Urbanization with Chinese Characteristics

DOMESTIC MIGRATION AND URBAN GROWTH IN CONTEMPORARY CHINA

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Executive Summary

In this report, we use data from China’s 2010 census to examine China’s urbanization and migration patterns from an international perspective. First, we present an overview of the historical use of the city as a means for control and administration across Chinese history. Second, we examine the comparability and reliability of official demographic data and find that definitions of urbanization change dramatically across China’s official censuses. Delving into the contours of urbanization and internal migration during the post-Mao era, we find that, even within the constraints of the hukou system, China truly has a national labor market and that a large portion of the working-age population in cities is made up of migrant labor.

Despite the rise of populous and densely populated cities in China, a look at China’s urbanization in an international perspective suggests that China is under-urbanized. Subsequently, we examine what China’s human resource profile in urban and rural areas portends for its ongoing urbanization drive. Finally, we offer some concluding observations on how modern technological advances may affect migration and urbanization in China.
I. Introduction

In the post–World War II era, the most basic demographic rhythms of human existence have been fundamentally recast across the planet. For the global population today, patterns of death, birth, and residence are radically different from those ever previously known.

With respect to death, worldwide mortality rates have plunged and continue to fall to ever lower levels. At this writing, humanity's overall life expectancy at birth appears to be higher than the highest level achieved in any country before World War II. With respect to birth, a worldwide revolution in childbearing patterns halved fertility levels over the half century 1960/65 and 2010/15, with no end to these global declines in sight. And with respect to residence, human beings are now, for the first time in our history, more likely to live in urban than rural communities.

The emergence of urban life as the modal form of human existence is an epochal development, but it took place in just six decades. In 1950, by UN Population Division (UNPD) estimates, the share of the world's population in urban settlements was under 30 percent; by 2010, it was more than half (51 percent). Humans' sudden and rapid urbanization was due to an explosive worldwide growth in cities. Between 1950 and 2010, the globe's urban population nearly quintupled, surging from about three-quarters of a billion to over 3.5 billion and to nearly four billion by 2015.

Even more extraordinarily rapid than the overall growth of urban areas was the pace of growth for big cities (or, as the UNPD calls them, “urban agglomerations”)—locales with populations of 300,000 or more. And the fastest-growing urban agglomerations were the largest in size: the settlements with populations of a million or more. Today, even as global population growth continues to decelerate from its postwar apogee in the 1960s, these megacities’ populations (especially in low-income areas) continue to burgeon.

As a simple matter of arithmetic, this worldwide postwar rise of cities was fueled by migration—mainly domestic migration. In fact, migration was the source of the overwhelming bulk of postwar urban population growth if we include both migrants and their descendants. Migration and urbanization are inseparable in the modern era: There would have been no great rise of cities without migration, and without the rise of cities, postwar migration would have been vastly more limited in scope and scale.

The conjoint trends of migration and urbanization, furthermore, were integral to the economic development processes that almost quadrupled planetary per capita output between 1950 and 2010 alone. Migration and urbanization have been part and parcel of the great structural transformation of economies globally. This complex dynamic has generated substantial and sustained increases in productivity and living standards as the overall structure of production and employment shifted from agriculture to industry and then to the services and knowledge-intensive undertakings.

There is reason to believe that urbanization is not only a handmaiden of modern economic growth but an engine of it as well. It is not just that cities transform daily life, occupations, expectations, and ways of thinking. The urban environment affords potential improvements in productivity through economies of scale based on population density; better “inputs” of health, education, and other facets of human capital that are characteristic of the “urban edge” over rural localities; a setting inherently more conducive to knowledge production and rapid dissemination of innovation and ideas; and other economic advantages intrinsic to the very nature of the modern city itself.

In the broadest of terms, the postwar story of migration and urbanization in China reads much like that of the rest of the world. For one thing, China
experienced truly explosive postwar urban growth. By official Chinese census figures, the proportion of the population living in urbanized settlements rose from just 13 percent in 1953 to nearly 50 percent in 2010.\(^7\) (We discuss the provenance and reliability of Chinese urbanization data later.)

According to its official population sample survey, China crossed the urban-majority threshold in 2011, and by 2015 China was 56 percent urban.\(^8\) By year-end 2017, that ratio was reportedly approaching 59 percent.\(^9\) All around the world, urban growth has been especially explosive in the biggest cities—so, too, in China.

Just as elsewhere in the world, domestic migration has played a major role in augmenting China’s urban numbers. And just as elsewhere, urban growth in China not only accompanied overall national socio-economic development but also played a major role in catalyzing material advance. China’s government regards urbanization as so central to the country’s prospects for continued rapid economic growth that Beijing is implementing an “urbanization drive,” as it is informally known: a long-term policy for accelerating the rise of cities and the increase of urban population.\(^10\)

Yet for all these similarities, China’s patterns of urbanization have also been distinctive—profoundly different from those of almost all other contemporary societies in important and far-reaching respects. We examine some of these differences and their implications in this report.

Naturally, the scale of things Chinese makes China’s urbanization process different from that of any other country almost by definition. In absolute terms, to no surprise, contemporary China’s urban growth has been unrivaled. Between 1985 and 2015, China’s urban population increased by over half a billion—accounting for not only more than a fourth of all worldwide urban growth over those decades but also well over twice as much urban population growth as the next largest contributor, India.

Likewise, the proliferation of megacities in China is a phenomenon unmatched in absolute terms by any other country in the modern world. In 1950, by UNPD estimates, China had just eight cities with populations over a million and none with five million residents. Sixty years later, in 2010, China had 85 cities with over one million people, 14 with over five million, and four with over 10 million—far more huge cities than any other nation. By 2015, according to UNPD estimates, China had more than a hundred million-plus cities, with a total of nearly 380 million inhabitants—seven times as many as resided in its 22 million-plus cities back in 1985, just three decades earlier, and over 25 times as many as in 1950.\(^11\)

But it is not just the quantitative—say, China’s sheer size or the spectacular speed of its structural transformation and economic growth over the past four decades—that distinguishes the processes of urbanization and development in modern China from those of other postwar societies. Scarcely less dramatic are the qualitative differences—most notably, the extraordinary reach of the Chinese state in shaping and managing domestic migration and urban growth. (No less should be understood from Beijing’s claim to have authority for administering an urbanization drive.) Vestiges of China’s totalitarian past, as well as aspects of its highly authoritarian present, are deeply impressed into the basic features of migration and urbanization in China today—and with powerful, pervasive consequences that virtually no would-be migrant can hope to avoid.

Chinese leadership since Mao’s death has striven to evince sustained rapid economic growth—and with remarkable success. But it has been no less vigilant in demanding, and enforcing, social control to maintain political stability and unchallenged one-party rule. Of its manifold instruments for social control, one of the most distinctive is surely the hukou system, the national registration system for all mainland Chinese nationals.

We will have more to say about the hukou system. For now, three observations about it will suffice.

First, in its current form, hukou identification paperwork determines whether any person in China is within or outside their officially designated place of residence. It provides municipal officials with grounds to deny social and other services to men and women without locally approved hukou. From a juridical and police perspective, each and every out-of-hukou
migrant’s existence in an “unauthorized” county, town, or city is wholly provisional and contingent.

Second, this Chinese migration-control arrangement is unlike anything in the modern non-Sinitic world. Strictly speaking, China’s current hukou system is not entirely unique—Vietnam and North Korea maintain similar social control mechanisms—but the similarity is because Hanoi and Pyongyang copied their versions from the original Maoist prototype.

Third, Chinese authorities evidently have no intention of ending this peculiar institution any time soon—quite the contrary. Talk of “reforming” (i.e., dismantling) the hukou system has been entertained in university, research institute, and even official policy circles in China for the better part of two decades. But the urbanization drive Beijing is now administering envisons no end to the hukou-ization of the Chinese population. If that policy works out as planned, China will enter the coming decade with some scores of millions of migrants finally granted local residence rights in their new abodes—but with hundreds of millions of migrants still designated as out-of-hukou residents working and living in unauthorized localities, effectively illegal aliens in their own country.

To be sure, not all the distinctive features of what might be called “urbanization with Chinese characteristics” can be explained in terms of the Chinese state’s exceptional ambition to oversee (or supervise) basic decisions in its subjects’ lives that would be considered private affairs in almost any other country. On the other hand, without an appreciation of the extraordinary degree of politicization and state involvement in residential movement, urban planning and development, and other matters that pertain broadly to population control or management, some of the most important differences between patterns of urbanization in contemporary China and the rest of the world cannot be understood or explained.

This report examines the great urbanization in China over the post-Mao era, a tremendous demographic transformation that was largely abetted by internal migration. In this report, we outline the dimensions of this great change, detail some of the dynamics in play, and point to some of the key implications for China’s economic, social, and political outlook.

The analysis undertaken here is quantitative and analytical, not prescriptive. That is, we focus on understanding trends and phenomena revealed by statistics and data and refrain from recommendations. Much has been written in more qualitative terms about modern China’s urbanization and migratory processes. There is also a large literature assaying the economics of migration and urbanization in modern-day China and still another corpus of studies offering policy analysis and advice on migration, urbanization, and development in China.

In this report, we instead attempt to extract meaningful information about Chinese urbanization and migration from demographic and socioeconomic statistics, including official Chinese population data. We pay special attention to China’s 2010 census, the most recent detailed official compendium of data concerning urbanization and migration. (Although a more recent 2015 mini-census was conducted, its results were not readily accessible at this writing.)

This report has seven sections. The first offers some historical background on migration and urbanization in China. The second addresses the comparability and reliability of the official Chinese demographic data that form the basis of our study—that is, the question of what we actually know and how we know it. The third presents the basic contours of migration in the post-Mao era as reported in official Chinese data, centering on the 2010 census. It also examines interprovincial migratory flows as reported by China’s 2010 census.

The fourth section looks at the Chinese urbanization process from an international perspective: how China differs from what might have been expected from a “typical” country and what this may mean for economic performance. The fifth discusses the arithmetic and politics of the great migration to Chinese cities. The sixth examines the contrasting human resource profiles of urban and rural areas in China as reported in China’s 2010 census and what this may portend for the ongoing official urbanization drive and thereafter. The final section offers some concluding comments.
II. Background

More or less by definition, urban settlements in China are as old as Chinese civilization itself, and urban life runs back as far as Chinese recorded history. Given ancient China’s high levels of technological attainment, economic sophistication, and administrative organization, sizable cities were characteristic of the Chinese empire even in its earliest years. The level of overall urbanization at that time was possibly unsurpassed anywhere else in the world.

Although such estimates are necessarily imprecise, Kang Chao of RAND Corporation used surviving (non-demographic) records to estimate that about 14 percent of China’s population lived in settlements of 2,000 persons or more in the third century BC, on the eve of the Qin Dynasty. By 2 AD, the date of Imperial China’s first census, Chao estimated China’s population to be about 17 percent urbanized. Around that time, according to studies by Princeton’s Gilbert Rozman and German urban planner Alfred Schinz, the Han Dynasty capital of Chang An (now Xi’an) might have had a population of a quarter of a million—and as Chao notes, “Chang An may not even have been the largest [Chinese] city at that time.”

Over the next millennium, urbanization in China appears to have waxed and waned, reaching an apogee under the Song Dynasty (on the eve of the Mongol conquest). In the early 13th century, by Chao’s careful reckoning, over 20 percent of the population of Song (southern) China was urbanized, and the Song capital of Lin An (present-day Hangzhou) may have had as many as 2.5 million people. To the north, in Jin China (then under rule by the Jurchen), Chao suggests the overall level of urbanization was only slightly lower.

Strikingly, however, urbanization ratios in China and even the size of China’s largest cities markedly declined over subsequent centuries—until the beginning of the industrial era in China—even though China’s total population surged over that same period. Historians and economists have debated this great paradox, but it need not detain us here.

Two distinctive features of urbanization in pre-modern China, though, merit mention and consideration for the perspective they cast on contemporary circumstances. First, there is the long history of relative geographical mobility for ordinary people in China. China has witnessed not only great movements of population across its territories over time but also—thanks to opportunities afforded by the long-standing commercialization of its economy and the attendant division of labor—considerable voluntary individual and family migration between countryside and city, both temporary and permanent.

Second, and hardly less relevant, is the enduring shadow that an overarching Chinese state has cast over city life and urbanization throughout almost all of Chinese history. In other places, cities may have arisen more or less spontaneously. But in China since at least the beginnings of the Qin Dynasty, imperial rulers took it for granted that the city was first and foremost an instrument for control and administration. Urban China was deliberately built in accordance with that understanding. In China, as Kang Chao observed, “cities were built by governments.” This extended well beyond the general bureaucratic imperatives of establishing a vast network of outposts to manage a geographically far-flung empire, reaching down into cities of any size “so that a more or less standard layout obtained in them,” thanks to ubiquitous official urban planning and detailed regulation of urban land use.

Thus, in the Chinese tradition, even more than in others, the city has been both a symbol of power and control by central authorities and the nerve center for it. Conversely, Chinese history can also be read as a story of what happens to rulers who do not maintain order and stability in their biggest cities. Time and
again over successive millennia, the end of a dynasty is heralded when the erstwhile ruling directorate loses control over the capital and other major urban centers.

Since most of China’s population was rural, imperial rule necessitated administration and control of the countryside, which in turn presupposed, among other things, an enormous bureaucracy for surveilling and policing peasants in small, distant localities. This imperial bureaucracy of course evolved and did not function effectively (or at all) in large parts of China during times of upheaval, chaos, and war.

Certain aspects of this historical system are highly relevant to China today, insofar as the lineage of extant People’s Republic of China (PRC) institutions for keeping track of people and managing population movement can be traced directly back to them. Strictly speaking, after 1949 the PRC scrapped the old, imperial baojia arrangements for community (multi-household) surveillance and monitoring, sometimes translated as the “mutual responsibility system.” But one key element of baojia was retained: hukou, the compulsory, official registration and identification system for individuals and their households.

Under Maoist Communism, hukou became an even more important tool for social control than under imperial rule. As Fei-Ling Wang put it, “The PRC hukou system had its distinctive totality, central planning, and Soviet-style ideological coating.” Perfection in the 1950s, the PRC hukou system was run under the auspices of the Ministry of Public Security (by “hukou police”). It recorded every Chinese citizen’s identity and personal details in official files readily accessible by party and state hierarchy. Every person was given a class status and assigned a specific residence, and they needed explicit state permission to travel from their approved locality. Migrating or traveling without express government authorization became a crime and could incur severe penalties.

Hukou officially registers each person’s household and establishes his or her legal place of residence. By so doing, it also establishes whether a Chinese man, woman, or child is venturing (or residing or working) illegally in any given location where authorities might question or challenge them. It controls population movement by tying rations (in earlier years of the Communist regime) or social benefits (today) to one’s hukou locality and by exposing China’s out-of-hukou populace to a panoply of penalties, both formal and unofficial. At the discretion of authorities, Chinese subjects may be detained, punished, and forcibly returned if they are found outside their authorized place of residence.

The disastrous Great Leap Forward campaign of 1957–59, which brought catastrophe and famine to the Chinese countryside, put the PRC hukou system to the test. But for the regime’s mechanisms for “influx control,” China’s capital and other key cities would have been overwhelmed by desperate and destitute peasants in search of sustenance. The consequences for political stability would have been unpredictable. Thanks to ruthless administration of hukou and urban rationing, Chinese authorities prevented urban growth during this crisis and actually sent city-based migrant workers back to their erstwhile rural hukou to reduce the financial strain of food costs for urban centers on the planned economy.

In the era of strict hukou-enforced controls on migration under Mao, urbanization was held to a virtual standstill (at least according to official statistics), despite the regime’s ambitious plans for rapid modernization and industrialization. (Migration controls did break down temporarily in Maoist China for much of the country during the turmoil of the Cultural Revolution in the late 1960s, but they were fully restored after the military suppressed the Red Guards.) There are serious issues surrounding urbanization data in modern China, as we will see shortly. Taken on their face, however, official Chinese statistics report that China’s urbanization ratio declined between 1960 and 1976, the year of Mao’s death: from 19.8 percent to 17.4 percent.

To go by these numbers, China’s urbanization ratio in 1980 (19.3 percent) would have been not only slightly lower than two decades earlier but also lower than Kang Chao’s corresponding calculations for Song Dynasty China more than seven centuries earlier. There are multiple reasons for this, not least of these totalitarian vigilance against urban disorder, but poor agricultural performance was surely a
primary factor here. Careful research suggests per capita grain output in China under Mao was no higher than it had been centuries earlier. This means that the inefficiencies of agricultural collectivization and the dysfunction of the commune system placed positive limits on the surplus rural areas could generate to support urban populations.

China’s current and ongoing surge in urbanization commenced only after the economic shift inaugurated three years after Mao’s death, at the landmark December 1978 3rd Plenum of the 11th Congress of the Chinese Communist Party, presided over by Deng Xiaoping. The following years would see (among other things) the demise of the commune system, increasing tolerance of private enterprise, and an outward orientation of the economy, including export promotion. These policy changes simultaneously freed up labor in the countryside and jump-started new demand for workers in cities and townships—a new economic situation that necessitated mass migration.

The huge new demand for migrant labor could not be squared with rigid Maoist hukou rules. But rather than scrap the hukou system, Chinese authorities preserved the system in principle while dramatically adjusting its operations in practice. Starting in the early 1980s, would-be migrants were permitted to apply for “temporary hukou” residential authorization in a new locality if, for example, they had secured employment there. This temporary authorization provisionally superseded a worker’s original and permanent hukou but would almost never actually replace it.

In practice, China’s hukou system works very differently today from Maoist times. In the 1950s, it was used to prevent peasants from moving to cities or to deport them back home if they somehow managed to secure an uncountenanced urban foothold. Nowadays local authorities typically turn a blind eye to non-hukou residents, so long as those migrants are earning money, paying taxes, and not causing trouble. Nevertheless, the hukou system endures—as does the Chinese state’s continuing reliance on this mechanism of social and political control, which helps account for the peculiarities and contradictions of urban development in modern China.

Thus arose a major new demographic feature of contemporary China: the floating population of out-of-hukou migrants that figures so centrally in our report. In 1982, according to China’s Third Population Census conducted that same year, just under seven million Chinese were living outside their official residence. By the Sixth Population Census in 2010—the main reference point for this report—their ranks had swollen into the hundreds of millions. And the floating population has reportedly grown since then—standing out as a significant feature of China’s population in arithmetic, but also economic and political, terms.
Before we attempt any quantitative analysis on population, urbanization, and migration in modern China, we must have some sense of the inherent uncertainties in—or limitations to—the numbers we wish to analyze. In other words, as in any other statistical investigation, we need to begin by assessing what we know and how we know it.

This means looking at the reliability of Chinese population data overall, the changing definitions of urban and rural areas over time (and thus the comparability of urban and rural data within Chinese time series), and the discrepancies between official Chinese estimates of rural and urban populations and those reconstructed by international demographic authorities for the most recent Chinese census (2010). Understanding the strengths, weakness, and peculiarities of the information one is working with is essential for any statistical investigation about any country. But it is all the more important when one is attempting to place the patterns or circumstances for a country in an international perspective, as we wish to do.

Before delving into what we know—and do not know—about China’s rural and urban population profiles, we need to understand the overall limits of China’s demographic data at the national level. So we should start with the question of the quality of nationwide or all-China population numbers. Although China’s demographic capabilities now may be better than those of other low-income countries, the “data” in China today are by no means a given—especially for those born after the advent of the One-Child Policy, which created considerable incentives for underreporting births, incentives that may also vary over space and time.27

China does not yet have complete and accurate vital registration for births and deaths, so its population data come primarily from national censuses and nationwide population surveys (or “mini-censuses”). The official time series numbers for China’s population are interpolations, reconstructions, or projections based on these data.28

But Chinese census estimates for newborns, children, and even youth from the era of the One-Child Policy have proved to be highly error-prone. The compulsory anti-natal program commenced unannounced in 1979 and was publicly proclaimed the following year. It was formally recalibrated into a two-child policy in 2015, and at this writing it is evolving once again—perhaps even toward pro-natalism. (For clues about these most recent changes and what they may portend for population policy in China, see Appendix A.) The accuracy of Chinese demographic data in years to come may not be disfigured by the incentive for parents to conceal or misrepresent the true number of children in their family. But in the 2010 census, these pressures were clearly present—as was the case for the previous three censuses that traced China’s demographic development during the nation’s now-famous post-1978 economic transformation.

Figures 1–4 underscore the problem. These figures contrast the counts and implied sex ratios for the Chinese population born since 1976 according to successive head counts by birth year from China’s post-Mao censuses.
Figure 1. Population Count by Birth Year from Successive PRC Censuses: Males and Females, 1976–2010


Figure 2. Population Count by Birth Year from Successive PRC Censuses: Females, 1976–2010

Figure 3. Population Count by Birth Year from Successive PRC Censuses: Males, 1976–2010


Figure 4. Sex Ratios by Birth Year from Successive PRC Censuses and Mini-Censuses, 1982–2010

As Figure 1 shows, there are huge discrepancies in head counts for total population in a given birth year. To pick an especially egregious example, only 23 million babies were counted in the 1990 census, but 20 years later, 28 million 20-year-olds were tabulated in the 2010 census. By the same token, 11.5 million babies were counted in 1999 for the 2000 census, but there were 13.9 million children for that same birth year in the 2010 census—over 20 percent more, despite intervening mortality.

Not surprisingly, female births are drastically undercounted (Figure 2). The discrepancies for females born in 1990 in the 1990 versus 2010 censuses amount to 26 percent—even before mortality adjustments. For girls born in 1999, the gap in the 2000 census versus 2010 census is 24 percent—again, before mortality adjustments. (International migration is a negligible factor here.)

However, even boys seem to have been appreciably undercounted (Figure 3). For birth year 1994, for example, the 2000 census and the 2010 census totals differ by nearly one million—that is, by over 10 percent. For 1999, the discrepancy is 1.2 million, which is nearly 20 percent. Since we do not yet have access to data from the 2015 population survey, we cannot tell what sorts of discrepancies we may be facing for the past decade (i.e., since the 2005 mini-census).

Because boys and girls are being undercounted—or concealed—the confounding effects of tabulation errors could be considerable. Indeed, given the concurrent discrepancies in head counts for boys and girls, the year-by-year estimates of sex ratios for the populations of any given birth year in One-Child Policy China vary substantially (Figure 4). To be sure, there is plenty of evidence that sex ratios at birth have been going up since the One-Child Policy began. But by exactly how much? According to the 2010 census, the sex ratio for those born in 1991 was 106 males per 100 females, while according to the 1995 mini-census, it was 115 males per 100 females. Discrepancies of similar magnitudes can be identified for other birth years as well. As some scholarship has suggested, the
concealment or misrepresentation of births in contemporary China may have played a considerable role in skewing reported sex ratios in China since the One-Child Policy began—a statistical artifact compounding the genuine distortions generated by mass female feticide.\textsuperscript{29}

Especially noteworthy here are the sex ratios for babies born in the first decade of the One-Child Policy—or, more specifically, 1982–89. These young men and women would be 30–37 years old today. According to the 1982 PRC census, the country’s sex ratio at birth (boys per 100 girls) was about 108. The 1990 census and 1995 mini-census reported similar sex ratios for that birth cohort. Yet the 2000 and 2010 censuses and the 2005 mini-census reported dramatically lower sex ratios for birth year 1982; according to the 2010 census, the sex ratio for that group was just 102. Indeed, according to the 2010 PRC census, the sex ratio for the young men and women born between 1982 and 1989 ranged between 99 and 102—distinctly lower than would be expected in a “normal” human population with China’s mortality levels and little international migration (relatively speaking).

Two authoritative research bodies on global demography—the US Census Bureau and the UN Population Division (UNPD)—attempt to reconstruct China’s official population returns to adjust for inconsistencies and errors in official reporting. These are ongoing efforts: The UNPD’s latest updates come from its World Population Prospects (WPP) series, most recently revised in 2017. For its part, the Census Bureau’s International Data Base (IDB) was most recently updated in September 2018. The contrast between official 2010 PRC census figures and these two organizations’ reconstructions of 2010 PRC population profile can be seen in Figures 5 and 6 and Tables 1 and 2.
Note, however, that the UNPD and Census IDB estimate population at midyear (July 1), while 2010 PRC census was conducted “with zero hour of November 1, 2010 as the reference time.” Since China’s population was growing by roughly seven million persons per year in 2010, this timing difference would account for about 2.3 million persons—meaning the Chinese census total should have been higher than the UNPD and Census IDB estimates. However, both Census IDB’s and UNPD WPP’s China 2010 estimates were higher than the PRC census head count—in aggregate, by about four million and 27 million, respectively. Thus, Census IDB implicitly took the 2010 PRC census

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**Table 1. Comparing the PRC Census to the US Census Bureau and UN Population Division: Absolute Population Difference by Age, 2010**

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returns as an undercount of about six million, or about 0.4 percent, while the UNPD implicitly held the undercount to be nearly 30 million, or about 2.2 percent. (By way of comparison, the US Census Bureau’s 1990 count of the American population was officially deemed to have been a net under-enumeration of 1.6 percent.31)

But the discrepancies between Census IDB and UNPD estimates and China’s own 2010 census figures are much larger once we disaggregate by age and sex. Leaving aside the timing difference, Census IDB’s estimate for China’s 2010 under-30 population is more than 23 million higher than China’s official count. The UNPD’s is 28 million higher, suggesting an

### Table 2. Comparing the PRC Census to the US Census Bureau and UN Population Division: Percentage Population Difference by Age, 2010

<table>
<thead>
<tr>
<th>Age</th>
<th>US Census Bureau</th>
<th>UN Population Division</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male Percentage Differences</td>
<td>Female Percentage Differences</td>
</tr>
<tr>
<td>0–4</td>
<td>2.9%</td>
<td>3.9%</td>
</tr>
<tr>
<td>5–9</td>
<td>5.8%</td>
<td>6.2%</td>
</tr>
<tr>
<td>10–14</td>
<td>16.1%</td>
<td>16.2%</td>
</tr>
<tr>
<td>15–19</td>
<td>5.2%</td>
<td>1.9%</td>
</tr>
<tr>
<td>20–24</td>
<td>2.4%</td>
<td>–1.0%</td>
</tr>
<tr>
<td>25–29</td>
<td>2.2%</td>
<td>–2.0%</td>
</tr>
<tr>
<td>30–34</td>
<td>–2.8%</td>
<td>–3.4%</td>
</tr>
<tr>
<td>35–39</td>
<td>–1.1%</td>
<td>–1.0%</td>
</tr>
<tr>
<td>40–44</td>
<td>–1.3%</td>
<td>–2.0%</td>
</tr>
<tr>
<td>45–49</td>
<td>–5.2%</td>
<td>–5.1%</td>
</tr>
<tr>
<td>50–54</td>
<td>0.8%</td>
<td>0.1%</td>
</tr>
<tr>
<td>55–59</td>
<td>–1.9%</td>
<td>–2.5%</td>
</tr>
<tr>
<td>60–64</td>
<td>–4.2%</td>
<td>–4.7%</td>
</tr>
<tr>
<td>65–69</td>
<td>–2.9%</td>
<td>–3.5%</td>
</tr>
<tr>
<td>70–74</td>
<td>–2.9%</td>
<td>–2.0%</td>
</tr>
<tr>
<td>75–79</td>
<td>–2.2%</td>
<td>–1.8%</td>
</tr>
<tr>
<td>80–84</td>
<td>–3.7%</td>
<td>–2.6%</td>
</tr>
<tr>
<td>85–89</td>
<td>–7.2%</td>
<td>–5.5%</td>
</tr>
<tr>
<td>90–94</td>
<td>–23.8%</td>
<td>–20.0%</td>
</tr>
<tr>
<td>95–99</td>
<td>–63.4%</td>
<td>–53.4%</td>
</tr>
<tr>
<td>100+</td>
<td>–75.8%</td>
<td>–69.9%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>0.9%</strong></td>
<td><strong>–0.3%</strong></td>
</tr>
</tbody>
</table>

undercount for the entire One-Child Policy generation of 5 percent.

For particular age groups in the One-Child Policy generation, the discrepancies look all the more extreme. The latest Census Bureau reconstructions imply a 2010 undercount of 16 percent for boys and girls age 10–14. Even more strikingly, the latest UNPD reconstructions imply that girls under age 15 were undercounted by more than 25 percent—and girls 5–9 years old were undercounted by slightly more than 30 percent!

If the IDB or UNPD reconstructions are closer to reality than the original 2010 PRC census, the implications would be of more than just demographic interest. All Chinese citizens, recall, are required to submit to hukou registration for their identity documentation. On the strength of the 2010 census, Chinese authorities concluded that 13 million persons—mostly children born above the population policy birth quota—were without hukou at that time. But that estimate was based on the difference between the total hukou population and the total population enumerated in the census count.

If the 2010 PRC census missed as many children as the IDB and the UNPD imply, China’s non-hukou population that year would have been much larger than Chinese authorities believed—perhaps three times as large. That would be a major oversight for a state that jealously commits to surveilling its entire population. If China were losing track of its population, this would have ramifications for migration and urbanization, the topics of our report, but for a great deal else as well. (Lest it go unsaid: There are no available estimates as yet from international demographic organizations on the size of China’s floating population or out-of-hukou migrants.)

And what is striking in Figures 5 and 6 and Tables 1 and 2 is not only the presumptive undercounts. The UNPD and Census IDB also seem to conclude that the 2010 PRC census has population overcounts for many birth cohorts—including most birth cohorts before the One-Child Policy went into effect. For example, Census IDB implies China actually had seven million fewer men and women in their 40s in 2010 than were counted in the 2010 PRC census. It likewise implies an overcount of almost four million for men and women in their 60s. UNPD reconstructions imply smaller overcounts for these same groups; even so, they suggest an overcount of nearly one million for 40-somethings and an overcount of about two and a half million for 60-somethings. In proportionate terms, both Census IDB and the UNPD imply that the population overcounts were most dramatic for older Chinese, those 70 and above.

Real-world undercounts are in general much easier to explain than presumptive overcounts—though some of these China 2010 overcounts could be reasonably explained. But notional overcounts can also be the consequence of demographic reconstructions that attempt to reconcile the observations from two or more seemingly inconsistent sets of census returns.

So much for international assessments of the overall reliability and quality of the 2010 PRC census. Next we need to examine the official Chinese data on urban and rural population as reported in the 2010 census. We defer for the moment the far-from-trivial question of China’s official definitions of rural and urban areas, focusing instead simply on the reliability of the 2010 census numbers for the places then designated as “rural” and “urban.”

We can start by comparing 2010 PRC census estimates for rural and urban populations to the corresponding estimates from the UNPD’s World Urbanization Prospects (WUP), most recently revised in 2018. The UNPD’s WUP is a separate initiative from the UNPD’s WPP and is not directly coordinated with it—WUP country-level population estimates are not identical to those of WPP—but the two projects come out of the same offices, from an expert staff fully cognizant of one another’s research. So there is considerable consonance in the overall assessment of population profiles and outlooks and the assessments underlying them.

At this writing, the UNPD presents data sets for two versions of WUP on its website, indicating that it judges both of these revisions to be reliable and current. The latest is their 2017 version of WUP; the earlier version is the 2014 WUP revision. The latest version is the most recently updated assessment—presumably reflecting insights that informed the 2017
round of revisions for WPP. But for our purposes, perhaps the most important difference between these two evaluations is that the 2018 version offers only aggregate estimates of urban and rural population, whereas the 2014 version provides breakdowns of rural and urban population by age and sex as well. We will use both the 2014 and 2018 WUP revisions to place official Chinese census estimates of the country’s urban and rural population in perspective.

Table 3 presents an overview of the various available estimates of urban and rural population for 2010 China. In it we contrapose the official 2010 census results for China, the WUP 2014 and 2018 estimates, and the China National Bureau of Statistics (NBS) revision of census 2010 numbers that has superseded the original returns in the China Statistical Yearbook and elsewhere. We also include the UNPD WPP 2017 and Census Bureau IDB numbers for comparative purposes; these provide no insight into China’s internal population distribution, but their breakdowns of overall population totals by sex for China 2010 may be usefully compared against the corresponding estimates from WUP 2014, PRC census 2010, and China NBS 2017.

As seen in Table 3, Census IDB, UNPD, and even China NBS now all regard the 2010 PRC census as an undercount, although by different margins. Further,
they all conclude that the 2010 census undercount for China was greater for males than for females—a somewhat surprising conclusion, perhaps, in light of the evidence of widespread and disproportionate underreporting of female births. (The Census IDB’s implicit judgment that the 2010 census slightly overcounted China’s females may be noted in passing with curiosity.)

As for rural and urban populations, all sources venturing such estimates concur that the 2010 PRC census is basically on the mark in estimating the country’s urban population. The 2010 census placed that total at 670 million. Both UNPD estimates and the China NBS estimate of urban population for China that year differ from the original count by less than one-tenth of a percentage.

Appreciable differences, on the other hand, are evident in the estimates for the rural population—all of them pointing to an undercount in the Chinese countryside. China NBS implies an undercount of the rural population by some eight million—enough to mean China would still have been slightly more rural than urban in 2010, contrary to what the 2010 census suggests. The UNPD indicates a rural population undercount of over 27 million, which would be a net undercount of 4 percent. The UNPD seems to be fairly confident about these results, since the differences among the three UNPD series for estimated all-China 2010 population totals, totals for male and female populations, and totals for urban and rural populations are never more than some hundredths of 1 percent. If UNPD estimates are close to correct, China’s 2010 urbanization ratio would be a bit lower than the China NBS revision suggests.

The scale of possible underreporting and misreporting for urban and rural China in the 2010 census may be greater than estimates of net urban or rural under-enumeration by themselves would suggest. We
Discrepancies are largest for rural areas: WUP 2014 implies that the Chinese census missed something like one in eight rural Chinese children that year and nearly every sixth rural girl under age 5. (If we had age-sex breakdowns for WUP 2018, these discrepancies might loom even larger, considering the implied nationwide undercount of children in WPP 2017.) And even though the UNPD’s total population 2010 estimate for urban China tracks closely with the 2010 PRC census, fairly large differences are apparent for some urban cohorts. WUP 2014, for example, implies that the census missed about nine million urban Chinese children that year, which would mean that nearly every ninth urban child was missed.

If accurate, that would be a noteworthy oversight for a government that places a high premium on following—and ultimately being able to police—its urban population. It would also imply that the overall proportion of “hidden” or “out of quota” children in urban China would be rather higher than most observers in recent years have presumed.

This overview of data on China’s population in 2010 by sex, age, and residence is not intended to favor one particular data source over any other. Instead it illustrates the range of uncertainty surrounding key demographic figures for China in 2010, the reference year for this report. Generally, the range of uncertainty appears to be greater for China’s rural population than its urban population, and it also appears to be disproportionately high for China’s children and youth population.
Thus far, we have focused on only the accuracy of “point estimates” for China’s population for 2010—in other words, on the reliability of the reported rural, urban, and nationwide head counts based on China’s own administrative designation of “urban” and “rural” locales for that particular year. But if we are going to place China’s patterns of migration and urbanization in historical and international perspective, we also need to examine definitions for rural and urban areas: their coherence, consistency over time, and comparability with those from other countries.

Appendix B details the definitional and conceptual changes in the treatment of “urban” and “rural” localities between the PRC’s First Census (1953) and Sixth Census (2010). Suffice it to say that standard and abiding criteria have not been the hallmarks of “urban” and “rural” designations. Under these six censuses, Beijing has maintained the same largely traditional taxonomy of “cities” (shi), “towns” (zhen), and “villages” (xiangcun)—the first two defined as urban—but the particulars of what is officially accepted as “urban” has changed. And these definitions have also

### Table 4. Contrasting Estimates of China 2010 Urban Population Structure

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>0–4</td>
<td>1,733,566</td>
<td>1,691,190</td>
</tr>
<tr>
<td>5–9</td>
<td>1,216,369</td>
<td>1,289,573</td>
</tr>
<tr>
<td>10–14</td>
<td>1,400,239</td>
<td>1,380,619</td>
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<tr>
<td>15–19</td>
<td>2,306,159</td>
<td>1,087,583</td>
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<tr>
<td>20–24</td>
<td>2,479,252</td>
<td>-321,100</td>
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<td>25–29</td>
<td>1,278,770</td>
<td>-101,405</td>
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<td>30–34</td>
<td>-1,248,197</td>
<td>-1,551,872</td>
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<tr>
<td>35–39</td>
<td>-610,544</td>
<td>-508,028</td>
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<td>40–44</td>
<td>-1,283,078</td>
<td>-1,829,727</td>
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<td>45–49</td>
<td>-1,184,737</td>
<td>-1,543,485</td>
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<td>50–54</td>
<td>348,698</td>
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<td>55–59</td>
<td>-74,173</td>
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<td>60–64</td>
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<td>-989,491</td>
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<td>65–69</td>
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<td>70–74</td>
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<td>-476,362</td>
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<tr>
<td>75–79</td>
<td>-329,807</td>
<td>-351,459</td>
</tr>
<tr>
<td>80+</td>
<td>-296,014</td>
<td>-310,389</td>
</tr>
<tr>
<td>Total</td>
<td>3,836,692</td>
<td>-4,456,013</td>
</tr>
</tbody>
</table>

Table 5. Contrasting Estimates of China 2010 Rural Population Structure

<table>
<thead>
<tr>
<th>Age</th>
<th>Absolute Comparison of 2010 PRC Census Rural Estimates to UN Population Division Rural Estimates</th>
<th>Relative Comparison of 2010 PRC Census Rural Estimates to UN Population Division Rural Estimates</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>0-4</td>
<td>3,427,712</td>
<td>3,193,908</td>
</tr>
<tr>
<td>5-9</td>
<td>2,435,785</td>
<td>2,411,810</td>
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<td>10-14</td>
<td>2,665,739</td>
<td>2,538,014</td>
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<td>15-19</td>
<td>3,161,424</td>
<td>1,926,179</td>
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<td>20-24</td>
<td>3,299,763</td>
<td>1,003,254</td>
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<tr>
<td>25-29</td>
<td>2,032,588</td>
<td>929,807</td>
</tr>
<tr>
<td>30-34</td>
<td>26,453</td>
<td>-223,689</td>
</tr>
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<td>35-39</td>
<td>697,351</td>
<td>724,297</td>
</tr>
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<td>40-44</td>
<td>27,682</td>
<td>-629,093</td>
</tr>
<tr>
<td>45-49</td>
<td>-77,983</td>
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<td>50-54</td>
<td>1,176,369</td>
<td>529,261</td>
</tr>
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<td>55-59</td>
<td>734,808</td>
<td>-452,410</td>
</tr>
<tr>
<td>60-64</td>
<td>-661,592</td>
<td>-674,534</td>
</tr>
<tr>
<td>65-69</td>
<td>-279,605</td>
<td>-417,986</td>
</tr>
<tr>
<td>70-74</td>
<td>-257,422</td>
<td>-258,886</td>
</tr>
<tr>
<td>75-79</td>
<td>-194,986</td>
<td>-217,801</td>
</tr>
<tr>
<td>80+</td>
<td>-196,826</td>
<td>-205,803</td>
</tr>
<tr>
<td>Total</td>
<td>18,017,259</td>
<td>9,612,658</td>
</tr>
</tbody>
</table>


been shaped by some measure of idiosyncrasy. The hierarchical nature of Chinese “cities” and changing definition of “urban areas” have generated considerable confusion and should be briefly described.

The first source of confusion results from the organizational structure of administrative divisions in China. There are three types of cities in China: province-level municipalities, prefecture-level cities, and county-level cities. In contrast to other countries, “city” in China is not synonymous with “urban.” Chinese cities are administrative regions—that is, politically decreed zones, including places of designated strategic significance—and are thus not simply de facto urbanized areas.

In general, these administrative “city” regions in China include rural areas. Kam Wing Chan of the University of Washington, for example, notes that less than 8 percent of the economically active population in “urban” India was engaged in agriculture in 2001—whereas in China in 2000, the corresponding fraction was over 20 percent, with almost 32 percent in agriculture in China’s “towns” that same year. Thus, the
connotation of “urban” population for China is different from what is commonly understood elsewhere.

These differences can have paradoxical ramifications. In its 2014 report on Chinese urbanization, for example, the World Bank demonstrated that conversion of rural land to “urban” land has led to falling population density among prefecture-level cities from 2003 to 2011. The same report observes that if Guangzhou conformed to the same geographical gradients of population density as Seoul, a city of comparable numbers, it would accommodate an additional six million persons.

Population density is considerably lower in China’s cities than in other East Asian countries because Chinese cities include less built-up areas—largely because farming or agricultural areas are incorporated into the official boundaries of “cities.” But this is also because of the legacy of Communist urban planning, which did not prioritize land use in major population centers in accordance with its scarcity value. Thus, large portions of prime real estate in China’s big cities were left underutilized.

The second source of confusion stems from the changing definition of “urban.” As the Chinese National Statistics Bureau indicates, three definitions of urban and rural population have been used. Initial census data employed administrative regions, such as “cities,” to calculate the urban population. Due to limited migration before Deng’s Reform and Opening, the National Statistics Bureau (then called the State Statistical Bureau) used urban hukou residents to estimate the urban population at 14.1 percent in 1964. However, these estimates may be biased down since there was actually migration to cities during this period.

In the Third Census (1982), urban populations were deemed to be anyone, regardless of hukou status, living in administrative city divisions, as previously described. Due to the relatively low level of economic development and the strict criteria for city administrations at this time, it is believed that the use of city administrations was representative of de facto urban areas.

However, over the 1980s, the criteria for city locales was lowered to stimulate investment. Urban buildup during this period meant that large rural areas were being incorporated into city administrative divisions. Thus, the definition for “urban” in the 1990 census was radically tightened, employing far more rigorous criteria for which parts of city administrations counted as urban to limit the inclusion of rural areas.

While the 2000 census used population density to determine which locales were urban, the most recent 2010 census dropped this population density criteria and allowed local-level administrative units to define urbanized areas. It was argued that using lower administrative units, such as residential and village committees, to report urbanization would improve urbanization estimates.

Beijing raised and lowered the bar for qualifying as “urban” from one census to the next with almost pendulum-like regularity between 1953 and 1990: tightened in the Second Census (1964), then loosened in the Third (1982), then tightened again in the Fourth (1990), and then loosened once more in the Fifth (2000). Zhou Yixing and Laurence J. C. Ma estimated the impact of these continuous redefinitions on the reported urbanization rate in China from one census to the next. By their reckoning, none of these revisions were minor—but the most astonishing revision came with the Fourth Census (1990).

In effect, the new guidelines for 1990 cut China’s reported urbanization rate in half. Zhou and Ma point out that if the 1990 census had employed the 1982 definition of “urban,” then the urbanization rate in 1990 would have been 53 percent, as opposed to the 26 percent actually reported for 1990. With this breathtaking revision, as Reiitsu Kojima of the Institute for Developing Economies noted at the time, the China Statistical Yearbook cut its count for China’s 1989 urban population by over a quarter billion persons (280 million) between its 1990 and 1992 editions!

And what of the latest (2010) official redefinition of urban and rural territory in China? Nothing as spectacular as the 1990 revision took place, but the tradition of continually redefining “urban” from one census to the next was continued. Unlike the
previously extant cycle of tightening and loosening the criteria for qualifying as “urban,” however, the Sixth Census marked the first time that the definition was loosened twice in a row.

After a thorough 2014 overview of the different definitions used and incorporated in the 2010 census, Qin Bo of Renmin University and Zhang Yu of Ohio State conclude that no less than 24 percent of the increase in urban population between the 2000 and 2010 census “should be attributed to urban reclassification and the readjustment of urban definitions.”

In other words, by Fifth Census standards, China’s reported urbanization rate in the Sixth Census (2010) might be lower than what was actually reported—possibly markedly lower.

Even from this summary overview, a glaring and unavoidable conclusion must be recognized: Modern China’s figures for “urbanization rates” and “urban population” are not measuring the same thing from one period to the next. With enough time and care, time series data could be constructed for China under alternative and temporally consistent definitions for “urban population”—but it is a task far beyond the scope of this report.

We might take some comfort from the fact that, at least for big cities, China’s Sixth Census count and the UNPD’s WUP 2018 revision come up with fairly similar numbers for 2010: the former counting 404 million, the latter 425 million. Since the UNPD’s count is for cities of 300,000 population or more, we might infer that China’s 2010 definition of “city” pertains to agglomerations slightly larger. Alas, the apparent congruence here appears to be nothing more than a coincidence: China does not classify its cities based on that population threshold, and its specific enumeration of cities varies considerably from this UNPD list.

The demographic techniques that the UNPD’s researchers and other trained demographers use are helpful for detecting inconsistencies in reported population data and reconstructing plausible demographic trends over time based on separate census counts or sample surveys for a given country. But those techniques rely on a head count approach for

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**Table 6. Incomparability of the Census Data on the Levels of Urbanization as Reflected by the Percentage of “Urban” Population**

<table>
<thead>
<tr>
<th>Census Date</th>
<th>Percentage of Urban Population in National Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>June 30, 1953</td>
<td>13.26</td>
</tr>
<tr>
<td>June 30, 1964</td>
<td>14.10</td>
</tr>
<tr>
<td>July 1, 1982</td>
<td>20.55</td>
</tr>
<tr>
<td>July 1, 1990</td>
<td>26.23</td>
</tr>
<tr>
<td>November 1, 2000</td>
<td>36.09</td>
</tr>
</tbody>
</table>

Note: Figures without parentheses are official census data, while the figures in parentheses are percentages for the years listed using the criteria of the preceding census. Vertical arrows indicate the resulting levels of urbanization if the criteria of the preceding census were used. Figures to the left and right of the horizontal arrows show that they lack continuity and temporal compatibility because they are based on different sets of criteria.

what is in effect a closed system: In principle, population totals today should precisely equal last year’s population, after factoring in births, deaths, and migration and aging everybody by a calendar year.

There is no comparable set of tools to estimate urban and rural population trends with perfect precision, even in principle. This is because there is no biological regularity to urban versus rural population composition in any given country. In every national population, the reported size of the urban population as a fraction of the total population depends on volition of residents and definitions of settlement types, matters far beyond the powers of population mathematics to replicate or predict.

This is why the UNPD accepts, and works with, every country’s own particular definition and enumeration of urban and rural population. As WUP 2018 explains:

We do not use our own definition of “urban” population but follow the definition that is used in each country. The definitions are generally those used by national statistical offices in carrying out the latest available census. When the definition used in the latest census was not the same as in previous censuses, the data were adjusted whenever possible so as to maintain consistency. . . . United Nations estimates and projections are based, to the extent possible, on actual enumerations.45

As we have seen, the UNPD does adjust official reported Chinese urbanization data. But these are relatively small adjustments; the UNPD basically works with the latest time series on urbanization that Beijing reports (Figures 9 and 10).

For better or worse, we follow the same approach in our report—having offered what we hope to be due-diligence caveats regarding the quality and reliability of official data on contemporary Chinese urbanization. Since most of our analysis focuses on Chinese population data for 2010, furthermore, we will mostly not be plagued by the difficulty of
NICHOLAS EBERSTADT AND ALEX COBLIN

Figure 10. Urban Population: PRC Census vs. UN Population Division, 1950–2016


attempts to enforce consistency on what appears to be a manifestly inconstant time series for China’s urbanization data.

China’s urbanization data are beset by more quirks and peculiarities than those for many other—likely most—contemporary societies. But by examining these shortcomings in isolation, we are by no means implying that there is a generally accepted standard in the rest of the world to which China is simply failing to adhere. The voluminous country notes in the “Source and Documentation” section of WUP 2018 attests strongly to the contrary. For better or worse, there is no single standard in practice for measuring urbanization across countries today—or for measuring it within countries over long periods of time.

New research today is contemplating a universally relevant “agglomeration index”: an internationally consistent measure of population concentration based on indicators for population density, the size for a “large” city, and the time required to travel to a “large” city center. Such standardization could make for big revisions in some of the international data that demographers, economists, and geographers are accustomed to citing and using for urbanization.

Initial work on such an index, for example, suggests that such global standardization would significantly and systematically increase “agglomeration ratios” in Sub-Saharan Africa in relation to currently reported urbanization ratios. On the other hand, it would generally have the opposite effect on the Latin America and Caribbean region.

What about China? For what it is worth, the test-drive for the agglomeration index produced a point estimate for China for 2000, before the most recent adjustments in definitions for “urban areas.” Nevertheless, for that specific year, one variant of the notional agglomeration index—the one using a 50,000-person threshold for “large city”—nearly matched the urbanization ratio reported in China’s Fifth Census (both estimates coming in at approximately 36 percent).
Such experimental work may be expanded and perhaps further refined with the assistance of new data sources, including satellite imagery and GIS techniques for identifying changes in built-up areas. But we are still far from the rollout and global embrace of such a new index. And in any case, the constant change in human lifestyles, preferences, and technological capabilities could mean that the criteria and thresholds for agglomeration indexes will themselves be constantly evolving, too.
IV. The Geography and Demography of Migration in China 2010

In this section, we offer a broad overview of the geography and demography of migration (focusing on the floating population) in contemporary China as reflected in the 2010 census. Crucial here is the convention of hukou: the aforementioned legal requirement for a registered place of residence in China.

The hukou system is not unique to Communist China, or Communist countries; it is found inter alia in democratic Taiwan as well—and as already noted, long predates the People’s Republic of China in Chinese history. In practical and administrative terms, though, there is a world of difference in the portent of this registration system for ordinary people in China and Taiwan. In China today, a person living outside his or her hukou is in violation of the law and potentially subject to both fines and penalties and to relocation back to the registered place of residence. While one’s hukou can legally be reassigned, this takes place for only a tiny proportion of contemporary migrants.

For 2010, Chinese census protocols counted as migrants those persons who had resided outside their hukou for six or more months before the November 1 national population count. Since we have no readily available data by which to cross-check the accuracy of these hukou migration data, we take them as given in this analysis. (For additional information on developments in the hukou system, see Appendix C.)

The dimensions of the ongoing movement of people in China are hinted at in Figure 11, which reports inter-censal provincial population change for 2000–10. For the first time since the Maoist famine, major geographic areas in China experienced population decline—perhaps most notably Sichuan, China’s erstwhile most populous province. At the same time, the population of other parts of the country was reportedly burgeoning. In just 10 years, Guangdong province’s population jumped by almost 20 million—or 22 percent. Guangdong’s population increase is dramatic in a country where total population rose by just 7 percent between 2000 and 2010. Just four provinces—Guangdong, Zhejiang, Shanghai, and Beijing—accounted for nearly half of China’s overall population growth between 2000 and 2010, even though they composed less than a seventh of the total Chinese population in 2000. As shown in Figure 12, interprovincial migration explains these big increases in regional population—as well as the decreases registered.

Figures 13–15 illuminate the migration dynamic more directly by depicting the net reported interprovincial flows of migrants in 2010. Figures 14 and 15 show the tally of in-migrants minus out-migrants for each of China’s 31 provinces and province-level municipalities. By 2010, more than 85 million men and women—about one out of every 15 Chinese—were reportedly interprovincial migrants, living outside their home province. (The true number may have been even higher. Some migrants may have resided outside their assigned hukou for less than six months at the time of the census, and others may not have answered that question accurately.) The share of interprovincial migrants was up sharply from just 10 years earlier, when just one in 29 Chinese was reportedly an interprovincial migrant. Net migration flows by province speak to the geography of opportunity—or the lack of it—in China.
Figure 11. Total Population Net Change by Province, 2000 vs. 2010


Figure 12. Absolute Net Migration Between Provinces, 2010

Figure 13. Net Migration Between Provinces, 2010


Figure 14. Net Migration as a Percentage of Nonmigrant Provincial Population, 2010

As of 2010, the net inflow of migrant population to booming Guangdong exceeded 20 million persons, the net inflow for coastal Zhejiang was reportedly 10 million, and Beijing, Shanghai, and Jiangsu (the other province bordering Shanghai besides Zhejiang) netted roughly nine million, seven million, and four million, respectively. On the other hand, five Chinese provinces reportedly experienced a net loss of over five million through migration: Jiangxi (five million), Hunan (over six million), Sichuan (nearly eight million), Henan (over eight million), and Anhui (nine million). The geography of net migration, highlighted in Figure 13, shows massive movements to the coastal areas plus Beijing and more modest movement to the northern and western regions, with central and inland China’s provinces furnishing most of the net out-migration.

Another take on interprovincial migration comes from casting these figures in proportional terms against the reference province or province-level municipality. (See Figure 14.) The reported fraction of net out-migrants from depressed Anhui amounted to over one-sixth of the province’s population. Four additional provinces—Jiangxi, Hunan, Sichuan, and Guizhou—reported net emigrant populations equivalent to 10 percent or more of their 2010 residential populations.

On the other end of the spectrum, net in-migration was equivalent to almost 40 percent of Shanghai’s residential population, 35 percent of Beijing’s, and over 20 percent of Tianjin’s. Beyond the province-level municipalities, net in-migration was equivalent to almost 20 percent of residential population for Guangdong and Zhejiang.48

Figure 15 casts further light on regional migration patterns in modern China. Whereas Figures 11–14 concerned the “flow” of migrants, Figure 15 examines the “stock” of migrants. It shows the proportion of the total population comprised of migrants in 2010 for China’s 31 provinces and municipalities—further indicating whether these migrants originated within or outside the province.
All in all, roughly two-thirds of all enumerated migrants in 2010 reportedly were intra-provincial migrants. But there were huge variations in patterns nationwide. As may be seen, migrants accounted for the majority of the total population in both Shanghai and Beijing and nearly 40 percent of the overall population in China’s third province-level municipality, Tianjin. In thriving Guangdong and Zhejiang, migrants were 35 percent of the total population. On the other hand, in remote and forbidding Tibet (Xizang), migrants were less than a tenth of the total population.

For the country as a whole, over 19 percent of the population were migrants—nearly one person in five. This was twice the proportion just 10 years earlier and seven times the proportion 20 years earlier. Migration has been growing explosively in modern China, and migrants are now a major component of China’s overall population.

Figures 16 and 17 offer an overview of the migrant population’s distribution by residential location type (city, town, or village) in China in 2010. According to these data, nearly two-thirds of migrants were living in big cities ("cities"), and nearly seven-eighths were in urban areas ("cities" and "towns"). In terms of the composition, migrants accounted for just 5 percent of the rural population (villages), but over one-fifth (21 percent) of the total population of smaller cities and over two-fifths (42 percent) of the total population of China’s bigger cities. For urban areas overall, migrants accounted for just over a third (34 percent) of the total population by 2010.

Dependency ratios—conventionally defined as the proportion of older (65+) and younger (0–14) populations in relation to the working-age (15–64) population—are of course shaped by long-term fertility and mortality trends in all societies. But in China today, they are also powerfully affected by migration patterns, as may be appreciated in reviewing the differences in dependency ratios among village, town, and city populations across the nation’s provinces. (See Figures 18–20.)
Not surprisingly, nationwide China 2010 dependency ratios were highest in the countryside and lowest in the big cities. But in rural parts of Chongqing, the total dependency ratio was twice as high as in rural parts of Shanghai, while the dependency ratio was nearly three times as high in rural Guizhou as it was in rural parts of Beijing. The dependency ratio for children, similarly, is almost always highest in rural areas. (It is four times as high in rural Guizhou as in rural parts of the Beijing municipality.) Corresponding, though less regular, trends may also be seen for old-age dependency in China in 2010.

In 2010, 75 percent of the population of China’s smaller cities (“towns”) and 80 percent of the nation’s big cities (“cities”) were composed of working-age men and women (15–64). (See Figure 21.) In big-city Guangdong, Zhejiang, and Fujian—vibrant coastal areas—the proportion of the working-age population is well over 80 percent. In effect, big cities in China today are workshops, relying heavily on imported labor to produce their wares.

China today has a truly national labor market—and a strikingly large number of people have relocated in pursuit of economic opportunities. According to China’s 2010 census, 261 million people—including 223 million people of conventional working age (15–64)—were residing outside their assigned hukou (or official registered place of residence). Of these 223 million, nearly three of every five working-age persons (57 percent) claimed they migrated to “work in a business” or “change jobs.” Those who did not cite job concerns may also have moved for economic considerations, but may not have said so.49

According to the 2010 Chinese census, the mainland’s 15–64 population totaled 993 million. Thus, the 223 million working-age migrants enumerated in the 2010 census would have accounted for slightly over 22 percent of the country’s conventional working-age manpower that year. This means roughly every fifth person of conventional working age was living outside his or her assigned place of residence.

Census data allow us to look at the relationship between migration and education nationwide—that is, both interprovincial and intra-provincial migration according to educational status.50 (See Figures 22–24.) Dramatically different patterns of migration in China are evident for persons of differing educational attainment.

For men and women with no more than primary schooling, migration is disproportionately reflected in the western hinterlands (Guizhou, Qinghai, Tibet, and Yunnan). Beijing appears to be the least welcoming for such unskilled migrants. For persons with secondary education, by contrast, Guangdong appears to be the special magnet; middle and high school–educated migrants in Guangdong are far overrepresented in relation to the national average. They are most underrepresented in Tibet and Qinghai.

Finally, for migrants with at least some tertiary education, Beijing is disproportionately the venue for migrants—no surprise here. Somewhat surprisingly, though, Shanghai does not seem to hold the same attracting power. Yet other places, such as inland
Figure 18. Total Dependency Ratio by Province, 2010


Figure 19. Youth (0–14) Dependency Ratio by Province, 2010

Figure 20. Old-Age (65+) Dependency Ratio by Province, 2010


Figure 21. Working-Age (15–64) Population as a Percentage of Total Population by Province, China 2010

Shaanxi and Henan, are highly overrepresented for highly educated interprovincial migrants. The reason is something of a puzzle—but there appears to be an answer to this puzzle, as argued in Appendix D. (That answer in turn provides insight into the logic and dynamics of migration for skilled manpower in China today.)

At the other end of the spectrum, Tibet looks to be one of the least inviting venues for migrants with higher education—again, no surprise. But the same is true of bustling coastal Guangdong and Zhejiang—the two top provinces for net in-migration in China today! This may suggest that the burgeoning demand for labor inside and outside their export processing zones is not tilted toward higher-skilled labor.

The 2010 PRC census does not provide data on the migrant population’s exact place of origin, but it does report the province of origin. This allows us to trace patterns of interprovincial migration. Generally (though of course not always), these interprovincial migrants have traveled farther than intra-provincial migrants in search of work or a new home. In 2010, one in three migrants lived outside his or her home province. We can learn about this aspect of...
Figure 26. Migration to Zhejiang from Province of Registered Hukou per Million Residents, 2010


Figure 27. Migration to Shanghai from Province of Registered Hukou per Million Residents, 2010


Figure 28. Migration to Beijing from Province of Registered Hukou per Million Residents, 2010


Figure 29. Migration to Jiangsu from Province of Registered Hukou per Million Residents, 2010


Figure 30. Migration to Guangdong from Province of Registered Hukou per Million Residents, 2010


Figure 31. Migration to Zhejiang from Province of Registered Hukou per Million Residents, 2010

contemporary migration in China by examining the characteristics and directions of these interprovincial population flows.

In Figures 25–34, we look at aggregate interprovincial migrations flows, focusing on the top five provincial migration destinations in 2010. These figures depict a sort of “gravity map” for interprovincial migration, with the pool of migrants generally located inland and flowing toward the nearest of the “magnet provinces” in question. In all five cases, however, Sichuan stands out as a major “exporter” of migrants, irrespective of its distance from the “importing” province.

Figures 25–29 show absolute flows—but provinces can vary considerably in size in China today. What about relative or proportionate out-migration to the major migrant-attracting provinces? These patterns are displayed in Figures 30–34. This does not appreciably change the patterns revealed in the previous set of figures—except for relatively populous Sichuan, whose import as a source of out-migrants is correspondingly diminished.
And where do migrants from the major “sending” provinces end up? We can see this in Figures 35–39. Generally, the answer tends to be the coastal areas—Shanghai most certainly included—plus Beijing. But differences and particularities also stand out. Sichuan, Henan, and Hubei, for example, also send significant flows of migrants into adjacent inland provinces, even though those venues are themselves relatively poor or underdeveloped. Sichuan and Henan, furthermore, also account for a proportionately high flow of people into the westernmost Xinjiang borderland.

The reason is not immediately clear to us and perhaps merits further investigation.

We have demonstrated that there are distinctive, predictable, and (in greater or lesser measure) economically rational patterns of regional migration in China today. But we should not wish to obscure the important point with which we began: China’s labor market—and its attendant domestic migration network—is truly national in nature. Migrants from every one of China’s provinces can be found in virtually every other province—and large cities in
China include migrants with *hukou* from every part of the nation.

This “churn” has economic implications, but it has political ramifications as well. We should never forget that, for policymakers in Beijing, acceptable internal migration is conditioned by not only its potential economic contributions but also its impact on social stability and regime security.
V. Chinese Urbanization in International Perspective

In this section, we examine the dynamics of Chinese urbanization from an international development perspective—that is, how China’s transformation into a majority urban society compares with transformations in countries with comparable income levels and social development indicators. We show that China in 2010 appeared to be markedly under-urbanized, given its levels of per capita income, educational attainment, and public health. Furthermore, compared with other contemporary societies, China’s apparent under-urbanization may have been retarding the country’s economic performance.

This may sound surprising, considering the tremendous surge of urbanization since the Deng-era reforms were unleashed at the Third Plenum of the 11th Party Congress in December 1978. Yet any country that had experienced the same surge of incomes, education, and health that China recorded since those historic reforms would have been predicted to urbanize even more than China did.

We surmise that China’s lagging urbanization progress was a consequence of policy—more specifically, the hukou system. Although the hukou system has been significantly relaxed since the Mao era, it still distorts labor market flows, restricting the rural population’s movement to urban locales. And we estimate that this distortion has cost China economic potential.

By our preliminary reckoning, China’s urban population in 2010 was roughly 70–100 million smaller than general international patterns of development would have predicted. By those same international patterns, China would have been expected to generate a gross domestic product (GDP) 10–15 percent larger than it actually produced with 70–100 million extra urban residents. We further surmise this is one reason the Chinese government was prompted to adopt a deliberate policy of positively stimulating urban population growth—the so-called urbanization drive unveiled in 2014.

In this section, we use international data sets to undertake our statistical analysis—not official Chinese statistics. These large international data sets permit us to investigate international patterns of postwar socioeconomic development in some detail and with some confidence (though, of course, with all the caveats that must attend such exercises).

The estimates for international urbanization come from the UN Population Division’s (UNPD) World Urbanization Prospects. Estimates on educational attainment are drawn from the massive International Institute for Applied Systems Analysis and the Vienna Institute of Demography data set on postwar educational patterns, an undertaking convened under the Wittgenstein Centre for Demography and Global Human Capital in Vienna. We also use the Barro-Lee Educational Attainment Dataset, a widely referenced source on the same topic assembled by Professors Robert Barro of Harvard and Jong-Wha Lee of Korea University.

For the estimates for annual levels of real GDP per capita, we use both purchasing power parity (PPP)-adjusted and non-PPP-adjusted series. The estimates come from the World Bank’s World Development Indicators (WDI) and from the Maddison Project Database’s historical estimates of PPP-adjusted per capita GDP. World Bank PPP-adjusted GDP estimates go back to only 1980. The Maddison Project Database, begun by the late Angus Maddison and continued after his death by his students and colleagues,
begins in 1 AD and extends to 2010. We also use WDI for annual estimates on life expectancy at birth for overall population.56

We use two data sets that offer (inescapably subjective) readings on the business climate (or, one might also say, on the quality of local institutions and policies): the Fraser Institute’s Economic Freedom of the World Index57 and the Heritage Foundation/Wall Street Journal’s Index of Economic Freedom.58 These data sets permit us to conduct panel data analysis of international patterns of development from 1970 to the present, covering more than 100 countries and often including well over 1,000 observations.

As we know, China’s urbanization since the end of the Maoist era has been monumental, unprecedented by almost any historical measure. According to the UNPD, between 1980 and 2010 alone, China’s urban population soared from about 190 million to 670 million—a leap of nearly half a billion people. Over those three decades, China’s urban population, by the UNPD’s reckoning, shot up by nearly 30 percentage points: from 20 percent to slightly over 49 percent. (See Figure 40.)

The UNPD World Urbanization Prospects’ estimates for China’s urbanization ratios almost perfectly match the latest official time series from Beijing. But this is because the UNPD basically takes official data by member states as given—and not because it is vouching for their accuracy, much less standardizing China’s urbanization data against the data for other countries.

Section II went into considerable detail outlining the inherent problems and constantly changing definitions for “urban” in China’s population statistics. Consequently, we have rather less confidence in the reliability of the long-term trends depicted in Figure 40 than UNPD appears to have. Obviously there was a phenomenal movement of people into cities.
and urban areas in China between 1980 and 2010, and this urban surge has continued since 2010. We, however, cannot be confident about estimating the precise dimensions and tempo of these changes. Consequently, we will focus most of our attention in this section on the reference year 2010 and how China’s urbanization looked in an international perspective at that time.

Paradoxically, despite the breathtaking structural transformation of the Chinese economy between 1980 and 2010—and the scarcely less remarkable surge in urban population over those same decades—a wealth of development indicators suggests that urbanization was actually lagging in contemporary China. Comparing the Chinese experience with that of other selected Asian societies shows the degree to which China today is an under-urbanized society.

Unsurprisingly, China in 2010 was reportedly less urban than Taiwan, Japan, or South Korea and more urbanized than India. The surprise in Figure 41 is that China was reportedly slightly less urbanized than Indonesia. Per capita output was substantially higher in China in 2010 than in Indonesia. All other things being equal, this would suggest China should have been more urbanized than Indonesia, not less.

If we examine the income trajectories of postwar urbanization for these same six countries, the degree of apparent under-urbanization in China is much clearer (Figure 42). China may have been slightly more urban than India in 2010 when it reached India’s estimated 2010 level of PPP-adjusted GDP per capita. But China was reportedly about 10 percentage points less urbanized than Indonesia when it had achieved Indonesia’s 2010 levels of GDP per capita, and in 2010 China was roughly 20 percentage points less urban than either Japan or South Korea when they reached China’s 2010 level of GDP per capita. In this Asian perspective, China certainly looked under-urbanized in 2010.

Furthermore, these figures may understate the comparative dimensions of under-urbanization in China. As mentioned, an apples-to-apples agglomeration
index would help standardize measures of urban population concentration and circumvent the definitional difficulties and peculiarities. At the moment, we have only international agglomeration index estimates for 2000.

In 2000, India’s estimated agglomeration ratio was more than 24 percentage points higher (at the 50,000 big-city threshold) than its UNPD-estimated urbanization ratio. For Indonesia, the corresponding agglomeration index estimate was more than 17 points higher than the estimated urbanization ratio. Japan, South Korea, and Taiwan all likewise garnered higher agglomeration ratios than urbanization ratios for 2000 by this same threshold. An objective international measure of urbanization, consequently, would almost certainly accentuate China’s under-urbanization in relation to these Asian comparators; the same would probably hold true for 2010.

Until more work is done on agglomeration indexes, we must rely on the conventional urbanization data to place China’s 2010 performance in international perspective. If we so compare China to the rest of the world, China still looks under-urbanized, given its level of development in 2010.

Figures 43–52 can give us a further sense of just how under-urbanized China appeared to be in 2010. These figures present simple international correlations for 2010, “predicting” urbanization ratios for countries the world over based on income (per capita GDP), educational attainment (estimated mean years of schooling), life expectancy at birth, or some combination of these variables, in some cases adding our indicators for business climate. By any combination of indicators, China’s estimated urbanization ratio always falls short of what would be predicted for a society with its other developmental characteristics—often markedly short.

China is not the only country to appear under-urbanized, of course. Indeed, by definition, roughly half the countries in the world would look under-urbanized in the sorts of ordinary least squares regressions we are using. India—the world’s other...
URBANIZATION WITH CHINESE CHARACTERISTICS

Figure 43. Predicted Urbanization Rate (UN Population Division) by World Development Indicators PPP GDP, 2010


Figure 45. Predicted Urbanization Rate (UN Population Division) by Mean Years of Schooling 15+ (Wittgenstein), 2010


Figure 44. Predicted Urbanization Rate (UN Population Division) by Life Expectancy (World Development Indicators), 2010


Figure 46. Predicted Urbanization Rate (UN Population Division) by Mean Years of Schooling 15+ (Barro-Lee), 2010

We do not wish to assign too much importance to this finding—but it seems interesting enough at least to merit mention.

Just how under-urbanized was China in 2010? We can use simple cross-sectional data for that year to offer a first approximation. If we “predict” urbanization ratios using education and per capita GDP with PPP adjustments, China’s reported level looks to be 7.8 percent lower than expected. If we use the same approach but instead substitute exchange-rate-based per capita GDP figures (i.e., without PPP adjustments), the estimated gap would be about 5.3 percent.64

In 2010, China’s enumerated population was 1.33 billion. Our simple estimates for under-urbanization in China that year would imply that China should have 70.1–103.6 million more urban
inhabitants if it were a “typical” country, given its income and educational levels. Rounding off to avoid false precision, we can call this range 70–100 million. We are hardly the first to suggest that contemporary China’s development has been marked by under-urbanization. To the contrary, Chinese scholars have been discussing this topic for years. Professor Zhang Li of Fudan University, for example, published an entire book in English in 2003 on what he termed “China’s limited urbanization,” which he described as the paradox of “high industrial growth without corresponding growth of urban population.”

The subject is a matter of not only academic studies but also policy research.

Indeed, Beijing’s current urbanization drive is predicated on the understanding that China is—or has been—an under-urbanized society. And interestingly enough, our simple calculations are keeping with the Chinese government’s own assessments. In 2014, when Beijing unveiled its “National New-Type Urbanization Plan (2014–2020)” (i.e., urbanization drive), authorities declared that China’s urbanization ratio in 2013 was 6.3 percentage points below those of other countries with similar income levels (53.7 percent versus 60 percent). That official Chinese estimate is almost exactly the midpoint of our calculated range (5.3–7.8 percent).

If our range of 70–100 million “missing” urbanites in China in 2010 proved to be roughly correct, migrant family separation alone could not account for that discrepancy. Of China’s officially counted migrant population in the 2010 census, 223 million
migrants were reportedly of working age (15–65). If the dependency ratio in China in 2010 were the same for these migrants as for the nation as a whole, China’s total migrant population in 2010 would have been 301 million—that is, about 40 million higher than the migrant total reported. But that gap falls far short of our 70–100 million number.

As is well-known, contemporary China contends with a “left-behind children” problem because moving entire families is difficult under the strictures of the current hukou regimen. Working off the 2010 PRC census, UNICEF has estimated there were as many as 61 million left-behind children in China in 2010, of which 29 million were living with neither father nor mother. But such numbers also fall far short of our 70–100 million range—all the more when we recall that many left-behind children are from urban areas and therefore are already counted in urban population totals, whereas the 70–100 million figure would refer to the prospective net urban population deficit.

We can tentatively surmise that hukou policy was a main factor responsible for suppressing urban population growth in China in 2010—through not only separating migrant families but also discouraging or preventing tens of millions of additional would-be migrants from moving out of the countryside. Clearly, reconstituting migrant families in their new locales, which is difficult under current hukou rules, would increase China’s urban population. But that alone would not make up the 70–100 million population...
URBANIZATION WITH CHINESE CHARACTERISTICS

Figure 53. Predicting per Capita GDP PPP with Life Expectancy, Urbanization, Education, and Index of Economic Freedom, 1970–2010

Note: Variables have a five-year lag.

increase necessary to bring China’s 2010 urban population up to the level one expects of a country of comparable population size and economic performance.

Yet the costs of under-urbanization in contemporary China are not measured only in human terms, such as the suffering of involuntarily separated families or the thwarted aspirations of would-be rural migrants to urban areas. Under-urbanization entails a loss of national economic potential for China as well—and a considerable one.

Estimating the economic implications of China’s apparent under-urbanization is the final aspect in this report of placing Chinese urbanization in an international perspective. One way to do this is by calculating the international “value” of urbanization as revealed by postwar patterns of economic development around the world.

Elsewhere we have delved into the interplay between per capita output on the one hand and human resources and business climate on the other. Indeed, we believe we have developed a compact and surprisingly powerful model for explaining and estimating postwar differences in per capita GDP between countries at any point in time—and within countries over time. Our model uses health (represented by life expectancy at birth), education (represented by mean years of schooling for the 15+ population), social complexity (represented by urbanization rates), and business climate or quality of institutions and policies (represented by the aforementioned indexes of economic freedom). This simple model can be seen in Figures 53 and 54.

Using just these four variables, we can explain roughly 85 percent of the differences in per capita...
GDP within and between countries for the decades since 1970.\textsuperscript{69} Note further that the predictive power of the model is attained using lagged variables (that is, using our independent variables for a given year to estimate the per capita output for a country five years later). This lagged-variable effect means we are not just dealing with simultaneous correlations. Although econometric analysis can never prove causation, we nevertheless have insight into causation in the dynamic connecting human resources, business climate, and economic outcome in our modern world.\textsuperscript{70}

The simple regression models presented in Figures 53 and 54 demonstrate one particular and important facet of the modern development dynamic: This is the independent contribution of urbanization to income growth. Our urbanization variable strongly tracks with higher GDP per capita, even after taking health, education, and business climate into account. In fact, the independent contribution of a 1 percentage point increase in urbanization looks to be roughly a 2 percentage point increase in overall GDP per capita.

This should be no surprise: There are many reasons to expect urbanization inherently stimulates development. What matters here is that our analysis can quantify this statistically. If China’s degree of under-urbanization in 2010 were accurately bounded by the range in our estimates, our simple models would suggest that under-urbanization was costing China around 10–15 percent in forgone GDP around 2010—not an inconsiderable sum. These same models would suggest that under-urbanization in 2010 would continue to exact a cost in terms of reduced national productivity for some years into the future as well.
Beijing’s urbanization drive is informed by this economic reality. And eliciting untapped growth potential from migration and urbanization looks increasingly important as the tempo of growth continues to slow (albeit from stratospheric heights) and generating growth from other sources becomes increasingly challenging.

For example, ghost cities can be seen as a product of under-urbanization, as measured by the movement of people because of hukou regime, and over-urbanization, as measured by urban housing. Therefore, we can see ghost cities as a manifestation of the dangerous overstock of real estate, which probably is one of the motivations behind state encouragement of rural-urban migration. The urbanization drive is not uniformly applied across Chinese cities. So-called second-tier cities have more relaxed migration rules compared to first-tier cities (such as Beijing and Shanghai), where the hukou system is strictly enforced.

Migration from the countryside, in turn, looks to be the main source of urban population growth for China today—and virtually the only source in the decades ahead. Given the realities of the hukou system and of the tremendous existing differences in education and skills between city and country in China today, this will make for political and economic complications. Some of these complications have likely been envisioned in advance by Chinese authorities. But others may not have been. In the following sections, we will cast light on some of these prospective problems.
VI. The Arithmetic (and Politics) of Migration and Urbanization with Chinese Characteristics

In this section, we examine China’s population structure, as reported in the 2010 census, by residential and migration status. Our analysis results in two significant findings. First, it would appear that urban China is no longer capable of maintaining, let alone increasing, its future manpower numbers on the basis of “town” and “city” residents legally living in their own hukou. To sustain—much less increase—urban manpower in the years immediately ahead, a continued influx of migrants is therefore absolutely essential. But such new migrants, under current arrangements in China, are not in general lawful residents of their new urban abodes—and this brings us to our second finding.

Migrants already account for a sizable fraction of China’s urban manpower. Indeed, in the big cities, migrants already constituted a majority of youthful manpower in 2010—and the share of such migrants in urban centers was likely higher in 2015 than it was five years earlier. Urban China has thus been transformed into a two-tier society—legal hukou residents and provisional or de jure illegal migrants. And the current second-class residents may constitute a majority of urban cohorts in many urban venues, irrespective of the urbanization drive and its announced plan to grant new local hukou to many millions of out-of-hukou migrants in towns and cities every year.

Figures 55–64 display the main aspects of China’s urban and rural population structure, as well as the population structure for China’s migrant population, from the 2010 PRC census. In these successive snapshots, we see the reported structure for China’s total population (Figure 55) and the residential population of urban and rural China (Figures 56 and 57). China’s total urban population is composed of “cities”—that is, major urban agglomerations—and “towns”—that is, smaller urban centers. We present the reported residential population structure for these separate types of urban concentrations as well (Figures 58 and 59). We then present the reported population structure for China’s total migrant population (Figure 60) and, finally, the population structures reported for the nonmigrant residents of urban China, China’s cities, China’s towns, and rural China (Figures 61–64). (We also refer to rural China as “left-behind rural China.”)

The data from Figure 55 show some curiosities. One of these is the surprisingly low sex ratio for the 25–34 group (103 males per 100 females)—an oddly low ratio, especially considering that men and women in their mid and late 20s in the 2010 census count had been born under the shadow of the One-Child Policy, which ushered in a sharp increase in sex ratios at birth. (We commented on these discrepancies in Section II.) Despite such curiosities, we take these data as “given” in our analysis.

We should remember that Figures 61–64 present China’s population according to their 2010 residential/migration status. They do not indicate the residential or hukou origins of those who have migrated. We do not have access to those data through the materials available for our analysis.

Fortunately, Zheng Zhenzhen and Yang Ge of the Chinese Academy of Social Sciences Institute of Population and Labor Economics have done this. Their work underscores an important point about the
Figure 55. Population Structure for China: Nationwide, 2010


Figure 56. Population Structure for China: Urban (Cities and Towns), 2010

**Figure 57. Population Structure for China: Rural ("Counties"), 2010**

![Population Structure for China: Rural ("Counties"), 2010](image)

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<tr>
<td>Male-to-Female Sex Ratio</td>
<td>105:100</td>
</tr>
<tr>
<td>Male-to-Female Ratio Age 25–34</td>
<td>104:100</td>
</tr>
</tbody>
</table>


**Figure 58. Population Structure for China: Cities, 2010**

![Population Structure for China: Cities, 2010](image)

<table>
<thead>
<tr>
<th>Population ( Millions )</th>
<th>403.8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median Age</td>
<td>35</td>
</tr>
<tr>
<td>Percentage Age 65+</td>
<td>7.7%</td>
</tr>
<tr>
<td>Percentage Age 15–64</td>
<td>80.1%</td>
</tr>
<tr>
<td>Percentage Age 0–14</td>
<td>12.2%</td>
</tr>
<tr>
<td>Ratio Age 55–64 to Age 15–24</td>
<td>48:100</td>
</tr>
<tr>
<td>Male-to-Female Sex Ratio</td>
<td>105:100</td>
</tr>
<tr>
<td>Male-to-Female Ratio Age 25–34</td>
<td>103:100</td>
</tr>
</tbody>
</table>

Figure 59. Population Structure for China: Towns, 2010


Figure 60. Population Structure for China: National Migrant Population, 2010

**Figure 61. Chinese Urban Population (Without Migrants), 2010**


**Figure 62. Chinese City Population (Without Migrants), 2010**

URBANIZATION WITH CHINESE CHARACTERISTICS

Figure 63. Chinese Town Population (Without Migrants), 2010


Figure 64. Chinese Rural Population (Without Migrants), 2010

260-million-plus persons counted as migrants in the 2010 census. Not all of them are peasants coming to the cities.\textsuperscript{73}

By their estimates, over a third (34.4 percent) of all reported migration in 2010 was urban to urban, and about a tenth (10.3 percent) was rural to rural. There was even some reported migration from cities to the countryside (accounting for 2.6 percent of the reported total). But most migration was rural to urban (52.7 percent), meaning that net rural-to-urban migration accounted for just over half (50.1 percent) of the total flow of reported migration in the 2010 census. That would amount to just over 130 million people.

In other words, if China’s 2010 population had been forced to live in their officially designated hukou location, 261 million people would have been displaced from the locales where they were counted—but China’s rural population would have been augmented by 131 million, and China’s urban areas reduced by that same amount. Net population transfer to urban areas via migration as of 2010 thus accounted for about 20 percent of the total reported residential urban population—even though de jure unauthorized migrants accounted for a much larger share of urban population in general, and of big-city population in particular, as we shall see below.

A cursory visual review of Figures 65–74 underscores how different the demographic structures of these 10 subpopulations were as of 2010. The most distinct population structure, not surprisingly, is for migrants: This group is composed overwhelmingly (over 85 percent) of working-age (15–64) men and women. The median age for this group is 30 years—five years lower than for China as a whole—and among migrants there are only 22 prospective workers age 55–64 for every 100 men and women age 15–24, as opposed to a 62:100 ratio for the country as a whole. Migrants furthermore tend to skew even more male than gender-imbalanced China does as a whole; the sex ratio for migrants is 110 males for every 100 females, versus an all-China sex ratio of 105:100.

Because China’s 2010 migrants overwhelmingly (87 percent) are located in urban areas, urban China

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**Figure 65. Legal Resident vs. Illegal Migrant: Nationwide, 2010**

![Figure 65](image.png)

URBANIZATION WITH CHINESE CHARACTERISTICS

Figure 66. Legal Resident vs. Illegal Migrant: Reported Composition of Working-Age (15–64) Manpower, Nationwide, 2010


Figure 67. Legal Resident vs. Illegal Migrant: China (Villages), 2010

Figure 68. Legal Resident vs. Illegal Migrant: Reported Composition of Working-Age (15–64) Manpower, China (Villages), 2010


Figure 69. Legal Resident vs. Illegal Migrant: Urban China (Cities and Towns), 2010

Figure 70. Legal Resident vs. Illegal Migrant: Reported Composition of Working-Age (15–64) Manpower, Urban China (Cities and Towns), 2010


Figure 71. Legal Resident vs. Illegal Migrant: China (Towns), 2010

Figure 72. Legal Resident vs. Illegal Migrant: Reported Composition of Working-Age (15–64) Manpower, China (Towns), 2010


Figure 73. Legal Resident vs. Illegal Migrant: China (Cities), 2010

in 2010 was, perhaps surprisingly, more youthful than rural China—and in some important respects, considerably more youthful. Whereas rural China counted 75 persons of older working age (55–64) for every 100 persons of younger working age (15–24), the corresponding ratio in urban China was 51:100. Despite longer lives and markedly lower fertility, urban China’s proportion of people age 65 and over was distinctly lower than rural China’s as of 2010. The effect is particularly notable in China’s biggest cities (“cities”), where 80 percent of the total population (including migrants) were of prospective working age (15–64) and where there were more than two persons age 15–24 for each person age 55–64.

But the picture changes radically when migrants are taken out of China’s “city” tableau. If only legal in-hukou residents in the big cities are counted, the median age for that subgroup jumps to 39 years (up from 35 years for big-city population overall); the ratio of 55- to 64-year-olds to 15- to 24-year-olds nearly doubles (86:100); and a society with tremendous built-in momentum for population decline is revealed. In 2010, among big-city legal residents, no age group was as numerous as men and women born in 1963—that is, persons then age 47 (babies born immediately after the Three Lean Years famine brought on by the disastrous Great Leap Forward). Among legal residents of the big cities, for every 100 persons age 47, there were only 58 persons 20 years younger (age 27), and for every 100 persons age 27, there were only 56 persons 20 years younger than them (age 7). Similar tendencies, although not quite as acute, are likewise apparent among legal residents of the smaller cities (“towns”).

Are China’s urban areas, absent migration, facing a severe depopulation? Is the legal in-hukou urban population about to become a “net mortality” society? These are important questions, yet answering them simply and conclusively is impossible with any readily available Chinese demographic data. China’s annual birth and death data are still problematic for the country as a whole and, perhaps surprisingly, for urban areas.

Figure 74. Legal Resident vs. Illegal Migrant: Reported Composition of Working-Age (15–64) Manpower, China (Cities), 2010

Figure 75. Projection of China’s Total Population Assuming Zero Net Urban Migration, 2010–40

Note: For methodology and assumptions in these projections, see accompanying text.

Figure 76. Projection of China’s Working-Age (15–64) Population Assuming Zero Net Urban Migration, 2010–40

Note: For details of methodology and assumptions, see accompanying text.
Lacking these data, we can still offer a formalized and internally consistent assessment of the urban demographic prospect by conducting a simple set of population projections for the nonmigrant populations of urban China based on the 2010 census results. We do so using the demographic software package DemProj contained in Spectrum 5, a version of the Futures Group’s widely used population projection software. Figures 75 and 76 fill out and refine estimates from the previous quarterly report concerning the inherent momentum in urban and rural populations in China as of 2010.

Using Spectrum demographic software, these projections illustrate what urban and rural Chinese population trends would look like in 2010–40 if:

1. Official China 2010 data on urban and rural population structures were correct;
2. UN Population Division (UNPD) estimates of total fertility rates for China from 2010 to 2040 from WPP 2017 (medium fertility variant) were correct, with a positive differential of 0.25 births per woman separating rural China from the national average, a negative differential for urban China, and sex ratios at birth (SRBs) for urban and rural areas comported to the national SRBs that the UNPD projects in WPP 2017;
3. These fertility differentials were held constant until 2040;
4. WPP 2017 projections for life expectancy to 2040 were accurate—except life expectancy at birth was a year lower than the national average in rural areas for both males and females, and conversely a year higher in urban areas; and
5. China experienced zero rural-urban migration and zero international migration after 2010—so that population change in urban and rural China in 2010–40 would be due only to natural increase (births versus deaths).

Under these projections, China’s total population peaks around 2028. However, urban population begins to decline in 2021, and urban nonmigrant population begins to decline around 2018—that is, at this writing.

More portentous is the intrinsic change of the age 15–64 population—that is, the population of those conventionally defined as working age. Under these projections, in-\textit{hukou}, urban, working-age manpower would have already begun to decline; nonmigrant, urban manpower would begin to fall in 2013; and rural, working-age manpower would peak around 2025 before starting to decline around 2030. In other words, by these projections, the only thing keeping China’s urban, working-age manpower from shrinking \textit{at the moment} may be migration.

Note that declining manpower totals do not necessarily mean declining workforce totals. Workforce can increase while manpower declines if labor force participation rates increase. But they cannot do so forever. Urban China now appears to be an “eater of men”; it cannot maintain its manpower without steady inflows from outside. Soon this will be true for the total population as well.

Thus, to repeat: We may have \textit{already} reached the juncture where urban and big-city China are \textit{entirely} dependent on the influx of migrant labor for any further increases in their total working-age manpower. Urban China has been the engine of China’s phenomenal and sustained burst of economic growth over the past generation and more. But the tempo of urban-driven economic growth depended on fueling the urban engine with a growing supply of would-be workers from the countryside. That supply is tightening up in purely numerical terms.

We address education and skills of prospective rural migrants in the following section. But now we need to examine the sociopolitical implications of the migration that has helped enable what many have called modern China’s development miracle. While this tremendous movement of people has brought both national and personal economic benefits, it is also directly accompanied by social problems (and potentially political tensions). This is so, quite simply, because the migration that has helped
sustain China’s remarkable economic transformation is almost entirely outside the law.\textsuperscript{75}

In effect, the overwhelming majority of migrants tabulated in the 2010 census were, in a sense, illegal aliens in their own land. The hundreds of millions of people in question were as a rule not included in social services in their new locales: health, education, housing, pensions, and the like.\textsuperscript{76} They typically could not bring their families with them to their new places of residence, resulting in a growing army of left-behind children and elderly relatives.\textsuperscript{77} They were quite typically exploited in the labor market—compensated less than legal residents with the same skills and education levels—though the degree of such exploitation varies and may have lessened over time.\textsuperscript{78} They were, and still are, discriminated against in other ways as well, so that the situation in their unauthorized places of residence remains generally contingent and precarious.

With this background in mind, we contrast the legally authorized in-hukou population structures with the out-of-hukou migrant population structures from the 2010 census for men and women of all ages, men and women of conventional working ages (15–64), China as a whole, China’s rural areas (villages), China’s urban areas (towns and cities), China’s smaller cities (towns), and China’s big cities (cities). (See Figures 68, 70, 72, and 74.) We can see from these figures that cities, particularly big cities, have been magnets for China’s migrants. We may further note that migrant populations—which is to say, de jure illegal residents—have come to account for absolute majorities across urban China for some age groups.

As of 2010, migrants outnumbered legal residents of China’s big cities among males age 16–35 and for every year of age within this grouping. Among females, out-of-hukou residents predominate for each year of age throughout the 16–31 age groups. For urban China as a whole in 2010, out-of-hukou residents outnumbered in-hukou residents at each year of age for the 18–21 age group among males and for the 16–21 age group among females.

Up to 2010, the influx of migrants to urban localities (including migrants from other urban localities) shifted the overall balance between in-hukou urban residents and out-of-hukou newcomers quite rapidly. In 2005, for example, migrants accounted for 39 percent of the urban population for ages 20–39; by 2010, just five years later, the share had risen to 44 percent.

With the promulgation of the official urbanization drive in 2014, and its promise to reassign hukou for tens of millions of migrants to that of their actual place of urban employment and residence, we may have already seen the high-water mark for the ratio of “outside” workers in urban China. However, we cannot actually calculate those trends for the period since 2010 with any precision, given our lack of access to new census or mini-census data.

We can get some sense of the trends underway, though, from the crude metric of the floating population to total urban population—an obviously imperfect measure, but an informative approximation for our purposes nonetheless.\textsuperscript{79} In both 2000 and 2005, that ratio was about 26 percent. It rose to 33 percent in 2010. It reached 34 percent in 2014, the year the urbanization drive was launched, and by 2016—the most recent year available at this writing—it was about 31 percent.

If Beijing’s 2014 urbanization policy proceeds according to plan, the proportion of national urban residents without local hukou would fall between 2014 and 2020—from 16.9 percent to 15 percent. In 2010, roughly one in three urban residents was out of hukou; under the new plan, the corresponding fraction in 2020 would perhaps be something like one in four. Implicitly, the plan envisions that more than 200 million Chinese will still be living out of hukou in 2020—and this is if the plan meets its currently envisioned targets. Suffice it to say that vast populations of de jure illegal migrants—some of them reaching near majorities or actual majorities of key age groups in many urban centers—look to be very much part of Beijing’s vision of the country’s future for as far as the urban planner’s eye can see.
VII. Educational Attainment: The Urban-Rural Divide, Migration, and Development

This section addresses educational attainment in relation to migration, urbanization, and economic development.

Skills and education are crucial elements of human capabilities for economic performance. The prospective contribution of migration to economic development in China depends on many considerations and factors, some of them devilishly difficult to measure objectively, such as business climate or the quality of policies and institutions. Likewise, skills imparted by education per se may not be measured easily or well. But 2010 PRC census data do avail us of information on educational attainment, and these afford important insights, not least into differences in educational profiles within China.

Figures 77–81 display population “pyramids” by age, sex, and educational attainment for the population age 6–85+ for China as a whole, rural China (villages), urban China (towns and cities), and China’s towns and cities separately, as reported in the 2010 PRC census. The “no schooling” group is self-explanatory. “Primary schooling” refers to people with some schooling, but no more than a primary education. “Secondary schooling” includes those with more than a primary education but no tertiary education, and “tertiary education” refers to people with at least some higher education, though not necessarily a college degree or equivalent.

These figures show the tremendous differences in reported educational attainment between rural and urban China in 2010. They also underscore the differences in reported educational profiles between smaller and larger cities in China.

Recall that these data are based on actual place of residence, not officially designated hukou residence; the reported profiles for urban China include nonlegal rural migrants already residing in those locales. In other words, these figures include the 130-million-plus people who were born (and in large part, educated) in the countryside but now reside in China’s urban areas as a component in urban China’s educational profile.

Table 7 quantifies some of the trends in Figures 77–81. Note, for example, that the proportion of working-age (15–64) Chinese villagers with some tertiary education or more in 2010 (2.6 percent) was just about the same as the national average for China in 1990, 20 years earlier. And it was barely an eighth the level of their urban counterparts and one-tenth the level of their big-city counterparts. By the same token, rural men age 20–39 with no more than a primary education accounted for one-sixth of all such men in China in 2010—three times the share for their urban counterparts and four times the share for male 20- to 39-year-olds in big cities. In 2010, just 4.4 percent of China’s rural women in their 20s and 30s had any tertiary education; the corresponding proportion was over 28 percent for women that same age in urban areas and nearly 35 percent in the big cities.

The patterns of educational attainment revealed in the 2010 PRC census could also be quantified using mean years of schooling (MYS) for various subgroups according to age and residence. MYS is a useful summary metric for comparing educational attainment between countries and over time, although it cannot take account of differentials in educational quality. The 2010 PRC census did not provide its own
Figure 77. China Population by Age, Sex, and Education Attainment, 2010


Figure 78. China Population by Age, Sex, and Education Attainment in Towns, 2010

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Figure 79. China Population by Age, Sex, and Education Attainment in Cities, 2010


Figure 80. China Population by Age, Sex, and Education Attainment in Urban Areas, 2010

estimates on MYS for the Chinese population, so we attempted to reconstruct them from publicly available information, following the approach of the widely cited Barro-Lee Educational Attainment Dataset. Our calculations are provided in Table 8.

The Barro-Lee approach is not as straightforward as it might seem, unfortunately. The problem is determining the rate of school completion and how much schooling to attribute to men and women who only partly completed their primary, secondary, or tertiary education. Patterns in this regard shift between and within countries over time, and Barro-Lee publications provide no insight into precisely how they dealt with this matter for China in 2010, or for any other specific country and calendar year.

Our independent calculations for MYS for China in 2010 resulted in nationwide estimates close to the Barro-Lee estimates. But they were not exactly the same. For 2010, based on the 2010 PRC census, Barro-Lee estimates placed MYS for the overall 15+ population at 7.95 years: 8.35 for males and 7.54 years for females. By contrast, we calculated 7.84 years for China overall, 8.20 years for males, and 7.47 years for females. Thus, there is slight downward bias in our calculation, and it is a bit greater for males than for females.

That noted, by our reckoning, the urban-rural gap in MYS for China’s adult (15+) population in 2010 was about 1.6 years: 8.6 versus 7.0. The calculated gap was greater for women than for men (1.8 years versus 1.4 years). And the gap between big cities and the countryside, not surprisingly, was even wider than the urban-rural gap (2.0 years for the overall adult population, 1.8 years for males, and 2.2 years for females). For the working-age (15–64) China 2010 population, we calculated an urban-rural gap of nearly 1.5 years for males and females combined (8.9 years versus 7.5 years) and an overall gap of nearly 1.8 years between big cities and the countryside (9.2 years versus 7.5 years).
### Table 7. Indicators of Educational Attainment from PRC Censuses

<table>
<thead>
<tr>
<th>Census Year</th>
<th>1990</th>
<th>2000</th>
<th>2010</th>
<th>2010 (City)</th>
<th>2010 (Town)</th>
<th>2010 (Village)</th>
<th>2010 (Urban)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage of Total (15–64) with No Schooling</td>
<td>N/A</td>
<td>4.9%</td>
<td>2.6%</td>
<td>0.9%</td>
<td>2.0%</td>
<td>4.1%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Percentage of Total (15–64) with Primary Education</td>
<td>43.6%</td>
<td>31.7%</td>
<td>20.8%</td>
<td>9.1%</td>
<td>17.3%</td>
<td>30.3%</td>
<td>12.2%</td>
</tr>
<tr>
<td>Percentage of Total (15–64) with Secondary Education</td>
<td>53.9%</td>
<td>58.5%</td>
<td>65.1%</td>
<td>65.5%</td>
<td>69.4%</td>
<td>62.9%</td>
<td>67.0%</td>
</tr>
<tr>
<td>Percentage of Total (15–64) with Tertiary Education</td>
<td>2.5%</td>
<td>4.9%</td>
<td>11.5%</td>
<td>24.6%</td>
<td>11.3%</td>
<td>2.6%</td>
<td>19.5%</td>
</tr>
<tr>
<td>Percentage of Men (15–64) with No Schooling</td>
<td>N/A</td>
<td>2.5%</td>
<td>1.5%</td>
<td>0.5%</td>
<td>1.1%</td>
<td>2.3%</td>
<td>0.7%</td>
</tr>
<tr>
<td>Percentage of Men (15–64) with Primary Education</td>
<td>39.2%</td>
<td>27.3%</td>
<td>17.4%</td>
<td>7.6%</td>
<td>14.0%</td>
<td>25.6%</td>
<td>10.1%</td>
</tr>
<tr>
<td>Percentage of Men (15–64) with Secondary Education</td>
<td>57.7%</td>
<td>64.3%</td>
<td>69.0%</td>
<td>66.5%</td>
<td>72.4%</td>
<td>69.2%</td>
<td>68.7%</td>
</tr>
<tr>
<td>Percentage of Men (15–64) with Tertiary Education</td>
<td>3.0%</td>
<td>5.8%</td>
<td>12.2%</td>
<td>25.4%</td>
<td>12.5%</td>
<td>2.9%</td>
<td>20.5%</td>
</tr>
<tr>
<td>Percentage of Women (15–64) with No Schooling</td>
<td>N/A</td>
<td>7.5%</td>
<td>3.8%</td>
<td>1.3%</td>
<td>2.9%</td>
<td>6.0%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Percentage of Women (15–64) with Primary Education</td>
<td>49.3%</td>
<td>36.3%</td>
<td>24.3%</td>
<td>10.5%</td>
<td>20.6%</td>
<td>35.2%</td>
<td>14.4%</td>
</tr>
<tr>
<td>Percentage of Women (15–64) with Secondary Education</td>
<td>48.9%</td>
<td>52.3%</td>
<td>61.1%</td>
<td>64.5%</td>
<td>66.3%</td>
<td>56.5%</td>
<td>65.2%</td>
</tr>
<tr>
<td>Percentage of Women (15–64) with Tertiary Education</td>
<td>1.8%</td>
<td>3.9%</td>
<td>10.9%</td>
<td>23.7%</td>
<td>10.2%</td>
<td>2.3%</td>
<td>18.5%</td>
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<td>Percentage of Men (20–39) with No Schooling</td>
<td>N/A</td>
<td>1.1%</td>
<td>0.7%</td>
<td>0.2%</td>
<td>0.5%</td>
<td>1.2%</td>
<td>0.3%</td>
</tr>
<tr>
<td>Percentage of Men (20–39) with Primary Education</td>
<td>30.9%</td>
<td>20.2%</td>
<td>9.7%</td>
<td>3.9%</td>
<td>7.5%</td>
<td>15.6%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Percentage of Men (20–39) with Secondary Education</td>
<td>65.7%</td>
<td>71.4%</td>
<td>71.1%</td>
<td>61.5%</td>
<td>73.8%</td>
<td>78.0%</td>
<td>65.9%</td>
</tr>
<tr>
<td>Percentage of Men (20–39) with Tertiary Education</td>
<td>3.4%</td>
<td>7.4%</td>
<td>18.4%</td>
<td>34.4%</td>
<td>18.1%</td>
<td>5.3%</td>
<td>28.6%</td>
</tr>
<tr>
<td>Percentage of Women (20–39) with No Schooling</td>
<td>N/A</td>
<td>2.8%</td>
<td>1.2%</td>
<td>0.3%</td>
<td>0.8%</td>
<td>2.1%</td>
<td>0.5%</td>
</tr>
<tr>
<td>Percentage of Women (20–39) with Primary Education</td>
<td>44.6%</td>
<td>30.0%</td>
<td>13.4%</td>
<td>4.8%</td>
<td>10.6%</td>
<td>21.8%</td>
<td>6.9%</td>
</tr>
<tr>
<td>Percentage of Women (20–39) with Secondary Education</td>
<td>53.4%</td>
<td>61.7%</td>
<td>67.6%</td>
<td>60.2%</td>
<td>71.9%</td>
<td>71.7%</td>
<td>64.4%</td>
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<tr>
<td>Percentage of Women (20–39) with Tertiary Education</td>
<td>2.0%</td>
<td>5.4%</td>
<td>17.8%</td>
<td>34.8%</td>
<td>16.6%</td>
<td>4.4%</td>
<td>28.3%</td>
</tr>
</tbody>
</table>

These are rather large differences for a nation where the level of adult educational attainment averages just eight years. Remember as well that the quality of education in rural areas may not be as high as in urban areas at any given level of matriculation.

We can try to put these China 2010 levels and differences in adult educational attainment into historical and international perspective thanks to the Barro-Lee data set. The two-year difference between rural and big-city China’s census-reported 2010 adult MYS, for example, is roughly equivalent to the absolute MYS improvement that rapidly developing China achieved over the two decades 1990–2010. By our calculations, furthermore, China’s rural adult MYS level in 2010 would have been roughly the same as less-developed Vietnam’s overall level that same year, while China’s urban level in 2010 would have been comparable with that of high-educational South Korea attained nationwide in 1985, a generation earlier. We already know the educational gap between rural and urban China today is a big one, but these sorts of benchmarks may help us better appreciate its dimensions.

This pronounced gap in educational attainment begs the question of exactly how much Beijing’s planned urbanization drive can accelerate economic growth through rural-to-urban migration (even assuming social tensions can be managed in the process). We have a sense of the overall gap in educational attainment between rural and urban areas. But are educational levels for the next wave of prospective rural migrants comparable to those of the rural migrants now in China’s cities and towns?

Unfortunately for our purposes, the 2010 PRC census does not break down the educational attainment of the urban population by migration status; the educational profiles of migrants and legal residents are aggregated in Figures 77–81 and cannot be disaggregated. So far as we can determine, no hukou-specific data (i.e., characteristics by original place of residence) on education, employment, or other key demographic and socioeconomic indicators are publicly available from the 2010 PRC census—or for that matter, virtually any other data set from the China National Bureau of Statistics.

We must therefore work with what we have. And the 2010 census does provide a summary of overall educational attainment for the population age 6 and

### Table 8. Preliminary Estimate: Mean Years of Schooling by Region in China, 2010

<table>
<thead>
<tr>
<th>Region</th>
<th>Age 15+</th>
<th></th>
<th></th>
<th>Age 15–64</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
<td>Total</td>
<td>Male</td>
<td>Female</td>
</tr>
<tr>
<td>National</td>
<td>7.84</td>
<td>8.20</td>
<td>7.47</td>
<td>8.22</td>
<td>8.49</td>
<td>7.95</td>
</tr>
<tr>
<td>City</td>
<td>9.00</td>
<td>9.23</td>
<td>8.77</td>
<td>9.25</td>
<td>9.39</td>
<td>9.11</td>
</tr>
<tr>
<td>Town</td>
<td>8.02</td>
<td>8.35</td>
<td>7.67</td>
<td>8.36</td>
<td>8.60</td>
<td>8.11</td>
</tr>
<tr>
<td>Village (Rural)</td>
<td>7.00</td>
<td>7.45</td>
<td>6.53</td>
<td>7.46</td>
<td>7.81</td>
<td>7.09</td>
</tr>
<tr>
<td>Urban</td>
<td>8.62</td>
<td>8.89</td>
<td>8.35</td>
<td>8.91</td>
<td>9.09</td>
<td>8.73</td>
</tr>
</tbody>
</table>

over for migrants in villages, towns, and cities—so those data can be compared with corresponding data for legal city, town, and village residents as of 2010.

We offer these comparisons in Figures 82–88. In addition to the standard education groups used in Figures 77–81 (no schooling, primary, secondary, and tertiary), we further break down the data back into the original seven education groupings listed in the 2010 census so we might better appreciate the differences in education profiles for China’s villages, towns, and cities. These visual depictions of the distribution of educational attainment among China’s villages, towns, and cities highlight a number of noteworthy differences, but one striking distinction is the deficit of higher education in rural areas.

We must caution: These data are not standardized by age, and we know the age structure of the populations under consideration in these figures differ quite considerably. Thus, we are not comparing apples to apples. China’s migrant population is significantly younger than the populations of legal rural residents or legal urban residents. All other things being equal, this distinction should bias reported educational attainment for adult migrants upward, since educational attainment is higher for young adults than older ones. Bearing this important caveat in mind, the data are nonetheless revealing.

To begin, Figures 82 and 83, which record the distribution of educational attainment among total numbers of migrants to cities, towns, and villages, seem to indicate a strong tendency toward higher educational attainment among migrants in the big cities and lower educational attainment among migrants in villages (rural areas). The tendency is further emphasized in Figures 84 and 85, which present the distribution of educational attainment among migrants in proportional terms. Virtually no migrants in villages or towns, for example, reported any graduate schooling. But the proportion of migrants in big cities with some graduate education was roughly comparable with the proportion for legal big-city residents (0.9 percent versus 1.1 percent).
Figure 83. Migrant Population by Educational Attainment and Current Location, 2010

![Bar chart showing migrant population by educational attainment and current location in 2010.](chart1)


Figure 84. Distribution of Adult Detailed Educational Attainment by Place of Residence and Migration Status, 2010

![Bar chart showing the distribution of adult educational attainment by place of residence and migration status in 2010.](chart2)

Figure 85. Distribution of Adult Educational Attainment by Place of Residence and Migration Status, 2010


Figure 86. Distribution of Detailed Educational Attainment in Population Age 6 and over, 2010

Figure 87. Educational Attainment by Location and Residence Status in Absolute Numbers, 2010


Figure 88. Distribution of Educational Attainment in Population Age 6 and over, 2010

By the same token, 10 percent of legal residents in big cities had some or more college education (college plus graduate school). By contrast, slightly over 10 percent of migrants in big cities, under 5 percent of migrants in towns, and 3 percent of migrants in villages had some or more college education. Among legal rural residents, the share was reportedly 0.4 percent. As of 2010, as we see in Figure 83, the number of legal rural residents with some or more tertiary education (junior college plus college and graduate school) totaled fewer than 10 million—but the corresponding number for big-city migrants was 36 million.

In all of legal rural China, furthermore, fewer than 50 million persons had some high school education in 2010. As we see in Figure 84, that amounts to just 7.4 percent of the legal rural resident population. This means that the proportion of legal rural residents with a high school education or better as of 2010 was under 9 percent. In the big cities, the corresponding share for legal residents was about 46 percent. It was 22.5 percent for migrants in rural areas, 36.8 percent for migrants in towns, and about 45.8 percent for migrants in big cities.

We should remember that many of the young migrants in big cities were themselves raised and educated in urban areas or big cities. And given the age structures in question, we can be fairly confident that the educational profile of migrants in big cities would not be quite as high as legal big-city residents.

But it should also be fairly clear that there is only a limited pool of people in rural areas with relatively high levels of educational attainment. Indeed, among rural China’s resident population (including migrants to rural regions from urban areas), the best educated cohort is the 20–24 age group. Yet just 5.2 million of the 56.3 million men and women in that cohort report exposure to higher education of any sort, for any duration. This works out to 9.3 percent with some tertiary education among China’s rising rural men and women in their early 20s. But that is just half the average for men and women of all conventional working ages (15–64) in urban China in 2010 (19.5 percent).82

An urbanization drive of any magnitude, in other words, would perforce reduce overall levels of educational attainment in urban China today. We cannot know precise details until the requisite National Bureau of Statistics data on educational attainment by age, current residence, and hukou location are accessible to international researchers. But available data strongly suggest the process of urban migration in China has already cherry-picked the younger people with the highest educational profiles from the countryside and brought them to China’s big cities. Migrant per migrant, the coming phase of rural-to-urban migration may therefore be less economically promising than it was over the past several decades.

Yet, while we cannot rigorously test this surmise, we can at least expose it to the only detailed data on hukou-specific educational attainment patterns we could obtain: the survey findings from the Chinese Household Income Project (CHIP), a joint collaboration between Chinese and Western economists that has been underway for nearly three decades.83 CHIP has a large sample size—its latest wave includes 160,000 households—and for our purposes it has the virtue of offering a specific household sample survey for migrants, in addition to its surveys for urban households and rural households.

We used the 2013 wave of the CHIP survey to examine educational attainment patterns reported for China’s working-age rural and urban residents by hukou background. Our analysis was facilitated by Professor Terry Siclar of the University of Western Ontario, a principal in the CHIP effort. The weighting schema for the analysis of the 2013 wave was developed by her and Yue Ximing (Renmin University of China).84

The CHIP data are not directly comparable to 2010 PRC census data and should not be expected to match up precisely with the educational attainment numbers we have derived from it. (And they do not.) Nonetheless, they can offer meaningful insights into educational differentials by hukou background. We present those results in Table 9.

We will not try to reconcile differences between the 2010 PRC census and the CHIP 2013 survey regarding educational attainment.85 In general (and ordinal) terms, though, CHIP 2013 indicates that educational attainment for both the 15–64 working-age population and the 20–39 working-age population was distinctly higher for those with urban hukou than for the
rest of the population—regardless of whether those working-age men and women were in *hukou* themselves or instead migrants working in other urban localities. But CHIP also finds that urban migrants of working age from rural areas have significantly higher educational attainment profiles than their *in-hukou* rural counterparts—substantially higher MYS, much more secondary education, and more tertiary education as well (although for all adults from rural *hukou*, the proportion with tertiary education is small). Although we need to be careful in interpreting the data in Table 9, these results seem entirely consistent with the proposition that a major movement of rural workers to urban centers in present-day China would lower the mean level of educational attainment for the migrant population in urban China and for urban China as a whole.\(^86\)

One last issue meriting mention is the matter of the so-called left-behind children—the boys and girls living apart from their long-term migrant parents. Based on the 2010 PRC census, UNICEF estimated that nationwide nearly one in four Chinese children under age 18 qualified as left-behind children (defined as living apart from at least one parent).\(^87\) The proportion of left-behind children is higher in rural China. The All-China Women’s Federation estimates that 38 percent of all rural children were left-behind children and nearly half of left-behind children are reportedly living with neither parent.\(^88\)

The long-term implications for education and skills from such arrangements are as yet unclear. Some researchers are concerned that these arrangements will seriously impair the educational and cognitive development of this rising cohort.\(^89\) The

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### Table 9. Education Endowment of Migration Status for Working-Age Population

<table>
<thead>
<tr>
<th></th>
<th>Working-Age Population (15- to 64-Year-Olds)</th>
<th>Young Adults (20- to 39-Year-Olds)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean Years of Education</td>
<td>Proportion of High School-Educated People</td>
</tr>
<tr>
<td>Rural Residents in Their Own Hukou</td>
<td>7.84</td>
<td>8.20</td>
</tr>
<tr>
<td>Urban Residents in Their Own Local Urban Hukou</td>
<td>9.00</td>
<td>9.23</td>
</tr>
<tr>
<td>Urban Migrants with Urban Hukou</td>
<td>8.02</td>
<td>8.35</td>
</tr>
<tr>
<td>Urban Migrants with Rural Hukou</td>
<td>7.00</td>
<td>7.45</td>
</tr>
</tbody>
</table>

Note: We used the 2013 wave of the CHIP survey to examine educational attainment patterns reported for China’s working-age rural and urban residents by hukou background. Our analysis was facilitated by Professor Terry Sicur of the University of Western Ontario, a principal in the CHIP effort. She and Yue Ximing (Renmin University of China) developed the weighting schema for the 2013 analysis. Source: Chinese Household Income Project survey, 2013.
counterargument would be that left-behind children typically benefit from remittances that their migrant parents send and consequently face less material hardship than they would otherwise, possibly even if both parents had remained in situ.

Available test score evidence on the question of left-behind children and systematic disadvantage (that is, disadvantage above and beyond the poverty that prompted parents to move in search of work in the first place) appears to be inconclusive, at least to date. We do not have enough information as yet to take a position on whether there will be a left-behind-children effect on education and skills for China’s rising generation. We may simply observe for now that, should such an effect ultimately be proved, this particular consequence of the current hukou system would have many adverse implications, of which the impact on prospective migrants’ economic potential would be only one.

In light of the data assembled in this section, however, we do not need to presume such an effect to suggest that the economic contribution of migration to overall growth in China in the decade immediately ahead could prove disappointing to many observers—not least those in policymaking positions in Beijing.
In this report, we analyzed the dynamics of China’s tightly interlinked phenomena of urbanization and migration—under the shadow of the hukou system, a distinctive policy regime in which the Chinese government both encourages unauthorized mass movements of people to urban centers and reserves the prerogative to deport those unauthorized migrants whenever it so chooses. Chinese economic growth depends on continuing flows of workers to cities, but for now the Chinese Communist Party (CCP) insists on maintaining social control over those migrants through the hukou system. The reference year for our study was 2010, the year of the most recent all-China census.

Our report offers a number of findings pertinent to a better understanding of China’s economic, social, and security realities. First, despite its remarkable economic record over the past generation, China in 2010 looked to be a significantly under-urbanized society. As a rough approximation, in 2010 China appeared to have 70–100 million fewer urban residents than one would have predicted for a country at this level of development (also noting the questions and problems in the definitions Beijing has used for classifying “urban” and “rural” areas). We suggest the lost economic potential from Chinese under-urbanization was considerable as of 2010, amounting to perhaps 10–15 percent of current GDP.

Second, we show that Chinese population structure and fertility patterns in 2010 were such that the in-hukou urban population was no longer capable of generating sustained population growth or manpower growth. To the contrary, our projections suggest that, without in-migration, China’s overall urban in-hukou population would be on course to decline around 2018—that is, more or less at this writing—and that the 15–64 working-age population would be set to peak in 2013, meaning that it would already be well into long-term decline today without steady influx of additional manpower from outside. Urban China is the engine of economic growth for China today; this demographic dilemma would mean that continuing migration from out-of-hukou men and women is crucial to the arithmetic of China’s future economic growth.

But the out-of-hukou migrants to urban areas that the Chinese growth machine badly needs are mostly treated as de jure illegal aliens in the cities and towns where they seek work. And this brings us to the third major finding of our report: Out-of-hukou migrants—commonly understood in China to be second-class citizens due to the discrimination they face where they reside and toil—have come to compose a sizable share of total manpower today for urban China as a whole. And they actually composed an absolute majority of working-age men and women in a still-increasing number of younger cohorts in China’s big cities as of 2010.

Even though Beijing’s urbanization drive envisions granting local residence to scores of millions of urban migrants, the plan also implicitly accepts that hundreds of millions of migrants to cities and villages will be consigned to second-class out-of-hukou status for the foreseeable future—meaning that young second-class citizens will compose a majority of many age groups in many cities for as far as the official Chinese planner’s eye can see. This has established an all-but-permanent social tension, based on vivid inequality recognized by all involved, at the heart of every Chinese urban center.

Fourth, governmental ambitions to stimulate China’s economic growth through induced urbanization notwithstanding, an examination of the huge rural-urban gap in educational attainment for China’s working-age population suggests that rural China may already have sent most all of its highest-skilled young men and women to urban areas. So any substantial
flow of rural-to-urban migration in the years immediately ahead would lower overall levels of educational attainment in urban China—begging the question of whether the next wave of urban migration will be as much of an engine for growth as past waves.

Our analysis points to both opportunities and problems. The under-urbanization we identified in China in 2010, for example, can be regarded as an economic opportunity—and a big one. “Normalizing” China’s urbanization profile for a society at its level of economic development would offer substantial economic benefits. And by all indication, Beijing has been attempting to reap these benefits with its urbanization drive.

According to official Chinese statistics, China’s urban population surged by more than 120 million between 2010 (the reference year for our study) and 2016 and was reportedly more than 140 million higher at year-end 2017 than in 2010. Since the official definitions of “urban” and “rural” in China remain opaque, we cannot tell how much of this upsurge is due simply to reclassification or redefinition of formerly “rural” areas.

All other things being equal, an increase in urban numbers of this magnitude could be expected to correct for much of the under-urbanization that, we argue, characterized China’s society and economy in 2010. The corollary of this correction, however, would be that China has already addressed a structural inefficiency—and must now look for other, perhaps more challenging, structural changes or reforms for additional sources of growth for the future.

On the other hand, the demographic and political arithmetic of urban growth looks to be problematic for China. If we are correct that in-hukou urban demographic growth is now essentially exhausted, the task of “fueling” China’s urban growth engines with even more manpower will essentially entail mass movement of rural workers to urban jobs. Given the wide gaps in educational attainment between urban and rural areas in China today—and the possibly even wider gaps in skills—such inflows stand to reduce mean educational and skill levels in urban areas and increase the dispersion of their distribution, in both cases perhaps appreciably. In addition to the impact on socioeconomic disparities, one might also expect the human capital effect here to function as a constraint against rapid macroeconomic growth.

To be sure, the story of urban development globally has, in broad terms, been a saga of less-educated rural migrants moving into urban areas and catalyzing economic development in the process. But the Chinese case differs from these “stylized facts” in two crucial respects.

First, China today is concluding its epoch of what might be called “heroic economic growth.” While rural-to-urban migration still offers China the promise of stimulating economic growth in absolute terms, it is part and parcel of a process bringing China down toward a relative tempo of growth more familiar in other contemporary settings.

Second, unlike elsewhere, China has a hukou system that automatically marks migrants into a separate, and inferior, urban caste. This inferior caste is not a fringe group in China’s big cities; it is a substantial minority of the working-age adult population overall. For younger age groups in many urban centers, this inferior caste is an outright majority of the overall population. Stark, unanswered social questions and even more sensitive issues regarding social stability attend this peculiar arrangement.

**Demographics with Chinese Characteristics and the Hukou System**

Our report highlighted important qualitative differences that distinguish the processes of migration and urbanization in China from those in virtually the rest of the contemporary world. But there is a broader and deeper point here. Such qualitative distinctions for China are not simply limited to the demographics of domestic migration and urbanization.

Plainly put, the Chinese state exercises exceptionally intrusive claims over the ordinary, everyday demographic life of its subjects in a variety of realms. It is in fact tempting to speak of “Demographics with Chinese Characteristics”—the almost reflexive tendency for the Chinese government to use the coercive instruments at its disposal to shape and (by so doing)
distort the demographic rhythms of the society under its command, altering demographic outcomes in the name of augmenting state power, enhancing state security, and preserving or perfecting social control for the regime.

To be sure, such unapologetically dirigiste impulses have a long and storied history in China. But the mechanisms of social control that make Demographics with Chinese Characteristics so distinctive today are, in important ways, new. The most striking are features devised under the CCP: innovations from the era of Maoist totalitarianism and, more ironically, the new social controls unveiled and implemented during the post-Mao era of “reforms.”

Regarding births and fertility, for example, Demographics with Chinese Characteristics means that the contemporary Chinese state is a partner with would-be parents in deciding when or whether children should be conceived and born—and the state has the deciding vote. For three and a half decades—from the early years of the Deng Xiaoping period until 2015—Beijing enforced a One-Child Policy through a nationwide system of quotas, population agents, and threats of severe penalties, including criminal penalties.

Although Beijing announced in late 2015 that it would be abandoning the “One-Child Norm,” authorities explicitly emphasized that they would not be dismantling its apparatus for forcible population control. Far from repudiating its program of forcible birth control, Beijing was refining it: recalibrating the lifetime birth ration it would grant its subjects to a “Two-Child Norm.” In 2018, Beijing announced it would be rescinding the two-child norm as well—but this did not mean relinquishing this instrument of population control. To this writing, indeed, Beijing insists that “births are a state affair”—even as there are signs the government is toying with reversing course and implementing a pro-natal population policy.

In the realm of mortality, Demographics with Chinese Characteristics might arguably refer to the recurrent spasms of unnatural “excess deaths” that punctuated China’s demographic patterns under Maoist rule. Some of these mortality spikes were unintended; some were not. But all were due to the considered policies and actions of China’s overarching party and state.

And then there is migration. With respect to migration, the epitome of Demographics with Chinese Characteristics is of course the hukou system, the de facto internal passport issued to all Chinese subjects by the Ministry of Public Security, which we have discussed extensively already.

The Logic of Migration with Chinese Characteristics

Ambitious—and merciless—policy interventions into ordinary people’s personal lives inevitably result in adverse and unintended consequences. The adverse unintended consequences of China’s coercive birth control policies are today widely recognized and discussed. To date, however, there has been rather less attention to, and discussion about, the corresponding reverberations of the hukou system—but not for want of adverse or unintended consequences.

As we have noted, hukou powers are very much a part of Beijing’s vision of the future. So as well, as we have noted, is the prospect that hundreds of millions of migrants will continue to suffer discrimination and social exclusion as out-of-hukou residents in booming urban China.

Contemplating this vision of the Chinese future, the outsider may be excused for asking, “But why?” Why would the Chinese government deem acceptable the indefinite nationwide continuation of an order that might uncharitably be described as “Soweto with Chinese characteristics”? What will it mean for China to have a caste of second-class citizens as the majority population for key working-age groups throughout the nation’s urban areas? How will social tensions be mitigated or managed with the highly visible inequalities such distinctions currently presage for such densely concentrated population centers? It is hard to imagine a conspicuous two-tier society will foster much social trust on either side of the divide.

As best can be told, the answers to these questions are that there is a logic to this most unnatural
arrangement for the real, existing Chinese government. Indeed, the human insecurity that migrants today suffer should be seen as serving purposes of state.

For one thing, financial exploitation of migrants directly serves the interests of municipalities and localities that benefit for migrant labor without being obliged to provide them with social benefits. In effect, migrants are “cash cows” for public finance in cities and towns all around the country. By not extending local hukou to working migrants (much less their dependents), the central government is protecting the public finances of the locales in which unauthorized migrants reside from the fiscal burdens that migrants’ demands for services might impose. Local authorities are often vocal about the budgetary “cri ses” they would face if migrants were to receive access to local services. Of course this is a problem the central government could solve by assuming responsibility for these costs—but that would be a major expense, and to date Beijing has declined to accept such a commitment.

The hukou system also provides a measure of political security for the regime in the face of potential instabilities. This is not merely a theoretical option or a potential instrument of control always held in reserve. In the wake of the 2008 global financial crash, tens of millions of Chinese migrants were sent back to their homes by authorities who did not wish to risk migrants congregating in cities as jobless discontent. They were only permitted to return later, as out-of-hukou work became available again. Although the total number of migrants so affected has never been officially announced, and has not been definitively estimated, the lower bound of unofficial estimates is that 20 million people were “un-migrated” in 2008–09; some academic estimates range as high as 48 million.

Preventing unrest in urban areas in the wake of the 2008 global economic crisis is surely regarded by Chinese authorities as a hukou policy “success.” No doubt the same is true of subsequent episodic use of hukou to reduce migrant population in Beijing and key urban centers. Whatever else may be said, these “successes” are unlikely to reduce the regime’s appetite for hukou perpetuation.

Migration and Control in an Increasingly Affluent and Urbanized China

On its current trajectory, if continued, the China of tomorrow looks to be an increasingly urban and affluent society supervised by an authoritarian leadership abidingly and deeply invested in social control of its subjects. Political and security calculations figure centrally in the development visions the Chinese government will, and will not, accept for the future.

Although Beijing’s current plans envision immense numbers of out-of-hukou workers in Chinese urban centers, they also imply that the share of the urban population made up of such officially disadvantaged men and women should be reduced over time. Chinese policy may of course offer the long-suggested arrangements for social inclusion of the country’s still-extralegal migrant population in the communities to which they have moved. But no such arrangements have been determined at this writing—and de jure “illegal” migrants continue to move to urban areas.

Multiple considerations are behind this determination, many of which we have already mentioned or reviewed. But there are perhaps other reasons that Beijing may be reconciled to a decline in the share of out-of-hukou population in urban areas as well, even though this means granting local residency rights to an increasingly large population of former farmers and peasants. It may be that the relative importance of hukou as a tool of social control is lessening as other new, technologically sophisticated tools of social control are perfected.

Much has been made of the surveillance potentialities of emerging new techniques of facial recognition, for example; likewise for the social credit system that China is planning to unveil in 2020. The potential social control via big data (police state use of artificial intelligence and information from e-commerce, fintech, and more) are just beginning to be discussed abroad.

Still other innovations and advances may likewise reduce the relative reliance Beijing vests in hukou as a population-control tool. Just how new technologies match with regime objectives, of course, remains to
be seen. Suffice it to say, the contradictions of a strategy for economic development predicated largely on building an urban workforce on a foundation of structured migration and “illegal” labor will affect life and society—and possibly politics—in China for decades to come.
Notes


appear on the website of the University of Michigan’s China Data Center, arguably the foremost such institute in the US; and it is not yet available for sale on Amazon. At Harvard, America’s largest university collection, a <hollis.harvard.edu> search locates several provincial volumes of the 2015 mini-census, but curiously, not the all-China volume. This is not to say that the China 2015 1% National Population Sample Survey might not be found in the US at present. But obtaining it proved impracticable for this project—and judging from the lack of English-language studies citing the source at this juncture, other Western researchers may have had the same experience.

24. Without getting too far ahead of ourselves, we may note that Kang Chao’s estimates for historical urbanization ratios comport closely with definitions in the First (1953) PRC population census—so that something like an apples-to-apples comparison indicates a long-term historical decline in urbanization in China up to the period of Communist rule. Definitions for “urban” were tightened between the First and the Second (1964) Census but then loosened again between the Second and Third (1982) Census—the impact of the tightening and loosening perhaps largely offsetting each other. If so, urbanization ratios in China at the start of the 1980s may not have been historically unprecedented—unlike virtually any other place on earth at the time, with the obvious and understandable exception of Cambodia.
26. Those interested in technical details should be aware that there is a distinction between “floating population” and “migrant population” in the official Chinese taxonomy. From Beijing’s standpoint, “registration-residence inconsistency” marks a person as a migrant—but that could mean a person living in the same city as their hukou but residing outside their officially designated residence. “Floating population” refers to that portion of the migrant pool who reside outside the village, town, or city in which their official hukou papers stipulate.
27. For clarity, the data we examine in this study—from China’s National Bureau of Statistics, the United Nations Population Division, and the US Bureau of the Census—all treat “China” as the mainland territories administered directly by Beijing—that is, not including Macau, Hong Kong, or the Republic of China on Taiwan, irrespective of legal or jurisdictional claims.
28. Strictly speaking, other demographic data sources do exist for contemporary China; these can and are used as “correctives” in reconstructing all-China trends. In addition to the hukou registry, there are figures on educational enrollment for children and youth, public health data, and more. But it is the census and mini-census data that are central to all estimates of contemporary Chinese demographic trends. See Chen Wei, “Evaluation of the Completeness of Birth Registration in China Using Analytical Methods and Multiple Sources of Data,” November 2016, http://www.un.org/en/development/desa/population/events/pdf/expert/26/notes/Chen_2016_Birth%20Registration%20in%20China.pdf.
URBANIZATION WITH CHINESE CHARACTERISTICS


34. As the WUP 2018 website says, “The 2018 Revision of World Urbanization Prospects . . . are consistent with the size of the total population of each country as estimated or projected in the 2017 Revision of World Population Prospects” [emphasis added]. UN Population Division, “World Urbanization Prospects 2018.” “Consistent with,” not “identical”—the population estimates in question are not exactly the same, but they are close.

35. Note that WUP 2014 and 2018 followed the 2012 and 2017 revisions, respectively, of World Population Prospects. If age-sex breakdowns for rural and urban population for China in 2010 were available from the 2018 WUP revision, these would presumably differ from those of the 2014 revision in some respects. This explains the apparent inconsistencies between Tables 1 and 2 and Tables 4 and 5.


40. Districts with population densities larger than 1,500 persons per square kilometer were considered urban locales.


42. Kojima, “Urbanization in China,” Table V.


44. Even such an effort, however, would still encounter difficulties in adjusting for seemingly arbitrary political decisions embedded in Beijing’s constantly shifting definitions of “urban” and “rural” areas, as these make international standardization especially challenging.


48. Note these net interprovincial migration tallies represent inflows minus outflows. For some places in China, such as Shanghai and Guangdong, there is essentially no reported outflow at all—that is, gross provincial out-migration of the population of 1 percent or less.

49. Of course, men and women younger than 15 or older than 64 may in fact have been working, but this big fact about the 15–64 population provides an important first take on migration and manpower in China. In fact, the Chinese census does not appear to collect
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data on work for migrants under the age of 15 because of child labor concerns. As for most migration around the world, migration in China has predominantly been fueled by the desire to find better working conditions than currently exist in rural areas.

50. The figures for this portion of the report were prepared by Grace Finley, whose work we gratefully acknowledge.


56. The WDI figures appear on the UNPD’s biennial World Population Prospects effort—but those life expectancy estimates are only offered for five-year periods. WDI interpolates these to derive annual soundings.


59. Some of these data sets offer observations extending back to 1970.

60. Depending on the source and whether the estimates are PPP-adjusted or based on foreign exchange rates, current World Bank WDI and Maddison Project data file estimates for 2010 place per capita GDP in China between 13 percent and 49 percent above that of Indonesia.

61. The figures for Taiwan are more difficult to parse since Taiwan has adopted a different set of thresholds for defining urban settlements from those widely used elsewhere. Since the Taiwanese threshold for “urban” is much higher than in most other parts of the world, it would appear that China was also considerably less urbanized in 2010 than Taiwan had been when it reached a comparable income level.

62. Uchida and Nelson, “Agglomeration Index: Towards a New Measure of Urban Concentration.”

63. In other words, the value of the “dummy variables” for China in the regressions in question were not only strongly negative but also consistently greater in absolute value than those for India or Indonesia—often twice the magnitude of the “India effect” or the “Indonesia effect.”

64. We are well aware that our methodological approach here is “simplistic” and that a much more sophisticated econometric examination of this relationship could be undertaken. We prefer the “simplistic” path precisely because the approach is so conceptually straightforward. We are also wary of the risks of false precision inherent in a more sophisticated analysis of China’s time-series data on urbanization, which we regard as embedded with major and typically undiscussed distortions and biases.


69. We should note that the estimative power of our model is hardly affected by choosing one measure of per capita GDP over another—that is, PPP-adjusted or non-PPP-adjusted—or one index of business climate over another—that is, Fraser versus Heritage/Wall Street Journal.

70. Here again, we should explicitly recognize the shortcomings of such “simplistic” modeling. As more sophisticated readers will immediately understand, the approach embraced here is subject to a number of potentially important pitfalls: among these, the problems of collinearity, omitted variable bias, and endogeneity. Even so, our results appear to be sufficiently stable and robust, so we are comfortable presenting them, if only as an illustrative first approximation of the magnitude of the effects at play here.

71. We recognize that “left behind” has a more particular connotation in China today, being used to refer to children and older
relatives of working-age migrants who do not accompany them to their new places of residence. There is considerable discussion in China today of left-behind children in particular. We are using “left behind” in a different sense here, applying it to the entire population not included in the great trek to the cities. But we will also directly address the matter of left-behind children later in this report.


73. There is an official distinction, previously noted, between the “migrant population” and the “floating population”—the latter being the subset of the former who are both out of hukou and residing outside the village, town, or city for which their hukou papers are designated. In the 2010 PRC census, Beijing counted 261 million migrants, of which 221 million, or about 85 percent, constituted floating population. The 2010 PRC census data we use in this report provide information on the total migrant population—not the floating population per se. Since the floating population makes up the overwhelming majority of migrants, we tend to use these two terms synonymously. But strictly speaking, there is a distinction here, and tens of millions of migrants in China today are not considered members of the floating population.


75. Although the actual numbers entitled are unknown outside Chinese officialdom, it is apparent that only a tiny minority of migrants in China over the past four decades have as yet seen their hukou officially changed to their new place of residence.

76. While the central government has dictated that migrant children are entitled to nine years of compulsory education in their local school districts, access to schooling is still not completely universal due to considerable barriers and lack of enforcement by local governments. Some locals have extended health services to migrants, but this remains exceptional.

77. China’s total population structure is composed of 74.5 percent working-age people (age 15–64). If one assumed that China’s migrant population had a similar composition, that the 223 million people constituted 74.5 percent of the total migrant population, then about 78 million older persons age 65+ and children under 15 would have been found with China’s 223 million working-age migrants. However, the reported migrant population for older and younger persons totaled about 38 million—a discrepancy of 40 million. A “normal China” population containing 223 million persons of working age would be expected to include 49 million children—whereas the enumerated China migrant population counted just 28 million. This is a large gap—amounting to 21 million children under age 15 in 2010. Even so, that gap is much smaller than some of the numbers often cited for total left-behind children in contemporary China, general estimates for which today often fall in the vicinity of 60 million or even more. We will return to the question of left-behind children in the next section.

78. The two components of total compensation to bear in mind are (1) wages or salaries and (2) social benefits, including health insurance, pension, and so forth. Even if migrants are remunerated at the same wage rates as in-hukou workers of comparable skills and experience, their overall compensation will be lower if social benefits are not granted—thus, the distinctive (and to foreign observers, sometimes surprising) current phenomenon in China of worker strikes for social benefits rather than higher pay. Tom Mitchell, “Chinese Factory Workers Strike over Benefits,” Financial Times, March 18, 2015, https://www.ft.com/content/c46252dc-9d48-11e4-9144-00144f6ab7de.


81. Any apparent discrepancies here are due to rounding.

82. For their part, 45 percent of urban men and women in their early 20s reported at least some tertiary education in 2010—and this includes the majority who were unauthorized migrants.


85. The most important of these is the high level of urban educational attainment reported. The 2013 CHIP survey attributes
11.5 mean years of schooling to China’s working-age (15–64), in-hukou, urban population—whereas we estimate MYS for all urban adults 15 and older in 2010 to be about nine years. To go by CHIP 2013 data and the Barro-Lee data set, moreover, the level of MYS for China’s urban, in-hukou, working-age population would have been almost the same as Hong Kong in 2010. This does not seem plausible for urban China as a whole. We suspect this curious result to be an artifact of sampling bias.

86. We note that MYS for urban migrants from rural areas in Table 9 is only marginally higher for the 20–39 group than for the 15–64 group—unlike their urban hukou counterparts and in-hukou rural counterparts. One interpretation of this distinction could be that recent influxes have already slowed the improvement of educational attainment for rural migrants in urban areas. Another possibility could be sample bias or measurement error.


94. These would include the mass deaths during land reform and “socialist transformation” in the Chinese countryside in the years following the Liberation and the death toll from the violence and upheaval during the Great Proletarian Cultural Revolution in the 1960s—both arguably intended consequences of Mao’s political designs, each thought to have claimed millions of lives. The most catastrophic mortality paroxysm was the terrible famine of 1959–61, which was a direct but unintended consequence of the disastrous Great Leap Forward, a madly ambitious campaign for super-rapid modernization that brought the entire economy to the verge of collapse and caused a breakdown of the nation’s food system. Thus “mortality with Chinese characteristics” might be understood to describe the tens of millions of deaths brought about by “socialist transformation,” “socialist construction,” and the fateful political campaigns of the Maoist regime, exacted from a society ostensibly at peace. To be sure, regime-made famines and deadly campaigns of terror were not unique to China in the 20th century—Communist China shared this “family resemblance” with other totalitarian states of the period—but China’s absolute head count from death-by-government actions was unparalleled.

95. Uncharitably—but not altogether inaccurately—recall that the apartheid regime of South Africa referred to the policy by which it shaped and governed Soweto and other similar settlements as “influx control.”


97. Hukou reform is not a new topic in Chinese political dialogue. The central government, which is aware of the potential political instability the system may cause, has mandated specific local governments to implement experimental hukou reforms. However, such reforms have proved ineffective. An important reason for their ineffectiveness is pushback from local governments. The announcement of national hukou reform following China’s November 2013 Third Plenum meeting was the first sign of potentially meaningful hukou reform. Although much fanfare was created around the announcement, little real action has been seen to date. While the State
Council released a draft measure in December 2014 for the relaxation of hukou restrictions and access to social services in small cities and towns, where only a small fraction of migrants reside, big cities such as Beijing and Shanghai will continue to strictly enforce the current system. These restrictions signify that half, if not more, of China's migrants will not benefit from these reforms because they currently live in urban (big-city) locations.


Appendix A. China’s Population Policy U-Turn: A Tougher New Battle Ahead

Kangyu Mark Wang

China’s mass fertility-control policy, infamously known for its ruthless one-child restriction, is ending after four decades of controversy. Although China’s fertility rate began to fall even before the implementation of the One-Child Policy in 1979,1 the Chinese Communist Party (CCP) leadership seems to have awakened to this problem only recently. Dismantlement of the fertility-control regime accelerated after Chinese President Xi Jinping took power in 2012, and all Chinese couples were allowed to have two children starting in 2016.

Ahead of the Fourth Plenum of the 19th Party Congress, which is yet to take place and will reportedly focus on economic issues,2 the government seems to be taking the temperature by allowing some open discussion on pro-natalist measures and probing people’s reactions. However, public opinion on the new direction of population policy seems far from positive. Some of the government’s proposals triggered fierce criticism of state coercion in fertility promotion. Backlash may also come from ethnic minorities if, as the new policy line suggests, birth restrictions are not lifted on them as they are on the ethnic Han majority. Also, starting in 2017, the term “family planning” ceased to appear in President Xi’s Party Congress speech and Premier Li Keqiang’s Annual Report of the Work of the Government.6 Along with policy changes, a new wave of institutional reform in 2018 removed “family planning” from the name of the Ministry of Health.7 This new round of reform radically changed the mandate of the new ministry and its departments regarding population policy and decisively weakened the family planning apparatus at the national level.8

Newest Wave of Policy Changes

The relaxation of family planning policy follows similar patterns of policy change in China.3 First, scholars and National People’s Congress (NPC) representatives advocate for policy change. Second, CCP media propose ideas without explicitly endorsing them, allowing some public discussion to test the waters. Third, CCP Congresses and Plenums approve the new policy framework, and then the NPC session the following year changes the corresponding laws.

Two major policy changes took place after Xi Jinping took power in 2012:

1. Since 2013, families could have two children if one parent was an only child.4

2. Universal two-child policy was implemented in 2016.5
Party-State Policy Statements. Party Congress Reports are paramount policy statements in China. They are signed by party general secretaries and are supposed to be followed by the whole party, government, and nation until the next Party Congress is held.

Party Congress Reports on Family Planning. In the 17th and 18th National Party Congress reports, former President Hu Jintao emphasized family planning. However, from the 17th to 18th Congress, the goal of “stabilizing low fertility level” was replaced by the need to “optimize policy” with the aim being “facilitating long-term balanced population development,” clearly suggesting policy change. Furthermore, in the 19th Party Congress Report, President Xi did not mention family planning. The overall goal of population policy became “promoting the link between fertility policy and related socioeconomic policies, and strengthening research on population development strategy,” again emphasizing the need for research. This leaves room for unspecified, probably dramatic, policy change in the future.


In 2014, Premier Li reiterated that China should “unwaveringly adhere to the basic state policy of family planning” and “implement the policy that allows married couples to have two children if one parent is a single child.” In 2015, by contrast, his comments on population policy were shortened to “advance the reform of family planning services and the way they are managed.” In 2016, he further emphasized the need to support “policies to complement the decision to allow all couples to have two children.” In 2017, he emphasized the two-child policy again, but without mentioning the term “family planning” itself. In 2018, he did not mention population policy at all.

Draft of the Civil Code: Family Planning–Related Content Eliminated. To keep pace with the CCP line, a new draft of the Civil Code of China submitted to the NPC Standing Committee in August 2018 also dropped all mentions of “family planning.” The new Civil Code is scheduled to be approved by 2020, and by then marriage and adoption will no longer be subject to family planning limits.

However, this is far from a complete purge of “family planning” in China’s legal vocabulary; most importantly, the term and the policy are enshrined in the constitution. Also, the National Population and Family Planning Law is not incorporated into the Civil Code, and thus the universal two-child policy will technically remain until the National Population and Family Planning Law is revised, despite implementation of the new Civil Code. The Fourth Plenum of the 19th Party Congress and the NPC session in spring 2019 will be the earliest time window to legally end family planning policy.

Institutional Reform at the National Level. Along the lines of population policy change, two waves of institutional reforms were implemented. The merger of the Ministry of Health and the National Commission of Population and Family Planning in 2013 failed to make a dent in the family planning apparatus. By stark contrast, the newest overhaul of the Ministry of Health in 2018 is more than a name change: The new commission completely purged the term “family planning” and decisively weakened its fertility policy apparatus in terms of internal structure and personnel.

2013 Merger of Health and Family Planning Ministries. In 2013, the Commission of Population and Family Planning merged with the Ministry of Health to become the Commission of Health and Family Planning. However, the two former ministries were coalesced rather mechanically without much substantial integration.

First, the official duty of the former Commission of Population and Family Planning remained unchanged. Second, in terms of subdivisions, all the former departments of the Commission of Population and Family Planning were kept under the new
commission. Third, in terms of personnel, the former Ministry of Health had 387 personnel, the former Commission of Population and Family Planning had 143 personnel, and the new commission had 545 personnel. In other words, the new commission after the merger was even larger than the sum of its two parts. Therefore, little real integration could have taken place. The family planning apparatus was hardly weakened in 2013.

2018 Renaming of the Health Commission. On March 23, 2018, the former National Commission of Health and Family Planning was renamed the National Commission of Health. According to a State Council document, “family planning policy making” is replaced by “policy making coping with aging population” in its mandate.

Except for this general State Council document, official documents on the specific duty, subdivision, and personnel arrangements of the new commission were not published as scheduled by June 20, 2018. In other words, the new National Commission of Health missed the official deadline to specify its new organizational structure. This unusual delay contrasts sharply with other newly established or overhauled ministry-level agencies, the majority of which made the new subdivisions public in time. Given that this round of overhaul almost eliminated the former family planning departments and thus must have important implications for vested interests, the delay is likely a result of bureaucratic infighting.

On July 30, the Health Commission’s detailed institutional reform plan was finally made public after being more than one month overdue. The plan clearly signals radical policy change. First, the term “family planning” is completely purged from the names and duties of the new commission and its subdivisions. More substantially, the number of subdivisions in charge of fertility policy is reduced from three to one. All former departments in charge of implementing family planning policy are removed, and the only subdivision responsible for population policy, the Population Monitoring and Family Development Department, is designed to “monitor population and report warning, propose policy suggestions related to population and family development, perfect and implement fertility policies, and establish and perfect aid policy to special planned families.”

More importantly, the new round of institutional reform in 2018 downsized the commission’s personnel, in sharp contrast to the 2013 merger. The former Health and Family Planning Commission had 545 personnel, while the new Health Commission has only 525. However, this 20-person reduction is still too small to cause all the 143 personnel of the former Commission of Population and Family Planning to lose their jobs.

In addition to removing family planning subdivisions, the new National Health Commission also promises to correct for some of the unwanted consequences of almost four decades of draconian birth control. It still shows no regret over a wide range of much criticized practices, including forced abortion, forced sterilization, confiscation of belongings, and dismissal from work of people who fail to “plan” their families. However, it does vow to help “specially planned families” or “family planning special families.” These are special types of families caused by family planning policies, including rural one-daughter families and families with a deceased only child. They usually face big social and economic difficulties.

In short, the renaming of the Health Commission in 2018 is far more substantial than the 2013 merger of the Health and Family Planning Ministries. The government still preserves the power to make fertility policy, but no longer in the name of family planning. Local health and family planning bureaus were also scheduled to follow suit and reconstruct.

Provincial-Level Variation of Population Policy: Revolution from Below? Under the principles specified by the Fifth Plenum of the 18th Central Party Committee, the Law of Population and Family Planning was edited in 2015. Compared to the 2001 version, it dropped stipulation of “encouraging late marriage and late childbirth.” It also authorizes provinces to make policies on children beyond the universally allowed two.

Since 2016, a new wave of provincial lawmaking on family planning has been seen across the country. In particular, the depressed northeast rust belt began
to encourage reproduction. As shown in Table A1, all of the three northeast provinces have birth rates far lower than the national level, and they have the most lenient third-child policy. Both the Jilin and Heilongjiang provinces allow border county residents to have a third child; this policy is not seen in any other border province. An extreme case is Liaoning, where the government plans to “reward” families with a second child through “taxation, education, social security and housing” policies to lighten the burden of giving birth to and bringing up children.

Also worthy of attention is the change in fertility restrictions on ethnic minorities: They used to be allowed to give birth to more children than Han people were, but no longer. For example, in Xinjiang, urban ethnic minorities used to be allowed to have two children but urban Han people only one. Rural ethnic minorities used to be allowed to have three, as opposed to only two for rural Han couples. After 2016, all urban couples are allowed to have two children, and all rural couples are allowed to have three children.

### Table A1. Birth Rate of Northeastern Rust Belt

<table>
<thead>
<tr>
<th>Province</th>
<th>2016 Birth Rate (Per Thousand)</th>
<th>2017 Birth Rate (Per Thousand)</th>
<th>Third-Child Policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liaoning</td>
<td>6.6</td>
<td>6.49</td>
<td>• Parents with disabled children</td>
</tr>
<tr>
<td>Jilin</td>
<td>5.55</td>
<td>6.76</td>
<td>• Border county residents</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Parents with disabled children</td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>6.12</td>
<td>6.22</td>
<td>• Foreign Chinese</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Border county residents</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Parents with disabled children</td>
</tr>
<tr>
<td>National</td>
<td>12.95</td>
<td>12.43</td>
<td></td>
</tr>
</tbody>
</table>


Goals Versus Reality: Limited Effects of the Universal Two-Child Policy

As specified by the State Council National Population Development Plan (2016–30), the government wants to boost China’s total fertility rate back to 1.8 in 2020 while lowering the sex ratio and improving education (Table A2).

The First Year of the Two-Child Policy. The universal two-child policy was first implemented in 2016. The national birth rate increased from 12.07 to 12.95, and among the 32 provinces, 24 saw a birth rate increase. However, in 2017 the national birth rate dropped to 12.43, and 10 provinces also saw a drop in the birth rate. (See Table A3.) Directed by the National Bureau of Statistics, multiple local governments conducted surveys on new births in the first half of 2018, which again showed decreases in the number of newborns as compared to the first half of 2017.

At the end of 2015, Deputy Director of National Health and Family Planning Wang Pei’an declared that the universal two-child policy would result in more than three million more births per year. However, even though 2016 saw an increase in the birth rate, the number of newborn babies increased by only 1.21 million, as calculated by annual birth figures provided by National Bureau of Statistics. The increase further shrank in 2017 to 0.58 million. Hence, relaxation of family planning policy to the universal two-child limit failed to meet the authorities’ expectation. Probably alarmed by people’s lackluster response to the universal two-child policy, the National Bureau of Statistics initiated another nationwide survey on “population
change” in September 2018 to “strengthen population development strategy research.”

Next Step to Avoiding a Population Crisis: “Independent Fertility” or Fertility Promotion?

Talk of “independent fertility”—that is, “couples deciding the number of children and time interval of fertility”—began in late 2016. Director of National Development and Reform Commission Development Research Institute Yang Yiyong said that “after 2020 China may realize independent fertility very soon.”

On May 21, 2018, Bloomberg News reported that “an initial feasibility study was submitted to Chinese Premier Li Keqiang in April,” and Premier Li “requested more research on the social impact of scrapping the policy altogether.” According to Bloomberg, “the decision could be made as soon as the fourth quarter,” and “announcement might also be pushed into 2019.”

Chinese news media then reposted this news. However, despite a U-turn in policy statements and important institutional reforms, Chinese couples are unlikely to be granted full independence in their fertility. The government does not intend to yield control over human reproduction, insisting that childbearing is a state affair and that people should have children for the sake of the nation.

As often occurs with policymaking in China, the government is now testing the waters by yielding proposals on fertility promotion policies and allowing some open discussion to probe people’s reactions. Yet, there are concerns remaining if birth control measures are completely scrapped: rapid increase of ethnic minority population, overcrowded megacities, and environmental pressures. Therefore, China’s population policy after the era of family planning is likely to involve both fertility promotion for the Han majority in ecologically stronger eastern China and fertility restriction in economically backward, ecologically fragile western China, where ethnic groups historically have had higher fertility rates.

Promoting Fertility for the Han Majority.

By now, both the government and the public seem to have reached the consensus that there should be no more birth restrictions, at least for the Han ethnic majority. The debate has shifted to the types of incentives and how much state coercion should be involved in fertility promotion.

The government seems to be considering both positive and negative incentives, contemplating subsidizing extra children and fining unmarried people and married couples without children. For example, on August 14, 2018, the Jiangsu Province Party Committee newspaper advocated for establishing a
## Table A3. Birth Rate as Calculated by Annual Statistical Reports

<table>
<thead>
<tr>
<th></th>
<th>2015 (Per Thousand)</th>
<th>2016 (Per Thousand)</th>
<th>2017 (Per Thousand)</th>
</tr>
</thead>
<tbody>
<tr>
<td>National</td>
<td>12.07</td>
<td>12.95</td>
<td>12.43</td>
</tr>
<tr>
<td>Beijing</td>
<td>7.96</td>
<td>9.32</td>
<td>9.06</td>
</tr>
<tr>
<td>Tianjin</td>
<td>5.84</td>
<td>7.37</td>
<td>7.65</td>
</tr>
<tr>
<td>Hebei</td>
<td>11.35</td>
<td>12.42</td>
<td>13.20</td>
</tr>
<tr>
<td>Shanxi</td>
<td>9.98</td>
<td>10.29</td>
<td>11.06</td>
</tr>
<tr>
<td>Inner Mongol</td>
<td>7.72</td>
<td>9.00</td>
<td>9.47</td>
</tr>
<tr>
<td>Liaoning</td>
<td>6.17</td>
<td>6.60</td>
<td>6.49</td>
</tr>
<tr>
<td>Jilin</td>
<td>5.87</td>
<td>5.55</td>
<td>6.76</td>
</tr>
<tr>
<td>Heilongjiang</td>
<td>6.00</td>
<td>6.12</td>
<td>6.22</td>
</tr>
<tr>
<td>Shanghai</td>
<td>7.52</td>
<td>9.00</td>
<td>8.10</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>9.05</td>
<td>9.76</td>
<td>9.71</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>10.52</td>
<td>11.22</td>
<td>11.92</td>
</tr>
<tr>
<td>Anhui</td>
<td>12.92</td>
<td>13.02</td>
<td>14.07</td>
</tr>
<tr>
<td>Fujian</td>
<td>13.90</td>
<td>14.50</td>
<td>15.00</td>
</tr>
<tr>
<td>Jiangxi</td>
<td>13.20</td>
<td>13.45</td>
<td>13.79</td>
</tr>
<tr>
<td>Shandong</td>
<td>12.55</td>
<td>17.89</td>
<td>17.54</td>
</tr>
<tr>
<td>Henan</td>
<td>12.70</td>
<td>13.26</td>
<td>12.95</td>
</tr>
<tr>
<td>Hubei</td>
<td>10.74</td>
<td>12.04</td>
<td>12.60</td>
</tr>
<tr>
<td>Hunan</td>
<td>13.58</td>
<td>13.57</td>
<td>13.27</td>
</tr>
<tr>
<td>Guangdong</td>
<td>11.12</td>
<td>11.85</td>
<td>13.68</td>
</tr>
<tr>
<td>Guangxi</td>
<td>14.05</td>
<td>13.82</td>
<td>15.14</td>
</tr>
<tr>
<td>Hainan</td>
<td>14.57</td>
<td>14.57</td>
<td>14.73</td>
</tr>
<tr>
<td>Chongqing</td>
<td>11.05</td>
<td>11.77</td>
<td>11.18</td>
</tr>
<tr>
<td>Sichuan</td>
<td>10.30</td>
<td>10.48</td>
<td>11.26</td>
</tr>
<tr>
<td>Guizhou</td>
<td>13.00</td>
<td>13.43</td>
<td>13.98</td>
</tr>
<tr>
<td>Yunnan</td>
<td>12.88</td>
<td>13.16</td>
<td>13.53</td>
</tr>
<tr>
<td>Tibet (Xizang)</td>
<td>15.75</td>
<td>15.79</td>
<td>16.00</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>10.10</td>
<td>10.64</td>
<td>11.11</td>
</tr>
<tr>
<td>Gansu</td>
<td>12.36</td>
<td>12.18</td>
<td>12.54</td>
</tr>
<tr>
<td>Qinghai</td>
<td>14.72</td>
<td>14.70</td>
<td>14.42</td>
</tr>
<tr>
<td>Ningxia</td>
<td>12.62</td>
<td>13.69</td>
<td>13.44</td>
</tr>
<tr>
<td>Xinjiang</td>
<td>15.59</td>
<td>15.34</td>
<td>15.88</td>
</tr>
</tbody>
</table>

The idea, to tax childless couples and then create a “fund” to help with raising children, triggered fierce criticism. People not only complained about the high costs of raising children but also criticized the potential for human rights violations involved in fertility promotion. Some have even drawn parallels with Communist Romania’s pro-natalist policy under Nicolae Ceaușescu, which banned abortion and severely limited contraception options. Consequently, the government seems to have backed down a little, with an op-ed on the official CCTV website dismissing the birth fund proposal as “ridiculous,” arguing that the government should focus more on positive incentives.

Regarding positive incentives, monetary rewards for families with more than one child are clearly on the table. According to Chinese news sources, since 2018, the National Health Commission has been “organizing experts” to discuss the possibility of “rewarding fertility” and estimate the likely effects of these monetary rewarding programs. If the pro-natalist Liaoning model is implemented nationwide, the positive incentives would cover taxation, education, social security, and housing.

However, these new pro-natalist policies would inevitably divert massive public resources. The author of the birth fund proposal argues that the government should use previous “social payment of upbringing,” or fine parents with more children than allowed, to finance new pro-natalist programs. Commentators immediately mocked this suggestion as naive because “social payment of upbringing,” which was supposed to be turned over to the State Treasury, has been in reality spent locally “in mysterious ways.” Hence, without any form of tax or fine on unmarried or childless people, positive financial incentives seem difficult to sustain.

Dealing with High Fertility Rates Among Ethnic Minorities. During four decades of family planning, China has always imposed more lenient birth restrictions on ethnic minorities than on the majority Han people. As a result, the ethnic population grew faster than the Han majority, which seems to alarm the government. This pattern is clearly illustrated in Table A4: The populations of Muslim minorities and

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1,242,612,226</td>
<td>1,332,810,869</td>
<td>7%</td>
<td>17%</td>
</tr>
<tr>
<td>Han</td>
<td>1,137,386,112</td>
<td>1,220,844,520</td>
<td>7%</td>
<td>16%</td>
</tr>
<tr>
<td>Tibetan</td>
<td>5,416,021</td>
<td>6,282,187</td>
<td>16%</td>
<td>26%</td>
</tr>
<tr>
<td>Mongolian</td>
<td>5,813,947</td>
<td>5,981,840</td>
<td>3%</td>
<td>20%</td>
</tr>
<tr>
<td>Manchurian</td>
<td>10,682,262</td>
<td>10,387,958</td>
<td>-3%</td>
<td>17%</td>
</tr>
<tr>
<td>Uighur (Muslim)</td>
<td>8,399,393</td>
<td>10,069,346</td>
<td>20%</td>
<td>26%</td>
</tr>
<tr>
<td>Kazakh (Muslim)</td>
<td>1,250,458</td>
<td>1,462,588</td>
<td>17%</td>
<td>24%</td>
</tr>
<tr>
<td>Hui (Muslim)</td>
<td>9,816,805</td>
<td>10,586,087</td>
<td>8%</td>
<td>21%</td>
</tr>
</tbody>
</table>

Tibetans in poorer western China grew rather rapidly compared to Han people. Also, as of 2010, all major ethnic minority groups had higher proportions of 0- to 14-year-olds than the Han majority did, and Tibetans, Uighurs, and Kazakhs again topped the list.

Although the State Council National Population Development Plan (2016–30) mostly warns of the low fertility rate and the aging population, it nonetheless mentions “higher fertility rates among ethnic minorities than national average,” the “increase of ethnic minority population,” and “unbalanced population development among ethnic groups in some ethnic regions.” Clearly, the government is worried about fast ethnic, especially Muslim, population growth and lagged Han population growth.

The government is particularly worried about “unbalanced population development among ethnic groups in ethnic regions.” The State Council Plan does not clarify which “ethnic regions” these are. However, if we take into account that Tibetans, Uighurs, and Kazakhs have particularly high population growth rates, then politically restive Xinjiang and Tibet must be among the worst headaches for the central government. It is not far-fetched to assume that some people believe “unbalanced population development” will result in ethnic minority, especially Muslim, “takeover” of those border regions.

The central government seems to be more interested in positive fiscal incentives to convince ethnic minorities to give birth to fewer children. Explicitly capping the number of births for ethnic minorities while encouraging fertility for the Han majority would be politically provocative and thus less plausible. Therefore, the central government intends to carry on the “Fewer Births, Faster Wealth” program, a monetary incentive scheme for households in western China—where the population is largely composed of ethnic minorities—to limit the number of children they have.

If the central government is really paranoid about the “explosion” of population of certain ethnic minority groups, especially Muslims in Xinjiang, we cannot rule out the possibility of a more regionally (and thus not explicitly ethnically) differentiated population policy that still holds on to restrictions for areas with relatively high fertility rates while encouraging childbearing in low-fertility areas.

**Conclusion: A Tougher New Battle in the War on Human Reproduction**

The leadership seems to fully endorse the plan to reverse four decades of fertility control policy since neither President Xi nor Premier Li mentioned the term “family planning” after 2017. Moreover, institutionally, the latest reform of the newly rebranded National Commission of Health is substantial, completely removing the term “family planning” and weakening the fertility policy apparatus. In addition, provincial-level legislation is demonstrating some flexibility in terms of ethnic minority population control and policy on the third child. This is especially the case for the northeast rust belt provinces that vow to boost fertility.

Notwithstanding, the effect of the universal two-child policy since 2016 seems limited, and birth rates continued to drop in 2017 and the first half of 2018. Worried about unbalanced population development among ethnic minorities, the government is unlikely to allow truly independent fertility. Instead, it will actively intervene to provide positive incentives for Han majority couples to have more children and hold on to monetary incentive schemes for ethnic minorities to have fewer children.

Low fertility rates have proved notoriously difficult to raise worldwide, and state-sponsored financial incentives for parents can be expensive. Also, negative incentives that punish single people or childless couples and fertility-control programs targeted at ethnic minorities can meet strong resistance and thus are politically costly. China is ready to continue the war on fertility, and we are likely to hear the war horn from the Fourth Plenum of the 19th Party Congress. But this new battle will be tougher, economically and politically.
Notes


27. The three subdivisions are the Local Family Planning Direction Subdivision, the Family Planning Development Subdivision, and the Floating Population Family Planning Service and Management Subdivision.

50. The slow population growth among Mongols and Manchus from 2000 to 2010 looks rather mysterious. Notably, many Mongol people and most Manchu people live in northeastern rust belt provinces, where fertility rates have always been low.
Appendix B. Changes in the Classification of Urban and Rural Population in China’s National Statistics

Kangyu Mark Wang

The People’s Republic of China’s (PRC) census classifies human settlements into cities (chengshi), towns (chengzhen), and rural areas (xiangcun). To compare urbanization statistics in China over time and with other countries, we need to understand the criteria used to classify the urban and rural population in China’s censuses.

Unfortunately, the six censuses that the PRC conducted used different urban-rural distinction rules. The current rule made for the 2010 Sixth National Population Census is based on idiosyncratic and politicized administrative divisions. Therefore, we should be cautious when comparing urbanization indicators among different rounds of national censuses and between China’s statistics and the United Nations Population Division (UNPD) figures.

First, I compare the rules used by China’s six national censuses and examine whether they under- or overestimated urbanization rates. From the Second National Population Census in 1964 to the Sixth National Population Census in 2010, all censuses have combined geographical and administrative standards to classify urban and rural populations. In general, administrative rules identify urban residential areas as those with a larger population (municipalities and administrative cities), while geographical rules classify urban and rural residents based on the size of the permanent population and on population density in suburbs and smaller residential zones. The current rule made in 2008 incorporates rural residents’ committees and villagers’ committees as a base unit for classifying the population.

Second, I compare the current rules for classification of cities, towns, and rural areas in China with the UNPD’s population-based classifications of big cities (300,000+), small cities (50,000-300,000), and urban areas. While the UNPD strictly follows population criteria, the classification of cities and towns in China is largely administrative, depending on the rules of reclassification of counties (xian) as county-level cities (xian ji shi) and townships (xiang) as towns (zhen). China’s population-based rules are usually much lower than the UNPD’s thresholds, but they should be seen as minimum requirements. Other economic and political factors usually play more important roles, with significant regional variation.

One of the challenges in classifying urban and rural residential areas is that the censuses classify areas into units called “cities” and “towns,” which exist within larger administrative cities. For example, a large city such as Hangzhou may have areas designated as urban towns and cities and areas that are considered rural.

Comparisons Among Six National Censuses

There have been three official regulations for urban-rural distinction: (1) the 1955 State Council Rules About Urban-Rural Distinction, (2) the 1999...
Rules About Statistical Urban-Rural Distinction (for trial implementation) by the State Bureau of Statistics, and (3) the 2008 Rules on Statistical Urban-Rural Distinction by the State Bureau of Statistics.

The 1955 State Council Rules About Urban-Rural Distinction.¹ In the 1955 rules, “cities and towns” (chengzhen) were defined as (1) prefectural seats and localities of People’s Committees (the predecessor of governments) above the county level and (2) residential areas with more than 2,000 permanent residents, more than 50 percent of whom were not nonagricultural. “Cities and towns” were further divided into “cities” (chengshi) and “towns” (jizhen). (See Figure B1.) The following were considered “cities” and the rest considered “towns”:

- Municipalities (e.g., Beijing and Shanghai),
- Prefectural-level cities, and
- County seats and “industrial and commercial areas” with a permanent population of more than 20,000 people.

There were two definitions of “urban residential areas” (chengzhen xing juminqu). The first included industrial and mining enterprises, railway stations, industrial and commercial centers, transportation hubs, schools above the middle school level, locations of scientific research institutions, and residential areas for employees. These had to have more than 1,000 permanent residents, and the nonagricultural population had to exceed 75 percent. The second was convalescent centers, where the convalescence population exceed permanent residents by more than 50 percent.

If a suburban area was adjacent to cities, it was considered “cities and towns,” regardless of the proportion of the nonagricultural population. Other residential areas were considered rural areas.

The 1999 Rules About Statistical Urban-Rural Distinction (for Trial Implementation).² In the 1999 rules, the definition of “cities and towns” (chengzhen) was divided into “cities” and “towns.” “Cities” were further divided into “downtown areas...
of administrative cities with districts affiliated” and “downtown areas of cities without districts affiliated.” (See Figure B2.)

For administrative districts of administrative cities, if their population density was at or above 1,500/km², their entire administrative districts would be considered “downtown area.” If it was below 1,500/km², only the district seat and other administrative subdistricts were considered “downtown area.” If the “constructed area” of district seats had already expanded to adjacent administrative towns and townships, the entire administrative areas of those towns and townships would be considered “downtown area.”

“Towns” were “downtown areas of towns.” They included administrative town seats and other urban residential committees (jumin weiyuanhui) that belonged to the administrative town. If the “constructed area” of town seats had already expanded to adjacent villagers’ committees (cunmin weiyuanhui), entire administrative areas of those villagers’ committees would be considered “downtown area.”

Some industrial and mining areas, development zones, tourist areas, scientific research institutes, universities, and colleges that were located outside towns and cities were included in the “towns and cities” designation. If they had more than 3,000 permanent residents, they would be considered “towns”; otherwise,

they were considered rural areas. Other residential areas were considered rural areas.

**The 2008 Rules on Statistical Urban-Rural Distinction by the State Bureau of Statistics.** In the 2008 rules, “cities and towns” (chengzhen) include “downtown area of cities” and “downtown area of towns.” (See Figure B3) “Downtown area of cities” include:

- Urban residential committees that belong to subdistricts of administrative cities (regardless of whether they have districts affiliated) and
- Areas of other urban residential committees and villagers’ committees that “urban facilities” expand to.

“Downtown area of towns” include:

- Urban residential committees that belong to administrative towns,
- Areas of other urban residential committees and villagers’ committees that “urban facilities” expand to, and
- Special areas, including industrial and mining areas, development zones, research institutes, universities, farms, and forest farms, with more than 3,000 permanent residents.

Other residential areas are considered rural areas.
Observations on How Urban-Rural Populations Are Qualified in Six Censuses. The rules above were applied unevenly in the different census surveys. Below are some comments on how each census adjusted the rules.

First Census (1953). No unified code was available back then, and the criteria were inconsistent among provinces. Generally, only administrative cities, county seats, “towns with prosperous commerce and industry and more than two or three thousand population,” industrial and mining enterprises, and forestry operating areas were considered urban areas.4

Second Census (1964). The definition of “urban” was narrowed to include only the nonagricultural population in cities and towns, as defined by the 1955 State Council rules about urban-rural distinction.

Third Census (1982). The definition of “urban” was expanded to include the agricultural population, again in cities and towns, as defined by the 1955 State Council rules about urban-rural distinction.

Fourth Census (1990).5 The population-based criteria stipulated by the 1955 State Council rules about urban-rural distinction were completely abandoned due to the rapid establishment of cities and towns and expansion of city and town administrative borders. Therefore, “city and town population” (shizhen renkou) was divided into “city population” and “town population.” Administrative borders at lower levels (districts, subdistricts, rural residential committees, and villagers’ committees) were used to identify them.6

Fifth Census (2000). The distinction between urban and rural population was made in accordance with the 1999 rules about statistical urban-rural distinction (for trial implementation). The population of “cities and towns” was considered urban population, and everything else was rural population.

Sixth Census (2010). The Sixth National Population Census followed the 2008 rules on statistical urban-rural distinction. The population of “cities and towns” was considered urban population, and everything else was rural population.

Changing Bias of Urbanization Statistics. As outlined above, all six censuses followed different rules to classify urban and rural population, causing inconsistency in urbanization statistics. A range of Chinese literature analyzed the directions of historical bias. In summary, the First, Third, and Sixth Census results are most accurate; the Second Census underestimated the urban population; and the Fourth and Fifth Censuses slightly overestimated the urban population.

First Census and 1953–62: Mostly Accurate. Statistics during this time relatively strictly followed the 1955 State Council rules about urban-rural distinction, and downtown population size and nonagricultural population proportion were used to identify administrative city and town areas.7 Therefore, most scholars believe these figures accurately reflected the real sizes of the rural and urban population.8

Second Census and 1963–75: Underestimate. Because of the economic disaster caused by the Great Leap Forward and the Cultural Revolution, the state during that time cut the number of cities and towns to reduce the urban population. As a result, the criteria for city and town establishment were raised. In particular, only the nonagricultural population was classified as urban population. Therefore, the second census underestimated the urban population and urbanization ratio.9

Third Census and 1976–83: Mostly Accurate. The Third Census in 1982 again used the administrative criteria set in 1955, and it was only after 1983 that new administrative towns and cities with mostly rural population were established. Therefore, the urbanization ratio in the 1982 census is believed to be mostly accurate.10

Fourth Census and 1984–99: Slight Overestimate. With administrative cities and towns rapidly expanding, they could no longer be the basis of the rural-urban
distinction. As a result, the 1990 census began to use districts, subdistricts, and residential committees to identify urban areas, giving more or less accurate results. However, it slightly overestimated city population and underestimated town population and, in total, still slightly overestimated total urban population.\textsuperscript{11}

\textit{Fifth Census and 1999–2008: Slight Overestimate.} The 1999 rules about statistical urban-rural distinction (for trial implementation) made only slight changes to the rules for the Fourth Census in 1990.\textsuperscript{12} It tightened the rules for the city population but loosened the rules for the town population and, in total, still slightly overestimated total urban population.

\textit{Since 2008: Mostly Accurate.} The 2008 rules on statistical urban-rural distinction corrected the overestimation of the urban population in the 1999 rules by using “constructed area” standards instead of population density standards.\textsuperscript{13} As a result, statistical figures on urban population have decelerated since 2005.\textsuperscript{14}

\section*{Comparison Between Chinese and UNPD Rules of the Classification of Conglomerates}

The UNPD estimate of China’s big-city population in 2010 (414.8 million) is close to China’s 2010 census city population (403.8 million), and the UNPD estimate of small-city population (254.6 million) is close to China’s 2010 census town population (266.2 million). While the UNPD strictly follows population criteria, the classification of cities and towns in China is largely administrative, depending on the rules of reclassification of counties as county-level cities and the reclassification of townships as towns.

China’s quantified, population-based standards are much lower than the UNPD’s thresholds: The minimum population requirement for county-level cities is around 150,000, while the minimum population requirement for towns is around 6,000. However, these should be seen as minimum requirements, and other economic and political factors usually play more important roles, with significant regional variations. In general, the minimal population criteria are higher in the eastern provinces than in the western provinces and mountainous areas.

\section*{Rules of Settlement Classification.} As shown in Table B1, the UNPD strictly adheres to population size standards in classifying settlements. However, administrative classification is the basis for settlement classification in China. Whether an urban settlement is considered a city largely depends on whether it is an administrative county seat or administrative city seat. Similarly, whether a settlement is considered a town or rural depends on whether it is an administrative town seat.

\section*{Establishment of Administrative Cities in China.} Two recent pieces of national-level legislations regulate the establishment of administrative cities in China: the 1993 Report About Adjusting City Establishment Criteria and the 2016 Criteria of County-Level City Establishment.

\textit{1993 Report About Adjusting City Establishment Criteria.} The 1993 Report About Adjusting City Establishment Criteria set four types of county-level city establishment criteria: (1) population density of the whole county area, (2) the population size of a county seat, (3) the economic power of the county, and (4) its military-political importance. They are summarized in Table B2. For a county to become a county-level city, it needs to satisfy the four types of criteria in any one of the three rows in the table. Similarly, the establishment of prefectural-level cities follows both population and economic power criteria, as summarized in Table B3.

After 1993, China saw a big surge in the number of county-level cities, many of which were established based on “bribery and falsified materials,” resulting in “false urbanization.”\textsuperscript{16} Therefore, the 1993 rules were suspended in 1997, and administrative cities began to be established on purely a case-by-case basis.\textsuperscript{17} From 1997 to 2016, new county-level cities were mostly in border and ethnic minority areas.
## Table B1. UNPD and 2010 PRC Census Rules of Settlement Classification

<table>
<thead>
<tr>
<th>Residential Type</th>
<th>UNPD Estimation</th>
<th>2010 PRC Census Estimation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Name</td>
<td>Name</td>
</tr>
<tr>
<td></td>
<td>Definition</td>
<td>Definition</td>
</tr>
<tr>
<td>UNPD</td>
<td>Big Cities</td>
<td>Cities</td>
</tr>
<tr>
<td>Definition</td>
<td>Urban agglomerations of 300,000 or more</td>
<td>Urban residential committees that belong to subdistricts of administrative cities (regardless of whether they have districts affiliated); areas of other urban residential committees and villagers’ committees that “urban facilities” expand to</td>
</tr>
<tr>
<td>2</td>
<td>Small Cities</td>
<td>Towns</td>
</tr>
<tr>
<td>Definition</td>
<td>Urban areas with populations of fewer than 300,000 but more than 50,000</td>
<td>Urban residential committees that belong to county seats and administrative towns; areas of other urban residential committees and villagers’ committees that “urban facilities” expand to; special areas</td>
</tr>
<tr>
<td>3</td>
<td>Rural</td>
<td>Rural</td>
</tr>
<tr>
<td></td>
<td>Settlements smaller than 50,000 persons</td>
<td>Settlements smaller than 50,000 persons</td>
</tr>
</tbody>
</table>


## Table B2. County-Level City Establishment Criteria Set by the 1993 Report About Adjusting City Establishment Criteria

<table>
<thead>
<tr>
<th>Population Density of the Whole County Area</th>
<th>Population Size of the County Seat</th>
<th>Economic Power</th>
<th>Military-Political Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 400 per km²</td>
<td>&gt;= 120,000; with urban hukou population &gt;= 80,000</td>
<td>Industrial output &gt;= 80 percent of total industrial and agricultural output; GDP &gt;= 1 billion yuan</td>
<td>Criteria can be relaxed for counties with special political and military importance.</td>
</tr>
<tr>
<td>&gt;= 100 per km² and &lt;= 400 per km²</td>
<td>&gt;= 100,000; with urban hukou population &gt;= 70,000</td>
<td>Industrial output &gt;= 70 percent of total industrial and agricultural output; GDP &gt;= 800 million yuan</td>
<td></td>
</tr>
<tr>
<td>&lt;= 100 per km²</td>
<td>&gt;= 80,000; with urban hukou population &gt;= 60,000</td>
<td>Industrial output &gt;= 60 percent of total industrial and agricultural output; GDP &gt;= 600 million yuan</td>
<td></td>
</tr>
</tbody>
</table>

2016 Criteria of County-Level City Establishment. A new wave of county-level city establishment began in 2016 under the new Criteria of County-Level City Establishment. Population, economic, and public service criteria remain. Most importantly, the permanent population of a county seat should be no fewer than 150,000, still lower than the UNPD line of 300,000. However, these quantified criteria are said to be only in principle and would be tightened for eastern China and relaxed for western China. Also, the actual approval would still follow a case-by-case process. In short, although hard and quantified criteria of city establishment have always been lower than the UNPD’s 300,000 line, other criteria have been rather opaque and politicized, and increasingly so.

Establishment of Administrative Towns in China: Localized Rules. There is currently no national rule regulating the establishment of towns and abolishment of townships in China, and provincial rules differ. For example, in Hebei, based on township total population density, the number of permanent urban residents of new towns should be no fewer than 4,500–8,000 people. By contrast, in Henan, where population density and total population are also criteria, the number of permanent urban residents of new towns should be no fewer than 5,000–8,000 people. All these urban population criteria should be seen as minimal requirements because economic and political factors are also taken into account.

### Table B3. Prefectural-Level City Establishment Criteria Set by the 1993 Report About Adjusting City Establishment Criteria

<table>
<thead>
<tr>
<th>Population Size of City Seat</th>
<th>Economic Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;= 250,000; with urban <em>hukou</em> population</td>
<td>Industrial output &gt;= 80 percent of total industrial and agricultural output; GDP &gt;= 2.5 billion yuan</td>
</tr>
</tbody>
</table>

Notes

6. City residents: For cities at and above prefectural level, only residents in “districts” (administratively, qu) are considered city residents. For cities without districts affiliated, only residents in “subdistricts” (administratively, jiedao banshichu) are considered city residents. Town residents: For cities without districts affiliated, only residents in urban residential committees (administratively, chengshi jumin weiyuanhui) are considered town residents. For towns affiliated to counties, only residents in urban residential committees (administratively, chengshi jumin weiyuanhui) are considered town residents.
15. Xia Hai and Zhongguo Zhengfu Jiagou, Qinghua Daxue Chubanshe, 2001, https://books.google.com/books?id=qkXM428FQkXpg-PA7&dq=%E5%85%88%E5%85%8D%E6%88%96%E5%85%85%E6%85%95%E6%85%95%E9%86%A9%E5%91%8A&source=bl&ots=qhtohxqyqf&sig=DDchl8A8JY1YKvMzfkkFWwFVsfv6hl-cn&sa=X&ved=0ahUKEwiP3sGqhZDahWGWfKKhHQkgfBPU4ChDoATJDeqJCBABw=onepage&q=%E5%85%88%E5%85%85%E6%88%96%E5%85%95%E6%85%95%E9%86%A9%E5%91%8A&f=false.

Appendix C. The Political Economy of China’s Evolving Hukou Regime

Kangyu Mark Wang

The hukou regime that restricts the Chinese people’s free movement within the country has profound implications for various aspects of China’s economic and social life. In particular, it obstructs people’s rural-urban movement and denies migrants city social welfare and public services. The relaxation of the hukou system is now considered the major drive for China’s “new modernization” plan.

At the national level, the Third Plenum of the 18th Party Congress in 2013 outlined the principles of the newest round of hukou reform, which were further detailed in the “National Plan on New Urbanization (2014-2020)” (hereafter “New Urbanization Plan”) and “Opinions of the State Council on Further Promotion of Reform of the Household Registration System” (hereafter “Opinions on Household Registration”) in 2014. The government promised to grant city hukou for more rural migrants, but the hukou system is still largely seen as a tool for population control in super- and megacities. In addition, the government intends to further expand the coverage of social welfare and public services for the floating population without hukou, which is likely to meet resistance from local governments due to concerns over public financing.

At the local level, worried about real estate oversupply, some big and supercities in central and western China have relaxed the requirements for city hukou registration since 2016. However, even the recently lowered standards are too high for the majority of migrant workers to meet, and the hukou regimes of super- and megacities remain strictly meritocratic, cherry-picking talented individuals and excluding the majority of low-skill migrants. Therefore, this appendix argues that the newest round of reform does not address a major problem of the hukou system: unequal access to social security and public services between low-skill migrant workers and local residents in big cities in eastern China.

Principles of the Newest Round of Hukou Reform

The process to grant rural migrants urban hukou, or the “citizenization” of rural migrants, is not intended for the majority of rural migrants. In 2017, 291 million Chinese lived outside their designated hukou, among whom 244 million are considered the floating population.3 However, according to the New Urbanization Plan, the citizenization of rural migrants will be at best slow-paced. The government intends to close the gap between the permanent residents’ urbanization rate and the hukou urbanization rate by only 2 percentage points. According to the New Urbanization Plan, migrants in urban areas without city hukou will still account for 15 percent of the Chinese population by 2020 (Table C1).

The expansion of non-hukou-based public services is still underdeveloped, and local governments lack an incentive to provide anything more than what the State Council requires. In addition, the move to abolish the nominal rural-urban hukou division is actually hollow and does not shake the hierarchy of city
welfare and public services provision or result in the privatization of agricultural land.

Citizenization of Rural Migrants and Control over City Size. To date, the Chinese Communist Party (CCP) has never shown any intention to dismantle the hukou regime completely. Instead, hukou reform is seen as part of an urbanization drive, with a focus on increasing the proportion of urban residents with city hukou.

The CCP considers the hukou regime a curb on the population size of big and supercities. The Third Plenum of 18th Party Central Committee articulated these principles:

We will help the eligible population to move away from agriculture and become urban residents. We will introduce new population management methods, accelerate the reform of household registration system, completely lift restrictions on new residence registration in administrative townships and small cities, relax restrictions on new residence registration in medium-sized cities in an orderly manner, lay down appropriate conditions for new residence registration in large cities, and strictly control the population size of megacities.

Table C1. The Timeline of Hukou Reform: New Urbanization Plan

<table>
<thead>
<tr>
<th>Index</th>
<th>2012</th>
<th>2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Permanent Residents Urbanization Rate (%)</td>
<td>52.6</td>
<td>About 60</td>
</tr>
<tr>
<td>Hukou Urbanization Rate (%)</td>
<td>35.3</td>
<td>About 45</td>
</tr>
<tr>
<td>Coverage of Compulsory Education Service Among Children of Rural Immigrant Workers (%)</td>
<td>N/A</td>
<td>&gt;= 99</td>
</tr>
<tr>
<td>Coverage of Basic Endowment Insurance Among Urban Permanent Residents (%)</td>
<td>66.9</td>
<td>&gt;= 90</td>
</tr>
<tr>
<td>Coverage of Basic Health Insurance Among Urban Permanent Residents (%)</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td>Coverage of Basic Housing Service Among Urban Permanent Residents (%)</td>
<td>12.5</td>
<td>&gt;= 23</td>
</tr>
</tbody>
</table>


Residence Permit System and Expansion of Non-Hukou Social Welfare and Public Services Coverage. Besides vowing to relax city hukou registration rules, the government also intends to institutionalize the residence permit system as a gateway to a city hukou. Anyone who lives outside their original hukou can apply for a residence permit, which gives them “basic” access to labor, education, and health services.

However, the local governments determine the scale of public services provided for residence permit holders, and they do not have any incentive to expand it. Firstly, the population registered under the local hukou still acts as the basis for calculating many key performance indicators of the government, and thus officials in big cities are incentivized to favor the local population in welfare spending and public services. People in China who have a local hukou usually oppose relaxing the hukou regime and expanding the city’s public services to include immigrants. Secondly, the State Council has yet to come up with a nationwide transfer payment mechanism based on the actual permanent population. Therefore, providing social security and public services for rural migrants could incur heavy financial burdens on migration destinations without compensation.
Therefore, rural migrants still enjoy few, if any, public services. Most importantly, children of rural migrants, who do not have city hukou even if they are born there, are thus largely unable to attend public high school or take part in the college entrance examination. Hence, they either go back home for education and become left-behind children or get employed in low-paying jobs.\(^7\)

**Abolishment of the Rural-Urban Divide in Hukou Regime.** Opinions on Household Registration also directed local governments to nominally abolish the division between rural and urban hukou and merge them into “residential hukou.” The name change lacks substance.

On the one hand, the de facto rural-urban divide in access to a wide range of public services never disappeared.\(^8\) Quite the contrary: As market reforms exacerbated regional inequality, it morphed into regional divides based on hukou origin. The residential hukou of downtown Shanghai and the residential hukou of Tibetan grasslands still endow people with very different access to public services.

On the other hand, “Rural Land Contracted Management Right,” or pseudo-ownership of nominally collectively owned rural land, remains locked in with the hukou system. Instead of automatically granting pseudo-ownership of land to people with rural hukou, the new land regime grants land pseudo-ownership based on village committee membership. Currently, rural migrants can still reregister hukou in city areas without losing access to land, and thus the dismantling of the rural-urban divide did not result in the full-scale privatization of agricultural land.\(^9\)

**Understanding the Political-Economic Dynamic of Hukou Reform**

Social control and economic management are considered the two key functions of the hukou regime. Furthermore, the current economic model based on mass real estate development and industrial upgrading provides new dynamics at the local level to the evolution of hukou regime; it is still city-centrist but has become more relaxed, elitist, and hierarchical.

**Social Control.** The hukou regime was initially established as the People’s Republic of China government began to consolidate itself in the early 1950s, with the purpose of “surveilling and controlling counter-revolutionary and suspicious elements.”\(^10\) The function of surveillance and control was largely replaced by the resident identity card system adopted in 1985, on which the current state surveillance regime, using the internet and artificial intelligence, is based.\(^11\) However, the dissociation between hukou registration and the urban population’s actual geographical location still worries some policymakers because they “make urban social governance more difficult.”\(^12\)

**Economic Management.** The hukou regime is the pillar of the rural-urban dual economic structure that allows city industries to exploit the agricultural population, in both the Maoist and post-Maoist years.\(^13\) Since the mid-1950s, the Communist command economy and overindustrialization began to bind the rural population to low-returning agricultural activities, instead pouring resources into urban industries. This pattern, however, was later replaced by the rapidly developing coastal labor-intensive industries exploiting rural migrants without hukou, who were paid far less than urban state-owned enterprise employees and had little access to basic social welfare and public services. If migrant workers were to get city hukou, city governments would need to pay for their welfare and public services. This is still considered the largest cost of further hukou reform.

Maoist economic policy, featuring command economy and state-led heavy industrialization, began to take shape in the early 1950s. To accelerate the accumulation of industrial capital, the state tried to minimize wages and thus needed to minimize food prices. Therefore, in 1953, the Communist state began to monopolize the trade of food: City residents were provided food for low prices, and the relative industrial wage was set higher than the agricultural wage. This naturally resulted in rural-urban migration, which was contained only by the hukou regime.
The hukou regime’s original economic function is well illustrated by the fact that migration permission was given by the destination, in most cases cities. The city-centrism of hukou reregistration remained until today. In short, Maoist China was both overindustrialized and over-urbanized compared to its level of economic development, but it was under-urbanized compared to its level of heavy industrialization. The hukou regime facilitated this development model by severely limiting rural-urban migration.

Maoist economic policy failed to provide sufficient food for city residents. Because of the famine in the late 1950s, 20 million urban residents were forced to go back to the countryside. Again during the Cultural Revolution, 40 million young urban residents were sent to the countryside. At the same time, control on rural-urban migration was further tightened. The state created a nationwide annual rural-urban migration quota: Urban hukou registration for rural migrants could not exceed 1.5 percent of the nonagricultural population.14

The quota system of city hukou registration still exists today in some big cities. In 1975, the constitution finally dropped the “migration freedom” clause. As shown by the quantitative research of Cai Fang et al., the extent of food shortage was a strong predictor for the actual scale of rural-urban migration in the Maoist era.15

The food shortage was significantly eased and the state monopoly on food trade dismantled in the 1980s and 1990s, and food provision ceased to be statistically related to the scale of migration. Despite the hukou regime, mass rural-urban migration took place at unprecedented rates and resulted in a large number of migrants working informally in coastal industries.16 However, the hukou regime was never eased.

The new economic motivation behind the hukou system is to exploit cheap migrant labor by maintaining the unequal access to social security and public services. As calculated by Peng Xizhe et al., from 1992 to 2004, the hukou regime enabled the extraction of around one trillion renminbi from migrant labor.17 Migrant workers were paid far less than workers with urban hukou and had access to essentially no welfare or public services.

At the early stage of market reform, local differentiation of the city hukou regime did not change the number of migrant workers drawn to cities, suggesting that the hukou regime had little impact on rural-urban migration itself. Migrant workers were going to leave for cities anyway, whether they could enjoy public services or not.18

As found by Ren Yuan, this pattern began to change in the early 2000s, when the hukou regime began to impair labor market liquidity; in other words, the Lewis turning point had come to China.19 However, the heavy burden on city welfare and public services expenditures is still seen as an important economic hurdle to scrapping the hukou regime.

Intragovernmental Competition over “Talent” and Real Estate Buying Power. An aversion to the possibility of diverting local financial resources to rural migrants discourages local governments from pursuing more liberal hukou reforms. However, in the newest round of hukou reform, big and supercities began to relax hukou registration restrictions for “talents” and people with real estate buying power. Local governments, which are financially dependent on mass real estate development and increasingly under pressure to “upgrade” industry to sustain growth, have begun to see hukou policy as a tool to attract more desirable immigrants who boost the local economy.

The current hukou registration rules implemented in most big, super-, and megacities are essentially competitive and meritocratic. Despite significant regional variations, the qualifying requirements for big-city hukou put a similar emphasis on investment, real estate ownership, education, and skills. For example, top graduates from universities, central and Beijing government personnel, returning overseas Chinese students, and successful entrepreneurs enjoy premium access to a Beijing hukou.20 Hukou candidates are given different points according to their career, educational, and financial backgrounds, and the cutoff line is determined yearly by the migration quota.21

This point-based meritocratic system in effect excludes all low-skilled labor. For megacities such as
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Shanghai, people holding master’s or even doctoral degrees sometimes fail to reach the minimal point to register hukou.\(^{22}\) Ironically, in the post-Mao era, the hukou regime does not really curb the rural-urban migration of low-skill laborers, who are unable to settle down in cities without a long-term employment contract anyway. By contrast, it is more likely to constrain “high-end talents” who want to enjoy city welfare and public services.

A new round of relaxation of big and megacity hukou registration rules began in 2016. They are implemented under the banner of “talent attraction,” though critics believe that local governments are more interested in stimulating the dangerously overcrowded real estate market, on which they rely financially.\(^{23}\) At the national level, Premier Li Keqiang in 2016 encouraged the “complete liberalization” of hukou registration for university graduates, skilled laborers, and returning overseas Chinese students, except in “some few megacities.”\(^{24}\)

Beijing and Shanghai still insist on the tightest hukou policies in China. Other super- and megacities have significantly loosened hukou control for “talents,” allowing university graduates and even associate degree holders to register, dropping the requirement of local employment.\(^{25}\) However, the majority of rural migrant workers still cannot meet even those lowered criteria with education and social insurance enrollment requirements. Therefore, the hukou regimes of mega- and supercities are still elitist and exclusive.

Other big, medium, and small cities are supposed to open hukou registration for all, according to the National Development and Reform Commission.\(^{26}\) As argued by Zhang Guosheng and Chen Mingming\(^{27}\) and Ren Yuan,\(^{28}\) hukou of small and medium cities does not endow its holders with many more welfare and public services than rural hukou, and thus rural migrants do not necessarily want to reregister. Nonetheless, to register hukou even in towns and

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Table C2. China’s City Hierarchy and Different Hukou Regimes

<table>
<thead>
<tr>
<th>The Level in the Urban Hierarchy</th>
<th>Urban Area Permanent Population</th>
<th>Hukou Regime</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Town</td>
<td></td>
<td>Largely inclusive, open to all with social endowment insurance enrollment</td>
<td></td>
</tr>
<tr>
<td>Small City</td>
<td>&lt;= 20,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medium City</td>
<td>50,000–1 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Big City (Type II)</td>
<td>1–30 million</td>
<td></td>
<td>Nanning, Luoyang</td>
</tr>
<tr>
<td>Big City (Type I)</td>
<td>3–5 million</td>
<td>Exclusive, combination of quota- and point-based systems; open to locally employed university and associate college degree holders</td>
<td>Hefei, Xiamen</td>
</tr>
<tr>
<td>Supercity</td>
<td>5–10 million</td>
<td></td>
<td>Tianjin, Wuhan</td>
</tr>
<tr>
<td>Megacity</td>
<td>Guangzhou and Shenzhen</td>
<td>Exclusive; not open to most university graduates</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10–15 million</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Beijing and Shanghai</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>&gt;= 15 million</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

small cities, migrants are still required to be “legally and stably” employed, own or rent “legal and stable” housing, and be enrolled in urban social endowment insurance programs, presumably inviting bureaucratic obstruction.

The Current Hukou Regime

As shown above, the logic of social control and economic management remains today, and historical institutions have left their imprints on the current hukou regime. Hukou registration at birth is jús sanguinis; newborns are registered under the same Hu (household) as their parents. As a result, city-born children of rural migrant workers still cannot get city hukou and thus cannot enjoy health care and education services in the city.

After the abolishment of the nominal rural-urban divide of hukou types, the hierarchical structure of different city hukou is the most important hurdle to rural-urban migration. As shown in Table C2, at present, hukou registration in towns and small and medium cities has largely been liberalized, open to all residents who have been enrolled in local social endowment insurance programs for some time. Hukou regimes in some big cities and most super- and megacities are still largely closed to ordinary low-skilled labor but have become more inclusive to university and associate college degree holders. The only exceptions are Beijing and Shanghai, where most university graduates or even advanced degree holders do not have the hope to get local hukou.

Conclusion

The newest round of hukou reform sees the relaxation of urban hukou registration as an important dynamic of China’s “new urbanization.” However, current policies cannot provide the majority of rural migrants with city hukou, or even equal access to city public services. First, the nationwide goal of hukou reregistration for rural immigrants is conservative, and big, super-, and megacities are still required to control the population size using the hukou policy. Second, despite State Council directions, local officials are discouraged politically and economically from expanding public services to include rural migrants. Third, the phaseout of the rural-urban divide in hukou does not make a dent in the city hukou-based welfare and public services hierarchy.

The logic of social control and agricultural population exploitation has been in place since the establishment of the hukou system. At present, hukou is no longer the main unit of state surveillance, but the economic benefits of denying migrant workers welfare and public services still discourage city governments from pursuing more liberal hukou reforms. In addition, the latest wave of relaxing hukou registration among most big cities, except Beijing and Shanghai, is a result of intragovernmental competition for human resource and real estate buying power. As a result, the hukou regime in big cities continues to be exclusive and elitist. By contrast, the almost-complete liberalization of town and small-city hukou registration has only minimal effect because it grants residents little privilege compared to rural hukou.

In short, the key features of the hukou regime—namely, jús sanguinis registration policy and city-centered, elitist, and hierarchical migration policy—remain intact despite rapid economic and social changes. The central government has shown little intention to end the hukou system’s main issue—unequal access to social security and public services in big cities—and local governments clearly lack the motivation to do so. As a result, despite recent registration liberalization for urban “talents,” the majority of China’s engine of growth, low-skill migrant workers, have little hope that they get hukou in big, super-, and megacities, as the state wants them to continue to be the engine of growth.
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Notes


4. According to Deputy Director of National Development and Reform Commission Xu Xianping, the “most important progress” made by National Plan on New Urbanization (2014–2020) is the use of the index of the hukou urbanization rate (the proportion of urban residents with urban hukou) and its difference with the permanent residents urbanization rate (the proportion of de facto urban residents). State Council Information Office of the People’s Republic of China, “Press Conference on New Urbanization Plan,” March 19, 2014.


17. Peng, Zhao, and Guo, “Huji Zhidu Gaige de Zhengzhijingjixue Sukao.”


Appendix D. Explaining the Migration Patterns of Tertiary-Educated Migrants: Higher Education Overcapacity and the Economics of Labor

Kangyu Mark Wang

The migration pattern of highly educated manpower in China cannot be explained solely by each province’s economic development level. Along with Beijing, inland provinces such as Shaanxi and Henan see a high proportion of tertiary-educated migrants.

I will disentangle this puzzling pattern in two steps. First, I break up the total migration of each province into intra- and interprovincial migration, which follow distinct patterns. Second, I use the level of labor market development and higher education overcapacity to explain the dynamics of intra- and interprovincial migration.

Beijing and Shanghai, highly economically developed eastern provinces, and Shaanxi, Shandong, and Henan, less developed inland provinces, draw the largest portion of intra- and interprovincial migrants with tertiary education or above in China. Two very different forces shape this pattern. First, Beijing, Shanghai, and Tianjin draw more interprovincial migrants than intra-provincial migrants. A large proportion of intra-provincial migrants there have particularly high education levels, while the pool of interprovincial migrants has proportionally fewer tertiary degree holders. Second, for inland provinces such as Shaanxi, Hunan, and Hubei, the majority of migrants are intra-provincial migrants, many of whom are not tertiary degree holders. However, a higher proportion of interprovincial migrants into those provinces are tertiary degree holders than are interprovincial migrants for municipalities such as Beijing and Shanghai.

This seems surprising at first, but the level of local labor market development and higher education overcapacity can explain more than 60 percent of this tertiary-education proportion variance in interprovincial migration. Higher education overcapacity simply means there are more seats at colleges and universities than there are eligible students in that province. In Heilongjiang and Liaoning, for example, this is the case because cities such as Harbin and Shenyang are so important in China’s modern history.

This appendix uses ordinary least squared (OLS) regressions to better explain the migratory trends of tertiary-educated people. I argue that the stage of labor market development has a positive impact on the proportion of tertiary-educated intra-provincial migration and a U-shaped impact on the proportion of tertiary-educated interprovincial migration. Higher education overcapacity has a positive impact on the proportion of tertiary-educated interprovincial migration.

This appendix intends to provide the following insights into the report. First, it argues that coastal cities and provinces are still the most attractive for high-skilled workers. Second, it highlights the educational dimension of migration, which can be as important as the economic dimension. Many rural,
uneducated, young people migrate to cities to become educated, and college and graduate students account for significant proportions of high-skill labor migration. Third, it proposes a new way of comparing what draws skilled labor across provinces.

The Breakup of Migration with Tertiary Education into Inter- and Intra-Provincials

Among the provinces of the People’s Republic of China, Beijing, Shaanxi, Shandong, Henan, Hunan, Hubei, and Shanghai...

Figure D1. Percentage of Intra- and Interprovincial Migrants Combined: Tertiary Schooling, 2010

Note: This figure appears as Figure 24 in the main text.

Figure D2. Educational Endowment of Intra- and Interprovincial Migration

Figure D3. Educational Endowment of Intra-Provincial Migration


Figure D4. Educational Endowment of Interprovincial Migration

have the highest proportion of migrants with tertiary education, from within and outside the province. (See Figure D1, which is identical to Figure 24 in the report.) While Beijing and Shanghai are megacities with many opportunities for educated people, Shaanxi and Henan are economically backward.

By contrast, Tibet, Guangdong, Zhejiang, and Guizhou have the lowest proportion of migrants with tertiary education. Zhejiang and Guangdong are coastal manufacturing powerhouses, while Guizhou and Tibet are the poorest provinces in China. These seemingly confusing patterns get clearer when we break down migrants into inter- and intra-provincial groups.

Provinces with a high proportion of tertiary-educated migrants have very different inter- and intra-provincial migration patterns. (See Figures D2–D4.) First, Beijing and Shanghai receive more inter-provincial migrants than intra-provincial migrants. An extraordinarily high proportion of intra-provincial migrants have tertiary education. Given hukou residents’ wealth and educational endowments in these two cities, this is not surprising. However, interprovincial migrants to these two cities are not usually highly educated.

Second, Shandong and Henan see fewer interprovincial than intra-provincial migrants, and the former group has a lower proportion of tertiary-educated people than the latter group does. Third, Shaanxi, Hunan, and Hubei also have fewer interprovincial than intra-provincial migrants, but the former group has a higher proportion of tertiary-educated people than the latter group does.

Among provinces with low proportions of tertiary-educated migrants, Guangdong and Zhejiang have more inter- than intra-provincial migration, and the proportion of tertiary-educated people is lower for interprovincial migrants than for intra-provincial migrants. This is understandable, taking into account the large scale of labor-intensive manufacturing industries in these two provinces. By contrast, Guizhou, a poor southwest province with little labor-intensive industry, has more intra- than interprovincial migrants.

### Hypotheses: The Economics of Labor Skills and Higher Education Capacity

I hypothesize that two main factors drive the higher education endowment of migrants: higher education overcapacity and the economics of labor. The proportion of intra-provincial migrants with tertiary education largely reflects the stage of provincial labor market development. The proportion of interprovincial migrants with tertiary education is determined by both the provincial labor market development stage and the level of higher education institute overcapacity.

### The Economics of Labor

The stage of local economic development is related to the pattern of intra-provincial migration in a linear manner and to interprovincial migration in a U-shaped manner. I hypothesize that provincial labor market development in China progresses through three distinct stages, which are summarized in Table D1. I also hypothesize that manpower within a given province will initially fill that province’s labor market and outside labor will then fill the vacancies. Another factor that affects these trends is that the high-skill labor market is more national than the low-skill labor market because it is more difficult to find people locally who can perform highly skilled jobs.

At the low stage of economic development, both low-skill manufacturing and low-skill service industries do not provide enough employment opportunities to meet the demand for low-skill jobs. Low-skill workers who are unsuccessful in securing employment need to look for jobs outside their own provinces. At the same time, a few high-skill jobs attract high-skill interprovincial migrants.

At the medium stage of economic development, low-end manufacturing and services begin to develop rapidly, which creates a demand for low-skill labor that the provincial labor supply cannot meet. Thus, low-skill labor from other provinces floods in.

High-end jobs are still few, filled by better-educated intra-provincial migrants and locals. Therefore, these provinces see a mass interprovincial migration of low-skill labor. The proportion of tertiary-educated
interprovincial migrants is lowest when a province is at the medium stage of development.

At the high stage of economic development, costs are too high for low-end manufacturing jobs to stay, but low-end service and construction jobs for megacity residents remain, which still attract mass low-skill interprovincial migrants. On the other hand, high-end jobs begin to increase, resulting in both intra-provincial and interprovincial high-skill labor migration. Therefore, although highly developed economic provinces still see mass low-skill interprovincial migrants, intra-provincial migration is high skilled in character, and there is significant high-skill interprovincial migration as well.

I present two hypotheses on economic development and tertiary-educated migration.

- **Hypothesis 1**: There is a U-shaped relationship between the stage of economic development and the proportion of tertiary-educated interprovincial migration.

- **Hypothesis 2**: There is a positive relationship between the stage of economic development and the proportion of tertiary-educated intra-provincial migration.

From the hypotheses above, the proportion of the total inter- and intra-migration of the three types of provinces are presented in Table D2.

**Higher Education Capacity.** If there is higher education overcapacity in a province, there are more seats at colleges and universities than college entrance examination (CEE, gaokao) participants can fill. In fact, college and graduate students account for a large share of tertiary-educated migrants in both intra- and interprovincial groups. For example, in 2018 there were 1.13 million higher education students in Shaanxi province, who accounted for about 20 percent of 5.65 million total migrants.

College and graduate students are classified as having a tertiary education. To continue to higher

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**Table D1. Three Stages of Labor Market Development in Chinese Provinces: Demand and Supply of Manpower**

<table>
<thead>
<tr>
<th>Stage of Economic Development</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill of Within-Provincial Labor</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
<tr>
<td>Low-Skill Manufacturing jobs</td>
<td>Few, filled by low-skill locals and intra-provincial migrants</td>
<td>Many, filled by low-skill interprovincial migrants, intra-provincial migrants, and locals</td>
<td>Few, filled by low-skill intra-provincial migrants and locals</td>
</tr>
<tr>
<td>Low-Skill Service Jobs</td>
<td>Few, filled by low-skill intra-provincial migrants and locals</td>
<td>Many, filled by low-skill interprovincial migrants, intra-provincial migrants, and locals</td>
<td>Many, filled by low-skill intra-provincial migrants, interprovincial migrants, and locals</td>
</tr>
<tr>
<td>High-Skill Jobs</td>
<td>Few, filled by high-skill intra-provincial migrants, interprovincial migrants, and locals</td>
<td>Some, filled by high-skill intra-provincial migrants and locals</td>
<td>Many, filled by high-skill intra-provincial migrants, interprovincial migrants, and locals</td>
</tr>
<tr>
<td>Examples</td>
<td>Shaanxi and Jiangxi</td>
<td>Zhejiang and Guangdong</td>
<td>Beijing and Shanghai</td>
</tr>
</tbody>
</table>

Source: Author.
education, most of them need to move outside of their assigned *hukou* towns, townships, and subdistricts to study because most Chinese towns, townships, and subdistricts do not have higher education institutions. About 25 percent of total migrants in Shaanxi have tertiary education. Therefore, a simple estimation shows that college and graduate students account for a stunning 80 percent of total tertiary-educated migrants.

I hypothesize that higher education overcapacity of a province also affects the proportion of tertiary-educated interprovincial migrants. If a province can provide more seats in higher education than what the local population needs, it is likely to attract interprovincial students, and thus it is likely to have a higher proportion of tertiary-educated interprovincial migrants.

• Hypothesis 3: There is a positive relationship between higher education overcapacity and the proportion of tertiary-educated interprovincial migration.

### Empirical Analysis: OLS Regressions

The main regression function for interprovincial migration is as follows:

\[ y_1 = \beta_0 + \beta_1 \cdot x_1 + \beta_2 \cdot x_2 + \beta_3 \cdot x_2^2 \]

\( y_1 \) refers to the proportion of interprovincial migration with tertiary education or more. \( x_1 \) stands for the overcapacity rate of higher education per capita, as measured by the annual higher education institution capacity divided by provincial population.

\( x_2 \) stands for the proportion of net migrants in the total number of permanent residents of a province, which is used as a measure for the stage of labor market development. If a province absorbs a high number of net migrants per local resident, it is considered to be at a high level of labor market development.

Figure D5 shows a strong positive correlation (correlation coefficient = 0.844) between \( x_2 \) and GDP per capita. However, I consider \( x_2 \) to be a better measurement of the “real” level of labor market development than is per capita GDP, which favors natural-resource-reliant provinces such as Inner Mongolia. If my hypothesis holds, \( \beta_1 \) should be positive, \( \beta_2 \) should be negative, and \( \beta_3 \) should be positive. Regression results are reported in Section (2) of Table D3. Section (1) gives a linear “robust check” regression: The quadratic model has higher adjusted R-squared than the linear model and thus is more desirable.

<table>
<thead>
<tr>
<th>Development Stage</th>
<th>Low</th>
<th>Medium</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Tertiary-Educated Migrants in Total Migration</td>
<td>Medium to High</td>
<td>Low</td>
<td>Medium to High</td>
</tr>
<tr>
<td>Proportion of Tertiary-Educated Migrants in Interprovincial Migration</td>
<td>High</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td>Proportion of Tertiary-Educated Migrants in Intra-Provincial Migration</td>
<td>Low</td>
<td>Medium</td>
<td>High</td>
</tr>
</tbody>
</table>

Source: Author.

Table D2. Three Stages of Labor Market Development in Chinese Provinces: Migration Patterns
As shown in Table D3 and Figure D6, both Hypothesis 1 and Hypothesis 3 hold. A 1 percentage point increase in the higher education overcapacity rate results in around a 15 percentage point increase in the tertiary-educated proportion in interprovincial migration. Also, there is a U-shaped relationship between the proportion of tertiary-educated interprovincial migrants and the level of labor market development. This model explains more than 60 percent of this tertiary-educated proportion variance in interprovincial migration.

The main regression function for intra-provincial migration is as follows:

\[ y_2 = \delta_0 + \delta_1 \cdot x_2 \]

\(y_2\) stands for the proportion of interprovincial migration with tertiary education or more. \(x_2\) stands for the proportion of net migrants in the total number of permanent residents of a province, which is used as a measure for the stage of labor market development. If my hypothesis holds, \(\delta_1\) should be positive. Regression results are reported in Table D4.

As shown in Table D4, Hypothesis 2 also holds. A 0.01 increase in net migration per capita results in a 0.4 percentage point increase in the tertiary-educated proportion of intra-provincial migration.

**Models for Alternative Measurements.** As argued above, the proportion of tertiary-educated migrants to the number of total provincial permanent residents is a better measurement than the proportion of tertiary-educated migrants to the number of total migrants. The higher a province’s economic development, the more attractive it is for tertiary-educated migrants. If that is the case, the U-shaped relationship in Hypothesis 1 is no longer necessary. Thus, Hypothesis 1 shall be replaced by Hypothesis 4.
Hypothesis 4: There is a positive relationship between the stage of labor market development and the ratio of tertiary-educated interprovincial migrants to total provincial permanent residents.

Hypotheses 2 and 3 should be rewritten as Hypotheses 5 and 6.

Hypothesis 5: There is a positive relationship between the level of provincial labor market development and the ratio of tertiary-educated intra-provincial migrants to total provincial permanent residents.

Hypothesis 6: There is a positive relationship between higher education overcapacity and the ratio of tertiary-educated interprovincial migrants to total provincial permanent residents.

A new model for “real” attractiveness to tertiary-educated interprovincial migrants is as follows:

\[ y_3 = \phi_0 + \phi_1 \cdot x_1 + \phi_2 \cdot x_2 \]

\( y_3 \) refers to the ratio of tertiary-educated interprovincial migration to the number of total provincial permanent residents. \( x_1 \) stands for the overcapacity rate of higher education per capita. \( x_2 \) stands for the proportion of net migrants to the total number of residents.

### Table D3. Regression Results of Interprovincial Migration on Higher-Education Overcapacity and Labor Market Development

<table>
<thead>
<tr>
<th></th>
<th>Proportion of Interprovincial Migration with Tertiary Education</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Linear Model</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quadratic Model</td>
<td></td>
</tr>
<tr>
<td>Higher Education Overcapacity per Capita</td>
<td>20.270***</td>
<td>14.953***</td>
</tr>
<tr>
<td></td>
<td>(4.000)</td>
<td>(4.242)</td>
</tr>
<tr>
<td>Net Migration per Capita</td>
<td>–0.717***</td>
<td>–0.444***</td>
</tr>
<tr>
<td></td>
<td>–0.118</td>
<td>–0.086</td>
</tr>
<tr>
<td>Net Migration per Capita Squared</td>
<td>0.156***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.062)</td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>0.214***</td>
<td>0.192***</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
<td>(0.012)</td>
</tr>
<tr>
<td>Observations</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>R²</td>
<td>0.576</td>
<td>0.655</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.545</td>
<td>0.617</td>
</tr>
<tr>
<td>Residual Standard Error</td>
<td>0.059 (df = 28)</td>
<td>0.054 (df = 27)</td>
</tr>
<tr>
<td>F Statistic</td>
<td>18.998*** (df = 2; 28)</td>
<td>17.122*** (df = 3; 27)</td>
</tr>
</tbody>
</table>

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Standard errors are reported in parentheses.

Figure D6. Residuals vs. Net Migration per Capita

Note: *After controlling for higher education overcapacity.

Table D4. Regression Results of Intra-Provincial Migration on Labor Market Development

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Linear Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Intra-Provincial Migration with Tertiary Education</td>
<td></td>
</tr>
<tr>
<td>Net Migration per Capita</td>
<td>0.391***</td>
</tr>
<tr>
<td></td>
<td>(0.075)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.207***</td>
</tr>
<tr>
<td></td>
<td>(0.010)</td>
</tr>
<tr>
<td>Observations</td>
<td>31</td>
</tr>
<tr>
<td>R²</td>
<td>0.484</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.466</td>
</tr>
<tr>
<td>Residual Standard Error</td>
<td>0.055 (df = 29)</td>
</tr>
<tr>
<td>F Statistic</td>
<td>27.217*** (df = 1; 29)</td>
</tr>
</tbody>
</table>

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Standard errors are reported in parentheses.
permanent residents in a province. If my hypothesis holds, both $\phi_1$ and $\phi_2$ should be positive. Regression results are reported in Table D5.

As shown in Table D5 and Figure D7, both Hypothesis 4 and Hypothesis 6 hold for the new measurement of attractiveness to tertiary-educated interprovincial migrants. A 1 percentage point increase in the higher education overcapacity rate results in around a 2.5 percentage point increase in the ratio of tertiary-educated interprovincial migration to the number of total provincial permanent residents. This model explains more than 70 percent of the total variance.

A stunning result is that the most “unattractive” provinces are exactly the rust belt provinces that are now under severe economic depression—namely, Heilongjiang, Jilin, Liaoning, and Tianjin—although the unattractiveness of coastal powerhouses such as Jiangsu, Zhejiang, and Shandong is more surprising. Given that I based my analysis on 2010 data and the provinces only began to face a crisis in the mid-2010s, this model seems to have some predictive power.

A new model for “real” attractiveness to tertiary-educated intra-provincial migrants is as follows:

$$y_4 = y_0 + y_1 \cdot x_2$$

$y_4$ refers to the ratio of tertiary-educated intra-provincial migrants to the number of total provincial permanent residents. $x_2$ stands for the proportion of net migrants in the total number of permanent residents in a province. If my hypothesis holds, $y_1$ should be positive. Regression results are reported in Table D6.

As shown in Table D6, Hypothesis 5 also holds for the new measurement of attractiveness to intra-provincial migration. A 0.01 increase in net migrants per capita results in a 0.09 percentage point increase in the ratio of tertiary-educated intra-provincial migration to the number of total provincial permanent residents.
Figure D7. Residual vs. Net Migration per Capita (New Independent Variable)

Note: *After controlling for higher education overcapacity.

Table D6. Regression Results of Real Attractiveness to Tertiary Intra-Provincial Migration on Labor Market Development

<table>
<thead>
<tr>
<th>Dependent Variable</th>
<th>Ratio of Tertiary-Educated Intra-Provincial Migration to the Number of Total Provincial Permanent Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Linear Model</td>
</tr>
<tr>
<td>Net Migration per Capita</td>
<td>0.084***</td>
</tr>
<tr>
<td></td>
<td>(0.014)</td>
</tr>
<tr>
<td>Constant</td>
<td>0.029***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
</tr>
<tr>
<td>Observations</td>
<td>31</td>
</tr>
<tr>
<td>R²</td>
<td>0.553</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.537</td>
</tr>
<tr>
<td>Residual Standard Error</td>
<td>0.010 (df = 29)</td>
</tr>
<tr>
<td>F Statistic</td>
<td>35.854*** (df = 1; 29)</td>
</tr>
</tbody>
</table>

Note: *p < 0.1; **p < 0.05; ***p < 0.01. Standard errors are reported in parentheses.
Implications for the Migration Pattern of Tertiary-Educated Manpower in China

As shown in the report, Beijing is disproportionately the venue for migrants with at least some tertiary education, along with inland Shaanxi and Henan. However, as analyzed above, that does not mean that all of them are attractive for tertiary-educated migrants. Shaanxi and Henan stand out not because the number of high-skill migrants is large but because the number of low-skill migrants is small. If measured by the number of tertiary-educated migrants per local resident, coastal provinces such as Beijing, Shanghai, and Tianjin come out on top (Figures D8–D10).

The Educational Function of Migration. As argued in the report, the proportion of tertiary-educated men and women is far lower in rural areas than in towns and cities. Also, the process of urban migration has been absorbing younger people with the highest educational profiles from the countryside and bringing them to big cities. Higher education (associate, college, and graduate) is an important driving force of migration, and rural people migrate to cities to get educated first and then find jobs. As in the case of Shaanxi, 80 percent of total migrants with tertiary education are college and graduate students. The same tentative calculation can be applied to other provinces, and results are reported in Figure D11.5

Beijing and Shanghai conspicuously have the lowest proportion of students in their tertiary-educated migrants. In other words, despite the large number of students pouring into those two megacities, most of the migrants in Beijing and Shanghai are there to find work; they are purely economically motivated. Other coastal provinces such as Guangdong and Fujian see a similar trend.

The low proportion of students in tertiary-educated migrants in northwestern provinces such as Inner Mongolia, Ningxia, Qinghai, and Xinjiang are an indicator of the low higher education capacity in those

Figure D8. Attractiveness to Intra-Provincial Migration with Tertiary Education

Figure D9. Attractiveness to Interprovincial Migration with Tertiary Education


Figure D10. Attractiveness to Combined Inter- and Intra-Provincial Migration with Tertiary Education

provinces. By contrast, some central and northeastern provinces such as Heilongjiang, Hubei, Jiangxi, Jilin, and Shaanxi see the largest proportion of students in tertiary-educated migrants, indicating weak economic draw for educated migrants or overdevelopment of higher education as compared to their labor market development level. This is not surprising, given that most higher education institutions were established before the reform era in 1978. It is only after the 1980s and 1990s that China’s economic activities further shifted to the coast, and northeast and central provinces began to lag behind.

It is reasonable to believe that the same thing happens to high school education: High school students usually move away from their hukou towns, townships, or subdistricts to study, becoming intra-provincial migrants. It is tricky because they become migrants to start school and join the ranks of the “tertiary educated” at the same time. In other words, they are initially classified as less-educated rural residents but later as more educated urban migrants. Therefore, education should be considered another important driving force of migration, at least for the 15–24 age group. With adequate higher education capacity, provinces can attract degree seekers and effectively increase the educational level of migrants.

### The “Real” Attractiveness of Employment Opportunities

Educational overcapacity plays an important role in attracting interprovincial high-skill migrants, which does not necessarily reflect the “real” absorbing power of job opportunities. I suggest that the residuals of the first regression would be better to compare provinces.

We can measure the draw of the provinces for tertiary-educated interprovincial migrants by looking at the proportion of tertiary-educated people among interprovincial migrants. After controlling for higher

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**Figure D11. The Educational Factor in Migration of Tertiary-Educated Manpower**

educational overcapacity and the stage of labor market development, Beijing performs better than Shanghai does in attracting tertiary-educated migrants; Guangdong performs better than Zhejiang does; and Shaanxi, Jilin, and Hainan perform better than Yunnan and Guangxi do (Figure D6).

As an alternative, we can measure a province’s attractiveness by examining the ratio of tertiary-educated interprovincial migration to the number of total provincial permanent residents. As shown in Figure D6, Beijing performs much better than Shanghai, while Guangdong performs better than Zhejiang. Rustbelt provinces and Tianjin are absolute underperforming outliers. Hainan and some northwestern provinces including Xinjiang, Qinghai, and Gansu also outperform.
Notes

1. The Ministry of Education of China only provides data on the total number of higher education students per 100,000 local residents of each province in 2010, so I multiply this number by the 2010 provincial total population to get the total higher education capacity of each province. Given that higher education students include three-year associate degree students, four-year bachelor's degree students, and graduate students, I hypothesize that on average the length of higher education is four years. Thus, dividing total higher education capacity by four would get annual higher education capacity. See Ministry of Education of China, “Provincial Number of Students at Different Levels of School per 100,000 Residents,” http://www.moe.gov.cn/s78/A03/moe_560/s6200/201201/t2012017_129521.html.


5. Here I make the same assumption I did for Shaanxi: All higher education students are classified as migrants.
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