

LOOKING TOWARDS 2030: A NEW WORLD COMING INTO FOCUS

Nicholas N. Eberstadt

This article examines global demographic trends to 2030, with a particular focus on projections for the world's major economies. All else held constant, ageing populations imply slower rates of economic development for Western Societies. However, a number of policy options are available to counteract the impact of demographic change.

Keywords: demographic change, economic growth, fertility, life expectancy, world population.

Remarkable as this may sound, we already have a fairly good sense of what the world's population profile will look like in the year 2030 – two decades hence. The reason, quite simply, is that long-term demographic projections have a powerful built-in advantage over corresponding economic, political, and prognostications about the future: the overwhelming majority of the people who will be inhabiting the world twenty years hence are already alive, living here today.¹

Given the strong regularity of survival trends in modern societies, both rich and poor, we can talk today with some confidence about the size and composition of this future world's population aged 20 and over – as well as the size and composition of the 20-plus groups in all of the world's major demographic and economic centres – in the year 2030.

From an economic standpoint, this long-term demographic outlook is sobering – and in some respects, perhaps even troubling.

Overall, it is all too apparent that the world economy in the generation ahead will not be able to rely on the size and scope of fresh new 'demographic inputs' that helped power global growth in the 'pre-crisis' generation. For today's affluent Western economies, the demographic challenges ahead are already generating concern, especially in Europe and Japan. But the demographic constraints on many of today's 'emerging markets' – rising economies such as China, Russia and India, the places that are widely expected to serve as increasingly important engines of global growth in the decades immediately ahead – are in any case both more serious and more intractable than is generally appreciated.

This observation is not offered as a counsel of despair. Quite the contrary: demography need not be economic destiny over the decades immediately ahead. But if the world community hopes to maintain or accelerate the drive toward greater prosperity for all, after we finally exit the current global crisis, coping with these new demographic realities will require profound and far-reaching changes in working arrangements, lifestyles, business practices and government policies – in both rich and poor countries alike.

Global demography: the revolutions that will be shaping the future

Slowly, but with a relentless regularity, population trends fashion the world of the future out of the conditions of today. If we want to understand what lies in store for coming decades, then we must first understand how we got to where we are today.

The twentieth century was the era of the 'world population explosion'. Between 1900 and 2000, human numbers nearly quadrupled, skyrocketing from about 1.6 billion to around 6.1 billion. Over the course of the twentieth century, global life expectancy at birth more than doubled – soaring from about 30 years in 1900 to something like 65 years by 2000.

If the twentieth century's revolutionary trend was the 'health explosion', with radical and pervasive reductions in mortality, that of the twenty-first looks to be a 'fertility implosion': a dramatic, far-reaching and as yet unremitting global reduction in birth

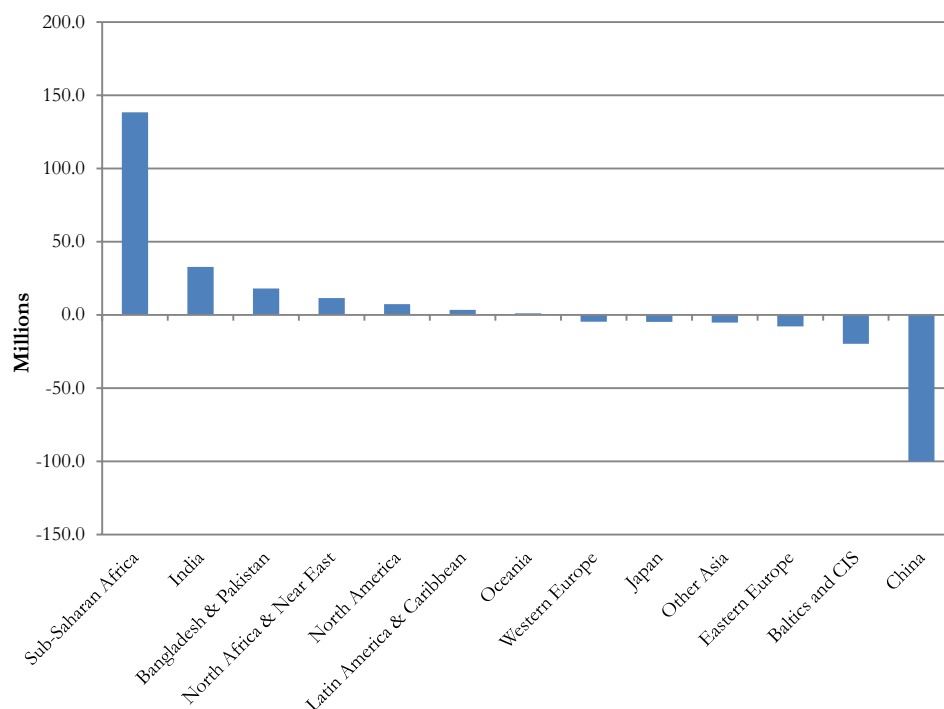


Figure 1: Total projected growth of younger working ages (15–29): 2010–2030 (Total world population change: +70 million)

Source: US Census Bureau International Data Base, available at <http://www.census.gov/ipc/www/idb/informationGateway.php>. (Accessed January 2011).

rates from previous ‘traditional’ levels. This low-fertility revolution is pregnant with implications, so to speak, for both our demographic and our economic future.

Little as we may know about the underlying causes of the ongoing global fertility revolution, we can be fairly certain of some of the consequences it portends. Firstly, pronounced fertility declines today necessarily imply a slowdown in the growth of working-age population tomorrow – and thus a decline of working-age manpower will be in the offing. Secondly, low fertility today leads to population greying tomorrow – and persistent sub-replacement fertility turbo-charges the process of population ageing.

New trends in global manpower

The conundrum facing the world economy in the decades just ahead is highlighted by prospective trends in labour availability. By comparison with the manpower trends of the past several decades, the outlook for the next two decades is decidedly less auspicious: not only in term of overall tempo, but also with respect to the regional distribution and age composition of labour availability.

By the reckoning of the UN Population Division, the world’s population of ‘working age’ (conventionally defined as men and women 15–64 years of age) grew by 1.3 billion, or by about 40%, between 1990 and 2010: a pace averaging about 1.7% a year (UNPD, 2008). Given the pronounced global fall-off in fertility over the recent past, however, the world’s manpower of economically active ages is set to grow much more slowly between now and the year 2030. According to the Census Bureau, the projected average rate of global manpower growth for the coming decades is 0.9% per annum – that is to say, only just over half the tempo for 1990–2010 (US Census Bureau, n.d.).

Over the next 20 years the worldwide pool of young manpower will undergo a severe deceleration. According to Census Bureau projections, the total global increase in young manpower (ages 15–29) between now and 2030 would be just four per cent, or 70 million persons – barely a fifth of the aggregate increase over the two decades just past (see Figure 1).

Yet, as younger manpower grows ever scarcer in relative terms (and in much of the world, in absolute terms as well), older manpower is becoming increasingly abundant – practically everywhere (see Figure 2). Over the next 20 years, the oldest segment of the conventionally defined working-age population – men and women 50–64 years of age – is projected to account for nearly half of all global manpower growth (nearly twice the share for the 1990–2010 period).

New studies by researchers at the International Institute of Applied Systems Analysis (IIASA) in Austria and the Vienna Institute of Demography (VID) offer past estimates and future projections for the educational profiles of 120 countries (accounting for well over 90% of the world’s population) (see Lutz *et al.*, 2007; Samir *et al.*, 2010). To go by their calculations, the improvement in educational attainment for the world’s working age population stands to be *slower* over the next 20 years than it was over the past 20 years.

This prospective slowdown in educational improvements for the world’s future workforce is the arithmetic consequence of two global demographic trends: the rise in the fraction of world population living in ‘less developed regions’ (where access to schooling tends to be more limited to begin with) and the absolute decline in totals for younger manpower in ‘more developed regions’ (which tends to slow the rise in average working-age educational qualifications in the richer countries).

All-in-all, the manpower trends depicted here point to mounting demographic pressures for a slowdown in the tempo of long-term global economic growth. All other things being

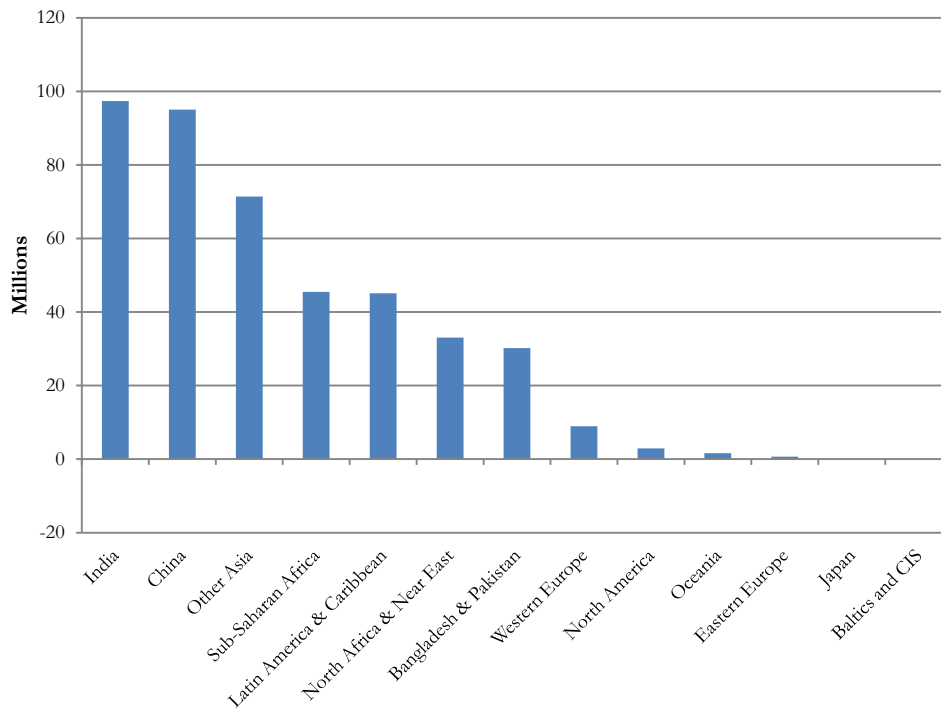


Figure 2: Total projected growth of ages 50–64: 2010–2030 (Total world population change: 431 million)

Source: US Census Bureau International Data Base, available at <http://www.census.gov/ipc/www/idb/informationGateway.php> (accessed January 2011).

equal, these new trends would also weigh towards a slowdown in aggregate consumer spending, and thus perhaps to pressures of a slowdown in business profits as well. But this global overview lacks a more local resolution. A closer examination of the implications of population change for specific major economies within the world system is warranted at this point.

The demography of the world's major economies

Let us then consider the prospective influence of demographic forces on the world's major economies over the next two decades. In this section we will briefly examine six countries or regions: China, Russia, India, Japan, Western Europe and the United States. Taken together, these six account for over half of the world's current population, over 70 per cent of the world's GDP (adjusted for purchasing power parity),² and about 70 per cent of global economic growth over the decade before the current global financial crisis.

China

By almost all accounts today, no major economy has more radiant prospects for the coming decades than China. In the three decades following Deng Xiaoping's 1978 moves toward overarching systemic reform, by Angus Maddison's reckoning, China's GDP grew almost ten-fold: averaging an estimated 7.5 per cent growth a year for 30 years. In aggregate, China now appears to be the world's second largest economy.³

Chinese policymakers confidently predict the country's growth will continue on into the future. But there is a major problem with this optimistic reading of China's economic future – it does not seem to take into account the demographic

tempests that China will have to weather in the years immediately ahead. China is confronting the demographic version of 'the perfect storm', and these new demographic realities may ultimately force us to revise today's received wisdom about 'China's rise'.

Persistent and extreme sub-replacement fertility is the demographic driver shaping the China of tomorrow. Given current trends, in fact, Census Bureau projections anticipate a peaking of total Chinese population in 2026 – just 15 years from now – and a continuing national depopulation thereafter. For greater detail, we can contrast China's current (2010) population profile with its projected profile for 2030 (Figure 3). In this future China, there would be fewer people under the age of 50 than in China today – and many fewer Chinese in their 20s and early 30s. On the other hand, there would be many more elderly Chinese than today – vastly more, in fact, in their 60s, 70s and 80s.

This dramatic shift in China's population profile has four major economic and social implications for the years immediately ahead.

The first is the end of labour force growth. Over the past three decades of hyper-rapid development in China, the country's working age population rose by over two-thirds – growing by an average of about 1.8 per cent a year. By contrast, as we have already seen, China's total working age population is set to fall between 2010 and 2030. Furthermore, as noted above, China's manpower pool will be ageing over these years; in fact, by 2030, there would be more than four older (50–64 years) prospective workers for every three younger counterparts (15–29 years) – a complete inversion of the current ratio. With a smaller and much greyer Chinese workforce on the horizon, sustaining the growth rates of the recent past would be a truly counter-intuitive proposition.

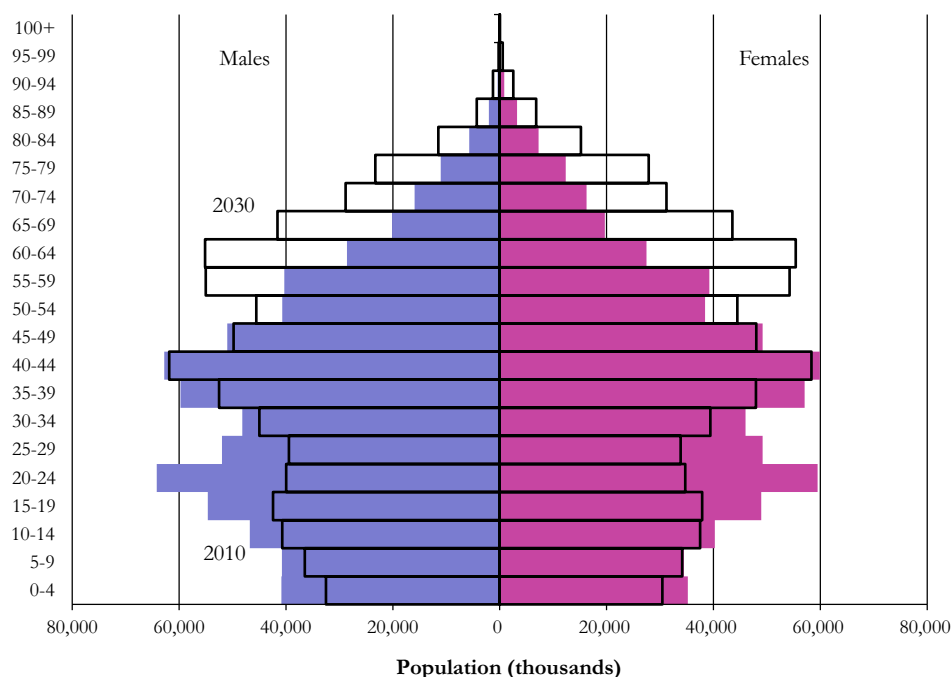


Figure 3: Projected population structure, China, 2010 vs. 2030

Source: US Census Bureau International Data Base, available at <http://www.census.gov/ipc/www/idb/informationGateway.php> (accessed January 2011).

Secondly, there is the broader issue of rapid and pervasive population ageing. The country will be experiencing a population explosion of senior citizens over the next twenty years, progeny of the pre-population control era. In 2010, about 115 million Chinese were 65 or older; by 2030, the corresponding number is projected to approach 240 million – meaning that China's cohort of senior citizens would be soaring at an average rate of 3.7 per cent per year. Meeting the needs of its rapidly growing elderly population will undoubtedly place economic and social pressures on China that no country of a comparable income level has ever before had to face.

Third, in the decades immediately ahead, China will see the emergence of a growing host of essentially unmarriageable young men. This outcome will be the all but inescapable arithmetic consequence of the gender imbalance that has accompanied the country's 'One Child Policy' – while ordinary human populations regularly and predictably report 103 to 105 baby boys for every 100 baby girls, China's officially reported sex ratio at birth (or SRB) was almost 120 boys for every 100 girls in 2005. This imbalance between the numbers of little boys and little girls in China sets the stage for a 'marriage squeeze' of monumental proportions in the decades just ahead. How will China fare with a growing army of unmarriageable, underprivileged, and quite possibly deeply discontented young men in its midst?

Finally, China faces the prospect of truly revolutionary changes in family structure. A new family type is in the making in China today: only-children begotten of only children. Until now, China has been a 'low-trust' society; given the risky environment in which business must take place, people have relied heavily upon trusted social networks (*guanxi*) largely composed of blood relatives. In China's most important economic centres, however, the kinship networks that have lowered the risks and transaction costs of business

are rapidly eroding. Unless China can come up with serviceable institutional substitutes – and quickly – economic performance in China may be adversely affected by this rapid transformation of the urban Chinese family.

When all is said and done, China still has many potential sources for enhancing productivity in the years immediately ahead. These include the migration of rural workers to more productive urban jobs, wider application of as yet under-utilised technical know-how, improved financial intermediation for the country's famously high savings rates, and broader institutional and policy reforms to enhance economic efficiency. Given such still-untapped potential, it is perfectly reasonable to argue that China could enjoy continuing growth in the decades immediately ahead.

But, given the confluence of serious demographic challenges that China now faces – problems that are not generally as yet appreciated, apparently even by Beijing's leadership – China's growth over the next two decades could be slower than is generally expected today, possibly dramatically slower.

Russia

The Russian Federation is another emerging market widely regarded as holding immense economic promise for the future – not least by the Kremlin. Despite the current economic downturn, official Russian plans envisage an average long-term pace of economic growth for Russia of six per cent a year through 2020 and continuing rapid growth thereafter. Some foreign analysts have offered assessments no less enthusiastic than the Kremlin's own; in one of its 'BRIC' reports, for example, a Goldman Sachs team forecast nearly six per cent per capita growth for the Russian Federation from 2010 to 2030.⁴ These ambitious visions, however, take no account of

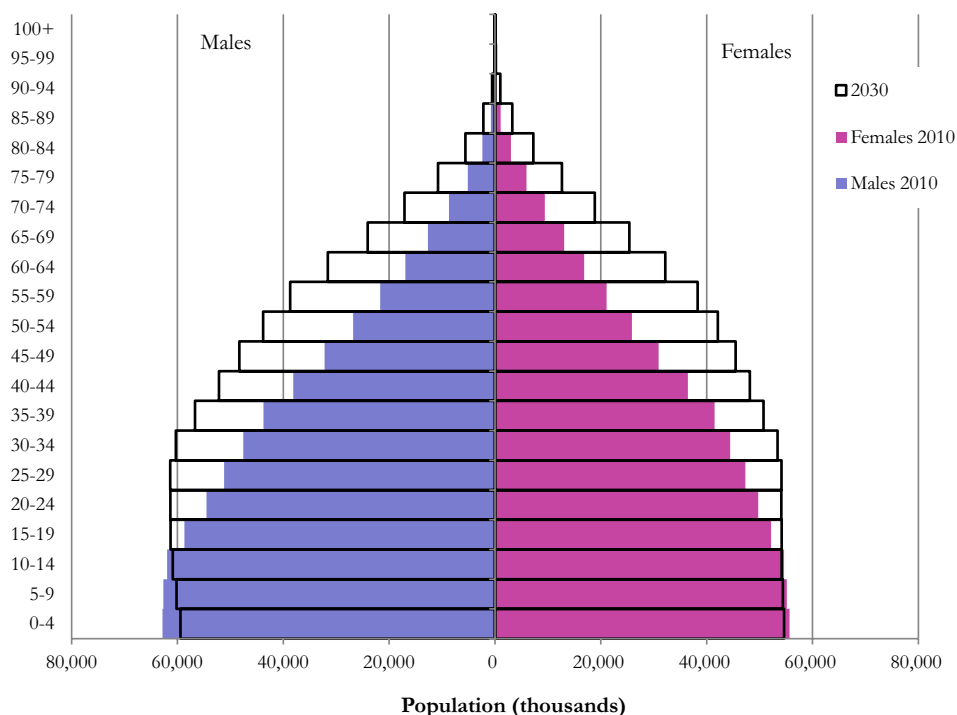


Figure 4: Projected Population Structure of India, 2010 v. 2030

Source: U.S. Bureau of the Census International Database, available online at <http://www.census.gov/ipc/www/idbacc.html> (accessed January 2011).

the country's demographic constraints, which are arguably even more serious than China's.

Russia has been in the grip of a protracted demographic crisis since the end of communist rule – a continuing paroxysm characterised by a sharp slump in births and an upsurge in deaths. Between 1992 and 2009 there were 13 million more deaths than births in the Russian Federation. Over that period, in fact Russia registered just over 3 deaths for every two live births.⁵ To go by such figures alone, one would guess that Russia was in the midst of a protracted famine or an unending, brutally disruptive war.

Between the start of 1992 and the start of 2010, official figures suggest Russia's population has shrunk by almost 7 million, or about five per cent. And despite some promising improvements in recent years, the outlook is further de-population in the years ahead. 'Medium variant' projections by the Kremlin's official statistical service, Rosstat/Goskomstat, envisage a further surfeit of deaths over births over the next two decades of the order of 10 million.⁶

More troubling than Russia's past and prospective de-population, however, is the health disaster that has been driving the country's population totals downward. According to estimates by the Human Mortality Database research team, overall life expectancy at birth in Russia was slightly lower in 2008 than it was in 1960 – almost half a century earlier.⁷

To make matters worse, at least from an economic standpoint, Russia's health disaster is concentrated in its population of working ages. Over the 40 years between 1965 and 2005, for example, death rates for men between their late 20s and mid 50s typically doubled. While diet, smoking, sedentary lifestyles, and above all, Russia's deadly romance with the vodka bottle can explain much of this broad deterioration in public health conditions, the actual decline in

survival prospects appears to be worse than such standard 'risk factors' would of themselves suggest.

Between now and 2030, the Census Bureau projects that Russia's working age population will fall by nearly 20 per cent. In the modern world, urban centres are typically the epicenters of economic growth – but Russia's urban population is smaller today than at the end of the Communist era, and the UN projects there will be fewer inhabitants in Russia's cities 20 years from now than today (UNPD, 2009). In addition, Russia's old-age burden will be steadily increasing over the decades ahead; whereas 13 per cent of the Russian population today is 65 or older, the projected proportion for 2030 is 21 per cent.

India

What about India? Since the country's 1991 financial crisis and ensuing economic reforms, India's GDP growth has averaged an impressive 6.5 per cent a year – in recent years the country has been humming along at eight per cent per annum. Many observers think the best may be yet to come.

In government and private sector circles alike, a growing number of analysts believe that India's future growth will be accelerated by demographic tailwinds. By this argument, the projected changes in India's population profile will position the country to benefit from what demographic economists call 'the demographic dividend'. Over the next two decades, India's total population is set to grow by a little over one per cent per annum, possibly becoming the world's most populous state before 2030 – and almost all of this growth would be working age manpower (see Figure 4). As India's manpower pool grows, the country's 'dependency ratio' (the ratio children under 15 and persons over 65 to working-age population) will

be falling, and the society will remain relatively youthful. Such changes in population structure could facilitate higher levels of national savings, investment, and thus – all other things being equal – economic growth.

Viewed in the aggregate, India today would indeed appear to be a poster child for a coming potential ‘demographic dividend’. But closer examination necessarily qualifies that initial impression. India’s vast, striking regional disparities in population profiles, and its still-appreciable human resource shortfalls in many regions, could make sustaining rapid economic growth a trickier proposition than might at first seem the case.

India is a land of many different religions, languages, cultures – and fertility patterns. To oversimplify only slightly, India today is bisected by a great North/South fertility divide. In much of the North (including parts of the Ganges belt and some of the country’s western-most districts) fertility levels remain quite high, with birth levels per woman of four or more. In much of the Indian south, on the other hand, fertility levels are at, or already below, the replacement level.

In effect, this means that two very different Indias are being born today: a youthful, rapidly growing north India whose future population structure will be akin to a traditional ‘Third World’ society, and a south India where population growth will be slowing or ceasing, where manpower growth will be coming to an end, and where pronounced population ageing will be commencing.

This great impending demographic divergence bears directly on the prospects for sustaining rapid growth in India in the decades immediately ahead. At the risk of oversimplification, it is India’s sub-replacement fertility areas that are the country’s engines of economic growth, while the high-fertility areas are generating the country’s future prospective workers. But there is a fundamental mismatch here – India’s growth engines require workers with relatively high levels of educational attainment, and India’s high-fertility areas are turning out a rising generation of young Indians with woefully low levels of schooling.

This is not to say that India cannot continue to grow, and to play an ever greater role in the international economy, in the years ahead. But the proposition that India might nearly quadruple its per capita income in the next 20 years (as a continuation of eight to nine per cent growth might imply) simply ignores the human resource requisites for such an economic ascent.

The developed economies – Japan, Western Europe and the United States

The general outline of impending demographic trends for the world’s major developed economies – Japan, Western Europe, and the United States – will already be familiar to most readers. Broadly speaking, all developed economies face demographic slowdowns and population ageing in the decades just ahead. But there are major differences in the acuteness and the precise nature of their coming demographic constraints.

In purely arithmetic terms, Japan stands to be the economic area most heavily burdened by the population trends that lie

immediately ahead. Japan has had the steepest, and the longest, fall-off in fertility in modern history; in 2008, the country celebrated barely 40 per cent as many births as it had 60 years earlier. This profound and protracted fertility collapse has set the stage for a corresponding depopulation in the generations ahead. Japan’s population decline could theoretically be mitigated to some degree by immigration, but perhaps more than any other affluent Western society, Japan has been incapable or unwilling to bring in newcomers from abroad. Official Japanese statistics, in fact, report a slight net *out-migration* of population over the past four decades.⁸ But Japan has also enjoyed the blessing of rapid and continuing health improvement over the post-war era; as of now, the Japanese have a higher life expectancy at birth than any other country on earth. Taken together, the country’s fertility, migration and mortality trends are therefore propelling Japan not only into demographic decline, but also to a degree of population ageing thus far contemplated only in science fiction.

Japan is already a net-mortality nation, registering more deaths than births, and over the next two decades the surfeit of deaths over births is expected to drive down the country’s total population by about 14 million, or about 11 per cent (from 127 million to 113 million). But the relative decline in working age manpower would be even steeper: between 2010 and 2030 the 15–64 group stands to shrink from 81 million to 67 million, or 17 per cent. All the while, the number of Japanese senior citizens would be rising. By 2030, in these projections, over 30 per cent of the population would be over 65, and over 12 per cent would be over 80. In this future Japan, there would actually be more octogenarians and nonagenarians than children under 15; by the Census Bureau’s estimate, median age for the country as a whole would be well above a currently mind-boggling 52 years.

The economic implications of these impending changes are far from positive. Even with healthy ageing – and the theoretical possibility of ever-later retirement from the workplace – they suggest a marked contraction in the country’s labour supply. Moreover, Japan’s looming old-age boom could weigh still further against maintaining even the country’s existing sluggish rates of economic growth. The coming surge in Japan’s older population portends downward pressure on national savings and investment rates, adding to the challenge of achieving steadily positive growth in national GDP. Of particular concern here are not only needs arising from physical frailty, but from all diseases for which older people are at greater risk. No modern country has ever before faced such a prospective burden, both social and economic.

Western Europe’s demographic prospects are outlined in Figure 5. Overall, to go by Census Bureau projections, Western Europe is set for population stagnation, growing in total by under four per cent over the next two decades, and with near-zero growth projected by the year 2030. Within the region, however, some of countries with the largest economies – including Germany and Italy – are set to experience population decline over the next 20 years.

Two unanswered demographic questions will loom especially heavily over the Western European economy in the decades immediately ahead. Firstly, can the region succeed in attracting and incorporating the foreign workers their

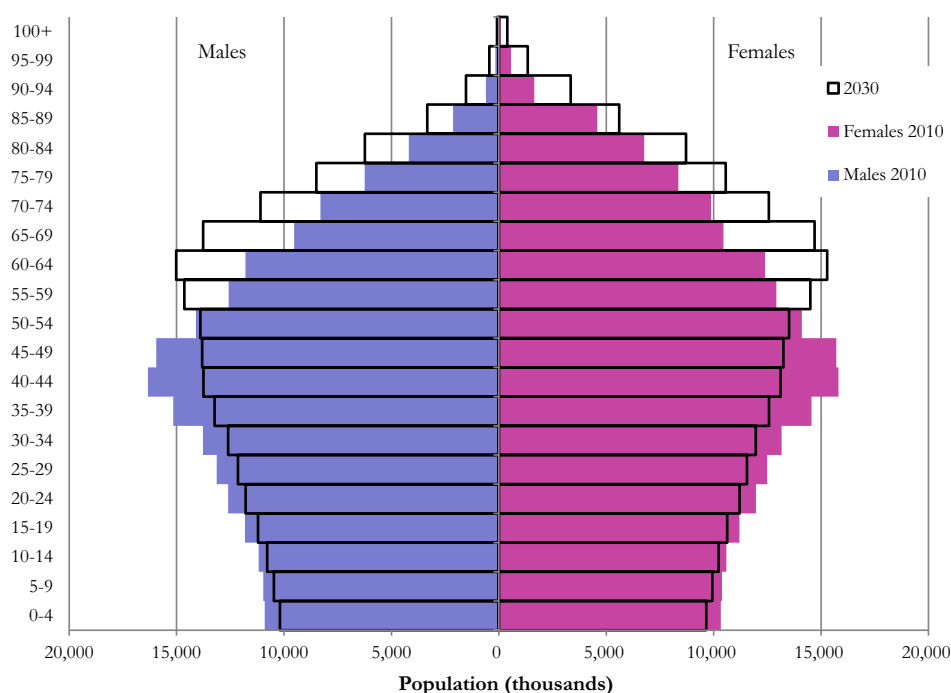


Figure 5: Projected population structure of Western Europe, 2010 vs. 2030

Source: US Bureau of the Census International Database, available online at <http://www.census.gov/ipc/www/idbacc.html> (accessed January 2011).

economies will need in the coming decades? If Western Europe does not enhance its overall performance in ‘social inclusion’, there will be repercussions – not only for economic growth, but possibly also for social cohesion. Secondly, can Europe translate health improvements into a longer working life for its progressively ageing population? At the moment, life expectancy in Western Europe is about two years higher than in the USA: but average retirement age in Western Europe is lower than in the USA, despite some uptrend in labour force participation for older workers in certain countries (mainly in northern Europe).

The great demographic exception within the affluent West is the USA. In contrast to the demographic stagnation or decline that faces most of the rest of the OECD over the decades immediately ahead, the USA, by Census Bureau projections, is set to grow by 20 per cent between 2010 and 2030. In fact, the USA stands to be growing at just about the same pace as the world population as a whole – meaning that the US share of global population is not set to shrink in the decades immediately ahead.

Virtually every age group within the US population – from babies through centenarians – is set to increase in size over the next 20 years (see Figure 6). Unlike practically all the rest of the now-rich countries, the USA can expect a growing pool of working-age manpower, characterised by a moderate but steady rise averaging 0.5 per cent per year over the next 20 years. And while the USA will be a greying society, its pace of population ageing is projected to be slower than virtually anywhere else in the OECD. Between 2010 and 2030, for example, the median age of US citizens is projected to rise by just under two years – compared with nearly four years for Western Europe and over seven years in Japan. And while the US’s ratio of working-age manpower to senior citizens 65 and older is set to decrease in the coming years, the country’s prospective ‘population support ratio’ for 2030 looks to be

markedly higher (3.2 : 1) than either Western Europe’s (2.5 : 1) or Japan’s (under 2 : 1).

The USA’s ‘demographic exceptionalism’ is the arithmetic consequence of two factors: the country’s relatively high fertility levels, and its continuing influx of immigrants. Over the past generation and a half, while total fertility rates in most of the rest of Western world were plunging, fertility rates in the US were actually increasing. And the USA is also the world’s principal receiving country for newcomers from abroad. Most of these immigrants are younger would-be workers. If fertility and immigration continue more or less at their current pace, as Census Bureau projections assume, the USA would tally a net inflow of almost 30 million immigrants over the next 20 years.

Nevertheless, there are also clouds on the US demographic horizon. The USA has a relatively good record in assimilating immigrants as loyal and productive newcomers – but future success in this endeavour will not necessarily occur automatically. Furthermore, the public K-12 education system produces uneven results (mediocre, by comparison with students from many other affluent societies) and the fraction of young Americans graduating from high school has been decelerating of late, possibly flat-lining in the years just ahead. Then there is the matter of health standards; America’s health progress does not compare all that well with advances underway in other affluent regions.

What is to be done?

Left unattended, the global demographic trends outlined above prefigure serious and gradually mounting pressures for slower world development and for downward revisions of worldwide material expectations, with all that such adverse changes could imply. However, feasible options are at hand

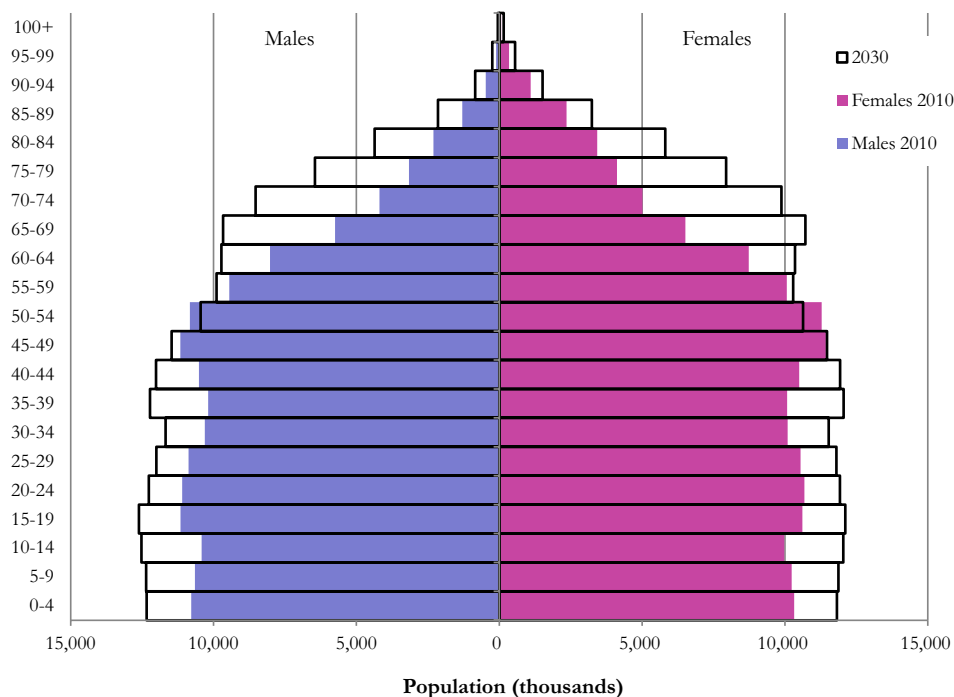


Figure 6: Projected population structure of the United States, 2010 vs. 2030

Source: U.S. Bureau of the Census International Database, available online at <http://www.census.gov/ipc/www/idbacc.html> (accessed January 2011).

already for countermanding some of these pressures and for capitalising upon new demographic opportunities as they may arise.

Addressing our new demographic challenges will require deliberate, concerted and sustained efforts at the local, national, and global levels to better realise the potential of our planet's most precious resources: namely, the men, women and children who will inhabit the world today and tomorrow. Very broadly speaking, such an approach must entail augmenting 'human capital' (health, education, knowledge and skills) while simultaneously creating an economic environment in which human economic potential can be translated into actual productive value with ever greater efficiency.

Improving educational opportunity and educational quality in low-income areas, for example, will figure centrally in enhancing prospects for both local and global growth over the decades ahead. Better educated workers tend not only to be more productive; they are also healthier and better placed for longer working lives. Developing populations cannot hope to generate First World income levels on Third World educational profiles. And recasting 'educational systems' (using that term very broadly) to provide genuine 'life-long education' would also bear tangible and potentially important productive returns – especially in now-developed societies, where an ever-growing share of the prospective labour force stands to be older workers.

Continuing general improvements in health conditions should also be a central objective, since health advances could prove a *sine qua non* for maintaining or increasing long-term economic growth rates in an ever greyer world. In both rich and poor countries alike, furthermore, great opportunities still remain for improving general health conditions through relatively inexpensive 'preventive' health strategies (that is to say, through promotion of healthier, less risky lifestyles and

behaviours, including reduction of smoking, moderation of drinking, more balanced diets, reasonable amounts of exercise, and the rest).

For affluent greying societies, taking economic advantage of the blessings of 'healthy ageing' will become ever more crucial to the quest for higher national income levels. This suggests that the existing disincentives in so many rich countries today against continued work at older ages for ever-longer living populations should be re-examined and ultimately eliminated, and that, conversely, voluntary extension of working life should be much more carefully incentivised. In addition, encouraging higher overall savings rates for greying societies should surely be on the international agenda, since – even in a global economy – higher national savings rates could promote higher national investment rates, and thus more rapid economic growth.

But eliciting growth in the years ahead will require more than just husbanding human resources – it will also require generating of higher rates of return on human capital for increasingly educated and healthy populations. Increasing the productivity of global manpower through improvements in efficiency is therefore also very much in order.

In part, this can be accomplished through what is termed (sometimes disdainfully) 'economic reform'. In the world's emerging markets, a whole host of institutional and policy reforms – including improved rule of law, security of property rights and governmental 'transparency' – could improve the productivity and purchasing power of workers and entrepreneurs. Such improvements in local 'economic climate' are still sorely needed in places like China, Russia and India, despite their developmental transformations to date. A more propitious 'economic climate' likewise offers as yet un-seized economic opportunities throughout much of South-east Asia, Latin America and the Middle East. Affluent societies are also going to need to face their own pressing economic and policy

reform issues – perhaps most importantly, growth-killing public entitlements and distorted incentive structures for the pricing of financial market risk.

Humanity has one additional ‘secret weapon’ in accelerating growth in the years ahead: knowledge production and technological innovation. The revolutions in health and life sciences, information technology and materials science over the past generation point to the opportunities that may lie ahead for improving human productivity. Capitalising upon the promise of potential advances in human knowledge, however, cannot be taken for granted. On the contrary: perhaps more than even before, we will have to commit to creating incentives for risk-taking, cutting-edge research and development, in both the public and private sectors.

All of the objectives just enumerated win on their own merits; they are things the world should be doing in any case. Impending demographic trends, however, add urgency to each and all of them, for the sake of the world’s future prosperity. Demographic change seems to unfold slowly – from month to month we can hardly notice the difference. But in reality, viewed in terms of our lives and the lives of our children, there is no time to lose in recognising and adapting to the enormity of the unavoidable demographic challenges that are being thrust upon us.

1. By the projections of the US Census Bureau’s International Data Base, roughly 70 per cent – well over two thirds – of the total global population in 2030 would be people born in 2010 or before (US Census Bureau, n.d.). ‘Medium variant’ projections by the United Nations Population Division (UNPD) likewise suggest that roughly 70 per cent of the total world population in 2030 would be persons already born by 2010. For the world’s more developed regions the proportions would be even higher, given the lower ‘population turnover’ inherent in their typically lower birth and death rates (UNPD, 2008). The figures issued by the US Census Bureau and the UNPD are the two most authoritative and widely utilised sources of population projections today – and in most ways, these assessments conform quite closely.
2. Estimates are for the year 2008 (cf. Maddison, 2010).
3. David Barboza, ‘China Passes Japan as Second-Largest Economy’, *New York Times*, August 15, 2010. Note these are not PPP-based comparisons, but rather comparisons based on prevailing foreign exchange rates.
4. Derived from Goldman Sachs Global Economics Group (2007, p. 149). By the year 2050, in this study’s projections, per capita output would be higher in Russia than in Germany, France, or any other country of continental

Europe; higher than in Japan; and even slightly higher than in Canada (ibid., p. 37).

5. Derived from Russian Federation Statistical Service (2010a, Table 2.1)
6. Derived from Russian Federation Statistical Service (2010b, Table 2.1)
7. Human Mortality Database, available at www.mortality.org.
8. Derived from Government of Japan Statistics Bureau (2011, Table 2-1), *Japan Statistical Yearbook 2011*, (Tokyo: Ministry of Internal Affairs and Communications, 2011). According to these official numbers, Japan experienced a net out-migration of 210,000 persons between 1969 and 2009.

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Nicholas Eberstadt is the Henry Wendt Scholar in Political Economy at the American Enterprise Institute for Public Policy Research (eberstadt@aei.org).

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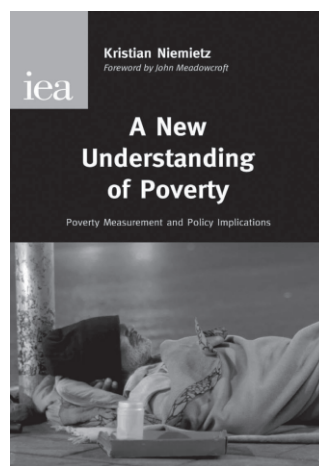
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