupboard with more skeletons every eight years than China put there in its years of shame" (1990, see ch11). Even with good harvests, decade after decade malnutrition, destitution, and premature deaths were quietly part of life for the lower class/caste Indians without spectacular disasters like famine. This observation can still be sharpened by taking into account external variables: while China's international environment worsened by economic and military blockages as well as a burden of debt repayment to the Soviet Union, India as a nonaligned country received multiple aid incomes from both sides of the Cold War.

The Politics of Famine Research

Famine research is a legitimate and important field, not only for the sake of historical truth itself but also its implications on the conditions of nearly half of humanity being trapped in prolonged food insecurity and abject poverty in the midst of unparalleled aggregation of capital and wealth in an age of global and peripheral capitalism. However, the subject, like some other politically sensitive ones, has too often not been treated rigorously. Rather, debates tend to be ideologically driven and emotionally charged, resulting in biased knowledge products influenced by a dominant genealogy of demonizing socialism since long before the Cold War. Manipulations of statistical and archival materials are rife, fabricated stories are told and circulated, obscure sources of information are freely quoted, dubious accounts of personal and isolated incidents are generalized, and

any soberer evaluation embracing the positive side of socialist experiences is dismissed or denounced (Sun, 2014; Wang, 2014). In such an intellectual ecology, Yang's work, among those of few historians, sociologists, economists, statisticians, and demographers who have sought to present a fuller picture of what actually happened in which circumstances and how and why, deserves our attention.

The power of the postsocialist ideological hegemony is such that official de-Maoization, overtly or covertly, is broadly accepted across the Chinese borders, and most appealing to a wide spectrum of intellectuals. An easy example is the popularity of *Mao: the Unknown Story* (Chang & Halliday, 2005) which claims that as many as 70 million died from "Mao's" famine and purges. Those who hailed the book as a sharp critique of communist China seem to be unaware of the plain fact that its narrative framework is actually quite "official", in that it is perfectly in line with the post-Mao political verdict of the Mao era. Another example is how Frank Dikotter's *Mao's Great Famine* (2010), following *Hungry ghosts: Mao's Secret Famine* by Jasper Becker (1996), has been so readily accepted as the real "history" (Dikötter, 2011). Dikötter claimed both the GLF famine toll of 45 million and Mao's personal responsibility along with the system's "structural issues". Yet even Yang Jisheng, the author of *Tombstone* whose toll figures were no less (36 million deaths plus 40 million "lost births" to a combined 76 million of population decline), argues against some of Dikötter's factual falsities and baseless assertions (Yang, 2011). Yang Songlin in this book takes us through the representative Chinese publications by Ding Shu (1991), Cao Shuji (2005), Song Yongyi (2009), Yang Jisheng (2013), and others for the domestic audience.

The assumption is that the CCP apparatus would automatically be defensive of Mao is common, but many past errors could be deliberately exaggerated so as to smooth out the expediency of carrying out the post-Mao departure of policies. A lack of serious scholarly publication in Chinese regarding the GLF (and the Cultural Revolution) has much to do with this post-Mao sensitivity and political dynamics (Gao, 2018). An irony here is that the ideological nature of Dengist pragmatism pretending to be against ideology is the politics of depoliticizaiton, in the words of Wang Hui (2006). To avoid what was perceived to be ideologically distractive from his "core principle of economic development", Deng dictated to stop debating the issue of socialism versus capitalism. One consequence was the silencing of socialist critics. Since only selected information and positions were allowed to publish without serious research

and reliable citations, and as rival views were suppressed and blocked, the domain of research ended up making claims: claims validating claims or claims against claims.

The politics of depoliticization, to be sure, leads to neither apolitical chimera nor political neutrality. Regarding the debate on whether the famine was wholly "manmade", as many officials and mainstream commentators insist, or whether it was at least partly due to natural disasters, politically convenient stunning "discovery" by the post-Mao Chinese scholars was that the officially announced "three difficult years" of 1959–1961 "in fact" enjoyed "favourable weather with timely sun and rain" (Jin, 1993). Astonishingly, such "evidence" of "normal rainfall" for the period nationally was supported by crudely averaging a yearly precipitation of months of drought and months of flood when many regions experienced both in alteration (such as in Shandong), and then also drought in the northern provinces (e.g. Heilongjiang) and typhoons/floods in the south (e.g. Fujian). The point is that such an absurd method and groundless ascertain, completely refutable by careful studies of the meteorological record of the period (Chen, 2000; Yang, 2013, see ch16), are influential without any rebuke from the official outlets. In this climate of demonization of the era of Mao, forgotten is scholarship by even fair-minded liberal scholars who had no sympathy for GLF that shows the role of prolonged and severe natural disasters. Roderick MacFarquhar, considered an authority in the PRC history, identified drought, flood, and diseases of staple crops among the causal factors of poor harvests and famine (1983). Similarly, Yak Yeow Kueh, an expert of agricultural development in China, systematically analysed heavy hit by unusual weathers on farm yields in those years (1995, see ch10).

Yang in this book (see ch11) discusses the data of climate-induced crop failures and how it has been manipulated. The truth is that the severity, scope, and duration of natural disasters at the time were literally unparalleled in some decades. Premier Zhou Enlai spoke at the extended Politburo meeting on 29 October 1960 that "such a huge disaster is unprecedented since the founding of our state. For people in my age, nothing like this is heard of in the twentieth century ever since we can remember" (Jin, 1998, 1558).

The quality of statistics and selective pick of them also indicates the politics of research on the GLF. Ideally, reliable national censuses and residential registrations in the first 30 years of the PRC would probably allow a more accurate and less controversial scholarship, even though what is

reliable or accurate needs to be established in the first place. Data collection and selection inevitably involve circumstantiated assumptions and methodological preferences. In 1983, the Chinese authorities published its third national census data and samples of national fertility auditing obtained in 1982, along with the data from 1953 and 1964 census. Ansley Coale, who chaired American Population and Demographic Committee, considered this set of materials to be generally reliable and only needed minor adjustments for being the main source of their China research. But the timing of releasing these statistical information that includes, implicitly, GLF victims, was hardly innocent, when many of those who had just resumed their party and government positions engineered a wholesale negation of the Maoist past. The fact that experts had privately raised doubts about the earlier census data already in the 1950s on the ground that the 1953 Census was conducted unscientifically and registered "an unbelievable [population] increase of some 30% in the period 1947–1953" has been ignored. This fact alone would render the claim that 17 million or many more people were "missing" in the famine years "worthless" if one cannot say for certain that the population in 1953 was 600 million (Wertheim, 1995). Ping-ti Ho, a veteran Chinese demographer, also pointed to many flaws in the 1953 enumeration (Ho, 1959, see ch5). Banister, too, regarded China's residential registration system before the mid-1970s as erratic which for her though could result in underestimation of the mortalities (Banister, 1987, 28).

The problem is that dismissing such objections, the crusade went on regardless, manipulating the national census data one way or another to come up with an estimated GLF famine toll. In the wake of China's own certified figure of 16.5 million toll, both western and Chinese investigators began to inflate it, at times by using obscure sources and even simply multiplying a certain number one particular location for an aggregation as the national total. Many authoritative western publications knowingly disregard the shaky foundation of a series of base numbers that are employed, and push their "findings" to become the influential fixture passed into popular folklore.

Major US demographers working on China uncritically depend their number crunching on the unsubstantiated data produced in the early years of the post-Mao regime. Moreover, their computational politics also allows problematic playing of unchecked numbers. For instance, the Coale Report (1984) in its recalibration of population change 1952–82 in China raises the numbers of both death and births that would directly

and indirectly enlarge the size of "premature deaths" during what they designated to be abnormal years (1958–63). Huang Weidong, a Chinese scientist, finds in the report a striking statistical discrepancy between 14.9 million "excessive deaths" for 1960 in the quantitative component and 25.88 million in its qualitative account (2018). The discrepancy enables an increase of the total famine toll to 27 million, including the 8.8 million "arbitrary" increase derived from projected births before 1960.

Other committee members of the report arrived at similar figures independently, for instance at 28.8 million by Banister (1987) while Basil Ashton and team propose a figure of 29.5 million (Ashton et al., 1984). In a recent exercise, Huang applies Coale's demographic model and linear interpolation procedures on the same data to repeat the computation and comes with strikingly different outcomes. He finds that "the Coale report did not follow what his own method should have resulted, violating the theoretical demographic principles". Additionally, since the report does not observe the convention of providing the margin of error, its numerical conclusion "has no statistical significance and cannot be treated as being scientific" (Huang, 2018). This is a serious allegation that deserves the attention in the field.

An additional example of data manipulation is about the "lost births". Ashton and collaborators do not straightforwardly append such loss to their reckoned famine toll, but do measure the loss by what they take as "normal" births in the years prior to and after the famine. More than 40% of their asserted total famine deaths appears under 10 years old (12.2 million). Separately, Ashton concludes that during 1958–1962, due to decreased fertilities alone, 33 million people were "missing". Coale (1984) and Arriaga and Banister (1985) each offer similar figures of fewer births during the famine years which gives a population decline in total of more than 60 million. This practice of taking into projected fertility rates in calculating population loss allows horrendous speculations and even "death" to happen without birth.

This kind of data manipulation "does not seem to have been ever applied by demographers and economists before, and never applied in contexts other than China" (Patnaik, 2002, 53). The method might have since become more common, but how China was singled out at the time remains telling. The 1982 census is used to "project back very high fertility rates to the past, thus constructing an entirely hypothetical larger total of births between 1953 and 1964" (Patnaik, 2018). Coale and Banister also jointly use what they deem "the high-quality data" from

the 1982 1‰ sampling survey data of fertility to find "missing girls" in China, where they recognize the incidences declined precipitously in the communist period although later returned through escalating sex-selective abortions (1996, 421). Overall, by keeping the official increase in population constant, exactly as many extra deaths could be assigned to the GLF (Patnaik, 2018).

In this connection, a final point concerning what Patnaik calls "ideological statistics" (2018) is the concept of "ultra linear mortality", a conceptual method itself likely to have been invented specifically for Maoist China. It works simply by a numerically derived trend of annual death rates through regression analyses of both the death and birth over the "normal" years, and then a comparison between this pure linear trend with actual deaths to show any non-linearity in an age-patterned and time-sequenced quantification of national population. As such, any lowered estimation of linear trend could easily be translated into higher or "excess" death rates of what appears to be above the normally declining rates of mortality, such as in China's inter-census period of the GLF, presumably due to starvation.

The political scientist Wang Shaoguang effectively questions this conceptualization by addressing the similar notions of normality and abnormality of deaths, of which the key is the fallacy of "averaging". What can be the reasonable average death rate? How might it come into being presumably comparative? The choice of what and where to compare, temporally by invoking comparable histories or spatially by involving regions or countries like for like, "is itself made politically" (Wang, 2014).

We are thus back to the issue of limitations and manipulation of primary data. If crude death rates in China had indeed rapidly dropped from about 38‰ in 1949 to 18.12‰ in 1957 by one estimation, it would have been a colossal yet impossible achievement in merely eight years (Banister, 1987, 80). Likewise, rather different statistical representations to include one of the decline from minimally 20‰ in 1949 to 10.8‰ in 1957 owing to reduced infant mortality and raised birthrate in the NBScensus data (Li, 1982), are just as too drastic to be demographically realistic. To computationally substantiate the famine toll at tens of millions around 1960 is to require an extraordinarily low mortality rate before the GLF.

Main Argument of the Book

Yang Songlin argues that assertions that there were 30 million or more famine deathsin GLF are implausible due to the methodological flaws behind their computation. He contends that the official population data is treated arbitrarily, either completely ditched while using obscure survey results and creating new data without substantiation; or selectively taken in support of one's chosen claims. Similarly, certain methods of calculation are applied only to exaggerate the premature death attributed to the GLF. Such methods, when applied to any period of years, could unexpectedly elevate death rates of the years in which there would unlikely be any significant premature deaths. By critically examining the discrepancies within the officially published population statistics, Yang shows how writers such as Wang Weizhi and Frank Dikötter cherry-picked data. Yang insists that discrepancies in the official publications can be contextualized and a more accurate estimation of the number of premature deaths is possible, if we take into account the socio-economic context of the GLF, especially the statistical confusion associated with under-registration and late registration of birthsand deaths during the population movements before and after the GLF.

Regarding the population data of the years surrounding the GLF, Yang identifies a number of problems. First, there were distinct discrepancies in this data based on the records collected in the household registration (hukou) system, such as between year-end population increase and natural population increase. Second, there seemed to be a significant trend of under-registration of birth, death, and rural–urban migration. Third, the recorded survival ratios were abnormal and larger than 100%, such as in 1960. Furthermore, the officially published drop of death rateprior to the GLF that is much more rapidly than any other country should not be taken for granted. These problems indicate that official statistics at the time had deviated from the demographic reality.

Yang examines each of these problems in their historically specific conditions. To sustain his less dramatic estimate of population variation of GLF years and substantiate his statistical adjustment thereto, Yang argues that although the household registration system (hukou) remains the most comprehensive source of population data, the accuracy of the officially published statistics concerning the prior 1982 population based on hukou is questionable because these statistics do not take into account the massive under-registration during the 1950s and delayed registration

of birth and death. It would be inappropriate to take the records in the hukou system without considering those intervening social and historical factors. In particular, there were several rounds of huge urban–rural migration in both directions, involving millions of people who failed to cancel or register their *hukou* timely. Because there was a large number of unregistered deaths throughout 1953–1958, which were correctively registered in 1959–1961, there led to a result of a sharp rise of account in death rate which then was counted towards the GLF famine toll. The scale of excess deaths then could have also been enlarged due to the "standard" of a linear trend of death rate recorded to be lower than normal in prior GLF years.

The fact that there was an exceptionally higher survival ratio among children whose birthswere registered in the post-GLF years is a strong evidence that many children born during the GLF did not have their birth registered at the time. Thus, Yang contends that taking the Chinese NBS officially published 1983 population statistics as the basis to calculate famine toll, as most demographers do, is flawed.

The success of Yang's challenge of the 30 million famine tool also relies on another crucial issue, the results of a fertility survey, i.e. the State Family Planning Commission (SFPC)'s "retrospective marriage and fertility survey" released in 1983. This door-to-door 1‰ sampling survey, which collected information about birth over the period of 1940–81, was conducted during the 1982 Census. A number of western demographers such as Ansley Coale (1984), Gerard Calot (1984), and Judith Bannister (1987) have used this fertility survey as a main source for their calculation and re-estimation of China's birth rate in the 1950s and 1960s. Although they do not necessarily agree with each other on the faminemortality, they all tend to see this fertility survey as furnishing evidence in support of statistical adjustment of official population data. In particular, the raised birth rates and as a consequence an elevated death rates according to the fertility survey lend much room for higher counts of the famine toll and population loss. Influential Chinese scholars too have affirmed the credibility of the survey results (Jiang, 1987; Yang, 2008). As such, whether the fertility survey is credible is a key factor over the estimated mortality of the famine.

Commenting on Jiangand Coale, Li Chengrui (1997), former NBS chief, considered the 1983 fertility survey data to be "accurate" and its method "scientific". This seems to render credibility to the accepted

conclusion of 30 million GLF famine toll. However, as there are discrepancies between the birth and death rates in officially published census data and those from the adjusted birth and death rates based on this fertility survey, a question arises: are the fertility survey rates more credible than those of the other officially published statistics? Li Chengrui did not address this question when he confirmed the credibility of the fertility survey. Yang Songlin analyses the circumstances of the two undertakings and major statistical procedures and outcomes of each. One discrepancy is that in the fertility survey results, the infant mortality rates (IMR) of 1957, which was not a famine year, were approximately 300 per thousand or 71% higher than that of the other officially published statistics. Both the 1982 Census and the fertility survey applied a sampling method, yet the two outcomes are not comparable. This is the case, according to Yang, because they have adopted different age grouping methods. Of the seven age groups, the number of samples of the fertility survey is higher in three and lower in the other age groups than those in the Census, with a maximum differential of 125%. Besides, the fertility survey was carried out by inexperienced surveyors of the newly established SFPC, while the 1982 census was conducted by well-trained staff. Yang thus concludes that the fertility survey results are unlikely to be more accurate or credible than the official figures based on the Census. Therefore, the higher GLF famine toll based on the adjustment of the fertility survey cannot be taken for granted.

One of the profound implications of Yang's questioning of the fertility survey is that the excess death numbers based on this survey lack statistical rigour and are methodologically untenable. The death rates drawn from the fertility survey should not be accepted at their face value and the methods utilized to derive them should be placed under more stringent scrutiny. It is based on his well explained critiques and rationale, highlighting the fact that most errors and omissions in the population data happened in the specific historical and socio-economic context, Yang adjusted the data of year-end population, birth and deaths through 1953–1982. His non-speculative estimation of the number of famine deaths is then between three and four million. He also talks the natural disasters as a primary cause of the famine, with policy failures and certain radical practices at the grassroots level worsening the situation. Opposing claimed "insider stories", Yang also demonstrates that serious errors and inconsistencies notwithstanding, there is nevertheless no evidence suggesting any systematic state manipulation of its population data.

Some Points of Contention

It has to be pointed out that the occurrence of a famine in China around 1960, following the erroneous GLF policies on top of large-scale natural disasters, is not disputed by Yang Songlin nor any of us here. By no means to overlook the dark side of PRC history and Mao's share of the responsibilities, what this book tackles is the controversy over the true magnitude of the famine. Our intention to have this book published in English is no more than achieving some balanced public understanding of the historical experience of Chinese socialism and drawing the right lessons from it. We are convinced that only open discussions that allow minority voices can lead us to an honest and solid historical assessment long obscured under a complacent discursive hegemony. It is also worth pointing out that Yang's original book in Chinese, *Someone Must Finally Speak the Truth* (2013), on which the main arguments of the present volume are based, was in part collaborated with the mathematician Sun Jingxian, a professor at Xuzhou Normal University. Sun's publications (2011, 2016) have been rejected by many on the basis that he works within the CCP apparatus. But most of the Chinese commentators who supported the mainstream conclusions on the GLF and postulate higher famine toll also work within the system. To assume that those, like Yang and Sun, who refute the demonization of Mao cannot be credible because they work within the CCP apparatus and at the same time to assume that those who, like Yang Jisheng also working within the CCP apparatus, presents a darker era of Mao to be credible is logically unsustainable.

A more reasonable concern is that Yang Songlin is not a professional demographer. But Yang Jisheng is not a demographer either, Nor is Jasper Becker, nor Jung Chang, nor Dikötter. In any case, this book does not pretend to be a demographic monograph. It is rather a historical-sociological investigation into the population movement related to census and surveys that makes a demographically significant argument. Yang is a versatile freelance researcher and essayist with a splendid experience in policy research and onsite economic management. Being not trained in the discipline of population change can be a fundamental barrier, but he has turned that disadvantage upside down by advancing a path largely overlooked by the disciplinarily confined experts.

In particular, by drawing our attention to the evolving residential registration system on the ground, the book demonstrates how hukouregistration was never rigidly implemented under a supposedly

"totalitarian" government and top-down central planning in the first two decades of the PRC. Its actual flexibility and chaotic implementation with many loopholes at a time of mass mobilization first because of industrial expansion and then demobilization of industrial workforce because of food shortage need to be looked into carefully for a more realistic, non-ideational, and non-static understanding. The dynamic interactions in these processes between individuals, families, collectives, and governments, and between industrialization and rural development, are essential for any adequate explanation for the GLF-affected events. Only when the function or malfunction of the hukou system is historically examined, can we approach to any accurate information and more reliable data about what happened and why. To be sure, some of Yang's hypotheses still await more empirical and analytical substantiation, but his breakthrough merits recognition.

While Yang's contribution brings fresh air to the field, objections may also arise to his insufficient use of the English literature. The book is written primarily based on first-hand Chinese sources, which is of great value, but nonetheless lacks a more extensive and thorough examination of the existing scholarship in other languages. However, the non-direct citation but from the translated citation of publications of foreign language sources actually enables Yang to have stronger engagement in the counterarguments.

In order to be illustrative, Yang has created some equations and formulas to recount other scholars' calculations second-hand, of which a few may appear short of clarity. Minor misrepresentations might be detected. He has not used mathematical symbols, the way most trained demographers would do. Again, this might not necessarily be a weakness if his expositions hold and can be understood by non-experts. From what we can see, all this has not compromised the validity of the book's central thesis because its author has meticulously searched and consulted alternative sources of information and non-official data.

Another point to note is that in order to focus on the core debate over the extent of famine which has important implications, several valuable parts in the original Chinese version are excluded from this book, including a substantial analysis of the GLF campaign itself which shows the insight of the causes of relevant policy decisions and the dynamism of successive events, and the intriguing question as to why the early warning of what was coming did not work because of the resistance from all levels of bureaucracies. Mao's personal interventions to halt ultra-leftism since

October 1958 before the 1959 Lunshan conference (Mao, 1959), for example, remains mostly concealed and missing from the public knowledge. Against the charge by Becker among others that Mao "ignored" the famine (Becker, 1996, see ch6), as another example, Mao signed the State Council's report on 17 April 1959 and titled it "the big problem of hunger for 25.17 million people in 15 provinces" as an emergency, requiring the document to be urgently delivered to each of the first provincial party secretary (Mao, 1959, 209). Days later on the 29th, he again penned an issue of "party internal correspondence" to address the urgency of relief. Sichuan among China's major grain producers, for example, was asked to donate 7.35 million tonnes of food staples to be delivered immediately to several urban centres. The sacrifice of local peasants in such circumstances was profoundly tragic but only part of the story (Cheng & Zhan, 2017).

Richly detailed in empirical narrative and analytically refreshing as it is, the book has not offered a sufficient discussion of the fundamental questions concerning history and theory beyond the fiercely disputed figures of famine deaths. Yet at some level, the final debate is about the more general issues, from assessing the political economy of Maoistsocialism to framing persistent food insecurity globally. Chapter 14 does engage some of such issues, only too briefly, such as the rights and wrongs of collectivization. It was not collective agriculture but communal dining along with other "communist infantile" adventures during the GLF that initially triggered some food waste and ensuing shortage. Also made clear is that collective land and organized labour were what ultimately have enabled China to feed itself. Full-length discussions of land reform, socialist accumulation, urban–rural divides, and so on are also cut down from the Chinese edition, resulting in some lack of theoretical depth concerning the nature or meaning of famine or the conceptual distinction between policymaking, regime type, and the foundational economic system.

Famine, after all, is not a function of shortage in food supply itself but of entitlement or right to food security or distributive justice, and is unconfined to the market logic of buying opportunities and ability. The communist regime and its designated political economy are conceptually separable from the kind of policy blunders seen during the GLF, only if stronger elaboration on these questions could be included. At the beginning of this chapter, the background and significance section and the debate on socialism section are meant to make up for this in some way.

A final point of contention is the tone and style of the book's distinctive prose. Unfortunately, the intended humour may not come across the English reader as intended every time. But it is better to keep Yang's narrative style so long as it is grammatical. What is important is that his writing is even-handed, but not sensational or propagandistic, which actually contrasts favourably with those more emotional and polemical publications pervasive in the market of GLF and famine literature. In sum, against the familiar verdict, this is a book that reverses the trend through both empirical fieldwork and analytical rumination. It gets into the bottom of complicated, under-explored areas of the national economy and population movement at a crucial period in Maoist China, and debunks ideologically motivated oversimplifications or the black and white myth of GLF. There is certainly a large room for improvement, but it is hoped that publication will bring more social scientifically inspirational research projects to emerge inside and outside China.

In the process of re-working on the English text, we have drawn inputs and critical scrutiny from many dedicated scholars. We are above all grateful to Yang Songlin for his devotion to researching, writing, and rewriting many times over, as well as his intellectual seriousness and open-mindedness towards critiques and disagreements, and to Sun Jingxian as well for their collaborated effort over the years. Along the way of preparing for this publication, a group of people as volunteers, who do not necessarily share the views, arguments, or quantitative conclusions of the book, have been involved for advice and editorial inputs. Among them, we can only mention a few who contributed most at the cost of the large amount of their precious time and endeavour: Gregor Benton, the leading historian of Chinese communism at the Cardiff University, served us as a principled and wise general adviser at an earlier stage, putting his own reservations aside. On his invitation, John Sexton, a professional editor and writer who has lived in China with intimate knowledge about the country, spent many hours a day for months both on checking the arguments and improving the English of the first translation. Liu Minquan at Peking University and Oxford University had engaged the author in restructuring his argument as a result of their extensive discussions. Qi Hao at the People's University in Beijing proofread an earlier manuscript and offered a succinct appraisal of its strengths and weaknesses. Daniel Vukovich at the University of Hong Kong worked with us throughout a lengthy and rocky process of translating, editing, and publishing both Sun and Yang's works. Yan Hairong at the Hong Kong Polytechnic University

and Wang Shaoguang at the Chinese University of Hong Kong among others have engaged us in some continuous and at times intense discussions. None of them, of course, is responsible for any error in the book. Finally, we must thank Jacob Dreyer and Palgrave for taking on the project of publishing this book. His support concurs with our conviction that free and substantial debate is the only way of truth seeking.

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PART I

Problems Surrounding the Death Counts in the Great Leap Forward

CHAPTER 1

Introduction: Someone Must Finally Speak the Truth

One day in late October 2013, a friend of mine from the United States sent me an article titled "Scholars Fight a Milder Version of Mao's Calamities" that mentioned me. Chris Buckley (2013), the author and *New York Times* journalist, starts the article with a statement that

> The Chinese Communist Party's drive to stifle ideological threats to its rule is giving a platform to a group of loyalist researchers who, to the dismay of many historians, deny that one of the grimmest episodes of the Maoist era claimed tens of millions of lives.

The article introduces my book as follows,

> A new book, "*Someone Must Finally Speak the Truth*," which has become a touchstone for supporters of Mao who deny that the famine killed tens of millions, maintains that at most four million "abnormal fatalities" occurred during the famine. That was indeed a tragedy, says the book's author, Yang Songlin, a retired official. But he blames that mostly on bad weather, not bad policies, and he and other like-minded researchers accuse rival researchers of inflating the magnitude of the famine to discredit Mao and the party.

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_1

Chris Buckley's words astonished me because everything deviated from the facts, except my name, the title of my book, and my view that "at most four million 'abnormal fatalities' occurred during the famine". I was not in Zhengzhou, but visiting a friend in Hangzhou when he interviewed me over the phone. I was just an employee at a private firm providing public policy advisory service to government departments some 20–30 years ago rather than a "retired official". Above all, Chris Buckley distorted my words in the interview by replacing what I said with what I opposed, i.e. blaming the famine "mostly on bad weather, not bad policies". In the interview, to answer his question about why the tragedy happened, I said to him, "As I clearly stated in my book, 'thirty per cent natural calamities and seventy per cent man-made disasters, or even ten per cent natural calamities and ninety per cent man-made disasters'" (Yang, 2013). Availing data from *China Compendium of Statistics 1949–2008* (see Table 1.23) regarding total grain production as well as *China Statistical Yearbook 1983* (National Bureau of Statistics, 1983, 103) regarding year-end population data, the book states that,

> During the three years from 1959 to 1961, there were indeed very severe natural disasters, and the grain production dropped from 300 kilos per capita in 1958 to approximately 210 kilos per capita. At that time, however, China was a planned economy and foods were distributed in a relatively even manner. The massive deaths from starvation could have been avoided if right policies had been in place. Given that the massive deaths did occur, there were definitely problems with policies.

The readers may find the above response and more details in the book. Perhaps Chris Buckley distorted my views for a reason other than that he did not read my book at all. Later, a few media from Germany, the UK, and the Netherlands interviewed me about the book, but I had to take extra caution to avoid "being deliberately misunderstood".

I appreciate that Palgrave agrees to publish the English version of my book, which I believe will furnish English readers with an alternative analysis and argument. There may be much less "misunderstanding" as mentioned above once the readers have seen the whole picture.

The English version is different from the Chinese version in (i) a restructured narration by making an argument before giving a refutation, (ii) accentuated themes, and (iii) critical literature review with more evidence and less words.

This book offers a point of view as follows.

While many researchers have examined the death toll relating to the famine in China about a half century ago, the most convincing findings are those that are based on the Chinese official statistics in which demographic data were collected in the household registration system at that time. However, the accuracy of the population statistics of the famine years was seriously weakened when people tended to abuse the registration system by under-reporting and complementary reporting out of self-interest. Almost all researchers have noticed the distinct and significant contradictions in the official demographic data of this particular period. Therefore, the credibility of any research directly based on those contradictory data is questionable.

On the other hand, it is possible to understand the cause, process, and extent of those contradictions because the registration method was specific, and procedures were clear. In further exploring this topic, this book aims to calculate and produce a group of demographic statistics that do not entail mathematical problems but keeps consistent with principles of demography and general demographic curves. The calculation uses general principles of demography as its frame of reference, studies the impact of household registration, resource allocation and social welfare on household behaviour with regard to the registration of birth, death, and relocation. The result of the calculation should be more approximate to the true numbers of the population at that time. An analysis of the famine demography based on this calculation should be more reliable.

The calculation is made in Chapter 7, concluding that the number of excess deaths in the period from 1959 to 1961 is approximately 3.6 million or somewhere between 2.6 million at least and 4 million at most.

Chapter 2 provides a critical review of ten authors who have given a comprehensive argument on this topic. Most of them believe that there were 28–45 million excess deaths during the GLF.

The cause of the famine was multifaceted, including "extreme weather and climate events" and "bad policies". I argue that the fundamental cause was not bad weather or climate. Rather, the disaster deteriorated due to bad policies that involved high level of grain requisitioning, arbitrary leadership that gave orders based on whim (*xia zhihui*), and boastfulness (*fukuafeng*). The most fundamental error lies in the belief among some of the top national leadership from mid-1958 to the end of 1960 in the so-called "transition in poverty (*qiong guodu*)" that China could "advance into communism" in spite of its low level of economic

development. The miscalculation resulted in the problematic policies of "centralized food supply" and nationwide practice of "public canteen", which deprived rural families of their traditional ability to survive disasters and contributed directly to the rise of death rate. Some have started from a system of social organization point of view arguing that socialism is doomed with a shortage in supply and others claimed that a collective economy or planned economy will definitely result in disasters like that. These perspectives are reviewed and analysed in detail in Chapter 3.

This book has benefited from many other people who have been generous with their time and mind offering advice, concerns, and reviews. Yet as always, responsibility for any errors and omissions in the text remains my own.

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PART II

Excess Mortality During the Three Years of Difficulty

CHAPTER 2

Current Research and Dilemmas

Studies on the Death Toll of the Three Years of Difficulties

The period from 1959–1961 is known as the "Three Years of Difficulties". There have been allegations of famine deaths even since back then. The problem, however, has been the absence of an accurate number of deaths. The Central Government releases national statistics including population statistics of the previous year at the beginning of every year. However, the population number of the period from 1958 to 1961 has long been kept from the public. The Chinese government at various levels started to compile *Compendia of Statistical Data* [*tongji ziliao huibian*] in 1950 as government internal data. Yet, no population information about the period has been recorded. This absence of information lends much room for speculation.

China conducted its third Census in 1982 and published the first *China Statistics Yearbook* in 1983, which released its population figures of the period from 1949 to 1982. The statistics shows that the population in 1960 was 10 million less than that at the end of 1959, and the number further decreased by 3.48 million in 1961. While the basic demographic equation would suppose that the number of deaths of a particular year be equal to the difference between the number of births and the net increase, the total number of deaths in 1960 and 1961 would be 39.48

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_2

million, given the 26 million births and the 13.48 million in deficit in these two years. This calculation result is astonishing enough despite that the year 1959 has yet to be counted.

The Japanese Kyodo News called it "The biggest demographic event in peacetime" (Li, 1997). Ansley Coale (1984), former President of the Association of Population of America and Professor at Princeton University, estimated in 1984 that the number of excess deaths was 26.8 million. According to Yang Jisheng (2008, 512–515), Judith Bannister, former Chief of the Center for International Research and the International Programs at the US Census Bureau, estimated 29.871 million; Gérard Calot arrived at an even larger number—28.51 million for the period of 1952–1962 and later adjusted his estimation to 40.9 million.

Jiang Zhenghua, Director of the Population Research Institute at Xi'an Jiaotong University, was awarded the Frist Class Award of State Science and Technology Prizes for a project which concluded that "the number of premature deaths was approximately 17 million during the Three Years of Difficulties" (Jiang & Li, 1988).

It was after the dissolution of the former Soviet Union that scholars began to pay much attention to this subject. Ding Shu (1991), a Chinese scholar who is now based in the United States used a number of different methods to calculate the data released by the State Bureau of Statistics and asserted that the number of premature deaths was somewhere between 35 and 44 million. Similarly, Jin Hui (1993), a professional writer at the Political Department of the People's Liberation Army's Beijing Military Region, claimed that "the number of premature deaths on the Mainland was no less than 27.91 million during the three years of disasters from 1959-61". Cao Shuji (2005), a history professor at Shanghai Jiaotong University made a similar conclusion that the total number of premature deaths was 32.458 million during the three years of famine. An excerpt of Cao's book was published in the journal of *China Population Studies* in 2005.

Wang Weizhi is supposedly someone who knows much about the population status during that particular period. According to Yang Jisheng (2008, 453–454),

> Wang Weizhi had studied population statistics at the Moscow Institute of Economics and Statistics from 1955-1959 before going on to work for a long time in the Department of Household Registration at the Third

Bureau of the Ministry of Public Security. He started to work at the Institute for Economics at Chinese Academy of Sciences in the 1980s.

Yang Jisheng claims that, if Wang Weizhi is correct, the total number of premature deaths would be 33.78 million from 1958 to 1961.

In the eyes of many, the most influential research in this field is Yang Jisheng's 1100-page book *Tombstone: The True History of China's Great Famine in the 1960s* published in two volumes in Hong Kong in 2008.[1] Not only has this book been reprinted several times in Hong Kong, but an English version has also been published. A complete electronic version is also available on many websites in China. According to Ding Xueliang (2008), a columnist of the Chinese version of the *Financial Times*, "Western academia usually pays little attention to Chinese academic publications. However, this book is a different case. Before it was released in May, news of its publication had been widely spread in academic circles […] As soon as it appeared on the Hong Kong market, many major newspapers in the West responded with serious reviews. As Yang Jisheng used to be a journalist at the Xinhua News Agency, and is deputy chief editor of *Yanhuang Chunqiu*, a magazine popular among some older intellectuals, *Tombstone* had enormous influence inside China. Some websites specialized in literature have declared that "one cannot understand China without reading *Tombstone*". Yang's claim of "36 million premature deaths in China from 1958-62" is cited by many and from time to time.

In 2011, Frank Dikötter (2010) beat five other titles to win the *Samuel Johnson Award* for non-fiction in the United Kingdom. Having received his award, he told a Voice of America reporter that "more than 45 million people died of starvation - making it a catastrophe of a similar order to the Second World War" (Qi, 2011). Ben Macintyre, chair of the *Samuel Johnson Award* panel of judges, also spoke highly of Dikötter's book,

[1] Yang Jisheng, born in 1940 in Hubei Province is a professor at the China's College of Journalism. He was proclaimed by Hong Kong media as one of the 13 "Most Influential Media Personalities in China [*Zhongguo Chuanmei Fengyun Renwu*]". He was formerly a journalist in the Tianjin Branch of Xinhua News Agency, a member of the editorial board, director of news collection, and director of investigation journalism at *Jingji Cankao Bao [Economic Information]*, chief editor of the Hong Kong magazine *China Market*, a member of the executive committee of the All-China Journalists Association. He is currently deputy editor-in-chief of the magazine *Yanhuang Chunqiu*. *Tombstone* was published by Cosmos Books in Hong Kong in 2008.

saying if you want to understand the history of the twentieth century "you almost have to *read* this book" (Flood, 2011).

The above-mentioned studies have all been published in the form of journal articles or monologues. Many "insiders" and "those who have experienced it" have also talked about the premature deaths of that period, postulating figures ranging from millions in a province to tens of millions nationwide. Many Chinese people are inclined to believe "insider information" particularly when those insiders are celebrities even though their testimonies are no more than "narrative history".

Guangzhou Daily carried a full-page interview with Yuan Longping on 8 April 2009. This world-renowned crop specialist told the reporter that,

> Perhaps you are too young to know this. Tens of millions of people died from hunger during the Three Years of Difficulties. In the Great Leap Forward, trees were chopped down for producing steel and the environment was destroyed. There was basically no harvest in 1959, a year of severe drought, causing 40 to 50 million famine casualties. I personally saw five people dying by the crop field, under the bridge and on the roadside. That was very sad. (Zeng & Guan, 2009)

That was the first time that the number of famine victims during the period from 1959 to 1961 has been mentioned in a Chinese official newspaper.

In the absence of an official statement on this matter, the CCP's Party History Press published the second volume of *The History of the CCP*, which carries a statement that "the national population in 1960 decreased by 10 million from the previous year". While the disasters lasted three years, this statement implies that the number of deaths in that particular year alone was nearly 24 million, which was 17 million more than that in a regular year.

By the end of the first decade in the twenty-first century, scholars in China and abroad have basically reached a consensus. In 2009, the Greenfield Bookstore published a two-volume book titled *The Great Leap Forward and the Great Famine: The Facts and Thoughts in a Historical and Comparative Perspective*, which compiled contributions of nearly one million words from about 60 scholars. Part of the book collects papers at "China's Lessons from the Past and Challenges for the Future: An International Symposium Commemorating the Fiftieth Anniversary of the

Great Leap Forward and the Thirtieth Anniversary of Reform and Opening" at the Seton Hall University in October 2008. The rest of the book consists of relevant articles that have been published in the *Twenty-First Century* of the Chinese University of Hong Kong, *Modern China Studies* at the Princeton University, *Yanhuang Chunqiu Magazine*, and *Contemporary China History Studies* in Beijing as well as articles published on academic websites. Those scholars have arrived at a similar conclusion that there were more than 30 million premature deaths during the Great Leap Forward. Besides, most public speeches and publications involving the number of famine victims would unexceptionally invoke the number of 30 million until a different view was given in 2011 when Professor Sun Jingxian from Xuzhou Normal University published an article titled "A Study on the Population Fluctuation in China in the 1960s" in the *Studies on Marxism* of the Chinese Academy of Social Sciences.[2] Having analyzed the cause of the contradictions in the population data, Sun contended for the first time that there were obvious and serious flaws in the population statistics of that period and that conclusions directly based on those statistics were not reliable. Sun's findings are of critical significance in that he has pointed out the flaws of the official population statistics on which all above-mentioned scholars have relied.

Terminology, Research Scope, and Methods

This research theme has attracted scholars from various countries and academic backgrounds, and their use of terminologies, research scope, and methods differ greatly. Therefore, it is necessary to give an overview of the terminologies, scope, and methods surrounding this topic and introduce the perspective from which this book approaches the topic.

Terminology

There is significant difference among scholars involved in the debate in terms of terminologies, research scopes, and methodologies. Therefore, it is necessary to give an overview of these differences and present the perspective of this book.

[2] Profession Sun Jingxian holds a PhD in Science. He is Professor and doctoral supervisor at the College of Mathematics of Xuzhou Normal University, and member of the Communication Committee of National Conference on Nonlinear Functional Analysis.

Some of the western scholars have employed such terms as "mortality above the linear trend" and "excess deaths" whereas most of the Chinese scholars have used terms such as "premature deaths" or "dying from hunger". These terms are similar in meaning by the way they are employed.

Mortality above the linear trend refers to the part above the linear trendline in a chart of mortality over a number of consecutive years (as in Fig. 2.1). It is also called "excess deaths".

Figure 2.1 illustrates the mortality above the linear trendline over the years from A to K. The number of deaths in years D, E, and F is notably larger than the linear trend so the part above the linear trendline is also called "mortality in excess of the linear trend". In the following equation:

$$\begin{aligned}&\text{Mortality in excess of the linear trend}\\&\quad = \text{Mortality} - \text{Mortality in linear trend}\end{aligned}$$

"Premature death" is a term that is used to define the nature of death, which is divided into two categories, namely normal death and premature death. Normal death refers to death resulting from internal factors, such

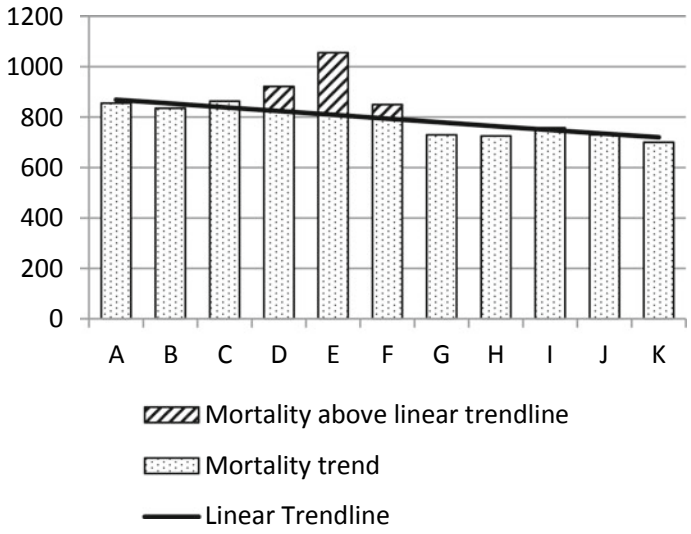

Fig. 2.1 Mortality above the linear trendline over the period from year A to K

as illness or old age. Premature death, on the other hand, refers to that caused by external factors, such as natural disasters, fire, drowning, events resulting from human intervention or error, such as workplace and traffic accidents, medical negligence, suicide, homicide, and so forth. Hence the following equations are established.

$$\text{Total mortality} = \text{normal mortality} + \text{premature deaths}$$
$$\text{Premature deaths} = \text{total mortality} - \text{normal mortality}$$

However, scholars who have employed the terminology of linear trendline have failed to follow the logic of the method in their narratives. They have selected the mortality data of the non-famine years to define "normal mortality". As a matter of fact, these data refer to "deaths in normal years" whereas mortality in normal years is not equal to normal mortality because even the total mortality in a normal year would consist of both normal mortality and premature deaths. Thus, the above equations are actually telling how many deaths there were in famine years more than non-famine years. The "premature deaths" that they are talking about have actually lost the meaning in defining the nature of death and become a "loanword". Put in an equation, it should be:

$$\text{Premature death} = \text{total mortality} - \text{mortality in normal years}$$

In this regard, the actual meaning of "premature deaths" is approximate to that of "mortality in excess of the trendline" or "excess deaths", both of which calculate the variation in mortality patterns but do not define the nature of death. Therefore, it is misleading to use such terms as "premature death" to describe situations that would otherwise be better understood as mortality in excess of the linear trendline or excess deaths.

That said, it still makes sense to associate most of the excess deaths with hunger and hunger-related factors in famine years if no other factors are identified as a cause of increased deaths. However, it would be too sensational to use such terms as "starve to death". Records have shown that most of the deaths in that period were caused by diseases that became deadly when patients were physically weakened by malnutrition. That is why the top priorities of many local health authorities were to treat intestinal diseases and prevent death caused thereby during the period. Perhaps for the same reason, in describing mortality caused by similar

factors, terms with broader connotation have been used, such as "premature deaths due to undernutrition and associated factors" by Amartya Sen and "die as a result of hunger" by some international organizations.

The calculation of mortality in excess of a trendline and premature death can be subjective because it is up to an author to decide the span of a trendline or to define "normal years". The number of excess deaths would be smaller if the basis vectors or the number of deaths in normal years are set at a higher level, vice versa. For example, the height of Mountain Everest can be 8848 metres, 4848 metres, or 4648 metres if the calculation is based on sea level, the average elevation of the Tibetan Plateau, or Everest base camps, respectively. As far as this book is concerned, the key lies in identifying and justifying an adequate and convincing methodology that does not contain defeaters for its own ideas.

Some western scholars have taken into consideration the declining trend of mortality and established a trendline that started the two years before and ended two years after the famine years. The part above the linear trendline is considered to be mortality in excess of the linear trendline (see Fig. 2.1).

Although "premature death" is less adequate than "excess deaths" in its meaning, it is still to be used in this book particularly when analyzing the findings of Chinese scholars who like to use this term. In this respect, these two terms are considered to be synonyms to avoid terminological confusion.

Research Scope

Some studies estimate the "reduction in the number of births", and add this to the number of "premature deaths" to arrive at a figure for aggregate "loss of population". I contend that this method makes little sense and begs for justification.

First of all, the moral implications of the aforementioned external lethal factors are drastically different from those of reduced fertility caused by wars and famine. It seems to be a logic of "political correctness" to simply add the number of reduced births to that of premature deaths. With this logic there would be no upper limit of the "loss of population" as there might have been reduced births due to reduced births, so on and so forth.

Second, death and birth are two separate events. The abnormal variations in birth and death usually do not always occur at the same time or

result from the same reasons. Take the Great Depression as an example. The period from 1931 to 1936 saw the United States at the peak of the Great Depression. The average annual birth rate dropped to 17.1 per thousand from the 1925–1929 figure of 20.2 per thousand. It seems to make sense if one would argue that the Great Depression has resulted in a loss of population by 3.1 per thousand a year. However, the death rate remained at 11.0 per thousand, and was even slightly lower than the figure of 11.8 per thousand for the period from 1925 to 1929 (Linder & Grove, 1947, 122–124, 666–667). The total loss of population would reduce from 3.1 per thousand to 2.3 per thousand if it should be a result of reduced births plus increased deaths.

This book, therefore, will not do any further analysis on the issue of "reduced births".

Some studies have defined the famine years to be from 1959 to 1961, but some adopted the period from 1958 to 1961 (Ding Shu) and others the period from 1958 to 1962 (Yang Jisheng). Still others (including three western demographers and Jiang Zhenghua) extended their study to a six-year period from 1958 to 1963.

The period from 1959 to 1961 is called "Three Years of Difficulties", the same time as the Great Leap Forward. Most scholars who have extended their time span beyond the time frame have included the year 1958. I contend that it is not appropriate to include the year 1958 if the research is focused on mortality associated with hunger. The year 1958 saw good weather and a big harvest, a fact that is recorded in many recollections and memoirs. Although part of the year's crop was not harvested because a campaign to produce steel diverted rural labour, the year 1958 still achieved a new record for food production since Liberation. The grain production increased from 193 million tonnes in 1956 to 195 million tonnes in 1957 and 198 million tonnes in 1958 (National Bureau of Statistics, 2016, see Table 1.23). There is no possibility that this year saw massive mortality caused by famine. In fact, the year is remembered as one during which a great deal of food was wasted because people were allowed to eat as much as they liked for free at the public canteens opened in the autumn of 1958.

Some scholars cite a few examples of local shortages of food to claim that the three years of the Great Famine actually started from the winter of 1958, but such claims are questionable. China is a huge country. In most years, there is either too much rain in the south and drought in the north or vice versa. Even in years when the weather is generally favourable all

across the country, there are places hit by natural disasters. This does not affect the conclusion that 1958 was a harvest year in which the weather was in general favourable for crops.

The inclusion of the year 1958 is usually attributed to its high death rate. According to the *China Statistical Yearbook* (National Bureau of Statistics, 1983, 105), the death rate in 1958 was 11.98 per thousand, 10.9 per cent higher than the 1957 figure of 10.80 per thousand. Taken together with the following three years, during which the death rate rose, it forms a neat "hump" in the mortality curve. If a researcher is setting out to prove that the Great Leap Forward (GLF, hereafter) caused the spike in the death rate, since it started in the summer of 1958, he or she may think it makes sense to include that year. However, the death rate had been declining after Liberation despite fluctuations along the years. Wide fluctuations may have been caused by multiple factors and they should be more carefully classified. For example, the death rate increased sharply by 14.5 per cent from 10.04 per thousand in 1963 to 11.50 per thousand in 1964, which is a more significant increase than the increase by 10.9 per cent from 1957 to 1958 (National Bureau of Statistics, 1983). The higher death rate in 1958 has nothing to do with famine, and this will be discussed in the later part of this book. Another example is the period from 1979, the year in which rural reforms were initiated, to 1983, when the Household Responsibility System [*jiating lianchan chengbao zerenzhi*] (HRS, hereafter) began to produce palpable effects. The death rate steadily rose from 6.21 per thousand in 1979 to 6.34 per thousand in 1980, 6.36 per thousand in 1981, 6.60 per thousand in 1982, and 7.08 per thousand in 1983 (National Bureau of Statistics, 1984, 83). The death rate in 1983 was 14 per cent higher than that in 1979.

The years of 1962 and 1963 were a recovery period in which conditions in rural areas took an apparent turn for the better. Most significantly, the death rate in 1962–1963 dropped considerably to a level even lower than that of 1957. It would be still less justifiable to include 1962 and 1963 in the scope of our research.

Therefore, a more appropriate research question should be:

What is the difference between the total mortality in the period from 1959 to 1961 and that in normal years?

Research Methods

There are only three approaches to look for the number of deaths during the Three Years of Difficulties. The first approach would assume that the

Central Government had carried out national surveys, but the result had yet to be released. It would be important to find this survey result. The second approach is to organize a large-scale field survey, collect data of that period, interview "people who may know about it", and analyze all the collected information. The third approach is a demographic analysis on the official statistics.

As far as this study is concerned, the first approach is not feasible because no one has been able to confirm that the state carried out any national survey of premature deaths during or after the Three Years of Difficulties, nor has anyone claimed to have found any "secret data" or cited any statistics of this kind. In any case, since the natural disasters were distributed unevenly, and the intensity with which the policies of the GLF were implemented also varied from place to place, local surveys would not be a good basis from which to arrive at general conclusions applicable to the whole country. Had there been any national survey of premature deaths, we should have been able to find some trace of it. As it is a difficult matter to judge the causes of deaths, it would be impossible for cadres at provincial, prefecture, county, and township levels to have no memory of it. The *Yanhuang Chunqiu* magazine is popular among a large number of former senior party officials who are not happy with policies in Mao's era. If there had been such an investigation, they would have been only too happy to talk about it. They did not. Yang Jisheng, a former senior journalist for China's main state-owned Xinhua news agency explored many local government archives, but has not reported anything about such a national survey. Likewise, Frank Dikötter has not found any evidence of such a national survey, and according to his investigation, the number of local surveys was also very small. He documented that the Gansu Provincial Party Committee sent out a request for estimates in 1962 for "excess deaths" during the famine, but only a handful of counties ever replied (Dikötter, 2010, 293). This suggests that no national survey on premature deaths has ever taken place.

This book attaches great importance to whether the state ever organized such a national survey. The reason is that any "disclosed" figures would be of little value if there had been no such survey. A population survey requires an enormous amount of work, involving not only adopting scientific survey methods, but also organizing a large number of staff over a long period of time. It took nearly six million surveyors to conduct China's fifth population census in 2000 (National Bureau of Statistics, 2002). A survey of premature deaths, involving the relevant

experts would take even more effort. It has been suggested that the relevant files have not been declassified yet, and some hope that the truth will be revealed after the disclosure of those files. I don't believe that these hopes will ever be fulfilled. Even if figures were disclosed in some files, they would lack credibility if they were not accompanied by the statistical principles and investigation procedures, according to which they were derived. A survey without clear and disclosed methods, scope, and procedures would have no credibility.

The second approach is not flawed because the Three Years of Difficulties was over half of a century ago, but because the famine situation varied greatly across the country. Not only did natural disasters hit the country in different places at different times, but also policies were implemented in different ways nationwide. The result of a calculation can hardly be convincing unless a qualitative investigation into the disasters is described adequately.

It looks like the third approach is the only viable one. This approach requires an answer to the question: what is "official statistics"?

What Is "Official Statistics"?

Even when some scholars cite "inside information", they all claim that their aggregate numbers are the result of calculations based on the official population statistics. Only, the sources of their "official statistics" are different. Ding Shu, Jin Hui, and Wang Weizhi have used the population statistics from the *China Statistical Yearbook*. Some western demographers have used as their basic data the marriage and fertility survey organized by the State Family Planning Commission (SFPC, hereafter) in 1982. Jiang Zhenghua has used Census data. Yang Jisheng uses population statistics compiled by local government employees organized by the Ministry of Education. Cao Shuji uses population data drawn from local chronicles. Frank Dikötter arrives at his conclusion by extrapolating from figures published by other scholars in addition to a few local investigations.

It is true that the SFPC and the Ministry of Education are also official sources, as are the publishers of local chronicles. Yet, the only authoritative population statistics are those released by the NBS. Other sources can be used for reference at best, but cannot be used as the basic data for the research. Compiling population statistics is a highly sophisticated task that requires survey and data processing methods of the highest standards. The

public security authorities and the statistical authorities, from central to grassroots levels, are the only two existing systems that have specialized institutions for registering and counting population on a regular basis. The household registration departments of the public security authorities reach down to every sub-district office in urban areas, and township governments in rural areas. The statistical authorities have urban survey teams and rural survey teams in all counties and districts. The everyday work of these authorities is to survey and register the population. Millions of surveyors are mobilized during each population census. In contrast, none of the statistics from other government agencies have resulted from systematic surveys and investigations. Their figures were either collected from the bottom-up by nonprofessional staff or compiled from other sources. We can obtain from the public security authorities and the statistical authorities the rules and methods they used to carry out surveys. However, no one can identify the methods used by any other authorities. Anyone familiar with rural affairs in the 1950s and 1960s would know that whatever statistics were required by higher authorities were often produced by a few cadres after a casual discussion—just like what Frank Dikötter (2010, 293) has described as a reply to "a request for estimates".

Therefore, among all the data those from the NBS, MPS and the Population Census Office of the State Council (PCOSC) are the most valuable and should be used as basis for calculation. All "official statistics" hereinafter are from these three sources. Data from other sources are to be used for reference or comparison purposes only.

Research Dilemmas

The following discussion explains how Professor Sun Jingxian's findings have changed the game.

Given the above-mentioned available data, it should not have been too difficult to calculate the number of premature deaths in the period from 1959 to 1961. A study may produce a result by using the official mortality data of each year in the following equation:

$$\text{Premature deaths} = \text{total mortality} - \text{normal deaths}$$

Even though data from some of the "official sources" may not be accurate, or people may hold different views about the definition of "normal"

and "abnormal" years, there should have been little room for fundamental discrepancies and errors in conclusions. However, things would be different if the problems that Sun Jingxian has identified are real. Those problems can result in fundamental errors in any studies, and therefore must be solved before a study can carry on.

Discrepancies in Official Data

There are four sets of population indicators in the *China Statistical Yearbook*, i.e. year-end population, death rate, birth rate, and natural growth rate (in rural and urban areas, respectively).[3] However, no direct data are available with regard to the number of births, deaths, and amount of natural population growth. The appendix to the population section offers an "Explanation of Major Statistical Indicators" (the Explanation, hereafter), which defines the relationships between the population indicators as follows.

$$\begin{aligned}&\text{Average annual population}\\&\quad = (\text{population at year-end}\\&\quad + \text{population at previous year-end}) \div 2\end{aligned}$$

$$\begin{aligned}\text{Birth rate} =& \text{number of births}\\&\div \text{average annual population}\end{aligned}$$

$$\begin{aligned}\text{Death rate} =& \text{number of deaths}\\&\div \text{average annual population}\end{aligned}$$

$$\begin{aligned}&\text{Natural growth rate}\\&\quad = (\text{births} - \text{deaths})\\&\quad \div \text{average annual population}\end{aligned}$$

[3] The *China Statistic Yearbook* is published annually by the National Bureau of Statistics of China, and hereinafter referred to as the *Yearbook*.

With the above equations in the Explanation, we can calculate the number of births, deaths, and the amount of natural population growth.

$$\begin{aligned}&\text{Number of births}\\&\quad = \text{average annual population} \times \text{birth rate}\end{aligned}$$

$$\begin{aligned}&\text{Number of deaths}\\&\quad = \text{average annual population} \times \text{death rate}\end{aligned}$$

$$\begin{aligned}&\text{The amount of natural population growth}\\&\quad = \text{number of births} - \text{number of deaths}\\&\quad = \text{average annual population}\\&\quad \times \text{natural growth rate}\end{aligned}$$

In demographic statistics, all the indicators are unique and therefore produce consistent results regardless of how an equation is organized. The numbers of year-end population, births, deaths, and the amount of natural population growth should be unique and consistent with each other.

The reality is more complex than that.

The population growth of a country can be affected by two factors. One is the number of births and deaths, and the other migration. The former is known as "natural population growth" and the latter "migration-related growth". If international migration (basically there was little international migration in China before 1990) should not be considered, the population growth would be the natural population growth, which is the difference between the population at the end of a year and the previous year, or the difference between the numbers of births and deaths. In an equation, it is:

$$\begin{aligned}&\text{Number of births} - \text{number of deaths}\\&\quad = \text{Population at year end} - \text{population at previous year end}\end{aligned}$$

However, Sun Jingxian found that there are discrepancies in population growth when the population data prior to 1982 in the Yearbooks are calculated in the above equation. For the sake of clarity, the "natural population growth" is defined to be the result of the following

calculation:

$$\begin{aligned}&\text{Natural population growth}\\&\quad=\text{average annual population}\\&\quad\times\text{natural growth rate}\\&\quad=\text{number of births}-\text{number of deaths}\end{aligned}$$

On the other hand, the "registered population growth" is defined to be the result of the following calculation:

$$\begin{aligned}&\text{Registered population growth}\\&\quad=\text{population at year end}-\text{population at previous year end}\end{aligned}$$

Table 2.1 shows that there is a difference between natural population growth and registered population growth each year prior to 1982 with a discrepancy of over a million in many years. Sometimes the natural population growth is larger than registered population growth, and sometimes the opposite is true.

This statistical confusion has multiple consequences. First, there will be two different groups of year-end population figures as there are two different groups of figures of population growth. There will be two different figures of year-end population because the natural population growth is different from the registered population growth even though the calculation starts with the same year-end figure from the previous year. As the calculation goes on there will be two different groups of year-end population figures. Consequently, there will be two different groups of mortality statistics.

As mentioned previously, there are two methods to count the number of deaths according to the equations provided in the Explanation. They are:

1. Mortality = average annual population × death rate
2. Mortality = the number of births − (population at year-end − population at previous year-end)

As shown in Table 2.2, the number of births − the number of deaths ≠ population at year-end − population at previous year-end, hence the number of deaths calculated with the second method will be different from that with the first method.

Table 2.1 China's registered population growth and natural population growth in 1954–1982 (million persons)[4]

Year	*Natural population growth*	*Registered population growth*	*Difference*
1954	14.76	14.70	0.06
1955	12.37	11.99	−0.38
1956	12.74	13.63	0.89
1957	14.81	18.25	3.44
1958	11.26	13.41	2.15
1959	6.79	12.13	5.34
1960	−3.05	−10.00	−6.95
1961	2.50	−3.48	−5.98
1962	17.97	14.36	−3.61
1963	22.74	18.77	−3.97
1964	19.30	13.27	−6.03
1965	20.30	20.39	0.09
1966	19.28	20.04	0.76
1967	19.26	18.26	−1.00
1968	21.21	21.66	0.45
1969	20.76	21.37	0.61
1970	21.14	23.21	2.07
1971	19.62	22.37	2.75
1972	19.10	19.48	0.38
1973	18.42	20.34	1.92
1974	15.74	16.48	0.74
1975	14.38	15.61	1.23
1976	11.78	12.97	1.19
1977	11.38	12.57	1.19
1978	11.47	12.85	1.38
1979	11.25	12.83	1.58
1980	11.65	11.63	−0.02
1981	14.46	13.67	−0.79
1982	14.61	14.69	0.08

Source National Bureau of Statistics (1987)

[4] All population data prior to 1982 in the rest of this book are from the same source.

Table 2.2 Two groups of calculation of the number of deaths from 1955 to 1964 (million)

Year	*Group 1 (Average annual population × death rate)*	*Group 2 (Number of births – registered population growth)*	*Difference*
1955	7.47	7.85	−0.38
1956	7.08	6.19	0.89
1957	6.88	3.44	3.44
1958	7.73	6.58	0.88
1959	9.72	4.37	5.35
1960	16.96	23.92	−6.96
1961	9.40	15.38	−5.98
1962	6.77	10.29	−3.52
1963	6.85	10.82	−3.97
1964	8.03	14.06	−6.03

Table 2.2 shows that sometimes the number in group 1 is larger than group 2, sometimes the opposite is true. The difference between the two groups is as large as millions in most of the years. The gap in 1959–1960 is as wide as 12.31 million. Apparently, something must have been wrong with the official statistics in that period.

A study on excess deaths is centred on the number of deaths on yearly basis, and cannot carry on if there should be two groups of death figures every year.

Another problem is that the equation "number of births – registered population growth" may give an unrealistic death figure. For example, the number of deaths would have been only 3.44 million in 1957 and subsequently the death rate would have been only 5.4 per thousand if use the following equation:

$$\begin{aligned}&\text{Death rate}\\&\quad = (\text{number of births} - \text{registered population growth})\\&\quad \div \text{average annual population in 1957}\end{aligned}$$

However, none of the countries with a large population in the world has ever had a death rate lower than 6.0 per thousand. Despite the excess deaths in 1959, furthermore, the death rate of the year would have been only 6.56 per thousand with the same calculation method. This would be even lower than the death rate in the 1980s.

This means a research method based on the calculation of the number of deaths by subtracting registered population growth from the number of births is not feasible. Unfortunately, six out of the above-mentioned scholars have adopted this calculation method. They are Ansley J. Coale (1984), Judith Banister (1987), Gérard Calot (1984), Jiang Zhenghua and Li (1988), Jin Hui (1993), and Wang Weizhi (1987).

Furthermore, there will be two groups of numbers of births resulting from the same problem, as shown in the following equations:

$$\begin{aligned}&\text{Number of deaths}\\&\quad=\text{number of births}-\text{registered population growth}\\&\text{Number of births}\\&\quad=\text{number of deaths}-\text{registered population growth}\end{aligned}$$

In result, there will be two completely different sets of statistics with regard to the four basic demographic indicators.

Death Data that Cannot Be Trusted

Yang Jisheng (2008) has adopted the following method to calculate the number of deaths:

$$\begin{aligned}&\text{Number of deaths}\\&\quad=\text{average annual population}\times\text{death rate}\end{aligned}$$

In Chapter 23 of *Tombstone*, he states that

Once the total population, birth rate and death rate are known, we can calculate the number of births and deaths in each year. The number of deaths caused by the famine is the difference between the total number of deaths during the three years of famine and the number of natural deaths, then:

The number of unnatural death in year n = (year n death rate − the natural death rate) × average population in year n (Yang, 2008, 444).

Table 2.3 China's death rate and death toll, 1949–1957

Year	*Death rate (per thousand)*	*Death toll (million persons)*
1949	20.00	10.83
1950	18.00	9.84
1951	17.80	9.92
1952	17.00	9.67
1953	14.00	8.14
1954	13.18	7.85
1955	12.28	7.47
1956	11.40	7.08
1957	10.80	6.88

Sources China Statistical Yearbook 1983, pp. 103, 105; the author's calculation

This equation is approximate to the following equation[5]:

$$\text{Number of premature deaths} = \text{number of births} - \text{number of deaths in normal years}$$

Yang Jisheng's method would still be problematic even if one should avoid using "number of births – registered population growth" to calculate the number of deaths.

Yao Qiyuan and Song Xiaoli (2011) have examined the changes in the death rates of some Asian and Middle Eastern nations and concluded that China apparently reduced its death rate from 20 per thousand to 10 per thousand in one-third of the time required by other comparable nations. This raised concerns that China's published death rate in this period was artificially low. Indeed, in the early years after 1949, the death rate and death toll apparently fell at an astonishing rate (Table 2.3).

It apparently took China only eight years to reduce its death rate from 20 per thousand in 1949 to 10.80 per thousand in 1957, an average annual decrease of 7.41 per cent. In absolute terms, the death toll dropped from 10.83 million in 1949 to 6.88 million in 1957, at an average annual rate of 5.51 per cent.

[5] Although the annual average population in normal years is not necessarily equal to the annual average population of a particular year, there is little difference in terms of calculation result.

The extraordinary nature of this decrease from 20 per thousand to 10 per thousand can be seen by comparing the situation in other nations. In the first half of the 1950s, the average world death rate was roughly 20.3 per thousand; in developing countries it was about 25 per thousand. The world death rate did not fall to 10.3 per thousand until the first half of the 1980s, by which time the death rate in developing nations had fallen to approximately 11 per thousand (Lu & Zhai, 2009, 140). In other words, it took 30 years for the world death rate to fall from 20 per thousand to 10 per thousand, at a rate of 2.3 per cent per year. The rate in developing nations was a bit faster, at 2.7 per cent annually. China's death rate, according to its official statistics, fell 2.2 times faster than that of the world as a whole, and 1.7 times faster than that of the developing world. Yao Qiyuan and Song Xiaoli noted this anomaly. They examined the changes in the death rates of a number of Asian and Middle Eastern nations. Their statistics are reproduced in Table 2.4.

It took an average of 28 years for these countries to reduce their death rate from 20 per thousand to 10 per thousand, far longer than the eight years China apparently took to achieve this. The death rates of these nations were, on average, 16.3 per thousand after eight years, far higher than China's death rate of 10.8 per thousand at the same point in time. Furthermore, Japan's death rate dropped faster than that of many other

Table 2.4 The decline of death rates in Asian and Middle Eastern nations

Nation	*Years required to reduce the death rate from 20 per thousand to 10 per thousand*	*The death rate after eight years of decline from 20 per thousand (per thousand)*
India	32.6	16.9
Bangladesh	20.7	15.3
Indonesia	22.3	15.6
Iran	23.5	15.8
Republic of Korea	26.2	16.2
Pakistan	27.0	16.3
Philippines	32.3	16.8
Thailand	35.8	17.1
Turkey	28.0	16.4
Egypt	29.0	16.5
On average	27.7	16.3

Source Yao and Song (2011)

countries. It took 30 years for its death rate to fall from 20.3 per thousand in 1920, to 10.9 per thousand in 1950 (Lu & Zhai, 2009, 140). The death rate statistics in China over the Three Years of Difficulties must have deviated from the truth.

The People's Republic has improved the living standards and health care since its establishment, and as a result death rate, infant death rate in particular, significantly dropped. Mortality is mostly seen in older age groups above 50 years old (National Bureau of Statistics and Ministry of Public Security 1988, 888–891).[6] These people spent most of their lives in wars and hunger. Yet, it is still unbelievable to many that the number of deaths could have dropped from 10.83 million to 6.88 million within just eight years, particularly when the descending rate is 2–3 times that of other countries.

Many western and Chinese scholars have doubted the rate at which China lowered its death rate, and have given higher estimates in their studies. With regard to the death rate in 1957, Coale estimated 19.0 per thousand, Banister 18.12 per thousand, Calot 13.2 per thousand. An average level at 16.8 per thousand according to these three scholars is approximate to the average rate of 16.3 per thousand among other countries in comparison.

Confusion with the Birth Data

Core demographic indicators are total population, number of deaths and number of births. As mentioned above, there are two different sets of data of population growth and year-end population, and the authenticity of death figures remains questionable. Yet there is even more confusion about the number of births.

The figure for births, a product of annual average population and birth rate, is produced annually from the birth registration records. "Age-specific population", which means the population of age-specific cohorts whose births were registered in a particular year, is included in every census. The survival ratio of an age-specific group is the number of the cohorts registered in a census year divided by registered births of the year when the cohorts were born. For example, the survival ratio of

[6] The 1981 mortality data by age group collected in the 1982 Census shows that the number of deaths in age groups of 50 and above took up 65 per cent of the total mortality.

people who were born in 1983 is 97.1 per cent in 2000 as 20.66 million births were registered in 1983 and 20.07 million of this age group were captured in the 2000 census.

The survival ratio should be in conformity with the following features. First, the survival ratio should be less than 100 per cent because a certain proportion of the registered population will have died before the census year. Second, the survival ratio should be lower among the older age cohorts and vice versa. As time passes, the population born in a certain year will fall and the survival ratio will decline accordingly.

However, the survival ratios calculated with the age-specific population of the censuses and the births of the *China Statistical Yearbook* often fail to conform to the norms. Figure 2.2 presents the survival ratios of the population registered in 1953–1999 according to the fifth population census in 2000. It shows that the survival ratios reached or exceeded 100 per cent in 11 out of the 46 years. It was shown in the fifth population census that the survival ratio was as high as 105.5 per cent for 1960, suggesting that not only no one from this age groups died over a period

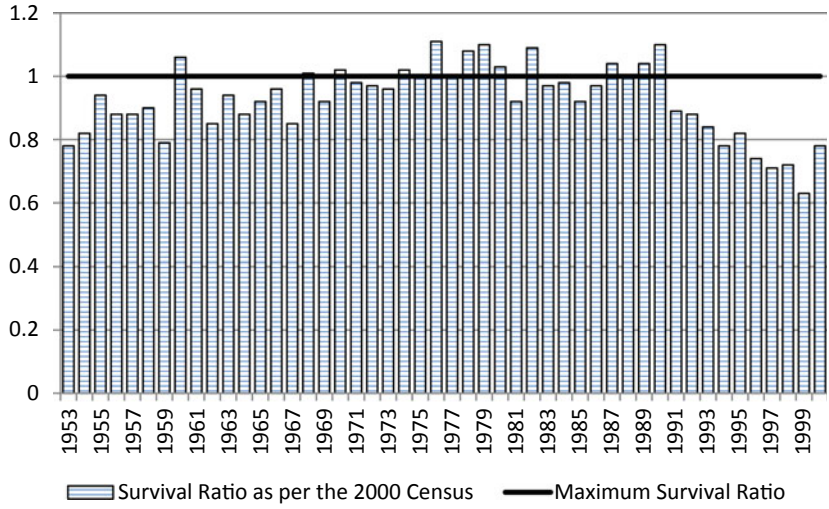

Fig. 2.2 Survival ratio of the population registered in 1953–1999 according to the Fifth Population Census in 2000 (per cent) (*Sources* The author's calculation on the basis of data from *China Statistical Yearbook 1983* and the NBS website)

of 40 years, but also that the population had increased by 0.76 million. In contrast, only 60 per cent of those who were born in 1999 appeared to be left the following year, indicating that something horrible happened that year and left 40 per cent of the babies dead. The survival ratios before and after the Three Years of Difficulties also fail to make demographic sense. While many scholars would work out the number of deaths by subtracting population increase from the number of births, the results of their calculation would be rendered invalid if the birth data should be messy as such.

As all three most important demographic indicators in the *China Statistical Yearbook* are problematic, any calculation that is directly based on these data would be problematic as well. While data from other sources (those in local chronicles in particular) are more or less associated with the statistical authorities, such confusion also exists in data from these sources.

It is the number of deaths by year that is most affected by the confusion in the calculation of premature deaths. Given the discrepancies in demographic indicators, there can be a difference of 5–6 million when the number of death is calculated with different methods. China's death rate was lower than that of comparable countries in some years by 0.5–0.6 percentage points. This translates into a difference of more than 3 million as China had a population of over 600 million. The calculation would make no sense if one could not identify a variation curve for mortality over a period of consecutive years.

It seems that the study on the mortality in 1959–1961 has hit a dead-end when there are no "declassified archives", field study is not feasible and there are considerable discrepancies in official statistics.

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CHAPTER 3

How to Resolve the Statistical Dilemma

Many scholars are aware of the discrepancies in population data and mentioned the dilemma in their publications. However, they have not calculated the data other than those they have selected, and therefore failed to identify the cause of the problem and see the whole picture of the dilemma. Many of them have just given a convenient answer like "the official statistics are fake" and then proceeded to cherry-pick what they believe to be "authentic" data or design new equations for their studies.

Dr. Sun Jingxian, professor in mathematics has not only identified the data discrepancies but also conducted in-depth analysis on the overall impact on narratives and presented a much clearer and more logical understanding of what had happened.

This book concurs with Sun's research method, which capitalizes on all the census and survey data of the NBS and statistics of the public security authorities, and aims to unlock the mysteries of the discrepancies and adequately adjust the population indicators by examining the registration system of the public security authorities through analysis based on relevant demographic, sociological, and statistical principles. This method is adopted when all other approaches are found to be problematic. By examining the household registration methods and their changes over the years, it is possible to identify the problems in the process of population data collection and formation.

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_3

How Population Data Was Collected Before 1982

In 1982, the NBS established "urban survey teams [*chengdiaodui*]" and "rural survey teams [*nongdiaodui*]" ("social economy survey teams" in urban and rural areas) at county level and above. Since then the statistical authorities have organized annual, nationwide one-per-thousand sample population surveys to compute the birth rate, death rate, and natural growth rate. Using the natural growth rate, the natural population growth can be calculated. A population census is conducted every ten years since the fourth census in 1990, and the number of total population by sample survey are adjusted according to the result of the census year. There are no longer data discrepancies in all four population indicators as mentioned in the previous chapter as the population growth in both the census and the sample survey is calculated on the basis of the sample survey statistics.

However, this was not the case prior to 1982, when the statistical authorities did not have their own survey teams, and had to rely on the household registration departments of the public security authorities for all population data.[1] The Communist Party, which had its roots in poor and remote areas, managed to mobilize almost the entire nation as soon as it took power. Every Chinese citizen was placed under the administration of a definite household administration authority (the basic unit being sub-district office in urban areas and the township in rural areas).[2] The grassroots household registration authorities (sometimes consisting of a single staff member) were responsible for recording birth, death, immigration, and emigration. The first population census was conducted in 1953, and produced population statistics on the basis of records retrieved from the household registration authorities. From then on, birth, death, immigration, and emigration had to be registered and were used to adjust the figures for registered population, which were consolidated at the end

[1] I visited Li Chengrui in July 2011 who were the Head of the NBS in 1982. I raised the questions of data discrepancies. According to Li, all yearly population statistics prior to the Third Census in 1982 had been provided by the public security authorities while the NBS had no population data sources of its own. The NBS did not adjust the population statistics because they did not have any criteria for adjustment, even if they found the discrepancies.

[2] There were no public security agencies at township level before the 1960s. (Public security commissioners were established in the 1960s). At that time, household registration at township (people's commune) level was managed by civil affairs assistants who collected and submitted the data to the public security authorities at county level.

of the year by each household registration authority. Errors due to under-registration of birth, death, immigration, and emigration were unlikely because household registration was closely integrated with the systems for the unified purchase and sale of agricultural products, and the distribution of industrial products. The registration records were checked annually, and it was relatively easy to identify errors and omissions.

It can be said that all population data prior to 1982 came from totaling up the registration records. All population figures were collected from records maintained by household registration authorities on a case-by-case basis. The figures were derived from records of the relevant demographic events. Population data after 1982 (apart from data collected in the census years) is not generated from the registration records, but is estimated by sample surveys. The estimation process complies with demographic and statistical standards.

Next, let us take a look at how population data was collected and processed by the public security authorities in the period from 1953 to 1981. Birth, death, immigration, and emigration were registered at the grassroots-level household registration administrations. The registered year-end population in each area was calculated using the equation:

$$\begin{aligned}\text{Registered year} - \text{end population} &= \text{registered population at previous year} \\ &- \text{end} + \text{registered births} - \text{registered deaths} \\ &+ \text{immigration} - \text{emigration}\end{aligned}$$

The figures from each grassroots organization were collected to generate the figures for registered year-end population, registered birth, registered death, registered immigration, and registered emigration, at county and district level. Each county and district published its population statistics annually, including the year-end population according to the household registration records, birth rate, death rate, and natural growth rate. The birth rate and death rate were calculated from the sum of the registered births, deaths, and year-end population figures. For a county, the aggregated emigration of townships was not usually equal to the aggregated immigration of townships as a lot of migration occurred across county borders. As a matter of fact, the figures for migration at the county level were not published.

All the birth rates, death rates, and natural growth rates of this period are calculated on the basis of the statistics of registered births, deaths,

and mid-year population figures that had been collected and consolidated by the lower layers of administration. This means all the rates have based on consolidated numbers, and the actual numbers of births, deaths, and natural population growth recorded in the registration system can be calculated retrospectively.

That said, migration could affect the numbers of local natural population growth, which might not be equal to the difference between the numbers of births and deaths. The average annual population actually consists of net migration in calculating birth rates with the following equation:

$$\text{Birth rate} = \text{Number of births} \div \text{average annual population}$$

From a mathematical point of view, the number of births is the product of birth rate and average annual population.

When population figures were reported from the county level through prefecture and provincial administration to national statistics authorities, only the numbers of births, deaths, emigration, immigration, and year-end population were consolidated. Like the administrations at the county level, each administration at higher level released birth rates, death rates, and natural growth rate, which were calculated with the consolidated numbers of births, deaths, and year-end population, without disclosing the numbers of migration.

The population statistics consolidated through the registration system should have been accurate if the birth, death, and migration had been registered properly. However, the accuracy of the statistics relying on large-scale registration has inevitably affected by omissions and late registrations, which means that the births, deaths, and migrations were not registered within the required timeframe and/or registered retrospectively (intentionally or unintentionally). As Sun Jingxian has observed, both under-registration and late registrations could cause data discrepancies, resulting in population statistics departing from the truth.

As mentioned above, there were three types of discrepancies in the population statistics prior to 1982, the first being a series of discrepancies caused by two different sets of indicators; the second being the number of registered births significantly deviating from the fact in some years resulting the survival ratios exceeding “possible ranges”, and the third being the death rate descending at a significantly higher than normal

rate. While causes of omissions and late registration varied, they have had multiple implications for the statistical results. The next part of this chapter will give an overview of the relationships between the aforementioned three types of discrepancies and the omissions and late registrations of birth, death, and migration.

As all population figures in 1953–82 were obtained from the household registration system, the population indicators in China's *Statistical Yearbook* in this period are termed as registered year-end population, registered births, registered deaths, and so forth. The term "actual mortality" in the following text refers to the actual number of deaths.

Implications of Under-Registration and Late Registration

Under-Registration and Late Registration of Births

A person will not have *hukou* unless his/her birth is registered, and this person's unregistered birth will have no implications for population data until the under-registration is rectified. Yet, the omission will still affect the actual population figure of the year in which the person was born as one person is not counted towards both the actual number of births and actual year-end population.

Late registration of a birth would mean that the registration was not completed in the year of the birth, but in later years. This might occur on a large scale if there was massive migration. If an unregistered birth is registered in a later year, the birth, according to the *Regulations on Household Registration of the People's Republic of China,* will be recorded and counted as a birth in the year of registration, while the actual date of birth will also be recorded.

For example, a child named *person A* was born in 1960 and the birth was not registered until 1962. Both the birth and *hukou* would be registered as part of the registered population indicators for 1962,[3] although the year of birth is still recorded as 1960 according to rules regarding late registration. Thus, the figure of registered births and registered population at year-end for 1962 would both increase by one.

[3]The number of births in 1960 has been consolidated and reported, and therefore cannot be altered.

However, the late registration will not cause discrepancy in terms of population growth. The above example can be expressed in the following equation:

$$\begin{aligned}&\text{Registered births} + \text{person A} - \text{registered deaths}\\ &= \text{registered year end population}\\ &+ \text{person A}\\ &- \text{registered year end population of the previous year}\end{aligned}$$

The result of the equation will remain unchanged if one person is taken out from both sides.

Therefore, neither unregistered births nor late registrations can produce the first type of discrepancies. However, the deviation from the actual population number caused by the omission and late registration will take effect on the survival ratio in the census year.

A population census investigates the number of people currently living. Suppose that a census took place in 1964, and *person A* would be registered as someone who is four years old. The number of people in this age group is thus added by one. Expressed in an equation, it is as follows:

$$\begin{aligned}&\text{Survival ratio in 1964 of people born in 1960}\\ &= (\text{4 year age group} + \text{person A})\\ &\div \text{number of registered births in 1960}\end{aligned}$$

As a result, the survival ratio of the group is higher than the actual survival ratio because the dividend is increased by one and *person A* is not counted in the registered births in 1960.

At the same time, the birth of person A is added to the number of births in 1962 but the person does not appear in the two-year people living in 1964. Expressed in an equation it is as follows:

$$\begin{aligned}&\text{Survival ratio in 1964 of people born in 1962}\\ &= \text{2 year age group}\\ &\div (\text{number of registered birth in 1962}\\ &+ \text{person A})\end{aligned}$$

With the divisor being increased by one person, as a result, the registered survival ratio of people born in 1962 is lower than the actual survival ratio of the age group.

If *person A* represented a large-scale population event, the 1964 census would see an unexpected dramatic increase in the number of "four-year-olds", which may turn out to be even larger than the number of registered births in 1960, resulting in the survival ratio of people born in 1960 larger than 100% and causing an unreasonably low survival ratio of children born in 1962.

This example shows how omissions and late registration can cause the number of registered births and registered year-end population to deviate from the actual numbers, and the deviation can be revealed in population censuses. Nevertheless, a deviation revealed in censuses can provide evidential support for optimization of birth and year-end population figures.

Under-Registration and Late Registration of Deaths

Like late registration of births, late registration of death means a death is registered later than the year in which the event takes place. However, the actual year of death is not to be registered (because it is of no significance).

For example, person B died in 1954, but the death was not registered until 1960. The omission did not change the number of deaths in 1954, thus had no effect on the year-end population figure of that year. The late registration in 1960 increased the number of deaths and reduced the population figure at year-end by one person, respectively. Yet, either the omission or the late registration would have no effect on the aforementioned first type of discrepancies. This scenario can be expressed in the following equation, which remains balanced when *person B* is taken out from both sides.

$$\begin{aligned}&\text{Number of births} - (\text{number of deaths} + \text{person B})\\ &= (\text{Year end population} - \text{person B}) - \text{population at the previous year end}\end{aligned}$$

However, both under-registration and late registration of deaths will impact on actual death rates.

The late registration of the death of *person B* means the number of registered deaths is less than the actual number by one in 1954. This can

be explained in the following equations.

$$\begin{aligned}&(\text{Number of registered deaths} + \text{person B})\\ &\quad \div \text{average annual population}\\ &\quad = \text{actual number of deaths}\\ &\quad \div \text{average annual population}\end{aligned}$$

Therefore:

$$\begin{aligned}&\text{Number of registered deaths} \div \text{average annual population}\\ &\quad < \text{actual number of deaths}\\ &\div \text{average annual population}\end{aligned}$$

As the death of *person B* is registered retrospectively in 1960, the number of registered deaths is larger than the actual number by one in 1960. Hence, the registered death rate will be higher than the actual rate.

If a large number of omissions occur in a certain period, the registered death rate will be significantly lower than the actual rate. Therefore, registered death rate that appears to be significantly lower than normal can be considered to be a sign of under-registration of death. Meanwhile, the width of deviation and other mortality data obtained through investigation can be used as evidence for assessing the under-registration. Likewise, when late registration occurs in a large scale within a certain period, the number of registered deaths in this period will increase dramatically and become much larger than the actual number. In the absence of extreme causes otherwise, the part in excess of normal mortality can be used to estimate the amount of late registration.

Under-Registration and Late Registration of Emigration and Immigration

Unlike the registration of births and deaths as two separate demographic events, each involving a single administrative district, each case of immigration/emigration involves the household registration authorities in two separate administrative districts. According to the rules of migration registration, a migrant needed to:

(1) obtain an "immigration permission (IP)" from the registration authority in the migration destination;

(2) submit the IP to the home registration authority and complete the registration of emigration;
(3) submit the certification of emigration to the authority in migration destination and complete the registration of immigration.

Moreover, most of the registration of both emigration and immigration is expected to happen in the same year.

Suppose that there were only two districts in China, A and B, and migration happened only from B to A. International migration is not considered here. Meanwhile, suppose the number of registered immigrants into A is M while the number of registered emigrants from B is N. In principle, immigration into A should be equal to emigration from B, as shown in the following equation:

$$M = N$$

$$M - N = 0$$

When M is greater than N, the net registered immigration in district A is greater in number than the net registered emigration in District B and emigrations from district B are not registered to cancel their residential status, or *hukou* in district B. The number of omissions of emigration registration can be expressed in the following equation:

$$\begin{aligned}&\text{Registered immigration into A - registered emigration from B}\\&= M - N\end{aligned}$$

As the number of emigrations from B were not registered ($M - N$), their *hukou* would not have been cancelled by the household registration authority in B. These people would have two *hukou* accounts, in A and B simultaneously. As a result,

$$\begin{aligned}&\text{Registered population at year end}\\&\quad - \text{Registered population at previous year end}\\&\quad = \text{registered births}\\&\quad - \text{registered deaths}\\&\quad + (M - N)\end{aligned}$$

As a result of the imbalance between M and N, or

$$M - N \neq 0$$

the following inequation is established:

$$\begin{aligned}&\text{Registered population at year end}\\ &\qquad - \text{ Registered population at previous year end}\\ &\neq \text{registered births - registered deaths}\end{aligned}$$

Meanwhile, as M is larger than N, registered population growth is no longer equal to natural population growth, as shown in the following inequation:

$$\begin{aligned}&\text{Registered population growth} + (M - N)\\ &\qquad > \text{natural population growth}\end{aligned}$$

As a result, registered population growth is larger than natural population growth. It suffices to say that omissions of immigration registration have happened when the registered population growth is larger than the natural population growth in a certain period of time. The number of the omissions can be calculated if the number of M and N are available.

In the opposite case, there would be omissions in immigration registration in years when M is less than N. This means there are "omissions of immigration registration" in district A, and the number of omissions is $(N - M)$.

As a result, in the population statistics of the country:

$$\begin{aligned}&\text{Registered population growth } + (M - N)\\ &\qquad < \text{Natural population growth}\end{aligned}$$

The above inequation gives rise to the following possibilities:

First, omissions of migration in registration can be the main reason of the discrepancies between registered population growth and natural population growth;

Second, there would have been omissions of emigration in registration in a given period when the registered population growth is larger than natural population growth;

Third, there would have been omissions of immigration in registration in a given period when the natural population growth is larger than the population growth.

Fourth, the discrepancies are the number of omissions or late registrations.

As a matter of fact, omissions can happen in both directions at the same time although the above discussion has described scenarios involving omissions in one direction at a time. For the sake of conciseness, these scenarios can be regarded as results of "net omissions of emigration registration" or "net omissions of immigration registration".

Furthermore, late registration of migration in either direction can narrow the result of "$M - N$". The number of year-end population would reduce by one once a person with two *hukou* accounts has duly completed registration of the unregistered emigration. Likewise, the number of year-end population would increase by one once a person with two *hukou* accounts has duly completed the registration of the unregistered immigration. As a result in both cases, the registered population growth will become approximate to the natural population growth. That is to say, late registrations of emigration or immigration would have happened if the difference between M and N should narrow down. The difference between late registrations in both directions is equal to the net decrease in the difference between M and N from the previous year. However, the late registration cannot be measured in each direction, respectively.

Migration statistics have never been officially released. Yet, *The People's Republic of China Compendium of Population Statistics 1949–1985*, compiled by the MPS and the NBS and published by China Financial and Economic Publishing House, contains specific data on net migration at provincial level. The *Compendium* shows that there has been statistical confusion with regard to registration of migrations, which has in effect confused the year-end population statistics. The data of "migration nationwide over the years" of the *Compendium* (National Bureau of Statistics & Ministry of Public Security, 1988, 978) shows that the net migration across the country has never been zero, with a gap over one million in most of the years and with a record migration-related growth of 3.22 million in 1959. As the deviation of the data on the registered population from natural population growth in the *Compendium* is not consistent with the discrepancies in the *Yearbook*, and the migration-related growths in the former vary greatly over the years, the data in the *Compendium* are to be used for reference only.

Demographic Limitations of Birth and Death Data

As far as I am concerned, many researchers have ignored some of the common demographic limitations and consequently have flaws in their studies. These limitations are closely related to the narratives in this book and therefore discussed here.

Demographic limitations of birth and mortality statistics means there are reasonable ranges for birth rate and death rate if a population is large enough. However, death rate may still greatly exceed the upper limit and birth rate can fall far below the lower limit of the ranges in some special circumstances. Statistical infrequencies and their causes can be identified if those limitations are carefully taken into consideration. Otherwise, there can be confusion in statistics and conclusion if those limitations are ignored.

There are two categories of factors that may affect death rates. One is those that can cause sudden changes, e.g. large-scale wars, plagues, and famines. The other is those that can cause incremental changes, including nutrient-related conditions, healthcare, and age structures. Nutrient-related conditions and healthcare can contribute to lower death rates when conditions improve as a result of social progress, and higher death rates when conditions deteriorate. These factors have a slow effect on the changes of death rates as social economic conditions are usually subject to gradual changes. The death rate of a nation may significantly reduce during a period of baby boom even when there is limited improvement in its nutritional conditions and healthcare. On the other hand, the death rate of a highly developed yet ageing nation may still gradually increase over the years.[4]

Theoretically speaking, factors that cause sudden changes may cause the death rate of a nation to rise well above the upper limit of a reasonable range. In history some nations were reduced by half and some even

[4] Japan experienced a baby boom immediately after the World War II. The dropping of average age and improvement in nutritional conditions and healthcare have resulted in its crude death rate reducing to 7.0 per thousand in 1970. Japan's crude death rate remained at 6.2 per thousand in the 1980s when the number of its younger population reached the peak and there was little room for further improvement in nutritional conditions and healthcare. The 1990s saw the start of its ageing process, and its crude death rate rose from 6.6 per thousand in 1990 to 7.7 per thousand in 2000. Japan has become an ageing society since the beginning of the twenty-first century. Its crude birth rate was 8.6 per thousand while its death rate was 8.7 per thousand in 2007. The crude death rate further climbed up to 9.5 per thousand in 2010.

wiped out—like what is depicted in the move *The Last of the Mohicans*. There have been assertions about the number of famine victims during the Three Years of Difficulties, ranging from 10 million to 3–40 million and up to 7–80 million and even over 100 million. Few have doubted the inflated claims because "there is no upper limit for death rate in extreme circumstances".

Yet, it makes much less sense if death rate is alleged to have become excessively low. The 1981 mortality data by age group collected in the 1982 Census shows that the number of deaths in age groups of 50 and above took up 65% of the total mortality (National Bureau of Statistics & Ministry of Public Security, 1988, 888–91). This shows that there is a lower limit for crude death rate. According to statistics of the World Bank's WDI database, Japan's lowest death rate was 6 per thousand, and China's 6.21 per thousand. It is reasonable to consider 6 per thousand to be the lower limit of death rate for populous nations.[5]

Besides a general lower limit, there is also a relative lower limit of death rate. The main causes of changes in death rate are social development, healthcare standards, and age structure. In the absence of exceptional circumstances, the death rates and their declining rates are expected to be similar among nations that have similar level of social development and healthcare standards. As mentioned previously, China's death rate declining at a speed three or four times faster than those of comparable nations in the first few years upon the establishment of the People's Republic in the absence of factors that might have caused sudden changes can only be understood as a result of a large number of omissions in registration of deaths.

The proportion of women of childbearing age is a factor that determines the upper limit of birth rate. Usually women take up 50% of a nation's total population, and the proportion of fertile women is lower. Women are most likely to have babies at an age between 20 and 29. The Third Census shows that 93% of the babies were born by women aged between 20 and 34 while 95% by women aged between 20 and 39

[5]The death rates of smaller nations are subject to a greater number of factors. For example, the WDI data shows that the crude death rate of Brunei is below 3 per thousand in the twenty-first century. However, the rate is largely 6 per thousand or above among nations with a population over 100 million. Some developing nations are currently facing their youth bulge. The crude death rate was 8.0 per thousand in India, 7.0 per thousand in Indonesia, 7.5 per thousand in Pakistan, and 6.4 in Brazil in 2010.

(National Bureau of Statistics & Ministry of Public Security, 1988, 742–3). According to the 1964 Census, women aged between 20 and 34 took up 9.5% and women aged between 20 and 39 took up 9.8% of the total population in 1961. Given 10% of infertility rate, the upper limit of birth rate can be as high as 90 per thousand. Every single fertile woman would have to have a baby if the birth rate should exceed the limit. According to the WDI data, Pakistan set the record birth rate at 50.9 per thousand in 1970, and this should be the upper limit of birth rate for populous nations.

Many of the aforementioned scholars have ignored these limitations. While there might be no upper limit for death rate in extreme circumstances and they have produced extremely high death rates for the famine years on the basis of the data they have selected, they have more often ignored other demographic factors, i.e. limitations to the upper limit of birth rate and lower limit of death rate. Regarding the following equation:

$$\begin{aligned}&\text{Number of deaths}\\&= \text{number of births} - \text{registered population growth}\end{aligned}$$

those who have selected the equation tend to ignore two things:

On the one hand, they should at the same time have recognized the equation below:

$$\begin{aligned}&\text{number of births}\\&= \text{the number of deaths} - \text{registered population growth}\end{aligned}$$

On the other, they should have applied these two equations to other years besides the period of 1959–60. They should face the consequences of cherry-picking numbers. Once they have produced a large number for death toll, they will have to apply this number in the calculation of population indicators in other years and see whether this number could make any sense at all. That is to say, any calculation that applies no upper limit to death rates should at the same time be able to stand the test of the principle that there are upper limit to birth rates and lower limit to death rates.[6]

[6] Yu Youjun, former Governor of Shanxi Province, asserted in one of his speeches at Sun Yat-sen University in 2016 that "Ye Jianyin revealed at the closing ceremony of the Work Conference of the CPC Central Committee on 13th December 1978 that '20

Therefore, apart from an earnest attitude to seek truth from facts and ethical integrity as well as the study on the number of famine victims during the Three Years of Difficulties requires the conclusions to be put to test from various perspectives.

Have the Official Statistics Been Manipulated?

Some researchers have noticed the confusion and discrepancies in the population data of the Three Years of Difficulties, but most of them put the blame on the government for having manipulated the data. However, none of them has produced any evidence, but speculated on government's motives on the basis of statistical discrepancies. These speculations are more often internally contradictory.

Cao Shuji's Assertion: Data Were Manipulated by the Government

As for the reason for using the county-level statistics rather than those of the provincial or national level, Cao (2005, 6)explains that,

> Ideally, as along as the sources of information are consistent, one can work out the total population of one year based on the population growth rate and the population of the previous year. However… according to the NBS's statistics…the calculated total population of each year after 1959 is without exception 4-7 million in excess of that of the statistics released by the NBS… obviously, manipulation of the pre-disaster or mid-disaster death rate is the fundamental cause of these discrepancies.

million people died in the Cultural Revolution…'". This part of Yu's speech became viral on the Internet. The authenticity of the quoted number of deaths has hardly been questioned as there might be no upper limit to death rate. Nevertheless, this alleged number should be put to the test of the principle that there is a lower limit to death rates. The average annual death rate was 8.4 per thousand, with a total registered death toll of 64.30 million over the period from 1966–76. A death toll of 20 million as victims of persecution suggests that "the number of deaths could have reduced by 20 million if there had not been the Cultural Revolution" and that the number of normal deaths should be 44.3 million. As a result, the average death rate over the ten years would have dropped to 5.80 per thousand. With the 20 million premature deaths being evenly taken out from each of the ten years, the death rate would drop to 4.73 per thousand in 1973. Only 1966 would see a rate higher than 6.0 per thousand, but it would still be lower than the lowest rate ever recorded in Japan.

Having noticed that the natural population growth had been larger than the registered population growth after 1959, Cao Shuji decided that the government must have deliberately raised the natural growth rate in order to lower the death rates of the Three Years of Difficulties.

As indicated in the following equation

$$\text{birth rate} - \text{natural growth rate} = \text{death rate}$$

the death rate could in effect be lowered when the natural growth rate of the period 1959–60 should be elevated. Given that the birth rate remains unaltered, a higher natural growth rate would mean a lower death rate. With a lower death rate in the Three Years of Difficulties, the number of deaths in excess of the linear trendline would also be reduced. As a matter of fact, the population growth calculated with natural growth rate was millions more than the growth recorded in the household registration system each year with a surplus of 26.56 million in total over the five-year period from 1960 to 1964.

Cao (2005, 9) adds that "in some areas in Anhui province, for example, the pre-disaster population was understated to the extent that the pre-disaster population growth rate is too low to be credible". Indeed, the natural population growth of the whole country had been lower than the registered population growth by millions each year before 1959 with a total difference of 11.5 million over the period from 1954 to 1959. Cao believes that the mortality issue of the Three Years of Difficulties can be concealed by lowering the natural population growth rate. As discussed above, given that the birth rate remains unaltered in the equation

$$\text{birth rate} - \text{natural growth rate} = \text{death rate}$$

the death rate will rise if the natural growth rate is brought down. If the death rates prior to the famine years had been elevated, the normal death rate will rise correspondently, resulting in reduced abnormal mortality during the Three Years of Difficulties.

While it seems to make sense with the equations, Cao has apparently ignored the following issues in his speculations.

First, artificial reductions of the natural population growth rates before 1959 were not possible unless the pre-1959 population statistics had not been published. However, the Chinese government at the county, city, and provincial and central levels, had started to publish the previous year's population figures on yearly basis since 1951. The figures recorded in

these data sets have remained unchanged. Therefore, it is clearly unreasonable to propose that the CCP, in anticipation of a serious population loss in later years, would have repeatedly elevated the death rates in order to be "better statistically prepared".

Second, Cao has defined the period of 1962–64 to be "normal years" in his calculation. A deliberate elevation of natural growth rates of these years would entail lower normal death rates and higher number of deaths in excess of the linear trendline for the period of 1959–61. This would not be a smart move to conceal the truth in favour of the government. If the government would ever manipulate the data, they should have brought down the natural growth rates of these three years. However, the truth is apparently the other way around: these three years have seen the highest level of natural population growth in excess of the registered growth.

Third, it is misleading to use "without exception" when saying that "the calculated total population of each year after 1959 is without exception 4–7 million in excess of that of the statistics released by the NBS". In fact, the natural population growth has been smaller than the registered population growth almost "without exception" since 1965. Cao's allegation begs a question why the government has bothered to elevate the death rates since then or whether the government is preparing for the next major population loss by lowering the natural growth rates in advance?

Yang Jisheng: Adjusting the Data on Purpose

With regard to the cause of the significant discrepancies between the figures for the registered year-end population and the year-end population by growth rate, many believe that the public security authorities and the statistical authorities have altered the population data for political purposes.

In *Tombstone*, Yang Jisheng (2008, 443) states that,

> According to Zhang Qingwu and Wang Weizhi who at the time were working at the Department of Household Registration at the MPS, Chinese population statistics at the grassroots level were reported from production brigades by accountants or copy clerks who were not specialized in this work. Therefore, the figures were not accurate. The report forms used by the production brigades included such items as total population, births, deaths, emigration and immigration. The total population

was calculated by counting rations of food, oil and cloth. The numbers for births and deaths were basically obtained from people's memories. The production brigade cadres got together and recalled how many died and how many were born. Thus, the figure for total population, counted on the basis of rationed supplies of food, oil and cloth, would be more accurate, but population could be overstated in years when there were excessive deaths. The death rates and birth rates were calculated on the basis of the above three figures. With emigration and immigration being taken into account, the increase of total population (the population at the year-end minus that of the previous year) and the natural population growth (the number of births minus death toll) should be equal to each other. However, considerable discrepancies arose when these two figures were collected from the provinces and put together.

In an age when living materials were rationed to each individual person, there were not many unregistered births. However, under-registration of death was common. For a household or production team, as soon as a person died, their *hukou* was supposed be cancelled, and subsequently all related supplies of living materials would be cancelled. However, if the death was kept unregistered, other members of the household could continue to share the rationed resources. There were also political reasons for not registering deaths. Too big a death toll might affect the local officials' careers. For the central government, excessive mortality would damage its political image. Wang Weizhi told me that the county and provincial authorities, when they received reports of a high level of mortality from grassroots levels, they would interrogate them, asking: 'Is your number accurate? Go and check it again!' The lower level authorities, having received such hints, would adjust their statistics until their superiors were satisfied. It was common in 1958-1962 for deaths to be kept unregistered while under-registration of birth was relatively rare. This caused the natural population growth (the number of births minus that of deaths) to exceed the growth of the total population (which was calculated on the basis of rationed supply of living materials and more accurate).

The basic rationale of the above explanation is that, for political reasons and personal interests, household registration, during this period, was characterized by widespread under-registration of death, but only very rare cases of unregistered births. Given that the figure for natural population growth was derived by subtracting the death toll from the number of births, population growth would be inflated if deaths were frequently left unregistered. Hence the tendency for the natural population growth to be greater than the increase in total population.

However, Yang Jisheng, Wang Weizhi, and Zhang Qingwu fail to make a solid case, for two reasons:

Firstly, natural population growth did not always exceed the "growth of the total population", i.e. the registered population growth. Apart from the six years 1960–1964 and 1967, the registered population growth was larger than natural population growth among the other 18 years of the period from 1956 to 1979 (see Table 2.1). Therefore, the claim that natural population growth was usually greater than the "growth of total population" rests on a false premise.

Secondly, even in the years when the registered population growth was less than the natural population growth, it is hard to prove that the public security authorities intentionally lowered the registered death rate. For the years 1962, 1963, and 1964, natural growth exceeded registered growth by 3.61 million, 3.97 million, and 6.03 million, respectively (see Table 2.1). It is contended that the difference was due to the public security authorities' intentionally under-registering the deaths of these people, and therefore, these numbers should be added to figures for registered mortality. If this is true, the real death tolls for the years 1962, 1963, and 1964 should be 10.28 million, 10.82 million, and 14.06 million, totaling 35.16 million, instead of 6.67 million, 6.85 million, and 8.03 million, respectively (National Bureau of Statistics, 1983, 103–5). That would mean, if we accepted Yang Jisheng's figure of seven million as the normal annual death toll, that there would have been at least 14 million premature deaths in 1962–64. However, this reasoning is not in accordance with historical facts: agricultural production recovered in 1962, and it was very unlikely that the years of 1962–64 should see such a large number of premature deaths.

Therefore, those researchers who have accused the government of manipulating data have failed to produce any evidence or rationale to support their allegations. Furthermore, they have actually created a dead-end for their studies as they would never be able to derive true statistics from fake ones if the government had faked the data.

In conclusion, population data prior to 1982 was obtained from household registration records maintained by the public security authorities. Both the records and the procedures for household registration in various periods are known. Errors and omissions in registration and their statistical implications can be identified. Therefore, it is possible to make adjustments to the survey and census data based on existing statistics and

other data that meet statistical standards and, hence, eliminate discrepancies. Nevertheless, all adjustments must not defy sociological principles, but be vindicated with facts in a relevant historical context. The historical background and causes of the discrepancies between the data of registered population growth and natural population growth, the contradictions between the number of births and survival ratio as well as the deviation of death rate from the normal range will be analyzed in the following three chapters. Meanwhile, the extent of deviation will be calculated and corrected in accordance with demographical and statistical principles.

As suggested by a number of western demographers, no one can proceed with the study on the death toll in the famine years unless a set of data in line with demographical and statistical principles and free of contradictions are made available. Calot suggests that Chinese demographers make some scientific adjustment to these statistics and explain the methods used for such adjustments (see Li, 1997, 14).

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CHAPTER 4

Causes of Two Sets of Population Growth Data and Data Adjustment

As shown in the previous two chapters, there are discrepancies in three groups of statistics, the most distinctive one being the contradictions in the yearly population data: there are two sets of data for each of the four major population indicators. Meanwhile the discrepancies between the two sets of population growth data have led to the confusion in the other three indicators. These contradictions have few direct implications for calculation of the death toll and analysis can take quite a few pages. Yet, we could ill afford ignorance of this problem because the contradictions can bewilder researchers and readers and prevent them from understanding the main line of my argument. Moreover, the contradiction occurred in a backdrop where the data of deaths and births were processed. A thorough analysis will help the readers have a holistic understanding of how population statistics were generated at that time. Therefore, this chapter presents and analyses the historical background in which the data of registered population growth and natural population growth are formed, and produces a set of yearly population data that are contradiction-free.

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
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Discrepancies Between Registered Population Growth and Natural Population Growth

As mentioned previously, the registered population growth significantly deviates from the natural population growth in almost each of the years prior to 1982. The deviation is demonstrated in the following figure.

Figure 4.1 shows that the registered population growth started to depart from the natural population growth soon after the first Census. In the period from 1954 to 1960 the registered growth was gradually larger than the natural population growth, and the opposite became true in 1960 and lasted till the end of the 1960s. The deviation began to narrow down towards the end of the 1960s and largely disappeared at the end of the 1970s. The registered growth and natural population growth have completely coincided with each other after a new method was adopted to collect and process population data in 1982.

As discussed in this chapter, under-registration and late registration of migration are responsible for the deviation. A mathematical induction has demonstrated that:

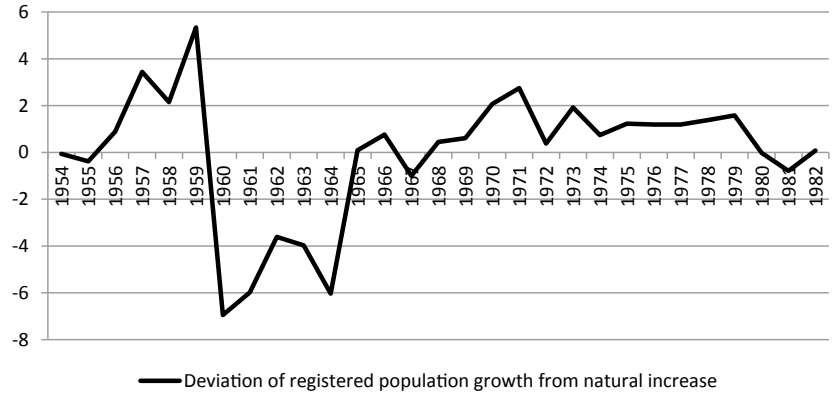

Fig. 4.1 The deviation of registered population growth from the natural population growth from 1954 to 1982

1. There must have been omissions in registration of immigration in a period when the registered growth is larger than natural population growth; the number of omissions is the difference between the registered growth and natural population growth.
2. There must have been omissions in registration of emigration in a period when the registered growth is less than natural population growth; the number of omissions is the difference between the registered growth and natural population growth.
3. A greater deviation from natural population growth would suggest that the under-registration is getting worse, and vice versa.

The mathematical induction also suggests that there had been a large number of omissions in registration of emigration before 1960, and the under-registration began to be rectified in 1960. By 1964, not only a large number of non-registered emigrations had been recorded in the form of late registration, but there had also been approximately a total of 20 million omissions in registration of immigration. These omitted immigrants began to have their *hukou* registered or re-registered in 1964, resulting in the registered population growth getting closer to the natural population growth. By the time when the HRS was implemented, the registered population growth has basically coincided with the natural population growth and the deviation associated with migration been corrected.

Nevertheless, it is not adequate to illustrate history with mathematical induction. All inductions must be verified with historical facts and relevant statistics.

Under-Registration and Late Registration of Migration Are the Cause of Confusion in Population Data

In Chapter 3 China was divided into two hypothetic districts for an illustrative analysis. The hypothesis can be applied to practical analysis in reality where there are more than one hundred thousand household administration authorities in over 30 provinces.

Sun Jingxian has noticed that, apart from numbers at national level, the *China Statistics Yearbook* has collected data of year-end population, birth rate, death rate, and natural population growth in two separate categories, namely urban statistics and rural statistics. By the time when China

completed its transition to a planned economy in 1953, the Chinese people had to have their residential status registered as either "urban *hukou*" or "rural *hukou*". It took even stricter procedures to change residential status than to relocate to another administrative area. This has practically divided China into two types of "household registration administrative areas", providing a premise for a mathematical induction based on historical data generated over time.

Sun has also noticed that under-registration and late registration of migration happened on a large scale in the 1950s when China initiated a nationwide urbanization campaign which ended shortly. He argues that this is the fundamental reason why the registered population growth and registered year-end population figures have greatly deviated from reality. He has explained with population statistics.

In the following table, the yearly registered population growth of townships and rural areas are calculated with the following method:

$$\text{population at year end} - \text{population at previous year end}$$

The natural population growth of urban and rural populations can be calculated by using the natural growth rates of cities and counties, respectively.[1] The difference between registered urban and rural populations and the natural population growth is termed as "migration-related growth". While international migration is not taken into account, the sum of "migration-related growth" of urban and rural populations should be zero. As shown in the following table, however, the opposite is true in fact.

The numbers of natural variance of urban and rural population for 1967–1970 are not available, so the migration-related growth of those years are not directly available. Yet, the difference between the registered

[1] Strictly speaking, urban population and rural population refer to people who have urban *hukou* and rural *hukou* respectively. City and county are two levels of administration, and city population and county population refer to people who live in administrative areas at different levels. Yet, most of the people who live in the cities had urban *hukou* while most people within the administrative area of a county had rural *hukou*. As we are calculating with growth rates rather than total population figures, the difference between the growth rates of urban population and rural population will be approximate with that between the growth rates of populations at city level and county level. The growth rates of populations at city and county levels are adopted because those of the urban population and rural population are not available.

growth and natural population growth is approximate to the migration-related growth, with the former varying in correspondence with the latter. In average the registered growth is larger than natural population growth by 13 per cent and otherwise smaller by 14 per cent. An estimate is made on the basis of the average differences for the migration-related growth in 1967–1970, which are −1 million, 0.45 million, 0.61 million and 2.07 million respectively so that the readers may have a general idea of what the migration-related growth may have looked like in those years.

Table 4.1 shows that the total migration-related growth was 9.72 million in 1954–1959, −26.57 million in 1960–1964, and 19.82 million

Table 4.1 The migration-related urban population growth in 1956–1982 (million)

Year	*Natural population growth*	*Registered growth*	*Migration-related growth*
1956	2.66	9.00	6.34
1957	3.45	7.64	4.19
1958	2.51	7.72	5.21
1959	2.14	16.50	14.36
1960	1.81	7.02	5.21
1961	1.32	−3.66	−4.98
1962	3.31	−10.48	−13.79
1963	4.35	−0.13	−4.48
1964	3.06	13.04	9.98
1965	2.72	0.95	−1.77
1966	2.01	2.68	0.67
1967			
1968			
1969			
1970			
1971	2.32	2.87	0.55
1972	2.08	2.24	0.16
1973	1.88	4.10	2.22
1974	1.43	2.50	1.07
1975	1.47	4.35	2.88
1976	1.06	3.11	2.05
1977	1.30	3.28	1.98
1978	1.43	5.76	4.33
1979	1.54	12.50	10.96
1980	1.64	6.45	4.81
1981	2.22	10.31	8.09
1982	2.68	9.83	7.15

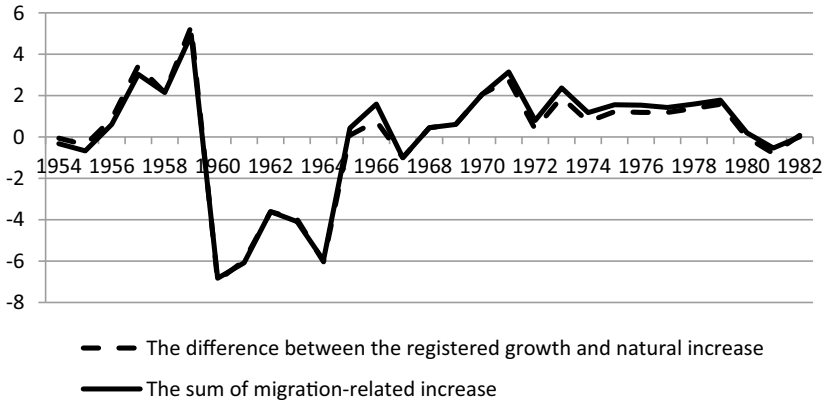

Fig. 4.2 The sum of migration-related growth and the difference between registered population growth and natural population growth

in 1965–1982 respectively, with a sum being 2.97 million. By 1982, the considerable fluctuation in terms of migration-related growth had basically ceased over the course of 23 years, with a surplus of three million in registered growth in equivalence to 0.29 per cent of the total population in 1982. A highly statistical coincidence can be seen in Fig. 4.2 between the sum of migration-related growth and the difference between registered population growth and natural population growth.

Based on the statistical coincidence shown in Figs. 4.1 and 4.2, Sun believes that the registered population growth deviated from the actual increase due to the large amount of under-registration and late registration associated with migration between urban and rural areas.

Sun Jingxian's Estimation Is Consistent with the Historical Facts

The Possibility of Under-Registration of Migration

Still, the argument drawn on the mathematical induction and the statistical coincidence with the rural–urban migration needs to be considered in a context involving the following three questions. (1) Did any large-scale migration happen between rural and urban areas? (2) Were there any loopholes associated with under-registration and double registration of migration in the household registration or *hukou* system? (3) Were

there any motives underlying intentional under-registration associated with rural–urban migration in the *hukou* system?

These three questions are about the necessary conditions for large-scale under-registration and double registration associated with rural–urban migration. Sun has elaborated on these questions in his publications.

Regarding the first question, a broad variety of documentation demonstrates that the industrial economy and other urban sectors experienced a rapid expansion from the start of the first Five-Year Plan, which generated a large number of employment opportunities and attracted millions of peasants to work in urban enterprises. Luo Pinghan of the Department of the Party History in the Central Party School verifies this in his book *The Grand Migration: The Reduction of the Urban Population 1961–63*. Referring to the new urban employees, he writes: "[In 1958] 16.61 million were recruited from the whole country… among them 11.04 million were recruited from rural areas" (Luo, 2003, 32). Employment in industry and construction was cut back in the first half of 1959. But "after the Lushan Conference… the fervor came back and excessive targets were set once more" (Luo, 2003, 72). In 1960, "by the end of July, the total number of employees… had increased by 3.28 million since the end of the previous year" (Luo, 2003, 81).

China experienced its first wave of urbanization in 1954–1960. Yet, according to Luo Pinghan, "in the second half of 1960, reorganization of the labor force to supplement the agricultural front, was rapidly implemented nationwide, following a series of directives from the CCP Central Committee. Employees were transferred to the grassroots levels. By the end of February 1961, a total of 4.106 million employees had been transferred nationwide" (Luo, 2003, 139).[2]

Along the same line, Sun Jingxian (2011b) states:

> There are various arguments concerning the number of redundant workers in 1961-1963. According to the book *A Reflection on Restructuring the National Economy in the 1960s*, a total of 19.4 million redundant workers were removed over the three years from 1961 to 1963. The number was 17.44 million if the number of college and vocational students who graduated and started work during that period is deducted. According to the

[2] It is noteworthy that most of the reduction of the population by 4.106 million took place in 1960 and the end of January 1961 the latest, since the Spring Festival of 1961 fell on 15th February.

> book *Labor Management in Contemporary China*, a total of 24.46 million workers were laid off in 1961-1963. The *China Statistical Yearbook1989* states that the total number of workers nationwide was 59.69 million in 1960. By 1963 the number had fallen to 43.72 million in 1963, a decrease of 15.97 million.

Therefore, there was indeed a large-scale urban–rural migration in the 1950s and early 1960s.

The second question is whether there were any policy loopholes that would allow double registrations and failures to register. China had no household registration system until the early years of the People's Republic. The MPS promulgated *Provisional Regulations on Urban Household Registration Administration* in July 1951, to set national standards for the urban household registration system. The *Provisional Regulations* applied only to cities; the household registration system had not yet been implemented in rural areas. At the time, migration was relatively loosely controlled. People could easily migrate to cities and apply for a permanent *hukou* as long as they obtained a provisional *hukou* from the relevant authorities within three days of arrival and continued to live there for more than three months.

On 22 June 1955, the State Council promulgated the *Directions on Establishing a Household Registration System for Permanent Residence*, which required all cities, townships, and villages to establish a *hukou* registration system. This decree extended the *hukou* registration system from urban to rural China. The *Directions* required that "efforts be made to establish and perfect the household registration system within a few years".

However, there were apparent loopholes in the *Directions*, which stipulated that in cases of "immigration (including by marriage): Households or individuals who move to a new locality… after submitting migration certificates *or other* certificates… can be registered in the immigration accounts". This means that migrants did not have to submit migration certificates, as long as they could produce "other certificates" that carried an official seal. This loophole would have allowed for large-scale double registration.

In a report to the municipal people's committee in 1958, the Labour Bureau of Baoding, Hebei, stated that

> some production teams or communes issued reference letters for their members so that they could look for jobs in other places; some escaped on their way to the work on reservoir construction sites, and set off for Baoding or Beijing to find jobs; others forged official seals and identity documents so they could migrate to cities. (Luo, 2003, 83)

However, the administration of household registration was far from adequate at that time. The *Directions* stated that "townships [*xiang* and *zhen*] where there are no police stations should establish township *hukou* books and registers of births, deaths, emigration and immigration. The township *hukou* books must keep records of all permanent residents of the township and add or cancel accounts in accordance with changes in population so that the actual population status can be acquired". However, even "collective *hukou*" were far from being established at the village team (production team) and village (production brigade) levels at the time, let alone *hukou* registration books for each household. There was usually only one *hukou* book for an entire town (commune), comprising thousands of people. Zhang Jiwu, former township civil affairs assistant in Suiping County of Henan Province, told me in an interview that he alone had been responsible for the *hukou* registration of the entire township. Besides, he was engaged in many other heavy commitments like the registration of marriage and divorce, placement services for veterans, and social assistance. A busy man like Zhang Jiwu would have struggled too much to manage the *hukou* business for thousands of people effectively on some registration form.

These problems were not solved until 1960 when the new household-based registration system was implemented, on a practical basis.

Regarding the third question, peasants who migrated to urban areas had definite incentives to leave their migration unregistered. China started to implement the unified purchase and sale [*tonggou tongxiao*] of grain in 1953. Food supplies were linked to *hukou*. When a young peasant was recruited, he or she was unable to buy food or obtain "food vouchers" until the employer sorted out his or her food ration [*liangshi guanxi*], for which a *hukou* was the prerequisite. Therefore, urban employers had to register a *hukou* for the newly recruited peasants, and peasants would acquire an urban *hukou* once recruited. This is known to every peasant. According to a report by Yutian County to higher authorities,

> In Damangang Village in Wu Commune in Hebei, all the young workers left. one of the main reasons was that the peasants aimed to "kill two birds with one stone" as they knew that food was supplied free of charge and every cent they made outside would become private income while their families would be taken good care of in their hometowns. (Luo, 2003, 42)

It is hard to tell whether every peasant who had two *hukou* did it on purpose. Yet, there was an element of self-interest underlying double registrations before 1960. In line with the implementation of the unified purchase and sale system, the supply of industrial products began to be rationed in 1954. Peasants were issued, by registered head count, with ration vouchers for buying everyday necessities such as salt, cloth, kerosene, and matches. More significantly, the household head counts had direct implications as to how much grain a production team could retain, and how much surplus grain they must sell to the government. At that time, public grain [*gongliang*] was equivalent to a fixed agricultural tax paid in grain. The surplus grain due to the government beyond the public grain [*yuliang shangjiao*] was calculated by subtracting the food retained, which was calculated by multiplying the quota that could be retained per capita by the production team population, from the food production after the delivery of the public grain. Each registered *hukou* account meant an increase in the food that could be retained, and a corresponding reduction of the *yuliang shangjiao*. At a time when rural household registration was relatively loosely implemented, the production teams and brigades would have greater discretion to allocate and adjust ration vouchers, the retained food quota, and surplus grain (this was not necessarily private embezzlement) if the peasants who migrated to urban areas did not register their emigration. Therefore, the migrants, the production teams and brigades, which were an administrative authority and had the power to issue certificates with an "official seal", did not pay much attention when somebody did not register his or her emigration.

Confusion Accompanying Rapid Industrialization

The above four factors logically allow for the possibility of widespread "double *hukou* registration" in the period before 1960, but these factors alone cannot prove that it actually took place. Sun has drawn attention to the following historical records: During the fervor of the GLF, "disorderly recruitment [*luan zhaogong*]" and "a chaotic drain of rural labour

[*nongcun laodongli mangmu wailiu*]" were common nationwide. These terms appeared in many local official documents. For phenomena to enter common parlance in this way they must have been widespread (Sun, 2011a).

Let us first examine the issue of "disorderly recruitment". A report from the CCP Linqing County committee to the State Council and the CCP Shandong provincial committee states that,

> Since June 1958, the Labor Bureau of Handan City, the Preparatory Office of the Handan Steel Factory of the Hebei Primary Heavy Industry Bureau, the Handan Textiles and Printing Factory, and the Handan Railway Bureau, have arrived in Linqing County to carry out recruitment without going through any formal procedures. In the 11 townships of the Weiyun Hexi region of the county alone, 5,650 young adults were recruited. At the outset, these work units asked to see *hukou* and food ration certificates. But later, even voter's certificates became acceptable. Some work units sent buses to transport new recruits from the townships and villages. Of 3,570 male adults in Jianzhuang Town, 1,500, or 42 per cent, were recruited to work in Handan City. From the Zhaozhuang Agricultural Cooperative of the same town, 300 out of 326, comprising 92 per cent of the male labor force, were recruited. Jianzhuang Town Middle School had to close down because 28 out of its 35 students were recruited.
>
> To recruit labor, some units have ordered their staff to recruit workers by writing letters to friends, or through their village networks. Some have even, openly or semi-openly, recruited jobless peasants who blindly migrated to cities. The Beijing Second Construction Company openly recruited 200 workers at the site of the Dongzhimenwai Beijiazhuang Second Primary School at the end of November 1958. The only condition for registration was: Bring your own luggage. Of the 200 workers, 60 per cent had no certification at all; some had hopped from other units, and some had newly arrived from rural areas. Some of them had earned enough to cover their travelling expenses, and their return to the countryside was arranged by the civil affairs authorities.
>
> According to an investigation of 11 work units, including the Shanxi Machine Tool Factory and the Taiyuan Mining Machinery Factory, these units recruited 22,650 workers, or 37.38 per cent of their total staff, from April to October 1958; new recruits made up as many as 63 per cent of employees in some units. Of these new workers, 58.43 per cent came from the countryside without completing formal procedures. (Luo, 2003, 29–31)

Next, let us talk about the "chaotic drain of rural labour".

A survey of ten provinces—Hebei, Shandong, Henan, Shanxi, Liaoning, Jilin, Anhui, Zhejiang, Hubei, and Hunan—showed that their rural areas lost three million workers from late 1958 to early 1959.

The "disorderly recruitment" by public institutions and enterprises caused a "chaotic rural labor drain". Living conditions in urban areas were vastly different from those in the countryside. There were free food supplies, so workers could pocket all their earnings, and the tide of young workers fed the "disorderly recruitment". Food supplies were needed to feed the new workers. Since grain supplies were not available on the free market but were tied to *hukou*, employers were forced to register *hukou* in order to feed their employees. Given the "chaotic rural labour drain" and the "disorderly recruitments", huge numbers of double *hukou* registrations were not only possible, but inevitable.

How Has the Registered Population Growth Deviated from Reality?

Below is a general description—based on social historical facts—of how under-registration and late registration associated with migration have impacted on year-end population figures.

The Period from 1956 to 1959

With industrialization at its peak, this period saw substantial under-registration of emigration and relatively little under-registration of immigration, resulting in a growth gap of 10.73 million. Most of these people were living in urban areas by the end of 1959, and held both urban and rural *hukou*.

The Year 1960

The year 1960 was exceptional when the migration-related growth dropped to minus 6.83 million from 4.94 million in the previous year, with a fluctuation width of approximately 12 million. The cause is very complex.

The under-registration of emigration maintained its momentum until July. Luo Pinghan's study reveals a continued influx of rural migrants into urban areas in the first half of 1960. He states that "by the end of July, the number of employees nationwide… had increased by 3.28 million compared with the end of the previous year". The situation was reversed in the second half of the year.

As discussed in Chapter 3, there must have been approximately 12 million people who had their emigration from rural areas registered retrospectively and there must have been millions of omissions in registration of immigration. Where are the records of these events and how could millions of omissions occur within one year? Where were the people who held no *hukou* at that time?

As shown in Tables 4.1, 4.2, and 4.3, it was the deficit in migration-related growth in the rural areas that had caused the migration-related growth to drop from 4.94 million to minus 6.83 million nationwide. In

Table 4.2 The migration-related rural population growth in 1956–1982 (million)

Year	*Natural population growth (million persons)*	*Registered growth (million persons)*	*Migration-related growth*
1954	12.26	10.47	−1.79
1955	10.07	11.63	1.56
1956	10.36	4.63	−5.73
1957	11.78	10.61	−1.17
1958	8.75	5.69	−3.06
1959	5.05	−4.37	−9.42
1960	−4.98	−17.02	−12.04
1961	1.28	0.18	−1.10
1962	14.66	24.84	10.18
1963	18.50	18.90	0.40
1964	16.17	0.23	−15.94
1965	17.25	19.44	2.19
1966	16.44	17.36	0.92
1967			
1968			
1969			
1970			
1971	16.89	19.50	2.61
1972	16.60	17.24	0.64
1973	16.09	16.24	0.15
1974	13.87	13.98	0.11
1975	12.57	11.26	−1.31
1976	10.38	9.86	−0.52
1977	9.84	9.29	−0.55
1978	9.82	7.09	−2.73
1979	9.52	0.33	−9.19
1980	9.79	5.18	−4.61
1981	11.98	3.36	−8.62
1982	12.00	4.86	−7.14

Table 4.3 The sum of migration-related growth of urban and rural population (million)

Year	*Urban areas*	*Rural areas*	*Nationwide = urban areas + rural areas (million)*
1954	1.47	−1.79	−0.32
1955	−2.23	1.56	−0.67
1956	6.34	−5.73	0.61
1957	4.19	−1.17	3.03
1958	5.21	−3.06	2.15
1959	14.36	−9.42	4.94
1960	5.21	−12.04	−6.83
1961	−4.98	−1.10	−6.08
1962	−13.79	10.18	−3.61
1963	−4.48	0.40	−4.09
1964	9.98	−15.94	−5.96
1965	−1.77	2.19	0.43
1966	0.67	0.92	1.59
1967			*−1*
1968			*0.45*
1969			*0.61*
1970			*2.07*
1971	0.55	2.61	3.15
1972	0.16	0.64	0.80
1973	2.22	0.15	2.37
1974	1.07	0.11	1.18
1975	2.88	−1.31	1.56
1976	2.05	−0.52	1.54
1977	1.98	−0.55	1.43
1978	4.33	−2.73	1.59
1979	10.96	−9.19	1.78
1980	4.81	−4.61	0.20
1981	8.09	−8.62	−0.53
1982	7.15	−7.14	0.01

the same year the natural population growth in rural China was minus 4.98 million, causing the registered population in year-end 1960 to be 17.02 million less than that in the previous year. As discussed in the previous chapter, the decrease by 17.02 million has nothing to do with deaths. Instead, there are two possibilities, one being the registration of emigration, and the other retrospective registration of emigration. The positive migration-related growth by 5.21 million in urban areas can be

understood as the immigration of more than five million people from rural areas. As a result, 11.8 million people lost their rural *hukou*. A plausible reason is that approximately 12 million people who had already migrated to urban areas have their emigration registered retrospectively.

There are two ways to "rectify" omissions in household registration. One is through report of omissions when people report their own omissions or when the omissions were discovered; the other is through automatic rectification of the household registration system when the emigrants fail to show up in the process of re-registration of *hukou*. While the period of 1956–1959 saw a total migration-related growth by 10.73 million caused by under-registration of emigrations, the migration-related increase decreased by 11.8 million in 1960 alone. As analyzed above, this can be explained by retrospective registration of emigrations.

However, people would be reluctant to report their emigration if it was in their interest to retain their original *hukou*. Even though some omissions could be discovered, the number was very small. A rectification of over ten million omissions in the registration within just one year could only be realized through a nationwide "campaign" in China.[3]

On 9 January 1958, the *Regulations on Household Registration of the People's Republic of China* (the 1958 *Regulations*, hereafter) was passed by the National People's Congress Standing Committee and promulgated as an Order of the President (National People's Congress, 1958). Legally binding, the 1958 *Regulations* clearly defined the purpose, scope, and the authorities responsible for household registration, the functions of the household registers, the procedures for applying for and cancelling *hukou*, migration, obtaining permanent residency and provisional residency. This marked the formal establishment of a uniform, nationwide, urban and rural household registration system. Given government practice at the time, all provinces and municipalities had to formulate and issue their own implementation documents, based on the central government documents, before the regulations could be applied in practice.

Take Beijing for an example. In February 1958, the Beijing Public Security Bureau, in accordance with the requirements of the CCP Central Committee and the MPS to implement the 1958 *Regulations*, drafted the *Implementation Plan of Beijing Public Security Bureau to Enforce the Regulations on Household Registration*. The work throughout 1958

[3]The term "campaign" is a household word at that time, usually referring to large-scale mass political, cultural, and production movement organized by the government.

concentrated on making the *Regulations* known to the public, as reported in a newsletter,

> From December 1958 to July 1959, based on the previous brief registration, each people's commune in the counties of Tong, Shunyi, Daxing, Zhoukoudian, Pinggu, Huairou, Miyun and Yanqing created 'residential population registration forms', one for each resident. One copy of the form was required for a rural *hukou* and was kept at the commune's politics and law enforcement department (the police station). Two copies were required for a township *hukou*, one held at the commune's politics and law department (the police station) and the other kept by the residents. A total of 2.585 million residential forms were filled out at this time. In the second half of 1959, all *hukou* in Beijing were registered and counted, according to the *Regulations*…Through the implementation of the *Regulations*, the problems relating to expired temporary resident status, and *hukou* errors were resolved. Since then, there have been complete and uniform legal provisions for the work of household registration. (Beijing Bureau of Public Security, 1960)

Beijing is the capital city and policies are put into practice swiftly. Since it had a relatively small rural population and had more experience in handling household registration through the public security authorities, Beijing encountered less difficulty than other places in carrying out this work. Many provinces did not issue their implementation plans until the second half of 1958 and even 1959 and therefore did not put the 1958 *Regulations* into practice until the second half of 1959 or even 1960 (Yang, 2008, 252).[4]

[4] It was not until 1959 that all provinces had applied the *Regulations* in rural areas. Sichuan province did not issue its Directions on Reinforcing the Administration of Household Registration and Population Statistics until 1960. Besides, the *Public Security Chronicles* of several provinces have shown that the regulations were applied in urban areas first and it took longer time to start in rural areas even in the provinces that were swift in taking actions. Shandong Party Committee did not allocate fund for administrative positions for managing *hukou* and household account cards until 4 September 1959. Fujian province started to verify the records of permanent population in the same year of the promulgation of the *Regulations*, but they only went through the records in urban areas. It had taken much longer time before the records in rural areas were checked. Having checked the records in 381 brigades in 1960, Jingjiang Prefecture identified 22,719 people who were no longer eligible for rural *hukou*. A total of 55,789 people were identified across the entire province in 1961. Likewise, the *Public Security Chronicles*

The implementation of the 1958 *Regulations* had an intrinsic corrective effect on the large-scale under-registration of death and emigration.[5] During the implementation, the previous method, by which the population of a whole commune was registered on a single registration form, was changed to "one registration form per permanent resident". At the same time, Article 4 of the 1958 *Regulations* stipulated that "household registration books were issued to cooperatives in rural areas". This meant that collective *hukou* was established at production brigade and even production team levels. This work, carried out in the second half of 1959, aimed to register the *hukou* of the residents who worked and lived in production teams, setting up "collective *hukou*" in production brigades and teams and keeping the *hukou* records of the residents. All records were to be reported to the civil affairs assistant or public security commissioners.[6] Since then, there was little opportunity for further under-registration of emigration. Most importantly, it became hard to revalidate the rural *hukou* of those who retained both urban and rural *hukou*. The rectification of under-registration of emigration was largely completed during the standardization of the household registration system, and the excess *hukou* accounts were basically eliminated. The figure for registered population following the rectifications was less than the original figure, but the difference would not be revealed until the statistics were collected and aggregated at township government at the end of 1960. This is the main factor that has rectified most of the omissions in registration of emigration and caused more than 10 million deficit in migration-induced changes in rural population.[7]

of Anhui Province pointed out that the household registration system was messy in 1959–60. In May 1960, Anhui Province Party Committee issued the *Notification of Establishing a Reporting System for Population Administration.*

[5] Yet, it does not have corrective effect on under-registration of birth and immigration. Usually the Chinese people would not choose not to report the births of their children. Under-registration of birth happened when parents attempted to avoid penalty for breaching the One-Child Policy. In that case, surveyors would not be able to find out even in a door-to-door survey. Usually under-registration of immigration occurred when someone was not willing to migrate into the administrative area and in effect lost their *hukou*.

[6] There were no police stations except in the suburban areas of a few municipalities.

[7] In addition, the implementation of the 1958 *Regulations* also rectified previous "under-registration of mortality", which also reduced the registered year-end population. Please refer to Chapter 8 of this Part for more details.

What are the factors that have caused millions of omissions in registration of immigration? The famine had its most devastating impact in 1960. It was reported in the news and was known to many. Many of the young peasants who had migrated to urban areas, especially those whose hometowns were severely affected, did not return to their hometowns. It is easy to understand why young peasants who had worked and lived in urban areas were loath to return home. Even today, few migrant workers who have experienced urban life return to their rural homes. Most city dwellers have relatives in the countryside, and many people from the countryside have relatives in cities. Migrants often stay in the cities and find casual employment through friends and relatives. Most of the immigrants in cities were young men and women, and many of them got married there. It was called "one end down [*yitouchen*]" if one part of a couple was laid off and consequently lost his or her *hukou*. Also, few of the individuals with *hukou* would send their spouses who lost their *hukou* back to the countryside. I worked as a teacher in a city in the 1970s. This was a typical family structure of many of my students. Others sought work in remote areas such as Xinjiang and the Northeastern provinces, and constituted a so-called "floating population [*mangliu*]".

The implementation of the 1958 *Regulations* would prevent large-scale under-registration of emigration from happening again. Under-registration of rural to urban emigration was substantially eliminated. However, the 1958 *Regulations* could not prevent the under-registration of immigration, because household registration was only for those who had *hukou*, and the floating population could not apply for new *hukou*, even in rural areas, but could only be sent back to their hometowns, once identified by the authorities.

Therefore, the reduction in the registered population in 1960 was caused by multiple factors, including the rectification of the under-registration of emigration effected by the reorganization of the household registration system, and by the under-registration of immigration when people did not return to their rural homes after their urban *hukou* was cancelled. There was a double reduction effect due to the implementation of the *Regulations*, and under-registration of immigration, when migrants, who had not registered their emigrations when migrating to the urban areas, did not return to their hometowns during the urban

job reduction exercise. These were the fundamental reasons for the population growth gap in the year 1960.[8]

It is notable that, as discussed in Chapter 2, both under-registration and late registration of migration can impact on migration-induced changes in population growth and jointly determined the growth statistics. The ratios of these two factors are not available through observation. Whether there were omissions in registration of emigration in 1960 was not considered for a good reason: the implementation of the *Regulations* was at its peak in 1960, so such omissions could be completely avoided. However, there could be both omissions and corrections in 1959 when the implementation of the *Regulations* started in some areas, but was delayed in other parts of the country. Generally speaking, intentional under-registration could be far more than correction. Yet, the amount remains unknown.

The Period from 1961 to 1964

In the period 1961–1963, the population growth gap enlarged by 12.78 million, reaching minus 19.74 million (i.e. the nationwide gap between population by growth rate and registered population at year-end). As suggested in the aforementioned mathematical induction, there must have been another huge wave of migration and consequently massive under-registration of immigration.

The state of the rural economy remained gloomy in the second half of 1961. Just as had happened previously, in the period 1961–1963, many laid-off workers did not return to their hometowns. Millions chose to remain in the cities and millions of others travelled to other regions to seek work. The rest became the so-called "floating population

[8] Apart from the above factors, policy-determined migration also played an important role. From 1949 to the present, approximately 17.5 million migrants were sent to carry out construction work on 86,000 reservoir projects, most of which were started in 1958 and completed during the GLF. This type of emigration reached its peak in 1960–1961. As these migrants were ordered to leave their native places for remote rural destinations, a considerable number chose to farmland near the construction sites or stay with friends and relatives rather than move. Alternatively, they fled their allotted destinations shortly after registering their *hukou* there. During a field study in Xichuan County in Henan province in the mid-1980s, I saw many former migrants, who had supposedly emigrated in the 1950s and 1960s, fishing and cultivating land in the mountains surrounding the Danjiangkou Reservoir.

[*mangliu*]". *Mangliu* is an abbreviation for "blindly roaming population". The term first appeared in 1956, but did not gain wide currency until after 1960. The Party Central Committee (1959) issued the *Directions on Stopping the Circulation of the Rural Labor Force*, which states that "according to incomplete statistics from Hebei, Shandong, Henan, Shanxi, Liaoning, Jilin, Anhui, Zhejiang, Hubei and Hunan, about three million peasants have drifted away…". Shelter and relief institutions recorded a floating population of millions. In the second half of 1960, the CCP Central Committee began to investigate the Xinyang Incident. The number of *mangliu* increased sharply across the country from late 1960 to early 1962.

The Period 1965–1981

Although it is impossible for anyone to produce an accurate number, on the basis of the analysis above, we propose that there were about 15.86 million people who lost their *hukou* in 1960–1963, due to the reorganization of the rural household registration system, lay-offs of workers in urban areas, and the out-flow of population caused by the famine. Next, I argue that these people would regain their *hukou* in later years. It took 15 years from 1965 to 1979 for these lost *hukou* accounts to be recovered.

By and large, the government completed the removal of redundant workers in 1963. The economy recovered and attained relatively rapid growth in 1964. The development of the secondary and service industries recovered to their post-Liberation peak. Many industrial and mining factories that had closed down in 1960–1962 restarted production and started to recruit workers again.

As shown previously, millions among the 15.86 million migrants who lost their *hukou* remained in the cities with their families, including those *yitouchen* couples with one party maintaining their urban *hukou*. They made great efforts to normalize their status by restoring or acquiring *hukou*. Those who stayed with friends or relatives in other areas or settled in the countryside also tried to get *hukou* status. As the economy improved, the millions of "*mangliu*", unless they could find jobs, eventually had to return to their hometowns and complete their immigration registration. It was very hard to get an urban *hukou* at that time, as the government had tightened up controls. Even when applying for a rural *hukou*, one had to go through relatively rigorous procedures, including certification by the public security authorities in one's native places. For

these reasons, it took a long time for the whole process to complete, and the chances of rectifying large numbers of under-registrations in one particular year were low. That was why it took more than a decade, from 1965 to the early years of Reform and Opening-up, to rectify the under-registration of emigrations. On average 1.1 million cases were processed per year with little variance over the years. Those who remained in cities—including family members from rural areas of those who have urban *hukou*—did everything they could to restore their urban *hukou*, resulting in an increase in the urban registered population. Some others migrated to rural areas or returned to their hometowns in the countryside. Hence there was population growth gap in both rural and urban areas.

Some may ask: how was it possible that 1.1 million people had their *hukou* registered in the system "for unknown reasons" every year when the household registration system had been stringently managed in that period?

As life could become increasingly difficult without *hukou*, children would find it hard to go to school or get a job when they grew up. China is a "society of compassionate culture" where there is always some room for making an exception for reasonable and compassionate circumstances where legal solutions don't apply. It might be possible for people to restore their *hukou* when they had been living and working in a place for a long time and their colleagues, leaders, and neighbours all knew exactly the reason why they had lost their *hukou*.

A friend of my father went to Taiwan in 1948, leaving his daughter in his hometown on the mainland. In 1960 when she was a teenager, the daughter and four of her friends took a train without tickets and travelled all the way to Xinjiang where they joined the *mangliu* population. The five of them eventually acquired their hukou in *Xinjiang*. The daughter had become a mother of three when she returned to her hometown in the 1980s.

The late registration of "illegal births against the family planning policy" in the 1990s is another good example. Usually 10-year survival ratio from birth is approximately 93 per cent. A survival ratio significantly lower than that in a particular year would suggest a large amount of late registration of births as a rectification of intentional or unintentional omissions. As a result of the retrospective registration, the number of registered births would be much larger than the actual number of births in that year. The family planning policy was strictly observed in the 1990s and anyone, cadres or common people alike, who breached the policy

could be punished in public. Therefore, most of the retrospective registration of births were for the "illegal births". Within the nine years of the period from 1991 to 1999, one million births were registered retrospectively in the first two years, and 2–3 million in the following three years, four million each year from 1996 to 1998, and astoundingly six million in 1999 (National Bureau of Statistics, 1983). As a result, approximately 30 million children born without "birth permit" obtained their *hukou* through retrospective registration within a period of nine years. Likewise, it is not only possible but also reasonable for the 10 million people who had lost their *hukou* status in the 1960s to re-acquire their *hukou* over a period of more than ten years.

From 1965 to 1979, the nationwide population growth gap had accumulated to 20.54 million, which means 20.54 million people who had had no *hukou* had their residential status confirmed and registered. However, it has been mentioned previously that only 13.77 million people had lost their *hukou* status in the period 1961–1964. Where did the surplus of 6.77 million come from? The reason lies in the growth of families. It is noteworthy that many of those migrants involved in the under-registration were young men and women. They had married and had children during this period of more than ten years. Their children would not have had *hukou* unless their parents did. When the parents obtained *hukou* status, their children would also receive *hukou*. Thus, it is reasonable that the 20.54 million includes the children of those migrants. (See Chapter 5 for further discussion of this matter.)

As the under-registration of immigration was rectified, the figure for the growth gap had dropped to nearly zero by the time of the third population census in 1982. If the annual figures for population growth gaps over the period from the first (1953) to the third (1982) population census are added together, the result is 0.26 million, which is a small number for China's population. The figure for the starting year, 1954, was minus 0.32 million while that of the finishing year, 1981, was minus 0.53 million. The registered population, which was inflated by more than 10 million in the period 1956–1959, was corrected by the implementation of the 1958 *Regulations* and the rectification of the under-registration of emigration, and the resulting balance was approximately zero. The under-registration of migrants was corrected by gradual late registration in the period 1965–1979, which also resulted in a balance of nearly zero.

Drawing on the mathematical induction and historical facts on migration, we can arrive at the following conclusion:

The rapid industrialization and its sudden braking during this period have caused a huge round of rural–urban *hukou* conversion involving tens of millions of people. There were over 10 million omissions and late registrations as many migrants chose not to complete their *hukou* registration timely out of self-interest, resulting in the registered population growth and registered population at year-end to deviate from the actual growth and population calculated at growth rate. Consequently, the number of deaths and births also departed from actual numbers. We should not use the registered population statistics if they have departed from the facts. Meanwhile, the figures of registered year-end population released in the Yearbook should also be optimized as year-end population calculated with growth rate is approximate to the actual year-end numbers. The discrepancies in population data prior to 1982 will be eliminated after the optimization. Subsequently, the result of

$$\text{number of births} - (\text{year end population} - \text{population at previous year end})$$

will become consistent in calculating the number of deaths with the result of

$$\text{average population by year} \times \text{death rate}$$

This means we have to give up the method that uses the registered population growth and the registered year-end population figures based thereon when we adopt the data from the *Yearbook*. Instead, we should use the equations given in the "Explanation of Major Statistical Indicators" to directly calculate the numbers of natural population growth, deaths and births.

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CHAPTER 5

Bewildering Birth Data: Origin and Adjustment

It has been argued in Chapter 4 that the contradictions and confusion would be eliminated once the year-end population is to be calculated at growth rate. However, the issues related to the number of births and deaths have yet to be further explored. The deviation of the figures of registered births from actual numbers was identified in the comparison with the census statistics. As a matter of fact, the contradiction in "increased population" no longer exists in post-1982 *Statistical Yearbooks*. However, survival ratios higher than 100%—and some are incredibly higher—are still seen.

Birth Data: Statistical Patterns and Methods

First, let us go over the definition of the term "survival ratio", which means how many people in an age group whose births were registered in a particular year remain living in the census year. In other words, survival ratio is the result of "the number of people in an age group recorded in the registration system in a census year/the number of births registered in the particular birth year". Normally survival ratio is subject to the following principles.

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1. The number of living people in census year will be smaller than the actual number of births, and a survival ratio will not be more than 100%. A survival ratio too close to 100% may suggest serious under-registration of birth in a particular birth year.
2. Survival ratios may slightly fluctuate if there have been no events of significant social consequences. The number of births registered in a particular year can be significantly larger than the actual number of births in that year if the survival ratio of an age group turns out to be only 70% when it is supposed to be 90–95%. Usually this happens when a large number of unregistered births of people in the particular age group are registered retrospectively, causing the number of registered births to inflate in the registration year.
3. The number of births should be consistent in population censuses. Survival ratio of a particular age group is expected to decline in later censuses. Statistics may not represent the reality in some years if survival ratio develops in the opposite direction.

As mentioned previously, there are data recorded in the registration system such as "the number of registered births" and "registered birth rate" versus such terms as "actual number of births" and "actual birth rate". Table 5.1 records the survival ratios of a number of censuses by age group.

There are three distinctive periods in Table 5.1. First, the survival ratios of people born in eight out of the eleven years from 1969 to 1982 were equal to or higher than 100% in the fourth census. Second, the survival ratios of people born in the four years from 1987 to 1990 were higher than 100% in the 2000 Census. Third, the survival ratios of people born in the 1990s were remarkably low in the 2000 Census, suggesting that only 63 per cent of those who were born in 1999 remained alive the following year. These questions need an answer.

That the survival ratios of people born in the period from 1969 to 1982 exceeded 100% suggests that a large number of babies born in those years did not have their births registered in their birth years (either because they were migrating or their parents did not have *hukou*), but in another year. The last chapter has indicated that the surplus of 6.77 million in 1965–1982 were actually the children of the 10 million young people who had lost their *hukou* as they would have had no *hukou* if their parents didn't have one. Their births would be registered retrospectively as soon as their parents acquired their *hukou*. This was the main reason

Table 5.1 Age-specific survival ratios in the second, third, fourth, and fifth censuses

		1964 census		*1982 census*		*1990 census*		*2000 census*	
BY	*RB*	*SP*	*SR*	*SP*	*SR*	*SP*	*SR*	*SP*	*SR*
1953	21.51	18.34	0.85	17.49	0.81	17.23	0.80	16.75	0.78
1954	22.60	19.21	0.85	18.60	0.82	18.33	0.81	18.51	0.82
1955	19.84	20.50	1.03	19.66	0.99	19.38	0.98	18.61	0.94
1956	19.82	18.68	0.94	17.93	0.90	17.64	0.89	17.36	0.88
1957	21.69	19.72	0.91	18.88	0.87	18.35	0.85	19.00	0.88
1958	19.09	20.40	1.07	19.46	1.02	19.06	1.00	17.14	0.90
1959	16.50	14.88	0.90	14.28	0.87	14.38	0.87	13.06	0.79
1960	13.92	14.31	1.03	14.31	1.03	14.44	1.04	14.68	1.06
1961	11.90	11.54	0.97	10.69	0.90	11.50	0.97	11.41	0.96
1962	24.64	15.57	0.63	15.62	0.63	15.93	0.65	20.92	0.85
1963	29.59	30.25	1.02	27.38	0.93	27.03	0.91	27.87	0.94
1964	27.33	28.48	1.04	25.13	0.92	25.29	0.93	24.14	0.88
1965	27.09			24.42	0.90	24.25	0.90	24.80	0.92
1966	25.78			25.69	1.00	25.19	0.98	24.83	0.96
1967	25.62			22.75	0.89	22.82	0.89	21.74	0.85
1968	27.56			24.54	0.89	24.55	0.89	27.72	1.01
1969	27.15			28.24	1.04	27.16	1.00	25.02	0.92
1970	27.36			26.49	0.97	26.04	0.95	28.01	1.02
1971	25.78			27.32	1.06	25.99	1.01	25.16	0.98
1972	25.66			25.22	0.98	24.50	0.95	24.80	0.97
1973	24.63			25.07	1.02	24.54	1.00	23.63	0.96
1974	22.35			24.03	1.08	23.49	1.05	22.87	1.02
1975	21.09			21.78	1.03	21.64	1.03	21.14	1.00
1976	18.53			20.43	1.10	20.46	1.10	20.49	1.11
1977	17.86			19.42	1.09	19.37	1.08	17.93	1.00
1978	17.45			18.62	1.07	18.86	1.08	18.83	1.08
1979	17.27			19.63	1.14	19.31	1.12	18.92	1.10
1980	17.87			18.27	1.02	19.22	1.08	18.39	1.03
1981	20.78			17.38	0.84	18.09	0.87	19.12	0.92
1982	21.26			20.81	0.98	22.02	1.04	23.10	1.09
1983	20.65					20.20	0.98	20.07	0.97
1984	20.63					19.06	0.92	20.31	0.98
1985	22.11					19.98	0.90	20.43	0.92
1986	23.93					21.41	0.89	23.19	0.97
1987	25.29					24.29	0.96	26.28	1.04

(continued)

Table 5.1 (continued)

		1964 census		*1982 census*		*1990 census*		*2000 census*	
BY	*RB*	*SP*	*SR*	*SP*	*SR*	*SP*	*SR*	*SP*	*SR*
1988	24.64					24.18	0.98	24.58	1.00
1989	24.14					23.33	0.97	25.14	1.04
1990	23.91					23.22	0.97	26.21	1.10
1991	22.65							20.08	0.89
1992	21.25							18.75	0.88
1993	21.32							17.91	0.84
1994	21.10							16.47	0.78
1995	20.63							16.93	0.82
1996	20.67							15.22	0.74
1997	20.38							14.45	0.71
1998	19.42							14.01	0.72
1999	18.34							11.50	0.63
2000	17.71							13.79	0.78

why the survival ratios appeared to be larger in a number of consecutive years after 1968. This also explains the surplus of 6.7 million mentioned in Chapter 4.[1]

Moreover, the Family Planning Policy, though implemented in 1979, had only been observed in urban areas for a long time before it was put into practice in rural areas in the late 1980s. The policy was so strictly observed in rural areas that a breach of the policy would incur heavy penalties and the performance of rural cadres was assessed against criteria that included their policy implementation outcome. It became impossible for babies born without a birth permit to have their births registered, causing the number of registered births to be much smaller than the

[1] The average survival ratio of people born in 10 years out of the period from 1965 to 1982 was 105%, involving 7.63 million births more than the registered ones. This number is only slightly larger than the previously mentioned 6.77 million. As multiple factors may have affected the registration system, these figures can be used as evidence for a general description only. Nevertheless, they should be considered to have explanatory power as long as they can fill in most of the statistical gap and are consistent with the demographic fluctuation.

actual numbers. This is the reason why the survival ratios of people born in 1987–1990 exceeded 100% in the 2000 Census.[2]

Thirdly, the family planning policies continued to be rigorously enforced in rural areas throughout the 1990s. However, it was unrealistic to keep the children unregistered indefinitely, particularly when they reached the school age. Thus, one way or another, the births of these unregistered children were registered in the 1990s despite possible heavy fines. As a result, the number of registered births shot up sharply, reducing the survival ratio to an abnormally low level.

Why and How the Birth Statistics for the Period from 1960 to 1962 Have Deviated from Reality

The survival ratios of people born in the years from 1953 to 1964 appeared to be abnormal in the data of the second, third, fourth, and fifth census. This book focuses on the demographical statistics and analyses the unusual survival ratios for this period (see Fig. 5.1).

There are a number of distinctive features in Fig. 5.1. First, the data of the fifth census are to be used for reference only because they are considerably discrepant from those in the previous three censuses. The survival ratios in the rest of the three censuses are consistent, and therefore to be used for analytical purposes. Second, the survival ratios tend to decline as expected in later census years. However, the SR of people born in 1960 kept climbing up, reaching 103% in 1964 and 106% in 40 years. Third, the SRs of people born in 1955, 1958, 1960, 1963, and 1964 all exceeded 100% in the 1964 census. Fourth, the survival ratios of people born in 1963 and 1964 in the last three censuses are adopted because the data of these age groups in the second census significantly deviated from the other censuses.

This shows that the census data are basically in line with demographical principles in terms of birth statistics. The data of the third and fourth

[2] The national birth rates of this period was based on one-per-thousand population surveys. In the meantime, the public security authorities collected data in a different system. Under-registration of birth would not be identified in a sample survey when the mothers avoided interviews. Most importantly, birth rates based on survey data would be approximate to registered records when birth rates were evaluated as part of performance assessment of rural cadres.

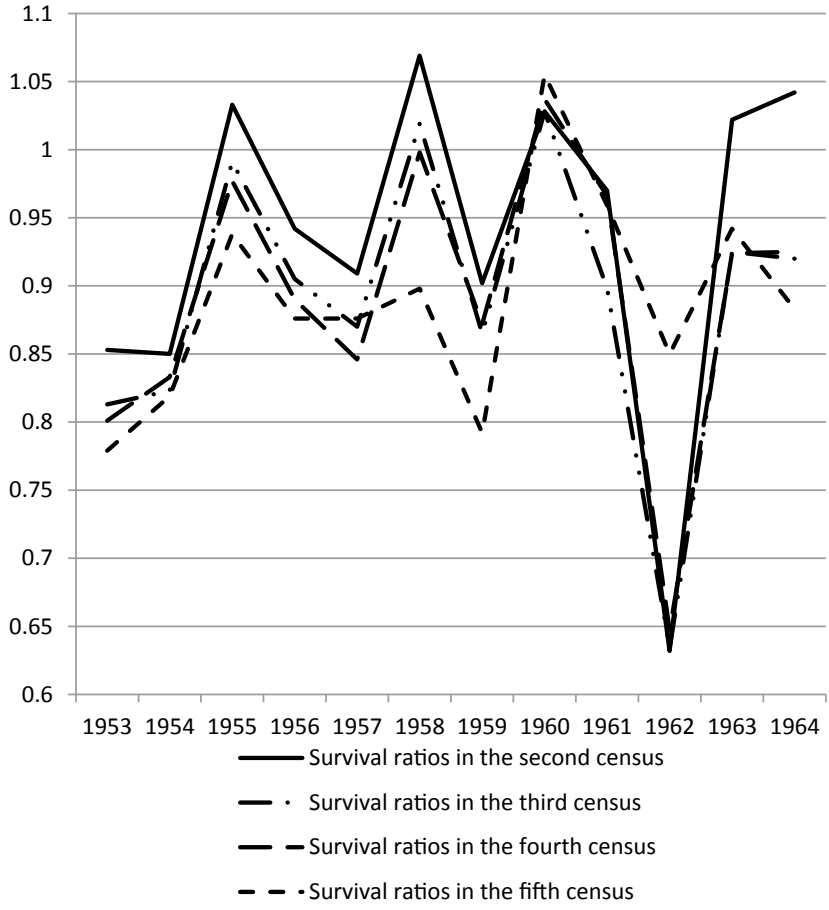

Fig. 5.1 Survival ratios in the data of the second, third, fourth, and fifth censuses

censuses should be closer to reality. There must have been serious under-registration of birth in 1960 as the survival ratio of this particular age group exceeded 100% and tended to rise in later censuses.

This study focuses on the demographic issues of the Three Years of Difficulties, and has not identified any factors that may have impacted on survival ratios of other years. Hence, the discussion concentrates on the actual births data of 1960 and 1962.

Survival ratios of people born in 1960 in excess of 100% are seen in the data of a number of censuses. This suggests a large number of unregistered births in 1960. As many babies were not registered in their birth year, the figure for registered births (the denominator) was too low. The excessively low survival ratio in 1962 suggests that a large number of unregistered babies born before 1962 were registered in that year, enlarging the number of registered births (meaning an excessively large denominator), resulting in an excessively low survival ratio. Such an explanation must be supported by argumentation that takes social factors into account. Social factors that would explain intentional under-registration of birth are easily identified for the period of the late 1980s, but it is more difficult to understand why people would intentionally avoid registering births in the 1950s or 1960s. During the years of planned economy, the Chinese people would always choose to register the births of their children and omissions were very unlikely.

Statistics should take account of social reality. Therefore, we need to ask what prevented the parents from registering the births of their babies.

Yang Jisheng (2008, 454) states that "There have been many unregistered births since the implementation of strict birth control. However, there were not many unregistered births in the years when living materials were rationed only to registered individual residents." His statements reveal the relationship between birth registration and family interests in different historical contexts.

The government set up a system of unified purchase and sales [*tonggou tongxiao*] of agricultural and industrial products in 1953. Newborn babies would not have been assigned a *hukou* unless their births were registered. Children would be entitled to food and other rations, only if they were registered in the system. For parents in rural areas, their household ration of agricultural products and entitlement to clothing vouchers and so on, would not be increased unless the birth of their children was registered. No one, unless their births were registered, could go to school, serve in the army, apply for a job, or even get married. Family life, both in urban and rural areas, would have been adversely affected if the parents failed to register the births of their children.

At that time, surplus grain had to be sold to the government at fixed prices. The volume of surplus grain was equal to the total grain production minus the standard quota of retained grain, which was calculated according to the number of family members. This means that production teams and households would be able to retain more grain for each new

birth registered. Most significantly, there would have been severe disputes and conflicts, because production teams were not supposed to provide babies with food and vouchers unless they had a *hukou*. Therefore, there was little likelihood that urban or rural residents, grassroots cadres, or household administration authorities would avoid, or forget, to register newborn babies (with the exception of parents who themselves had no *hukou* and would, therefore, not be able to have their babies registered).

What has caused the under-registration of birth? Would it be like in the 1960s and 1970s where children failed to get hukou because their parents did not have one? Obviously not. It was not until the second half of 1960 that large numbers of workers were laid off in urban areas. It was after 1961 that most migrants lost their *hukou* because they refused to return to their rural hometowns.

There is only one other possibility: over ten million migrant parents from rural areas gave birth to children while they were fleeing famine and they were unable to apply for *hukou* for their babies until one or two years later. The survival ratios became distorted when the births were registered retrospectively.

With severe famine afflicting provinces such as Anhui, Henan, and Shandong beginning in the second half of 1959, large numbers of peasants began to flee their hometowns in search of food. These provinces were already known for their frequent natural disasters and consequent export of population. There were even well-known terms for these movements of destitute people—one was "*zou xikou*" or heading west. Peasants would trek west to Shanxi, Shaanxi, and Gansu and even as far as Xinjiang. Peasants from Xinyang and Nanyang headed south, and their journeys were dubbed "*xia hubei*" or heading down to Hubei. Refugees from Shandong usually headed northeast and their displacement was known as "*chuang guandong*", that is to say, travelling to the Guandong (Kwantung) region of Manchuria. As for Anhui, the people of Fengyang were well-known for travelling nationwide carrying with them a set of flower-drums (*huagu*). In some areas around the Yellow River, Huai River, and Hai River, it was a way of life for some peasants to sow in the spring and autumn and beg for food in the summer and winter.

In the 1959 *Directions on Stopping the Circulation of the Rural Labor Force*, it was stated that "according to incomplete statistics from Hebei, Shandong, Henan, Shanxi, Liaoning, Jilin, Anhui, Zhejiang, Hubei and Hunan, about three million peasants have drifted away…". Although the peasants from Xinyang Prefecture were prevented from leaving their

hometown in the period from the winter of 1959 to the spring of 1960, tens of millions of peasants across the country still took their centuries-old exile routes after the suppression of the Xinyang Incident in the spring of 1960. More peasants from disaster areas joined them when famine took hold in provinces such as Sichuan in 1960–1961.

However, fleeing the famine did not necessarily mean living as a beggar. The Chinese have a long tradition of helping their friends and relatives. Many peasants went to live with relatives in less affected areas. In his article "Housing and repatriation of the indigent migrants during the Great Leap Forward", Pi Xuejun (Pi, 2009) states that the central government established detention and repatriation stations around the country in order to keep the floating population under control. "The 11 detention and repatriation stations in Jiangsu Province handled 526,105 cases from inside and outside the province from 1960 to January 1961". One of the major purposes of the detention and repatriation stations was to prevent famine refugees from settling in urban areas and causing chaos. These stations were mostly located near major cities. But a larger number of peasants lived with their friends and relatives, or moved back and forth between counties and townships. Many refugees did not travel very far. I attended a seminar with senior officials of the Xin County Bureau of Public Security in Xinyang City. They told me that Xinyang people do not refer to the so-called "Xinyang Incident", but talk about the "Guangshan Incident". At that time, a large number of people from Guangshan County fled to Xin County (Xin County used to be part of Guangshan County, but was separated from it after Liberation). Even today, one can still find famine refugees who fled from Guangshan and settled in Xin County. The *Report on Unswervingly Stopping Free Flow of Population*, jointly issued by the party caucuses of the MPS and the Ministry of Civil Affairs (the MCA), stated that the number of famine refugees "reached a nationwide peak of about six million in 1960". Yet, this number was based on the reports from the detention and repatriation stations. Many more refugees were travelling from place to place or staying with their friends and relatives. There were more likely to have been 15–20 million refugees fleeing their hometowns. The MPS/MCA document also recorded that "among the floating population, 60-70 per cent were aged from 15-50", which suggests that the majority of them were of reproductive age. Pi Xuejun states in his article that "Xuzhou City received 286 abandoned infants and children from 1 to 23 March 1960, and other counties received 452 within 20 days". This statement shows that reproduction among the floating population was a fact.

In the movie *Jiao Yulu*, winner of Golden Rooster Award best picture, party secretary Jiao Yulu rescues a child on his way to the countryside. This was not straightforward fiction, but it told a true story. The child changed his name from Zhang Xuzhou to Zhang Jijiao after Jiao Yulu saved his life. His memoir is available on the Internet. Zhang had been named after Xuzhou, the place where he was born, when his parents were fleeing the famine in Lankao, Henan province.

It is important to remember that the tens of millions of famine refugees had *hukou*, unlike those referred to in the previous chapter, who were unable to register their babies because they themselves did not have *hukou* due to the "under-registration of immigration" during the policy-driven migrations. The famine refugees were unable to register their babies while they were away from their famine-stricken hometowns in 1960–1961. But they were able to register their babies as soon as they returned home.

The economy started to recover in the second half of 1961, and some famine refugees began to return home. The homeless, and those staying with friends and relatives, would have returned home in 1962. Most of those who had babies in 1960–1961 would have returned (Those who had worked in urban areas and subsequently lost their urban *hukou* would have tried to regain their urban residential status. But for peasants who seldom left home, fleeing the famine was only a temporary strategy. Most of them would have returned as soon as possible, apart from a few, such as young women who got married outside their hometowns). Having returned, they would have registered their babies in 1962 in order to claim a supply of living materials.

This explains why the survival ratio was extraordinarily high in 1960, but excessively low in 1962. The survival ratio of 94.5 per cent in 1961 did not seem excessively high because of the offsetting effect of some babies born to refugees in 1960 being registered in 1961, while others, born in 1961, were registered in 1962.

This can be verified from the statistics for the most severely famine-stricken provinces. According to the province-specific statistics in *The People's Republic of China Compendium of Population Statistics 1949–1985*, there were 684,911 registered births in Henan in 1960, while the figure for the survivors of this cohort recorded in the 1964 census was 855,741, giving a survival ratio of 125 per cent. There were 1,826,728 registered births in 1962, and the surviving population was 1,101,486 in 1964, a survival ratio of only 60 per cent. The same source shows that survival ratios of the Anhui population born in 1962 and 1963 were

only 47 per cent and 44 per cent. In Shandong, the survival ratio of the population born in 1962 was only 61 per cent in 1964 (National Bureau of Statistics and Ministry of Public Security, 1988, 280–283, 672, 685, 688). These are all big provinces in terms of population, and their figures have huge implications for the national statistics.

Sima Qian, in his *Historical Records* [*Shiji*], records a similar story: When Liu Bang[3] and his troops turned back and headed south to Luoyang they passed a place named Quni (today in Ding County, Hebei). Liu, standing on the city walls, noticed the houses in the area were very big. He exclaimed "What a spectacular county! I have travelled everywhere under heaven, but I have never seen a place like Luoyang." He asked his advisor, "What is the population of Quni?" The advisor answered that "there used to be more than 30,000 households. Most of them fled during the wars. Now, there are only 5,000 households left" (Sima, 1959).

This means that a population of 30,000 households had shrunk to only 5000 after a decade of war. Did the other 83 per cent population die? No, most of them ran away and hid. It is a basic strategy for the Chinese, as elsewhere around the world, to flee wars and disasters. People return when the wars or disasters have passed, and stability has returned. It is common occurrence for people thought to be dead to return and be registered in population statistics. This is the fundamental reason why population always drops sharply after the outbreak of wars, but rises rapidly in the early years of a dynasty (Table 5.2).

Statistics have shown that the early years of Han Dynasty, Tang Dynasty and Song Dynasty saw an average registered population growth rate between 25 and 30 per thousand, doubling those at 8–14 per thousand in normal years. As a new dynasty might not experience drastic social changes in its early years, little fluctuation would be expected in its actual population growth rate. The population of a dynasty rose dramatically because the registered population before the establishment of the dynasty was far smaller than what it was in reality. Most of them ran away and hid out during the years of dynastic transition and appeared after the country stabilized.

Historical cycles as such are common in Chinese history and arguments ignoring this common sense would end up becoming a laughing stock.

[3]The founder of the Han Dynasty, who achieved power through a peasant rebellion.

Table 5.2 A comparison of the population in the early and mid-years of major Chinese dynasties

Dynasty	*Dynastic year*	*Calendar year*	*Registered population*	*Annual growth rate (per thousand)*	*Source of data*
Han	Jianwu Zhongyuan 2nd year	57	21.01 million persons	27.37	*Book of Later Han: Junguo Zhi*, notes by Fu Wuji
	Mingdi Yongping 18th year	75	32.13 million persons		As above
	Hedi Yuanxing 1st year	105	53.26 million persons	14.93	As above
Tang	The years of Gaozu Wude	about 622	2 million households	23.19	*Tongdian: Shihuo 7*
	Gaozong Yonghui 1st year	650	3.8 million households		As above; *Old Book of Tang: Gangzong* volume 1
	Zhongzong Shenlong 1st year	705	37.14 million persons	7.11	*General Mirror for the Aid of Government*, volume 208
	Tianbao 14th year	755	52.92 million persons		*Tongdian: Shihuo 7*
Song	Taizu Kaibao 9th year	976	3.09 million households	29.58	*Tongkao- Hukou- Ertian Fusi*
	Zhenzong Jingde 3rd year	1006	7.42 million households		*Songhui Yaoji Gao: Shihuo* 12
	Zhezong Yuanfu 3rd year	1100	19.96 million households	10.34	*History of Song: Geography*

Some scholars have recently argued that the Taiping Rebellion caused the Chinese population to drop from 400 million to 240 million. These people apparently did not notice that volume 261 of the *True Records of Emperor Xuanzong* [*Xuanzong shilu*] recorded the Chinese population as 401.01 million in 1834, while volume 17 of the *Assembled Records of Emperor Guangxu* [*Guangxu Huidian*] recorded a figure of 377.64 million in 1887, just 15 years after the last great battle of the Shi Dakai's Daduhe Battle. If their findings were true, the annual average registered population growth rate during those 15 years would have to have been 30.68 per thousand. But the normal growth rate at the time was less than 11 per thousand (Yang, 2016 [1438]). Even if they could arrive at a figure of 240 million, it would be that of the registered population, not the actual number. Among the 160 million registered population that vanished, at least 100 million were off the record because they had fled their hometowns.

Applying the Figures for the Under-Registration and Late Registration of Births to Make a More Accurate Estimate of the Population in the Period 1960–1962

Based on the above conclusion, we have made an attempt to adjust the figures for registered births, registered year-end population for 1960–1962.[4] The estimate of a population figure here, e.g. estimated number of birth and estimated number of deaths, is considered to be more accurate as it is based on demographical principles to eliminate the discrepancies involving the registered population data.

The numbers of registered births were 13.92 million, 11.9 million, and 24.64 million in 1960, 1961, and 1962 respectively, or a total of 50.46 million. The surviving population born in these three years were 14.31 million, 11.54 million, and 15.57 million, or a total of 41.42 million

[4]The existing data suggest that there were errors in the survival ratios for the years prior to 1960. Most importantly, the variance in the numbers of births affect the figures of year-end population only and have no effect on the number of deaths whatsoever, and therefore do not affect the analysis on mortality issues. Hence, only the numbers of births during the famine years are estimated here. A more accurate estimate is made to correct a wrong impression that "the population dropped sharply during the Three Years of Difficulties". As this book is focused on the population variance in the famine years, adjustments are made to the unusual survival ratios around the famine years only.

in 1964 according to the second census. If all unregistered births in 1960–1961 were registered retrospectively in 1962, the actual survival ratio of the population born in 1960–1962 should be 82 per cent (41.42 million/50.46 million). Given the equation.

$$\text{Actual number of births} = \text{surviving population} \div \text{estimated survival ratio}$$

we can provide an estimate of the actual number of births. If what is collected in the relevant age groups in the second census is considered the actual surviving population, we can employ the following equation:

Under-registration or over-registration of births: Registered births—estimated births.

A negative balance is called "under-registration"; and a positive balance "over-registration". Thus,

$$\text{The estimated number of births in } 1960 = 14.31 \text{ million} \div 0.82 = 17.45 \text{ million}$$

Thus,

$$\text{Underregistration of birth (million)} = 13.92 - 17.45 = -3.53 \text{ million}$$

$$\text{The estimated number of births in } 1961 = 11.54 \text{ million} \div 0.82 = 14.07 \text{ million}$$

Thus,

$$\text{Underregistration of birth (million)} = 11.90 - 14.07 = -2.17 \text{ million}$$

$$\text{The estimated number of births in } 1962 = 15.57 \text{ million} \div 0.82 = 18.98 \text{ million}$$

Thus,

$$\text{Overregistration of births (millions)} = 24.64 \text{ million} - 18.96 \text{ million} = 5.66 \text{ million}$$

Calculated this way, there were approximately 5.66 million children born in 1960–1961 who were not registered due to the chaotic conditions. Their births were probably registered in 1962, and thus, the surplus of approximately 5.66 million births in 1962 actually resulted from under-registration in the previous two years. Given these figures, the estimated year-end population for 1960 and 1961 should be increased by 3.53 million and 2.17 million respectively, and the year-end population for 1962 should, accordingly, be reduced by 5.66 million.

Based on the above estimate, the numbers of births and year-end population in 1959–1963 can be adjusted accordingly. Taking into account the under-registration of birth by 3.53 million, the year-end population in 1960 was not 10 million lower than the 1959 figure, but was 0.46 million higher. The equivalent figure for 1961 was not 3.48 million lower than the 1959 figure, but 1.16 million higher. Overall, the population during these two years did not fall by 13.48 million, but increased by 1.64 million, over the year-end figure for 1959. Therefore, although the great famine significantly slowed population growth, there was no ostensible dent in the population curve (Fig. 5.2).

The adjusted year-end populations for 1953–1964 are in Table 5.3.

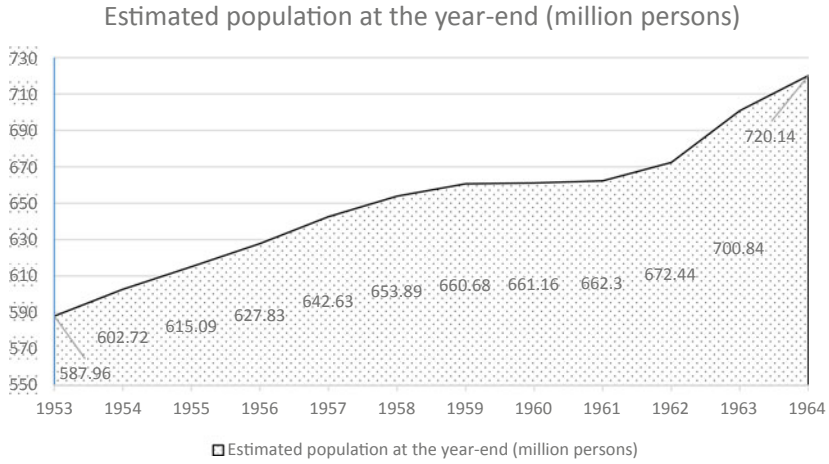

Fig. 5.2 Estimated population at year-end calculated with growth rate using adjusted numbers of births (million persons)

Table 5.3 Year-end populations 1953–1964 adjusted using survival ratios

Year	*Registered year-end population (million persons)*	*Year-end population by growth rate (million persons)*	*Estimated year-end population (million persons)*	*Estimated population—year-end population by growth rate (million persons)*
1953	587.96	587.96	587.96	0
1954	602.66	602.72	602.72	0
1955	614.65	615.09	615.09	0
1956	628.28	627.83	627.83	0
1957	646.53	642.63	642.63	0
1958	659.94	653.89	653.89	0
1959	672.07	660.68	660.68	0
1960	662.07	657.63	661.16	3.53
1961	658.59	660.13	662.30	2.17
1962	672.95	678.10	672.44	−5.66
1963	691.72	700.84	700.84	0
1964	704.99	720.14	720.14	0

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CHAPTER 6

Astounding Death Figures, Cause and Adjustments

Doubts Surrounding the Death Toll

The death toll of the period from 1950–90 is listed in Fig. 6.1 (National Bureau of Statistics, 1986). The curve shows that the basic state of mortality can be broken into five phases.

The first phase covers the four years from 1950 to 1952, during which the death toll declined gradually from 9.84 million to 9.67 million at an average rate of 0.87 per cent per year. The second phase covers the five years from 1952–57, in which the death toll dropped rapidly, from 9.67 million to 6.88 million, at an average rate of 6.58 per cent per year. The third phase covers the period from 1958–64, with notable fluctuations. The average number of deaths rose to 9.35 million per year. The fourth phase covers the fifteen years from 1965–79, in which the death toll fell slightly from 6.79 million to 6.02 million at an average annual rate of 0.86 per cent. Except for a couple of years, the trend line is basically horizontal. On average, the annual death toll was 6.41 million. The fifth phase covers the period from 1979–90, in which the death toll started to

The analysis in this chapter is the focus of this book as the death figures have significantly departed from the truth.

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_6

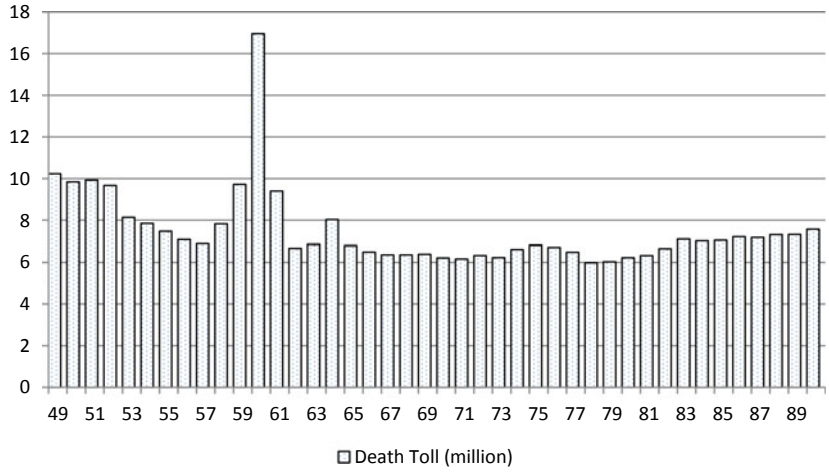

Fig. 6.1 The death toll in the period from 1950–1990

Table 6.1 China's death toll in five phases

Phases	*Average death toll (million persons)*	*Annual growth rate (per cent)*
I: 1949–1952	9.81	−0.87
II: 1953–1957	7.85	−6.57
III: 1958–1964	9.35	2.53
IV: 1965–1980	6.41	−0.86
V: 1981–1990	6.94	2.11

increase, on average, by 2.11 per cent per year. The annual average death toll in this period was 6.94 million, or 0.53 million higher than in the previous 15 years (Table 6.1).

Two things stand out as suspicious in the above description of China's death toll from 1952–90.

First, the death toll dropped exceptionally rapidly in the period 1952–1957, compared with the rates at which death toll declined in comparable countries as indicated in Chapter 2 as well as the rate in the first four years of the People's Republic.

Before 1949, China had long suffered from wars and social polarization. The vast majority of the peasantry lived in dire poverty. Apart from the high infant death rate, it was rare for the adults to live over the age of 70. Many sources attest that life expectancy at that time was only slightly over 30.

After the land reform, poor peasants, who made up the majority of the population, owned their own land, and income distribution gradually became more even. The Chinese economy started to recover in 1950, and grain production per capita grew from 209 kilograms in 1949 to 285 kilograms in 1952. By 1952, China's grain production was nine per cent higher than in the best year before Liberation. Grain production per capita increased at an average rate of 10.9 per cent per year from 1949 to 1952. The reserves of cotton, cattle, pigs, sheep, and aquatic products approached or broke records. Agricultural production continued to grow, albeit more slowly, until 1958. Grain production per capita reached 301 kilograms in 1957, but the average annual growth rate was only 1.2 per cent between 1952 and 1957.

Health care facilities in rural areas improved, but not significantly. Township-level health centers were not established until the mid-1960s. Village-level clinics were only established during the Cultural Revolution. The really significant changes in rural health care conditions took place after the "June 26 Instruction [*liuerliu zhishi*]" issued by Mao Zedong in 1965.

The increase in per capita grain production and the more even distribution of income improved the living conditions of the elderly, and it is logical to expect a longer life expectancy. The problem is that, although the improvement in living conditions was an ongoing process from 1949 to 1958, and more pronounced in the first part of this period from 1949–1952, the statistics show only a limited decline in the death at a rate of 1.89 per cent per annum. However, the registered death rate dropped suddenly in the second part of this period at a rate of 7.05 per cent per annum, more than three times faster than in the previous four years. Whilet the death rate seems to have declined at a normal speed in the first four years of the People's Republic, the decrease of the death rate over the five years from 1953–57 seems to be outside the normal range.

Secondly, it is hard to explain why there were 0.5 million less registered deaths on average each year in the period from 1980–90. In particular, the death rates in some of the years in the 1970s were also lower than normal.

China experienced a "baby boom" in 1963–75, and the year-end population increased rapidly. As a result, the death rate declined considerably (by 37.6 per cent in 1965–80) even when the death toll did not reduce as much (by 11.2 per cent in 1965–79). Nevertheless, the death rates in the late 1970s are still exceptionally low, being the lowest in the history of the People's Republic at 6.25 per thousand in 1978, 6.21 per thousand in 1979 and 6.34 per thousand in 1980, respectively.

Living standards in rural areas should have improved after 1979. There was no regression in health care if it was not significantly improved. Those who were 50 years and older in the 1960–80 s were born in the first half of the twentieth century when the size of the population was static. Normally, the numbers of people aged 50 should be largely equivalent in the fourth and fifth phases. Yet, it is hard to explain why there were 0.5 million (approximately 8 per cent) more deaths in the age group in phase V, in which people were better off than in phase IV.

There are no doubts about the wide fluctuation in phase III as the cause was clearly known.

Based on the above reasoning, we can make the following estimates.

1. There was significant intentional and unintentional under-registration of death in the period 1953–58, causing registered mortality to be less than the actual number of deaths.
2. The under-registration of death in 1953–58 was rectified in 1959–61, causing the registered mortality to be larger than the actual number of deaths.
3. There was some intentional and unintentional under-registration of death in the period 1965–80, causing registered mortality to be less than the actual death toll.
4. The under-registration of death in 1965–80 was rectified after 1980, accentuating the high death toll in the 1980s.

This is discussed in detail below.

Analysis of the Under-Registration of Death in Two Different Periods

From the experience in dealing with under-registration and late registration of death in China's household registration system, we have learned that: there must have been under-registration of death when the number of registered deaths is significantly lower than the actual mortality, and there must have been a large number of late registrations of death when the number of registered deaths is significantly higher than the actual mortality.

Motives and Possibilities of Intentional Under-Registration of Death

While the under-registration of birth before the implementation of the Family Planning Policy could be caused by "omission" or "delay", the under-registration of death could be regarded as intentional family or even community behaviour. Most scholars agree that there were social factors that gave rise to intentional under-registration of death in the period of the planned economy.

In *Tombstone*, Yang Jisheng stated that he was informed by Zhang Qingwu and Wang Weizhi, who were working in the Department of Household Registration Administration at the MPS, that "in an age when living materials were rationed by headcount, there were not many unregistered births. However, under-registration of death was common. To a household or production team, as soon as a person died, his *hukou* would be cancelled, and subsequently all his supplies of living materials would be stopped. But if the death was left unregistered, other members of the household could continue to claim the rationed resources" (Yang, 2008, see ch23).

Mr. Huang Rongqing, Director of the Institute of Demographic Studies at Capital University of Economics and Business, and Chief Editor of the journal *Population and Economics*, stated in his article "A Study on China's Mortality Issues" that:

> As required by China's household registration system, the family of the deceased must report the death to the local police stations [*paichusuo*]. As most of the mortality happens in hospitals, death certificates issued by the hospitals will state the name and other details of the deceased. The family

> members then take the death certificate to the police station to report the death and cancel the *hukou*. Intentional and unintentional under-registration and omissions are not common. In rural areas, however, more people died at their homes. It was harder to confirm the causes and time of death, and inaccurate registration was more likely to happen. Furthermore, the hukou was for a long time closely associated with the people's vital interests. The supply of food, groceries, clothing, and everyday necessities was pegged to the *hukou*, and would be stopped once the *hukou* was cancelled. Therefore, people tended to delay or avoid reporting the death. As the administration of the household registration system was not as rigorous as in urban areas, there was a considerable amount of under-registration and late registration of deaths. (see Fang, 2001)

Zhang, Wang, and Huang have described only part of the picture. At the grassroots rural level in a collective economy, food quota was based on the result of "quota standards x total number of people". A lower registered population meant a lower quota of food to retain and more had to be delivered to the state, which was not in the interest of either families or production teams. Given that allocation of resources was based on headcount over the three decades from 1953 to the early 1980s, both families and collective units had the incentives for intentional under-registration and late registration of death.

Intentional under-registration of death could not possibly have been done in secret, because the whole village would know who had died. In many parts of rural China, many agricultural products (sweet potatoes, potatoes, and vegetables alike) were openly and directly distributed to villagers near the crop fields. If the family of the deceased continued to receive his or her food ration, the whole village would make a fuss unless there was a tacit understanding between the cadres and the members of the production team, or the family in question was particularly powerful.

I would argue that intentional under-registration of death was unlikely in 1953 because the policy of food quota was not implemented yet. Omissions in registration of death were rampant due to intentional under-registration during the period from 1953–80 when China maintained a planned economy. In 1981, the Household Responsibility System [*jiating lianchan chengbao zerenzhi*] began to be implemented nationwide and every rural family was allowed to contract a piece of farmland and the size of the land was on a headcount basis. The rest of a village would definitely be unhappy if some "dead person" was included in the headcount. Therefore, intentional under-registration of death became rare after 1981 and

completely lost its appeal in the late 1980s when the use of food ration coupons stopped.

Intentional Under-Registration of Death Before 1964

Two significant changes took place in China's political-economic system in 1953. China adopted a household registration system that separated its rural and urban populations and started to implement the unified purchase and sale [*tonggou tongxiao*] of grain. These policies were the main cause of intentional under-registration of death.

As mentioned previously, statistics have shown that China's death rate dropped from 20 per thousand in 1949 to 10.8 per thousand at the rate of 8.0 per cent per year within eight years while the death rates of other comparable nations remained at about 16 per thousand after eight years of gradual decline at the rate of 2.8 per cent annually. In particular, China's death rate fell by 9.5 per cent a year during the five-year period from 1952–57. Most demographers agree that intentional under-registration of death was rampant at that time. While the number has been unknown, it can be estimated with the following three methods.

1. Using the rate of descent of comparable countries as a reference in correcting China's registered death rate;
2. Finding out whether China had any relatively standard population surveys at that time;
3. Searching for any records of omissions in registration of death.

Here, the term "surveyed" is used to modify statistics obtained from official surveys rather than household registration or census, e.g. surveyed death rate, surveyed birth rates, and so forth. The term "estimated" is used to modify statistics as a result of calculation based on demographic principles and data, e.g. estimated birth rate and estimated number of deaths, and so forth.

First, it took China only eight years to lower its death rate from 20 per thousand to 10 per thousand while it took other countries 3.5 times as long, i.e. 28 years on average. Within eight years China's death rate had dropped to 10.8 per thousand, but those of other countries had remained at 16.3 per thousand on average with 15.3 per thousand being the lowest. In terms of death toll, the number of deaths fell from 10.83 million in

1949 to 6.88 million in 1957 in China by 5.5 per cent a year on average. In contrast, the death toll of comparable countries had descended by only 0.33 per cent annually in 1970–80, a mere one-sixteenth that of China.

These figures are important. As there is always a lower limit of normal death rate, no country can outrun other nations in reducing death rate like that regardless of their social systems or the speed of economic development. The three aforementioned western demographers have arrived at similar conclusions by estimating the average death rate at 18–21 per thousand in 1954–58. Yet, their methods of calculation are problematic and will be discussed in Chapter 8. Setting the actual death rate at 16 per thousand for 1957 could be arguable, but this rate could be used as a benchmark.

Second, the government conducted a survey of population age and mortality age among 52.25 million people in 171 townships, 2 counties, and 126 cities, in 19 provinces (including autonomous regions and municipalities) in 1957. The survey showed that the death rate was 8.59 per thousand at city level and 13.43 per thousand at county level (Wang, 1987, 37). According to the analysis of this survey in *New China's Population over Six Decades*, the sampling method of this survey was not standard for various reasons. Samples of townships were collected in places near cities and those of villages near townships. Few samples from remote villages were collected. While death rates in urban areas would be lower than those in rural areas in general, those in remote villages were the highest. Therefore, the death rate derived from the survey was likely to be lower than the actual rate.

China's population was 646.53 million in 1957. According to the statistics of the NBS and the MPS (1988), the population at city level was 69.02 million, and rest of the population, at county level and below, amounted to 577.51 million.[1] Applying the death rates from the sample survey, there were 0.59 million deaths at city level, and 7.76 million at county level in 1957. The death toll was not less than 8.35 million. Hence, the number of unregistered deaths would have been not less than 1.47 million, and the death rate not less than 13.1 per thousand in 1957.

[1] There are no county-specific population data in *The People's Republic of China Compendium of Population Statistics 1949–1985*, but city-level data are available. Thus, the county-level population was calculated by subtracting the sum at city level from the total population figure.

Third, Jiang Zhenghua, former deputy minister of the State Family Planning Commission and director of the fifth population census, states, "The under-registration of death before 1963 was rectified during the re-organization of the household registration system prior to the second population census…the re-organization identified about eight million *hukou* accounts that should have been cancelled" (Jiang & Li, 1988). The reorganization referred to by Jiang was mentioned in Chapter 3, i.e. the implementation of the *Regulations on the Household Registration of the People's Republic of China* during the period 1958–61.[2]

Based on the above discussion, I believe it is appropriate to make an estimate of the death rate at 13.10 per thousand for 1957 and the total under-registration of death at eight million for the years prior to 1962.

An Estimate of Intentional Under-Registration of Death in 1953–61

Having analysed the under-registration of death before the second census, we understand that the year-specific data of under-registration of death can affect the baseline in determining the number of excess deaths. Thus, two different sets of under-registration data are to be discussed as follows.

I. *The death rate based on the 1957 survey is not adjusted.*

The recorded death rate at 13.10 per thousand from the 1957 survey, due to its flaws in sampling method, should be lower than the actual rate, which is between 13.10 and 16 per thousand. There would be a total of 7.1 million omissions in registration of deaths in the five years from 1953–57 if the death rate from 1957 survey remains unadjusted (see Figs. 6.2 and 6.3).

[2] All omissions in registration of deaths, once identified, must be rectified. Otherwise, there would have been 8 million surplus in year-end population, but also there would have been 8 million people living incredibly long life in the household registration records. The late registration of deaths would result in a lower death rate. The exceptionally low death rates for 1962–63 and 1965–79 suggest that the late registration could not possibly have happened in those years. Therefore, the retrospective registration of deaths must have taken place in 1959–61 only regardless of what the "reorganization" might have referred to. The period 1959–61 is the only place where population statistics can be adjusted because the death rates were unusually high and the population data of these years have never been released.

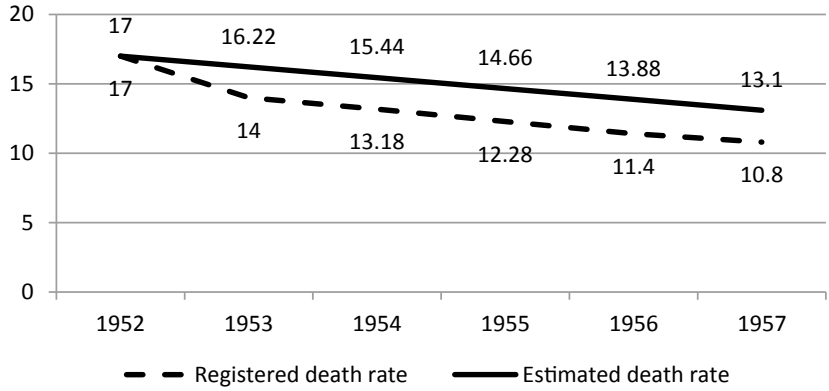

Fig. 6.2 Estimated death rates in 1953–57 taking under-registration of death into account

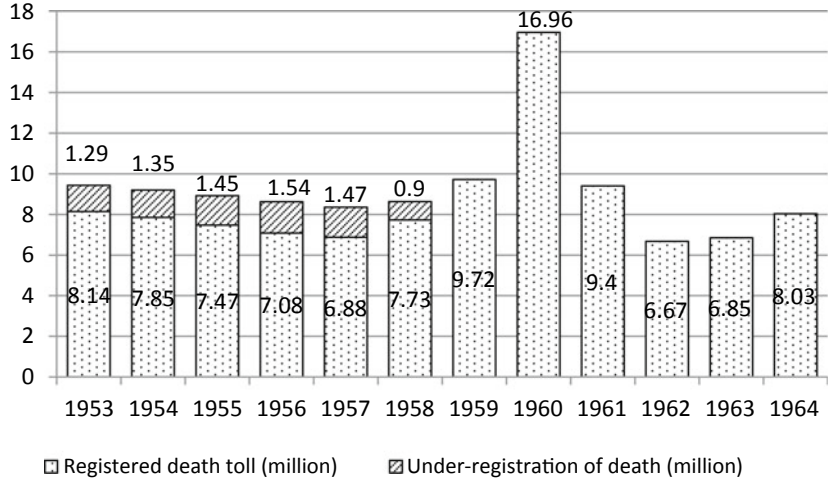

Fig. 6.3 The under-registration of death in 1953–63

The eight million omissions in registration of deaths that Jiang Zhenghua referred to were recorded in *China Population Yearbook 1987* compiled by the Institute of Demography of the Chinese Academy of Social Sciences and considered to be "evidence based". How is this figure

associated with the 7.1 million omissions mentioned above? I believe that 0.9 million deaths were not reported in 1958 as a result of intentional under-registration.

There must have been a certain amount of intentional under-registration of death in 1958 as that was the first year of the implementation of the *Regulations on Household Registration System* and the household registration had not started yet. The 0.9 million intentional omissions could not possibly happen in 1959–63 because, as mentioned previously, it took a tacit understanding between the cadres and the members of the production team to do that. The enforcement of the *Regulations* was at its peak during the period from 1959–61. At that time, if any rural household or production team cadre dared to keep the deaths unregistered, it would, in the language of the period, have been described as "committing a crime against the prevailing wind"—the very last thing an official would risk. Therefore, few would intentionally keep deaths unreported during the "reorganization" campaign. Intentional under-registration of death might have increased in the two years following the end of the reorganization, but its number should be limited and is not to be estimated here due to a lack of evidence.

Below is an estimate of under-registration of death in 1953–57.

Assuming that the death rate declined in a linear trend from 1952 to 1957 (see Fig. 6.2), we can work out year-specific death toll for 1953–1956, using the mortality figures from the two sample surveys, and thus calculate the linear distribution of the under-registration of mortality for each year.

The amount of under-registration of death was 0.9 million (see Fig. 6.3) if the omissions in 1953–57 were calculated using the death rates given in Fig. 6.2.

II. *A Higher 1957 Survey-based Death Rate after Adjustment*

As discussed previously, the population survey in 1957 investigated cities and neighbouring areas so the surveyed death rate would be lower than the actual death rate. Therefore, while the figure of intentional under-registration of death remains 8 million, the death rate for 1957 can be moderately elevated from 13.1 per thousand to 13.3 per thousand, and the intentionally under-registered death rate for 1958 be moderately

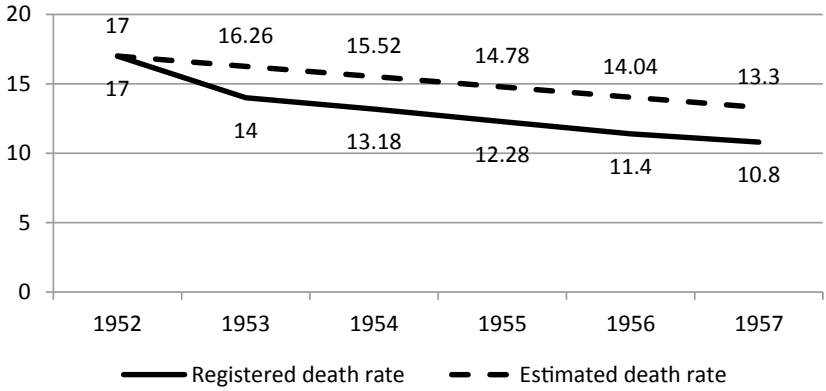

Fig. 6.4 Estimated death rates in 1953–57 taking under-registration of death into account

lowered. Thus, the death rates for the period from 1953–58 will decline linearly, as shown in Fig. 6.4.

The actual number of deaths will be reduced when the amount of intentional under-registration of death in 1958 adjacent to the famine years is reduced, lowering the linear benchmark for death figures. As a result, the number of excess deaths will increase. In the same line, the number of deaths for 1964 can be moderately reduced on condition that there were presumably a small number of unreported deaths in 1962–63 and these unreported deaths were registered in 1964. Intentional under-registration of death was unlikely in 1962 when a nationwide reorganization of household registration was just completed and *hukou* registration system was well established. Therefore, it could be estimated that there were 0.1 million unreported deaths in 1963. Hence, the death toll in 1953–63 can be estimated and shown in Fig. 6.5.

It is a reasonable adjustment to raise the death rate for 1957 by 0.2 per thousand when the number of unreported deaths for the period from 1953–58 was kept at 8 million. In comparison with the death rates of comparable countries for the same period and those estimated by the western demographers, the adjustment to the death rate is very little, as shown in Fig. 6.6.

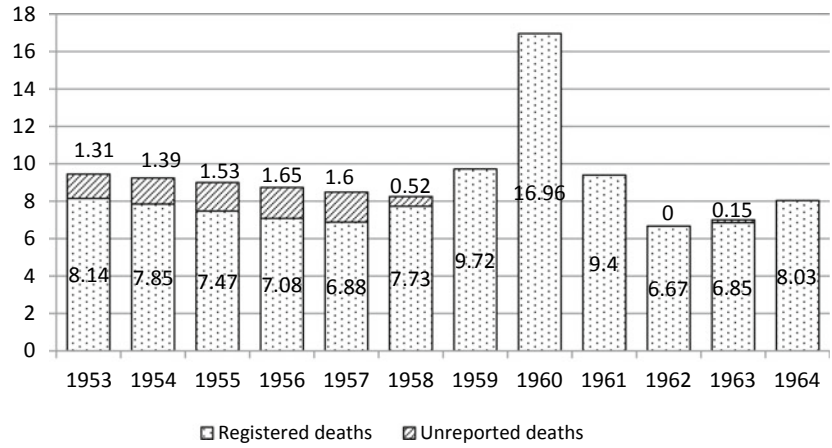

Fig. 6.5 Under-registration of death in 1953–63 (million)

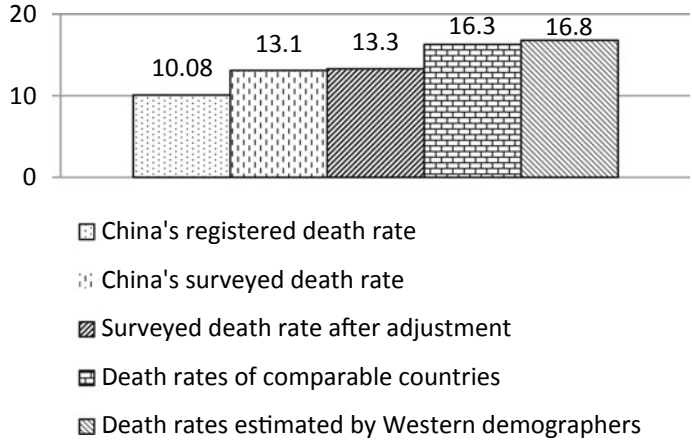

Fig. 6.6 Death rates after 8 years of declining from 20 (per thousand)

Intentional Under-Registration of Death in 1965–80

As discussed in Chapter 3, China promulgated and implemented the *Regulations on Household Registration System* in 1958–61. Some loopholes were fixed. However, intentional under-registration of birth and

deaths happened again once the regulations were no longer stringently enforced as before. Thus, it was inevitable that under-registration of death continued to happen after the 1964 census. The figures of unreported deaths can be obtained in two ways. One is from authoritative sources, the other by estimation on the basis of the data in the fifth phase in which there was an unexceptional increase in death toll.

Mr. Huang Rongqing states that

> the *hukou* accounts registered between the second and the third censuses were corrected in the third census. It was found that there were eight million *hukou* accounts belonging to deceased people, obviously the result of under-registration. (see Fang, 2001)

Mr. Huang is a member of the Expert Panel of the National Population and Family Planning Commission, and a member of the executive board of the China Population Association. His estimate that more than eight million unregistered deaths were identified in the third census should be considered reliable.

The figure of 8 million unreported deaths in the period from 1965–80 can also be verified by comparing the death toll of this period with that in 1981–90. The year 1981 saw the start of nationwide implementation of rural reform featuring *baochan daohu* (contracting output to individual households). The rural incomes experienced fastest growth that even exceeded urban incomes over a decade from 1981–90. The living standards in rural areas were greatly improved. The death rate and death toll were expected to follow the trend in the previous three decades and decline due to diminished motivation and chance for intentional under-registration of death. On the contrary, however, the yearly death toll was higher by 0.6 million on average and the death rates were also much higher.

As far as I can see, there was little change in people's livelihood, so the actual death toll should be able to follow the post-1949 trend and decline. As shown in Fig. 6.7, there was a small bulge for the 4-year period from 1974–77, suggesting a yearly surplus of deaths by 0.6 million on average above the years prior to and after the period. The reason is yet to be identified. Here the eight million unreported deaths are allocated into the years in a way that the dents in the trend are filled up (see Fig. 6.7).

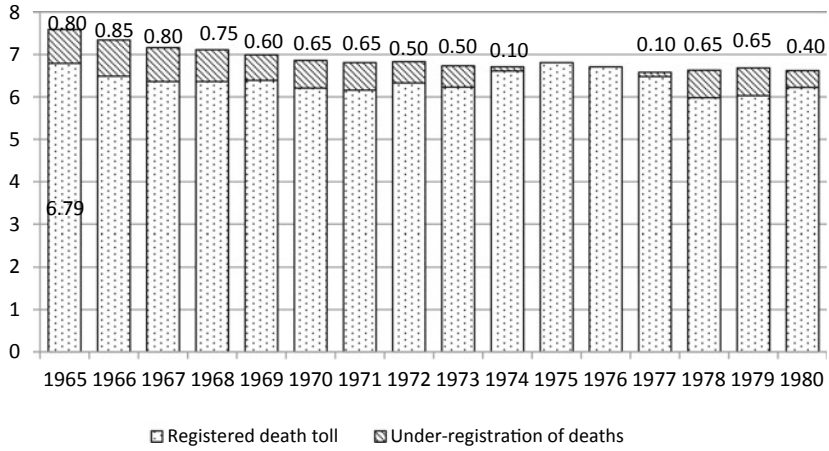

Fig. 6.7 Under-registration of death in 1965–80 (million)

Correction to Intentional Under-Registration of Death

Principles of Correcting Intentional Under-Registration of Death

Many scholars noticed the relatively low crude death rate and calculated a figure for the under-registration of death. However, they all ignored the fact that, unlike the under-registration of birth, the unregistered deaths will eventually be discovered. Unreported births will not be captured in the household registration system and they will not be detected unless the births are registered retrospectively. Those who have deceased could not possibly remain in the household registration system forever. This is something easy to understand—the deaths of people who have *hukou* cannot possibly remain undiscovered forever. People who died at the age of 70, unless having their deaths registered, would become 100 years old in the registration system in 30 years. The household administration authorities will take notice if there are a large number of exceptionally old people living in their areas. Besides, unreported deaths will be discovered in a population census and reorganization of household records that involve door-to-door surveys. Surveyors only check out the people who

are included in a household registration booklet (*hukouben*) and will ask to actually see them.[3]

How is under-registration of death dealt with once it is discovered in a census or through maintenance of the household registration system?

Instead of the statistical bureau, the public security's household administration departments are the only authorities responsible for the registration of births and deaths. Once an unreported death is discovered, it will be recorded and the *hukou* will be cancelled accordingly. This is nothing but everyday business. A population census is led by an office set up specifically for the census that is mainly organized by the statistical authority. Among the population data collected in a census, the total population is used to correct the population figure at the end of the year. However, the discovery of unreported deaths cannot be used to correct the death rate of the year. If the eight million unreported deaths mentioned by Huang Rongqing should be added to the death toll of 1982, the death rate of the year will increase by 130 per cent. Therefore, what they could do was nothing but stating "there was an under-registration of death by eight million in 1965-81" in an internal report.

How was the figure of eight million unreported deaths dealt with? As analysed previously, there will be no more intentional under-registration of death after the third census. Yet, the eight million unreported deaths discovered in the third census must be processed in the household registration system, or they would be identified again in the fourth census. No significant under-registration of death was identified in the 1990 census. What happened to the eight million unreported deaths in the household registration system in 1981–90?

Baochan daohu (contracting output to individual households) was started in 1981, and deceased villagers were not entitled to the share of farmland. For this reason, unreported deaths will be discovered, and under-registration corrected. China began to phase out its rationing system in the mid-1980s when many of those who died in the 1960s and 1970s would have reached the age of 80s or 90s. It became meaningless to have their names kept in the household register. Thus, most

[3] As explained previously, China's birth rate data from the statistical authorities are obtained through sample surveys after 1982. The surveyed birth rates will be approximate to the registered birth rates as long as pregnant women from rural families hide out in order to avoid heavy fines for having children without birth permits.

of the unreported deaths were registered and the *hukou* of the deceased cancelled by the end of 1980s.

In what years exactly was the under-registration of eight million deaths corrected?

According to Jiang Zhenghua, "eight million *hukou* accounts, which should have been cancelled, were identified in the rectification of the household registration system prior to the second national population census".

Yet, Jiang Zhenghua's statement is yet to be supported by more evidence. Besides, the term "prior to the second national population census" covers a long period of time and needs to be specified. That is where the aforementioned principle "there is no upper limit for death rate in extreme circumstances, but there is always a lower limit to death rate" comes in.

While under-registration of death causes the registered death rate to be lower than actual death rate, late registration of death causes the registered death rate to be higher than the actual one. This means under-registration of death can only be identified when the death rate is exceptionally low, and late registration identified when a death rate is exceptionally high. While it might be easier to identify with an exceptionally low death rate, it is much harder to define whether a death rate is exceptionally high because death rate is not subject to an upper limit.

It is easier to discern under-registration of death: The death rates in 1953–57 would be in excess of a relative lower limit when they are three or four times lower than those of the comparable countries. It might make sense if the death rates in 1964–80 were lower than those in the 1950s, but it would be impossible if they were even much lower than those in the 1980s.

In fact, the years in which late registration of deaths happened can be identified using the principle "there is always a lower limit to death rate". Given that late registration of deaths will cause the number of registered deaths to be larger than the actual death toll, in a year in which large amount of late registration happened:

$$\text{Registered death toll} = \text{actual death toll} + \text{late registered deaths}$$

$$\text{Actual death toll} = \text{registered death toll} - \text{late registered deaths}$$

An exclusive method can be used for analysis here.

Was it possible that late registration of deaths happened in 1962 and 1963? The number of registered deaths was 6.67 million and 6.85 million in those years, respectively. Given that eight million unreported deaths had to be registered prior to the second census, the estimated yearly death rate would be lower than 9 per thousand if 20 per cent of the late registration happened in those two years. While the original death rates (10.02 per thousand for 1962 and 10.04 per thousand 1963) were already the lowest after 1949, and the yearly estimated death rate was higher than 10 per thousand on average for the period from 1964–68, it becomes "unpractical" to consider 1962 and 1963 to be the time when the late registration of deaths happened.

What about 1964? The registered death toll for 1964 was 8.03 million. It would be too small a figure to accommodate the eight million unreported deaths. Moreover, Jiang Zhenghua has specified that the rectification occurred "prior to the second population census".

Could the unreported deaths be retrospectively registered in the period from 1965–81? The likelihood is even smaller. The yearly death toll in this period was 6.41 million on average. If 0.5 million unreported deaths should be registered in each year, the estimated death rates in 8 out of the 16 years would be lower than 7 per thousand on average, and four would be lower than the relative lower limit—6 per thousand. In particular, the death rate would be only 5.7 per thousand for 1979.

Could it be the case that the eight million unreported deaths, to which Huang Rongqing referred, discovered in the 1981 census and registered in the 1980s or even later, was actually the eight million that Jiang Zhenghua has talked about? Negative. Usually, unreported deaths will be discovered within 20 years. The eight million unreported deaths that Jiang Zhenghua mentioned had occurred before 1959. There would have been millions of people older than 100 years in the household register in the 1980s if their deaths had been left undealt with. It would be more unimaginable if the rectification had been further delayed up until the 1990s.

As explained, the period from 1959–61 was the only appropriate time for the under-registration of death in 1953–58 to be rectified. The number of registered deaths in this period was 14.5 million more than that in other years, a number big enough to accommodate the eight million unreported deaths.

More importantly, this period provided the only statistical window for rectification. While population data of other years are released in the

following year, the population data of the period from 1958–61 alone was not released until 1983. Even if the under-registration of eight million deaths was processed through "deliberate adjustment" rather than rectified in the implementation of the *Regulations* in 1959–61, the adjustment could only be made in those years.

Year-Specific Retrospective Registration of Death

As we saw previously, allocating the figures for late registration of death to 1959–61 makes little difference. The only reason for doing so is to achieve a better visual effect. A mathematical calculation will lead to the same results as long as the number of late registrations is fixed at eight million.

As it is argued here that the under-registration of eight million deaths was rectified in 1959–61 when the *Regulations* was implemented, the rectification process would be much similar to that of the omissions resulting from rural–urban migration as discussed in Chapter 3. Most of the under-registration of emigration was rectified in 1960, less in 1961 and least in 1959. Thus, we postulate that 0.72 million were registered retrospectively in 1959, 6.46 million in 1960, and 0.82 million in 1961.

Meanwhile, as discussed previously, the 0.15 million unreported deaths for 1963 could only be registered in 1964 (see Fig. 6.8).

The late registration of eight million unreported deaths identified in the third census and how these deaths were registered in the following years are not relevant to the topic of this book, and therefore, not to be further discussed. My estimate is that those deaths were randomly

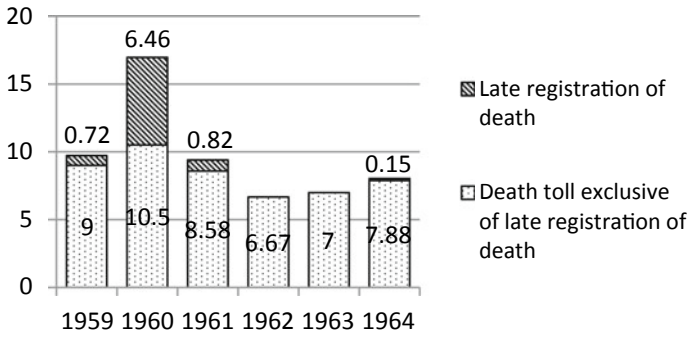

Fig. 6.8 An estimate of death toll for the period from 1959–64 (million)

registered prior to the fourth census. There were 70.73 million deaths recorded in the period from 1981–90 at the rate of 6.27 million per year on average when the retrospective registration of eight million deaths were not counted. The death rate is slightly lower than the estimated death rate for 1980, i.e. 6.70 million per year, which is normal from a demographic perspective.

Can Demographic Statistics Be Estimated?

Some may argue that the above discussion more like a mathematical process than an analysis of demographic events. I contend that a mathematical deduction based on reasonable evidence is necessary when demographic statistics are known to have significantly departed from the fact. Otherwise, it would make no sense for any further discussion.

Chinese governments in ancient times gathered population statistics for two purposes—taxation and conscription. The long-standing tax policy was to raise a poll tax which was 4–5 times greater than the agricultural taxes, and was the mainstay of government revenue. Additionally, every adult male was obliged to provide one month's labour service per year. The greater the number of adult males, the more favourable to the royal court. But from the peasants' point of view, avoiding registration was the most effective way of escaping these tyrannical practices. There are abundant historical records of how Chinese peasants shirked military service, even abandoning their land and running for their lives, or how they pooled their assets in extended family holdings to evade labour service. There can be no doubt that the extent of under-registration was considerable.

According to the *True Records of Qing Dynasty*, there were 20.34 million adult males in 1684, the 23rd year of the reign of Kangxi (Royal Qing Court, 2008a, see vol 118). The number had increased to 21.62 million by the 47th year of Kangxi (1708), a total growth of 6.29 per cent at 2.6 per thousand per year on average (Royal Qing Court 2008a, see vol 235).

In the 51st year of Kangxi (1712), the Qing government issued a royal order that taxes would no longer be raised in line with population growth. Emperor Kangxi proclaimed that, since "the world has been at peace for a long time and the population is growing day by day, it would be unfair to increase grain levies and taxation in line with population. Although the population has increased, the land area has remained the same. The

governors of all provinces should set a perpetual fixed quota according to the number of adult males recorded in the current grain and tax register, no less and no more. No taxes or grain collections shall be levied on newborn males beyond that quota" (Royal Qing Court 2008a, see vol 257). The order was enforced in the 52nd year of Kangxi (1713) when the adult male population had reached 23.59 million. The number of adult males would be 22 million in 1712 when the "normal population growth rate" is set at 2.6 per thousand. With an increase by 1.59 million within just one year, the population growth rate would be 7.23 per cent in 1713, an equivalence to the total population growth over the 28 years prior to Kangxi's 1712 royal order. Obviously, we could only consider the record of 21.62 million for 1708 to be "registered number of adult males", with 1.58 million being unregistered. The actual number of adult males should be 23.2 million.

When the Emperor Yongzheng succeeded to the throne, he integrated the poll tax with agricultural taxes (*tanding rumu*), and thereby abolished the taxation of adult males. The population reached 26.42 million by the 12th year of Yongzheng (1734). There was an increase of 1.42 million adult males at the "normal population growth rate" (Royal Qing Court 2008b, see vol 150). The surplus of three million adult males over the period from Kangxi's freezing of tax rate to Yongzheng's fusion of poll tax with agricultural tax had actually existed before Kangxi's royal order was issued. The actual number of adult males should have been 13.6 per cent larger than 22 million.

An in-depth study on China's population in early and mid-Qing dynasty would have to deal with the population figures for 1684 and 1712, and question whether there had been massive intentional under-registration of adult male population. The only answer to that question is positive. In the same way, an estimate of the number of unregistered adult males with a "normal growth rate of adult male population" is credible.

Likewise, would it be a convincing argument that there was significant under-registration of death when China's death rates dropped three or four times faster than those of comparable countries in 1949–53? The answer is yes. Would an estimate of the number of unreported deaths on the basis of sample surveys be credible? The answer is positive, too. Therefore, the above mathematical deduction is reasonable.

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CHAPTER 7

There Were 2.6–4 Million Deaths in the Three Years of Difficulty in Excess of Normal Years

What Are "Normal Years"?

Now that we have a closer to reality estimate of population figure for 1953–1964 and death toll in particular, the term "normal years" needs to be properly defined so as to calculate the number of "normal deaths". The selection of "normal years" or "death rates of normal years" will considerably affect the result of the calculation of excess deaths, which tends to be smaller when the number of normal deaths is bigger and vice versa. Except the three aforementioned western demographers, most have chosen different years as "normal".

The western demographers have argued that there were excess deaths in the 6-year period from 1958 to 1963. Having estimated the death toll for 1953–1964, they calculated the linear trend of deaths for 1958–1963 on the basis of the linear trend of deaths for 1957–1964. The number of deaths in excess of linear trend is the difference between the death toll of the 6-year period and the linear trend.

Ding Shu believes that the death rate for 1957 is credible and he uses it to calculate the number of premature deaths for the period from 1958 to 1961.

Jin Hui, Wang Weizhi, and Cao Shuji have defined the period from 1959 to 1961 to be famine years and calculated the number of excess deaths in these three years. Jin Hui adopts the average of the death rates

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_7

of 1956, 1957, 1963, and 1964 to be a normal death rate. Wang Weizhi considers the death toll of 1958 to be a normal number of deaths. Cao Shuji has not specified "normal years", but his calculation method shows that he has adopted an average number on the basis of the figures for 1959 and 1962. Yang Jisheng has described the period from 1958 to 1962 to be famine years, and he uses the average of the death rates of 1955, 1956, 1957, 1963, 1965, and 1966 as a normal death rate.

Jiang Zhenghua and Frank Dikötter have not provided a calculation method. How they have selected "normal years" remains a mystery.

It seems that definition of "famine years" has been based on the selection of "normal years", which are those adjacent to the famine years. Some, such as Ding Shu and Wang Weizhi, have adopted the year prior to the Three Years of Difficulties, some have used the average of a number of years. The western demographers have used a linear trend model. Yang Jisheng did not select a number of consecutive years. While defining the period from 1958 to 1962 to be famine years, he chose 1963, 1965, and 1966 to be normal years. He argues that the death rate of 1964 was higher than normal and therefore inaccurate. Thus, he removed 1964 from the "normal years".

I believe that a study on "the excess deaths during the famine years" should focus on the period 1959–1961 and select the adjacent years to be "normal years". As there is no such thing as exact number of excess deaths, a range of figures for excess deaths should be provided to readers by presenting the various results calculated with different methods, including the linear trend model that uses the average of death toll two years prior to and after the famine years to be the starting and ending points of the linear trend line as well as the method that uses the average death toll of the years before and after the famine years.

Having studied the death figures and their variance of the period from 1953 to 1982 and the years surrounding the famine, I would like to specify the meaning of the term "normal" in two folds. First, it means that both death rate and death toll remain within the linear trend. Second, the death toll has not been affected by unusual events in a year.

Usually, factors that may affect the death figures, such as death toll and death rate, are improvement or deterioration of living standards and healthcare. As these conditions may change at slow pace, the variance in death rate and death toll tends to be small. However, wars, pandemics of plague, and social turmoil can cause the death rate to rise sharply and large variance in death figures. A particular year can be considered "abnormal"

if the death rate deviates sharply from the linear trend and the deviation can be clearly explained by specific events.

The Years of 1962 and 1963 Were Not "Normal"

Figure 7.1 shows that there is a clear dent in the death toll of 1962–1963 in correspondence with a clear bulge in similar size for 1959–1961. According to the second method of estimating death toll, the death toll of 1962 and 1963 was 6.67 million and 7 million respectively. The average death toll was 6.84 million, 20 per cent lower than that of 1957–1958, i.e. 8.56 million and 12 per cent lower than that of 1964–1965, i.e. 7.67 million, and even lower than the average yearly registered death toll over the next 15 years, i.e. 7.03 million. Both the bulge and the dent can be considered "not normal", particularly when the factors that might have caused the bulge and dent can be identified through analysis.

In terms of social conditions, the rural areas were still affected by famine in 1962 and 1963. The area affected by natural disasters in 1962 was still 189 per cent of the average for 1950–1958. In 1963, the afflicted

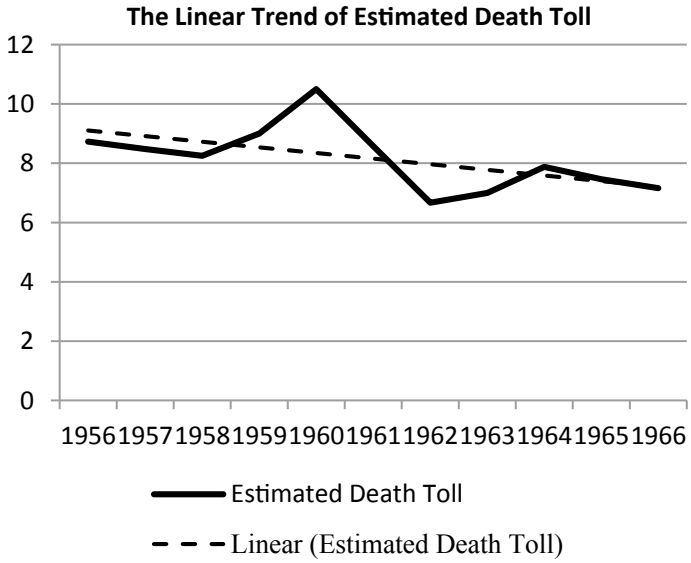

Fig. 7.1 An estimate of death toll of 1956–1965 and linear trend (million)

area was still 163 per cent of the average. Grain production per capita in 1962 was only 22 kilograms higher than in 1961, and 23 kilograms lower than in 1959, the year the famine started. In 1963, the equivalent figures were 38 kilograms and 6 kilograms. As the *Regulations* had just been implemented, large-scale under-registration of death was very unlikely. It is difficult to explain why there was a dent in the death toll curve in those two years, and why the registered death rate and death toll were even lower than in 1957, and lower than the figures for many subsequent years.

Having studied population statistics from other sources, I believe that the exceptionally high death rate of the elderly people in 1959–1961 has caused the significant drop in the number of deaths among the elderly population in 1962–1963, and this was the fundamental reason why the death toll significantly dropped.

Something peculiar can be observed in the age-specific population figures recorded in the first and the second censuses.

Table 7.1 shows that the population aged 65 (aged 60 in 1959) and above declined in 1964 and became smaller than that in 1953. This defies demographic common sense.

Living conditions in 1964 were better than in 1953, so, logically, the life expectancy of the elderly should have improved. This is confirmed by the increase of more than 20 per cent in the number of 55–65 year-olds. But the population aged 65 and above declined in 1964. The death rate of this specific age group was clearly much higher than that of groups aged under 60.

This is probably connected with the excess deaths in 1959–1961.

Many memoirs record that elderly people accounted for a disproportionate number of those who died in rural areas during the three years

Table 7.1 Data regarding the elderly in age-specific population statistics, 1953 and 1964

Age groups	*1953 (million persons)*	*1964 (million persons)*	*Population growth (million persons)*	*Variance (per cent)*
55–59	20.57	26.64	6.07	29.5
60–64	16.49	20.22	3.73	22.6
65 and above	25.03	24.53	−0.40	−1.6

Source National Bureau of Statistics and Ministry of Public Security, 1988, 480–604

Table 7.2 Population over the age of 65 in 1953 and 1964, in heavily affected provinces

Province	*1953 (millions)*	*1964 (millions)*	*Population growth (millions)*	*Variance (per cent)*
Henan	2.25	2.04	−0.21	−9.3
Anhui	1.13	0.72	−0.41	−36.3
Sichuan	2.59	1.84	−0.75	−29.0
Guizhou	0.50	0.44	−0.06	−12
Shandong	2.82	2.48	−0.34	−12.1
Gansu	0.38	0.24	−0.14	−36.8
Total	9.67	7.76	−1.91	−19.8

Source National Bureau of Statistics and Ministry of Public Security, 1988, 408–604

Table 7.3 Population over the age of 65 in 1953 and 1964 in less affected provinces

Province	*1953 (millions)*	*1964 (millions)*	*Population growth (millions)*	*Variance (per cent)*
Jilin	0.39	0.49	0.10	25.6
Liaoning	0.71	0.89	0.18	25.4
Shanxi	0.67	0.73	0.06	9.0
Shaanxi	0.61	0.71	0.10	16.4
Fujian	0.40	0.55	0.15	37.5
Total	2.78	3.36	0.54	19.4

Source National Bureau of Statistics and Ministry of Public Security, 1988, 408–604

of hardships. In 1968, after graduating from high school, I was sent to work in a production team in Nanyang, in Henan province. The majority of my schoolmates were sent to (what was formerly known as) Xinyang Prefecture. They told me of the large number of famine deaths that had occurred there. They also pointed out that, as far as they could see, there were hardly any people over the age of 70. These impressions are confirmed by statistical evidence (Tables 7.2 and 7.3).[1]

[1]When identifying the province-specific data, some provinces for which the data were apparently anomalous, were excluded. For example, the over-60 population in Heilongjiang in 1964 was 65.7 per cent larger than that in 1953, which is difficult

Apparently, the proportion of over-60s in the death toll in the heavily affected provinces was far higher than in the provinces that were less affected by the famine and had less premature deaths as well as higher than the national average.[2]

The age structure of the excess mortality affects the death toll and death rates of subsequent years. Age of death and death rate are interrelated figures. If the proportion of deaths among senior age groups is "excessively high" at an earlier stage, the death rate will be "excessively low" in subsequent stages.

The proportion of people aged 65 and above was 42.6 per thousand in 1953 and reduced to 34.8 per thousand in 1964.[3] This means that the proportion of people aged 63–64 reduced by 18.3 per cent in 1962–1963. The death rate inevitably dropped when the number of people from the age group that took up more than half of the deaths every year had reduced considerably. The death rate of 1962–1963 declined by 10.2 per cent when the proportion of people aged 65 and above, whose age group took up 55.5 per cent of the yearly deaths, decreased from normal years by 18.3 per cent. Once the death toll is counted with a death rate 10.2 per cent higher, the average death toll of 1962–1963 will be consistent with the subsequent years, and the dent will become much less obvious.[4]

As the death toll in 1962–1963 has shown unusual fluctuation and is highly relevant to the number of excess deaths in 1959–1961, it would be inappropriate to consider 1962–1963 to be "normal years". Therefore, this book regards the death toll in 1964 and subsequent years as "normal deaths" and uses the figure for linear trend estimation.

to explain. The data for Guangdong province had the same problem. Although the exclusion of this data does not necessarily benefit the argumentation of this book, we have discarded the illogical data. As a result, the calculation shows that the increase in the population figures is approximately in proportion to the decrease.

[2] Those who were 65 years old and above in 1964 were 60–62 years old during the years of difficulties.

[3] The population in year-end 1953 was 587.96 million. The number of people aged 65 and above was 25.03 million, or 42.6 per thousand. The population in year-end 1964 was 704.99 million, and the number of people aged 65 and above was 24.53 million, or 34.8 per thousand.

[4] The average yearly death toll was 6.76 million for 1962–1963. It will become 7.45 million and approximate to the death toll of 1964–1965, i.e. 7.53 million, if the death rate is increased by 10.2 per cent.

An Analysis of Excess Deaths for the Period 1959–1961

It is reasonable to consider 1958 and its preceding years as well as 1964 and its subsequent years to be normal years when 1962 and 1963 are specifically categorized as "abnormal". The numbers of excess deaths may slightly differ, as discussed in Chapter 5, due to the selection of different "normal years" and how the starting and ending points of a linear trend line are determined. Below is an analysis on the number of excess deaths using two different sets of estimated death toll in relation to how the under-registration of death may have been rectified respectively.

An Estimate of Excess Deaths Using the First Set of Estimated Death Data

The under-registration of death for 1953–1964 and the under-registration of death by eight million from 1965 to 1980, with the 1957 death rate based on survey result being unadjusted, are shown in Figs. 6.3 and 6.7 respectively. An estimate of death toll for 1959–1964 taking under-registration of death into account is given in Fig. 7.2. The part for 1959–1962 in these three figures can be used in the estimate of the

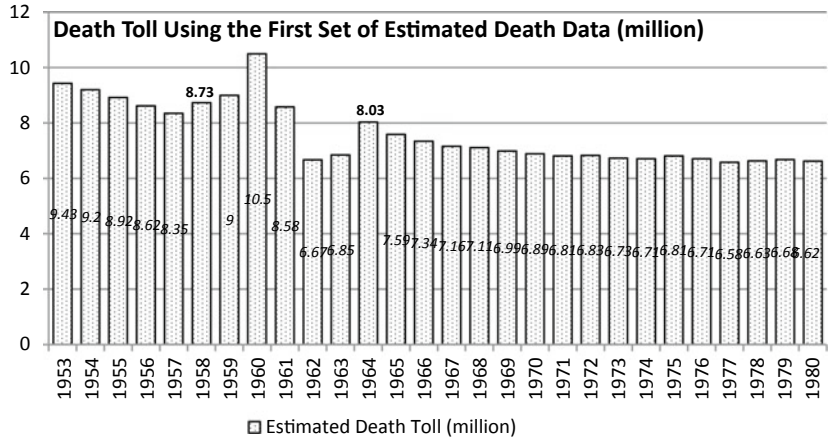

Fig. 7.2 An estimate of death toll for 1953–1980 using the first set of estimated death data (million) (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

death toll for the period from 1953 to 1980 taking under-registration and late registration of deaths into account.

As explained previously, the selection of "normal death rate" or the starting and ending points for a linear trend line can have clear effect on the figure of excess deaths. Below are a number of selection criteria and correspondent results.

1. Using the linear trend model adopted by the three western demographers. The death toll in the adjacent years before and after the famine is taken as the starting and ending points, and the part above the linear trend line is called deaths in excess of linear trend line. In this method, the trend line starts with 8.73 million for 1958 and ends with 8.03 million for 1964.

According to the first method of defining the benchmark, the death toll over the six years from 1958 to 1964 should have fallen by 0.7 million in total, or by 0.117 million each year. Thus, we can calculate as follows:

$$\text{The linear death toll in 1959} = 8.73 - 0.117 = 8.613 \text{ million}$$

$$\text{The linear death toll in 1960} = 8.613 - 0.117 = 8.496 \text{ million}$$

$$\text{The linear death toll in 1961} = 8.496 - 0.117 = 8.379 \text{ million}$$

Therefore:

$$\text{Death toll in excess of the linear trend in 1959} = 9.0 - 8.613 = 0.387 \text{ million}$$

$$\text{Death toll in excess of the linear trend in 1960} = 10.5 - 8.496 = 2.004 \text{ million}$$

$$\text{Death toll in excess of the linear trend in 1961} = 8.58 - 8.379 = 0.201 \text{ million}$$

$$\text{Total death toll in excess of the linear trend from 1959 to 1961} = 0.387 + 2.004 + 0.201 = 2.592 \text{ million.}$$

The above calculation process shows that the total death toll in excess of the linear trend from 1959 to 1961 is 2.592 million (Fig. 7.3).

2. According to the second method, the starting point is the year 1957 (the mid-point of the preceding three-year period) and we use the average death toll of 8.57 million for the period 1956–1958; the finishing point is the year 1965 (mid-point of the subsequent three-year period) and we use average death toll of 7.55 million for the period 1964–1966. The linear death toll declined by 0.1275 million each year, calculated by dividing the balance of the starting and the finishing points by 8 (the eight years from 1957 to 1965). The year-specific linear death toll in 1959–1961 is then calculated accordingly.

According to the linear trend, the death toll in 1959 should have been 8.32 million, that in 1960, 8.19 million, and that in 1961, 8.06 million. The total death toll should have been 24.57 million.

$$\text{Death toll in excess of the linear trend in } 1959 = 9.0 - 8.32 = 0.68 \text{ million}$$

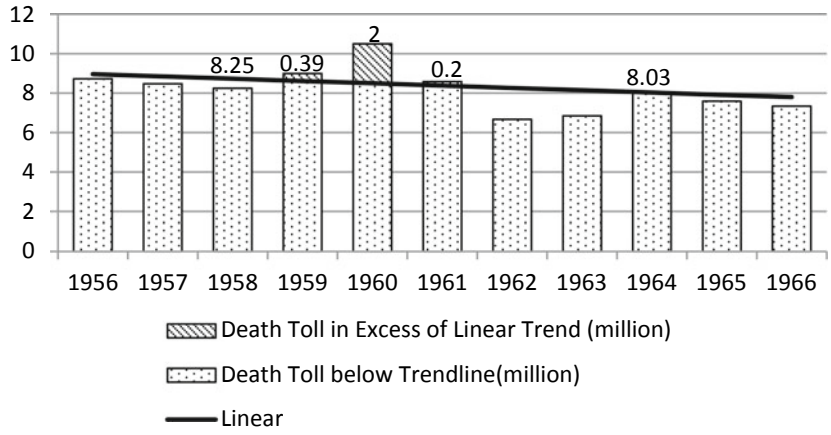

Fig. 7.3 1959–1961 death toll in excess of a linear trend calculated using the first method of selecting the linear trend baseline (million) (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

Death toll in excess of the linear trend in 1960 = 10.50 − 8.19
= 2.31 million

Death toll in excess of the linear trend in 1961 = 8.58 − 8.06
= 0.52 million

This gives us a total death toll above the linear trend over the three years of 3.51 million (Fig. 7.4).

As explained previously, it does not matter how many unreported deaths were registered retrospectively in each of the three years. An arithmetic calculation will lead to the same result anyway.

According to the data in Fig. 7.2, the estimated death toll in 1959–1961 was 28.08 million. Using the first method of selecting linear benchmarks, there were 25.49 million deaths in line with the linear trend over the three years, and the mortality in excess of the linear trend was 2.59 million.

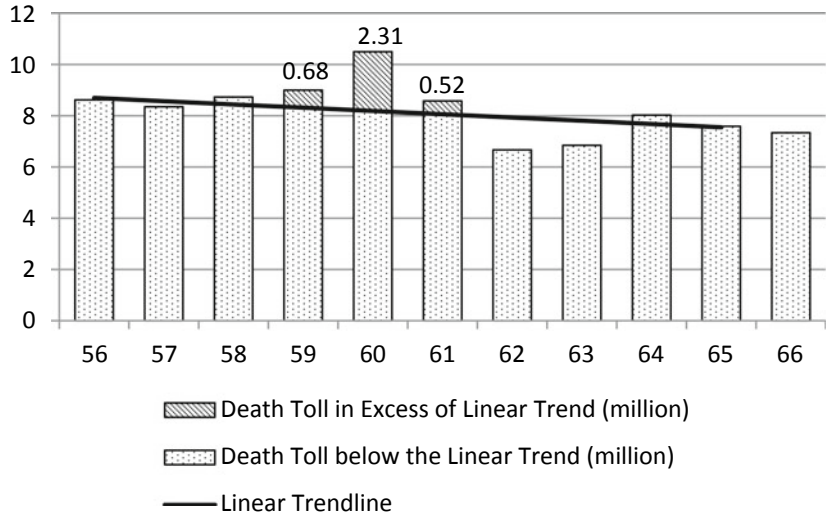

Fig. 7.4 1959–1961 death toll in excess of the linear trend calculated using the second method of selecting the linear trend baseline (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

Using the second method, there were 24.57 million deaths in line with the linear trend over the three years, and the mortality in excess of the linear trend was 3.51 million.

Chinese scholars usually choose the death data of "normal years" for calculation purpose. Hence the excess deaths can be estimated using the following third and fourth methods.

3. The average of the death toll in 1958 and 1964, i.e. 8.38 million is used as "normal death toll". Thus, we have

$$\text{Death toll from 1959 to 1961} - \text{normal death toll} \times 3$$

$$28.08 - 8.38 \times 3 = 2.94 \text{ million}$$

4. To minimize errors, the average of the death toll in 1956, 1957, 1958, 1964, 1965, and 1966, i.e. 8.11 million is used as "normal death toll". Using the same equation, we have

$$28.08 - 8.11 \times 3 = 3.75 \text{ million}$$

Thus, we have four figures of excess deaths, i.e. 2.59 million, 2.94 million, 3.51 million, and 3.75 million respectively.

An Estimate of Excess Deaths Using the Second Set of Estimated Death Data

While it is known that there were eight million intentionally unreported deaths before the reorganization of the household registration system, the amount of under-registration of death for 1958 would be too large unless the proportion of under-registration for 1957 could be higher. With a higher death toll in 1958 the starting point of the linear trendline will be higher and the number of excess deaths will be smaller. The death rate for 1957 at 13.10 per thousand is by far lower than a normal death rate at 16 per thousand. The death toll for 1958 can be lower when

the death rate for 1957 is adequately adjusted, and the result will be more convincing. Meanwhile, the death rate for 1964 was higher than normal possibly because unreported deaths were identified and registered retrospectively as it was a census year. The death data will be more accurate if the death toll for 1964 can be adequately lowered. Though this may sound like a subjective logic, the argument can be more convincing (Fig. 7.5).

The number of excess deaths is calculated with the first method as follows.

1. The death toll for 1958 and 1964 is selected to be the benchmarks for a linear trendline (see Fig. 7.6).

Thus, the death toll in line with the linear trend was 24.39 million for 1959–1961, and the number of excess deaths was 3.69 million.

2. According to the second method, the starting point is the year 1956 and we use the average death toll for the period 1956–1958; the

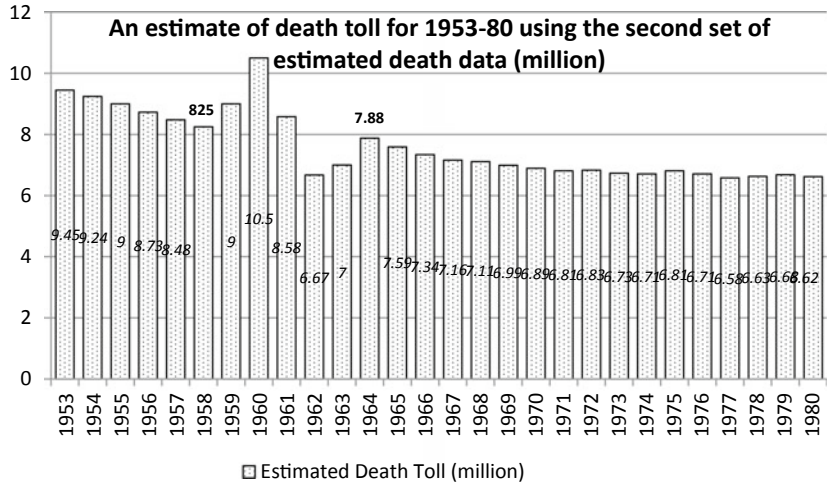

Fig. 7.5 An estimate of death toll for 1953–1980 using the second set of estimated death data (million) (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

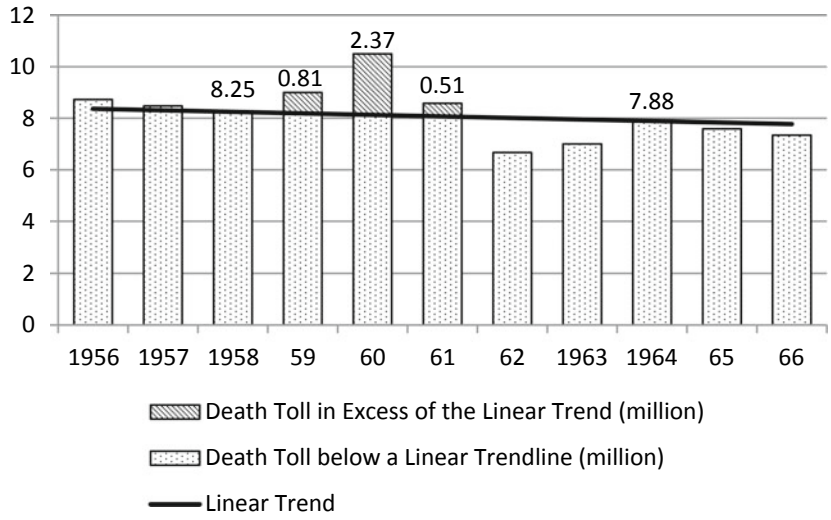

Fig. 7.6 Death toll in excess of the linear trend calculated using the second method of selecting the linear trend baseline (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

finishing point is the year 1965 and we use average death toll for the period 1964–1966. The linear trendline starts with 8.49 million and finishes with 7.6 million. The death toll declined by 0.11 million each year over the 8-year period (see Fig. 7.7). The year-specific linear death toll and excess deaths are then calculated accordingly.

Using this method, there were 24.48 million deaths in line with the linear trend over the three years, and the mortality in excess of the linear trend was 3.60 million.

3. The number of premature deaths would be 3.89 million if the years of 1958 and 1964 are adopted as normal years and the average of the death toll of these two years normal death toll.
4. The number of premature deaths would be 3.95 million if the average of the 1956–1958 and 1964–1966 death toll is adopted as death toll for normal years.

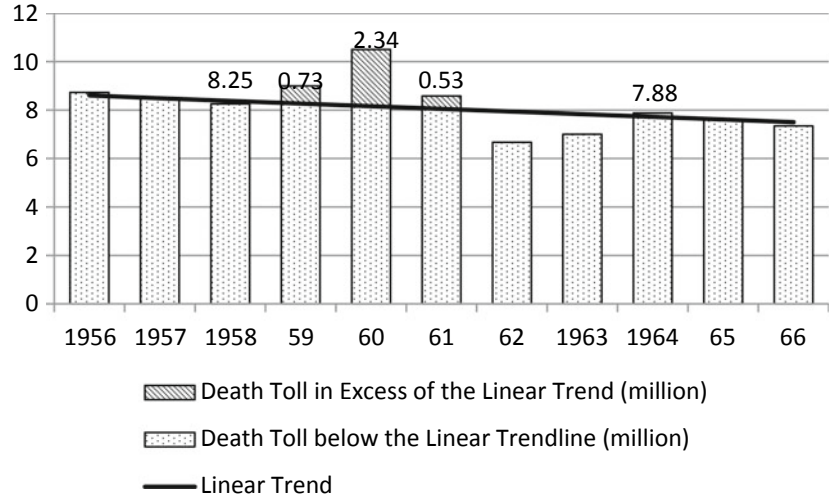

Fig. 7.7 Death toll in excess of the linear trend calculated using the second method of selecting the linear trend baseline (II) (*Source* National Bureau of Statistics and Ministry of Public Security, 1988, 408–604)

The above estimates have included two sets of year-specific death toll and applied them using four methods of selecting linear trend benchmarks and defining normal death toll respectively. Hence, we have eight figures for excess deaths, i.e. 2.59 million, 2.94 million, 3.51 million, 3.6 million, 3.69 million, 3.75 million, 3.89 million, and 3.95 million. The arithmetic mean is 3.49 million. The average excluding the highest and lowest two values is 3.64 million.

In summary, the number of excess deaths in 1959–1961 is approximately 3.6 million, or anywhere between 2.6 million and 4 million.

As explained in the discussion of mortality-related terminology in Chapter 2, the mortality in excess of the linear trend refers to the mortality in 1959–1961 above the linear death toll for the period 1953–1964. As the major event in those three years was the great famine, a considerable number of the excess deaths must have been related to hunger. However, it is difficult to determine exactly what proportion was due to famine and what proportion was caused by other factors.

Reference

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PART III

A Critical Review of Mainstream Literature and Findings

In the following four chapters, ten research findings are to be reviewed. The first part of this book has presented its methodologies, arguments, and conclusions. Yet, a further critical review of the findings of other scholars is necessary for a refutation of arguments that contain errors. The only effective way is to point out exactly what evidence that they have used is false and what evidence has been used inappropriately as well as how their arguments have defied formal logic or mathematical logic.

CHAPTER 8

Institutional Constraints on China's Population Statistics

Research Methodologies of Some Western Demographers

Coale (1984), Bannister (1987), and Calot (1984) were the earliest to show an interest in the mortality issues during the Three Years of Difficulties. They were world-renowned demographers occupying important positions in demographic research institutions.[1] Their research methodologies have many things in common. This chapter mainly reviews the findings of Coale who has argued that there were 27 million excess deaths.

The foreign scholars did not use the annual registered death rates released in 1983 but constructed a new set of statistics on birth rates and death rates on the basis of the SFPC's retrospective survey and the first three population censuses. In order to differentiate these statistics with those derived from the household registration records, we will call the former "birth rates according to survey" and "death rates according to survey".

[1] Ansley J. Coale is President of the Population Association of America and a professor at Princeton University. Judith Bannister is Chief of the Centre for International Research and the International Programs Centre at the U.S. Bureau of the Census. G. Calot is Director of the French National Institute of Demographic Studies.

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_8

At the time of the third national population census in 1982, the SFPC organized a retrospective marriage and fertility survey of 300,000 women between the ages of 15–67. The survey was conducted by door-to-door interviews, a method which is believed to be quite reliable. Each woman was asked to relate her childbearing and marriage history over the past 41 years since 1940 or, simply put, in which years they had had babies. The SFPC released the results of the 1/1000-sample fertility survey in 1983.

Foreign scholars believe that the survey results are more accurate than the data collected from birth registrations that are published in *China's Statistical Yearbook*. Also, they trust the reliability of the population censuses of 1953, 1964, and 1982. As Li Chengrui (1997) stated, "Coale's re-estimation of the birth rate was made according to the retrospective memories of the women of various age groups in the one-per-thousand sample fertility survey. He adjusted the figures to take account of lunar leap years (13 months) and non-leap years". The birth rates calculated by foreign demographers according to the SFPC statistics (referred to as "birth rate according to the survey") are shown in Table 8.1.

Table 8.1 China's birth rates modified by several foreign demographers (per thousand)

Year	*Registered birth rates*	*Birth rates according to the survey*		
		Ansley J. Coale	*J. Bannister*	*G. Calot*
1954	37.97	44.4	43.44	41.49
1955	32.60	41.3	43.04	41.38
1956	31.90	40.0	39.89	38.28
1957	34.03	41.1	43.25	41.45
1958	29.22	37.7	37.76	36.22
1959	24.78	28.3	28.53	27.24
1960	20.86	25.2	26.76	25.65
1961	18.02	22.3	22.43	27.10
1962	37.01	40.9	41.02	39.79
1963	43.37	47.3	49.79	48.69
1964	39.14	40.7	40.29	39.82
1965	37.88	39.7	38.98	38.77
Average	31.72	37.19	39.72	36.80

Source Li (1997)

Table 8.2 China's death rates estimated by a number of foreign demographers (per thousand)

	Registered Death rate	*Estimated death rate*		
		Ansley J. Coale	*J. Bannister*	*G. Calot*
1954	13.18	29.1	24.20	19.96
1955	12.28	22.4	22.33	22.31
1956	11.40	20.8	20.11	16.85
1957	10.80	19.0	18.12	13.24
1958	11.98	20.4	20.65	15.98
1959	14.59	23.3	22.06	19.20
1960	25.43	38.8	44.60	40.76
1961	14.24	20.5	23.01	27.03
1962	10.02	13.7	14.02	18.28
1963	10.04	13.0	13.81	21.22
1964	11.50	13.5	12.45	20.82
1965	9.50	11.1	11.61	10.26
Average	13.32	21.32	21.40	21.42

Hence, foreign demographers compiled a survey-based birth rate of 37.90 per thousand that are generally higher than the registered birth rates—31.72 per thousand—by 6.18 per thousand. They have also estimated that 16.3 per cent of the births were not registered. What method did they use to establish estimated death rates?

Li Chengrui (1998) summarizes Coale's research into five phases:

- The first phase: Calculating the birth rates and number of births during the period 1953–1982, according to the results of the retrospective marriage and fertility survey.
- The second phase: Calculating the number of births during the periods from 1953 to 1964 and from 1964 to 1982, by summing the year-specific figures according to the survey, and then calculating the population growth of these two periods by subtracting the calculated numbers of birth from the sum of the relevant population at the year end, revealed in the third population census. The death toll for these two periods, can then be estimated by using the equation "Mortality = births – natural population growth".
- The third phase: with the equation "Registered death toll/estimated death toll = completeness of recording" (1 − completeness of

recording = omission rate), the completeness of recording during the 1953–1964 period is 62 per cent (with the omission rate at 38 per cent), and that of the 1964–1982 period is 84.3 per cent (with a rate of under-registration of death at 15.7 per cent).

- The fourth phase: Presuming the completeness of recording to be 55 per cent during the 1953–1956 period, and 84 per cent in 1964 (with the omission rate dropping from 45 per cent to 16 per cent). The completeness of recording remained at 84 per cent during the period from 1964 to 1982. The death toll and death rate of each year is estimated by fixing the baseline according to the completeness of recording in percentages, and by presuming that the completeness of recording varies in a linear trend and can be distributed to each year accordingly.
- The fifth phase: Taking the death tolls of 1957 and 1964 to be the benchmark for the linear trend of mortality, calculating the linear deaths of 1958 and 1963 respectively, and comparing the calculation with the estimated death toll in order to work out the excess part above the linear trend line.

Bannister's and Calot's research methodologies are different from that of Coale's, but they are all based on the data of the retrospective marriage and fertility survey and the three population censuses. As shown in the table below, these three scholars share a great deal of common ground on general methods and definition of phases (see Li, 1997).

Li quoted the following statements from Coale (1984):

> The number of deaths calculated from officially listed death rate is 5.90 million in 1957 and 8.02 million in 1964. Had deaths followed a linear trend from 5.9 million to 8.0 million over these years, the total number of deaths in 1958–1963 would have been 41.8 million. The number derived from officially recorded death rate is 57.4 million; by this calculation, the crisis led to an excess of 16 million deaths. The number of deaths in 1957 and 1964 adjusted for under-registration are 10.4 and 9.4 million. With a linear trend, the adjusted total number of deaths in 1958–1963 would

> have been 59.4 million. The actual total (adjusted for estimated under-registration) is 86.2 million, about 27 million deaths in excess of the linear trend line.[2]

It is worth discussing a few questions arising from their research processes and conclusions, for example, whose births were unregistered according to the marriage and fertility survey, and whether the retrospective marriage and fertility survey was closer to the truth.

Whose Births Were Unregistered According to the Marriage and Fertility Survey?

The SFPC fertility survey results are the statistical foundation of the work carried out by Bannister, Coale, and Calot. They have used the survey results to estimate the number of unregistered births and subsequently the number of deaths. Therefore, it is of great significance to find out whose births were unregistered and whether it is appropriate to use the under-registration figure to estimate the number of deaths. We examine this below.

According to the numbers provided by the foreign demographers, the "birth rate according to the survey" is higher than the "registered birth rate" by 6.18 per thousand or by 19.5 per cent, and 16.3 per cent of births were not registered. This means that a total of 44 million babies were not registered upon their births over the period from 1954 to 1964.

Statistics should take account of social reality. Therefore, we need to ask what prevented the parents from registering the births of their babies.

Chapter 5 has summed up Chinese people's attitude towards birth registration before the implementation of the Family Planning Policy. At that time there was little likelihood that urban or rural residents, grass-roots cadres, or household administration authorities would avoid, or

[2] Coale's statement that "The number of deaths calculated from officially listed death rate is 5.90 million in 1957" is probably a computation error. According to the statistics, the "officially listed death rate" was 10.80 per thousand, and the average population in 1959 was 637.41 million (628.28 million at the year-end of 1956, and 646.53 million in 1957). The registered death toll in 1957 was 6.88 million, which was 0.98 million more than the result calculated by Coale. This error probably affected the accuracy of Coale's calculations. Having pointed out this error, Li Chengrui argued that Coale should have arrived at a figure of only 22 million deaths in excess of the linear trend, using his computation method.

forget, to register newborn babies. Chapter 5 also presents two circumstances in which some births were not registered. One is that some parents themselves had no *hukou* and would, therefore, not be able to have their babies registered; the other is that the babies were born in places other than where their parents maintained a *hukou*. Yet, practically speaking, there might have been two other possibilities.

The third circumstance is very similar to the second one as mentioned above: some births were not registered for various reasons, causing the number of registered births of the year to be smaller than the number according to the retrospective survey. The parents would have registered the births as soon as they could, and the late registration has caused the number of registered births to be larger than the actual number. That said, the balance would be very small as the additions and reductions have cancelled each other over the years. Thus, these circumstances would have contributed very little to the under-registration of 44 million births identified in the retrospective survey.

The most probable explanation is that unregistered infant mortality is the reason for the difference between the numbers of births estimated according to the fertility survey, on the one hand, and registered births, on the other.

The term "birth" in both household registration and population statistics refers to the babies who "have breathing or other life signs when delivered from the mother's womb" (National Bureau of Statistics, 1987, 130). According to the *Guidelines for Establishing the Permanent Residential Household Registration System*, promulgated in 1955, and the *Regulations on Household Registration of the People's Republic of China*, promulgated in 1958,[3] babies had to be registered within one month of birth. Article 9 of the 1958 *Regulations* clearly stipulated that "If the infants die after birth and before birth registration, both their births and deaths should be registered". This meant that both the birth and the death of a baby who lived a short life, for even only one minute, had to

[3] In the section A of Part Two of the *Directions* regarding births, it was stipulated that the parents or other direct relatives should report the birth of babies within one month to the People's Committee of the father and mother's locality, or report to the cadres in charge of the administrative organizations below township level (such as head of production team [*zuzhang* or *tunzhang*]) who must report to the People's Committee of the township for registration of the birth.

be registered. But even today, very few Chinese people have heard of this regulation.

At that time, few parents who lost their babies within one month after birth would know that they had to go to the commune offices and find a civil affairs assistant to register their babies' birth and death. Unlike nowadays when most babies are born in hospitals, most of the babies in rural China were born at home during the time of the people's communes. While there were nearly 3000 county-level administrations, all hospitals, 2600 in 1949 and 4179 in 1957, had exclusively been set up in urban areas at county level or above. The number of hospitals surged to 34,379 at the end of the 1950s, with 29,079 being established in areas below county level. Medical facilities at commune (township) level [*gongshe weishengyuan*] and clinics [*weishengsuo*] at production team (village) level were not established until the early 1960s. In April 1964, the Ministry of Health, following the guidelines of the CCP Central Committee, issued the *Opinions on Further Strengthening the Training of Health Workers and Midwives in Rural Regions*, which proposed, for the first time, to "make every effort so that every production brigade [*shengchan dadui*] will have midwives, and every production team [*shengchandui*] will have health workers within 3-5 years". This means that, before 1964, most births in rural areas, especially more remote areas, were attended by amateur midwives [*jieshengpo*]. It would be common in such circumstances for deaths of newborn babies to go unregistered in rural China. It was not until the mid-1960s that health workers were installed in production brigades, and that "barefoot doctors" and collective household registration became available at production team level, which made it possible to lower the number of unregistered infant deaths.

Two conclusions can be drawn from the above analysis: One, it is possible that Chinese customs, and the birth and death registration practices at that time were the reasons for the under-registration. Two, most of the unregistered deaths were most probably the deaths of infants whose births were not registered either. If this is true, estimation based on the methods of the three western demographers will give rise to confusing results.

Can the Estimate of Under-registration of birth Lead to Any Convincing Conclusion?

The three western demographers have estimated the mortality statistics using the following method[4]:

$$\text{Death toll} = \text{births} - (\text{population at the beginning of a period} - \text{population at the end of a period})$$

Therefore:

$$\begin{aligned}&\text{Estimated death toll from 1953 to 64}\\&= (\text{total registered births from 1953 to 64} + \text{unregistered births})\\&- (\text{the population in year end 1964} - \text{the population in year end 1953})\end{aligned}$$

This equation takes it for granted that the population of "unregistered births" on the right side would somehow be included in the population at year end as per the 1964 census. If they were living and included in the 1964 census, the census-based population figure in year-end 1964 would be enlarged, and therefore offset the same amount of "unregistered births" without inflating the figure on the right side of the equation. Yet, if they had died and therefore were not included in the census-based population in year-end 1964, the offset would not happen. As a result, the number of deaths would be larger.

As explained previously, those who had survived would definitely register their births as soon as they could, so the first scenario was rarely seen. The late registration of births would reduce the number of "unregistered births" of the registration year to a very low level. Therefore, the most probable factor is that neither the births nor deaths of the babies who died soon after their births had been registered. Their number is included in the figure of "unregistered birth" on the right side of the equation without any offsets.

The problem is: the 44 million would not be identified in the 1964 census because they had already died. They were part of the total population, but were never recorded in the population statistics. As the fertility

[4]According to Li Chengrui, the right side of the equation was "the population at year-end as per the 1964 census – the population at year-end as per the 1953 census". Given that the "registered population at the end of the census year" is corrected with the year-end figure according to the census and therefore are approximate to each other, the census-based population figures are considered the same with the registered year-end figures. However, as mentioned previously, this equation does not apply to statistics prior to 1982.

survey did not ask whether the under-registration was due to infant mortality or whether either births or deaths were registered, the investigation effectively "brought the deceased babies back to life" on the right side of the equation, causing the death toll for the period from 1953 to 1964 to increase by tens of millions.[5]

The Chinese parents' attitude towards birth registration and their behaviour was determined by China's economic policies and the limited maternal healthcare at that time, hence were the institutional constraints on birth registration. The western demographers have apparently ignored these limitations.

Low Credibility of the Data Collected in the Retrospective Marriage and Fertility Survey

The statistics based on the RMF survey have deviated from the reality in many ways.

If the statistics derived from the SFPC survey were accurate, it followed that China's infant death rate (IMR) was dramatically higher than the officially published figures.

The IMR published by the government is not calculated on the basis of household registration data but is derived from survey data. It is not included in the NBS's population statistics but is usually gathered and published by the public health authority. China's IMR was 109 per thousand in 1957 (Liu, 1989). The most frequently quoted IMR for pre-1949 China is 200 per thousand. According to a survey of 101 cities conducted in 1928–1933, the average IMR was 156 per thousand. If the results of the SFPC's fertility survey are accurate, most of the excess births will have been associated with infant mortality. The 18 per cent increase in the number of births should be recorded as cases of infant mortality. In other words, the IMR of 1957 should not have been 109 per thousand, but approximately 270 per thousand. This would be even higher than that recorded before 1949, therefore, the credibility of the SFPC's retrospective fertility survey is questionable.

[5] As shown in Table 8.2, the average yearly death rate was 21.5 per thousand over the period from 1953 to 1964 according to the three western demographers, 60 per cent higher than the registered death rate for the same period. Given that registered death toll was approximately 84 million, there would be an extra 50 million deaths.

The data from sample surveys of the public health authority should be more accurate. According to a survey by the public health authority, the IMR was 39 per thousand in 1981 (Liu, 1989). The 1982 population census recorded age-specific mortality in 1981. There were 680,000 deaths in the age 0 group, equivalent to 41.2 per thousand of the 16.5 million births that took place that year (National Bureau of Statistics and Ministry of Public Security, 1988, 888). The census figure and the survey data are largely consistent with each other.

Professor Sun Jingxian has provided another set of statistics, showing, from another perspective, why the results of the fertility survey may be regarded as questionable.

According to the statistics, if the 1982 population census is set as the benchmark, the women's fertility rate, calculated on the basis of the SFPC's fertility survey, is higher than the census statistics in two age groups, and lower in the rest of the five, with a maximum deviation by 130 per cent. The credibility of any conclusions drawn from research based on data with so large a deviation and such dramatic fluctuations, no matter how scientific the calculation method may be, is questionable (Table 8.3).

Some believe that the fertility survey results are more credible for the way it was organized and conducted. Commenting on the fertility survey, Yang Jisheng stated that "this survey was conducted by family planning staff on door-to-door and face-to-face basis, and therefore, is relatively credible". I do not agree. The credibility of such door-to-door interviews

Table 8.3 A comparison of women's fertility history between the 1981 census and the 1982 fertility survey of the previous year

Women's age groups	*Number of births as per the Census (persons)*	*Number of births as per the Fertility Survey (persons)*	*Deviation (per cent)*
15–19	377,150	724,138	92.0
20–24	5,276,210	7,336,945	39.1
25–29	10,565,740	9,564,531	−9.5
30–34	2,994,050	2,311,330	−22.8
35–39	841,970	760,591	−9.7
40–44	320,480	285,714	−10.8
45–49	69,330	43,350	−37.5
Total	20,444,930	21,026,599	2.9

is determined by the quality and interpersonal skills of the thousands of interviewers, as well as the psychological state of the interviewees, the nature of the questions, and how difficult the questions were. Many of these factors can be very arbitrary. It is far more complicated to get a clear answer from a woman on which year she gave birth, than to double-check the household registration information with the interviewees. Population censuses are also conducted door-to-door. Two drastically different results were obtained from the same households in the same year. One survey was carried out by experienced, skilled census practitioners, who did not have to ask complicated questions, and the other by amateur interviewers, recently recruited by the SFPC (which had been established only one year before), who had to ask the interviewees sensitive questions. It is unclear why the results of the former survey should be regarded as much less credible than the latter.

I contend that the statistics of the fertility survey is questionable and a study on the mortality issues during the Three Years of Difficulties should not be based on the survey. Also, the excessively high IMR based on the survey is not true.

Researching the variance of population during the famine years is a very complex matter. We need to take into account many factors—the institutional constraints on statistics, behaviour out of self-interest for example—that may have affected the data used to compile statistics. Given the statistical confusion and discrepancies in the Statistical Yearbook, it would be very hard to solve the puzzle by a government department on the basis of one SFPC fertility survey.

G. Calot has apparently noticed the statistical confusion and realized how difficult it was to produce more accurate figures by adjusting the data. In a conversation with Li Chengrui (1997), Calot stated,

> Chinese problems are best answered by the Chinese themselves. By all means, historians need estimated statistics. We suggest Chinese demographers make some scientific adjustment to these statistics and explain the methods used for such adjustments.

I agree with Calot on this.

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CHAPTER 9

Problems in the Research of a Number of Chinese Scholars

Many of the Chinese scholars had never been involved in research in demographics or statistics before they took up their studies on famine deaths. Both Ding Shu and Cao Shuji are historians. They have designed their own formulas for calculating premature deaths, but failed to realize that their formulas are irrelevant to "premature deaths" at all. As a writer, Jin Hui adopted two equations and mixed them up to calculate data by category, and these two equations contradict to each other. Wang Weizhi is the only one specialized in this area. However, instead of using any statistical data, he has based his calculation on his own estimates only. This chapter focuses on the fundamental errors that these scholars have made, although there are other minor issues in their studies.

Ding Shu Has Been Working on the "Abnormal Decrease of Year-End Population"

Ding Shu, who was one of the first overseas Chinese scholars to research this subject, is specialized in China's contemporary history and now lives in the United States. He has authored a number of publications, including *Man-made Calamities: The Great Leap Forward and the Great Famine* (The 1990s Publishing House, 1991), and *Great Leap Forward: Great*

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_9

Famine (Greenfield Bookstore, 2009). Although his books have not been published in Mainland China, they are readily available there online. In *Man-made Calamities*, Ding Shu used the population statistics published by the National Bureau of Statistics without making any modifications or adjustments.

Yang Jisheng (2008, see ch. 23) summarized Ding Shu's research:

> Mr. Ding Shu's calculations show that there were 35 million premature deaths in total from 1958-1962. His calculations were based on the annual population statistics for the period published by the NBS.

Yang continues:

> However, Ding Shu does not believe the NBS's figures for total population, because the NBS's figures for population at year-end conflict with those for population growth rate. He believes that it is more credible to use the growth rates published by the NBS. He agrees with Jin Hui's judgment that 'the statistical staff, out of professional integrity, intentionally preserved a set of relatively genuine historical data,' and the growth rates were the genuine data that they preserved. Therefore, Ding Shu calculated the total number of premature deaths to be 44 million, based on the growth rates.

How was this conclusion arrived at? Yang explains as follows;

First, if there is a reliable death rate, then

$$\begin{aligned}\text{Premature deaths in a certain year} = {} & (\text{death rate of the year} - \text{normal death rate}) \\ & \times \text{population at the previous year end}\end{aligned}$$

where there is reliable birth rate, then

$$\begin{aligned}\text{Premature deaths in a certain year} = {} & \text{population at the year end of the year} \\ & - [1 + (\text{birth rate} - \text{normal death rate})] \\ & \times \text{the population at the previous year end}\end{aligned}$$

> As he does not believe the existing statistics on the birth rates and death rates, he uses the death rate in 1957, viz. 10.08 per thousand, as the

> normal death rate. If there had been no famine, the death rate ought to have declined year on year. Choosing the 1957 death rate and setting it to be the normal mortality for each year will not underestimate the normal death rate, and therefore, will not overestimate the premature death rate. He believes that the birth rate of 37.01 per thousand in 1962 published by the NBS is reliable. As he is unable to obtain reliable birth rates for each year, he can only use the second equation as stated above.

Yang Jisheng (2008, 462) has summarized Ding Shu's research methodology and process in a concise and explicit manner. From Yang's introduction, we understand that Ding Shu considered two equations before abandoning the first and adopting the second. Although Ding's usage of the "population at the previous year-end" instead of "average annual population" does not conform to the standard use of statistical indicators, there is little difference between the two. This equation is similar to the usual equation for counting premature deaths below.

$$\text{premature deaths} = \text{death toll} - \text{normal mortality}$$

As discussed previously, the result would be around 14.5 million if the data from the *China Statistical Yearbook* is used. Is it because the equation fails to produce a number bigger than 30 million or because "a reliable year-specific death rate is not available" that the first equation was ditched? It is hard to tell.

Although he has no faith in the credibility of the official statistics on birth rates and death rates for other years, he decides that the death rate for 1957 and the birth rate for 1962 are "reliable". Thence, Ding chose the second equation. However, his second equation is unable to produce any figures for premature deaths. Instead, it only works on the "year-end population in excess of normal years".

Ding's equation is as follows.

$$\begin{aligned}&\text{Premature deaths}\\&= \text{population at year end} - \text{annual average population}\\&\times \left[1 + (\text{birth rate} - \text{normal death rate})\right]\end{aligned}$$

As Ding has ignored the birth rates of other years, the birth rate for 1962, which he selected, is actually one of the "normal birth rates". Thus,

the above equation turns out to be:

$$\begin{aligned}&\text{Premature deaths}\\&= \text{population at year end} - \text{annual average population}\\&\times \left[1 + (\text{normal birth rate} - \text{normal death rate})\right]\end{aligned}$$

According to the "Explanation of Population Statistical Indicators":

$$\text{Birth rate} - \text{death rate} = \text{natural growth rate}$$

Hence,

$$\text{Normal birth rate} - \text{normal death rate} = \text{normal natural growth rate}$$

Meanwhile,

$$\begin{aligned}&\text{Annual average population}\\&\times \left(1 + \text{normal natural growth rate}\right)\\&= \text{normal population at year end}\end{aligned}$$

We can make further deductions from Ding's equation, as follows:

$$\begin{aligned}&\text{Premature deaths}\\&= \text{population at year end} - \text{normal population at year end}\end{aligned}$$

What does the result of "population at year-end– normal population at year-end" refer to? If it is a negative value, it refers to "the gap below the normal population at year-end". To be consistent on both sides of the equation, the result should be "abnormal population growth"—by no means can it be called "deaths" more or less than normal years. That is to say, Ding has designed a formula that cannot work out any figures of premature deaths. Therefore, his formula is problematic.

The second is that this equation can generating "abnormal" population figures by millions for almost any year.

As Ding decided that the death rate in 1957, viz. 10.80 per thousand, according to the NBS, was "credible", and could be taken as the normal death rate, and that the birth rate in 1962, viz. 37.01 per thousand, was reliable, his equation can be solved as follows:

Abnormal decrease of population

$$= \text{population at year end} - \text{annual average population} \times [1 + (0.03701 - 0.0108)]$$
$$= \text{population at year end} - \text{annual average population} \times 1.02621$$

Thus, Ding derived a "natural population growth rate" of 26.21 per thousand. Any year with a lower growth rate will be categorized as one with "abnormal population growth" or one with "population at year-end lower than normal years".

Indeed, with the help of such an equation, Ding is able to conclude there was an "abnormal population reduction" amounting to tens of millions during the Three Years of Difficulties. But the equation is capable of producing astonishing figures for many other years. The reason is simple. The death rate that Ding selected was the lowest of the twelve years following Liberation, while the birth rate he selected was the third highest during the thirteen years following Liberation. A relatively high birth rate minus the lowest death rate will certainly result in a very high natural growth rate. Consequently, there will be an "abnormal decrease of population" in any year with a lower natural growth rate. Actually, 26.21 per thousand is the highest natural growth rate in the twelve years following Liberation, from which we can conclude there was an "abnormal decrease of year-end population" amounting to millions in each of those twelve years. Furthermore, according to the equation, there would be an "abnormal decrease of population" in every year since the Liberation, a period of more than sixty years, apart from the six years from 1963 to 1968, in which birth rates were high.

As a matter of fact, it is not too difficult for Ding to verify his own results. All he has to do is make deductions from the equations given in the "Explanation of Population Statistical Indicators". Alternatively, he could have applied his equation to any other years apart from the famine years.

Cao Shuji's Calculation Method Is Problematic Too

A Professor at Fudan University, Cao Shuji (2005a; 2005b, 282) claims that there were 32.458 million "premature deaths" in 1959–1962. Cao is also a historian, and his research interests include Chinese historical geography, migration history, population history, environmental history,

history of Chinese medicine as well as social and historical history. In the first part of his book *The Great Famine* (2005), he explains how he has selected, processed, and computed his data.

Cao's formulas cannot work out any figures of premature death. Cao (2005b, 282) explains his calculation method as follows.

> The net reduction of population is computed by subtracting the post-disaster population from the pre-disaster population, and adding natural growth in excess of normal mortality during the great famine. The result is the reduction, or total reduction, of population, which when summed with net migration, constitutes the number of premature deaths.

This can be converted into an equation, as follows:

$$\begin{aligned}&\text{Premature deaths}\\&=(\text{population at starting point}-\text{population at the finishing point})\\&+(\text{natural population growth}-\text{normal mortality})\\&+\text{net migration}\end{aligned}$$

We can make deductions from the equation according to the "Explanation of Major Statistical Indicators"—the "population at starting point" refers to the population at previous year end, and the "population at the finishing point" refers to the population at year end in Cao's equation. Thus,

On the left,

$$\begin{aligned}&\text{Premature deaths}\\&=\begin{pmatrix}\text{population at previous year end}-\text{population at year end}\\+\text{natural population growth}+\text{net migration}\end{pmatrix}\\&-\text{normal deaths}\end{aligned}$$

Hence,

$$\begin{aligned}&\text{Premature deaths}+\text{normal deaths}\\&=\text{population at previous year end}-\text{population at year end}\\&+\text{natural population growth}+\text{net migration}\end{aligned}$$

Because:

$$\text{Premature deaths} + \text{deaths in normal years} = \text{death toll}$$

In result,

$$\begin{aligned}&\text{Death toll}\\ &= \text{Population at previous year end} - \text{population at year end}\\ &+ \text{net migration} + \text{natural population growth}\end{aligned}$$

Then,

$$\begin{aligned}&\text{Natural population growth}\\ &- \text{death toll} + \text{net migration} = \text{population at year end}\\ &- \text{population at previous year end}\end{aligned}$$

Therefore,

$$\begin{aligned}&\text{Natural population growth}\\ &= \text{population at year end}\\ &- \text{population at previous year end}\\ &+ \text{death toll} - \text{net migration}\end{aligned}$$

On a national scale, leaving aside international migration as negligible, the equation holds as follows.

$$\begin{aligned}&\text{births} - \text{death toll}\\ &= \text{population at the finishing point} - \text{population at the starting point}\end{aligned}$$

Cao has adopted a method that requires a collection of local data, and migration and immigration of a locality can affect its year-end population, so he added net migration to his calculation. According to the *Explanation of Major Indicators*, the balance between births and deaths is called "natural population growth". The registered population growth of a locality (registered population at year end—registered population at previous year end) must take both natural increase and net migration into account. Thus,

$$\text{Births} - \text{deaths} + \text{net migration}$$

$$= \text{population at year end} - \text{population at previous year end}$$

$$\begin{aligned}&\text{Births}\\ &= \text{population at year end} - \text{population at previous year end}\\ &+ \text{death toll} - \text{net migration}\end{aligned}$$

Further deductions from Cao's formula show that
According to the Explanation:

$$\begin{aligned}&\text{Births}\\ &= \text{population at year end} - \text{population at previous year end}\\ &+ \text{death toll} - \text{net migration}\end{aligned}$$

According to Cao Shuji:

$$\begin{aligned}&\text{Natural population growth}\\ &= \text{population at year end} - \text{population at previous year end}\\ &+ \text{death toll} + \text{net migration}\end{aligned}$$

The right side of both equations are identical. Yet, the left side differs drastically. This shows that Cao confuses natural population growth with what is meant by "births". Another possibility is that he is not familiar with how to use integration formulas. He would have found out his problem if he had applied his equation a bit more carefully.

Regardless of the result of Cao's equation, a formula that replaces births with natural population growth will never work out the figure of death toll, not to mention that of premature deaths. This means Cao Shuji has run into the same problem with Ding Shu, i.e. their formulas are irrelevant to the calculation of "premature deaths".

Cao Shuji Is Not Familiar with the Principles of Statistical Sampling

I was initially impressed by Professor Cao's data collection ability—he had apparently collected the chronicles from all counties. Later, I noticed he had written that "although incomplete, from a sampling point of view, the number of local chronicles is adequate". In the notes, he adds that "this research used data from 1,050 local chronicles, and discarded

several hundred others, which were either unavailable or *from non-disaster areas*".

China has 333 prefecture-level cities [*dijishi*] and 2000 counties (excluding county-level districts of cities). The number of local chronicles used is between half and two thirds of the total. To be sure, that is not a small number. Professor Cao is confident that "from a sampling point of view, the number of local chronicles is adequate".

Apparently, Cao is not familiar with statistical principles. Apart from the quantity of samples, sound sampling in statistics has everything to do with the evenness and independence of the choice of samples, about "whether the opportunity to be chosen is evenly spread among all samples" and "whether the use of one sample will affect the opportunity to be chosen of other samples". The essential point is that the selection must be random. The size of the sampling proportion is not the most important factor. One per thousand is a common standard used in population sampling practice and is nevertheless considered basically accurate.

Statistical sampling shuns "pre-determined ideas" but welcomes "fairness". If a batch of samples, say, a basket of white and brown Ping-Pong balls, is shuffled for random selection, a blind person can do as good a job of complying with commonly accepted statistical sampling criteria as a professor.

Cao has blatantly defied the principle "whether the opportunity to be chosen is evenly spread among all samples". In selecting the local chronicles, Cao found less than 2000. He decided to exclude those from "non-disaster areas with low death rates" and retain those of the disaster areas, in order to calculate the "death rate" of a region that he called *fu*, and then apply this to the death rate for each province and, subsequently, to the whole country. In this way, he arrived at a result of 32.458 million, a seemingly precise number of "premature deaths".

To be honest, few people would understand the difference between *fu* as an ancient administrative region and modern administrative divisions, given that historical geography is a much less popular academic field. It would be even harder for the confused readers to verify Cao's conclusion by using his formula. His readers will only be bewildered unless he could explain his method more clearly.

Jin Hui's Dilemmas

Jin Hui, a writer associated with the People's Liberation Army, was one of the earliest to research this subject. Jin (1993) states that "the number of premature deaths in rural China alone could be as high as 34.71 million". The article was quite influential, and many have endorsed Jin's research. Professor Cao Shuji (2005b, 7) comments that "Jin Hui's research is relatively reliable in terms of his methodology because it does not depend on the mortality statistics of the disaster years to work out the genuine death toll. One must know that it is the easiest and most convenient and direct way for manipulators to alter the mortality statistics of the disaster years".

Jin Hui (1993) presents his formula as follows:

$$\begin{aligned}&\text{Premature deaths}\\&= \text{births}\\&+ \text{reduction in total population} - \text{normal mortality}\end{aligned}$$

This means that Jin's calculation of death toll resulted from applying the formula "birth – registered population growth". Why did not he use a formula like "average annual population multiplied by death rate" instead? He wrote:

> The reduction of the total population in 1960 would only be 3.07 million whereas there would be an increase by 2.49 million in 1961 if we calculate with the officially released birth rates, death rates and natural growth rates. The total population figures would be different from the official data to an extent that those rates are not reliable at all.

Jin Hui seems to have gone farther than Cao Shuji by discrediting not only the "death rate statistics of the disaster years" but also the birth rate and natural growth rate data. This is why he refuses to use "average annual population × death rate" to calculate the death toll. The problem is, however, how he could ever calculate the "births" in his formula if he does not believe in the birth rates? Jin explains,

> For the sake of analysis at this stage, we just use the official birth rates for the time being. In result, there were 13.81 million births in 1960 (662.07 million × 0.02086), 11.87 million in 1961 (658.59 million × 0.01802), adding up to 25.68 million in these two years.

This means that, although Jin Hui did not believe in the "death rate statistics of the disaster years", he used these figures "for the time being" to calculate the number of births in 1960 and 1961 anyway. In the same way, he produced the figures of "normal deaths". He wrote:

> We took the average death rate from 1956-1957 and from 1962-63 to be the "normal death rate" for the period from 1959-61, which is neither too low nor too high. If we calculate using this rate, there would be 6.99 million normal deaths in 1960 (662.07 million × 0.01057) and 6.96 million in 1961 (658.59 million × 0.01057), adding up to 13.95 million in total.

Thereafter, he used his formula to produce the numbers of premature deaths for 1960 and 1961 as follows.

$$\begin{aligned} &25.68\,\text{million (births)} - 13.95\,\text{million (normal deaths)} \\ &\qquad + 13.48\,\text{million (reduction in population)} \\ &\qquad = 25.21\,\text{million (premature deaths)} \end{aligned}$$

So far, as Cao Shuji comments, Jin Hui has not used the "death rate statistics of the disaster years", but the birth rates only. How did he calculate the figures for 1959? Jin explained:

> As for 1959, we might as well believe, for the time being, the official death rate of 14.59 per thousand, which is different from the aforementioned average death rate by 4.02 per thousand. Even so, the number of premature deaths could reach 2.70 million (672.07 million × 0.00402).

It looks like Jin did not cling to his disbelief and has, as a matter of fact, used the "death rate statistics of the disaster years" (including all of the birth rates, deaths rates, and natural growth rates that he called "unreliable", given "natural growth rate = birth rate – death rate").

The following equation shows how Jin Hui has reached his conclusion:

$$\begin{aligned} &\text{Premature deaths in the period from 1959 to 1961} \\ &\qquad = 25.21\,\text{million} + 2.7\,\text{million} = 27.91\,\text{million} \end{aligned}$$

As discussed previously, the formulas "births – registered population growth" and "average annual population × death rate" will generate two different sets of death figures due to inconsistencies between these two

formulas. A calculation will have consistency problems and defy the laws of mathematics if it involves two formulas that are inconsistent with each other. Nevertheless, it could be just a failure to keep one's words if one should use data that he has considered "not reliable", but a fatal flaw in calculation method can lead to devastating mistakes.

Let us have a look at what will happen if we use Jin Hui's formula without applying the "official rates".

The number of births in 1959 would be 16.50 million and there would be an increase in year-end population by 12.13 million when using the formula "annual population × birth rate". Given the normal birth rate of 10.57 per thousand according to Jin Hui, the normal death toll in 1959 would be 7.04 million. As a result:

$$\begin{aligned}\text{Premature deaths in 1959} &= 16.50 - 7.04 + (-12.13)\\ &= \text{minus } 2.67 \text{ million}\end{aligned}$$

$$\text{Premature deaths from 1959 to 61} = 25.21 + (-2.67) = 22.54 \text{ million}$$

This means that, if Jin Hui should insist on not using the "death rate statistics of the disaster years", the number of premature deaths in 1959–1961 would be 22.54 million, 2.67 million less than the figure produced by a calculation using the data for only two years.

Yang Jisheng does not seem to agree with Jin's calculation method in his review of Jin Hui's findings. Yang (2008, 452) comments in the *Tombstone*:

> Using the equation "births – normal deaths + reduction in total population = premature deaths", he calculated (25.68 - 13.95 + 13.48) million = 25.21 million, which means that the premature deaths in 1960-61 could be as high as 25.21 million. Adding the year of 1959 in the same way, the total number of premature deaths during these three years was not less than 27.91 million.

Yang has given a formula and used the same set of data and produced the same death figures, viz. 25.21 million, as Jin Hui did. Yang also agreed with Jin on the number of premature deaths for 1959, viz 2.7 million (27.91 million–25.21 million). However, Yang has not given any details about his calculation process, but skipped it by saying "in the same way". However, as demonstrated above, "the same way" will produce a

premature death figure of minus 2.67 million instead of 2.70 million, and the number of premature deaths in 1959–1961 would be 22.54 million instead of 27.91 million.

The above analysis can lead to the following conclusion:

Cao Shuji was wrong when he commented that Jin Hui did not use the "death rate statistics of the disaster years".

Jin Hui has made a methodological error by involving two formulas that are inconsistent with each other to process two sets of data of the same nature.

Yang Jisheng should have given details about his calculation methods.

Wang Weizhi's Research

As one of the few who are specialized in this area, Wang Weizhi (1987) concluded that there were 33.78 million premature deaths in the period 1958–1961. However, his findings were only summarized in Yang Jisheng's *Tombstone*. Wang's research is discussed here because Yang Jisheng's assertion of 36 million "premature deaths" in *Tombstone* is derived by extrapolating from Wang's figures. Yang (2008, 453) confesses that he "basically agrees with Comrade Wang Weizhi's conclusion".[1]

Yang (2008, 453–454) describes the sources of Wang Weizhi's basic data.

> Comrade Wang Weizhi does not think it is correct to say that the population at the year-end in 1959 was 12.13 million in excess of that of the previous year. According to his analysis, 1959 was the first year of the Three Years of Difficulties. The number of births had started to decline, while mortality had begun to increase. It is approximately in line with reality that the natural growth of population was 6.77 million, 40 per cent less than that of the previous year. By contrast, it is not true that the total population increased by 12.13 million at a growth rate of 1.8 per cent, and

[1] *Tombstone* introduces Wang Weizhi as someone having studied demographic statistics at the Moscow Institute of Economics and Statistics from 1955 to 1959 and worked for a short period at the Institute of Economics at Chinese Academy of Sciences, before going on to work in the Department of Household Registration at the Third Bureau of the Ministry of Public Security (MPS). Wang Weizhi visited several provinces in the early 1960s to investigate the population statistics and find out what had happened. He later worked at the Institute of Demography of the Chinese Academy of Social Sciences. Not only is he familiar with demographic and statistical theories, but also knows how official statistics are produced.

> that the increase was only 1.28 million less than that of the previous year. This is because many local authorities did not believe that the population growth had slowed down, and therefore intentionally inflated the numbers of births to maintain a relatively high level of growth rate.

Meanwhile, Yang states that,

> It would be a conservative estimate that the total population decreased by 10 million and natural variance dropped by 3.04 million in 1960. The actual reduction was even more. On the one hand, the numbers of births were inflated; on the other, the death toll was intentionally deflated. The total population continued to decrease whilst the natural variance grew by 2.49 million in the opposite direction, leaving aside the inaccuracy of the numbers.

Therefore,

> He backcalculated the 1964 census data to conclude that the total population in 1961 should have been 645,080,000, which was 14.86 million less than the original statistics. Then, it becomes necessary to reassess the total population and natural growth during the three years of hardships. Wang Weizhi made the following hypothesis. In terms of natural growth, the population increased by 6.77 million in 1959. However, it decreased by 21.63 million in 1960-61, which added 8.15 million, to the original number of 13.48 million. Allotting 8.15 million to 1960 and 1961, Wang Weizhi adjusted the reduction of total population in 1960 from 10 million to 15 million, and the originally recorded reduction in 1961 from 3.48 million to 6.63 million.

Yang Jisheng's summary shows that Wang Weizhi altered the major population figures of 1959–1962, that is—the registered population at year end, according to his own understanding. The adjustment was based on his personal judgement of the "practicality" or "impracticality" of the figures. The methodology used in making the adjustments amounts to "estimation".

Wang Weizhi made adjustments to the statistics on the basis that his former colleagues in the statistic authorities have manipulated the data. Wang also told some stories about the motives and process of the

manipulation. Recounting his interview with Wang, Yang (2008, 454) says,

> Too big a death toll will affect the local officials' career future. For the central government, excessive mortality will damage its political image. Wang Weizhi informed me that, the county and provincial authorities, when receiving a report of high level of mortality from the grassroots level, will interrogate them 'Is your number accurate? Check again!' The lower level authorities, having received such hint, will keep adjusting their statistics until their superior authorities are satisfied.

I don't believe Wang's figures are of any value as his findings are only as accurate as his own estimates.

As explained previously, the population data of that period did not come from the statistic authorities but from the public security authorities where the figures were collected at grassroots level and reported to authorities at higher level until the data were gathered at the central level. The Third Bureau of the Ministry of Public Security was responsible for collecting and assemble the population data. According to Yang Jisheng, Wang Weizhi "worked at the Department of Household Registration in the Third Bureau of the Ministry of Public Security (MPS)". He is among the staff who know exactly how the national population statistics were processed. However, it is not enough for an insider like him to accuse his former colleagues of manipulating the population data because it proves nothing by telling stories no matter how vivid those stories may sound. Where there is manipulation there must be original data that have been manipulated. Wang as an insider should at least know roughly what the original data might be. His research would have been much more valuable if he could simply present or describe those original data to his readers. It is not logically reasonable to produce estimates simply because someone might have manipulated the data.

Likewise, if anyone announces that "the winning numbers of the Euro Millions today will be 11, 19, 34, 43 and 45", it will be reasonable for someone like Wang Weizhi to say that "it is nonsense". However, Wang cannot make any estimate on what the winning numbers should really be simply because he knows that the announcement was nothing but nonsense. If he should make an estimate anyway, his speculation would have to stand the test of the official announcement later.

It may be reasonable for Wang to argue that "The total population continued to decrease whilst the natural variance grew by 2.49 million in the opposite direction, leaving aside the inaccuracy of the numbers". However, it becomes problematic when he goes on to back-calculate "the 1964 census data to conclude that the total population in 1961 should have been 645,080,000, which was 14.86 million less than the original statistics". If the population in year-end 1961 is reduced by 14.86 million, the reduction will cause problems for the statistics in subsequent years.

Wang set out to calculate the death toll, using the following equations:

$$\text{Death toll} = \text{births} - \text{registered population growth}$$

which can also be

$$\text{Births} = \text{death toll} + \text{registered population growth}$$

Given that the registered population in year-end 1962 is 672.95 million and registered death toll 6.67 million, the following will happen if the population figure in year-end 1961 after Wang's adjustment is used in the equation:

$$\text{Births in 1962 (million)} = 6.67 + (672.95 - 645.98) = 34.54 \text{ million}$$

This brings the birth rate in 1962 to 52.4 per thousand, higher than the world's highest birth rate of 50.9 per thousand in Pakistan in 1970. Obviously, Wang is not aware that there is an upper limit to birth rate.

Most of the babies born in 1962 would have been conceived in 1961. To describe how a lack of food has impacted on fertility rate, Yang Jisheng (2008, 496) wrote:

> During the three years of great famine, a lot of women suffered from metroptosis and amenorrhea, and men's sperm numbers dropped significantly. Some of them have completely lost the ability to have a child. Besides, couples became much less sexually active due to hunger. As a result, fertility rate dropped across the country.

A birth rate like 52.4 per thousand in 1962 would suggest that 60 per cent of the Chinese women aged between 20 and 40 would have a bun in their ovens in a famine year!

Wang Weizhi has adjusted the population data based on accusations without any supporting evidence. He simply adds and reduces population

figures of some years by millions. Those figures in millions were then allocated to some years in the name of "adjustment". Although Wang Weizhi seems to be in a good position to research on this demographic topic, his numbers were nothing but results of reallocating some part of the *China Statistical Yearbook* data. I do not believe that the figures he has produced are based on a valid method of data processing.

Is Wang Weizhi Really Familiar with Any Demographic Theories?

Can Wang Weizhi produce a larger figure of premature deaths by producing a set of randomly organized figures in which the natural population growth in the three years is significantly cut down? Yang Jisheng gives a table of population figures as a result of Wang's adjustment.

Can Wang's adjustment by significantly lowering the year-end population figures for 1959–1961 lead to a conclusion that there were more than 30 million premature deaths? Let us have a look at the following calculation using the adjusted data and equations that are in line with the "explanation of major statistical indicators".

$$\text{Death toll} = \text{average annual population} \times \text{death rate}$$

$$\begin{aligned}\text{Death toll of 1959 (million)} &= (659.94 + 666.71)/2 \times 0.01459 \\ &= 9.68 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Death toll of 1960 (million)} &= (666.71 + 651.71)/2 \times 0.02543 \\ &= 16.76 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Death toll of 1961 (million)} &= (651.71 + 645.08)/2 \times 0.01424 \\ &= 9.23 \text{ million}\end{aligned}$$

The total death toll is 35.67 million. According to Yang Jisheng, Wang Weizhi has decided that the total normal death toll should be 23.43 million (7.81 million in 1958 × 3). Given the following equation

$$\text{Premature deaths} = \text{death toll} - \text{normal death toll}$$

the total number of premature deaths in the three years would be 12.24 million.

What if no adjustment is made to the year-end population figures released by the NBS?

The death toll calculated with NBS year-end population figures would be as follows:

$$\begin{aligned}\text{Death toll of 1959 (million)} &= (659.94 + 672.70) / 2 \times 0.01459 \\ &= 9.72 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Death toll of 1960 (million)} &= (672.70 + 662.70) / 2 \times 0.02543 \\ &= 16.78 \text{ million}\end{aligned}$$

$$\begin{aligned}\text{Death toll of 1961 (million)} &= (662.70 + 658.59) / 2 \times 0.01424 \\ &= 9.41 \text{ million}\end{aligned}$$

The total death toll would be 35.91 million, and the number of premature deaths would be 12.48 million by taking out 23.43 million normal deaths from the death toll.

There is a mere difference of 0.24 million from the calculation that uses Wang's adjusted data. This means that Wang Weizhi is unable to produce any significantly larger number of premature deaths even when he has adjusted the population data on the basis of ungrounded accusation of data manipulation by his former colleagues.

In the equation

$$\text{Death toll} = \text{mid} - \text{year population} \times \text{death rate}$$

the mid-year population figure will increase or decrease along with the year-end population figure as long as the death rate remains unaltered. With a lower mid-year population figure, the death toll on the left side of the equation will also reduce. When Wang Weizhi cut down the year-end population figure, he has practically brought down the number of deaths at the same time. In the equation "premature deaths = death toll – normal deaths", the figure of premature deaths will decline concurrently with the death toll as long as the figure of normal deaths remains unaltered.

As mentioned previously, Wang's calculation of the "premature deaths" has produced a result being 33.78 million by, as Yang Jisheng has explained, using the equations

$$\text{death toll} = \text{births} - \text{natural population growth}$$

Table 9.1 Wang Weizhi's adjustment to the population and natural population growth in year-end 1959–1961 (million)

Year	*Year-end population*			*Natural population growth*		
	Before adjustment	*Adjustment*	*After adjustment*	*Before adjustment*	*Adjustment*	*After adjustment*
1959	672.07	−5.36	666.71	12.13	−5.36	6.67
1960	662.07	−10.36	651.71	−10.00	−5.00	−15.00
1961	658.59	−13.51	645.08	−3.48	−3.25	−6.63

$$\text{premature deaths} = \text{death toll} - \text{normal deaths}$$

Table 9.1 shows that the so-called "natural population growth" is the result of "population at year-end – population at previous year-end", which is actually "registered population growth". To be more accurate, it should be called "estimated population growth" because the calculation uses a set of adjusted data. Hence, Wang's formula is expressed in the following equation:

$$\text{death toll} = \text{births} - \text{estimated population growth}$$

Jin Hui has used a similar equation that has produced a figure for premature deaths, which is less than 23 million. According to Jin Hui, the number of "normal deaths" was 6.98 million, 0.83 million less than Wang Weizhi's figure. How did Wang Weizhi arrive at a figure approximate to 34 million?

In the equation

$$\text{death toll} = \text{births} - \text{population growth}$$

any number was taken out of the amount of population growth will be added to death toll, and vice versa. Jin Hui's problem is that the registered population in year-end 1959 was exceptionally high. The registered population growth would be as high as 12.13 million for the year if the registered population in year-end 1958 is used in the equation. The death toll as a result would be only 4.37 million (16.50 million minus 12.13 million), which is lower than the death toll of normal years by more than 2 million. As Wang has significantly lowered the population figure in year-end 1959, the population growth became 6.67 million and, as a

result, the death toll rose to 9.83 million, which is higher than his estimation of "normal death toll" by 2.02 million. In the same way he has produced higher death toll figures for 1960 and 1961, respectively. This explains why Jin Hui's calculation has produced a premature death figure approximate to 23 million but Wang Weizhi could only give a number approximate to 10 million.

Wang Weizhi has also failed to apply his method to other years to verify the applicability of his formula. He has produced higher death rates for 1960 and 1961. However, the death rate of 1957 would be only 5.4 per thousand if we apply the same formula. Likewise, the death rate would be 6.2–5.0 per thousand in five out of the years prior to 1982, and 5.0–4.0 per thousand in two. The lowest death rate would be 3.7 per thousand in 1971. Obvious, Wang is not aware that there is a lower limit to death rate in reality.

Unlike Ding Shu, Jin Hui, and Cao Shuji, Wang Weizhi is supposed to be good at demographics and mathematics (see Yang, 2008, 454). Wang should have been able to identify and avoid the problems that Jin Hui has encountered, and he should have noticed that Jin's difficulty lies in the inconsistency within the statistical data. However, Wang fails to identify the cause of the inconsistency, but instead he attempted a "shortcut" by taking advantage of his "expertise in demographic statistics" in producing sensational figures.

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CHAPTER 10

Other Research and Findings

Apart from the seven findings analysed in detail in the previous chapters, there are some other well-known research, findings, and authors. However, there is little academic value in the latter.

Jiang Zhenghua's Research

Jiang Zhenghua graduated from the Department of Electronic Engineering of Xi'an Jiaotong University in 1958. He did postgraduate work at the Bombay International Institute of Demography from 1980 to 1982 and was the first director of the Population Research Institute at Xi'an Jiaotong University. He was appointed deputy minister of the State Family Planning Commission in 1991. In 1998, he was elected chairman of the Chinese Peasants and Workers Democratic Party and vice chairman of the National People's Congress Standing Committee.

According to Li Chengrui (1997), Jiang Zhenghua met a number of world-famous demographers, including Coale, Bannister, and Calot when he attended the International Population Conference in Florence in June 1985. Jiang then decided to investigate the death rate and birth rate during the famine years in China (perhaps he was taking up Calot's suggestion "that Chinese demographers make some scientific adjustment to these statistics"). He submitted a proposal to Chen Muhua, then

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_10

minister of the SFPC, to add this project to the National Research Project Scheme. Having received approval, Jiang took up leadership of the project. The project concluded that there were about 17 million premature deaths during the Three Years of Difficulties (Jiang & Li, 1988). Jiang's research was first of its kind in China. Given his capacity as the director of the Population Research Institute at Xi'an Jiaotong University, vice chairman of the NPC Standing Committee as well as winner of the First-Class State Scientific and Technological Progress Award he received for the research, his report is the most authoritative and influential to have emerged "within the system".

Unlike the western demographers, Jiang Zhenghua did not base his research on the data of the fertility survey. His data was based on the mid-year population figures and the age-specific and gender-specific statistics from the three population censuses. Li Chengrui (1998) summarizes Jiang Zhenghua's research in four phases.

- Phase 1: Obtain gender-specific and age-specific population statistics for the previous year and the present year from the 1982 census. Use an iterative, self-correcting algorithm to generate a complete gender-specific and year-specific life table for 1981.
- Phase 2: Establish a "convex" parametric estimation model to estimate the survival ratio of each age group and sex group during the period between population censuses. For example, with regard to the population born in 1953, one can use the statistics of the third census to ascertain their year-specific size of the surviving cohort and death toll over the period from 1953–64, and also the size of the surviving cohort and the death toll of the same age group in 1982, when they reached the age of 29. Then, using the parametric estimation model, one can calculate the mortality, and surviving numbers, of the same age group for each year in the 28-year period.
- Phase 3: By optimizing data consistency and timing adjustments, one can generate a complete life table for the 27-year period from 1953 to 1981, and hence, calculate the birth rate and death rate for each year.
- Phase 4: For abnormal years, when average life expectancy drops and the death rate rises, life expectancy and the number of normal deaths will be calculated separately, and then compared with the estimated death toll from 1958–63 to calculate the number of premature deaths.

Though Jiang was awarded the Frist Class Award of State Science and Technology Prizes for his findings, his research is not discussed in detail in this book for two reasons. First, Jiang secured a huge amount of funding for his project and he organized a team to establish some award-winning "mathematical model". However, his conclusion that there were approximately 16.97 million premature deaths was nothing like an interesting discovery. One can simply use the data in *China Statistical Yearbook* to reach a conclusion that there were about 14.50 million excess deaths in 1959–61, a figure only 2.4 million smaller than Jiang's result. Jiang is well aware that the famine took place in 1959–61 instead of the 6-year period from 1958–63. Other research findings have also shown that, if 1958 is included in the famine years, there will be an increase in total number of deaths by over one million and the benchmark for linear trend will be lowered by 0.20 million. If Jiang had narrowed the focus of his research down to the 3-year period from 1959–61, he would have reached the same conclusion that there were 14.5 million excess deaths. Having used enormous human and financial resources, Jiang ended up producing a conclusion that could otherwise have been reached by using the data of the *Statistical Yearbook*, not to mention that his method of calculation and credibility of data are not any better.

Second, although Jiang has published his mathematical model in his report, but he fails to explain how exactly the data are processed. This makes it impossible for other scholars to verify his calculation. Sun Jingxian (2011) contends that Jiang's mathematical model is flawed. He has also urged Jiang Zhenghua to respond to his questions, but Jiang never did. This has rendered Jiang's research findings questionable.[1]

[1] According to Sun Jingxian, Jiang believes that there were nearly 40 million unregistered deaths in 1953–63 (this figures does not come from fertility survey, so it has nothing to do with babies who died soon after their births.), and the related population was included in the 1953 survey as well as in the population in year-end 1953, viz. 587.96 million. Hence these 40 million unregistered deaths should have been discovered in the 1964 census, the reason being census surveyors were required to verify the status of each resident in a door-to-door survey. If nearly 40 million deaths had remained unregistered, it would have been recorded in the census report. Jiang's problem is that he has yet to explain how exactly the 40 million unregistered deaths had been dealt with.

Frank Dikötter's Research

In 2011, Frank Dikötter, author of *Mao's Great Famine*, beat five other titles to win the Samuel Johnson Award for non-fiction in the United Kingdom. Having received his award, he told a Voice of America reporter that "more than 45 million people died of starvation—making it a catastrophe of a similar order to the Second World War" (see Qi, 2011). Ben Macintyre, chair of the *Samuel Johnson prize* panel of judges, also spoke highly of Dikötter's, saying if you want to understand the history of the twentieth century "you almost have to *read* this book" (Flood, 2011).

Yang Jisheng and Frank Dikötter are alike in that their work mainly consists of descriptions of tragic events while they do little in the way of calculation of the number of premature deaths.

But out of 300 pages of main text, Frank Dikötter (2010) devoted only 10 pages, in his last chapter on the "Final Tally", to his calculation method. He claims to have obtained "controlled files" and compared "hidden statistics" from 13 counties in the five provinces of Hebei, Gansu, Guizhou, Shandong and Guangdong, with the corresponding figures used by Professor Cao Shuji. He maintains that "we find a pattern of underestimation, sometimes by 30–50 per cent, sometimes by as much as a factor of three or four" (Dikötter, 2010 296–298). Given the number produced by Cao (2005) was 32.46 million, the correction of this underestimate implies a number of premature deaths of 42–48.7 million, or even 54–57 million.

Frank Dikötter provides neither population statistics nor calculation methods to support his "final tally". He simply makes a few adjustments to Cao's conclusion, on the basis of the data from a dozen counties, and then extrapolates the number of premature deaths across the whole country. A book like this has even less to do with demographic studies than Cao's.

Cao Shuji has discarded data from "non-disaster areas", and applied the death rates from disaster areas to the whole country. Frank Dikötter goes even further, by drawing wide-ranging conclusions from scraps of information. For instance, in adjusting Cao's data, he says: "In Tianjin…30,000 people died within three months at the end of 1960… [while] the figure provided by Cao Shuji… is 15,000 excess deaths over three years". "In Zhangye, out of a population of roughly 280,000, some 5000 people died in November, followed by 6000 in December 1960. Even if we double the normal rate of attrition to two per cent, that would

still represent over 10,000 excess deaths in less than a quarter of a year. Cao Shuji arrives at 17,000 unnatural deaths—not for one county in two months, but for four counties over a period of three years" (Dikötter, 2010, 297).

A statement about a certain number of deaths in a certain month of a year in a particular county must have been quoted from a "controlled file" submitted by some cadre outside the structures responsible for compiling population statistics. But one has to take into account the purpose of the file, possible instructions from superiors, and the intentions of the cadre, when assessing the accuracy of the death toll figures it contains, which are often overstated, understated or, sometimes, more or less accurate. This is a common issue with so-called local "controlled files" and is one reason why local officials do not really take them seriously. They often contain "rumors and slanders" to use modern usage. By using a single county's statistics over 2–3 months to refute Professor Cao's statistics, which were drawn up on the basis of a study of the data of four counties over three years, Frank Dikötter appears to fall short of normal academic standards. Multiplying Cao's figure, which was obtained through a flawed calculation method, by something that he invented to his satisfaction, Frank Dikötter surely can produce a figure that is "overtly inflated".

Apparently, Frank Dikötter believes "records from local archives" and uses them exclusively. In his notes, Frank Dikötter (2010, 292, 333, 362) writes,

> a senior party official called Chen Yizi claimed that the team had arrived at a death toll of 43 to 46 million people for the famine. …
>
> But there is enough archival evidence, from a sufficiently large diversity of party units, to confirm that the figure of 43 to 46 million premature deaths proposed by Chen Yizi, who was a senior member of a large working group that sifted through internal party documents around 1980, is in all likelihood a reliable estimate. The death toll thus stands at a minimum of 45 million excess deaths….
>
> After 1979, as the new leadership wanted to find out more about the Maoist era, a team of 200 was instructed by Zhao Ziyang to go around every province to examine internal party documents…The team's report was never published, but Chen Yizi…claimed that …

These statements suggest that Frank Dikötter believes that there are records of premature deaths in the archives of the local police, party apparatus, and statistical authorities, and Chen Yizi saw these materials when, on Zhao Ziyang's[2] instructions, he conducted field investigations.

Obviously, Frank Dikötter knows very little about China's political system if he believes that the Premier would dare to organize a 200-person working team, so soon after the end of the Cultural Revolution, to investigate archives across the country in order to "find out more about the Mao era" and then produce a report claiming there were 45 million premature deaths during the Three Years of Difficulties. This kind of story might convince judges responsible for awarding literary prizes, but most Chinese people would find it laughable. Deng Xiaoping was China's paramount leader; many other founders of the People's Republic were still alive and in power, quite apart from the fact that the Premier was directly answerable to the Party General Secretary, Hu Yaobang. Are we really expected to believe that this busy new Premier, on his own initiative, began a hunt for "skeletons in the closet" from Mao's time, which would incriminate not only still living and powerful founding fathers of the country, but also Zhao Ziyang himself?[3] What did he want? What was his purpose? The credibility of this part of his book is zero.

Apart from Chen Yizi's claims, there is no evidence that local archives kept files about premature deaths during the Three Years of Difficulties. Frank Dikötter has never been successful in locating these files after sifting through more than a thousand famine files. His own investigation shows that neither the Party Central Committee nor localities have ever organized such an investigation or undertaken even a decent estimation. He should have questioned: how Chen Yizi managed to access investigation data that could never be identified or retrieved?

Even Yang Jisheng was astonished by Frank Dikötter's treatment of the data. In an article entitled "A Response to Frank Dikötter's comments on *Tombstone*" Yang wrote: "Many times Frank Dikötter has stated that China's archives have been opened, and that he viewed thousands of files, which form the basic materials for his book. I visited the archives of more

[2] Zhao Ziyang was premier of China from 1980 until 1989, when he was dismissed for sympathizing with student demonstrators in Tiananmen Square. He was held under house arrest from 1989 until his death in 2005.

[3] Comrade Zhao Ziyang was the "erstwhile secretary of Guangdong who had pioneered an anti-hiding campaign in 1959".

than 10 provinces, as well as the Central Archive, and copied and photocopied thousands of original files. It is difficult to describe how hard it was. Even in the capacity of a senior Xinhua journalist, and with the help of many friends in high places, I still had to overcome considerable resistance, and was turned away in some provinces. It was even harder to get access to county level archives. As far as I know, the files concerning China's great famine are not openly available yet…Frank Dikötter, who is clearly identifiable as a foreigner by his speech and physical appearance, must have worked some clever magic to get access to more than a thousand files about the famine. It would be of great help to scholars in China studies if he cared to share some of his experience in this regard".

Frank Dikötter's book has been a huge hit overseas and has been lauded to such an extent that one is classified as "layman" if one tries to join the debate without reading it. Having read it, I do not believe the book should be categorized as a valuable contribution to the research on the period. Most part of his book is about creating a sensational effect by telling tragic stories. His method of calculating death figures is the most simplistic among all the research, so simplistic that its validity cannot be established. Hence, this book should have been awarded a prize for "fiction".

Can an "Abnormal Reduction in Population" Be Considered "Hunger Deaths"?

In August 2008, Xinhuanet.com published an article by Sun Weimin (2008) entitled "Yang Shangkun's Talk on his Twenties in the General Office of the CCPCC". Su Weimin was Yang Shangkun's secretary for many years. The article relates things said by Yang Shangkun in 1996 and 1997. One of the paragraphs is as follows:

> In 1964, the Central Committee decided to do a national population census and established a steering group. I was appointed the head of the group…however, the census showed that the national population was 662.07 million at the end of 1960, a decrease from the end of 1959 of about 10 million. The natural growth rate was minus 4.57 per thousand, and below county level it was minus 9.23 per thousand. This was the first time that new China experienced negative population growth. Although the statistical methods were backward and the statistics may not have been very accurate, the figures generally reflected the phenomena of premature

> deaths due to various reasons in some parts of the countryside, which was something worth serious attention. Having collected the statistics, we reported to Mao Zedong. Mao smiled faintly and said that 'I have never believed statistics like yours'. Thus, the second national population census ended.

This paragraph has been widely quoted. Many believe that this is important evidence that there were 30 million famine victims. The implications of quoting Mao's statement "I have never believed statistics like yours" and describing his "faint smile" are obvious. It would not surprise anyone if some "insiders" seem to have believed that the 10 million shortfall was due to starvation when someone in Su's position has stated that "the figures generally reflected the phenomena of premature deaths due to various reasons in some parts of the countryside".

According to Yu Dehong (2002),[4] Li Jian—Director of the Department of Local Affairs of the Central Supervisory Committee visited Henan Province to investigate the Xinyang Incident in April 1960. Yu states that:

> Li Jian and others spent about three months investigated the matter and collected casualty statistics county by county in the first half of 1960. They reported that 1.05 million had died of hunger.

The assertion that more than one million people died of hunger in Xinyang Prefecture in 1959–60 has almost been considered "recorded history" as it is stated in a report written by someone from the Central Supervisory Committee published in an academic journal. Some government websites also carry articles about Li Jian's investigations in Anhui Province. However, none of these articles was written by Li Jian, but either a first-person narration recorded by Li's son or quotations by Yang Jisheng and others.[5]

[4] Yu Dehong was secretary of Zhang Shufan, then Deputy Party Secretary of Xinyang Prefecture. Zhang was among those who were strongly against the "*Five Winds*".

[5] On 25th September 2013, an article titled "Li Jian, leader of a Central Supervisory Committee investigation team: My Experience in the Investigation of the 1961 Famine in Anhui Province". The article was actually written by Li's son. It mentions that Li Jian once submitted to one of the Party Central Committee leaders a report that referred to millions of casualties. However, Li Jian had never confirmed the content of the article up to his death in 2018.

Having reviewed the so-called Li Jian's investigation, Sun Jingxian (2018) noticed that Li Jian covered nearly 20 counties in less than 30 days. Using the data of *Demographic Statistics of Henan Province,* Sun contends that the 1.05 million deaths mentioned in Li Jian's report was a sum of births and registered population growth, which was a negative number. The numbers of so-called "premature deaths" in many of the popular articles written by people who claim to "have experienced the famine" and published online are largely produced in the same way.

Inside Information is not Necessarily Reliable

It is necessary to talk about assertions based on so-called "inside information". Figures of approximately 30 million famine victims "leaked" by some "insiders" have been quite influential. Many Chinese, even if they are neither interested in, nor convinced by scholarly works, firmly believe stories told by those who have supposedly obtained privileged information because of positions they have held. Many of these insiders have since passed away and it is not possible to check their testimony. Although eyewitness accounts are generally considered valuable, it is always up to their listeners to believe or disbelieve their stories. There are often other "insiders" who would tell an entirely different story. Stories of a number of highly regarded "insiders" will be discussed and analysed here.

Mr. Shi Zhongquan, a CCP history expert, asserted that Li Chengrui, the former head of the NBS, published an article confirming there were 22 million premature deaths during the Three Years of Difficulties, and added that "Li Chengrui's article was approved by the *Party History* Research Centre. I can vouch for its authenticity, but I am not so sure about conclusions drawn from other statistics". This statement is a significant endorsement.

However, when we asked Mr. Li about his article, he denied that it had concluded there were 22 million premature deaths. His article was a response to Professor Coale's calculation that there were 26.8 million deaths above the linear trend. His actual conclusion was that "there would be only 22 million deaths above the linear trend, if Coale's research methods and data were properly applied".

And in fact, if one examines Li's article, it sets out this conclusion quite clearly and explicitly. Li had noticed discrepancies between some of Coale's quotations from the China Statistical Yearbook and the original. For example, Coale states in his book that the number of deaths in 1957

derived from the officially recorded death rate is 5.9 million. However, the actual number of deaths derived from the officially recorded death rate is 6.88 million, a number larger by almost one million. Li (1997) writes,

> the death toll, calculated according to the registered average annual population of 637.41 million in 1957, is inconsistent with the mortality figure for 1957 given in Coale's book. Could it be that Coale's mortality figure for 1957 was calculated using other average annual population statistics? The author's calculation is: (1) Given the figure of registered mortality of 5.9 million in 1957, and the morality rate of 10.80 per thousand stated in Coale's book, the average population for that year should be 546.3 million. (2) Given the death toll of 10.4 million and the death rate of 19 per thousand estimated by Coale in his book, the average population of that year should be 547.37 million. These two results suggest that the 1957 population figure was 35 to 36 million lower than the 1953 census figure of 582.60 million (which Coale recognizes as accurate). When the figure of 1957 is compared with that of 1958, which is 653.24 million, such a rapid increase of population, by 100 million, is unimaginable.

Therefore, Li (1997) has made technical adjustments to the 1957 mortality figures and explained,

> According to Coale's method, applied to all other years, the official statistics for average population of 637.41 million in 1957, and the death rate of 19 per thousand re-assessed by Coale, the death toll was 12.11 million. Relating this figure to the death toll of 9.4 million for 1964, calculated by Coale, there would have been 64.62 million deaths within the linear trend from 1958-64. Given Coale's estimate of the actual death toll of 86.2 million over these six years, there were 21.58 million deaths above the linear trend, or approximately 22 million (the author is responsible for this adjustment).

These statements make clear that Li Chengrui's figure of 22 million deaths above the linear trend was calculated using Coale's logic and data, and showed that Coale should have arrived at a result of no more than 22 million deaths above the linear trend. The main argument of Li's article is clear: Coale's research was technically flawed, in that it overestimated the death toll above the linear trend by 5 million.

Lastly, there is Mr. Liao Bokang, former Chairman of the Chinese People's Political Consultative Conference Sichuan Provincial Committee, who was Secretary of the Youth League Chongqing Committee during the Three Years of Difficulties. *Wenzhai Zhoubao* [*Weekly Digest*] carried an article on 27 February 2008, stating that Mr. Liao Bokang had disclosed that there were more than 10 million famine victims in Sichuan alone (Lin, 2008).[6] The article states that Yang Shangkun[7] asked Liao Bokang about the famine casualties when they met at a conference in Beijing in June 1962. The article states that:

> After he sat down, Comrade Shangkun dismissed Liao's reservations and asked him to tell the truth…saying that "we know that Sichuan suffered heavy casualties, but the details cannot be verified. We ordered Sichuan to report on this, but no report has been made so far. We consulted the Ministry of Civil Affairs (MCA), which was responsible for disaster relief, asking them how many died in Sichuan in this severe situation. The Ministry said four million. Actually, their figure came from the Sichuan Bureau of Civil Affairs. The Central Committee did not believe it. We then consulted the MPS, which was in charge of the household registration system. Their figure should be more accurate because access to food, clothing, oil, soap, and matches depended on vouchers that are linked to *hukou*, and each death meant a *hukou* would be cancelled. The MPS, based on the report of the Sichuan Public Security Bureau, reported eight million. The Central Committee did not believe this report either. The Central Committee has no idea how many died. You tell me, exactly how many died in Sichuan?"
>
> Liao Bokang raised one finger, and said "Ten million died".
>
> "Ten million? Where did you get this figure?"
>
> "From an official document drawn up by the Party Provincial Committee".
>
> "All official documents above county level must be sent to the General Office of the Central Committee. How come I knew nothing about it?"
>
> Liao Bokang said, "A footnote in a document issued by the Sichuan Party Committee shows that Sichuan's population at the end of 1960 was 62.36 million whilst the NBS's population yearbook shows that the number in 1957 was 72.157 million. The gap between these two figures

[6] At the time Chongqing was part of Sichuan province. It is now a separate municipality.

[7] Yang Shangkun (1907–1998) was secretary-general of the Communist Party Central Military Commission from 1981–1989 and President of China from 1988–1993.

> was approximately 10 million. This is just a figure inferred from the documents. The actual number in reality could be larger". (see Lin, 2008)

On reflection, Mr. Liao Bokang believes that there were at least 12.5 million famine victims in Sichuan in 1960. The article reads like an on-the-spot report, with details of who said what to whom, when, and where. But the author of the article should have asked Liao Bokang to produce the "document issued by the Sichuan Party Committee" because it is the most essential evidence for the figure of 10 million. In the absence of the document, Chairman Liao could simply report any figure.

Even if Chairman Liao could not produce the document, the author should have referred to other articles or other statistical data. It was alleged in the article that Sichuan's population dropped to 62.36 million in 1960. But *the People's Republic of China Compendium of Population Statistics* shows that Sichuan's population in 1960 was 68.54 million; and *China's Population*, which Yang Jisheng quotes in *Tombstone*, says it was 68.97 million. These figures exceed Liao Bokang's number by more than 6 million.

While Liao asserts that "the NBS's population *Yearbook* shows that the number in 1957 was 72.157 million". The same data source shows that Sichuan's population in 1954 was 64.48 million, increased to 68.77 million in 1955, at a growth rate of 66.53 per thousand, and to 72.16 million in 1957, an annual growth rate of 38.18 per thousand. What is the implication of an increase of 66 per thousand in a single year? Given that the death rate of that year was 10.4 per thousand (National Bureau of Statistics & Ministry of Public Security, 1988, 308), it implies a birth rate of around 76 per thousand, meaning that almost every woman of childbearing age would have had to give birth to a child. Clearly, there must have been other factors at work.

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CHAPTER 11

Tombstone: A Most Influential Work

There are fundamental errors in almost all research findings mentioned in the previous chapters. The credibility of the data that the three western demographers have relied on is questionable. Like Jin Hui (1993) and Wang Weizhi (1987), they have all ignored the fact that the death toll was not equal to the balance of births and registered population growth, as indicated below.

$$\text{Death toll} \neq \text{births} - \text{registered population growth}$$

Another two Chinese scholars, Ding Shu (1991) and Cao Shuji (2005), have designed formulas that are irrelevant to the calculation of "premature deaths". The findings of Jiang Zhenghua and Li Nan (1988) and Frank Dikötter (2010) are either of low academic value or not to be considered academic research at all. Yang Jisheng (2008), who argues that there were 36 million premature deaths, is the only one whose formulas do not have detectable errors. His research is analysed in this chapter.

In the eyes of many, the most influential research in this field is Yang Jisheng's 1100-page book *Tombstone: The True History of the Great Famine* published in two volumes in Hong Kong in 2008. Not only has this book been reprinted several times in Hong Kong, but an English

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_11

version has also been published overseas. A complete electronic version is also available on many websites in China. According to Ding Xueliang (2008), a columnist of the Chinese website of the *Financial Times*, "Western academia usually pays little attention to Chinese academic publications. However, this book is a different case. Before it was released in May, news of its publication had been widely spread in academic circles […] As soon as it appeared on the Hong Kong market, many major newspapers in the West responded with serious reviews". As Mr. Yang Jisheng used to be a journalist at the Xinhua News Agency, and is deputy chief editor of *Yanhuang Chunqiu*, a magazine popular among the older generation of intellectuals, *Tombstone* had enormous influence inside China. Some have declared that "one cannot understand China without reading *Tombstone*".

However, there are a number of problems with *Tombstone*.

Yang Jisheng Did Not Base His Argument of 36 Million Premature Deaths on Calculation

Almost everyone who agrees that there were 30 million famine victims believes that Yang Jisheng arrived at his finding of more than 36 million famine victims by computation, based on careful investigation of the official statistics released by the NBS. Frank Dikötter (2010, 291) wrote that "retired journalist Yang Jisheng suggested a figure of about 36 million – also based on open official statistics".

Did Mr. Yang Jisheng really reach his conclusion of 36 million "premature deaths" by scholarly computation? The answer is clear if one examines *Tombstone* carefully.

Volume I of the *Tombstone* lists the data he obtained in his investigation, without analysing or computing the number of "premature deaths". The second volume starts with Chapter 15, in which Yang (2008, 301) states, "there were 36 million famine victims in the three years from 1958 to 1961, and a shortfall of 40 million births". But up to this point in the book, there has been no analysis or computation regarding the death toll. Actually, the book does not start to elaborate his research on the number of premature deaths until Chapter 23. His own research conclusion is that if the NBS's official statistics are applied, there were 16.2 million premature deaths in the period 1958–1962. If the statistics of all the provinces are added together, there were "20.98 million premature deaths".

In the entire book *Tombstone*, there is no computation process to support the claim of 36 million premature deaths from 1958 to 1962 (two years longer than the timeframe adopted by other scholars). How Yang's figure, which can be easily identified in *Tombstone*, was inflated to 30–40 million, and became widely accepted, is not clear.

So where does the figure of 36 million come from?

Having set out his own estimation in Chapter 23, Yang reviews the existing literature. After summarizing and critically reviewing the research findings of seven scholars from China and abroad, Mr. Yang Jisheng endorses Wang Weizhi's research. Under the heading "I basically agree with Wang Weizhi's conclusions", Yang expresses his full agreement (Wang seems not to have published his findings elsewhere, as they are nowhere to be found outside *Tombstone*).

We examined Wang Weizhi's research in the previous chapter. Without relying on any statistical references, Wang significantly adjusted the official statistics and applied in equations to calculate the "premature deaths" for the period 1959–1961. The number he arrived at was 33.78 million, 2.22 million short of *Tombstone's* figure of 36 million. Yang Jisheng (2008, 523) adjusted Wang's findings, according to the following logic:

> Local famines had already struck some places by the fourth quarter of 1958. The death toll of 7.81 million was in excess of normal mortality. If the average mortality from 1956-58, which is (7.062 + 6.875 + 7.811) million ÷ 3 = 7.249 million, is taken as the normal level, the normal mortality from 1959-61 would be7.249 million × 3 = 21.747 million. Deducting 21.747 million from the death toll of 57.213 million, there would be 35.466 million famine victims during the three years.

Finally, the number is approaching 36 million. Still, strictly speaking, 35.466 million is less than 36 million. It would be 35.47 million rounded to two decimal places, or 35.5 million to one decimal place, or 35 million to the left of the decimal point. Then, why does Mr. Yang Jisheng insist on a figure of 36 million? The answer is found in the following narration in *Tombstone* (Yang, 2008, 524).

> Chinese scholars such as Jin Hui, Cao Shuji and Wang Weizhi have estimated that the premature deaths ranged from 32.5 to 35 million…However, neither Jin Hui nor Wang Weizhi took into account the premature deaths in 1958 and 1962… Although Cao Shuji included the death tolls for 1958 and 1962 in his calculations, the numbers are too small to be

> significant. Some areas were omitted. If the number of famine victims in 1958 and 1962 are added …the total number of famine victims would be 35-37 million, of which we have adopted the average number of 36 million.

Yang's conclusion that there were 36 million premature deaths turns out to be the result of extending the calculations made by Jin Hui, Wang Weizhi, and Cao Shuji. This is puzzling because Yang's own calculations produced a result ranging from 16 to 21 million. Why, then, did he boost other researchers' numbers to 36 million?

Yang seems to have ignored the figures that has just reviewed. There was no range of 32.5–35 million, but a range of 28–34 million. The number given by Jin Hui was 27.91 million. Wang Weizhi arrived at a figure of 33.78 million. Cao Shuji's number was 32.46 million. Besides, Wang Weizhi's figure was 35.47 million after Yang Jisheng had added the numbers for 1958 and 1962. Even Wang's figure was barely above the lower limit of the range of 35–37 million. So where exactly does the "average number of 36 million" come from?

A careful reading of Yang's 1100-page book reveals the fact that, although he has employed various calculation methods, he has never been able to produce a figure of 36 premature deaths.

Let us have a look at how Yang has arrived at a figure of 20 million premature deaths using "standard" formulas.

Yang's Calculation Fails to Adhere to the Principle of Consistency

Mr. Yang used two sets of statistics in his own research—official data obtained from the central government, and data collected from provincial authorities—to generate two sets of results, as follows:

Yang (2008, 495, 496) presents his basic rationale as follows,

> If the figures for total population, birth rate and death rate for each year are given, one can calculate the number of births and the death toll for each year. The number of famine victims can be calculated by subtracting the normal mortality from the death toll of the three famine years. It can be converted into the following equation:
>
> Premature deaths in a certain year = (death rate − normal death rate) × average annual population for the year

Regarding the "normal death rate", Mr. Yang states that,

> During the period of peace since 1949, the birth rate rose and the death rate declined, year on year, apart from in special circumstances. This trend continued until birth control policies were introduced in 1972. Therefore, the population trend from 1957 to 1964 would have remained unchanged if the 'Great Leap Forward' had not happened. During this period, the trend of the death rate constituted a straight line sloping gently downwards, while that of the birth rate was a straight line climbing gently upwards. The birth rates and death rates for each year during this period should be distributed around these lines. This is the basis on which normal death rates and normal birth rates are estimated.
>
> To better prevent interference by accidental factors, I took the average population from 1955 to 1957 to be the starting point and the average from 1964 to 1966 to be the finishing point. I chose 1964 rather than 1962 to be the finishing point in order to avoid possible distortion by the compensatory growth in the two years immediately after the great famine. However, the death rate of 1964 was higher than normal because the 1964 census wrote off 8.2 million *hukou* entries, which were overstated in previous years. Therefore, when setting the normal death rate, I selected the average of 1963, 1965 and 1966.

Hence, Yang set the "normal death rate" at 10.47 per thousand.

Using the above method and data, Mr. Yang used the official statistics released by the central authorities to conclude that there were 16.2 million premature deaths in the period 1958–1961.

Subsequently, Yang (2008, 497) used official statistics from the provinces, on the grounds that "China is a vast land, and conditions vary greatly due to geography … there will be considerable inaccuracy if uniform criteria are adopted without taking geographical variance into consideration". Using these statistics, he concluded that there were 20.98 million premature deaths over the 5-year period from 1958 to 1962.

The problem of Yang's calculation lies in his failure to adhere to the principle of consistency in data processing.

He only took into account provincial death tolls that were larger than "normal mortality", and ignored provinces where the death toll was less than normal. Having listed, in his Table 22-2, the population at year-end, birth rate and death rate for all provinces and municipalities, he listed the premature deaths and birth deficits for all provinces for each year from 1958 to 1962 in his Table 22-3, entitled "the impact of the great famine

on the population of all provinces". The table has 45 blank boxes in the 140-item column of "premature deaths", which means that the death toll in around one-third of the places listed was at, or below, the "normal" level. This is one of the reasons why the "premature deaths" figure aggregated from provincial data is millions higher than that calculated from the national statistics.

It would be inappropriate to propose an analytical method tailored to a specific target population and specific years, but not applicable to other population groups and other years. If his method was applied consistently, there would be enormous numbers of "famine victims" in any given year, even in years where death rates were significantly lower.

For example, the death rate for 1962 was 30 per cent lower than that of 1961; the death toll decreased by 2.7 million. It was 29 per cent lower than the previous year and the lowest in the 15 years since 1949. The death rate of 10.02 per thousand was 4.5 per cent lower than the "normal death rate" of 10.47 per thousand given in *Tombstone*. According to the linear trend model for mortality research, the number of premature deaths in 1962 should be a negative figure. However, Yang still managed to derive 420,000 "premature deaths" by using his "blank box" method.

In order to accurately analyse the situation of the whole country, one should add up both positive and negative figures. If the figures of all provinces in which the death rates were lower than Yang's "normal death rate" were added to the form, the number of "premature deaths" would be 19.76 million instead of 20.98 million—a difference of 1.22 million.

Other Problems in Yang Jisheng's Calculation

Normally, the statistics produced by the central authorities should be equal to the sum of figures collected from all provinces. Why has Yang arrived at a figure of 16.20 million premature deaths using the statistics released by the central authorities, but 20.98 million using province-specific data? The reason is that he also employed the following approaches.

First, when calculating the "premature deaths" of individual provinces, he did not use the data released by the NBS and the MPS, but the statistics from *China's Population*, a series compiled by the Ministry of Education, the SFPC, and the Population Census Office of the State Council (PCOSC). The population statistics of individual provinces

quoted in the series are not exactly the same as those published by the NBS and the MPS.

Secondly, he included 1958 and 1962 in the famine years, stretching the usual definition of the "Three Years of Natural Disasters".

Thirdly, when selecting the years to use as a benchmark of normal mortality, he ruled out the years 1958 and 1964, in which the death rates were relatively high and would have caused the normal death rate to be significantly elevated.

As a result, the number of premature deaths was significantly boosted. I do not think that these methods are in compliance with the standards for demographic studies, as can be shown by the following analysis.

Why Did Yang Jisheng Choose Not to Use the MPS Data?

When analysing the death toll for individual provinces, Mr. Yang did not use the data from *the People's Republic of China Compendium of Population Statistics 1949–1985*, which was compiled by the Department of Population of the NBS and the MPS on the basis of "three national population censuses and the regular annual population statistics". It is the only NBS publication that contains province-specific population statistics. (The *China Statistical Yearbook* was first published in 1983. It does not carry year-specific data for each province, but only province-specific data for the current year.) Yang chose to use the *China's Population* series. According to him, this series "is published by China Financial & Economic Publishing House, and compiled by a special editing panel under the leadership of the Ministry of Education, the SFPC and the PCOSC. Each province, by organizing staff related to the work, is responsible for the component relating to its own province. The series went to press in 1986. The statistics for each province were reviewed and confirmed by the provincial authorities" (Yang, 2008, 445–446).

Mr. Yang should know that the police system and the state statistics system are the only two systems that have the infrastructure and specialists required to deal with population registration, censuses, and statistics in accordance with standard administrative measures and methods. None of the statistics produced by other systems or institutions like the Ministry of Education or the SFPC deserves to be called "official statistics". It is stipulated in *the People's Republic of China Law of Statistics (2009 Revision)* that "the statistics obtained from all provinces, municipalities and

autonomous regions by the National Bureau of Statistics shall be released by the NBS or by institutions authorized by the NBS". The law was not, in any sense, a "power grab." It was enacted because statistical work requires a professional approach, and the appropriate infrastructure and expertise. It was intended to prevent confusion that would be caused by statistics arbitrarily disseminated by many authorities.

When analyzing China's population statistics, both Chinese and foreign demographers should adopt, if available, NBS statistics rather than those from other sources. If any other sources are chosen, their methods and procedures should also be set out. This is a standard applicable not only in population research, but in all statistical research. A public opinion poll would be labelled fraudulent if it was not accompanied by its survey methodology and sampling criteria. Foreign demographers chose the SFPC's retrospective marriage and fertility survey because the survey was conducted in accordance with explicit methods and metrics. Even so, they spent nearly one year checking the computations in order to ensure "the consistency between the external and the internal data, and the validity in logic" (Li, 1997). They did so because they understood that faulty data would undermine their findings. But it seems that the *China's Population* series did not explain how the population statistics were collected and processed. Strictly speaking, such statistics are illegitimate.

In his notes, Yang (2008, 451) says that he "used the MPS statistics" to supplement the numbers for Hubei and Anhui and that "the MPS statistics are quoted from *the People's Republic of China Compendium of Population Statistics*". This shows that Yang disregarded the *Compendium of Population Statistics* for reasons other than availability. Yang (2008, 497) explains why he did not use the MPS data with the following reason.

> The figures of premature deaths in the *China's Population* series are also results of deliberate reduction, but still they are closer to the truth than the official statistics.

The following Table 11.1 also reveals how Yang has selected data: The death toll for 1958–1962 is 3.27 million higher when using the data from the *China's Population* series rather than the MPS statistics.

Table 11.1 shows no evidence in support of the idea of 1958 and 1962 being famine years.

Table 11.1 The difference in death counts between the *Compendium of Population Statistics* and the *China's Population* series, respectively (million persons)

	A: Death toll in Compendium of Population Statistics	*B: Death toll in* China's Population	$C = B-A$
Beijing	0.324	0.315	−0.009
Tianjin	N.A	0.262	N.A
Hebei	2.595	2.330	−0.265
Shanxi	1.048	1.041	−0.007
Inner Mongolia	0.517	0.503	−0.014
Liaoning	1.449	1.456	0.007
Jilin	0.740	0.739	−0.001
Heilongjiang	0.901	0.891	−0.010
Shanghai	0.366	0.358	−0.008
Jiangsu	2.810	2.815	0.005
Zhejiang	1.311	1.299	−0.012
Anhui	3.137	3.735	0.598
Fujian	0.791	0.789	−0.002
Jiangxi	1.244	1.240	−0.004
Shandong	4.550	4.533	−0.017
Henan	4.146	4.145	−0.001
Hubei	1.998	2.002	0.004
Hunan	2.952	2.957	0.005
Guangdong	2.244	2.101	−0.143
Guangxi	1.741	1.930	0.189
Sichuan	8.874	11.768	2.894
Guizhou	1.982	2.068	0.086
Yunnan	1.691	1.686	−0.005
Tibet	N.A	N.A	N.A
Shaanxi	1.027	1.028	0.001
Gansu	1.288	1.257	−0.031
Qinghai	0.208	0.210	0.002
Ningxia	0.127	0.128	0.001
Xinjiang	0.438	0.445	0.007
Total	50.499	54.031	3.270

It is not appropriate, as previously discussed in the "research scope", to include 1958 in a study on famine, the reason being almost all would agree that there could not possibly be a nationwide famine in 1958, a year in which China had fine weather all year round and experienced its peak of grain production over the past decade.

Could the *fukuafeng*, which resulted in a high level of government purchases and low level of food retained by rural households, have caused the famine? The government purchased 51.9 billion kilograms of agricultural products during the government purchase period [*zhenggouji*] in 1957–1958, an increase of 2.2 billion kilograms from the previous year. In 1958–1959, the government took 55.65 billion kilograms, an increase of 3.75 billion kilograms. Given that approximately 20 million rural population migrated to urban areas in 1958–1959, it makes sense that the food retained by rural households would have decreased by about 3.75 billion kilograms, at the rate of 187.5 kilograms per person per year (standard food retention rate in rural areas). While food rationing and retention were relevant to people movement, the increase in government purchases could hardly have resulted in the famine (see National Bureau of Statistics, 1999).

It is even more irrational to include 1962 in the timeframe of "mortality above the linear trend" because the death rate was 30 per cent lower in 1962 than in 1961. It seems unreasonable, given the lower death rate in 1962, to argue that "population statistics show that the so-called 'Three Years of the Great Famine' did not finish until 1963". More importantly, China increased its food production to 154.41 million tonnes and imported another 5 million tonnes in 1962, the food availability was approximately 250 kilograms per capita. Therefore, given the recovery in food production and lower death rate, it is unreasonable to consider 1962 to be a famine year.

Nevertheless, the number of premature deaths will increase by a total of 1.96 million, or 1.56 million and 0.4 million for 1958 and 1962, respectively, using Yang Jisheng's "blank-box" method.

There are no good reasons to consider 1964 to be "abnormal".

Yang (2008, 444) sets out to define "normal death rate" as follows.

> to better prevent interference by accidental factors, I took the average population from the three years prior to 1958 (1955-1957) as the starting point, and the average from the three years after 1962 (1964-66), to be the finishing point. I chose 1964 rather than 1962 to be the finishing point, in order to avoid possible distortion by the compensatory growth in the two years immediately after the great famine. However, the death rate of 1964 was higher than normal, because the 1964 census offset 8.2 million entries which resulted from late registration in the previous two years. Therefore, when setting the normal death rate, I selected the average of 1963, 1965 and 1966.

Yang skipped 1958 and chose 1955–1957 simply because he counted 1958 as one of the great famine years. The reason for skipping 1964 is not only inadequate, but also conflicts with his own rationale, to the extent that it is hard to understand his logic.

Initially, he said he would choose "the average from the three years after 1962 (1964–1966) to be the finishing point", which means he had no intention to choose 1963. The reason given was "to avoid possible distortion by the compensatory growth in the two years immediately after the great famine". Subsequently, he excluded 1964 for some reason, and finally decided that he should select "the average of 1963, 1965 and 1966". He should have at least explained why 1963 has suddenly become "normal".

He went on to say that "the death rate of 1964 was higher than normal because the 1964 census offset 8.2 million entries which resulted from late registration in the previous two years". Thus, he removed 1964 from the "normal years".

But the logic for doing so was flawed. The statement that "the 1964 census wrote off 8.2 million entries which resulted from late registration in the previous two years" is quoted from a book entitled *A Study on China's Historical Population Statistics* (Yang, 1996), to which Wang Weizhi was a contributor to the section of "Modern Times". Yang (1996, 1522–1523) states,

> The 1964 census identified 8.2 million over-registered entries in various provinces and regions... The over-registration had largely resulted from the fact that some production brigades and teams, collective units and even some counties over-claimed cloth vouchers and retained excess amounts of food retain in order to have a bigger share of materials within their "groups." Some did this for illegitimate private gain. No means was too tricky, or too strange, in accomplishing this, including registering as many births as possible, but keeping deaths unregistered, registering as much immigration as possible, but keeping emigration unregistered, as well as registering non-existing households and fake names. In some places, even cattle and local gods [*tudiye*] were registered as humans…the 1964 census struggled thoroughly and seriously against over-registration, and the census result was relatively genuine.

By "over-registered entries", Wang means that the census identified and rejected the 8.2 million over-registered entries for year-end population

rather than for "over-registered deaths".[1] Since any identified over-registration could only affect the "registered population at the year-end", it would have little impact on the death rate for 1964 to "written off" 8.2 million from the previously counted and released statistics, and hence have nothing to do with the unusual high death rate for the year.

The annual average population was 698.36 million and the registered death rate was 11.50 per thousand for 1964. The actual population in year-end 1964 would have been 713.19 million and the annual average population 702.46 million if such "writing off" had not really happened. The death rate would be 11.43 per thousand for 1964. The difference in terms of death rate was merely 0.07 per thousand, which does not justify the exclusion of 1964 from "normal years" for its death rate.

Employing these rather confused arguments, Mr. Yang defines the year 1964 to be abnormal. This alone lowered the normal death rate by 0.49 per thousand. Applied to a total population of 660 million, that is equivalent to an increase of 0.32 million premature deaths per year, or 1.62 million over 5 years.

From all of the above, there are at least four problems regarding how Yang arrived at the figure of 20.98 million "premature deaths".

First, he should have followed statistical standards in data selection rather than cherry-pick data. For this reason, his number of "premature deaths" should be reduced by 1.22 million.

Second, he should have used reliable data that are up to statistical standards. By using less reliable data, the number of "premature deaths" was boosted by 3.27 million in a questionable way.

Third, he included the years 1958 and 1962, in which there was no famine, among the famine years, which added a further 1.35 million "premature deaths" (excluding the 0.61 million non-premature deaths ruled out by his "blank-box" method).

Fourth, by lowering "normal death rate" without adequate evidence, he increased the figure of premature deaths by another 1.62 million.

In this way, the number of "premature deaths" was boosted by no less than 7.46 million. In conclusion, Yang Jisheng's research can be summarized in two points. One is that the figure of 36 million premature deaths is not a result of calculation based on academic standards. Second, if he

[1] It cannot be part of the "death toll" either, because the number of registered deaths was 8.03 million in 1964.

had followed accepted demographic and statistical standards in data selection and processing as well as defining famine years and "normal year", he would have arrived at a figure no higher than 14 million. Nevertheless, the under-registration of death prior to the famine years and the late registration of death within the famine years have yet to be taken into consideration.

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PART IV

The Main Causes of the Disaster

There are three mainstream arguments in regard to the causes of the famine.

One is the natural disaster argument. The catastrophe has been termed as "Three Years of Natural Disasters" in the official discourse, which implies that natural disasters were responsible for the catastrophe. After all, the former Chinese President Liu Shaoqi had referred to "30 per cent natural disasters, 70 per cent man-made calamities" at the so-called 7000-cadre conference of January–February 1962. Some have argued in recent years that those three years had seen favourable weather for crops and there had been no natural disasters at all.

Others have argued that the famine was caused by a serious shortage of food resulting from unrealistic targets set by the CCP for the GLP, which gave rise to the "five winds"—exaggeration, arbitrary orders as well as excessive requisitioning and under-reporting of disasters at local level.

The third argument does not consider "man-made calamities" to be a policy failure, but a particular and inevitable result of socialism. It is argued that socialist economics is essentially economics of shortage. Calamities as such are unavoidable when deteriorating shortage is worsened by natural disasters. Some have argued that famine is intrinsic to the planned economy whilest nobody dies of hunger in a market economy. Others have argued from a game theory perspective, saying that collectivization in rural China had denied the peasants of their rights to withdraw from the system and thus turned rural economy from a repeated game into a one-shot game, resulting in a collapse of productivity.

In this part arguments harping on "the system" are analysed as they are all proposed by renowned scholars.

CHAPTER 12

The Extent of Natural Disasters

Was This an Entirely Man-Made Calamity?

Cui Yongyuan (2009), former CCTV anchor, delivered a presentation to a largely young audience at Jianzhen (Ganjin) Library, Yangzhou. Part of his speech is transcribed as follows:

> A couple of days ago, one of our anchors appeared with a number of well-known economists. In his introductory remarks, he referred to the "three years of natural disasters". One of the scholars rebuked him, saying 'you show you don't have even basic knowledge, talking about three years of natural disasters. Those were man-made calamities.' The Shanghai meteorologist Ding Hui wrote in an article… that according to his statistics, the years from 1959-61, were among the best, in terms of natural conditions, in the past century. Thus, it is not credible to call this period three years of natural disasters. The 7,000 cadre conference….called it 30 per cent a natural disaster and 70 per cent a man-made calamity. That judgment is no longer credible. This was an entirely man-made calamity.

I do not know how well Mr. Cui did his homework. There is no meteorologist by the name of Ding Hui in Shanghai. There is someone called Jin Hui. However, he is not from Shanghai, or a meteorologist, but a writer. Jin Hui (1993) is known by some for his following remarks (Table 12.1).

S. Yang, *Telling the Truth: China's Great Leap Forward, Household Registration and the Famine Death Tally*,
https://doi.org/10.1007/978-981-16-1661-7_12

Table 12.1 Graded data of the national drought and flood situations

Year	*−2 zones (flood)*	*−1 zones (partial flood)*	*0 degree zones (normal)*	*+1 zones (partial drought)*	*+2 zones (drought)*	*Total from 120 stations*	*National average*
1954	41	29	26	16	8	−79	−0.658
1957	15	17	35	34	19	−25	+0.208
1958	20	27	35	30	8	+24	−0.175
1959	13	34	35	25	13	−9	−0.075
1960	14	21	33	44	8	+11	+0.092
1961	12	36	28	29	15	−1	−0.008
1965	6	9	30	34	41	+95	+0.792
1972	5	12	26	35	42	+97	+0.804

I have at hand an "annual table of annual droughts and floods across the country". This table was compiled by meteorologists who collected the data from 120 hydrological stations nationwide. It grades each year using a five-point scale according to its drought and flood situations, and clearly records the general situation in each year from 1895-1975 in terms of national and local flood and droughts.

I assembled the data of the relevant years in the following table, in which the minus 2 means flood, minus 1 means partial flood, zero means a normal or balanced condition between flood and drought, 1 means partial drought, and 2 means drought.

I believes that the "table of year-specific drought and flood situations across the country" more accurately describes the true picture of natural disasters than the *table of the disaster-stricken areas*. In fact, in the disaster stricken areas in 1959-61, the primary cause of the "decrease of agricultural production from usual years by more than 30 per cent" was not natural disaster, but the steel-making campaign involving 90 million people, the communal canteens, and the "communist wind [*gongchanfeng*]" that diverted people from the harvest, the "battle of large troop formations [*dabingtuan zuozhan*]", arbitrary orders that kept people constantly on the run, caused various diseases and massive mortality amongst the labor force. These man-made factors were the direct cause of the three years of calamities.

Even those who have no knowledge of meteorological data can see that the average deviation of the "Total from 120 stations" column in Jin Hui's table in 1959–1960 was only 0.058, or 10 per cent of the five-year average of 0.527. The small deviation apparently convinces Jin that

China did not suffer from either serious drought or serious flooding at the time. Following the same line, Mr. Cui seems to also believe that those years were favourable. Jin Hui concludes that "the drought and flood situation was normal, even favorable, in 1959-61…It is high time the myth of 'three years of severe natural disasters' be brought to an end". Cui the anchorman went further by defining these years as "among the best, in terms of natural conditions, in the past century".

The Chinese government's decades-long "three years of severe natural disasters" rhetoric would, indeed, have been blown away if "a number of established meteorologists" had really created the table in compliance with basic statistical standards and in accordance with the meteorological data.

However, some people soon pointed out flaws in the table.

Hui (2002, 63) tracks the development of hydrological stations nationwide from 1949 to 2001 and states,

> Taking basic hydrological stations as an example, hundreds were built each year in first decade after the foundation of the New China. There were 3,611 basic hydrological stations across the country by 1960, constituting the peak in the history of the construction of hydrological stations in China. There were two troughs after the peak. One was in the early 1960s. Before 1957, hydrological work was mainly administered by provincial authorities. In 1958-1959, in the particular historical context of the time, the administration of the stations was passed down to the county level. Problems became apparent in 1959 when the whole nation experienced economic difficulties due to the GLF, and natural and man-made calamities. Many stations were closed, and the number of basic hydrological stations decreased to 2,664 in 1963. This was the first trough. With adjustments to the national economy, the administrative authority over the hydrological stations was passed upwards again at the end of 1963, and construction of hydrological stations gradually revived. By 1966, before the Cultural Revolution started, there were 2,883 stations". The author reiterated that "Looking at the whole process of the development of the national hydrological stations network, we can see that the golden age was the 1950s. The framework of today's network was largely created at that time".

According to the figures, there were more than 3000 hydrological stations in 1959–1961, with 3611 in 1960. The number of hydrological stations has remained 3200–3300 on average since the 1980s. Jin Hui's table of

graded data of national drought and flood situations used data from only 120 out of 3300 stations, or only 3.6 per cent of the total.

Thus, a few questions arise:

Firstly, assembling and analyzing the data from 3000 hydrological stations is not so great a task, from a technical point of view. Why pick out less than 4 per cent of them? The author should have referred to, and described, the unused data from the remaining 3000 stations.

Secondly, what method did the meteorologists use to select the stations? Were they chosen randomly, or according to other methods that conform to statistical standards? Jin Hui did not make any mention of the selection process, which is an important part of standard statistical practice. Also, the years chosen for comparison with 1959–1961 were 1954, 1957, 1958, 1965, and 1972, which covered a period of 18 years in a non-consecutive manner. Such a sampling method does not seem to conform to the basic rules of statistical analysis.

Lastly, hydrological stations are not run by the meteorological authorities, but belong to departments and authorities responsible for administering water resources. Hydrological stations are responsible for "organizing hydrologic surveys, collecting, categorizing and analyzing hydrologic data; monitoring the volume and quality of rivers and lakes". Those "meteorologists" should have adopted data from hydrological stations are established in all counties and keep a complete record of meteorological information—rainfall, temperatures, and humidity, which is directly relevant to agricultural activities. The number of meteorological observatories increased from 34 in 1952 to 110 in 1957; and that of meteorological stations from 283 to 1537, which means there was one in almost every county (National Bureau of Statistics, 1986, 198).

Mr. Yang Jisheng (2008, see ch. 14) also denies a connection between the natural disasters and the famine, asserting that there were no natural disasters in the three years. But unlike Jin Hui, Yang Jisheng employs meteorological data in a relatively professional manner. Yang (2008, 334) does not trust the NBS's statistics, judging that "The NBS, as a servant of the state power, could not have possibly provided any statistics that contradicted the CCP Central Committee, once it had set the political tone with its assertion that there were 'three years of natural disasters'". Citing data from *The Atlas of China's agricultural climate resources and variance of primary agricultural products* edited by Gao Suhua, he quoted the table "Precipitation anomaly percentage" and stated that "It is alleged that there was a severe drought in Shandong…Meteorological

data shows that the average precipitation in the province in July and August 1959 was 278 mm, 23 per cent less than that in the same period in normal years…it was no more than an ordinary drought". He added that the "average precipitation anomaly percentage nationwide was minus 30 per cent in 1960 - nothing but an ordinary drought".

Citing meteorologist Gao Suhua, Yang Jisheng defines the "precipitation anomaly percentage" to be the relationship between the average precipitation of an area in a particular period, and its long-term precipitation. On this premise Yang argues that there could not have been any severe drought that had led to a crop failure nationwide, no matter what the level of rainfall was as long as the precipitation was close to the long-term average level.

However, it is not clear how the PAP indicator can establish any direct causal relationship between average precipitation and crop production. This is partly because for agriculture. It is more about having the right amount of precipitation at the right time rather than the average amount of precipitation throughout a year. Let us have a look at the situation in Shandong as an example. The data cited here is taken from the *Report of the Damage Caused by Disaster in China 1949–1995* (hereinafter referred to as *Disaster Report)* (Zhang & Fan, 1995). The *Disaster Report* was prepared by the MCA, which is responsible for matters related to disasters. Of course, Yang Jisheng might also consider the MCA a "servant of the state power" and disregard its data. But in that case he would be unable to find any data, because the Bureau of Meteorological Services is also "a servant of the state power", and *The Atlas of China's agricultural climate resources and variance of primary agricultural products* was published by a state-owned publishing house.

According to the *Disaster Report* (Zhang & Fan, 1995, 64–68), "the average precipitation in Shandong province in June-August 1959 was 329.5 mm, 39.8 per cent less than the average 543.4 mm for those months in normal years. The drought lasted more than 100 days and covered 73.70 million *mu*, or 58 per cent of the farmland in 74 counties and cities in early August". Furthermore, the *Disaster Report* states that "The precipitation in Shandong from October 1959 to April 1960 was only 76 mm, 48 per cent less than the same period in history. Due to the drought…seedlings failed to grow in 36.3 million *mu*, or 30.7 per cent of the farmland".

It is also recorded in the *Disaster Report* that

> there was a prolonged drought from January to September in provinces such as Shandong, Henan…lack of rainfall since last September (in 1959). Some regions did not have any rain for 300 – 400 days… the Yellow River and its catchments in Shandong and Henan stopped flowing for prolonged periods, and the water supply for eight million residents in the Ji'nan region dropped to emergency levels.

The report goes on.

> …from June to October…11 typhoons hit within five months, twice as many as usual. The typhoons lasted for 10-20 h, more than three times the average… There were 19 storms within a 30-day period in parts of Shandong, leaving 3-4 meters of flooding on flat land.
>
> In July-August, consecutive storms in the Haihe Plains and the Yellow River Plains resulted in severe flooding. Hebei and part of Shandong province had a situation not seen for a hundred years, with 1.6 million hectares, or 54 per cent of the farmland covered in water causing crop failure on one million hectares. In September, 0.6 million hectares of farmland remained immersed in water, and 3,500 villages in Liaocheng and Cangzhou were cut off.

Thus, it may have been the case that the "precipitation anomaly percentage" in Shandong in July–August in 1959 was only 23 per cent, which would not suggest a drought. But this does not alter the fact that the eight million citizens of Ji'nan, the "World Capital City of Springs", with 733 natural springs, had no water to drink during the prolonged drought, which lasted from the autumn of 1959 to the spring of 1960, while they suffered flooding 3–4 metres deep after the 19 storms in the early summer of the year.

Anyone who has some knowledge in statistics would understand that usually an "average value" does not mean anything more than an arithmetic mean.

There Were, Indeed, Natural Disasters

If the conclusions reached by the Chinese meteorologists and Gao Suhua, cited by Jin Hui (1993) and Yang Jisheng (2008), are correct, they should be able to stand the test by the recent publications of the specialists in the same profession. China experienced natural disasters more frequently and extensively in 2008–2010. There were freak snowstorms in southern

China in 2008, a spring drought in northern China in 2009, and a severe cold spell in Huaibei in 2010. All these, as well as the persistent drought in Yunnan, have been reported and highlighted on TV and in newspapers. Most of the reports compared the disasters with what had happened "fifty years ago". The snow and hail damage that affected more than ten provinces just before Spring Festival in 2008 were reported in the media as "a cold snap of the like we have not seen in fifty years". Zhang Ximin (2008) reports that,

> According to Hunan Regional Meteorological Centre, the snow and hail storms that raged across the country in late January 2008 are a first-class disaster that has 1 in 50 chance of being equalled or exceeded in any given year.

Below are some more reports on disasters across the country in the first couple of months of recent years. Guo Yuanming and Shen Chong (2011) report that,

> Statistics released by the State Flood Control and Drought Relief Headquarters show that precipitation in the middle and lower reaches of the Yangtze River this year is 40-60 per cent less than normal and is at the lowest level since 1961.

Xinhua News Agency (Zhao, 2009) also reports that,

> According to specialists at the Henan Provincial Bureau of Meteorology, average rainfall since late November last year was only 2.2 millimetres, a drop of more than 90 per cent from the norm, and the lowest level since the same period in 1961.

At the same time, Wang Fengwei et al. report that,

> Yesterday, the 2008 climate report released by Shijiazhuang Bureau of Meteorology shows that the year saw major meteorological disasters, drought in winter and spring, followed by an autumn drought, of the kind we have rarely seen in the past 50 years.

A severe drought is reported in Anhui (Wu, 2011).

> According to meteorologists at the Provincial Climate Centre, there was a persistent shortage of rainfall in the regions along, and north of, the Huaihe River from 1st October 2010 to 31st January 2011. The number of zero precipitation days is the largest since the same period in 1961.

Even Yunan Province, known for its all-year-round Spring City of Kunming, suffered from a severe drought in early 2010 (Bao, 2010). It is reported that,

> China Weather Network: Since this January, Yunnan has been suffering from a once-in-a-half-century drought. Around 3.85 million people and 2.09 million cattle are reliant on emergency water supplies.

During the three years from 2009 to 2011, there were severe droughts in Shaanxi, Shanxi, Henan, Anhui, Yunnan, and the middle and lower reaches of the Yangtze River. We saw reports on TV showing cracked and parched farmland, dried up rivers and ponds, withered crops, and people and livestock having to travel long distances for water. All these reports noted that the disasters were the most serious since 1961, or over the past 50 years.

Even a severe critic of the GLF like Liang Zhiyuan (Liang, 2008, 89) reckons there was a severe drought in the GLF. He writes,

> Before 1958, the average annual precipitation in the county was 820 millimetres. That in 1959 was 634.1 millimetres, a little less than usual. However, a severe drought took place in July-October, the critical time of the year.

He quoted data from the county's meteorological department:

> 0.2 millimetres in mid-July,
> 9.5 millimetres in late July,
> 16.7 millimetres in early August,
> 1.5 millimetres in mid-August,
> 33.3 millimetres in late August,
> 0 millimetres in early September,
> 4.7 millimetres in mid-September

The total precipitation during the 72 days from 10 July to 20 September was 65.9 millimetres. There were only 27.9 millimetres of rainfall during

the 41 days from 10 July to 20 August, the most critical period for corn and rice. As a rural saying goes, "you cannot buy dry days in May, but consecutive gloomy days in June ensure a harvest" (the lunar calendar is used here), which depicts July and August of the solar calendar to be a time when there is "a small drought every three days and a big drought every five days". These periods are critical for the autumn crops. The drought at this time of the year is called the "throat-seizing drought". The amount of precipitation from July to September would result in a disastrous shortfall, if not total crop failure in Anhui.

Southern and eastern Henan, middle and northern Anhui, northern Jiangsu and Shandong constitute a broad climate belt where warm and humid air from the southwest and cold air from the north meet and contend. A severe drought hit the whole region in the summer and autumn of 1959. Zhang Shufan (1999), then Deputy Party Secretary of Xinyang Prefecture, writes,

> The worst drought in a hundred years hit Xinyang Prefecture in 1959. There was no rain for 100 days. Extensive underproduction or crop failure was predicted for the autumn… The next year saw floods in Xinyang, which claimed 1,657 lives. A severe drought followed in 1961, in which the precipitation was 10 per cent less than that in 1959… Grain production was only 50.28 per cent of that in normal years. The production of rice, which was the staple food, was only 36.55 per cent of that in normal years.

To describe the natural disasters, Yu Dehong (Yu, 2002), secretary of Zhang Shufan, states,

> There was a severe drought between the summer and autumn in 1959. For more than 80 days there were no rainfall that was adequate for crop growth and the drought continued in late autumn. The land was under water stress 49 percent of the year. Many rivers and ditches were cut off and ponds dried out. Nearly one third of autumn crops were not sowed timely or not sowed at all because of the water deficit. One third of the crops failed, one third had significant shortfall, and only one third were harvested as expected.

Zhang Sai and Fan Baojun (1995) have also recorded the distribution of droughts and floods as well as disaster situations in detail in the *Report of the Damage Caused by Disaster in China 1949–1995.*

In 1959:

From January to April, a severe spring drought struck Hebei and Heilongjiang, affecting three million hectares of crops. The land in Heilongjiang was affected to a depth of 4-5 inches, a phenomenon rarely seen in history. Meanwhile, there were three floods in Southern China. The Zhujiang, Yangtze, and Huaihe rivers flooded more than two million hectares of farmland.

From June to August, the Yangtze River and Huaihe River areas suffered from a catastrophic drought, which spread north of the Yellow River and inland to the southwest early August, affecting 22.76 million hectares of farmland. Many places had no rain for more than 100 days. In late July, however, Hebei, Beijing and Heilongjiang were hit by sudden storms and subsequent mountain torrents, which flooded over more than two million hectares of farmland. More than 80 million people were affected by the disaster, 80 per cent more than the average number affected by disasters in the period 1949-1958. More than ten million people were affected in each of the provinces of Shandong, Hubei and Sichuan. The disaster-affected population in the spring was as high as 97.7 million (people lacked food, fled their hometowns, suffered from nutritional diseases, fell into bankruptcy, died prematurely, or had to give away or sell their children), 2.87 times the average affected population in the period 1949-1958.

In 1960:

The whole of mainland China, except Tibet, was hit by disasters rarely seen in a hundred years. The major catastrophes were the persistent drought in the north and the severe typhoons and floods in the southeast coastal provinces.

From January to September, the extreme drought continued from the previous year in the north and northwest regions, including Shandong, Henan, Hebei, Shanxi, Inner Mongolia, Gansu and Shaanxi. Some regions had no rain for 300-400 days. In the three major grain producing provinces of Shandong, Henan and Hebei, 15.986 million hectares in total, or 68.9 per cent of the farmland, was stricken, and 8.085 million hectares or 56.9 per cent, were severely affected. The Yellow River and its catchment system in Shandong and Henan dried up for a prolonged period of time. The water supply for eight million people in Ji'nan dropped to emergency levels. The drought extended to the southern provinces of Jiangsu, Hubei, Hunan, Guangdong, Sichuan and Yunnan. The mainland, excluding Tibet, had 38.46 million hectares of farmland affected by drought, which was a record in the 50-year history of the People's Republic.

While northern China was suffering from drought, eastern provinces were hit by devastating typhoons and floods in June-October. Eleven

typhoons made landfall within five months, twice as many as usual. The typhoons lasted for 10-20 h, more than three times the average. The typhoons also brought heavy storms and flooding, covering 9.933 million hectares in the 11 provinces of Guangdong, Fujian, Zhejiang, Anhui, Henan, Jiangsu, Shandong, Hebei, Liaoning, Jilin and Heilongjiang, causing more than 5,000 casualties. There were 19 storms within 30 days in parts of Shandong, leaving 3-4 meters of flood water on flat land. The Liao River and Taizi River flooded burst their banks in northeast China and submerged 1.437 million hectares of farmland in Liaoning and Jilin provinces.

The affected population this year was 92.3 million, and there were 129.8 million refugees by the spring, 3.8 times as many as the annual average population affected in the period 1949-1958. Droughts and floods occurred simultaneously. Part of a province was hit by storms and subsequent flooding, while other parts of the province were suffering from persistent drought.

In 1961:

The extreme natural disasters continued for a third consecutive year, affecting a wider area than in the previous year. One quarter of the affected land suffered from crop failure (reduction of production by 80 per cent and above is defined to be crop failure). The number of people affected was 163 million, also more than that in the previous year. The number of refugees reached 218 million by the spring, more than one third of the total population, and 6.4 times as many as the average number of people affected by disaster in the period 1949-1958.

From winter to March, 13 million hectares of farmland in the Yellow River and Huaihe River areas suffered a prolonged and extensive drought, which extended to the Yangtze River area in April-June. The total drought-affected area nationwide was 37.846 million hectares, and 18.654 million hectares were severely affected. Wheat production in Hebei, Shandong and Henan, China's three main grain producers, fell by 50 per cent from the already low level of the previous year. Correspondingly, 0.67 million hectares of farmland in Hubei were hit by heavy storms, and 5.04 million houses were damaged or wrecked. In April-June, the Zhujiang, Xiangjiang, Ganjiang and Minjiang river areas south of the Yangtze River were struck by two large-scale storms. The rivers burst their banks and inundated vast areas, including 10 counties and cities. In July-August, consecutive storms in the Haihe Plains and the Yellow River Plains resulted in severe flooding. Hebei and part of Shandong province had a situation not seen for a hundred years, with 1.6 million hectares, or 54 per cent of the farmland covered in water causing crop failure on one million hectares. In September, 0.6 million hectares of farmland remained immersed in water,

> and 3,500 villages in Liaocheng and Cangzhou were cut off. Around 2.8 people ran out of food and the casualties in Cangzhou Prefecture amounted to 4.9 per cent of its population. From late July to August, parts of northeast China were devastated by storms and subsequent mountain torrents, which hit Yichun City, cut the transportation, power and telecommunications links, and shut down factories. In the Songhuajiang River area, 0.07 million hectares of farmland suffered crop failure.
>
> In August-October, southeast provinces including Guangdong, Fujian, Zhejiang, Jiangxi and Anhui were hit by 11 typhoons, of which nine were measured above scale 12, a record number in the 50-year history of the People's Republic. The damage included 1.8 million hectares of submerged farmland, wrecked fishing vessels, collapsed houses, broken sea dykes and many casualties.

Agricultural disasters have their worst impact when they are not restricted to a single season or a single year but persist or return in consecutive years. Local disasters are naturally of less concern than those that hit the entire country, or large parts of it. In disaster-struck areas, people consume seed grain instead of planting it, livestock die off or are killed for food, human and animal diseases spread rapidly. If the disaster only lasts one year, the situation can be quickly turned round. But if disasters continue, difficulties are compounded. Three consecutive years of disasters cannot fail to have a devastating effect. If a disaster only affects one area, others can help out. The central government can mobilize national resources to provide relief. But when disasters happen consecutively and on a large scale, relief efforts cannot cope. Most of the natural disasters recorded in human history, which caused heavy casualties, were large-scale calamities that lasted a number of years.

The whole of Europe suffered from continuous rain and persistent low temperatures in the summer of 1315, which caused a reduction in grain production. The wet and cold weather continued in 1316 and grain production fell further. The people were forced to kill their livestock and eat their seed grain to survive. The rainy weather lasted for three consecutive years and caused the worst famine in European history. Between 10 and 25 per cent of the population starved to death. It took more than a decade for the population to recover to its level of 1315. If the gloomy and rainy weather had lasted for only one or two years, things would have been very different. The length of the period of poor weather

was the determining factor that caused one of the worst natural disasters in European history. In the *Dingwu Qihuang*[1] of 1876–1879, for four consecutive years, the provinces of Shaanxi, Shanxi, Hebei, Henan, and Shandong were afflicted by severe drought, a period that was given the name "The Extraordinary Calamity in the Year of Dingwu [*Dingwu Qihuang*]". Thousands of square miles of land were bare of crops and the unburied bodies of famine victims lay everywhere. The death toll was over 10 million (Li et al., 1994, 81).

The natural disasters of 1959–1961 were not only prolonged but they also affected a larger land area than any other disasters since 1949. The damage caused to agricultural production at the time is shown below (see Fig. 12.1).

Firstly, the disasters were large scale and caused devastating damage. In the nine years from 1950 to 1958, the annual average area of farmland affected by disaster was 19.71 million hectares, of which 8.77 million hectares were devastated. The annual average area of farmland affected by disaster 1959–1961 was 57.28 million hectares—nearly three times greater. An annual average of 22.51 million hectares of farmland, or two-and-a-half times more than the mean of the previous nine years, was devastated. In terms of the area affected, this was one of the greatest disasters in Chinese history.

Secondly, the disasters were prolonged and became steadily worse. The area devastated in 1959 was double that in 1958 and increased by a further 82 per cent in 1960. The situation deteriorated again in 1961 but the devastated area increased by only 15 per cent that year. The aftermath continued to be felt even in the three years of "recovery". In 1962 the disaster-affected area was still 185 per cent of the mean in the nine pre-disaster years. The equivalent figure for 1963 was 162 per cent, with the afflicted area being larger than in 1959.

Given that there were three consecutive years of drought, followed by another two years of relatively serious disasters, this period surely qualifies as one marked by "severe natural disasters".

Therefore, it is against the fact to claim that the climate was favourable for crops in the three years of difficulties. Before 1949, China did not keep detailed and extensive weather records. The most recent disaster comparable with the three years of natural disasters in 1959–1961 was

[1] The extraordinary calamity of the year Dingwu (the 43rd year in the traditional 60-year-cycle).

the *Dingwu Qihuang*. But the *Dingwu Qihuang* did not affect as large an area as the disasters of 1959–1961. It is safe to say that the natural disasters of 1959–1961 were the worst in the past 150 years. As China was in the early years of industrialization and was far less capable of handling agricultural natural disasters than in the 1970s, it was inevitable that the disasters would cause grain production to drop sharply and per capita food consumption to drop towards famine level.

In conclusion, the main cause of the significant decline in grain production from 1959 to 1961 was once-in-a-hundred-years natural disasters in three consecutive years. To illustrate the role of human and natural factors, it is more objective to say "seventy per cent natural disasters and thirty per cent man-made calamities, or even ninety per cent natural disasters and ten per cent man-made calamities".

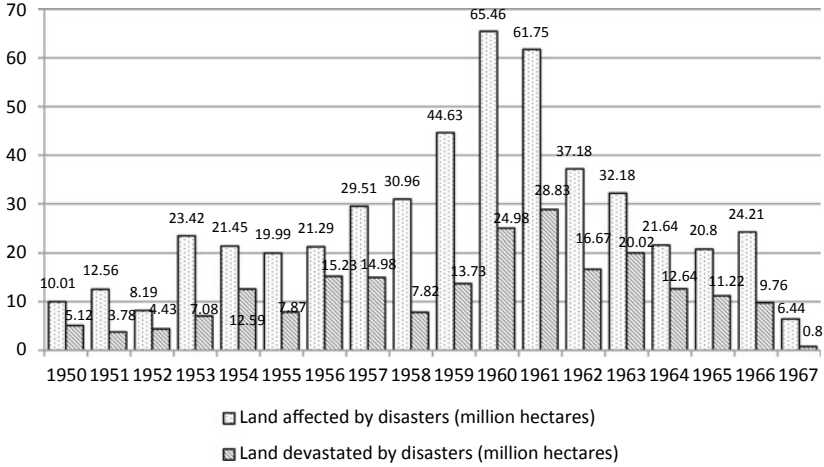

Fig. 12.1 Area of land affected by natural disasters 1950–67[2] (*Source* Zhu 1999)

[2] China's farmland was 117 million hectares in 1960, a moderate increase since the Liberation. The farmland experienced a rapid expansion during the GLF, particularly after the start of Learning from Dazhai campaign, and surged to 127 million hectares in 1970 and 134 million hectares in 1980 (2.1 billion mu), an increase by 14.5 per cent. Thus, the data from 1950 to 1970 are used for the comparison of disaster-afflicted areas.

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CHAPTER 13

An Analysis on Policy Factors

At the enlarged Central Work Conference attended by 7000 cadres in January 1962, the CCP examined its work since the start of the GLF and recognized that there were mistakes at both central and local levels. Liu Shaoqi, former Vice President in charge of the Central Committee at that time, referred to "30 per cent natural disasters, 70 per cent man-made calamities". The Central Committee admitted that they had made serious mistakes and these mistakes had caused a significant economic recession. The content of Liu Shaoqi's statement is to be analysed here.

There are two kinds of "man-made calamities". One is "policy failure", and the other is "absurd system". This chapter will focus on "wrong policy".

The Excess Deaths Were Mainly Caused by Policy Failure

Given the serious and prolonged natural disasters, a question remains: Whether the distinct excess deaths were caused by natural disasters or man-made calamities?

I believe that the excess deaths during the famine were closely related to "man-made calamities", the reason being a large-scale famine would not necessarily cause a large number of people to die of hunger although

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serious natural disasters can result in significant reduction in food production and a large-scale famine.

Figure 13.1 gives us the general picture of grain per capita for the period 1959–1961, taking import of food into consideration. As shown in the following figure, China's food per capita was less than 230 kg in 1959–1961, and less than 220 kg in 1961 and 1962, which was a very low level.

The death rate of a country with a large population tends to be higher when grain production per capita remains lower than 230 kg for a number of years. A large proportion of the deaths will be related to hunger and these deaths are to be counted as "deaths in normal years" unless disastrous events take place in those years.

During the Republican period, the grain production per capita was about 220–270 kg, with an estimated crude death rate at 25 per thousand or higher (Shun Pao, 1935).Approximately 3–7 million Chinese died of hunger every year, even in the absence of a significant famine. Likewise, grain production per capita remained at around 210–230 kg per capita

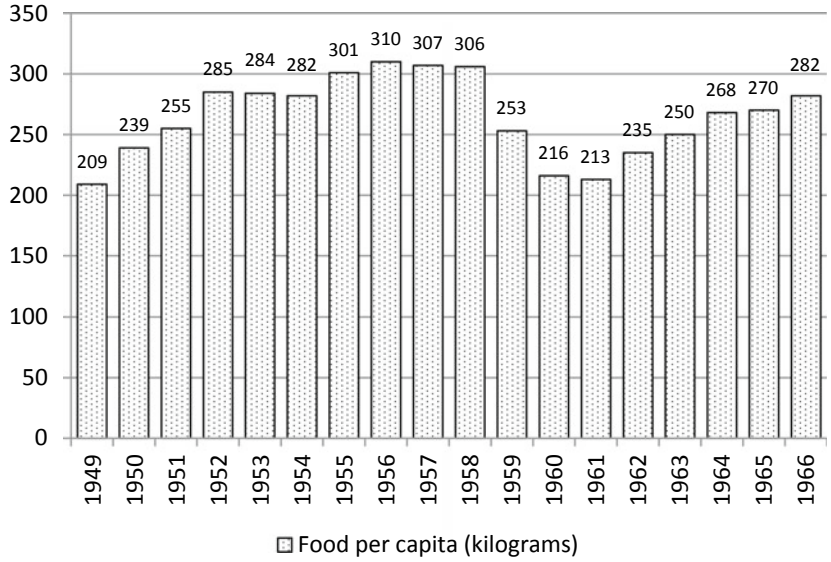

Fig. 13.1 Food per capita 1949–1966

with a double-digit crude death rate for a long time. To describe the causality between low grain production level and famine casualties, Jean Drèze and Amartya Sen (2002, see ch. 11) state that "nearly four million people die prematurely in India every year from malnutrition and related problems". Given a low level of food production per capita, death rate will surge when natural disasters hit.

Apart from the previously mentioned Extraordinary Calamity in the Year of Dingwu [*Dingwu Qihuang*], *Cambridge History of China* recorded 11 medium and large-scale famines in China for the 38-year period from 1911 to 49. There were numerous reports on famine deaths. For example, it was reported by both Chinese and foreign newspapers that 3 million people died of hunger in Henan province due to war and famine in 1942. Harrison E. Salisbury (1987, 289) wrote,

> Six million Chinese died in the 1929-30 famine. The event rated half a column of inside space in *The New York Times*.

Now that we know that the famine was caused by natural disaster and death rate would rise when food per capita was as low as 220 kg, why do I insist that "man-made factors" were the primary cause of the hunger-related deaths? The reason lies in the fact that hunger-related death can be associated with how food is distributed as well. At a time of food scarcity, hunger-related death can be significantly reduced by distributing food evenly.

After China started to implement the unified purchase and sale [*tonggou tongxiao*], food was rationed according to age and workload. No one, whether they were urban or rural citizens, cadres or common people, farmers, fishermen, or herdsmen, whether they live in food production areas or not, was entitled to more food. Peasants were allowed to retain 190–200 kg of grains, despite some slight difference between the north and the south part of the country. Urban labour workers were entitled to as much as 22.5–27.5 kg per month while the quota for employees at administrative institutions [*xingzheng shiye danwei*] in urban areas was 13–14 kg, and secondary and tertiary students 13–16.5 kg. I worked as a PE teacher at a secondary school, and my girlfriend was a Chinese language teacher in 1972–1976. I was entitled to 22 kg of food per month and she 13.5 kg.

In this kind of system, food was rationed in a way similar to "wartime control of supply" where the government collect and manage food as

well as other wartime supplies and distribute these supplies according to different needs during the war. This was an effective way to ensure supply for military purposes at the lowest possible cost. Yet, the CCP adopted as a long-term policy in an effort to accelerate China's industrialization. As the government had already accumulated experience in rationing, it should have been able to avoid excessive famine deaths by reasonably adjusting distribution when there was a significant reduction in grain production. For this reason, I hold policy failure responsible for the excessive deaths.

Policies are implemented by cadres. In disaster-stricken areas where the same policy was implemented, some counties suffered more than others. Many people died from hunger in Guangshan County in Xinyang Prefecture, and this was known as "Guangshan Incident".[1] But nearby Luoshan and Xin counties suffered much less. Many refugees from Guangshan found the food just a few kilometres away. Our investigations in Xin county showed that most of its villages had received refugees from Guangshan; a small number of the former refugees are still there.[2] The Xin County Bureau of Public Security told us that two of their cooks were former famine refugees from Guangshan. Their original homes were just a few dozen kilometres away. There was only one reason for such a difference. The party secretary of Guangshan County, Ma Longshan, was an extremist who deceived his superiors, deluded his subordinates, and drove the masses to despair. He denounced his colleague, Zhang Hongfu, who opposed the excesses of the GLF. As a result, Zhang Hongfu was beaten to death. But in neighbouring Luoshan and Xin counties, such things did not happen. What happened in Guangshan was exactly what many would understand Liu Shaoqi was referring to when he said at the 7000-cadre conference that there were "30 per cent natural disasters and 70 per cent man-made calamities" in some places. Based on the above, I argue that human factors were the primary cause of the huge numbers of hunger-related deaths.

[1] When I was investigating the famine issues in Xin County, I noticed that Xinyang people did not refer to the so-called "Xinyang Incident", but talked about the "Guangshan Incident", which referred to the excess deaths caused by policies being implemented in an extreme way by local cadres in Guangshan.

[2] Xin County used to be part of Guangshan County, but was separated from it after Liberation.

There are some who are unhappy with Liu Shaoqi's speech at the 7000-cadre conference. They argue that the famine was caused by natural disasters alone, and that Liu Shaoqi exaggerated the policy flaws in pursuit of a political agenda.

I do not think this is a defensible position. Neither Mao Zedong nor Liu Shaoqi blamed natural disasters exclusively for the famine, but took the blame for the "man-made calamities" upon themselves. Both Liu Shaoqi, who spoke on behalf of the CCP Central Committee, and Mao Zedong, who criticized himself at the 7000-cadre conference, took the blame, on behalf of the party and the government. Mao Zedong (1991, 996) said, "I must shoulder all the blame for the direct and indirect mistakes made by the Central Committee, because I am the chairman of the Central Committee", adding that "I know little about industry or commerce".Both Liu and Mao took the responsibilities on behalf of the CCP and the central government, showing that the Party was willing to face its responsibilities instead of shuffling off them.

Did the Great Leap Forward Cause the Great Famine?

Many have understood Liu's speech as a judgement on the GLF as such that the GLF had eventually caused the great famine. However, Liu's remark about 30 per cent natural disasters and 70 per cent man-made calamities was not an overall evaluation of the GLF and the people's communes, but was made in answer to a question about how the current difficulties had arisen (Zhang, 2006, 149–150).

Liu said,

> How did this difficult situation happen? Why was there no growth in the supply of food, clothing and necessities, and even a reduction? What were the causes? There were only two causes: One was natural disasters. Natural disasters over three consecutive years resulted in a fall in production of both agricultural and industrial products. The other was the shortcomings and mistakes in our work since 1958. Of these two factors, which one was primary? ...conditions varied in different places…In some places, the underproduction of agricultural and industrial products was caused by natural disasters. However, the underproduction in some other places was not caused by natural disasters, but by the shortcomings and mistakes. Last year, I visited Hunan where they were in considerable difficulty. I asked the peasants: what were the causes of your difficulties? Were there any natural disasters? They answered that there were natural disasters, but not very

> severe. The causes were "30 per cent natural disasters and 70 per cent man-made calamities". I made further investigations. There were a few ponds. I asked them whether the ponds had dried up in 1960. They told me that the ponds did not dry up. The natural disasters did not seem to be very severe, as there still was water in the ponds. Regarding the general situation nationwide, I reported in writing that: Our difficulties have been caused by, on the one hand, three consecutive years of natural disasters and, to a great extent, on the other hand, the shortcomings and mistakes in our work and style of work. Regarding each province, prefecture and county, you can have a discussion according to the specific conditions and make your judgment based on the truth.

Two points in Liu Shaoqi's speech are worth emphasising.

First, the 30/70 per cent division referred to the causes of the economic difficulties instead of the famine.

Second, he was not talking about the whole country when he said "the natural disasters did not seem to be very severe". Regarding the rest of the country, he said: "you can have a discussion according the specific conditions and make your judgment based on the truth".

Evaluating things using formulas such as 30/70 per cent, 20/80 per cent, or 1/9 fingers is a common CCP practice. But would be a gross oversimplification to try to apply an across-the-board, nationwide formula to the 1959–1961 period.

The GLP featured rapid industrialization. As shown in Fig. 13.2, China's primary industry index dropped to minus 15.9 per cent in 1959 while the secondary industry index rose at a rate of 25.8 per cent. The primary industry index continued to decline to minus 16.4 per cent, showing that the economy was severely unbalanced. The food supply in urban areas was no longer sufficient to meet demand. Production of cash crops also plunged, causing a shortage of raw materials for light industry. Cotton production fell from 1.97 million tonnes in 1958 to 1.06 million tonnes in 1960, and 0.75 million tonnes in 1962—only 38 per cent of the 1958 figure. The production of oil, sugar cane, sugar beet, silk, tea, tobacco, and fruit dropped by half or more from the 1958 level. The secondary industry index struggled to remain at 5.6 per cent, then collapsed in 1961 and slid to minus 42.1 per cent, more than cancelling out the growth of the previous two years. While the primary industry index recovered to 1.4 per cent and then 4.5 per cent in 1962, the secondary industry index slid further to minus 9.8 per cent. The economy as a whole did not begin to turn the corner until 1963. It

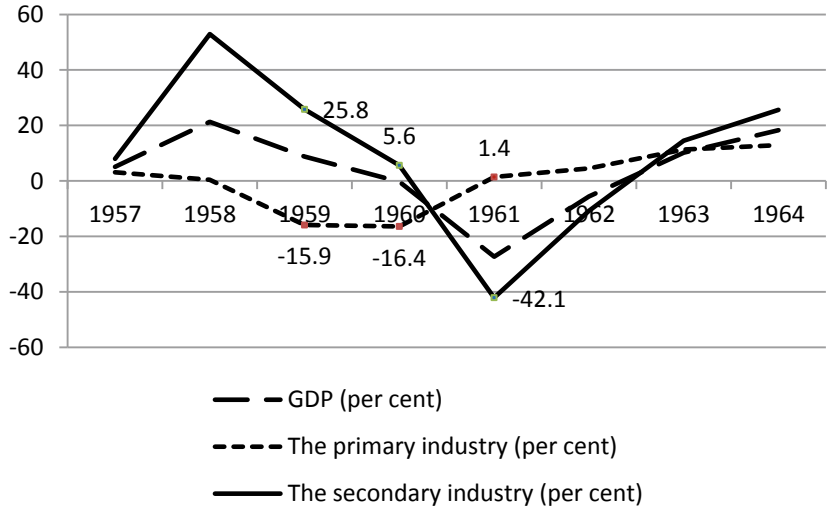

Fig. 13.2 The indexes of primary and secondary industries prior to and after the Three Years of Difficulties

was the famine that had caused the failure of the GLF rather than the GLF having caused a great famine. It is inappropriate to understand Liu's remark as a judgement on the GLF as a whole.

It is commonplace to attribute the food shortages and famine to the steel-making campaign and construction of large-scale water projects, which diverted the labour force from the harvest, and to misguided new methods such as deep ploughing and close planting. Stories about the negative impact of industrialization at the people's commune level on agriculture can be found in many memoirs.

However, Zhang Shufan (1999, 139) recalled that "nevertheless, there was a big harvest in 1958, even though the steel-making campaign affected the harvest and about 10 per cent of the grain was lost as a result". Zhang's statement shows that the harvest was affected by the diversion of rural manpower. The 1958 harvest should have brought in a bumper crop, but it turned out only 1.3 per cent up in 1957, and this translated to a slight decrease in per capita grain output. Nevertheless, the amount of food grain per capita remained comparable with that of the decade before, and the decade after, the disaster period. A famine was

very unlikely in a year with a high level of food production per capita as such.

Let us have a look at the timeline of the GLF. The steel-making campaign only lasted a year and ended in 1958. At the end of the year, Mao Zedong warned the Central Committee of the dangers of diverting the rural labour force. There was a famine in 1959. Some memoirs told stories about "gleaning in a sweet potato field after they were harvested in the previous year", but this does not mean the harvest was incomplete. The deep ploughing and close planting happened in 1958 and 1959, but only affected a small proportion of "experimental fields", were not responsible for the 1958–1959 drop in production, and had no effect on the shortfalls of 1960–1961. The natural disasters started in 1959, while rural labour was still being diverted. But it must be pointed out that most of the labour was mobilized to fight the drought by constructing hydrological projects. In 1959, "as many as 60 million cadres and masses devoted themselves to the fight against the drought…Henan province held five emergency teleconferences, and more than one million cadres and 20 million peasants joined the fight against the drought" (Zhang & Fan, 1995, 65). The diversion of the labour force was directed at fighting the disaster.

It makes sense to talk about causation when one event closely follows another. However, an ordered sequence of events does not necessarily imply any causality. But there were two harvests in between what happened in 1958 and what happened in the autumn and winter of 1959. The connection between the events was, therefore, tenuous at best. The claim that excessive diversion of rural labour was the primary cause of the fall in grain production in 1959–1961 is, surely, not proven.

Severe natural disasters happened. And given the agricultural and hydrological infrastructure and the disaster-fighting capacity at the time, a significant drop in grain production, and consequently a drop in food per capita, resulting in famine, were inevitable consequences (Zhang & Fan, 1995, 65). The calorie intake of both urban and rural citizens was bound to drop sharply regardless of government policy. In many regions, it was

simply a matter of "staying alive".[3] The only reason for grain production per capita to drop from 300 to 200 kg was deadly natural disasters that had lasted for three consecutive years.

Unrealistic Targets, the "Wind of Exaggeration" and Excessive Requisitioning

How Did "Man-Made Calamities" Cause Excess Deaths?

The *Resolution on Certain Questions in the History of the Party Since the Founding of the People's Republic of China* stated that:

> This was due to our lack of experience in socialist construction and inadequate understanding of the laws of economic development and of the basic economic conditions in China. More importantly, it was due to the fact that Comrade Mao Zedong and many leading comrades, both at the centre and in the localities, had become overconfident, impatient for quick results, and overestimated the role of man's subjective will and efforts. 'Left' errors, characterized by unrealistic targets, the issuing of arbitrary orders, the wind of exaggeration and the stirring up of a 'communist wind', spread throughout the country […] at the Lushan Meeting of the Political Bureau of the Party's Central Committee in July 1959, Comrade Mao Zedong […] erred in initiating criticism of Comrade Peng Dehuai and then in launching a Party-wide struggle against 'Right opportunism' […] It was mainly due to the errors of the Great Leap Forward and of the struggle against "Right opportunism" together with a succession of natural calamities, and the perfidious scrapping of contracts by the Soviet Government, that our economy encountered serious difficulties between 1959 and 1961, which caused serious losses to our country and people.

This is the CCP Central Committee's summary of the causes of the "losses to our country and people" including the huge numbers of excess deaths. The *Resolution* did not attribute the "serious difficulties" and "serious losses to our country and people" to the GLF and the

[3] In September 1960, the central government issued the *Directions on Lowering the Food Supply Quota in Rural and Urban Areas*. According to the *Directions*, the per capita food quota per year was reduced to about 300 *jin* of unprocessed grains in areas north of Huaihe River…and to under 300 *jin* in heavily afflicted areas in various provinces. Three hundred *jin* of unprocessed grains can be converted into 1300 cal per day.

people's communes, but to "unrealistic targets, arbitrary orders, the wind of exaggeration and the 'communist wind'".

Many scholars believe that the GLF and the people's communes were the fundamental causes of the calamities. Their logic is that: Mao Zedong was "hot-headed"[4] and launched the GLF and the people's communes (Deng, 1994, 296). The GLF fostered unrealistic targets, arbitrary orders, and the wind of exaggeration. The unrealistic targets and the wind of exaggeration led to excessive requisitioning [*gaozhenggou*] which left the peasants with insufficient food to eat. The wind of exaggeration and arbitrary orders delayed disaster relief. Combined together, excessive requisitioning and delaying disaster relief resulted in large-scale deaths from starvation.

Some have also argued that giving priority to urban areas was also a contributing factor (Ge & Xin, 2006).

This all seems to make perfect sense. But let us take a closer look.

Unrealistic targets:

The targets for industry and agriculture were raised during the GLF. The best-known example was the target for steel production, but targets for agriculture were also raised. The initial draft of the second Five-Year Plan, drawn up in 1958, called for grain production of 250 million tonnes in 1962. Although it was fairly high target, it was achievable. (Production was 195 million tonnes in 1957. It would have taken an annual growth rate of 5.1 per cent to reach 250 million tonnes in 1962. Having recovered to the level of 1958 in 1965, national grain production grew 4.3 per annum till 1970.) But the target was raised to 300–350 million tonnes, requiring an annual growth rate of 8.4–11.8 per cent, at the Second Plenary Meeting of the Eighth Party Congress in May 1958. This was entirely impractical, and aspirations reached absurd levels when the State Planning Commission submitted to the Central Committee a revised plan which envisaged grain production rising to 750 million tonnes at an average annual growth rate of 30 per cent. At that time, China had

[4]When summarizing the lessons from the GLF, Deng Xiaoping stated that "The Party Central Committee made a mistake, for which the collective leadership, not just a particular person, was responsible".

The objectivity of Deng Xiaoping's summary is supported by the biographies of major national leaders including the *Biography of Mao Zedong, Biography of Liu Shaoqi, Biography of Zhou Enlai, Biography of Deng Xiaoping,* and *Biography of Chenyun* published by Zhongyang Wenxian Chubanshe [the Central Literature Publishing House]. However, the responsibility issue is not the focus of the study of this book.

only 111.83 million hectares of farmland.[5] Given the sown areas usually amounted to 85 per cent of the farmland, the mean production would have had to reach 526 kg per *mu* by 1962. (It was only 325 kg per *mu* in 2009).

Nevertheless, the CCP Central Committee approved the proposal. The targets had remained at an unrealistically high level before being gradually lowered after the Lushan Conference in 1959 and were completely cancelled in 1960.

The Wind of Exaggeration:

The unrealistic targets encouraged cadres to exaggerate and invent production figures, which soared from thousands of *jin* per *mu* to more than one hundred thousand *jin* per *mu*. The media, particularly *The People's Daily*, trumpeted these figures. As a result, "launching production sputniks" became an everyday occurrence. Since the grain production was apparently soaring, it was logical to increase the quotas for compulsory state purchases.

Excessive Compulsory Purchases:

Although the wind of exaggeration following the excessive targets was linked with the requisitioning quotas, the quotas were not simply raised in line with the inflated production figures. Since the government set up a system of unified purchase and sales [*tonggou tongxiao*] of agricultural and industrial products in 1953, the government had made and consistently implemented grain purchase policies. All production units (cooperatives) set government purchase targets according to taxable standard yields per *mu* and through a democratic process in the form of discussion. The state purchase targets were made in a bottom-up rather than top-down order. Once a threshold was set, only the part exceeding the threshold was subject to state purchase. The food below a threshold consisted of seed, forage, and the result of "food retention standard" multiplied by head-counts. The surplus grain or public grain [*gongliang*] was calculated by subtracting the food retained from total food production after the delivery of the public grain. The government would purchase 70–80 per cent of the surplus grain. The government started to implement a "three-fixed

[5] In the preface of *Tombstone*, Yang Jisheng states that "China's food production increased in the 1980s and 1990s when there was less farmland but 200 million more people than in the 1960s". But this statement does not tally with the facts. China's farmland increased to 134 million hectares in 1980, a record high, and 14.5 per cent higher than the 117 million hectares in 1960.

policy" (*sanding zhengce*), namely a policy of "fixed targets for production, purchase and sale". This meant that the government would purchase 80–90 per cent of the surplus grain at fixed rates for three consecutive years, unless in extreme circumstances. The amount of state purchase would remain unchanged if production increased, but the purchase would be reduced in years where disasters hit. The state purchase quota was fixed according to the plan made after the autumn harvest in the previous year. Although government purchases exceeding set targets might be counted as "political achievements", it did not directly affect the purchase plan of the year. Thence, the policies did not contribute to the "wind of exaggeration" and "excessive state purchases", and excessive purchases could only be the result of a breach of the policy.

In 1958, the administration of the state purchase system was passed from the central government to the provinces, which assumed responsibility for "the management of the balance between compulsory state purchases and sales, and of the surplus beyond the compulsory state allocation quota [*gouxiao cha'e guanli, diaobo baogan*]". The central government remained in control of the balance of compulsory purchases and sales, while the provinces were given the authority to set the levels of purchases and sales. Therefore, the actions of the provincial leadership made a huge difference to the amount of purchases and sales.

As grain production fell in 1959 due to natural disasters, the wind of exaggeration continued to blow in some areas, and the compulsory grain purchases were not cut, as they should have been, in line with the actual situation, but were slightly raised. Compulsory purchases amounted to 39.7 per cent of total production in 1959, an increase of 10 per cent over the previous year, and 15 per cent above the 1957 level. Many have quoted the figures in Table 13.1 to argue that excessive compulsory purchases caused the famine (Chen, 1984).

Yet, we need to clarify two matters.

First, we need to make clear what "compulsory purchases" and "return sales" meant. By compulsory purchase, the government charged peasants a fixed agricultural tax paid in grain and purchased surplus grain from them to provide for urban citizens and industrial purposes. Return sales means part of the compulsory purchase was sold back to peasants (population with a *rural* hukou). The food supplied to urban citizens and used for industrial purposes was "compulsory purchase – return sale" whereas food retained for peasants was "production – purchase + return sale".

Table 13.1 Grain production, compulsory purchases and return sales in 1954–1961

Year	*Production (million tonnes)*	*Compulsory purchases (million tonnes)*	*Return sales to the rural areas (million tonnes)*	*Net compulsory purchases (million tonnes)*	*Compulsory purchase ratio (per cent)*	*Net compulsory purchases ratio (per cent)*
1952	163.9	33.3	5.1	28.2	20.3	17.2
1953	166.8	47.5	11.6	39.5	28.4	23.7
1954	169.5	51.8	20.2	31.6	30.6	18.6
1955	183.9	50.7	14.6	36.1	27.6	19.6
1956	192.7	45.4	16.7	28.7	23.6	14.9
1957	195.0	48.0	14.2	33.8	24.6	17.3
1958	197.7	58.8	17.0	41.8	29.7	21.1
1959	169.7	67.4	19.8	47.6	39.7	28.0
1960	143.8	51.1	20.2	30.9	35.5	21.5
1961	136.5	40.5	14.7	25.8	29.6	18.9
1962	154.4	38.1	12.4	25.7	24.7	16.1
1963	170.0	44.0	15.0	29.0	25.9	17.1
1964	187.5	47.1	15.3	31.1	25.1	17.0
1965	194.5	48.7	15.1	33.6	25.0	17.3

Note The data of the return sale of grains in and after 1959 are not available. *Source* National Bureau of Statistics (1999), State Agriculture Commission (1982)

This practice can be confusing to people who are not familiar with planned economy.

Yang Jisheng (2009) says,

> The "over purchased grains [*guotouliang*]" had to be sold back to the villagers, and this amount reached 40 per cent on an annual basis. A great deal of grain was wasted when moving it back and forth from town to country. Despite this waste, the government was, above all, interested in controlling the grain, and so the over-purchasing went on, year after year.

Mr. Yang seems not to have fully understood how the return sale of grain came into being, and its main purpose.

After the unified purchase and sale of grains were implemented, rural residents engaged in forestry, animal husbandry, fishery, and cash crops other than grain began to rely on the "commodity grain" that the government purchased from other areas and allocated to them. The government

had to organize "return sales" every year to areas that were constantly short of food, and this accounted for most of the "return sales". In grain production areas, surplus grains were to be purchased by the government. Yet, the government had to sell part of the purchased grains back to the peasants when the harvest dropped below compulsory purchase threshold. Food for disaster relief purposes was not part of the "return sale" but was allocated from the National Grain Warehouse [*guojia liangku*] at the request of the civil affairs authorities. In other words, of the commodity grain purchased by the government, 55–60 per cent was consumed in urban areas, and most of the remaining 40–45 per cent was delivered to peasants who were not engaged in grain production. The grain consumption ratio between rural and urban residents is not accurately reflected by the proportion (25–40 per cent) of state-purchased grain in total grain production. Return sales, as an integral part of the *tonggou tongxiao* system, was a way of adjusting supply and demand for grain during the transition from the market economy to the planned economy rather than "controlling the grain".

Adjustments need to be made when comparing food retained per head in rural areas with food consumption per head in urban areas.

China was at the peak of an industrialization drive from 1956 to the first half of 1960, during which huge numbers of people migrated from the countryside to cities, and the demand for food in urban areas rose sharply. The urban population surged from 91.85 million in 1957 to 130.73 million in 1960, an increase of 38.88 million. Subtracting natural population growth, the number of migrants reached 31.71 million, or 6 per cent of the rural population in 1960. In 1959 alone, the figure for migration from rural to urban areas was 14.36 million, of which nearly 10 million had kept their agricultural *hukou*. About 10 million peasants had migrated to cities by early 1960, without registering their emigration. These figures are noteworthy.

Total grain production in 1959 was 169.70 million tonnes, of which 67.40 million tonnes was compulsorily purchased by the government, an increase by 8.6 million tonnes from the previous year. It looks like undisputable evidence of unrealistic targets resulting in exaggeration and subsequently excessive compulsory purchase.

The truth was, excluding 19.80 million tonnes of "return sales", the net compulsory purchase was 47.60 million tonnes, an increase of 5.8 million tonnes from the previous year.

As 14.36 million people migrated from rural areas to urban areas in 1959, the migration translated into a need to increase compulsory purchase by 3.63 million tonnes at 253 kg per person (a national average quota). This was 2.17 million tonnes, or 3.7 per cent more than the government purchase in the previous year. (Given the increased use of grain for industrial purposes, this figure could be lower.) Thus, the argument of famine being caused by excessive compulsory government purchase is untenable.

Grain production was 143.80 million tonnes in 1960, with a net compulsory purchase being 30.9 million tonnes. The real rural population in 1960 was 519.3 million. However, due to the under-registration of emigration, the natural growth of rural population in 1960 was 12.04 million more than the figure of migration factors are taken into account. Grain retained per capita was about 217 kg on average. Subtracting the proportion for seed grain, the retention of unprocessed food grain per capita was 162.5 kg, or 13.5 kg per month (it could be nearly 15 kg if produce from private plots [*ziliudi*] was counted). The grain allotted to urban residents, plus that used for industrial purposes or exported, made up approximately 21.5 per cent of total grain production in 1960. Subtracting grain used for industrial purposes or exported, the food available per capita for urban residents was not appreciably higher than that in rural areas. The supply for ordinary urban residents had been 13–13.5 kg per person before the "years of difficulties" but dropped to 12 kg per person in 1960. This meant that there was no chance that the food per capita in urban areas was significantly higher than that in rural areas. The truth is that everyone was caught up in the nationwide famine, and no one—cadres or common people alike—was treated more favourably than others.

The amount of compulsorily purchased grain increased by 2.17 million tonnes in 1959 over the previous year. The increased purchases translated to approximately 4 kg of reduction of retained grains per capita in rural areas. The available food per capita in rural areas dropped from about 287 kg in 1958 to about 217 kg and decrease by 70 kg. This was mainly due to the reduction in grain production—caused by natural disasters—by 28 million tonnes, or 42 kg per capita nationwide. Besides, there was a further reduction by 25.9 million tonnes in 1960. It is not reasonable to focus exclusively on the 4 kg reduction due to compulsory purchases, without taking into account the bigger picture. It is incorrect to place

the blame for the rural famine and premature deaths on over-purchase of grain by the government.

Those who have studied the state purchase and return sale of grain on a province-by-province bases, in that period, have found two regular patterns. One is that the state purchases were excessive and were not cut back in time in the early period of the disaster, in provinces like Henan, Anhui, Sichuan, and Shandong where premature deaths were most numerous. The other is that return sales in most of these worst-affected provinces took place in a timely manner. During the years of unified purchases and sales, compulsorily purchased grain was delivered by the provinces to the central government, while the provinces had authority over the return sales.

This explains at least four things. First, the excessive targets set by the central government were responsible for the excessive government purchases. Second, not all provincial leaders catered to the central government at all costs, only some provincial leaders went to extreme lengths to please their powerful superiors, whatever the cost. Third, the central apparatus did not know exactly what was going on, but provincial leaders did. Otherwise, they would not have begun increasing return sales in 1959. Four, although some cadres had made mistakes, they had not lost all conscience or reason, and knew they needed to deliver aid to the peasants (He, 2003).

The excessive government purchases were a cause of the severe shortage of food in rural China. But, objectively speaking, the under-production of grain, caused by the natural disasters, was the fundamental reason for the food shortage. At that time, it was not only the rural areas that were lacking in food; many cities only had a few days' worths of food reserves. Food supplies to urban residents were also cut. Preferential treatment to city dwellers, insofar as it existed at all, did not play an essential role in causing the food shortages in rural areas.

The Communist Wind and Communal Canteens Were the Primary Factors

The deaths in 1959–1961 were caused by many factors. Natural disasters resulted in a sharp decrease in per capita food production, which was exacerbated by embargos imposed by western countries.[6] Exaggerated achievements provoked by unrealistic targets, resulted in excessive compulsory state purchases. These factors were all responsible for the premature deaths in the rural areas. But the really deadly factor was the communist wind, which gave birth to the "food supply system" and the "public canteen" systems, which lasted from the mid-1958 to the spring of 1961. If it had not been for the communist wind and big canteens, even the previously mentioned problems would not have resulted in such large numbers of deaths.

[6]In early 1961, merchant ships from Canada and Australia were trying to ship grain to China and were willing to pay cash to buy fuel from American petrol companies. At the first United States National Security Council meeting presided over by J.F. Kennedy on 1 February, someone proposed relaxing restrictions that prevented ships with vessel entry permits issued by the communist China, from being refuelled by American petrol companies. It was proposed that refuelling should be permitted on condition that only food was being carried, and payment was made by cash. Kennedy asked the State Department to consider the proposal. But the final decision was that "policy changes of this kind are not appropriate at this time". On 3 February, American companies were ordered not to refuel ships carrying food to China. Some Americans suggested that the embargo on China should be lifted on humanitarian grounds, but the government set a precondition that the Chinese government must lodge an application before the request was granted. It was reported that at an ambassadorial meeting between China and the United States on 29 June, Jacob D. Beam proposed to China that US citizens might be permitted to send food parcels to people in China. But the Chinese government declined this gesture. The real test of the benevolence of the United States government was its response to two applications for export permits lodged in the first half of 1961 to the U.S. Department of Commerce by a Seattle international trade company, stating that an intermediary agent in Hong Kong had asked to purchase 10.5 million tonnes of food for China and North Korea. The Department of Commerce refused to issue the permit claiming that there was no evidence that the order was sent at the request of the Chinese government. The National Security Council refused to reconsider the issue. According to a resolution of the National Security Council, the State Department advised President Kennedy "to urge food exporters to China, including the governments of Australia, Canada and France, to use food as leverage to get Beijing to change its behaviour".

The Communist Wind and Transition in Poverty

There are crucial differences between the state ownership and collective ownership systems. The ways in which materials and funds are allocated are entirely different. In units under state ownership the government had the authority to transfer goods and materials at will, but also had to organize production and distribution within the units. Under the collective ownership system, the goods and materials remained the property of the collective owners, and no one outside the collective had the authority to transfer funds or materials at will. However, the so-called "communist wind" blurred the boundaries between collective ownership and state ownership.

The slogan of the people's communes was "first big and second public [*yida ergong*]". Size mattered. Under the collective ownership system, organized at village level, all the owners had an awareness of their rights to the use and dispose of their assets. When the production team, that is the village, was the basic accounting unit, the villagers were able to clearly identify their own interests. But when production brigades became the basic accounting unit, villagers in southern China and mountainous areas, where villages are smaller, no longer felt like owners. When communes became the basic accounting unit, and could cover an entire county, the difference between collective ownership and state ownership was effectively effaced as far as the peasants were concerned.

When assets were managed at the commune level under the five-in-one system comprising workers, peasants, soldiers, students, and merchants, the communes resembled feudal manors. In such circumstances, if the upper-level units had the authority to allocate and transfer the goods and materials of the lower-level units, the former logically had to assume responsibility for the latter's livelihood. It was entirely against the principle of equal rights and duties if the superior units only took away the assets without taking care of the livelihood of the members of the lower units. The policy as such was called *yiping erdiao*.[7]

This flawed policy was rooted in an ideological theory called "transition in poverty" [*qiong guodu*], which means a transition from collective economy to state-owned economy despite the low level of economic development.

[7] *Yiping* stands for equalization of income and distribution whereas *erdiao* means indiscriminate transfer of resources.

The theoretical basis of this anomalous system was known as "transition in poverty". The "transition" was from the collective economy to the state ownership [*quanmin jingji*]. The CCP Central Committee passed a *Resolution on Issues of Establishing the People's Communes in the Rural Areas* at the Beidaihe Conference in August 1958. The *Resolution* defined the nature of the people's communes as follows: "They remain a form of collective ownership at present. Those with favourable conditions may transform into public ownership. Generally, it would take 5–6 years to complete the transition. Distribution remains by work". Obviously, the Beidaihe *Resolution* did not prescribe an anomalous people's commune system like the one discussed above. However, after the communes were established, they all took themselves to be the ones with "favourable conditions". Some became too impatient to wait for 3–4 years but completed the "transition" within just a few months. It was called "transition in poverty" because the transition was made when productivity was low, and goods and materials were scarce. These developments took place in spite of the five necessary conditions explicitly stipulated in the Beidaihe *Resolution*.

Both local officials and the central government were responsible for the "transition in one go". Less than a fortnight after the release of the Beidaihe *Resolution*, an editorial entitled "Uphold the red banner of the people's commune and march forward" was published in *The People's Daily* of 13 September 1958. The editorial urged that "public canteens", "nursery schools", and "knitting groups" be set up when establishing the people's communes. It also said the last remnants of private ownership remaining in the previous agricultural producers' cooperatives, such as private plots, private cattle, private orchards, and production machinery should be transferred to commune ownership. The editorial deleted the reservations about timescales in the original *Resolution*. Following the editorial, central leaders, including Mao Zedong, visited various provinces and praised the "supply system", including the public canteens and collective living, and announced that the "food supply system" was the embryo of communism and would be implemented in the autumn of 1958.

Mao Zedong was clearly aware of this. Recalling a report of the survey of the "One county, one commune" practice in Henan he sent to Mao in October 1958, Wu Lengxi (2006, 91) wrote:

> He pointed out that there were two things that he was not sure of, if the communes practiced ownership of the whole people, like state-owned

> factories. One was whether the government would be able to allocate production and living materials to the communes in disaster years as in normal years. The other was whether the government could purchase all of the products from the communes in harvest years. […] The central government could not even guarantee allocation of production and living materials to meet the needs of the counties in normal years. It was obvious that there would be even less likely in disaster years.

What happened later reflected Mao's concerns. He condemned the policy of *yiping erdiao* in August 1958, and as a result, the policy ceased by the end of the year.

Mao started to rectify the policy of *yiping erdiao* and communist wind at the First Zhengzhou Conference in early November 1958, and these problems were basically solved in early 1959. Although the communist wind and transition had exerted considerable negative impact on agricultural production, they did not directly cause huge number of excess deaths. The most direct cause was the public canteen system, or "food supply system", implemented nationwide.

The Food Supply System and Public Canteens

Both state ownership and collective ownership refer to the ownership of the means of production, not everyday consumption goods. Even in state-owned units, consumption goods are privately owned. After the CCP terminated the wartime rationing system, employees in both enterprises and public institutions started to receive salaries this remained the case after the planned economy was established. During the period from the time of advanced cooperatives [*gaojishe*] to the early years of the people's communes, the production surplus, after deducting state purchases and surplus grain due to the government, was distributed directly to village households and became their private possessions. Stored food, other consumption goods, and tools were also private property. However, a "food supply system" featuring public canteens began all across the country in the autumn of 1958.

The so-called "food supply system" had two aspects. One was that the production team no longer distributed products to the villagers but maintained everything at the collective level. Food was collected and stored in the canteens. As the commoditization of agricultural products was not very developed at that time, the implementation of the food

supply system meant the "collectivization" of basic consumption goods. The other aspect was that all meals were provided by the public canteens. Since the accounting was done at the commune level, problems arose.

If there had been only the "communist wind" and "transition in poverty" but the surplus after turning in everything due to the government had been distributed to the peasants and remained their private possessions, or consumption had not been collectivized, there would have been no such thing as "allocation and transfer [*diaobo*]". It would have been much more difficult to reclaim grain from the peasants' homes after it had been distributed. For thousands of years, the grain in family food jars had been clearly understood to be private property. The peasants would have fought tooth and nail to resist the collection of their food because it was traditionally justified to do so.

Meanwhile, since the food supply system was in place, and the lower-level units and the peasants did not have to worry about how big the harvest was and how it was allocated, they ate as much as they pleased. The canteens cooked as much as they liked as long as there was food and the peasants ate as much as possible, thinking that the supply of food was the government's business and that the upper-level units and the government would shoulder the responsibility if the canteens ran out of food. Unfortunately, they were wrong. Nobody was responsible when the canteens ran out of food. Nominally the public canteens represented a food "supply system", but as a matter of fact, it was a "centralized food supply system".

It should be emphasized that although the CCP Central Committee later started to rectify the communist wind in early 1959, it maintained a favourable attitude towards the big canteens. The big canteens remained in existence until the end of 1960 and were not completely disbanded until Spring Festival in 1961. A crippled and misshapen "food supply system", which encompassed the entire micro system of food supply, was put into practice nationwide.

If the means of production had remained under collective ownership and food and other consumption goods had been distributed to the rural households from 1959 to the end of 1960, as they were after the spring of 1961, there would have been no severe increase in mortality, even given the drop in production, excessive targets, exaggerated achievements, and excessive state purchases.

People Really Starved to Death

I lived in rural Henan as a *zhiqing*—educated youth sent to work and live in rural China as part of the Up to the Mountains and Down to the Countryside Movement—in 1968. My experience as a *Zhiqing* helped me unlock the mystery of famine deaths when I was having a conversation with one of my schoolmates about life in Henan in the 1960s.

At that time, life was still hard in rural Henan. I stayed in a family of seven—two adults and five children. The oldest child was a 14-year-old boy and the youngest a one-year-old girl. The husband was the only breadwinner. However, the wife was still able to deal with resource scarcities and kept day-to-day life in balance. Vegetables were kept dry on the roof while peppers and garlic were hung on the walls. The yards were kept tidy, and the children's clothes were clean though with nicely stitched up patches. I asked my schoolmate what would happen if there was a shortage of food.

Suppose there was a severe disaster in the autumn, and a family of seven had been allocated with only 420 kg of food from their production team. They would have had to manage to survive till the following May, which means each person would have only 250 g per day, or 90 kg per year, less than half of the retained food for rural families in 1960. What would have happened?

Both my schoolmate and I agreed that nobody would die of hunger. By May, everyone in the family would look sallow and emaciated, but it is unlikely anyone would have starved to death. Would this have been possible? Actually, it was the way of life for Chinese peasants for thousands of years. Before 1949, the annual average grain production per capita was 250–300 kg. Subtracting that taken by landlords and rich peasants who made up nine per cent of the population, and taxes and levies which accounting for 20 per cent, the food per capita left to the peasants was probably less than 150 kg (Yang, 2009). If disaster hit, most of the poor peasants and farm labourers would have less than 40–50 kg of food per person per year, and those in dire poverty would have even less. In order to survive to the next spring, a peasant mother would have carefully calculated and allocated food according to the ages of the family members, and they would have scavenged wild herbs, tree bark, chaff, and other edible stuff for extra food in order to stay alive. While women and children might eat a bit less and adult males might eat a bit more, and they might consume more in busy seasons and less in other days, a mother would

always make sure that everyone had something to eat every day. This is a survival skill that Chinese poor peasants have cultivated over thousands of years.

People will die of hunger if they fail to get anything to eat for a prolonged period of time. Daily consumption of 250 g of grain—corn for example—can be converted into around 800 cal per day. People need at least 1000–1200 cal per day to avoid getting emaciated. With the 800 cal supplemented by chaff, berries, and wild herbs, people did not have to die like they would if they had nothing to eat for six or seven days.

The way rural cadres ran the public canteens was fundamentally different from the way a peasant grandmother would manage her kitchen at home. As far as the cadres in charge of the canteens could see, the "food supply system" meant that the upper-level units would allocate food if there was a shortage. Thus, they ate as much as they could in the beginning and put their trust in allocation from the higher authorities when they ran out of food, instead of resorting to "substitution of fruits and herbs for grain [*guacaidai*]". Thus, they had no choice but to close the canteen when no food was allocated as they had expected. The Director of the CCP History Research Office at Guangshan County in Xinyang Prefecture told me that some of the canteens were sometimes closed for one week due to a lack of food. Some people would die if they had failed to get any food for such a long time.

There were indeed severe and prolonged natural disasters in 1959–1961, and food per capita dropped below 220 kg. The wind of exaggeration and excessive compulsory purchases further reduced food retained for rural families. Disaster relief was not properly and timely provided in some heavily afflicted areas, and local cadres in some areas adopted extreme measures when implementing the policy of "collecting food from families" and forbidding private possession of food. Yet, the food retention standards were still somewhere close to 180 kg per capita, and it would have been probable for the actual food retention to remain at 90 kg per capita in the disaster-stricken areas. In fact, disaster relief became the focus of government work in the autumn of 1960 and by that time, the wind of exaggeration and excessive compulsory purchases had ceased as both the government and communities had realized the famine situation after the Xinyang Incident in the spring of 1960. However, there were still excess deaths in late 1960 and early 1961. I believe it was flawed policies such as "gathering all food at the canteens" that were in force from the

summer–autumn of 1958 to the spring of 1961 that were directly responsible for incidents of hunger-related deaths. There would not have been a significant rise in excess deaths if the previous policies of distributing grains directly to village households during the time of advanced cooperatives [*gaojishe*] had continued, even though death rates might inevitably rise due to the famine.

How China Has Responded to Disasters in History and What We Can Learn from It

As discussed previously, most of the excess deaths in 1959–1961 were caused by collectivization of consumer goods. Although the disastrous effects of the "communist wind", the "wind of exaggeration", and excessive government purchases are obvious, it does not follow they made large-scale famine deaths inevitable. Let us examine the Three Years of Difficulties in the context of Chinese history and find out how the response to natural disasters and famine affects the outcome.

China is one of the countries that suffer the most from frequent, severe climate disasters. A minor disaster can happen every three years and a major disaster every five years. There may be disasters in the north while there are none in the south, and there may be catastrophes inland and none in coastal areas. Or vice versa. Or both. But there are disasters every year. According to Deng Tuo, who was writing in the 1930s, from the Qin-Han to the Ming-Qing period, 1013 floods and 1022 droughts resulted in severe famines (Deng, 1984, 55–56). Chen Gaoyong (2007) examined more data and concluded that there had been 3459 floods and 3504 droughts during the same period. Of the threats to agriculture by climate disasters, droughts account for 60 per cent and floods 30 per cent (Chen, 2007, 2). Drought in the north and floods in the south, drought in the west and flooding in the east, drought in the spring and floods in the autumn, floods in the spring and drought in the autumn, or consecutive droughts and floods can happen every year. This is the major threat to agricultural production (Sun, 2004, 7).

Living through famine has been part of the everyday life of the Chinese people for the greater part of their history. Today, "life" means an abundance of activities engaged in for amusement and self-development, but in the past, for many people, it meant simply staying alive.

The unfavourable climate conditions and consequent frequent natural disasters forced the ancient Chinese to work out special mechanisms to

cope with disasters, and the Chinese people, therefore, established sophisticated systems to tackle disasters. According to Lishan Xu and Zixiang Hu (2009, 80),

> The distinctive feature of China's ancient disaster relief system was centrality of the emperors. When major disasters hit in the Qin-Han dynasties, the emperors usually collected suggestions from the public. For example, in the fourth year of Benshi (110 BC), an earthquake hit 49 prefectures. Emperor Xuandi ordered "the Prime Minister, ministers, noblemen, and prefectural lords to widely consult scholars on how to respond to the emergencies and help me overcome my shortcomings." With the help of ancient wisdom and customs, the Chinese disaster relief theories and policies gradually developed and became more sophisticated, and an entire system, including disaster relief (inclusive of provision of grain, money and labour), food allocation (including delivering grain to the people, moving people to places where there was food, and selling food reserves at cost price), compensation, pest control, consolation, tax abatement, storage, loans and conservation, was established.

In China, especially after the Han Dynasty, society consisted of two parts. One was the emperor and the imperial bureaucracy; the other was made up of the common people, including landlords, merchants, land-owning peasants, tenant farmers, farm labourers, and people from all walks of life. The emperors, their bureaucracy, and their armies produced nothing, but lived off-grain levies and taxes. From the mid-Han Dynasty onwards, even the princes of the smaller feudal states could no longer live on the produce of their own lands but received handouts and subsidies from the central government. The other households, registered in the household system, were all independent economic entities that produced material goods (He, 2007). Small-peasant farming was the basis of the economy, and it continued into the early years of the People's Republic.

In such a society, there were two major channels of circulation and exchange. One was the collection of grain levies and taxes by the emperors and their bureaucracy. The other was market exchange among the economic entities—the commoner households. No matter how rich a Chinese landlord or merchant was, unlike a European feudal lord, the life or death of peasants in a famine was not his direct, economic concern (although some, for moral reasons, would set up charity relief organizations). However, the life and death of the peasants had a direct impact on the emperors and their bureaucratic system. This was not just

a moral commitment but touched on the survival of the royal courts because consecutive disasters would lead to peasant bankruptcies, concentration of land ownership, and masses of refugees. During the reign of Chongzhen, consecutive droughts resulted in countless famine deaths and huge movements of famine refugees. Li Zicheng rebelled against the royal court. Emperor Chongzhen was unable to bring the situation under control. Although Li was defeated by Hong Chengchou and his army reduced to only 18 cavalry men in the Tongguan Battle, he managed to rally hundreds of thousands of followers in just three years and an army of a million by the following year. If there had not been an abundance of famine refugees, how could Li Zicheng have dethroned Emperor Chongzhen and driven him to suicide.

It was this social and economic structure that gave rise to the disaster relief philosophy of "saving the people from water and fire" and the development of a mature disaster relief system.

Generally speaking, in a society of small peasants and market exchange, the peasants get through disasters, for the most part, in three ways; by living off their relatives and friends, fleeing their hometowns, and begging for food, or government disaster relief and tax abatement.

First, it was common for Chinese peasants to get through minor disasters with the help of their friends and relatives. Mobility in an agrarian society was relatively restricted. Family ties in this patriarchal society were close, and the relationships between rural families were usually harmonious and friendly. When minor disasters hit, people could save lives by sharing a small amount from their rice jars. After the Song Dynasty, big families usually bought up assets and fields especially for disaster relief purposes. In minor disasters that did not last too long, people could live through the difficulty if those who had food reserves helped those who had run out of food. But, clearly, this would not work in the case of persistent, major disasters when every family ran out of food. This was a common way of survival in a small-peasant economy.

Second, fleeing one's hometown and living as a beggar was the most common way to survive a major disaster. It was part of everyday life in places where natural disasters are frequent. Fengyang in Anhui was a place well-known to Chinese for its citizens playing flower drums and begging across the country almost every winter and spring because "there were famines in nine out of every ten years". Many peasants from eastern Henan were also accustomed to this sort of life. In some ways, it resembled the way of life of north China nomads who would tend their herds

in the summer and autumn but engage in robbery and plunder in the winter and spring.

The people were able to make a living by begging only because there were no disasters, or less severe disasters, in other areas. From March–April and September–October every year, a cloud belt stretches from southwest to northeast China. Sometimes the cloud belt stays still, sometimes it moves up or down. This means floods in some places and droughts in others, and in yet other places, wet and dry days are relatively evenly distributed. China is big enough to always have some places less stricken by disasters than others. As a result, Chinese peasants from a particular region developed conventional "begging routes". The Shaanxi people used to call the Henan people "Henan shoulder-poles [*Henan dan*]" because Shaanxi and Gansu used to be the main destinations for beggars from middle and northern Henan, who would arrive carrying shoulder-poles, one end loaded with their children and the other with their belongings. Before reform and opening-up, almost all provincial level model workers in Shaanxi were descended from Henan beggars. People from Shandong and northern Hebei used to "go east of Shanhaiguan [*chuangguandong*]" when famines hit, people from Nanyang in Henan fled to Hubei, and Xinyang people fled to southern Anhui and northern Jiangxi.

Third, the basic government measures to tackle disasters were disaster relief and tax abatement. Two things had to be prepared in advance to be in a position to offer relief and avoid turmoil when major disasters hit. One, there must be reserves. The treasuries of all dynasties put money aside for disaster relief precisely because the emperors did not want to lose their thrones. Two, local governments were obliged to report disasters in a timely manner. According to the *Laws of the Qin Dynasty [Qinlu]*, the amount of rainfall and the number of grains on ears of wheat had to be reported. The nature of the disaster and the precise area of land affected had to be specified. Reports had to be made regularly at fixed times of the year. Anyone who dared to cover up a disaster or failed to report truthfully would be severely punished. The government would be able to reduce the damages of disasters through relief, loans, and tax abatement if these two conditions were properly managed.

Of course, although ancient Chinese governments had sophisticated disaster relief systems on paper, they were not always effective in practice. Emperors might care more about luxuries and pleasures and corrupt officials could embezzle disaster relief funds. Things usually deteriorated

as a dynasty approached its end. As a result, major disasters still caused countless casualties in all dynasties.

Nevertheless, it remains true that China's peculiar geographical and climatic conditions dictated that the government take the major responsibility for combating severe natural disasters. China's rulers have to understand the basic rules of disaster relief, the measures that need to be taken, and must implement these measures unswervingly. If the rules are disregarded, large-scale mortality is inevitable. Ignorance of long-established measures for combating disasters and carrying out relief work, delaying the response to, or denying the existence of a disaster will also lead to huge calamities.

How did the calamity of 1959–1960 happen? Simply put, it was because the rules governing how to cope with disasters were comprehensively breached, and some policies implemented were completely at odds with long-established approaches to dealing with disasters.

First, public canteens eliminated the possibility of helping friends and relatives.

The people's commune system, in 1958–1961, was fundamentally different from the system that existed later in that private appropriation of food and other essentials was abolished in many villages. In the autumn of 1958, the production team stopped distributing the harvest to households and began to store all grain in the canteens. The peasants ate all their meals in the canteens and no longer had any food at home. Every household depended on the food at the canteen, and it was up to the cooks how much food each person got. No one had food at home, and therefore no one could offer help to friends and relatives. The first path to relief in times of disaster was closed.

Second, in some places, for a period, some local cadres prevented the peasants from fleeing to beg. Zhang Shufan (2008, 141) wrote, "Many canteens had run out of food. The people had no choice but to cook sweet potato leaves and wild herbs at home. When they found out, the cadres smashed their woks. So the people were forced to flee the famine. The party prefecture committee saw this as a threat to the GLF and set up checkpoints to stop the people fleeing". According to Yang Jisheng (Yang, 2008, 28), Guangshan County of Xinyang Prefecture deployed the people's militia to stop peasants leaving in 1959. The restriction on leaving were lifted in late 1960, but they were strictly enforced when the disaster hit in the autumn of 1959 and the spring of 1960. Thus, the second path was closed.

Most significantly, officials in some places requisitioned excessive grain through compulsory purchases, leaving rural canteens short of food, then covered up the consequences and delayed relief efforts. In Xinyang prefecture, the leadership, from the secretary of the prefecture committee down to county secretaries, not only left people to die, but also took measures to prevent the news from leaking out. The central and provincial governments were left unaware of the situation and did not organize any relief efforts.

Where all three paths were closed, deaths from hunger became inevitable.

It is worth noting that the famine could have been much less severe if it was not for the policy of public canteen's monopoly on food. People would not even have had to flee their hometown if food had been evenly distributed to rural households in most disaster-stricken areas, and only a few heavily afflicted areas would have needed a relief.

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CHAPTER 14

Are Socialism, Planned Economy, and Collectivism Responsible for the Calamities?

Some scholars specialized in economic systems have referred to the excess deaths during the Three Years of Difficulties in their critique of socialism, planned economy, and rural collectivism, although they have not done any specific research into the mortality issues for that period.

A fundamental cause of famine is a shortage of food. There would be a severe famine as soon as there was a food crisis if shortage should be intrinsic to a socialist economy. A book entitled the *Economics of Shortage* by the famous Hungarian scholar, János Kornai, was popular among Chinese scholars in the mid-1980s, when the shortage of supplies including food was still fresh in the memory of the Chinese people who had experienced the planned economy.

Some of the Chinese economists became famous by offering sensational claims in a new era of reform and opening-up. Awarded "economist of the year" twice by CCTV, Zhang Weiying (2017) claimed in one of his speeches that "people die of hunger in a planned economy…, but no one will die of a shortage of food in a market economy".

Justin Yifu Lin (1990, 1228), former Chief Economist and Senior Vice President of the World Bank is known for his article titled "Collectivization and China's Agricultural Crisis in 1959-1961", in which he states that "The agricultural crisis in China in 1959-61…resulted in 30 million extra deaths". Lin attempts to establish a theoretical framework to prove

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that the people's commune system will definitely lead to "the collapse of the rural productivity".

The fact that the household contract responsibility system enabled the 18 households in Xiaogang Village to increase grain production from 17,500 kilograms to 65,000 kilograms in a single year seems to be valid evidence for those arguments.[1] If famine is intrinsic to the planned economy and the people's commune system, policy failure would be irrelevant to the study on famine deaths.

Arguments proposed by these three renowned scholars will be analysed in this chapter.

Shortages in a Planned Economy

At some point in time all socialist countries including China and the former Soviet Union shared something in common—prolonged shortages in almost all resources. In China, besides grain vouchers, there were vouchers for oil, meat, fish, soybean products, salt, sugar, eggs, cookies, rice cakes, moon cakes, groceries, tobacco, wine, desserts, and rice noodles. Shortages as such usually could last several decades. My experience of the times was that everyone was short of everything. Why shortages were common in socialist countries? What is the connection between prolonged shortages in supply and productivity? A book entitled *Economics of Shortage* by the famous Hungarian scholar, János Kornai, was popular among Chinese scholars in the mid-1980s. At the time when China and the former Soviet Union were reforming their planned economies, this book offered a logical criticism of socialist economics and influenced a lot of people engaged in the reforms.

János Kornai (1980) has established a theoretical framework for socialist microeconomics and he argues that "surplus" is a permanent condition in capitalist countries, while "shortages" are chronic in socialist nations. Kornai believed that the source of shortages was the confusion between the roles of government and businesses, and the real causes of the shortage economy were the weak profit incentives of state-owned enterprises combined with soft budget constraints. The socialist businesses were motivated towards extended reproduction and producing greater

[1] According to the official story, China's rural de-collectivization began in 1978, when the peasants of Xiaogang village in Anhui province secretly agreed to divide their collectively farmed land into individual plots.

quantities, which created a mutually reinforcing pursuit of output quantity, attempts to pre-empt, and hoard, supplies of raw materials, leading, in turn, to a shortage of goods and materials. As a result, product and resource scarcity is inevitable.

Kornai's analysis of the causes of the shortages in socialist planned economies has long been considered authoritative and had a strong impact on China's reform of economic system. Many people have experienced shortages, and it is widely held that state-owned enterprises in socialist economies are less motivated by profit and that both government and businesses lack hard budget constraints. If some causality could be established between the two, state ownership would definitely become the target of reform.

Yet, the *Economics of Shortage* contains logical fallacies and lacks empirical evidence.

First of all, logically or operationally, storage resulting from the "hoarding impulse" of enterprises is not an infinite process. Companies rarely store more than 30 per cent, or at most 50 per cent, of a year's supply of raw materials. Excessive hoarding incurs costs in terms of warehouse capacity and so on. A planned economy typically stores no more than a normal market economy—usually around 20 or 30 per cent. Of course, it is necessary to strike a balance. If a balance is found there can be no such thing as a vicious circle of shortages breeding hoarding and hoarding exacerbating shortages in a mutually reinforcing and self-inducing process. Instead, there will be a static, relatively fixed level of storage, which imposes a certain amount of warehouse occupancy costs.

According to Kornai's logic, the soft budget constraints in state-owned businesses lead to management difficulties, and the tendency to hoard leads to insufficient supplies and consequent shortages. If this is really so, there should be significant underproduction per capita in socialist countries relative to their counterparts. However, this was not the case at all.

As a matter of fact, shortages and surpluses have never been seen in the per capita production or per capita possession of any particular commodity. Nor has it been shown in a way that there were shortages when per capita production was low, and surpluses when the per capita production was high.

When Russia was a planned economy in 1985 it produced 17.131 million tonnes of meat or 120 kilograms per capita. But almost everyone

used to complain that they could not get meat products while all varieties of meat were available in American supermarkets in huge quantities. In fact, meat production turnover in the United States was only 24.629 million tonnes, or 109 kilograms, per capita in 1985. Per capita meat production was 97 kilograms in France and 58 kilograms in the United Kingdom in the same year. Russia eventually switched to a market economy in 1995, and people stopped complaining about meat shortages because all kinds of fresh meat were available at the butchers. But meat production turnover dropped to 6.871 million tonnes, or 46.5 kilograms per capita, that year—less than 40 per cent of the level a decade before.

China was a planned economy in 1970, when meat production was 5.965 million tonnes (World Bank, 2016),[2] or 7.2 kilograms per capita. At that time, no one felt they had enough meat to eat. Meat was not sold for money but supplied against vouchers. The planned economy was still in place in 1980,[3] by which time meat production had increased to 12.054 million tonnes, or 12.2 kilograms per capita. Meat was still rationed. Like China and Vietnam, per capita meat production was low in the rest of Asia. It was only 1.4 kilograms in India in 1970, and 5–10 kilograms in Southeast Asian countries. But the people in those countries never complained about meat shortages.

However, Kornai has failed to understand that a shortage in macroeconomic terms means "a shortage of supply and a surplus of demand" while a surplus means "a surplus of supply and a shortage of demand". Without involving the concepts of demand and supply, as well as macroeconomic phenomena and problems, it is next to impossible to explain shortages and surpluses.

Shortages and surpluses happen in a planned economy and a market economy in different ways because they adopt different distribution mechanisms.

One cannot avoid the question of demand when talking about shortages, and analysis of demand inevitably involves the distribution system. In economic terms, demand means "desire empowered by affordability". Surpluses result from demand being depressed, usually for one or both

[2] At that time, meat referred to beef, pork, and mutton, and did not include chicken or other meats.

[3] The implementation of the household contract responsibility system began after the Beidaihe Conference in September 1980.

two reasons. One is a lack of affordability despite a wish to purchase; the other is unwillingness to purchase even though the goods are affordable. Both lead to oversupply. Shortages, on the other hand, occur where there is excess demand, propelled by willingness to purchase and affordability, resulting in an undersupply.

Discussion of this subject cannot be isolated from its historical context. The socialist countries of the last century, including the former Soviet Union, were all emerging industrialized nations, at the stage of industrialization and urbanization. The correct yardstick against which to measure them is not the western developed economies, but other, non-socialist, industrializing nations, such as the emerging market economies of Latin America and Asia. This approach will yield a more useful and logical characterization of the two economic systems.

Both polarizing and flattening income distribution impact demand and supply. Due to resource constraints, supply of all goods including necessities can be limited. When income is evenly distributed and everyone can afford them, a shortage of necessities will be inevitable.

In the mid-to-late stages of the last century, the Gini coefficients of the capitalist economies were usually higher than those of the socialist nations.[4] However, there was much difference between these two kinds of economies in terms of demand and supply of necessities.

The machine-woven cotton cloth became available in the Chinese marketplace in the first half of the nineteenth century. It was accessible, at first, only to a thin layer of well-off people in coastal cities, but later spread to ordinary city dwellers and the rural rich. A century later, in the 1930s, it was still too expensive for ordinary peasants. The output was 0.28 million metres in 1936, or 5 metres per capita, the highest production figure achieved before 1949. There was no shortage of cotton cloth, but it did not sell very well, despite the efforts of the sellers. This was not because the peasants did not want it, but because they could not afford it.

By 1970, the output of cotton cloth had reached 11 metres per capita, more than twice the pre-1949 per capita peak. But vouchers were required to buy cloth and people were restricted to only 15 *chi* (5 metres)

[4] These refer to the socialist nations at the time when János Kornai wrote his book. At that time, the Gini coefficient was about 0.2in the former Soviet Union, about 0.25 in the oriental socialist nations, about 0.3–0.35 in the developed nations, and 0.35–0.6 in other nations of private ownership.

per year. This left nobody satisfied. Even city dwellers wore clothes that had been repeatedly patched. There was a continuous shortage of cloth from the start of the planned economy in the early 1950s until 1983 when cloth vouchers were no longer required. The shortage of cloth happened because everyone could afford it.

In 1970, the annual average expenditure was 261 yuan for urban residents and 114 yuan for those who lived in the countryside (National Bureau of Statistics, 1986). There was not a huge difference between city dwellers and peasants. At the time, one *chi* of cloth cost 0.15–0.2 yuan, so it only cost 2.25 yuan to buy 15 *chi* of cloth. A peasant whose income was 50 per cent of the mean would spend only 4 per cent of his annual earnings on cloth while urban residents would spend 1 per cent. At that time, education, healthcare, and housing were almost free. Its output would have to double if people should spend 3 per cent on cloth.

The case of meat was similar to that of cloth. Mean per capita meat production was 7.2 kilograms in 1970, almost 2.5 times the output in the best years before 1949.[5] The growth rate was by no means low. At the time, urban citizens were entitled to buy 4–5 kilograms of meat per year. (This worked out at around half a *jin* per month. An additional half *jin* was allowed on National Day and Spring Festival. In some places, one could also buy small amounts of minced meat without a voucher. Conditions varied from place to place.) At the time, the price of pork was only 0.6 yuan per *jin*. Beef and lamb cost 0.5 yuan per *jin*. The consumption of meat per capita would have increased to 15 kilograms and supply of meat would have to increase by two folds if urban residents should spend 3 per cent of their budget (or 8.4 yuan) on meat.

It was the same with consumer durables. The output of the "three indispensables [*lao sandajian*]", bicycles, watches, and sewing machines, had increased from almost zero to 3.7 million, 3.5 million, and 2.4 million by 1970, and production was growing at a double-digit rate annually. Altogether, the three items cost about 400 yuan, and most urban families both needed, and could afford, them. But there were 35 million urban families and 126 million rural households. If 50 per cent of them could afford one bicycle, it would have taken 20 years to meet the demand, given the production capacity at that time.

[5] The highest output of meat before the Liberation is not available. According to the *Yearbook*, the head counts of pigs and lambs in the best years before the Liberation were 38 per cent and 43 per cent of the output in 1970, respectively.

A conclusion can be drawn from the above analysis: the unequal distribution of income in a market economy gives rise to a phased increase in consumer demand that suppliers can keep pace with. When consumers go to the market in successive waves and the income levels of the few advance faster than those of other groups, manufacturers must keep producing new products in order to meet the surging demand of the high-income group, and product designs must be developed and upgraded swiftly. Hierarchical market supply will reduce pressure on resources required for producing products for each market segment.

The flattening of income distribution in socialist countries creates an immediate explosive rise in demand that the production process cannot keep up with, due to resource constraints. On the other hand, it is not easy to meet the existing demand for products that are both needed and affordable, when production resources are limited. As the old Chinese saying has it, when radishes sell fast, no one bothers to wash the dirt off them. When the demand is high and goods are affordable, manufacturers are too busy to develop new products. Like a princess who does not have to worry about her marriage, why would enterprises need to manage their production carefully?

The shortages in planned economies did not result from businesses' tendency to hoard, but from the flat income distribution which meant that those who "who did not deserve to" could afford to buy. Kornai simply reversed cause and effect.

Yet, the *Economics of Shortage* has been criticized in the West as "theoretical positivism rather than empirical positivism". In his book, Kornai did not use standard modelling methods, which are commonly used in western economics, or economic statistics for analysis, but adopted a deductive approach. But whatever methodology is employed, its logic must be consistent with reality. He could have considered "shortages" together with "surpluses" in a context of supply and demand. Unfortunately, he has simply studied "shortages"—a macroeconomic concept—at a microeconomic level only, thus falsely claimed that shortages are intrinsic to planned economy and the cause of insufficient supply and stagnant economic development.

The Market Economy Cannot Avert Hunger-Related Deaths

Zhang Weiying proclaimed "economist of the year" twice by CCTV, received the China Economic Theory Innovation Award in November 2011. In his award acceptance speech he lamented,

> So what was the most severe disaster caused by ignorance in human history? It was the system that was imperatively implemented from top to bottom in countries with more than one-third of world's total population. That is the so-called planned economy. (Zhang, 2017, 6)

He continued,

> Would there have been the Great Leap Forward Campaign if we had carried out a market economy? Would there have been so many casualties? Definitely no! Of course, even if we had a market economy, we might have the gap between the rich and the poor and casualties in case of natural disasters such as earthquakes and tornadoes, but there would be no casualties caused by the shortage of food. (Zhang, 2017, 9–10)

Zhang holds that hunger and hunger-related deaths were absolutely caused by a planned economy—shortages of food can be seen in any country, but hunger-related deaths can only happen in planned economies while nobody would die of hunger in countries where market economy is adopted. Zhang's assertion is particularly appealing to those who believe there were 30 million famine deaths during the Three Years of Difficulties.

However, what Mr. Zhang says is at odds with historical facts as well as the opinions of other scholars.

Amartya Sen, the Nobel Prize Laureate, and his co-author Jean Drèze (1991) have apparently followed a different line of argument in the Introduction to *Hunger and Public Action*. They wrote that,

> the importance of the institution of wage labour is a particular aspect of this general problem. People who possess no means of production except their own labour power, which they try to sell for a wage in order to earn an adequate income to buy enough food, are particularly vulnerable to changes in labour market conditions. A decline in wages vis-a-vis food prices, or an increase in unemployment, can spell disaster for this

> class. While hiring labour has existed for a long time, its relative importance—especially in the form of wage labour—has dramatically increased with the spread of capitalism, even in developing countries. The class of landless wage labourers has indeed recurrently produced famine victims …The acute vulnerability of wage labourers in a market economy is a problem which applies, in fact, also to the richer countries (including those of Western Europe and North America), since even there wage labourers have little ability to survive on their own when unemployment develops as dramatically as it did, say, in the early 1980s. People in this predicament have been spared the necessity of starvation because of the supplementation of the market mechanism by institutionalized social security, and in particular by unemployment insurance, in the absence of which there would have been, it is easy to see, acute and widespread hunger in many of these countries.
>
> The importance of the vulnerability of wage labourers to famines can be particularly acute in that intermediate phase in which the class of wage labourers has become large (unlike in pre-capitalist formations), but a system of social security has not yet developed (unlike in the more advanced economies).

If Zhang Weiying was right, there should not have been any more hunger-related deaths from 1990s onwards as most countries including China and former Soviet Union countries have since become market economies. Unfortunately, according to statistics published by the United Nations World Food Programme, one child died from malnutrition in the world every six seconds, and 25,000 people died every day. More than 925 million people in the world were going hungry (FAO, 2010). WFP statistics show that there were still 142.1 million Chinese, or 11 per cent of the total population, suffering from undernutrition in the early years of the new century.

On 13 November 1996, heads of state, government leaders, and representatives of more than 170 countries gathered in Rome to endorse the *Rome Declaration on World Food Security* and the *World Food Summit Plan of Action*, which aimed to reduce the number of undernourished people by half by 2015. In 2000, this target was reiterated in the *United Nations Millennium Project*.

Ten years later, the United Nations Food and Agriculture Organization warns that the number of undernourished people in the world remained at 820 million in 2006 (Wang, 2006). On 18 September 2008, the FAO

declared that the population suffering from hunger had increased by 75 million due to the surge of food prices since 2007. The number of people going hungry was now 923 million, even larger than the initial number targeted for relief work by the 1996 Rome conference. The FAO projected that, because of the global economic slowdown and rising food prices, 1.02 billion people would go hungry in 2009, 11 per cent more than in 2008 (UN News, 2009). Although the malnourished population decreased in 2010, the number was still 12 per cent higher than 14 years before. "With a child dying every six seconds because of undernourishment related problems, hunger remains the world's largest tragedy and scandal", FAO Director-General Jacques Diouf said, "This is absolutely unacceptable" (FAO, 2010).

It seems that Mr. Zhang Weiying's assertions are diametrically at odds with human history. His argument should be revised and restated as follows: "Not only does the market economy generate polarization between the rich and the poor, but it also leads to deaths from hunger, even when there is no shortage of food".

The *Wall Street Journal* reported that "about 360 million people are living under the official poverty line – more than in any other country – and starvation is all too real" (Parulkar, 2012). The reporter interviewed Paro Devi of Manjhladih village in the eastern state of Jharkhand. Her husband, Padamchand Hazra, used to earn $1.50 per day doing construction work and riding a cycle rickshaw. Food was always scarce in their house. They were surviving on a razor's edge. In the summer of 2010, the government-run food distribution programme in the area shut down when the local ration dealer stopped distributing grain…Around the same time, construction work dried up. The family went days without food. Mr. Hazra grew thin and weak and was unable to work. One day, "about six in the evening", Ms. Devi recalled, "he asked me to put the khattiya (a makeshift bed) outside. He wanted food. He kept asking for it, but there was no food in the house". That night, Mr. Hazra died.

Many other poor people died of hunger. The reporter investigated the lower castes and the tribal populations, and wrote that

> It is no surprise that most reported starvation deaths occur in these communities. In Bihar the under-five death rate for scheduled castes is 113 deaths per 1000 births, compared to the state-wide average of 85 and the all-India average of 74. We visited 30 scheduled caste and scheduled

> tribal families that had lost at least one man, woman, or child because of a lack of food in the house.

India, of course, has a market economy.

Given the persisting global food security issues (FAO, IFAD et al., 2019), so far market economy has yet to demonstrate its ability to overcome what the Overseas Development Council is concerned about—"the perceived self interest of elite is often at odds with policies designed to help the poor" (Linowitz, 1980, 26). The reality in market economies is that more food is consumed by the few, and only surplus food is available for redistribution purposes.

In ancient societies, only a small proportion of grain was used as raw material for industrial purposes. Therefore, the impact of unfair distribution on hunger was relatively limited. In general, the rich consumed more grain by eating pigs and chickens fed on grain and drinking hard liquor which was made from grain. As we saw previously, to provide the same amount of energy, 70 per cent of the grain calories are lost in the production of pork and chicken. Two thirds of the grain calories are lost in the process of making liquor. The consumption of "wine and meat" behind the vermilion gates was certainly responsible for some of the "the bones of those frozen to death" outside. But the problem is more much serious today. In the United States, Canada, Brazil, Argentina, and China, tens of millions of tonnes of corn are used for manufacturing alcohol. To some extent, it can be argued that cars running on alcohol are taking food out of the mouths of hunger victims in Africa.

Table 14.1 shows per capita nutrition supply in some western nations. A large proportion of the calories are from meat and therefore indirectly from crops. Although global grain production per capita has surpassed the food and clothing sufficiency threshold, this does not mean that everyone in all countries gets 360 kilograms of grain. While African nations, like most under-developed countries, are deliberating on how to prevent pandemic hunger, specialists in the West are studying how to solve their endemic obesity problem. According to FAO, food consumption per capita in developed countries (in terms of calories) was 28 per cent higher than that in developing countries and is projected to remain 20 per cent higher in 2030.

In fact, at the time of food (and other resources) shortage, most governments would resort to rationing instead of the market, particularly

Table 14.1 Per capita nutrition supply in some western nations in 1999

Nation	*Daily energy supply (Calories)*	*Proportion of animal-sourced food (per cent)*	*Daily consumption converted into grain (kilograms)*	*Annual consumption converted into grain (kilograms)*
Canada	3027	31	1.27	462.6
France	3386	40	1.55	546.7
Germany	3351	34	1.45	527.7
United Kingdom	3131	34	1.35	492.8
United States	3600	29	1.48	538.6

Source Li (2006, 9)

in times of war because the market per se does not provide fair distribution. Obviously, Zhang Weiying, when he asserted that in a "market economy…no one will die of a shortage of food", was speaking in absolute terms, and no evidence or logical reasoning supports his claims. It would be too simplistic to ascribe the famine and hunger-related deaths to socialism and planned economy.

Justine Yifu Lin's Hypothesis Is Not Supported by Empirical Evidence

One of the most cited publications on China's rural issues is "Collectivization and China's Agricultural Crisis in 1959-61" by Justine Yifu Lin, former Chief Economist and Senior Vice President of the World Bank, and now honorary Director of China Centre for Economic Research at Beijing University, Vice Chairman of the National Committee of the Chinese People's Political Consultative Conference. In the abstract, Lin (1990, 1228) states that,

> The Agricultural Crisis in China in 1959-61, after the initial success of the collectivization movement, resulted in 30 million extra deaths. In this paper, a game theory hypothesis proposes the main cause of this catastrophe. I argue that because of the difficulty in supervising agricultural work, the success of an agricultural collective depends on a self-enforcing contract, in which each one promises to discipline oneself. A self-enforcing

> contract, however, can be sustained only in a repeated game. In the fall of 1958, the right to withdraw from a collective was deprived. The nature of the collectivization was thus changed from a repeated game to a one-time game. As a result, the self-enforcing contract could not be sustained and agricultural productivity collapsed. The empirical evidence is consistent with this hypothesis.

In first part of the paper, Lin (1990, 1228–1229) added,

> Collectivization started in 1952 with a very impressive success: agricultural output increased continuously from 1952 to 1958. The movement encountered no active resistance from the peasantry and was carried out relatively smoothly…Suddenly in 1959, agricultural production plunged dramatically for three successive years…that this crisis resulted in about 30 million excess deaths.

The validity of Lin's hypothesis is determined by whether the so-called "empirical evidence" is true. It seems to true that there were successive good years from 1952 to 1958 when the rural economy had evolved from mutual aid teams [*huzhuzu*] to elementary cooperatives [*chujishe*] and on to advanced cooperatives [*gaojishe*], and peasants were required to join people's communes in 1958 as well as food production plunged for three successive years from 1959 to 1961. However, the deadline to opt-out from cooperatives was the end of 1956 rather than 1958. Food production had not started to decrease until two years later, and the compulsory membership of cooperatives had not been abolished until 1980. Lin is either ignorant of these facts or he has chosen to ignore them.

China started collectivization right after the completion of the land reform. The Central Committee of the CCP published the Resolution on Agricultural Producers' Cooperatives on 16 December 1953, a milestone in the development of agricultural cooperatives into the stage of *chujishe*. As an elementary form of cooperative, *chujishe* had the following features: Peasants could join or quit on a voluntary basis; rural families became shareholders and jointly run the cooperatives using their land and other capital goods (such as a pot of forest, cattle, and farming machines) as "stock" or "lease"; harvest is distributed according to labour hours and shares (mostly according to labour hours). There were 15,053 *chujishe* in 1953, with 272,000 household members. The number of chujishe peaked at 1.394 million in January 1956, with 106.68 million household members, accounting for 90 per cent of the total rural households.

However, the number of *chujishe* plunged to 36,000 in the next year (Li, 1997, 91). During the time of *chujishe*, farmland was privately owned, and peasants were free to join or quit cooperatives.

Advanced cooperatives [*gaojishe*] emerged in 1955. The fundamental difference between *chujishe* and *gaojishe* did not lie in their sizes, but that the private farmland, together with all facilities on it including ponds, wells, and other water facilities, became collectively owned without compensation to its peasant owners. (*Gaojishe* would reimburse the peasants if the facilities on the farmland were newly built.) The land was no longer considered capital goods for income or harvest distribution purposes. In this regard, there is no fundamental difference between *gaojishe* and the people's commune. Within one year, the number of gaojishe had increased to 540,000 by the end of 1956 with 119,450,000 household members, accounting for more than 96 per cent of households in rural China. The fundamental difference between private ownership and collective ownership lies in the fact that private owners had the right to withdraw from a *chujishe* while this right was completely denied in a collective economy. Nevertheless, the transition from chujishe to gaojishe took place in the fall of 1955 and was completed at the end of 1956 instead of the fall of 1958.

The people's commune in rural areas emerged in the summer-fall of 1958, featuring "*yida ergong*" (a combination of government and production units at commune level), integration of workers, peasants, businessmen, students, and soldiers as well as communist wind of "*yiping erdiao*". A people commune as an administrative area was comprised of all production units of a *gaojishe* within the area. Its most direct impact on rural households was the extent to which it defined public ownership of goods and properties. At its initial stage, people's commune was a basic unit for accounting purposes. This means everything within a commune with a population of tens of thousands was publicly owned, and financial gains and losses were irrelevant to individual rural households. As a result, productivity dropped considerably. Mao criticized this radical model of public ownership at the Central Committee's First Zhengzhou Conference in November 1958. Just three or four months after it was put into practice, people's commune ceased to be a basic unit for accounting purposes. The Central Committee's Shanghai Conference issued an official document entitled "About the 18 Problems of the People's Commune" in March 1959, stating that "production teams

should also be entitled to some ownership and administrative authority". At the conference, the Central Committee decided to review all accounts during the time of *yiping erdiao* and return goods and properties that had been requisitioned or otherwise make compensations. On 3 November 1960, the Central Committee issued an "Emergency Letter on the Current Issues Regarding Policies on People's Commune in Rural Areas" (also known as "Twelve Points on Rural Policy"), which stipulated that people's communes were to practice three levels of ownership with production teams (an equivalence to a *gaojishe*) as a basic unit and this practice would remain unchanged for at least seven years; all mistakes that were made during the time of *yiping erdiao* must be corrected; commune members were allowed to keep a small private plot [*ziliudi*] and run a small family business. Thus, land ownership in rural areas was restored to its *chujishe* model. The "Twelve Points" was implemented after the Central Committee issued the Ordinance on the Work of the People's Commune in Rural Areas (also known as "Sixty Points" or *Liushi Tiao*) in 1961, establishing a basic framework for China's rural collective economy. In September 1980, the General Office of the Central Committee issued an official document titled "On Several Issues Regarding the Agricultural Responsibility System" (also known as the "75th Document" or 75 *hao wenjian*), granting permission to practice *baochan daohu* (contracting output to individual households) nationwide. This ordinance was endorsed in the Summary of National Conference on Rural Work in January 1982. By the end of 1982, *baochan daohu* had been put into practice nationwide.

Thus, Lin's argument has fallen short of empirical evidence that he boasts. First, within three years (1955–1958) in which peasants were denied of their right to withdraw from a collective, China's grain production increased from 919.7 million kilograms in 1954 to 988.25 kilograms in 1958 by 3.9 per cent per year on average. Second, grain production further increased from 682.5 million kilograms in 1961 to 1.66 billion kilograms in 1979 by 5.1 per cent per year on average, when peasants' right to withdraw had remained denied over the 18 years following the three years of severe natural disasters. Even if the Three Years of Difficulties were included, China's grain production had achieved a continuous increase by 2.72 per cent per year on average over the 25-year period from 1954 to 1979 when peasants were not allowed to withdraw from a collective. In contrast, global grain production had increased by 1.78

per cent per year on average over a 25-year period from 1970 to 1995,[6] lower than what China had achieved from 1954 to 1979 by 35 per cent.

Although peasants had been denied of their right to withdraw from a collective, there is no adequate empirical evidence to support Lin's assertion that agricultural productivity had collapsed due to the denial.

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[6] According to *FAO Statistical Yearbook 1994* and *FAO Quarterly Bulletin of Statistics 1995 issues 3&4*, global grain production increased from 1212.95 million tonnes in 1970 to 1883.64 million tonnes in 1995 by 1.78 per cent per year on average over a period of 25 years.

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CHAPTER 15

Concluding Remarks

To calculate the number of excess deaths during the Three Years of Difficulties can be a formidable yet straightforward task. It can be straightforward because there is a clear boundary of research scope and all essential conditions for research are available. There have been few disputes over the principles, statistical standards, and computing methods while demographic statistics, methods, and data are available from government sources. What makes the task a formidable and insurmountable one lies in the confusion and discrepancies in the data from NBS sources. The French demographer G. Calot has apparently noticed the statistical confusion and realized how difficult it was to produce more accurate figures by adjusting the data. In a conversation with Li Chengrui (1997, 7), Calot suggested that "Chinese demographers make some scientific adjustment to these statistics and explain the methods used for such adjustments". Calot has implied that it is possible to produce a more accurate result as long as we can find out what exactly has been wrong with the methods and process of the NBS's population surveys and what exactly caused the statistical deviation as well as how much the deviation is. Research on this topic can move forward once a more accurate result is produced. Yet, it takes deep knowledge about China's history and society to accomplish this task. That is why Calot has premised his suggestion on an understanding that "Chinese problems are best answered by the

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Chinese themselves. By all means, historians need estimated statistics" (Li, 1998). I wonder if he said so because he was not satisfied with his own calculation. I would rather not speculate on that. Yet, I believe he was trying to convey the following message: this is a very important topic; Chinese scholars are capable of answering the question; it is essential to make adjustment to the existing statistics in order to produce a more credible result.

Unfortunately, most of the Chinese scholars including two demographers have failed to live up to Calot's expectation, circumventing the central problem and reaching conclusions using flawed methodologies. Sun Jingxian is among the few who have taken the difficulties seriously and carefully studied the causes and historical background of the statistical confusion and discrepancies as well as provided critiques on those who have ignored the methodological issues.

In this study I have attempted to make some scientific adjustment to these statistics and explain the methods used for such adjustments, as Calot has suggested, and proceeded to accomplish the task with a more accurate result.

Population surveys and publicly released information have shown that there was significant under-registration of death by 8 million in periods from 1953–1958 and 1965–1980, respectively. The exceptionally low death figures of these two periods also defy common sense. Given that under-registration of death can lower the number of registered deaths, the actual death figures for these two periods should be adjusted to a higher level by adding 8 million, respectively.

As under-registration of death can eventually be discovered and rectified, and its correction can be detected in a statistical anomaly and found in available records, it is understood that the under-registration in 1953–1958 was rectified in 1959–1961. The under-registration of death in 1965–1980 was gradually rectified after 1981. Rectification of under-registration of death can in effect inflate the number of registered deaths and a death figure that separates the rectification factor would be more accurate. Thus, the actual death toll in 1959–1961 should be 28.08 million instead of 36.08 million.

By making the above adjustment, the confusion and discrepancies in population statistics are eliminated and the result is more consistent with demographic principles. Calculation of death toll is hence made simple:

The years prior to 1959 and after 1963 are considered "normal years". By adjusting the death figures for these years to a higher level, the "death

toll in normal years" or "linear baseline of death toll" is elevated from 7.18 million to 8.03 million, by 0.85 million per year on average.

Thus, the number of excess deaths for the period from 1959 to 1961 will be somewhere between 2.6 and 3.6 million if we adopt the linear method that the three foreign demographers have used, and somewhere between 3 and 4 million if we adopt the calculation methods that other Chinese scholars have used. This is drastically different from the figures ranging from 26 million to 45 million that those scholars have claimed.

While some readers may wonder why I have produced a figure that is much smaller than the results by other scholars, they should perhaps ask why those scholars have come up with sensational numbers.

The three foreign demographers have noticed that one cannot proceed to research on famine issues without consistent and accurate demographic figures. Unfortunately, they have approached the matter from a wrong perspective due to their ignorance of planned economy. Nevertheless, none of them has produced a figure larger than 30 million. For example, Coale has asserted a figure of 22 million. Chinese scholars, however, have created various methods to generate a figure that they like, and although the statistical confusion and issues have remained, they have each managed to produce a figure larger than 30 million and they all claimed that their calculation was based on official statistics.

However, the problem is that one can never produce a figure larger than 30 million on the basis of official statistics.

Given that "death toll = average annual population x death rate", the death toll of the period from 1959 to 1960 would be 36.08 million in total. Even if we use the equation "death toll = registered population – registered population growth", the death toll would be smaller than 44 million in total. Such a figure as 30 million excess deaths can be possible only when the death toll of normal years is kept lower than 4.7 million per year.

I have always wondered—why some are so obsessed with the figure of 30 million and why the death figures have been inflated from 3.6 million to 17 million, 20 million, 30 million, and further to 40 and 50 million? I have no interest in speculating on motives of other scholars, but I have identified some similarities with what had happened in the former Soviet Union in the 1980s and 1990s.

Khrushchev made his "secret speech" at the *20th Congress* of the Communist *Party* of the *Soviet Union, denouncing Stalin for his cruel cleansing repression in 1936–1938 when many were executed or banished.*

However, no statistics were released (Likewise, the CCP did not release the population figures in 1958–1961 timely). In his famous book *Bitter Cup: Bolshevism and Reformation of Russia*, Alexander Nikolaevich Yakovlev mentioned that the former Head of the Ministry of Internal Affairs Sergei Nikiforovich Kruglov reported in 1954 to Khrushchev that "There were 3.7 million being persecuted from 1930 to 1953, of which 765,000 were executed". Later, he told reporters that "there were 20 million martyrs during Stalin's repression, maybe more" (Zhang, 1996).

Dmitrij A. Volkogonov (1991), former head of the Soviet Military's Psychological Warfare Department, declared that "I have acquired much literature, which can almost prove indirectly that the figure of 3.5 - 4.5 million describes the number of victims more accurately".

Former National Security Advisor of the United States Zbigniew Brzezinski (1995, 14) wrote in his book *Out of Control: Global Turmoil on the Eve of the twenty-first century* that, "though the precise figures for Stalin's toll will never be available, it is unlikely that the number of victims ranging from 20,000,000 – 25,000,000 is an exaggeration".

Nine years after the disintegration of the former Soviet Union, Academician V. Rukov, President of the Russian State Social University made a summary of what had happened then. He said, "Khrushchev believed that the number of people persecuted nationwide was more than 7 million; Yakovlev *of the Political Bureau* of the Central Committee of the Communist Party of the Soviet Union declared that the number was 13 million; other people, adopting various counting methods, came up with figures ranging from 20 million, 30 million to even 70 million. They seem to be running a race of speculating big numbers" (Rukov, 2011).

Russia declassified the archive of the former Soviet Union at the end of the last century. There are 786,000 executions during the Stalinist Period, 26,000 each year on average. The total number was 963,000 including the convicts and the banished for criminal cases who died on the Gulag Islands, corrective labour camp, and prison (see Wu, 2004).[1]

[1] Employing the official statistics released by authorities such as KGB and Russian Agency for Federal Security, and the declassified documents from the State Archive of the Russian Federation, Wu Enyuan, a specialist on the Soviet Union history, calculated that about 1.3–1.5 million were convicted and 1.14 million were detained at corrective labour camps for political reasons during the great purges. The total number of persecuted people was less than 3.5 million, of which about 0.8 million were executed.

The recorded executions were 21,000 more than Kruglov had reported to Khrushchev in 1954.

Now, few would bother to pay attention to the declassified archive. Most literature and literary works would unanimously condemn Stalin for killing tens of millions of his own people.

For most people from other countries, a matter of millions or tens of millions of casualties can be just a subject of boring debate or number guessing game, but it can be quite a heavy topic to a people who have suffered.

"How many were persecuted to death by Stalin" was the theme of the "number guessing game" enthusiasts who are interested in the Soviet history at the end of the 1980s. When President Gorbachev announced the names of the winners, the one who produced the statistics in tens of million deaths was awarded the prize—subsequently, the Soviet Union was dissolved.

In 1999, "How many Muslims were killed by Mihailović in Kosovo" became the theme of the "number guessing game" for those who were interested in European politics. While NATO and western government spokesmen talked of former Yugoslav forces indiscriminatingly killing more than 100,000 Kosovo Albanians in the Kosovo conflict from 1998 to 1999, less than 3000 murder victims were discovered in the end. A direct consequence of the Kosovo conflict is the region being destabilized and the declaration of independence of Kosovo from Serbia. Regarding the exaggeration of genocide casualties by the West, Jonathan Steele (2000) points out, "If you don't have the true figure, you can exploit the issue".

In 2002, questions like "Did Saddam Hussein possess weapons of mass destruction? How many? Including nuclear weapons?" became the theme of the "number guessing game" for the military enthusiasts in the West. Subsequently, Iraq was invaded by US-led coalition that overthrew the Saddam Hussein regime, and the region destabilized with prolonged conflicts and heavy population loss.

Someone asked me, "even if you can prove there were not 30 million but 27 million deaths, what is the point?" Ding Xueliang may have a special understanding of a question like this. He comments, "Numbers are very important because the death toll during the Chinese famine was unprecedented not only in China but also human history" (Ding, 2008).

The former Soviet Union had a population of 160 million at the time. According to Kruglov, 0.48 per cent of the total population, or 1 in 200

were executed. However, the proportion would rise to 15.6 per cent, or 1 in every 6.4 if Brzezinski's figures are adopted. That tens of million people were persecuted to death was enough to condemn Stalin to be a devil and the Communist Party of Soviet Union an "organization against humanity". Those who believe 30 million or 70 million were killed did not even bother to calculate the proportion by dividing the total population of 160 million. They did not bother to think what kind of historical traces would have been left if one out of every 2.7 or 6.3 people (or an equivalence of one family) had been brutally killed! Sensational numbers will take effect if most people believe them. When Yeltsin declared the dissolution of the Soviet Union and the Communist Party, the Soviet citizens were indifferent and apathetic. The 190 million people chose to keep silence for a simple reason: a party that had killed tens of millions of fellow citizens did not deserve any sympathy, and a terror state where one out of three people had been brutally killed did not deserve its existence.

For the Three Years of Difficulties, China's average annual death rate would be 14.2 per thousand and lower than those in 1955 and before as well as India's average death rate in the 1960s if there were 3.6 million excess deaths, accounting for 0.55 per cent of total population. However, there would have been 1 death in every 15 people if Frank Dikötter's figure of 45 million should be adopted. This means there would have been hunger-related death in each family or their relative's families, and the death rate would be 36.9 per thousand, almost double the death rate prior to 1949. Furthermore, with a much-inflated death count at hand, people like Lu Yuegang (1998) would say that tens of millions more Chinese died within just three years when the CCP was in power than over the 14 years of Sino-Japanese War. I am deeply concerned about what would happen to my country and my families if the numbers keep inflating. Hence, I wrote this book.

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