## Demography and Dispossession: Explaining the Growth of the Global Informal Proletariat, 1950-2000

Aaron Benanav (abenanav@uchicago.edu)

The University of Chicago

### Abstract

Since 1950, the world’s urban labor force has expanded dramatically, a process that has been accompanied by a huge increase in informal employment. Accounts of these phenomena generally assume that urban workers without formal work are mostly migrants from the surrounding countryside. Such accounts seek to explain why people have been alternately pushed or pulled into the cities, in spite of the fact that urban employment opportunities are scarce. This article shows that outside of China, the vast majority of the growth of the world’s urban workforce has been the consequence, not of rural-to-urban migration, but rather of urban demographic growth. I develop a concept of demographic dispossession to explain the relatively autonomous role demographic growth has played, first, in the proletarianization of the global population and, second, in the informalization of the urban workforce. I then explore the reasons why demographic growth in Africa, Asia and Latin America tended to be more rapid and urban in character when compared to demographic growth in the high-income countries in the 19th and early 20th centuries.

### Introduction

In cities around the world, people can be found eking out livings on the margins of the economy—collecting recyclables, selling fruit, cutting hair and even polishing diamonds. Working on micro-scales and often using outdated tools, individuals laboring in the informal sector of the economy account for a small minority of the non-farm workforce in high-income countries (HICs) but represent the majority of that workforce in many low-income countries (LICs), as well as in the world as a whole.[[1]](#footnote-2) Indeed, the world’s population is more deeply imbricated in market exchange than ever before, but only 26 percent of the world’s labor force is employed on a “standard” contract.[[2]](#footnote-3) The vast rise in the number of people working informally is one of the most visible signs of the limits that projects of economic development encountered in the late twentieth century. A growing awareness of those limits has reshaped our understanding of twentieth-century economic history, encouraging scholars to take a critical perspective on theorists and strategies of economic development, particularly as these were disseminated from the USA.[[3]](#footnote-4)

Yet in spite of the limited success of developmental projects, a definitive shift in the structure of global economic activity has nevertheless taken place. In 1950, 70 percent of the world’s population lived in the countryside and 62 percent of its workforce labored in agriculture.[[4]](#footnote-5) Today, these shares have fallen to 46 percent and 28 percent respectively. Globally, there are about as many people living in urban areas as rural ones and almost three times as many non-farm workers as farm workers. Whereas in the middle decades of the 20th century, it was still the case that most people grew or made much of what they consumed; today, the vast majority are dependent on market exchange to purchase everything they need to live, even though many individuals must scratch out their livings as “wage hunters and gatherers.”[[5]](#footnote-6) These trends give rise to two questions. First, what factors made for the massive proletarianization of the world’s population in the second half of the twentieth century? That is to say, how did more and more people come to depend on selling their labor to survive? And second, why did this process continue to unfold, in spite of a persistent lack of formal employment opportunities in cities (where most of the world’s proletarianized populations live)?

In answering these questions, most scholars assume that urban dwellers who need jobs but cannot find steady work must have come from somewhere else: that is, they must have migrated from the countryside. Understanding the expansion of the informal urban workforce is therefore a matter of figuring out what forces are drawing people to cities. In 1960, the United Nations published a comparative study of rural-to-urban migration in rich and poor countries titled Why Labour Leaves the Land, which sought to catalogue the “universally operative” factors pushing and pulling people from rural areas to urban ones.[[6]](#footnote-7) Follow-up studies, such as Urban Unemployment in Developing Countries (1973), sought to explain why this migration continued in spite of a lack of urban jobs.[[7]](#footnote-8) All the while, it was assumed that migration from the countryside was the main source of the expanding urban proletariat in the low-income world. It was not until 1980, when the UN published a study titled Patterns of Urban and Rural Population Growth, that this assumption was shown to be false.[[8]](#footnote-9) In reality, by the mid twentieth century, the largest part of urban population growth in LICs was already due to people being born in urban areas, rather than migrating to them. By the 1970s at the latest, the majority of the urban dwellers who needed jobs but could not find steady work likely came from nowhere: born in urban areas, they never knew a rural life.

This reversal of perspectives has had little impact outside of a specialized, urban demographic literature.[[9]](#footnote-10) It requires that we look more closely at the shifting sources of proletarianization as one of the key aspects of postwar global economic history. The population of the world has expanded dramatically, from 2.5 billion people in 1950 to more than seven billion today. Over the same period, global populations living (and working) in urban areas more than quintupled in size, from 750 million people to 4 billion. Yet the world’s rural population did not shrink. In fact, there are more rural-dwellers alive today than there were people in the entire world in 1950. Economic accounts of urban labor force growth must therefore be supplemented—albeit carefully—by demographic ones. In recent years, historians have turned to global demographic questions, examining twentieth century policies around population growth, as well as theories arising from an attention to that growth.[[10]](#footnote-11) Here, I look at the social-structural consequences of demographic growth itself. I argue that, in the second half of the twentieth century, rapid population growth acted as a relatively autonomous force in the economy, altering pathways of social-structural change.

The birth and subsequent survival of huge numbers of people in itself made old ways of life impossible: as of around 1960, there were not enough nitrogen compounds available in the soil to support the world’s population without the application of synthetic fertilizers.[[11]](#footnote-12) Meanwhile, more and more people were born in urban areas and could access the food and other goods they needed to survive only via market exchange. Lacking property from which they might derive a rental income, proletarianized urban populations were forced to sell their labor or the simple products of their labor to obtain those goods, as soon as their parents no longer contributed to their upkeep. The result was that huge numbers of people entered urban labor markets regardless of prevailing labor-market conditions. As I will show, demographic sources of urban labor-force expansion became increasingly important in the waning decades of the twentieth century. In the context of widespread economic stagnation, following the onset of the Third World Debt Crisis in 1982, hundreds of millions people continued to be born, come of age, and enter urban labor markets, contributing massively to the informalization of employment.

This article has four sections. The first section examines existing theories of the proletarianization process, which focus on mechanisms pulling and pushing people from the countryside to cities. The second section outlines my alternative mechanism based on population growth, which I call demographic dispossession. The third section explores the role demographic dispossession played in the informalization of the LIC workforce in the decades after 1960, comparing outcomes in most LICs to the exceptional case of post-reform China. The final section then turns to questions of the causes of population growth, focusing on changes in the patterns of that growth in the course of the twentieth century. As compared to the prior history of population growth in HICs, population growth in LICs was more rapid and urban in character. That made this process more difficult to discern, since it lacked a clear historical precedent.

### I. Sources of Proletarianization

Explanations of the growth of the proletariat typically rely on a model proposed by economist Arthur Lewis in 1954 in a paper titled “Economic Development with Unlimited Supplies of Labor.”[[12]](#footnote-13) Lewis described how people are pulled from the countryside to cities in the course of economic development, willingly giving up the autonomy associated with self-sufficient farming for a chance at a better life. For Lewis, proletarianization follows naturally from the propensity, identified by Adam Smith, to “truck, barter and exchange:” it is a consequence of people taking advantage of the gains of trade associated with commercialization.[[13]](#footnote-14) The pace of commercial expansion then determines the pace at which proletarianization unfolds: the higher the economic growth rate, the more urban job opportunities will open up, and the more people will leave the land in search of higher incomes. Lewis’s model was widely adopted across the new discipline of developmental economics: it helped convince policymakers that the key to achieving development was sustaining high rates of GDP growth.[[14]](#footnote-15) However, this perspective soon came up for criticism.

In the 1950s and 60s, more people entered urban labor markets than there were jobs available, adding to an existing oversupply of hotel porters and petty-traders. The International Labor Organization (ILO), an United Nations specialized agency, passed a resolution in 1964 encouraging developing countries to adopt employment targets in addition to economic growth targets, in an effort to focus attention on growing problems of urban unemployment and underemployment in LICs. Then, in 1969, the ILO launched its World Employment Program to study these phenomena in greater detail.[[15]](#footnote-16) Drawing on a paper presented by anthropologist Kieth Hart in 1971, the ILO came to describe individuals working on the margins of urban economies as participants in the informal sector, which counts among its members those who are employed without a contract (e.g. day laborers), as well as those who are self-employed or work as unpaid family labor in micro-enterprises selling directly on the market (e.g. street vendors).[[16]](#footnote-17) The informal sector has continued to grow since it was first described in the early 1970s; it exploded in size in the 1980s and 90s.[[17]](#footnote-18)

With a Lewis Model, it was difficult to explain why people continued to show up in urban labor markets in spite of a persistent lack of job opportunities, so scholars began casting about for alternative explanations. In 1970, John Harris and Michael Todaro proposed that government interventions into the labor markets of LICs had artificially raised urban wages relative to rural incomes, drawing people into cities on the mere chance of getting an urban job.[[18]](#footnote-19) In 1977, Michael Lipton similarly argued that an “urban bias” in LIC governments had led to the over-expansion of city populations.[[19]](#footnote-20) The International Monetary Fund and the World Bank used these theories to justify the implementation of structural adjustment programs, which encouraged LIC governments to deregulate labor markets in order to reduce wage differentials between formal and informal jobs, yet even as labor protections eroded and wage differentials fell, levels of urban informality continued to rise.[[20]](#footnote-21)

Alternative, heterodox accounts of proletarianization took a different approach, looking to factors pushing people into urban labor markets against their will rather than pulling them there by choice. These accounts were typically Marxist or Marxist-inspired. The dependentistas criticized Lewis for assuming that the countryside was a site of “undeveloped” rural economies; Andre Gunder Frank argued instead that rural economies had been actively “underdeveloped” by the process of commercialization, especially as mediated by colonialism.[[21]](#footnote-22) Colonial powers had narrowed what were formerly diverse forms of rural existence, making the poor more vulnerable to the natural and social catastrophes that might force them to flee the countryside. Many such catastrophes took place in the course of the twentieth century, dispossessing people of their rural livelihoods and forcing them to migrate to cities.

The concept of dispossession is key to heterodox accounts of the proletarianization process.[[22]](#footnote-23) That process had formerly been defined in terms of a shift from subsistence agriculture into waged labor, but such a definition proved inadequate for an era that saw a massive expansion of urban informality. After all, the majority of informal workers do not earn wages. Finding no one to employ them, they engage in self-employment in micro-enterprises, selling goods and services directly on the market (many micro-enterprises sell to other producers rather than consumers: those who collect recyclables in order to sell them to larger firms are more like disguised employees than independent entrepreneurs). Informal workers can be included among the proletariat only if the latter’s defining feature is taken to be not wage-labor but rather the lack of resources—i.e. access to arable land or other forms of property—that forces people to seek waged work. The same situation leads people to engage in own-account informal activities when work for wages is unavailable.[[23]](#footnote-24)

According to Haroon Akram-Lodhi and Cristóbal Kay, heterodox accounts focus on two mechanisms of dispossession pushing rural-dwellers into urban labor markets: (1) dispossession by rural differentiation and, (2) dispossession by direct expropriation.[[24]](#footnote-25) Like the Lewis account, both alternatives begin from the process of commercialization and associated gains of trade. In the “dispossession by differentiation” account, smallholding peasants are the ones trying to benefit from gains of trade. They abandon subsistence agriculture to grow marketable crops, sometimes migrating over great distances to do so. Now subject to market laws, these producers achieve varied rates of return. A few are able to accumulate; however, most eventually find themselves unable to compete. These peasants lose their land and migrate to urban areas. In the “dispossession by expropriation” account, large landowners are the ones trying to take advantage of the gains of trade. Most peasants in the 20th century did not own the land they farmed; instead, they were subject to the dictates of landed elites, who controlled (and still control) a large portion of the arable land in most countries.[[25]](#footnote-26) According to this account, landowners expel peasants from the land—by either outright force or dubious legal means—in order to convert the use of that land to market-oriented production. Few peasants find employment on converted farms. Most are pushed into overcrowded urban markets.

These heterodox accounts have the right starting point: they ask, what are the forces pushing people into urban labor markets, causing labor supply to rise far in excess of demand? Yet the heterodox accounts cannot explain this phenomenon either (or at least, they cannot explain its largest part). Like the mainstream accounts, the heterodox ones focus on mechanisms transferring the population from subsistence farming to the sale of labor-power. That remains a dominant paradigm in the economic-historical literature today. Migration from the countryside to the cities was certainly a crucial element in the history of LIC proletarianization; however, that process was much more a matter of population growth than of population transfer, whatever the latter’s ascribed cause. For example, statistical estimates suggest that, of the 216 million people added to LIC urban populations in the 1960s, fully 60 percent was due to urban births in excess of urban deaths; only the remaining 40 percent was due to a combination of rural-to-urban migration and the reclassification of rural areas as urban ones (which has been an important phenomenon in itself, in an era of rapid overall population growth).[[26]](#footnote-27) In general, demographic factors have failed to enter into economic accounts of urban population and labor force expansion. That has turned out to be “seriously misleading.”[[27]](#footnote-28)

### II. Demographic Dispossession

The dominant role of population growth in explaining the expansion of urban populations, and hence of urban workforces, was recognized belatedly. As late as 1973, historical statistician Paul Bairoch could still deny as “contrary to the facts” that “the natural growth of the population is the essential cause of the population increase in urban areas.”[[28]](#footnote-29) Like the theorists discussed above, Bairoch argued that migration was the dominant factor in urban population growth. By the end of the decade, however, UN researchers had proven that the opposite was the case. Compared to historical averages in the HICs, urban population growth rates in LICs were high not due to “unusually rapid change in urban proportions” but rather precisely due to “rapid changes in the total population size to which those proportions are applied.”[[29]](#footnote-30) In other words, population growth was the essential factor, not population transfer. Changes in the total population size then ramified through the labor force as young people came of age and looked for work.

Population growth explains why, in spite of massive increases in non-agricultural employment levels across LICs, agrarian employment levels were almost always larger in 2010 than they had been in 1960, making it seem as if growing urban workforces had appeared out of nowhere. In Mexico, the non-agricultural labor force expanded by 848 percent between 1960 and 2010, yet the agricultural labor force grew by 47 percent. In Indonesia, the non-agricultural labor force expanded by 700 percent over the same period, even though the the agricultural labor force grew by 80 percent. Meanwhile, in Egypt, the non-agricultural labor force expanded by 462 percent, even as the agricultural labor force grew by 42 percent. These are a just few examples of a nearly universal phenomenon across LICs, whose explanation is to be found in the huge growth of these populations.[[30]](#footnote-31) LIC populations doubled in size in just 31 years, from 1.7 billion in 1950 to 3.4 billion in 1981, and then nearly doubled again to 6.1 billion in 2015.

It is impossible to abstract away from this demographic growth. It was a major force of social-structural change in its own right. In this section, I deploy insights from the UN’s demographic studies of the sources of urban population growth to develop an account of demographic growth as an autonomous mechanism of proletarianization in LICs. I argue that, alongside dispossession by differentiation and dispossession by expropriation, rapid population growth effected a third and more crucial form of dispossession that I call demographic dispossession.[[31]](#footnote-32) Due to rapid population growth, more and more young people found that when they came of age, they lacked access to the resources that would have allowed them to survive without recourse to the labor market or its derivate product markets.[[32]](#footnote-33) This process happened in two primary ways: first, among peasants communities and, second and more crucially, among the children of urban workers. With an account of demographic dispossession in place, I will then return to the question of the informalization of LIC workforces in the following section to explore the specific role demographic forces played in that history.

#### Dispossession of peasants

Demographic dispossession took place first of all in the countryside, among peasants who were largely self-sufficient producers. In spite of the narrowing effects of colonialism, peasant communities still relied on varied production practices. Many peasants participated in market exchange, but they generally did not depend on that exchange for their survival. In any case, regardless of peasant survival strategies, rapid demographic growth was highly disruptive: it upended inter-generational practices of resource management by pulverizing existing landholdings (and accelerating the pace at which new lands had to be brought into cultivation). As rural populations grew, peasants divided up their land among successively larger generations of children. Many families found that their inheritance was too small for them to live by subsistence farming. They were therefore proletarianized.[[33]](#footnote-34)

It is possible to estimate the degree of demographic dispossession in the countryside by looking at changes over time in cultivated land per person engaged in agriculture. However, the situation for poor rural-dwellers was generally much worse than these statistics suggest, since, as I suggested above, landholdings tended to be highly unequally distributed.[[34]](#footnote-35) In most LICs, land per person fell significantly in the second half of the twentieth century. To take just three examples: in Mexico, Egypt, and India, these ratios fell by around 25 percent in twenty years, 1960-1980, putting enormous pressure on rural-dwellers trying to survive via self-sufficient farming. In India, such ratios continued to fall after 1980, reaching 50 percent of their 1960 level in the 2000s. By contrast, in Mexico and Egypt, land-per-person ratios improved in the 1980s, as agricultural populations peaked in absolute terms and began to decline due to out-migration (in both countries, agricultural workforces were still larger in 2010 than they had been in 1960, due to an intervening period of population growth). The pulverization of holdings added to pressures pushing people to migrate to towns.

A countervailing factor to this form of dispossession was given in the degree to which smallholders were able to take new lands under cultivation. Opportunities to do so varied. In sub-Saharan Africa, land under crop increased by 55 percent between 1960 and 2010; in South-East Asia, it increased by 62 percent over the same period (in Thailand, cultivated land per person rose by 20 percent between 1960 and 1980, despite rapid population growth). Much of the land smallholders colonized was ecologically fragile, yet farming that land allowed more people to persist as agricultural producers: among regions, sub-Saharan Africa and Southeast Asia have the highest shares of their labor forces in farming today. Elsewhere, relatively little additional land was taken under crop. For example, in India, the total cultivated area increased by just 16 percent between 1960 and 2010. Limits to the extension of cultivated land meant that many peasant families saw their plots pulverized in the course of a few generations of rapid population growth, resulting in dispossession.[[35]](#footnote-36)

#### Dispossession of the children of urban workers

Demographic dispossession also unfolded in a second way, among already dispossessed populations living in cities. In capitalist societies, only the sons and daughters of well-to-do families are able to avoid working, since they inherit property from which they can derive an income. The children of most urban-dwellers inherit nothing from their parents. Finding a job is therefore a normal part of the proletarian life course: young people are forced to sell their labor or its simple products as soon as their parents are no longer able to contribute to their upkeep. In periods of population growth, this process issues in an ongoing expansion of the urban labor supply. That is precisely what happened in LICs after 1950: each successive urban generation in LICs was much larger than the one that preceded it, resulting in a dramatic increase in the dispossessed population and hence in the proletariat.

This second form of demographic dispossession was the single largest contributor to proletarianization after 1950, yet it is frequently misconstrued: in analyzing the growth of cities, people have tended to mistake urban population growth due to urban births for growth due to rural-to-urban migration.[[36]](#footnote-37) That is apparent in the way that scholars like Harris and Todaro explain the historically unprecedented character of rapid urban population growth in LICs. LIC urban populations did grow at an unprecedented pace, with average growth rates of 3.7 percent per year between 1950 and 2000 as compared to just 2 percent per year in Europe between 1850 and 1900.[[37]](#footnote-38) That’s how Lagos, which housed 325 thousand people in 1950, could grow to a city of over 10 million in 2010, or how Dhaka was able to grow from a city of 417 thousand to a city of almost 15 million over the same period (in sum, the urban populations of the LICs grew almost ten times over between 1950 and 2010, from 300 million to nearly 3 billion people). Harris and Todaro assumed that this rapid growth was due to rapid rates of rural-to-urban migration; they then sought to explanation why out-migration was so fast.[[38]](#footnote-39) In reality, less than half of the unprecedented urban growth in LICs was due to out-migration from the countryside. Rates of out-migration are approximately indicated by the urbanization rate, which is equal to the urban population growth rate minus the overall population growth rate.[[39]](#footnote-40) Included in this measure is also in situ urbanization, that is, the transformation of rural areas into urban ones, taking place when the countryside surrounding a city or town is swallowed up by urban expansion. The urbanization rate in the LICs measured 1.6 percent per year between 1950 and 2000—only somewhat higher than the urbanization rate in Europe between 1850 and 1900, at 1.3 percent per year.[[40]](#footnote-41)

The remainder of urban population growth was due to what demographers call “urban natural increase;” I call it autonomous urban growth, since this growth was not natural but rather changed in character over time.[[41]](#footnote-42) The autonomous urban growth rate is equal to the urban population growth rate minus the urbanization rate. It measured 2.1 percent per year in the LICs in the second half of the 20th century—three times as high as the 0.7 percent growth rate achieved in Europe, 1850-1900. It was this autonomous growth that largely accounted for the unprecedented character of LIC urban growth: urban populations grew so quickly simply because many more people were born in cities than died in them. In sum, 57 percent of all LIC urban growth after 1950 was due to urban births in excess of deaths (that percentage also tended to rise over time, decade by decade). Associated increases in the urban labor supply then took place independently of any population transfer.

Recognizing the central role of autonomous urban growth in explaining the post-1950 expansion of the global proletariat is key to understanding the overall history of proletarianization. Unlike their rural counterparts, urban workers depend on market exchange in order to meet most or all of their needs. Such market-dependence is all the more extreme for people who grew up in cities: they generally cannot not migrate “back” to the countryside to take up a rural livelihood that they never knew. The urban-born are thus, to a much greater extent, caged within urban labor markets: they have to sell their labor to live regardless of changes in urban labor-market conditions.

### III. Dispossession and Informality

What remains to be explained is the specific role demographic factors played in the informalization of the LIC workforce.[[42]](#footnote-43) The key here is that, unlike migration rates—which tend to vary directly with economic growth rates—rapid population growth rates generate demographic dispossession largely independently of the speed of economic growth prevailing in each country. This account helps explain the accelerating pace of proletarianization over the course of the entire twentieth century: population growth rates sped up in many LICs in the 1920s and then in all LICs after 1950, leading to an acceleration in the pace of demographic dispossession and hence labor force expansion. Crucially, the labor force continued to expand quickly down to the end of the twentieth century, even after demographic growth rates began to decelerate. Between 1965 and 1985, LIC population growth rates peaked and then slowed, as parents started to have fewer children: in the early 1960s, more than six children were born on average to each LIC family; by the early 1980s, average fertility levels had fallen to a little more than four children. Today, the average LIC family has less than 2.7 children. However, slowing population growth rates did not initially slow the rate of growth of the labor force, for two reasons.

First, as population growth rates fell, LIC populations aged. Some countries are still young: the median age in Nigeria is 18 years and South Africa it’s 26 years. But in most LICs, median ages have risen. People who had been born in prior decades are maturing into the workforce.[[43]](#footnote-44) The result is that an ever growing share of the population consists of workers. For example, in China, the total population grew by 110 percent between 1960 and 2010, while the labor force grew by 190 percent. Meanwhile, in Brazil, the total population grew by 170 percent, while the labor force grew by 290 percent. In both cases, a contributing factor was a rising labor force participation rate, associated with a rising median age.[[44]](#footnote-45)

Rising labor-force participation rates might have been counteracted by a second trend, namely the tendency of women to drop out of the workforce in the middle phases of economic development.[[45]](#footnote-46) The shift to non-farm work, which is associated with that development, is classically held to disadvantage women since, in patriarchal societies, they are tasked with minding young children. This task is more difficult to perform at work once the home and the workplace are separated and the latter comes under the control of an independent employer. However, from the 1960s forward, women in LICs began to have many fewer children at what were, historically speaking, low levels of GDP per capita. They tended to remain in the labor force during their childbearing years in spite of shifting out of agricultural employment.[[46]](#footnote-47) The consequence was that, although it unfolded at a relatively slower pace than it had at its mid-century peak, LIC demographic growth continued to give rise to gigantic increases in the labor supply.

In the waning decades of the twentieth century, these unfolding demographic trends interacted with a global economic slowdown, issuing in a dramatic informalization of urban work. Following the 1982 Third World Debt Crisis, most LIC economies experienced a profound slowdown in average annual rates of economic growth, resulting in reduced urban job opportunities even as the urban labor supply grew enormously. The upshot in the towns was that, while demographic dispossession continued to increase the size of the proletariat, this proletariat was now obliged to depend to a greater extent on informal sources of employment. In the countryside, where the proletariat was also growing as a consequence of demographic dispossession, workers suffered from a similar lack of employment opportunities. Yet, contrary to the accounts of urban labor force expansion I discussed above, these rural workers were increasingly forced to languish in the countryside: they found it more difficult to migrate permanently to cities, since the demand for labor in urban areas had all but collapsed. The result was that a rising share of urban labor force growth, and hence informality, was due to the entry of the children of urban workers into the labor market, taking place under adverse economic conditions.

#### A lasting economic downturn

A major economic downturn set in across most LICs in the 1980s and 90s, beginning with the Third World Debt Crisis of 1982-85. In the aftermath of that crisis, many countries turned to the IMF and World Bank for assistance. LIC governments adopted structural adjustment programs in an effort to restore previously prevailing rates of growth on a new, supposedly more stable foundation by opening or further opening their economies to global trade.[[47]](#footnote-48) However, by this time, the world economy had entered a more turbulent era of lower growth rates punctuated by periodic financial crises.[[48]](#footnote-49) Global GDP-per-capita growth rates slowed from 3.5 percent per year in the 1960s to 2.0 percent per year in the 1970s, falling further to 1.3 percent per year in the 1980s and 1.1 percent per year in the 1990s, before recovering slightly to 1.4 percent per year in the 2000s. Opportunities to gain from global trade were becoming more scarce, even as the trade share of global GDP was rising rapidly. Only a few countries with strong competitive advantages—mostly located in East and Southeast Asia—were able to benefit from those opportunities in a significant way.

Outside of East and Southeast Asia, many LICs experienced a “lost decade” in the 1980s.[[49]](#footnote-50) Latin American and Caribbean countries saw zero GDP per capita growth in the 80s, while Middle East and North African countries and sub-Saharan African countries saw negative growth rates of 0.7 percent per year and 1.0 percent per year respectively. Growth rates recovered to some extent in the 90s but remained low, although in sub-Saharan Africa, growth rates stayed negative to 2000. By contrast, in South Asia, per capita growth rates rose from the beginning of the 1980s but did so unevenly: on the subcontinent, many states in India continued to see little growth, which contributed to rising income inequality across the country.[[50]](#footnote-51)

Due to low rates of GDP per capita growth, the 1980s and 90s were decades of rising informality, as labor market entrants encountered a dearth of new employment opportunities. Jacques Charmes provides the following estimates of changes in informality shares of non-agricultural employment.[[51]](#footnote-52) In North Africa, those shares rose from 40 percent in 1975-79 to 48 percent in 1995-99. Meanwhile, in sub-Saharan Africa, they rose from 67 percent in 1980-84 to 87 percent in 1995-99. In Southern Asia, informality rose from 53 percent in 1985-89 to 70 percent in 1995-99. In Latin America, for which 1980s data do not exist, they rose from 53 percent in 1990-4 to 56 percent in 2000-04. Over these periods, non-agricultural employment came to account for a much greater share of total LIC employment, so absolute levels of urban informality rose by more than these statistics suggest.

Yet economic downturns in this period were not only extreme in urban areas; they were also extreme in rural ones. The 1980s and 90s saw sharp declines in world market prices for most crops, putting massive pressure on small producers.[[52]](#footnote-53) Making matters worse, government price supports for farmers were often removed in this period as part of IMF-led structural adjustment programs.[[53]](#footnote-54) The result, in many countries, was a lasting agrarian crisis. That likely contributed to the fact that, in the mid-1980s, agricultural labor forces peaked in absolute terms and went into decline in some LICs such as Brazil and Indonesia (in both countries, 2010 levels were still higher than 1960 levels due to a prior period of labor force growth).

Based on this evidence from rural areas, some scholars have attributed the explosive growth in the informal urban proletariat in the 1980s and 90s to a wave of in-migration from the countryside associated with dispossession by way of rural differentiation or direct expropriation.[[54]](#footnote-55) If that were true, we would expect the migration share of urban population growth to have risen at this time. Instead, in almost all LICs, that share fell. Indeed, migration shares had already been falling since the 1950s in almost all countries. With few exceptions (discussed below), the 1970s and 80s showed no break in the pattern; in some cases, rates of decline accelerated. In the Middle East and North Africa, the migration share of urban population growth fell from 33 percent in the 1970s to 20 percent in the 1990s. In South Asia, it fell from 44 percent to 32 percent over the same period, in sub-Saharan Africa, from 43 percent to 32 percent, and in Latin America, from 34 percent to 28 percent. By the late twentieth century, these migration shares had fallen so significantly that UN projections were thrown off: “the attainment of 50 percent of the population living in urban areas” was delayed “from 2000 to 2007 or 2008.”[[55]](#footnote-56) Urbanization rates in LICs after 1980 were far lower than the UN expected.

The explanation of this phenomenon is that—due to a lasting economic crisis in LIC urban areas—many dispossessed rural-dwellers who otherwise would have permanently migrated to cities were unable to do so. They could not gain footholds in depressed urban economies where job openings were scarce. At the same time, many people found it difficult to generate own-account work for themselves in the urban informal sector, since emergent opportunities there largely depend on economic growth occurring in the rest of the economy.[[56]](#footnote-57) Because they could not find steady work, large numbers of people were forced to remain in the countryside, in spite of the fact that agricultural employment opportunities were also declining.

That contradicts the way rural-to-urban migratory flows are commonly understood. The assumption is that people move to cities first and then try to find work, but historically, the reverse has more typically been the case: people secure urban employment—often by means of kinship ties with those living in cities—before they move.[[57]](#footnote-58) If no urban employment can be found, people engage in circular migration, coming and going on a temporary basis while looking for more permanent arrangements.[[58]](#footnote-59) Increases in circular migration have made it more difficult to determine patterns of residency in LICs. Meanwhile, many more rural-dwellers have been forced to languish in rural areas—and even to circulate between depressed rural areas or to and from dynamically expanding ones—in spite of a simultaneous dearth of jobs in agriculture.[[59]](#footnote-60) Rural non-farm economic sectors are correspondingly expanding.[[60]](#footnote-61) They house a dispersed informal proletariat in the countryside, which is the rural counterpart to the concentrated informal proletariat residing in cities.

Nevertheless, in spite of reduced rates of rural-to-urban migration, the 1980s and 90s still saw high rates of urban population growth due to demographic factors. In fact, this was a period of unprecedented urban growth: one billion people were added to LIC urban areas between 1980 and 2000—a number approximately equal to the entire HIC population in the year 2000. Excluding China (which I consider below), 65 percent of LIC urban growth in the 1980s was due to urban births, rising to 70 percent in the 1990s. At the same time, huge numbers of people who had been born in urban areas came of age in this period and joined the labor force. To take two examples, typical of LICs, Mexico and Egypt each saw their non-agricultural workforces double in size in just 20 years between 1980 and 2000. India saw its non-agricultural labor force grow by even more, 134 percent, over the same period, representing an increment of some 96 million additional non-farm workers. Many of these new labor-market entrants ended up in the urban informal sector, which grew massively in this period. They had little choice, since they had to find work in order to live.

#### Exceptions that prove the rule

It should be noted that in a few countries, migration shares of urban growth rose after 1980 instead of falling. Looking at these exceptional cases helps us understand the general rule. Countries experiencing rising migration shares fall into three categories. First, there are countries that experienced violent conflicts, such as Sierra Leone and Rwanda, where people fled to urban areas from conflict zones. Second, there are countries that repealed “pass laws” instituted in earlier decades, which had made migration to cities illegal: negative rates of urbanization in the 1960s and 70s then generated a pent-up demand for urbanization in the decades that followed. Examples include South Africa and China.[[61]](#footnote-62) Finally, there were countries that experienced rapid economic growth after 1980. While other LICs saw sharp reductions in economic growth rates in the 1980s and 90s, East and Southeast Asian countries saw economic growth rates accelerate, making it possible for poor rural-dwellers to find toeholds in urban economies. Examples include China, again, as well as Indonesia.

Among all of these exceptional cases, China stands out. The Chinese population is so large and moved against the current to such a large extent that including China in calculations of LIC migration shares of urban growth shifts their direction of change: with China included, migration shares rise from 40 percent of urban growth in the 1970s to 50 percent in the 2000s; with China excluded, they fall from 39 percent to 34 percent. China was an exceptional case for a variety of reasons. However, the main reason is that, starting in the late 1970s, China began to experience extremely high rates of GDP growth, which remained elevated for decades.[[62]](#footnote-63) High rates of economic growth in China led to rapid job creation, making possible a massive movement of people from the countryside to the cities. 360 million people are estimated to have migrated between 1980 and 2010 in the largest wave of rural-to-urban migration in human history.[[63]](#footnote-64) Many people also migrated without ever leaving home, as their villages were absorbed into expanding urban landscapes.

Due to high rates of economic growth, China also saw relatively low rates of economic informality: in 2010, informal employment was estimated to be 25 percent of all employment in urban areas, which is low compared to LIC averages.[[64]](#footnote-65) China saw rising urbanization rates due to a massive economic boom; in almost all other LICs, an economic downturn in the 1980s and 90s caused urbanization rates to decline. Nevertheless, in those other LICs, urban populations still continued to grow rapidly, as urban births became the main engine driving urban expansion. The urban-born came of age and entered labor markets that, in the context of stagnant economies, were overcrowded. They had little choice but to join the ranks of informal workers.

### IV. Demographic Transitions

In the second half of the 20th century, demographic growth made for an ever larger proletariat and did so regardless of whether LIC economies were growing quickly or not. The autonomy of demographic processes from economic ones turned out to be especially crucial in the final decades of the twentieth century, when rapid urban labor force growth continued in spite of economic stagnation, issuing in an increasing informalization of the urban workforce. The question that now imposes itself is how to explain the specific pattern of demographic growth that was behind demographic dispossession in the LICs.

Various accounts of this demographic growth are available. Among non-scholars, Malthusian accounts—which argue that poor people are having too many children relative to available resources—are still widespread. As I will explain, the strength of the Malthusian account is that it does describe population trends over the 10,000 years before the modern era; however, it cannot explain the trends under examination here. The twentieth century saw the emergence of an alternative to Malthusianism: the demographic transition theory accurately describes modern demographic growth as a transitional phenomenon associated with a lag between the onset of falling death rates—resulting from modern advances in nutrition, public health and medicine—and a consequent fall in birth rates. Yet the most prominent version of this account also cannot explain the population trends that unfolded in LICs after 1950. As it turns out, patterns of demographic growth shifted significantly over the course of the twentieth century, making the pattern of demographic transition in LICs rather different from the same process as it occurred in HICs. In this section, I explore the shift in the character of demographic growth, focusing on its consequences for proletarianization.

#### Explaining population growth

Malthusianism offers a powerful explanation of pre-modern patterns of population growth. Over the long history of agrarian civilizations, populations tended to grow during times of peace and empire building until they hit the limit of what the existing resource base could support, given a relatively fixed technological level and a rigid social structure.[[65]](#footnote-66) At that point, prices for food crops rose relative to land and manufactures, leading to instability and war, with the consequence that population levels stabilized or even declined. That in turn caused the terms of trade for food crops to move in the opposite direction.[[66]](#footnote-67) This Malthusian pattern cannot account for twentieth century population trends. For, in the twentieth century, there was no resource cliff. Between 1900 and 2000, the size of the global population increased by 270 percent, yet the real prices of food crops decreased by 60 percent.[[67]](#footnote-68) In 2010, there were still 750 million malnourished people in the world, but their plight had little to do with global resource constraints.[[68]](#footnote-69) On the contrary, that plight was largely the result of agricultural overproduction in an era of highly industrialized agriculture.[[69]](#footnote-70) And yet, in spite of the fact that the global population thus failed to overshoot its resource base, the population has still seen its growth rates slow significantly: population growth rates fell from almost 2.1 percent per year in the late 1960s to less than 1.2 percent per year in the early 2010s. Population growth rates will slow further as women continue to give birth to fewer children.[[70]](#footnote-71)

The combined effects of (1) falling food prices in spite of rapid population growth and (2) falling fertility levels in spite of rising life expectancies broke the pattern of Malthusian cycles that formerly governed agrarian societies. In the mid 20th century, an alternative account emerged that sought to explain these trends as part of a wider story of modern social-structural change: proponents of the demographic transition theory argued that rapid population growth in the modern era is best described as a temporary phenomenon associated with rising life expectancies.[[71]](#footnote-72) Whereas Malthusians had feared that rapid population growth in the nineteenth and twentieth centuries was a consequence of the fact that people, particularly poor people, were having more children; demographic transition theorists showed that, in fact, people were mostly having the same number of children as before. Populations were growing rapidly primarily because fewer children were dying. In the HICs, people eventually responded to higher survival rates by having fewer children. Demographic transition theorists claimed, correctly, that the same thing would soon happen in LICs. These theorists pointed out, however, that the fertility adjustments that bring the era of rapid population growth to an end occur only after a delay of some decades. Due to this decades-long delay between falling mortality rates and falling fertility rates, rapid population growth rates can persist for a long time (since, once they begin to fall, fertility levels have to chase a moving target: mortality rates continue to fall as well). That is precisely what happened in the low-income world.

Demographic transition theory provides us with “special laws of population” specific to the modern era,[[72]](#footnote-73) yet the version of this theory popularized in the mid-twentieth century by demographers Frank Notestein and Kingsley Davis—which remains the one most familiar to historians—is less useful in explaining the trends under examination in this article.[[73]](#footnote-74) Their account relies on a tight connection between economic modernization, on the one hand, and falling mortality and fertility, on the other. Notestein and Davis theorized that, in a first phase, economic modernization would reduce mortality rates without altering parents’ demand for large families: parents would continue to demand large families because having children served as a form of social security for the elderly; children could also be employed as farmhands after a few years of age. Supposedly, the demand for large families would continue unabated until a second phase, when further modernization transformed the reigning social values, elevating the individual over the collective and leading to a demand for small families rather than large ones. In fact, as became clear in the 1960s and 70s, both phases of the demographic transition were unfolding in countries where no economic modernization was taking place.[[74]](#footnote-75) For example, in Bangladesh, GDP per capita stagnated at $280 between 1970 and 1990.[[75]](#footnote-76) Yet over that same period, average life expectancies rose from 46 to 56 years, and fertility levels fell from 6.9 to 5.0 children per family. As it turns out, modernization was neither a precondition of falling mortality levels nor of a declining demand for children.

That fertility levels could decline under so many different conditions was particularly surprising to demographers.[[76]](#footnote-77) No socio-economic shift appeared to be necessary to start the process. Fertility declined in countries where school enrollments were rising as well as where they were falling.[[77]](#footnote-78) The most accurate predictor of fertility decline is literacy; however, in some societies with high literacy levels, fertility fell slowly, while in others fertility remained high.[[78]](#footnote-79) It may seem like the obvious reason why no single factor explains fertility decline is that some states promoted family planning, yet fertility declined even where governments were indifferent or hostile to such planning.[[79]](#footnote-80) On the basis of these observations, some scholars have suggested that there can be no general theory of demographic transition, only specific histories of transitions in each country.[[80]](#footnote-81) Yet there are few historical phenomena more global in their scale and scope: demographic transitions have taken place across almost all countries in a relatively short period of time.

In what follows, I rely on an alternative perspective, put forward by Chris Wilson and Pauline Airey and developed by John Cleland, Tim Dyson, and David Reher, which claims that the only prior event needed to set the fertility transition in motion, in any country, is the mortality transition itself.[[81]](#footnote-82) Wilson and Airey’s revision to demographic transition theory is based on historical research that revealed that in the HICs before the onset of fertility transitions, fertility levels varied widely.[[82]](#footnote-83) Maximum human fertility levels were also far higher than expected (and much higher than pre-transitional averages of four to eight children). Thus, even before the demographic transition began, populations must have had at their disposal both means of adjusting fertility and also reasons for doing so. The fact that populations grew extremely slowly in the past led Wilson and Airey to conjecture that before the transition, societies must have controlled fertility levels so that they approximately balanced mortality levels.[[83]](#footnote-84) In reality, birth rates were slightly higher than death rates, generating slow population growth and population cycles. Nevertheless, it appears to be the case that, in pre-transitional societies, people generally limited fertility (primarily by varying age at first marriage and the length of breastfeeding),[[84]](#footnote-85) so populations did not grow quickly. Slow rates of growth were essential to community cohesion because, under those conditions, supporting successive generations required only a slow accretion of resources.

Given this context, declining infant and child mortality levels in the modern era acted as a shock to pre-transitional demographic regimes, generating socially destabilizing population growth.[[85]](#footnote-86) Each successive generation was much larger than the last, upending long-standing practices of resource management. Neither modernization nor any other factor had to be present for people to react to the destabilizing consequences of population growth by reducing fertility levels.[[86]](#footnote-87) Declining mortality and the rapid population growth it entailed were destabilizing in themselves. The causes of a delay between the two legs of the demographic transition is then explained simply as a delayed reaction: before they adopt modern methods of contraception, people have to be convinced that falling child mortality rates represented a secular cyclical change. That takes time: typically, women who already have “three or more surviving children” are the first in their communities to use contraceptives.[[87]](#footnote-88) As feminist scholars have argued, reducing fertility also requires changes in change-resistant patriarchal social relations.[[88]](#footnote-89)

The looser set of ties between modernization and population growth suggested by this alternative account is key to understanding the history of the demographic transition in the LICs and hence what distinguished proletarianization in the LICs from the prior history of proletarianization in the HICs. In the modern era, global mortality levels declined due to a health transition, which set the demographic transition into motion everywhere in the world.[[89]](#footnote-90) Due to this transition, humanity all but conquered the causes of untimely death (although the benefits of having done so remains unequally distributed both within and across countries). However, this health transition underwent a two-fold transformation in the two centuries after 1800. First, the pace of this transition accelerated as it uncoupled from rising incomes associated with economic development. Second, it became more urban in character. Both of these shifts preceded the onset of the demographic transition in the LICs. Together, they explain why the pattern of population growth has been so different in LICs when compared to the prior experiences of HICs.

#### Mortality declines accelerate

It is possible to measure the acceleration of the global health transition by the pace at which gains in life expectancy where achieved in different periods. Gains in life expectancy in Western Europe between 1830 and 1900 measured just 0.14 years per year. By contrast, for the world as a whole, gains in life expectancy between 1900 and 1950 were on the order of 0.25 years per year, rising further to 0.31 years per year between 1950 and 2010. Due to this accelerating pace, the leap in life expectancy from 40 years to 65 years took place more quickly in the LICs in the twentieth century than it had in the HICs in the nineteenth and early twentieth centuries: in Germany, average life expectancies took 130 years (1820-1950) to rise from 41 to 67 years; China made roughly the same leap, from 39 to 65 years, in less than one third of the time (1940-1980). The disruption to modes of life brought on by rising life expectancies was therefore much more sudden in LICs than it had been in HICs.[[90]](#footnote-91) As survival rates rose, population growth rates spiked suddenly to between 2 and 3 percent per year, in turn causing a massive wave of demographic dispossession to unfold across the low-income world. In most countries, the fertility transition began within 25 years of 1950 and unfolded rapidly. But once again, fertility levels were chasing a moving target: mortality was falling so quickly that, in spite of rapidly declining fertility, population growth rates remained elevated for a long time.

To understand why the pace of the global health transition accelerated over time, we have to examine its causes. In essence, it was an epidemiological shift.[[91]](#footnote-92) In the past, people died more frequently of communicable diseases such as typhoid fever and gastroenteritis; today, people die more frequently of degenerative diseases such as heart disease and cancer. That has had dramatic effects on rates of child mortality, since children are particularly susceptible to communicable diseases. In the LICs as a whole, 25 percent of children born in 1950 died by the age of five. Child mortality rates were even higher in some countries, such as Indonesia, where 30 percent died before that age. Since then, childhood death rates in all LICs have fallen by 80 percent: in 2015, five percent children were expected to die before age five.

The health transition that led to declining deaths from communicable diseases first took place in Europe, at a time when Europeans were still afflicted by periodic population crises associated with Malthusian dynamics. The capitalist transformation of food production and distribution in the early modern period dissolved the link between the size of the population and the price of food.[[92]](#footnote-93) Health improved in large part due to a greater stability of calorie intake, and then due to improving sources of nourishment. In the nineteenth century, capitalist methods of production and distribution spread, raising survival rates across Europe and its offshoots. On this basis, some demographers argued that economic development would always be the major source of falling mortality levels, via this pathway of improved nutrition.[[93]](#footnote-94)

In reality, by the late 19th century a dramatic shift had taken place in the mechanism of the health transition. Improvements in the production of lenses—taking place as part of the Second Industrial Revolution—made it possible to develop powerful microscopes, which allowed scientists to see bacteria for the first time.[[94]](#footnote-95) They were also able to infer the existence of viruses by means of fine grained filters.[[95]](#footnote-96) On this basis, scientists formulated the germ theory of disease, which revolutionized the understanding of the disease transmission from the 1880s and issued in innovations in public health and medicine that caused the pace of the mortality transition to accelerate around 1900. New knowledge was eventually embodied in goods such as vaccines and antibiotics, which were cheap to distribute, especially when and where international institutions were willing to assist state governments.[[96]](#footnote-97) Many other innovations arising from germ theory were nearly costless to implement, such as hand-washing, isolating the sick, and boiling drinking water.[[97]](#footnote-98) Once these means of reducing mortality were discovered, they only had to be communicated to others in order to be effective.

It is highly likely that these latter, relatively costless innovations were responsible for the dramatic decline in mortality levels that took place in many LICs in between the 1920s and 60s, since these declines frequently occurred in countries that saw little increase in GDP per capita levels.[[98]](#footnote-99) For example, Jamaica experienced particularly rapid declines in mortality between 1920 and 1950 in spite of zero increase in per capita incomes, largely as a result of effective government information campaigns.[[99]](#footnote-100) The upshot is that, in LICs, declining mortality levels were increasingly uncoupled from economic growth, allowing dramatic declines in mortality to take place even where economic growth rates stagnated or collapsed.[[100]](#footnote-101)

Advances in public health and medicine resulting from the elaboration of the germ theory of disease had their most dramatic effects on urban mortality levels. Until the late nineteenth century, urban areas acted as demographic sinks: more people died in cities than were born in them because disease transmission rates were especially high where populations were densely packed.[[101]](#footnote-102) That slowed the pace of the population growth in HICs in the nineteenth century, since the demographic transition was accompanied by urbanization.[[102]](#footnote-103) Innovations based on the germ theory of disease subsequently removed the brakes on urban autonomous growth: due to improvements in sanitation and health care, urban life expectancies began to overtake their rural counterparts. However, by the time the germ theory was elaborated, HIC fertility levels were already beginning to fall. As a result, rising HIC life expectancies no longer translated into rising rates of population growth.

LIC demographic transitions were rather different in this regard: they universally occurred after the elaboration of the germ theory. As a result, even at an early stage in the transition, cities were already acting as autonomous sources of population growth. Indeed, urban mortality levels in LICs fell dramatically in spite of the fact that many urban-dwellers lived in “slum” housing.[[103]](#footnote-104) The result was that LIC urban populations became rapidly self-expanding. That explains the fundamental historical difference between the character of the demographic transition in the HICs and the LICs. It also helps explain why demographic factors were overlooked in the history of global proletarianization: in LICs, autonomous urban growth contributed to unprecedented urban population growth rates, which had no historical correlate in the HICs.

In sum, the global health transition began with, and was tied to, rising incomes associated with the transition to capitalism. Over time, however, due to the capitalist transformation of both agriculture and industry—and associated developments in science—the health transition unmoored itself; it became relatively autonomous from economic development. On that basis, the demographic transition began to unfold across populations that may have been imbricated in market exchange but were not dependent on that exchange for their survival.[[104]](#footnote-105) The result was that demographic dispossession took place even where other aspects of capitalist economies were meagerly present. That explains the global extent of proletarianization in the world economy today—why it has taken place even where substantial economic development and urban economic growth are absent. In large part, urban labor forces have expanded simply due to population growth: people come of age and need to find work, regardless of labor-market conditions.

### Conclusion

Population growth has formed a key backdrop to the expansion of capitalist economies for more than two centuries. Between 1820 and 1920, the global population increased from 1 billion to 2 billion people. Over the subsequent 96 years, it then expanded to more than 7 billion people, of which more than 3.5 billion are urban-dwellers. Looking at this seven-fold increase, it is easy to see that demographic dispossession was the major cause of the expansion of urban workforces over the entirety of the modern era, even if its effects were dampened in the first three-quarters of the nineteenth century by high rates of urban mortality.

A major consequence of demographic dispossession has been that, year after year, enterprises have found at their disposal a growing supply of young recruits who need to find work in order to live. What will happen to capitalist economies in the future as the pace of demographic expansion continues to slow down and then begins to go into reverse? Such a reversal is already unfolding in a number of HICs, but over the coming decades, it will take place in many LICs, too.[[105]](#footnote-106) The entire world will likely experience its population peak within the next half century, as more and more countries see average fertility levels fall below the replacement rate. In fact, as long as already unfolding demographic tendencies continue, the population is likely to be smaller in the year 2100 than it was in the year 2000.[[106]](#footnote-107) That might finally reverse the advantage that capital has in sourcing labor from oversupplied markets.

Still, that turning point is decades away. Before then, the world’s population will likely increase by another 1.5 to 2 billion people, with nearly all of that growth taking place in the urban areas of LICs.[[107]](#footnote-108) In reflecting on the totality of the modern period of growth, it is important to remember that the increase in the population has not been the result of unrestrained sexualities or of change-resistant cultures. Instead, modern population growth has largely been an unintended consequence of a health transition, which has itself been part of a wider transition in global human development. World life expectancies have risen from 30 years in 1900 to almost 70 years today, largely but not exclusively due to declines child mortality levels. Over the same period, literacy rates among those ages 15 and older climbed from 21 percent in 1900 to more than 80 percent; average years of education rose from 1.7 years per person to 7.7 years; and urbanization shares rose from 13 percent to 54 percent. In all of these cases, disparities between HICs and LICs remain large, but that does not change the fact that today’s population is not only bigger; it is also healthier, more educated, more urban and more interconnected than ever before.

Over the past two centuries, the capacities of human beings have increased by leaps and bounds. So have their expectations for their lives, as made apparent in, among other things, billions of individuals’ drives to raise their educational attainments in search of better standards of living. The problem people face in large parts of the world is a persistently low demand for their labor, which has pushed a billion people into the non-farm informal labor force and has left additional hundreds of millions to languish in rural poverty who might otherwise have moved to cities. Their economic insecurity will worsen in the coming decades if economic growth rates continue to stagnate in many countries even as urban workforces continue to grow. If the apostles of robotization are to be believed, their situation may worsen further.[[108]](#footnote-109)

1. Juan R. de Laiglesia and Johannes Jütting (eds.), Is Informal Normal? Towards More and Better Jobs in Developing Countries (Paris: OECD Publishing, 2009), 18. In this article, I use “HIC” and “LIC” to designate rich and poor countries respectively. My term LIC includes low- and medium-income countries, according to the World Bank’s classification. [↑](#footnote-ref-2)
2. International Labor Organization (ILO), World Employment Social Outlook: The Changing Nature of Jobs (Geneva: ILO, 2015), 31. See also ILO, Non-Standard Employment around the World: Understanding Challenges, Shaping Prospects (Geneva: ILO, 2016). [↑](#footnote-ref-3)
3. See for example Nils Gilman, Mandarins of the Future: Modernization Theory in Cold War America (Baltimore: Johns Hopkins University Press, 2004); Odd Arne Westad, The Global Cold War (Cambridge: Cambridge University Press, 2007); David Ekbladh, The Great American Mission: Modernization and the Construction of an American World Order (Princeton: Princeton University Press, 2010); Daniel Immerwahr, Thinking Small: The United States and the Lure of Community Development (Cambridge: Harvard University Press, 2015). [↑](#footnote-ref-4)
4. Statistics used in this article derive from the following sources. Demographic statistics derive from the United Nations (UN), World Population Prospects, 2015 edition. Urban statistics derive from the UN, World Urbanization Prospects, 2014 edition. Employment statistics derive from the Groningen Growth and Development Centre, 10-Sector Database, 2015 edition, as well as the ILO, Key Indicators of the Labor Market Database, 2015 edition. Other economic statistics derive from the World Bank, World Development Indicators, 2016 edition. Agricultural statistics derive from the UN Food and Agriculture Association (FAO), FAOSTAT, 2015 edition. Statistics from the pre-1950 period derive from the Organization for Economic Cooperation and Development, How was life? Global well-being since 1820. Statistics not drawn from these databases will be noted. The global agricultural percentage for 1950 derives from Paul Bairoch and J.M. Limbor, “Changes in the Industrial Distribution of the World Labour Force, by Region, 1880-1960,” International Labour Review 98, no. 4 (1968): 326. [↑](#footnote-ref-5)
5. See Jan Breman, Wage Hunters and Gatherers (Delhi: Oxford University Press, 1994). [↑](#footnote-ref-6)
6. ILO, Why Labour Leaves the Land: A Comparative Study of the Movement of Labour out of Agriculture (Geneva: ILO, 1960), 183. [↑](#footnote-ref-7)
7. Paul Bairoch, Urban Unemployment in Developing Countries (Geneva: ILO, 1973). [↑](#footnote-ref-8)
8. UN, Patterns of Urban and Rural Population Growth (New York: UN, 1980). See also Mark R. Montgomery, Richard Stren, Barney Cohen, and Holly E. Reed, Cities Transformed: Demographic Change and Its Implications in the Developing World (Washington, DC: The National Academies Press, 2004); George Martine, Gordon McGranahan, Mark Montgomery, and Rogelio Fernández-Castilla (eds.), The New Global Frontier: Urbanization, Poverty, and Environment in the 21st Century (Sterling: Earthscan Publications, 2008). [↑](#footnote-ref-9)
9. An exception would be in the discussion of the demographic dividend or bonus, which has also been described as a “youth bulge.” See below, and also Isabel Ortiz and Matthew Cummins, “When the Global Crisis and Youth Bulge Collide: Double the Jobs Trouble for Youth,” UNICEF Social and Economic Policy Working Paper, 2012, http://dx.doi.org/10.2139/ssrn.2029794. [↑](#footnote-ref-10)
10. See Matthew Connelly, “Population Control Is History: New Perspectives on the International Campaign to Limit Population Growth,” Comparative Studies in Society and History 45, no. 1 (2003): 122–47; Alison Bashford, “Nation, Empire, Globe: the Spaces of Population Debate in the Interwar Years,” Comparative Studies in Society and History, vol. 49, No. 1 (2007): 170-201; Matthew Connelly, Fatal Misconception: The Struggle to Control World Population (Cambridge: Harvard Belknap Press, 2008); Alison Bashford, Global Population: History, Geopolitics, and Life on Earth (New York: Columbia University Press, 2016). [↑](#footnote-ref-11)
11. Based on the calculations of Vaclav Smil, Enriching the Earth: Fritz Haber, Carl Bosch, and the Transformation of World Food Production (Cambridge: MIT Press, 2001), 159-60. [↑](#footnote-ref-12)
12. W. Arthur Lewis, “Economic Development with Unlimited Supplies of Labour,” The Manchester School 22, no. 2 (1954): 139–91. [↑](#footnote-ref-13)
13. Adam Smith, The Wealth of Nations (New York: The Modern Library, 2000 [1776]), 14. [↑](#footnote-ref-14)
14. H.W. Arndt, Economic Development: The History of an Idea (Chicago: University of Chicago Press, 1989), 51. [↑](#footnote-ref-15)
15. In his initial description of this program, ILO Director-General David Morse did discuss the role demographic growth played in the growing employment problems of the LICs. See David A. Morse, “The World Employment Programme,” International Labour Review 97, no. 6 (1968), 517-524. [↑](#footnote-ref-16)
16. See ILO, Women and Men in the Informal Economy: A Statistical Picture (Geneva: ILO, 2013). For a history of the concept of informality, see Paul E. Bangasser, “The ILO and the Informal Sector: An Institutional History,” 2000, http://www.ilo.org/employment/Whatwedo/Publications/WCMS\_142295/lang--en/index.htm. [↑](#footnote-ref-17)
17. Jacques Charmes, “The Informal Economy Worldwide: Trends and Characteristics,” Margin: The Journal of Applied Economic Research 6, no. 2 (2012): 110-12. [↑](#footnote-ref-18)
18. J. Harris and M. Todaro, “Migration, Unemployment and Development: A Two-Sector Analysis,” American Economic Review 40, no. 1 (1970): 126–42. [↑](#footnote-ref-19)
19. Michael Lipton, Why Poor People Stay Poor: Urban Bias in World Development (Cambridge: Harvard University Press, 1977). [↑](#footnote-ref-20)
20. United Nations Human Settlements Program (UN-HABITAT), The Challenge of Slums: Global Report on Human Settlements, 2003 (Sterling: Earthscan Publications, 2003). [↑](#footnote-ref-21)
21. Andre Gunder Frank, “The Development of Underdevelopment,” The Monthly Review 18 (1966): 3. [↑](#footnote-ref-22)
22. For a similar account, see Michael Denning, “Wageless Life,” New Left Review II/66 (2010): 79-97. [↑](#footnote-ref-23)
23. Some better-off workers, seeking autonomy, also choose informal business ownership over wage work; however informal employment is mostly generated, “not so much in response to investment opportunities as in the neoclassical sense but out of necessity to create one’s own employment.” S.V. Sethuraman, “Introduction” in The Urban Informal Sector in Developing Countries, edited by S.V. Sethuraman (Geneva: ILO, 1981), 16. [↑](#footnote-ref-24)
24. Haroon Akram-Lodhi and Cristóbal Kay, “Surveying the Agrarian Question (Part 1): Current Debates and beyond,” Journal of Peasant Studies 37, no. 2 (2010): 255–84. [↑](#footnote-ref-25)
25. World Bank, World Development Report 2008 (Washington, DC: World Bank, 2008), 87. See also Gustavo Anríquez and Genny Bonomi, “Long-Term Farming and Rural Demographic Trends,” Background Paper for the World Development Report 2008. [↑](#footnote-ref-26)
26. UN, The Components of Urban Growth in Developing Countries (New York: UN, 2001), 35. [↑](#footnote-ref-27)
27. Samuel H. Preston, “Urban Growth in Developing Countries: A Demographic Reappraisal,” Population and Development Review 5, no. 2 (1979): 196. [↑](#footnote-ref-28)
28. Bairoch, Urban Unemployment in Developing Countries, 42-43. [↑](#footnote-ref-29)
29. UN, Patterns of Urban and Rural Population Growth, 17. [↑](#footnote-ref-30)
30. Exceptions include countries like South Korea and Taiwan, which experienced rapidly declining population growth rates, as well as exceptionally rapid economic growth rates. [↑](#footnote-ref-31)
31. For a similar account, focused on early modern Europe, see Charles Tilly, “Demographic origins of the European proletariat” in Proletarianization and Family History, edited by David Levine (New York: Academic Press, 1984). [↑](#footnote-ref-32)
32. I use the term “deviate product markets” to refer to markets where urban informal workers sell the simple products of their labor directly to consumers and businesses. [↑](#footnote-ref-33)
33. In the middle decades of the twentieth century, landless wage-workers in rural areas already formed sizable elements of rural economies in many low-income regions, e.g. in Latin America. Finding cross-country comparative data that separated out agricultural laborers from other agricultural producers has proven difficult. I largely abstract away from the important question of the prior generation of a rural proletariat in this article. [↑](#footnote-ref-34)
34. Demographic histories were mediated by struggles over titles to and distributions of land that are beyond the scope of this article. [↑](#footnote-ref-35)
35. It is important to note that limits to the extension of cultivated land were not the same as limits to the growth of agricultural output. Agricultural output levels rose faster than population growth in the second half of the 20th century, due to more intensive farming associated with so-called “Green Revolution” technologies. [↑](#footnote-ref-36)
36. Montgomery, et. al., Cities Transformed, 89. [↑](#footnote-ref-37)
37. Paul Bairoch and Gary Goertz, “Factors of Urbanisation in the Nineteenth-Century Developed Countries: A Descriptive and Econometric Analysis,” Urban Studies 23 (1986): 291. [↑](#footnote-ref-38)
38. Harris and Todaro, “Migration, Unemployment and Development,” 126. [↑](#footnote-ref-39)
39. The urbanization rate corresponds to the rate of rural-to-urban transfer only when the rate of so-called “natural increase” is the same in rural and urban areas (underlying mortality and fertility rates may vary, but the resulting rate of growth must be the same). UN surveys confirm that this condition held for many countries in the 1950s and 60s, but it does not necessarily hold for all times and places. If rates of “natural increase” are lower in urban areas than rural ones, the urbanization rate will underestimate rural-to-urban migration. See Montgomery, et. al., Cities Transformed, 115-6. [↑](#footnote-ref-40)
40. The latter is an under-estimate of the actual rate of rural-to-urban transfer in Europe, 1850-1900, since mortality rates were still higher in urban areas than rural ones. [↑](#footnote-ref-41)
41. See for example UN, Patterns of Urban and Rural Population Growth, 17. [↑](#footnote-ref-42)
42. See also Jan Breman and Marcel van der Linden, “Informalizing the Economy: the Return of the Social Question at a Global Level,” Development and Change 45, no. 5 (2014): 920–40. [↑](#footnote-ref-43)
43. See David E. Bloom, David Canning, and Jaypee Sevilla, The Demographic Dividend: A New Perspective on the Economic Consequences of Population Change (Arlington, VA: Rand, 2003). [↑](#footnote-ref-44)
44. Today, median ages are 37 in China and 31 in Brazil. [↑](#footnote-ref-45)
45. See Kristin Mammen and Christina Paxon, “Women’s Work and Economic Development,” Journal of Economic Perspectives 14, no. 4 (2000): 141–64. [↑](#footnote-ref-46)
46. David E. Bloom, David Canning, Günther Fink, and Jocelyn E. Finlay, “Fertility, Female Labor Force Participation, and the Demographic Dividend,” Journal of Economic Growth 14, no. 2 (2009): 79–101. Many women who labor in urban informal enterprises do not experience a separation of the home from the workplace, since they continue to work out of their homes. [↑](#footnote-ref-47)
47. See UNCTAD, Trade and Development Report 1989 (New York: United Nations, 1989); See also UN-HABITAT, The Challenge of the Slums. [↑](#footnote-ref-48)
48. See Robert Brenner, Economics of Global Turbulence (New York: Verso Books, 2006). [↑](#footnote-ref-49)
49. Antonio Ocampo, “Latin America’s Growth and Equity Frustrations During Structural Reforms,” Journal of Economic Perspectives 18, no. 2 (2004): 67–88. [↑](#footnote-ref-50)
50. Atul Kohli, “Politics of Economic Growth in India, 1980-2005: Part I: The 1980s,” Economic and Political Weekly 41, no. 13 (2006): 1251–59. See also Atul Kohli, Poverty amid Plenty in the New India (Cambridge University Press, 2012). [↑](#footnote-ref-51)
51. Charmes, “The Informal Economy Worldwide,” 110-12. [↑](#footnote-ref-52)
52. FAO, State of Food and Agriculture 2000 (Rome: FAO, 2000), 133-34. [↑](#footnote-ref-53)
53. ibid., 147-48. [↑](#footnote-ref-54)
54. See Farshad A. Araghi, “Global Depeasantization, 1945-1990,” The Sociological Quarterly 36, no. 2 (1995): 337–68; Mike Davis, Planet of Slums (New York: Verso Books, 2006). [↑](#footnote-ref-55)
55. UN, The Components of Urban Growth in Developing Countries, 1. [↑](#footnote-ref-56)
56. Jan Breman, Footloose Labour: Working in India’s Informal Economy (New York: Cambridge University Press, 1996). [↑](#footnote-ref-57)
57. Montgomery, et. al., Cities Transformed, 327. [↑](#footnote-ref-58)
58. Often, it is not the poorest rural dwellers who migrate to cities. Rural-to-urban migrants typically possess skills or savings that give them an advantage over urban poor in looking for work. See Cecilia Tacoli, Gordon McGranahan, and David Satterthwaite, “Urbanization, Poverty and Inequity: Is Rural–Urban Migration a Poverty Problem, or Part of the Solution?” in Martine, et. al. (eds.), The New Global Frontier, p. 48. [↑](#footnote-ref-59)
59. See Jan Breman, The Poverty Regime in Village India: Half a Century of Work and Life at the Bottom of the Rural Economy in South Gujarat (Delhi: Oxford University Press, 2007). [↑](#footnote-ref-60)
60. See Steven Haggblade, Peter B.R. Hazell, and Thomas Reardon, Transforming the Rural Nonfarm Economy (Baltimore: Johns Hopkins University, 2007). [↑](#footnote-ref-61)
61. South Africa saw urbanization rates of 0.28 percent per year, 1960-1985. China saw urbanization rates of -0.39 percent per year, 1965-1975. For comparison, the LIC average in the 1960s and 70s was 1.5 percent per year. [↑](#footnote-ref-62)
62. Two additional factors explain why the wave of rural-to-urban migration taking place in China has had such a dramatic effect on overall LIC migration shares of urban growth. First, China’s migration share of urban growth was extremely low before the wave began: it was zero percent from 1970 to 1974, as government-instituted pass laws were still in effect; in addition, as part of the Cultural Revolution, millions of young students were forced to migrate from urban areas to rural ones. When these policies were relaxed during the post-1979 reform era, many people were already likely to migrate from the countryside to cities due to a pent up demand for urbanization. Second, the effect of mass migration on urban-growth shares was accentuated due to a simultaneous reduction in urban autonomous population growth, taking place via the implementation of the One Child Policy after 1980. Urban birth rates in China had already begun to fall in the late 1960s, in line with regional trends: East Asia as a whole experienced a rapid decline in fertility rates after 1950, so that overall population growth rates in the region were the lowest among all LIC regions. However, China accelerated this process via its stringent population policy, which was enforced more strictly in urban areas than in rural ones. China’s migration share of urban growth rose particularly dramatically as a result of these trends: from zero percent in the early 1970s to more than 80 percent in the 2000s. See Barry Naughton, The Chinese Economy: Transitions and Growth (Cambridge: MIT Press, 2007), 161-77. [↑](#footnote-ref-63)
63. Kevin Honglin Zhang and Shunfeng Song, “Rural-Urban Migration and Urbanization in China: Evidence from Time-Series and Cross-Section Analyses,” China Economic Review 14, no. 4 (2003): 386–400. [↑](#footnote-ref-64)
64. Albert Park and Qu Xiaobo, “Informality, Returns to Education, and Labour Market Integration in China,” The Indian Journal of Labour Economics 56, no. 4 (2013): 617–34. [↑](#footnote-ref-65)
65. See Peter Turchin, “Long-Term Population Cycles in Human Societies,” Annals of the New York Academy of Sciences 1162 (2009): 1–17. [↑](#footnote-ref-66)
66. See Robert Brenner, “Property and Progress: Where Adam Smith Went Wrong,” in Marxist History-Writing for the Twenty-First Century, edited by Chris Wickham (Oxford: Oxford University Press, 2007), 49-111. [↑](#footnote-ref-67)
67. Statistics derived from the Grilli and Yang Commodity Price Index. See Stephan Pfaffenzeller, Paul Newbold and Anthony Rayner, "A Short Note on Updating the Grilli and Yang Commodity Price Index" World Bank Economic Review 21, No. 1 (2007): 1-13. [↑](#footnote-ref-68)
68. See FAO, State of Food and Agriculture 2000, 190. [↑](#footnote-ref-69)
69. Selling crops at prevailing prices, resource-poor farmers found it difficult to earn enough income to buy what they needed to feed their families. [↑](#footnote-ref-70)
70. 46 percent of the world’s population lives in countries where average fertility levels have already fallen below replacement levels of 2.1 children per woman. Another 31 percent of the population lives in countries where average fertility levels have fallen to near-replacement levels (of 2.1 to 2.5 children per woman). These levels will continue to fall. [↑](#footnote-ref-71)
71. See James C. Riley, “The Timing and Pace of Health Transitions around the World,” Population and Development Review 31, no. 4 (2005): 741–64. For an historical account, see Simon Szreter, “The Idea of Demographic Transition and the Study of Fertility Change: A Critical Intellectual History,” Population and Development Review 19, no. 4 (1993): 659–701. [↑](#footnote-ref-72)
72. Karl Marx, Capital: A Critique of Political Economy, Volume 1, Fourth Edition (New York: Pelican Books, 1976 [1890]), 784. [↑](#footnote-ref-73)
73. Frank W. Notestein, “Population—The Long View,” in Food for the World, edited by Theodore W. Schultz (Chicago: University of Chicago Press, 1945) and Kingsley Davis, “The World Demographic Transition,” The Annals of the American Academy of Political and Social Science 237 (1945): 1-11. [↑](#footnote-ref-74)
74. Chris Wilson and Pauline Airey, “How Can a Homeostatic Perspective Enhance Demographic Transition Theory?” Population Studies 53, no. 2 (1999): 117–28. [↑](#footnote-ref-75)
75. On Bangladesh, see John Cleland, “The Effects of Improved Survival on Fertility: A Reassessment.” Population and Development Review 27, supplement (2001): 74. [↑](#footnote-ref-76)
76. John Bongaarts and Rodolfo A. Bulatao, Beyond Six Billion: Forecasting the World’s Population (Washington DC: National Research Council, 2001), 56. [↑](#footnote-ref-77)
77. ibid., 59. [↑](#footnote-ref-78)
78. ibid. [↑](#footnote-ref-79)
79. Massimo Livi-Bacci, A Concise History of World Population, Fourth Edition (Malden, MA: Blackwell Publishing, 2006), 161. [↑](#footnote-ref-80)
80. See Simon Szreter, “Theories and Heuristics: How Best to Approach the Study of Historic Fertility Declines?” Historical Social Research 36, no. 2 (2011): 65–98. [↑](#footnote-ref-81)
81. Wilson and Airey, “How Can a Homeostatic Perspective”; Cleland, “The Effects of Improved Survival on Fertility”; Tim Dyson, “A Partial Theory of World Development: The Neglected Role of the Demographic Transition in the Shaping of Modern Society,” International Journal of Population Geography 7, no. 2 (2001): 67–90; David S. Reher, “The Demographic Transition Revisited as a Global Process,” Population, Space and Place 10, no. 1 (2004): 19–41. [↑](#footnote-ref-82)
82. Wilson and Airey, “How Can a Homeostatic Perspective”, 121. See also Ansely Johnson Cole and Susan Cott Watkins (eds.), The Decline of Fertility in Europe (Princeton: Princeton University Press, 1979). [↑](#footnote-ref-83)
83. Wilson and Airey, “How Can a Homeostatic Perspective”, 120. [↑](#footnote-ref-84)
84. Livi-Bacci, A Concise History of World Population, 12. Many societies also practiced infanticide as a form of post-natal birth control. [↑](#footnote-ref-85)
85. Cleland, “The Effects of Improved Survival on Ferility”, 82. [↑](#footnote-ref-86)
86. Dyson, “A Partial Theory of World Development,” 71. [↑](#footnote-ref-87)
87. Cleland, “The Effects of Improved Survival on Fertility,” 78. [↑](#footnote-ref-88)
88. See Alison Mackinnon, “Were Women Present at the Demographic Transition? Questions from a Feminist Historian to Historical Demographers,” Gender & History 7, no. 2 (1995): 222–40; Angélique Janssens, “‘Were Women Present at the Demographic Transition?’ A Question Revisited.” History of the Family 12, no. 1 (2007): 43–49. [↑](#footnote-ref-89)
89. See James C. Riley, Rising Life Expectancy: A Global History (New York: Cambridge University Press, 2001), 1. [↑](#footnote-ref-90)
90. Average fertility levels in LICs were also significantly higher, at the start of the transition, than they had been historically in HICs because average LIC pre-transitional mortality levels tended to be higher. [↑](#footnote-ref-91)
91. See Abdel R. Omran, “The Epidemiological Transition: A Theory of the Epidemiology of Population Change,” The Milibank Memorial Fund Quarterly 49, no. 4 (1971): 509–38; see also Riley, Rising Life Expectancy, 10. [↑](#footnote-ref-92)
92. See Robert Fogel, The Escape from Hunger and Premature Death, 1700-2100: Europe, America and the Third World (New York: Cambridge University Press, 2004). [↑](#footnote-ref-93)
93. For an early and influential example, see Thomas McKeown, The Modern Rise of Population (New York: Academic Press, 1976). [↑](#footnote-ref-94)
94. John C. Caldwell, Demographic Transition Theory (Dordrecht: Springer, 2006), 166. [↑](#footnote-ref-95)
95. ibid. [↑](#footnote-ref-96)
96. See Rodrigo R. Soares, “On the Determinants of Mortality Reductions in the Developing World.” Population and Development Review 33, no. 2 (2007): 247–87; John C. Caldwell, “Routes to Low Mortality in Poor Countries,” Population and Development Review 12, no. 2, (1986): 171–220. [↑](#footnote-ref-97)
97. Riley, Rising Life Expectancy, 188. [↑](#footnote-ref-98)
98. See James C. Riley, Poverty and Life Expectancy: The Jamaica Paradox (New York: Cambridge University Press, 2005). [↑](#footnote-ref-99)
99. ibid., 100-101. [↑](#footnote-ref-100)
100. 1980s Sub-Saharan Africa is an exception to this story, due to the onset of the AIDS epidemic. [↑](#footnote-ref-101)
101. Tim Dyson, Population and Development: The Demographic Transition (London: Zed Books, 2010), 24. [↑](#footnote-ref-102)
102. James C. Riley, Low Income, Social Growth, and Good Health: A History of Twelve Countries (Berkeley: University of California Press, 2008), 22. [↑](#footnote-ref-103)
103. See UN-HABITAT, The Challenge of the Slums. [↑](#footnote-ref-104)
104. Another key difference between HIC and LIC experiences of population growth over the past two centuries is that in nineteenth century Europe, urban populations without access to steady employment had other options, besides entering the informal (or casual) economy: they could migrate to whiter-settler societies. European countries that had low ratios of manufacturing to agricultural employment saw the highest rates of overseas migration. See Livi-Bacci, A Concise History of World Population, 116. [↑](#footnote-ref-105)
105. See David S. Reher, “Towards Long-Term Population Decline: A Discussion of Relevant Issues,” European Journal of Population 23, no. 2 (2007): 189–207. [↑](#footnote-ref-106)
106. This statistic is derived from the UN’s “low projection” for the next 83 years, which assumes that fertility levels worldwide will converge at 1.5 children born per family. The “medium” projection, based on an assumed convergence at 2.0 children born per family, looks increasingly unrealistic based on current trends. [↑](#footnote-ref-107)
107. Once again, based on the UN’s low projection. [↑](#footnote-ref-108)
108. See Martin Ford, Rise of the Robots: Technology and the Threat of a Jobless Future (New York: Basic Books, 2016); Erik Brynjolfsson and Andrew McAfee, The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies (New York: W.W. Norton, 2016). For a counterpoint, see Robert Gordon, *The Rise and Fall of American Growth: The U.S. Standard of Living since the Civil War* (Princeton: Princeton University Press, 2016). [↑](#footnote-ref-109)